

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Coram

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

Petition No.30/2004

In the matter of

Approval of charges for Unified Load Despatch & Communication Scheme in North Eastern Region.

And in the matter of

Power Grid Corporation of India Ltd.

.... **Petitioner**

Vs

1. Assam State Electricity Board, Guwahati
2. Meghalaya State Electricity Board, Shillong
3. Government of Arunachal Pradesh, Secretary and Commissioner (Power) Itanagar
4. Power & Electricity Deptt., Govt. of Mizoram , Aizwal
5. Electricity Deptt. , Govt. of Manipur, Imphal
6. Department of Power, Govt. of Nangaland, Kohima
7. Department of Power, Govt. of Tripura, Agartala.

...**Respondents**

The following were present

1. Shri Umesh Chandra, PGCIL
2. Shri V.K. Prasher, PGCIL
3. Shri U.K. Tyagi, PGCIL
4. Shri D.D.Dhayaseelan, PGCIL
5. Shri P.C.Pankaj, PGCIL
6. Shri V.K.Gupta, PGCIL
7. Shri C.Kannan, PGCIL
8. Shri V.C.Jagannathan, PGCIL
9. Shri T.S.P.Rao, PGCIL
10. Shri R.P.Padhi, PGCIL
11. Shri Y.K.Dixit, PGCIL
12. Shri A.K.Sharma, PGCIL
13. Shri Ramesh Bahri, PGCIL
14. Shri C.D.Saee, Meg. SEB
15. Shir M.K.Adhikary, ASEB

ORDER
(Date of Hearing: 15.6.2004)

In this petition, filed under Section 79(1) of the Electricity Act, 2003, the petitioner, Power Grid Corporation of India Ltd., has sought approval of tariff for the Unified Load Despatch and Communication Scheme (hereinafter referred to as “the Scheme”) in North Eastern Region.

2. At the outset it is necessary to observe that the Scheme has been designed to strengthen the load despatch infrastructure in the country. The Scheme covers investment in RLDC and SLDCs. The scope of the present petition, therefore, covers determination of fees and charges for the regional load despatch centers under sub-section (4) of Section 28 of the Electricity Act, 2003. We, therefore, proceed on that basis, instead of determining tariff for the Scheme as a transmission asset.

3. The investment approval and expenditure sanction was accorded by the Central Government in Ministry of Power vide its letter dated 21.8.1997 at an estimated cost of Rs. 167.93 crore, including IDC of Rs. 23.06 crore, based on 4th quarter 1996 price level.

4. During execution of the Scheme there has been an increase in the cost on account of change in scope of approved items of work, Foreign Exchange Rate Variation and other reasons. As such, based on the recommendations of Public

Investment Board, the Central Government vide its letter dated 31.3.2003, accorded its fresh approval to the Revised Cost Estimates of Rs. 263.81 crore, including IDC of Rs. 34.60 crore, consisting of (i) Power Grid's portion of Rs. 250.36 crore, including IDC of Rs. 31.82 crore and (ii) SEBs' portion of Rs. 13.44 crore, including IDC of Rs. 2.78 crore, based on 2nd quarter 2002 price level. As per the revised approval, the Scheme was to be commissioned by December 2003.

5. The scope of the Scheme includes:

(a) Establishment of Control Centres at Regional and State level for Supervisory Control and Data Acquisition (SCADA) and Energy Management System (EMS).

(i) RLDC (Regional Load Despatch Centre) at Shillong

(ii) SLDCs (State Load Despatch Centres) at Guwahati (Assam State), Shillong (Meghalaya) and Agartala (Tripura) and Remote Console SLDCs located at Imiphah (Manipur), Aizwal (Mizoram), Kohima (Nagaland), Itanagar (Arunachal Pradesh).

(b) RTUs (Remote Terminal Units –66 Nos.) to be installed at various 400 kV/220 kV/132 kV Sub-Station and generating stations in NER.

(c) Adaptation work at sub-stations and generating stations to meet the requirement of data acquisition through RTUs

(d) Associated dedicated communication network comprising fibre optic (895 Kms), Microwave (19 hops) and PLCC system (112 terminals).

(e) Auxiliary power supply system comprising UPS (Uninterrupted Power Supply – 8 nos.), DG set (1 no.) and DC power supply system including batteries.

(f) Other infrastructural facilities such as air-conditioning, fire-fighting, construction/renovation of building etc.

6. Date of commissioning of the Scheme is 1.8.2003. The commissioning of the Scheme was advanced by about four months, in view the fact that the during 11th Project Coordination Committee Meeting held at Shillong on 25.6.2005 it was decided that the Scheme would be declared under commercial operation from 1.8.2003.

7. Due to nature of equipment / services under the Scheme, the high initial cost and financial position of the constituents, a concept similar to levelised tariff has been proposed in the petition, entailing uniform charges over period of assumed life of the Scheme of 15 years for recovery of capital cost. The other components namely, O & M expenses and Interest on Working Capital have not been proposed to be levelised .The petitioner has proposed the following methodology for computation of tariff:

(a) Return on equity: ROE @ 16% on equity has been proposed by the petitioner for the system both for Regional and State portions. Further, recovery of total equity has been proposed during the period of 15 years.

(b) Interest on loan and loan repayment: Interest on loan capital has been computed on the outstanding loans. Interest on loan has been considered by applying weighted average interest rate(s) applicable on actual loan and deployed by the petitioner for the Scheme, both for Regional and State portions. Repayment of total loan of State portion and Regional /Central Sector portion has been considered by the petitioner during the period of levelised charges of 15 years.

(c) Operation and maintenance (O&M) Expenses: The petitioner has proposed O&M charges for first two years @ 7.5% for Regional/Central Sector portion with provision of annual escalation linked with AICPI /WPI. According to the petitioner, this should be adjusted after the end of 2nd year based on actual O&M expenses. O&M expenses for the State portion have been proposed to be undertaken by the concerned State utility.

(d) Interest on Working Capital: Interest on working capital has been proposed by adopting the following principles:

- (i) Operation and maintenance expenses (cash) for one month;
- (ii) 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 has been revised at the rate 6%;
- (iii) Receivables equivalent to two months' average billing; and

(iv) Interest on working capital at the rate of 10.50%.

(e) Levallisation of charges:

(i) For State portion: Annual charges comprising all the above parameters except O&M and interest on working capital levelised for 15 years with discounting factor equal to ROE for equity portion and weighted average interest rate on loan for loan portion.

(ii) For Regional /Central Portion: O&M and interest on working capital components of tariff are not levelised and charged extra for each year. This component has been proposed to be adjusted at the end of each year based on actual O&M expenses.

8. Based on the above noted facts, the petitioner has sought approval for the charges for the Scheme as under:

(Rs. in lakh)

	Central Portion	State Portion
	2003-04	2003-04
Annual Capital Recovery Charge - Loan	154.99	113.54
Annual Capital Recovery Charge - Equity	27.24	19.96
Annual Capital Recovery Charge - Total	182.23	133.50
O&M Expenses	990.54	0.00
Interest on Working Capital	43.83	2.38
Total	1216.60	135.88

9. The petitioner has claimed interest on working capital as per the details given below:

(Rs. in lakh)

Interest on Working Capital	Central portion	State portion
	2003-04	2003-04
Maintenance Spares		
Less Initial capitalised spares		
Maintenance spares for working capital	132.07	0.00
O&M Expenses	82.54	0.00
Receivables	202.77	22.65
Total	417.38	22.65
Rate of Interest on Working Capital	10.50%	10.50%
Interest on Working Capital	43.82	2.38

10. MeSEB and ASEB have raised objections stating that O&M charges sought by the petitioner are too high.

11. On the issue of reasonability of O&M charges, the petitioner has submitted that O&M charges for Central Sector portion @ 7.5% of the capital cost are proposed on normative basis only for the initial two years which would be adjusted based on the actuals. This has been proposed in view of the fact that project of this nature and magnitude has been established for the first time in India and no past data is available for arriving at normative O &M charges. Moreover, in view of the system being predominant with communication facilities and computer hardware and software, royalty charges for micro wave links, spares, consumables, AMC for computer etc., the rate of 7.5% has been recommended by its consultant to the petitioner. On consideration of the norms

furnished by the petitioner, O&M charges @ 7.5% of the admitted capital cost are being allowed, subject to retrospective adjustment based on actuals after prudence check by the Commission. O&M expenses for RSCC portion should be shared by all the respondents.

12. The petitioner had sought to apply escalation for O&M expenses based on the formula as applicable to transmission sector as specified in the tariff Notification dated 26.03.2001. However, in our opinion, this formula is not suitable in case of the Scheme due to following reasons:

(a) The weightage of 55% to CPI and 45% to CPI may not be considered appropriately for the Scheme.

(b) Similarly, the escalation formula for RLDC expenses with 90% weightage to CPI component is also not suitable for the Scheme.

13. We, therefore, direct that the special formula for escalation of O & M expenses for the Scheme shall be evolved after sufficient details about prudent O & M expenditure are available.

14. After hearing the petitioner, the respondents, and deliberating on the mechanism evolved by the petitioner, this Commission is inclined to accept the proposed methodology for calculation of fees and charges for the Scheme by adopting the following principles:

- (a) Annual capital cost recovery shall be based on the levelised tariff for 15 years,
- (b) IWC and O&M charges shall not be levelised,
- (c) O&M charges shall be payable initially @ 7.5% of the admitted cost,
- (d) The actual O&M expenses shall be reimbursed with retrospective effect after a thorough scrutiny and verifying their prudence.

15. Accordingly, charges for the Scheme in North Eastern Region has been calculated taking into account the following factors:

- (i) Capital cost as on the date of commissioning,
- (ii) Weighted average rate of interest @ 10.234%,
- (iii) Return on Equity (RoE) @ 16%,
- (iv) Levelised tariff in lieu of depreciation, interest and RoE,
- (v) Interest on Working Capital @ 10.50% i.e. prevailing PLR rate of State Bank of India as on date of commercial operation, and
- (v) Additional Capitalisation after date of commercial operation shall be considered in the next tariff period.

Capital Cost

16. On the analogy of the provisions 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 petitioner company, has been adopted on the basis for computation of tariff.

17. Based on the audited expenditure details submitted by the petitioner, the gross block is worked out as under:

(Rs. in lakh)

	CENTRAL PORTION	STATE PORTION							Total
	RSCC	ASEB	MeSEB	Tripura	Manipur	Nagaland	Mizoram	Arunachal Pradesh	
Expenditure up to date of commercial operation 1.8.2003	10216.20	3718.76	1069.28	1112.21	377.5	356.04	320.74	220.27	17391.00
Gross Block on date of commercial operation	10216.20	3718.76	1069.28	1112.21	377.5	356.04	320.74	220.27	17391.00
Expenditure from date of commercial operation to 31.3.2004 (As per audited A/C)	950.95	297.46	85.54	88.02	30.28	29.04	26.19	18.16	1525.64
Gross block on 31.3.2004	11167.15	4016.22	1154.82	1200.23	407.78	385.08	346.93	238.43	18916.64
Balance estimated Expenditure	315.11	81.93	10.95	10.94	4.06	4.06	3.62	2.69	433.36
Estimated completion cost	11482.26	4098.15	1165.77	1211.17	411.84	389.14	350.55	241.12	19350.00
Mandatory spares on date of commercial operation	193.18	155.2	36.21	35.5	-	-	-	-	420.09

18. Value of initial spares on date of commercial operation for each portion has been considered as per the table above for calculation of fees and charges. However for P& E Manipur, P&E Nagaland, P&E Mizoram and P&E AP the value had been indicated as “-“ which has been taken as Nil for the purpose of calculation of fees and charges.

19. It is noted from the revised cost estimates approved by Ministry of Power under letter dated 31.3.2003 that funding of the project was to be through grant - in-aid to the extent of 90% of the petitioner's portion (Rs.25036 lakh) and 100% of the respondents' portion (Rs.1344 lakh). The actual expenditure is less than

the capital expenditure on which the tariff is claimed. It has been decided to consider grant-in-aid as 90% of the capital expenditure considered for tariff and balance 10% has been considered as loan on which annual capital recovery charges have been worked out. Accordingly, the parameters considered for computation of fees and charges are summarised as under:

(Rs. in lakh)

	Central portion	State Portion	Total
Capital cost	10216.20	7174.8	17391.00
Gross deemed loan (10%)	1021.62	717.48	1739.10
Grant in aid (90%)	9194.58	6457.32	15651.90
	10216.20	7174.80	17391.00

20. On the issue of utilization of infrastructure of the Scheme for telecom network and sharing of consequential benefits with beneficiaries, the respondent Govt. of Tripura had raised the issue of launching of a scheme for Telecom Network in NER utilizing the infrastructure and assets of communication system under the Scheme.

21. The respondent, ASEB had also raised this issue and stated that in the indicative cost submitted by the petitioner at NREB forum, an amount of Rs 411.00 lakh was set aside from the total cost of petitioner portion, which is shown as cost of telecom. This issue was taken up by the respondent. In response, the petitioner has replied stating that Rs 411.00 lakh of the total project cost is a commercial component and therefore it is excluded from grant. It was further submitted that since this commercial component excluded from the grant does not mean that it is not a part of entire project cost and benefit from

the share of profit /loss from this telecom investment should be shared with the beneficiaries.

22. The petitioner also submitted that the infrastructure set up under the Scheme and which is being utilized by the petitioner for its telecom venture is limited to use of 6 Nos optical fibers (Out of 12 Nos available in the OPGW installed under the Scheme under Central Sector portion only. The Scheme utilizes six fibers only. Optical line terminal equipment etc installed under the Scheme is not being shared. Since the systems are completely independent, operation of the Scheme is in no way compromised or effected. It was further submitted that for utilization of the above fibres, the incremental cost of six fibers @ 25% of the cost of optical fiber cable amounting to Rs. 411.00 lakh has been apportioned towards telecom venture. The cost of the Scheme had accordingly been reduced to this extent. The cost data provided to the Commission is after deduction of Rs. 411.00 lakh from the Scheme cost. Therefore, the cost of the Scheme excludes Rs. 411.00 lakh towards the cost of six fibers and is therefore is not a component of proposed tariff for the Scheme. We are satisfied with the explanation furnished by the petitioner.

Cost Over-run

23. It is observed that the estimated completion cost as well as gross block on date of commissioning Scheme (Rs.19350.00 crore) is less than the revised estimated cost approved by the Central Government on 31.3.2003 (Rs. 250.36 crore). Hence, there is no cost overrun.

Recovery Factor

24. Based on Weighted average rate of interest and RoE, recovery factor for 15 years have been arrived at as under:

$$\text{Recovery Factor: } \frac{i (1+i)^n}{(1+i)^n - 1}$$

Where, i= Weighted average rate of interest and RoE respectively and

n= period

$$\begin{aligned} \text{Recovery factor for loan} &= \frac{0.10234 \times (1.10234)^{15}}{(1.10234)^{15} - 1} \\ &= 0.13323 \\ \text{Recovery factor for equity} &= \frac{0.16 \times (1.16)^{15}}{(1.16)^{15} - 1} \\ &= 0.1794 \end{aligned}$$

25. Interest on Working Capital has been considered at prevailing cash credit rate of nationalized banks. Working Capital for Regional/Central Sector portion is comprised of 2 month's receivables, 1 month's O&M and spares @ 1% of capital cost of the Scheme. For State portion, working capital is comprised of 2 months receivables only as operation and maintenance is proposed to be done by the respective states. Spares are escalated on the similar basis as the O&M expenses for the purpose of working capital component.

26. Based on the foregoing principles and methodologies, the annual fees and charges for the Scheme for North -Eastern Region are calculated as under:

(Rs. in lakh)

	Calculation of ULDC charges	
	Central Portion	State Portion
	2003-04	2003-04
Capital Cost	10216.20	7174.80
Gross Deemed Loan	1021.62	717.48
Initial capitalised spares	193.18	226.91
Annual Capital Recovery Charge - Deemed Loan	136.11	95.59
O&M Expenses	766.22	0.00
Interest on Working Capital	29.68	1.70
Total charges	932.01	97.29

27. The additional calculations in support of interest on working capital are extracted below:

INTEREST ON WORKING CAPITAL

(Rs. in lakh)

Interest on Working Capital	Central Portion	State Portion
	2003-04	2003-04
Maintenance Spares	102.16	
Less Initial capitalised spares	38.64	
Maintenance spares for working capital	63.53	0.00
O&M Expenses	63.85	0.00
Receivables	155.34	16.22
Total	282.71	16.22
Rate of Interest on Working Capital	10.50%	10.50%
Interest on Working Capital	29.68	1.70

28. In addition to the charges worked out above, the petitioner shall be entitled to other charges like income tax, incentive, surcharge and other cess and taxes in accordance with the notification dated 26.3.2001 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 the fees and charges approved above.

29. It is to be noted that the full capital cost shall be recovered over a period of 15 years with interest/return. After full capital recovery, the assets shall be transferred to the respective constituents at nominal value.

30. The petitioner is already billing the respondents on provisional basis in accordance with the Commission's interim order. The provisional tariff charges shall be adjusted in the light of final charges now approved by us. Also, the petitioner has been charging RLDC fees and charges based on order dated 8.5.2003 in petition No.109/2000 as summarised below.

(Rs in lakh)

	2003-04
A. Escalatable Charges	356.89
B. Non-escalatable Charges	7.80
C. Sub- Total (A)+(B)	364.69
D. Interest on Working Capital	3.37
Total RLDC charges - (C) +(D)	368.06
Working Capital (WC)	30.67

31. At the hearing on 10.10.2002 on petition No. 82/2002 (ULDC charges for Northern Region), it was stated on behalf of the petitioner “the tariff to be approved in the present petition would replace RLDC charges approved by the Commission earlier”. Accordingly, RLDC fees and charges recovered from the respondents based on order dated 8.5.2003 shall be proportionately adjusted against the fees and charges approved in this order, for the period 1.8.2003 to 31.3.2004.

32. This disposes of petition No. 30/2004.

Sd/-

(BHANU BHUSAN)
MEMBER

sd/-

(K.N. SINHA)
MEMBER

sd/-

(ASHOK BASU)
CHAIRMAN

New Delhi Dated 20th September 2005