

BEFORE
THE CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

FILE NO:.....

IN THE MATTER OF: Approval under regulation-86 of tariff for Unified Load Despatch & Communication (ULDC) Scheme in Western Region.

Power Grid Corporation of India Ltd.
(Govt. of India undertaking)

---PETITIONER

Registered office: B-9, Qutab Institutional Area,
Katwaria Sarai, New Delhi 110 016 and
Corporate office: "Saudamini", Plot no.2,
Sector-29, Gurgaon -122 001. (Haryana)

Madhya Pradesh Power Transmission Co. Ltd.,
P.O.Box No. 34, Rampur,
Jabalpur – 482 008.

--- RESPONDENTS

Represented by its Chairman

To

**The Hon'ble Chairman and
His Companion Members of The Hon'ble CERC
The Humble application filed by the Petitioner**

MOST RESPECTFULLY SHOWETH

1. The Petitioner herein, Power Grid Corporation of India Ltd. is a Government company within the meaning of Companies Act 1956 and wholly owned by Govt. of India.. The Petitioner is also discharging the statutory functions under various applicable provisions, including in particular section 28 and 38 of the Electricity Act, 2003.
2. In exercise of powers under sub-section (1) of section 27A of Indian Electricity Act 1910 (repealed by the Electricity Act, 2003), the Government of India has declared the Petitioner herein as the Central Transmission Utility. By virtue of section 185(2) of the Electricity Act 2003, the Petitioner shall be deemed to have continued as Central Transmission Utility. The CTU shall undertake transmission of electricity through inter state transmission system. The CTU shall also discharge the functions of planning and co-ordination relating to interstate transmission system and operate the Regional Load Despatch Centres (RLDCs). Further, RLDC may give such directions and exercise supervision and control as may be required for ensuring integrated grid operation and shall be inter-alia responsible for carrying out real time operations for grid control and despatch of electricity within the region through secure and economic operation of the regional grid in accordance with the Grid Standards and the Grid Code

Considering the critical role of RLDC for ensuring integrated grid operation of a large power system in Western Region, it was considered essential that a modern state-of-the-art *Supervisory Control and Data Acquisition System (SCADA) and Energy Management System (EMS)* along with dedicated communication is established at RLDC as well as SLDCs of Constituents in the overall interest of the Region. Otherwise it would be difficult on the part of WRLDC to ensure integrated operation of power system in the region as provided in THE ELECTRICITY ACT, 2003" and "INDIAN ELECTRICITY GRID CODE (MARCH 2002).

3. As per Section 79 of the Electricity Act' 2003, the function of CERC inter-alia include regulation of the inter-State transmission of electricity and to determine tariff for inter-state transmission of electricity. POWERGRID being CTU as per section 27(2) of the Act it is operating the RLDCs.
4. Accordingly, the ULDC Scheme has been envisaged in Western Region to operate, monitor and control the regional power grid in a unified, well-coordinated and integrated manner. The benefits of the scheme are substantial and would lead to:
 - i) Supervision, monitoring and control of power system on real-time basis.
 - ii) Optimal operation of Power System (i.e. generation & associated resources).
 - iii) Minimisation and faster restoration of grid disturbance.
 - iv) Improvement in the quality of supply through better control of frequency, voltage and other parameters.
5. The administrative approval and expenditure sanction for the Unified Load Despatch and Communication Scheme for Western Region was accorded by Government of India vide letter No.: 12/5/98-PG dated 5th Feb., 2001, at an estimated cost of Rs. 262.18 Crs., including IDC of Rs. 46.99 Crs. at II Quarter, 2000 price level. Later a corrigendum vide letter No. 12/5/98-PG dated 12th Feb., 2001 was issued by Govt. of India modifying the project implementation Schedule as 48 months from the date of investment approval from 24 months. A copy of sanction is attached hereto as **Encl. -1, page 4 to 20**. The detailed break up of the cost is given in the Annexure of the above GOI order and the highlights are as under:
 - i) Cost of POWERGRID's portion is Rs..254.82 Crores (including IDC of Rs. 45.58 Crs.), and
 - ii) Cost of SEB's portion is Rs. 7.36 Crs. (including IDC of Rs. 1.41 Crs.),
 - iii) The project would be Funded with World Bank loan, state share, domestic borrowings and POWERGRID's internal resources.
6. The scope of work covered under the scheme is as follows :-

PROJECT

“The scheme would encompass a composite communication, load dispatch and SCADA equipment to meet future grid operational requirements commensurate with the generation capacity addition programme. Real-time data from all major generating stations and sub-stations would be gathered and transmitted to State Load Despatch Centres and the Regional System Co-ordination & Control Centres to provide real-time information on system condition and equipment status for monitoring and controlling the system. Computer hardware & software would facilitate both real –time and off line and load flow studies, stability analysis and reliability studies to analyse and optimize the system operation.

Communication system supporting speech & data transmission would be based on Power Line Carrier Communication (PLCC) and wide –band, high-capacity Microwave and Optical Fibre equipments.

The scheme involves setting up of a Regional System Co-ordination Centre (RSCC) at Mumbai ; the State Load Despatch Centre (SLDCs) at Gotri, Bhilai, Jabalpur and Panaji for Gujrat, Chhatisgarh, Madhya Pradesh and Goa respectively. Further, the scheme also involves integration of existing SLDC of Maharashtra at Kalwa with RSCC system. The Sub-Load Despatch Centres (Sub-LDCs) would be set up at suitable locations in the constituent states. Each Sub-LDC will acquire data from the Remote Terminal Units (RTUs).”

7. It is submitted that the Petitioner has entered into a MOU with the Respondents individually for the establishment of load despatch and communication facilities under composite unified scheme in Western Region, a copy whereof is enclosed hereto as **Encl.- 2 (page 24 to 33)**. The broad scope of work and responsibilities of POWERGRID the Petitioner and responsibilities of constituents are identified at Para 1.4 & 1.5 of MOU. Further, the broad scope of work and responsibilities of POWERGRID and constituents in respect of operation and maintenance of Load Despatch and Communication facilities are identified at Para 2.1 & 2.2 of the MOU. Further, in view of non payment of full transmission charges for the project executed by POWERGRID by beneficiary states of WR, it was decided that a separate commercial agreements may be signed with beneficiary states for payment of tariff. Accordingly, commercial agreement was signed by POWERGRID and the beneficiaries. Copy of the one such agreement signed by the POWERGRID and MPSEB is attached hereto as **Encl.-3, page 96 to 104** ..

The allocation of responsibilities in implementation of the ULDC scheme, envisages that POWERGRID would be inter-alia responsible for preparation of detailed specifications, invitation of tenders, evaluation of bids, award of contracts for supply, erection, testing and commissioning of load dispatch and communication equipments, total design and engineering of the unified scheme In addition, POWERGRID shall also be responsible for installation, testing and commissioning of all the equipments ordered by POWERGRID at the State Load Despatch Centres, generating stations and sub stations of the constituents.

8. It is submitted that the as per project approval letter dated 5.2.2001 and its corrigendum dated 12.2.2001, ULDC scheme in Western Region was schedule to be commissioned within 48 months from the date of approval i.e. by February'2005. However, the project has been completed in the month of Jan.'2006. The completion of the project was delayed mainly due to the following reasons.

GOI approval envisages the project to be commissioned in a period of 48 Months from the date of Govt. approval i.e. by February, 2005. TEC as issued by CEA had stipulated the condition that consent of beneficiaries for participating in the scheme, as well as, sharing of cost be obtained by way of signing of MOUs with the beneficiaries before taking up the implementation of the project. However, despite constant persuasion at various levels at POWERGRID, CEA and Ministry of Power, **the signing of MOU could not be completed before August 2002, causing initial delay of approx. 19 months in finalization of contracts for various equipment packages.** Despite that, the project was commissioned in Jan'06 and declared in commercial operation from 01.02.06. and the overall delay was reduced to 12 months only.

The RCE of the said project at revised estimated cost of Rs. 234.67 cr., with reasoning of reduction in overall cost with time over run was forwarded to MOP during Nov.. 2002. However, MOP vide letter dated 24th /30th Dec.' 2002 while noted the time over run, informed that since there is reduction in earlier approved cost, the approval cost of GOI for RCE is not required. A copy of letter dated 24th /30th Dec. '2002 is attached here to as **Encl-4, (page 105 to ...)**

9. All the works necessary to put the WR ULDC project (scope covered under this petition) under commercial operation has been completed and the WR ULDC scheme is under commercial operation w.e.f. 01.02.2006. A copy of letter dated 25.1.2006 and its corrigendum dated 6.2.2006 regarding commercial operation of WR ULDC project is attached hereto as **Encl.-5, (page 106 to 107)** ..

Details of Capital cost of ULDC scheme in Western Region which is under commercial operation w.e.f. 1.2.2006 is as below:

Sl. No.	Particulars	Capital Cost	IDC	IEDC	Rs. In Lakhs
					TOTAL
1.	Expenditure up to 31.03.2005	11,453.50	1,136.33	1,013.50	13,603.33
2.	Expenditure from 1.4.2005 to 31.01.2006 ie.DOCO	1,510.92	477.11	151.32	2,139.35
3.	Balance estimated expenditure	2,413.87			2,413.87
4.	Total	15,378.29	1,613.44	1,164.82	18,156.55
	Time schedule for balance expenditure				31.03.2007

Constituent wise cost break up is as under:

Particulars	Rs. In lakhs				
	RSCC	MPSEB	CSEB	GEB	GED
Expenditure up to 31.3.05	8578.43	2982.77	706.99	1178.15	156.99
1.4.05 to 31.1.06 (up to DOCO)	1079.23	445.48	155.58	325.89	133.17
Cost as on DOCO	9657.65	3428.25	862.58	1504.04	290.16
Balance estimated expenditure	1037.06	479.06	169.99	427.57	300.19
Total	10694.72	3907.31	1032.56	1931.61	590.35

As against approved cost of Rs. 262.18 crs. (out of which cost of POWERGRID's portion is Rs. 254.82 crs. and SEB's portion is Rs. 7.36 crs.), the actual cost up to DOCO (1.2.2006) is Rs. 157.43 crs. and balance estimated expenditure is Rs. 24.14 crs. thus making the total estimated completion cost of Rs. 181.57 crs. The above cost consist of cost on account of RSCC (i.e. Rs. 106.95 crs.) and cost on account of State Sector portion (i.e. Rs. 74.62 crs.). The balance expenditure of Rs. 24.14 crs. is not considered for the tariff calculation in the above petition and shall be filed separately.

From the above it is clear that there is reduction of Rs. 73.25 crs. in overall cost of this scheme. However the there is escalation in the cost of central portion whereas the cost of state portion has been reduced. The reason for variation in cost is described as below:

A) Central portion :

As against apportioned approved cost of Rs. 75.20 crs., the estimated completion cost as per the auditor's certificate is Rs. 106.95 crs. which is higher by Rs. 31.75 crs. The reasons for the increase in cost is as below:

- i) Staff quarter for the WRLDC staff in the vicinity of WRLDC office were procured in order to enhance their availability specially at the time of power crisis This has increased the cost as the same was not envisaged in the FR.
- ii) There was change in the communication system from microwave to the fibre optic

media as desired by the constituents & was discussed during the PCC meeting which increased the cost of the central portion considerably. This change in the communication system was also vetted by CEA.

- iii) Due to the change in the communication system from microwave to the fibre optic media, repeater shelters, which were not envisaged in the FR, has to be provided to maintain the signal strength has further increased the cost of the central portion.

It is relevant to mention that the apportioned RCE for central portion is Rs. 147.22 crores and actual anticipated expenditure is within this RCE.

B) State portion :

As against apportioned approved cost of Rs. 179.61 crs., the estimated completion cost as per the auditor's certificate is Rs. 74.62 crs. which is lower by Rs. 104.99 crs. The reasons for the decrease in cost is as below:

- iv) There was reduction in the scope of Communication system and no. of RTUs in case of MPSEB /CSEB causes the reduction of cost.
- v) Cost was also reduced due to the reduction in taxes and duties, interest rates and other finance charges under the EMS /SCADA, Aux. power supplies etc.

It is relevant to mention that the apportioned RCE for state portion is Rs. 79.44 crores and the actual anticipated expenditure is within this RCE.

10. **TARIFF**

10.1 It is submitted that WR ULDC scheme is a state of the art project, highly sophisticated and is being implemented for the overall interest of the Western Region . The scheme is complex in nature and international consultants of repute were engaged to assist POWERGRID in all phases of work as per the advice of World Bank. Considering national importance of the scheme and looking into the nature of equipment/ services under ULDC project, the high initial cost and financial position of the constituents, the norms and factors prescribed in notification dated 26.3.2004 issued by the Hon'ble Commission, may not be suitable for the ULDC schemes for recovery of cost. In view of above, POWERGRID has evolved a tariff mechanism known as levelised tariff, which is different from the conventional tariff. The levelised tariff, for WR ULDC scheme is calculated based on the formula indicated in tariff orders issued by Hon'ble Commission in case of Northern, Southern and North Eastern Region. This mechanism would entail a uniform tariff over a period of 15 years and would avoid front loading of the tariff.

10.2 In view of the foregoing, the Petitioner has worked out the detailed terms and conditions and tariff for assets covered under this petition viz. tariff for Unified Load Despatch and communication (ULDC) Scheme in Western Region.

The ULDC scheme comprises of investment in Central Sector Portion, tariff for which is to be shared by all the Respondents (WR Constituents) and the State portion, charges for which are to be paid by the respective respondents. The proposed terms & conditions and norms for the scheme are as under:

a) **RETURN ON EQUITY AND RECOVERY OF TOTAL EQUITY**

Return on equity @ 14% on the equity amount deployed by Petitioner for the above system has been considered both for Regional and State portion. This is in line with the orders issued by Hon'ble Commission in case of NR ULDC scheme for the period 2004-09. Further, recovery of total equity of state portion and Regional/ Central sector portion has been considered during the period of levelised tariff i.e.15 years.

$$\begin{aligned} \text{Recovery factor for equity for 15 years} &= \frac{0.14 \times (1.14)^{15}}{(1.14)^{15} - 1} \\ &= 0.16281 \end{aligned}$$

b) **INTEREST ON LOAN AND LOAN REPAYMENT**

Interest on loan @ weighted average interest rate(s) applicable on actual loan(s) amount deployed by the Petitioner for the above system has been considered both for Regional and State portion. Further, yearly loan repayment has been considered during the period of levelised tariff i.e.15 years, both for Regional and State portion in place of depreciation.

$$\begin{aligned} \text{Recovery factor for equity for 15 years} &= \frac{0.0624 \times (1.0624)^{15}}{(1.0624)^{15} - 1} \\ &= 0.10458 \end{aligned}$$

c) **OPERATION AND MAINTANENCE EXPENSES**

As there is no background of O&M expenditure of this project in this region and considering the annual maintenance charges for computer hardware/software system and other associated expenditure which are unique in nature, initial O&M charges for the 2004-09 block period have been considered @ 7.5% for Regional/ Central sector portion with the provision of annual escalation @ 6%. The O&M charges would be adjusted after the end of 2nd year based on the actual O&M expenses. The O&M for State portion is being undertaken by respective respondent.

d) **INTEREST ON WORKING CAPITAL**

Interest on working capital @ prevailing cash credit rate of State Bank of India has been considered. The working capital for Regional/ Central sector portion would comprise two (2) months receivables, one (1) month O&M and spares @ 1% of capital cost of the project. This is in line with the norms issued vide notification dated 26.3.2004 by the Hon'ble Commission. The Spares shall be escalated on the similar basis as that for O&M expenses for the purpose of working capital component.

Whereas for State portion, working capital would comprise two (2) months receivables only as O&M is proposed to be done by the States themselves.

e) **LEVELISATION OF TARIFF**

1. **Regional/Central sector portion**

- i) The annual tariff comprising “ (1) Return on Equity and recovery of total equity and (2) Interest on loan and loan repayment” is levelised for 15 years with a discounting factor equal to Return on equity for equity portion and weighted average interest rate on loan for loan portion.
- ii) The O&M Expenses and Interest on Working Capital component of tariff would not be levelised and would be charged extra as worked out for each year. This component shall be adjusted at the end of each year based on actual O&M expenses. The escalation on O&M is as described in para 10.2 c.

2. State sector portion

- i) For State portion, the annual tariff comprising“ (1) Return on Equity and recovery of total equity and (2) Interest on loan and loan repayment” is levelised for 15 years with a discounting factor equal to Return on equity for equity portion and weighted average interest rate on loan for loan portion.
- ii) The Interest on Working Capital component of tariff would not be levelised and would be charged extra as worked out for each year. The O&M for State portion is being undertaken by respective respondent.

10.3 The Petitioner has worked out the tariff for the 15 years period w.e.f. 01.02.2006 to 31.01.2021, based on principles of levelisation as detailed at 10.2(e) above, and O&M charges and interest on working capital for block period w.e.f. 01.02.2006 to 31.03.2009, for regional/central sector portion. The details are enclosed as **Encl.-6, page (111. to 122).**

Further, the Petitioner has worked out the tariff for 15 years period w.e.f. 01.02.2006 to 31.01.2021, based on principles of levelisation as detailed at 10.2(e) above, and interest on working capital for the block period w.e.f. 01.02.2006 to 31.03.2009, for the State sector portion. The details are enclosed as **Encl.-7, page (123. to 139).**

10.4 The proposed tariff for central sector portion and state sector portion is summarized as below :-

A) **REGIONAL/ CENTRAL SECTOR PORTION** (for period from 1.2.2006 to 31.1.2021) Rs./laks

- i) Levelised tariff component per annum
(for the period from 1.2.2006 to 31.1.2021) 1147.75
- ii) O&M and Interest on Working Capital Component.

I year of DOCO	724.32 (O&M)	48.90 (IWC)
II year	767.78 (O&M)	50.64 (IWC)
III year	813.85 (O&M)	52.48 (IWC)
IV year	862.68 (O&M)	54.43 (IWC)
Subject to adjustment on actual basis		

iii) Sharing of Charges

The charges for the Unified Scheme under Central Sector mentioned above shall be shared by the respondents (beneficiaries / constituents in North Eastern Region only) in the ratio of central generating capacity allocation, including the allocation from unallocated capacity from the Central Generating stations. Inter-regional export/import of power, whether bilateral or multilateral, would not affect the sharing of charges for Unified Scheme.

B) **STATE SECTOR PORTION** (for period from 1.2.2006 to 31.1.2021)

- i) Levelised tariff component per annum
(for period from 1.2.2006 to 31.1.2021) 723.17
- ii) Interest on Working Capital Component.

Ist year of DOCO	12.57 (IWC)
IInd year	12.57 (IWC)

IIIrd year
IVth year
Based on prevailing cash credit rate

12.57 (IWC)
12.57 (IWC)

- iii) **Payment of Charges:** The charges for the Unified Scheme under State Sector portion mentioned above shall be paid by the respondents on the basis of capital cost as follows:

SL NO.	STATES	LEVELISED TARIFF	IWC	TOTAL TARIFF
1	MPPTCL	407.43	7.08	414.51
2	CSEB	102.51	1.78	104.29
3	GETCO	178.75	3.11	181.85
4	GED	34.48	0.60	35.08
	TOTAL	723.17	12.57	735.74

10.5. **Other Charges**


The other charges viz. Income Tax, Incentive, any other taxes, cess, late payment surcharge etc. would be payable extra. Moreover, Foreign Exchange Rate Variation would also be charged extra on actuals

11. In the circumstances mentioned above, it will be just and proper that the tariff/charges for Unified Load Despatch and Communication (ULDC) Scheme in Western Region to be allowed to be recovered from the Respondents on the basis set out in para-10 above, subject to requisite adjustment to be done after completion of all minor leftover works, determination of final completion cost and approval of final transmission tariff by this Hon'ble Commission.

PRAYER

It is respectfully prayed that the Hon'ble Commission may be pleased to

1. Approve the tariff for Unified Load Despatch and Communication (ULDC) Scheme in Western Region, on the basis set out in para-10 above, from the date of commercial operation;
2. Approve the reimbursement of expenditure by the beneficiaries towards publishing of notices in Newspapers and other expenditure (if any) in relation to the filing of petition and petition filing fee.
3. Pass such other relief as Hon'ble Commission deems fit and appropriate under the circumstances of the case and in the interest of justice subject to requisite adjustment on revision/modification.

FILED BY
POWER GRID CORPORATION OF INDIA LTD.

Represented by Prashant Sharma
Dy. General Manager (Commercial)

Gurgaon
Dated :24 .07.2006