Central Electricity Authority
System Planning & Project Appraisal Division
Sewa Bhawan, R.K. Puram, New Delhi – 110066.

No. 26/10/2008/SP&PA/CEA/ **Date: June 11, 2008**

To

All State Utility members of Standing Committee on Power System Planning of Northern and Western regions.

(As per list attached)

Subject: Joint Meeting of State Utility members of the Standing Committees for Power System Planning of Northern Region and Western Region, held on 10th June 2008, at Delhi – Minutes of the Meeting

A joint meeting of State Utility members of Standing Committees for Power System Planning of Northern Region and Western Region was held on 10th June 2008 at NRPC, Katwaria Sarai, New Delhi.
Minutes of the meeting is enclosed.

Enclosed: As above

Yours faithfully,

(Pardeep Jindal)
Director (I/c) (SP&PA-III)
(Telephone No. 011 26732325)

List of Addresses

Power Grid Corporation of India Ltd (POWERGRID)

1	Director (Projects) Powergrid Corp. of India Ltd., "Saudamini", Plot No. 2, Sector-29, Gurgaon-122001	2	The Executive Director (Engg.), Powergrid Corp. of India Ltd., "Saudamini", Plot No. 2, Sector-29, Gurgaon-122001 Fax 95124-2571760
	Western Region		
1	The Member Secretary, Western Regl. Power Committee, MIDC Area, Marol, Andheri East, Mumbai - Fax 022 28370193	2	Member (Transmission & Distribution), Chhatisgarh State Electricity Board, Dangania, Raipur (CG)-492013 Fax 0771 4066566
3	Member (Transmission),	4	Member (Transmission),

	MPPTCL, Shakti Bhawan, Rampur, Jabalpur-482008 Fax 0761 2665593		MAHATRANSCO, 'Prakashganga, Plot No.G-9, Bandra-East, Mumbai-400051 Fax 022 26452868
5	Executive Engineer (Projects) Electricity Department, 220/66 kV Kharadpada S/S, UT of Dadra & Nagar Haveli, Post Naroli-396235 Ph. 0260-2650857	6	The Chief Engineer, Electricity Department, The Government of Goa, Panaji - Fax 0832 222354
7	The Managing Director, GETCO, Sardar Patel Vidyut Bhawan, Race Course, Baroda-390007 Fax 0265 2337918 / 2338164	8	Executive Engineer Electricity Department, UT of Daman & Diu Moti Daman-396220 Ph. 0260-2250889, 2254745
	<u>Northern Region</u>		
1	Member Secretary NREB, 18-A Shajeed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi - 110016.	2	Member (Transmission) HPSEB, Vidyut Bhawan Shimla - 171 004.
3	Director (Transmission) UPPCL, Shakti Bhawan Extn, 3rd floor, 14, Ashok Marg , Lucknow - 226 001.	4	Director (Transmission) Urja Bhawan, Kawali Road Dehradun, Uttaranchal - 248 001. Fax : 0135 2762023
5	Director (Projects) DTL, Shakti Sadan. Kotla Road New Delhi - 110 002	6	Director (Transmission) HVPNL Shakti Bhawan, Sector -6 Panchkula - 134 109
7	Member (Transmission) PSEB, Mall road, Patiala - 147 001.	8	Sh. Shaukat Rashid Wani Development Commissioner (Power), J&K, Exhibition Ground, Near New Secretariat, Srinagar - 190 001
9	Director (Transmission) RVPNL , Vidyut Bhawan, Janpath Jyoti Nagar, Jaipur Rajasthan	10	Chief Engineer (Operation) Ministry of Power, UT Secretariat Sector - 9 D Chandigarh - 161 009.

Minutes of the Joint Meeting of State Utility members of the Standing Committees for Power System Planning of Northern Region and Western Region, held on 10th June 2008, at NRPC, New Delhi

A joint meeting of State Utility members of Standing Committees for Power System Planning of Northern Region and Western Region was held on 10th June 2008 at NRPC, Katwaria Sarai, New Delhi to discuss following issues:

1. Sharing of charges for transmission system associated with Sasan and Mundra UMPPs
2. North East – Northern /Western Interconnection –I - Interregional transmission system
3. HVDC back-to-back between SR and WR at Kolhapur(WR) along with Narendra(SR)-Kolhapur(WR) 400kV D/C line – Sharing of transmission charges by Northern Region constituents.

The meeting was chaired by Member(Power System), CEA.
List of participants is given at Appendix-I.

Summary record of discussions is give below:

1. Sharing of Charges for transmission system associated with Sasan and Mundra UMPPs

1.1 Member (PS), CEA welcomed the participants and stated that the transmission system requirement for Sasan and Mundra UMPPs and corresponding system strengthening schemes had been discussed and agreed in the earlier meetings held separately in the respective regions. He observed that implementation of the schemes was held up and the process of signing of BPTA was not getting completed due to some of the utilities that were not having share in these generation projects had been opposing the pooling of transmission charges for some of the elements of the agreed systems. He said that the concept of dividing the total transmission system requirement into generation specific and common purpose components was principally agreed in the meeting of WR and later also in NR meeting. Under this concept, the transmission charges for the generation-specific-component was proposed to be shared only by beneficiaries of the generation projects in ratio of their respective shares and those for the common-purpose-component was proposed to be pooled with the regional system alongwith considering additional generation (/share of generation in the region while working out revised transmission charge sharing ratios. He also informed that CERC vide its order dated 28/03/2008 had mentioned that additions in

regional system would not be pooled unless specifically agreed by respective stakeholders. After this Member (PS), CEA explained generation specific and regional strengthening transmission elements for Mundra and Sasan UMPP.

1.2 RVPN stated that in the proposed option Northern Region would have to share the charges for part of the transmission system actually located in Western region. He also suggested for considering a direct HVDC Bipole to NR. Chief Engineer, CEA explained that the proposed system had been agreed after the detailed discussions considering various alternatives including HVDC system. He further explained that that Mundra power would practically get absorbed into WR system and NR beneficiaries would get power through displacement utilizing the NR/WR/ER regional and inter-regional transmission system. This is as per the practice being adopted for other Long Term Open Access projects.

1.3 After further discussions on the transmission system requirement covered with Mundra UMPP, both the WR and NR participants agreed to the proposals.

1.4 POWERGRID stated that there were space constraints at Aurangabad S/S (Mahatransco) and therefore suggested that a separate substation at Aurangabad with Aurangabad- Aurangabad (Mahatransco) 400 kV D/C (Quad) interconnection be provided and provision of GIS bays at Aurangabad (Mahatransco) may be explored incase of space constraints. It was further stated that considering the future power flow requirement, a 1200kV S/S might also be needed at Aurangabad substation, therefore the Wardha– Aurangabad 400 kV line may be a 1200kV line initially operated at 400 kV considering long term perspective. Members agreed to the proposal.

1.4 Chief Engineer (SP&PA), CEA explained the sharing mechanism worked out for generation specific and regional strengthening transmission elements for Sasan UMPP and Mundra UMPP, to be shared by the NR/WR constituents. He said that Western Region constituents would utilized specific system of Sasan for their share of power from Sasan UMPP and specific system of Mundra for their power from Mundra UMPP. They would also utilize the pooled system of WR for the delivery of power from both the projects. Accordingly, WR beneficiaries would share the transmission charges for the specific system of the respective project and for the WR pooled system, power allocation to WR constituents from

Sasan and Mundra would be considered in working out revised ratios for sharing of WR pooled transmission charges. For the Northern Region beneficiaries, he said that, the Sasan power would get delivered to Northern Region directly and therefore, NR beneficiaries would utilise specific transmission system of Sasan and NR regional pooled system. Mundra power would get injected into WR system, NR beneficiaries would be utilizing specific system of Mundra plus WR regional pooled system plus NR regional pooled system. Accordingly, for Sasan, NR beneficiaries would share the transmission charges for the specific system and pooled charges of NR but no charges for WR. However, for Mundra, NR beneficiaries would share the transmission charges for the specific system and pooled charges of NR as well as pooled charges of WR.

1.5 Representative from M.P. stated that the transmission system of Sasan had been provided only upto Bina and proportional charges for Bina – Gwalior 765 kV line should also be considered while calculating the transmission charges for Sasan for NR. Member(PS), CEA opined that under such scenario whenever any new inter-regional project would come up the issue of utilization of existing/under-construction would need to be re-visited. Elaborating this, he stated that, the Bina – Gwalior 765 kV line would be used for transfer of power to WR after the commissioning of NER-Agra HVDC bipole. NR constituents also expressed their reservation towards the proposal of WR. After detailed deliberations it was proposed that one circuit of Bina – Gwalior 765 kV line be included in the Sasan transmission system and transmission charges for this be shared by the beneficiaries of Sasan UMPP after the commissioning of Sasan UMPP. And, till the commissioning of Sasan UMPP, WR constituents would share its transmission charges. This was agreed by the constituents of WR and NR.

1.6 Chhatisgarh stated that they would not share any transmission charges for Sasan and Mundra UMPPs, as in spite of repeated requests they had not been allocated any share in Sasan and Mundra UMPPs. CE(SP&PA), CEA explained the methodology of calculating transmission charges and said that as the additional generation would be added in the denominator while working out the ratios for sharing of regional pooled transmission charges, as illustrated in the indicative calculation given in the Agenda, the per unit transmission charges

could in fact come down. Chhatisgarh also agreed for sharing the pooled regional transmission system associated with Sasan and Mundra.

1.7 UP requested for the transformers and provision of bays at Agra. Member(PS), CEA explained that this could be taken up separately as a system strengthening scheme with NR constituents.

1.8 A discrepancy was noticed between the transmission system stated under 'ATS for Sasan-Regional System for WR' and the system as had been agreed in earlier meeting. Based on the discussions the list was corrected and accordingly, the scope of transmission works to be included under the generation specific and regional transmission elements for Sasan and Mundra, as finalized and agreed, is enclosed at **Annex-I**.

1.9 POWERGRID requested the constituents to expedite the signing of BPTA for generation specific and regional strengthening as the time available for implantation was short. Constituents assured their cooperation in this regard.

2.0 North-East – Northern/Western Interconnection-I – Inter-regional transmission system

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Annex-I

I ATS for generation projects: Proposed components exclusively required with the specific generation project

1.	**Mundra UMPP 4000MW (Transmission charges to be shared only by benefiaciries of Mundra UMPP in ratio of their allocated power)** (1) Mundra-Limbdi 400 kV D/C (Triple Snowbird) (2) Mundra-Bachau - Ranchhodpura 400 kV D/C (Triple Snowbird) (3) Mundra-Jetpur 400 kV D/C (Triple Snowbird)
2.	**Sasan UMPP 4000MW (Transmission charges to be shared only by benefiaciries of Sasan UMPP in ratio of their allocated power)** (1) Sasan-Satna 765 kV 2x S/C (2) Satna 765/400 kV, 2x1000 MVA S/S (3) Satna- Bina (PG) 765 kV 2x S/C (4) Bina(PG)-Bina(MP) 400 kV D/C (2^{nd} line) (5) LILO of both circuits of one of the Vindhyachal-Satna 400 kV D/C line at Sasan (6) FSC on 400 kV Sasan-Satna D/C

	(7)	FSC on both of Satna-Bina 2xD/C
	(8)	Line bays for 765kV operation of Agra-Gwalior-Bina-Seoni lines
	(9)	Sasaram-Fatehpur 765kV S/C
	(10)	Fatehpur-Agra 765kV S/C
	(11)	Bina – Gwalior 765 kV one ckt (already being constructed)

II **System Strengthening in Western Region** – transmission charges to be pooled in the regional system and additional 4200 MW of WR share in Sasan and Mundra UMPPs and 1300 MW of NR share in Mundra to be included in working out the ratios for sharing of regional pooled transmission charge

ATS for Mundra – Regional System for WR

1.	Bachchau 400/220 kV 2x315 MVA S/s
2.	Gandhar – Navsari 400 kV D/c
3.	Navsari (GIS) 400/220 kV 2x315 MVA S/s
4.	LILO of both circuits of Kawas-Navsari 220 kV D/c at Navsari
5.	Navsari-New location near Mumbai 400 kV D/c
6.	Wardha 765/400 kV 3x1500 MVA S/s
7.	765 kV operation of Seoni-Wardha 2xS/c lines
8.	Wardha-Aurangabad 400 kV D/c (quad) with 40% fixed series capacitor(considering long-term perspective, it is proposed to consider the option of 1200 kV S/c initially operated at 400 kV for this line)
9.	400/220 kV GIS substation near Mumbai
10.	Aurangabad-Aurangabad 400 kV D/c (quad)
11.	Aurangabad 400/220 kV 2x315 MVA S/s

ATS for Sasan – Regional System for WR

1.	Bina(PG)-Indore 765 kV S/c
2.	New 765/400 2x1500 MVA S/s at Indore
3.	Indore(PG)-Indore 400 kV D/c (quad)
4.	Upgrading Bina and Gwalior S/s to 765 kV : 2x1000 MVA 765/400 kV at Bina and 2x1500 MVA 765/400 kV at Gwalior.

III. System strengthening in Northern region – transmission charges to be pooled in the regional system and additional 3800 MW of NR share in Sasan and Mundra UMPPs to be included in working out the ratios for sharing of regional pooled transmission charge

1.	Agra-Sikar 400 kV D/c (quad)
2.	New 400/220 2x315 MVA S/s at Sikar with 220 kV D/c line interconnecting to 220 kV S/s
3.	Sikar-Jaipur PG 400 kV D/c
4.	Sikar-Ratangarh 400 kV D/c
5.	LILO of both circutis of Nathpa Jhakri-Abdullapur 400 kV D/c at Panchkula with 2x315MVA, 400/200 kV S/s at Panchkula.

Annex-II

- **Part-A : North East – Northern / Western Interconnector – I**

Sharing of trnamsission charges by Northern Region and Western Region in ratio of power allocation from hydro projects in NER

(i) Biswanath Chariyali – Agra ±800 kV, 6000 MW HVDC bi-pole line
(ii) Balipara – Bishwanath Chariyali 400kV D/C line
(iii) LILO of Ranganadi – Balipara 400kV D/C line at
(iv) Biswanath Chariyali (Pooling Point)
(v) LILO of Depota - Gohpur 132kV S/C line at Biswanath Chariyali
(vi) Establishment of 400/132 kV Pooling Station at Biswanath Chariyali with 2x200MVA, 400/132/33 kV transformers alongwith associated bays.
(vii) HVDC rectifier module of 3,000 MW at Biswanath Chariyali and inverter module of 3,000 MW capacity at Agra.
(viii) Augmentation of 400 kV Agra substation by 1x315 MVA, 400/220/33 kV transformer alongwith associated bays
(ix) Extension of 400 kV line bays at Balipara substation.

- **Part-B : Transmission System for immediate evacuation of power from Kameng HEP**

ATS for immediate evacuation of power from Kameng HEP. Sharing of transmission charges by beneficiaries of Kameng HEP

(x) Kameng - Balipara 400kV D/C line
(xi) Balipara - Bongaigaon 400kV D/C line (quad conductor)
(xii) with 30% Fixed Series Compensation at Balipara end
(xiii) Extension of 400 kV line bays at Bongaigaon and Balipara substations

Part of ATS of Kameng HEP. Sharing of trnamsission charges by NER constituents only as part of their regional pooled system

(i) 2nd 315 MVA, 400/220 kV ICT at Misa

- **Part-C : Transmission System for immediate evacuation of power from Lower Subansiri HEP**

ATS for immediate evacuation of power from Lower Subansiri HEP. Sharing of trnamsission charges by benfeficiaries of Subansiri HRP

(i) Lower Subansiri – Biswanath Chariyali (Pooling Point) 400 kV 2*D/C line with twin lapwing conductor
(ii) Extension of 400 kV line bays at Biswanath Chariyali Pooling Substation

Annex-I

List of Participants

Central Electricity Authority
1. Shri V. Ramakrishna, Member (Power System)
2. Shri A. K. Asthana, Chief engineer (SP&PA)
3. Shri Gautam Roy, Director, (SP&PA)
4. Shri Pardeep Jindal, Dy. Director (SP&PA-III)
5. Shri Upendra Kumar, Dy. Director (SP&PA)

Power Grid Corporation of India Ltd
1. Shri R. N. Nayak, ED (Engg)
2. Shri Y. K. Sehgal, GM (Engg)
3. Shri Mukesh Khanna, CDE (Engg)
4. Prashant Sharma, AGM (Comml.)

NRPC
1. Shri S. P. Singh Gaherwar, MS
2. Shri R. P. Aggrawal, SE (Operatrion)
3. Shri P. S. Maske, SE (Comml.)
4. Shri Prahlad, EE
5. Shri Vijay Menghani, EE
6. Shri Vikram Singh, EE
7. Smt Rishika Sharan, EE

WRPC
1. Shri Manjit Singh, SE (Operation)

MSETCL
1. Shri A. Roy, Director (Operation)
2. M. R. Khadgi, Chief Engineer

MSEDCL
1. G. S. Trimukhe, CE (PP)

MPPTCL
1. Shri Dr. R. P. Bhatele, ED (T&P)

MPTRADECO
1. Shri D. D. Khandelwal, ED (L&RA)

GUVNL
1. Shri P. J. Jani, Dy. Engr
2. K. P. Jangid, CFM (Comml.)

GETCO
1. Shri S. K. Negi, MD

CSEB

1. Shri Shiv Raj Singh, Advisor
2. Shri O. P. Sharma, CE (Trans.)

GED
1. Shri Jose E. De Melo, AE

RVPNL
1. Shri L. N. Nimawat, Addl. SE (Project)

HVPN
1. Shri V. P. Kalra, Director (T)

UPTCL
1. Shri R. P. Singh, Chief Engineer
2. Shri V. K. Agarwal, SE

UPPCL
1. Shri Arun, Director (Trans.)

PSEB
1. Shri Kamal Krishan, Dy. Director (Plg.)

HPSEB
1. Shri A. K. Vaidiya, Director (I/S)
2. J. C. Kaushal, Sr. EE

DTL
1. Shri S. R. Sethi, Director (Operation)
2. A. K. Kaul, GM, SLDC

BSES, Delhi
1. Shri Mukesh Dadhich, Manager
2. Shri Mithun Balaji, Asstt. Manager
