

**Government of India
Central Electricity Authority
SP&PA Division, Sewa Bhawan
R K Puram, New Delhi-66**

No. 26/10 and 1/9 /2008/SP&PA/CEA/

Dated 27.5.2008

To,

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

(As per list)

Subject: Agenda for the joint meeting of State Utility members of Standing Committees for Power System Planning of Northern Region and Western Region to be held on 10th June 2008, at Delhi

A joint meeting of State Utility members of Standing Committees for Power System Planning of Northern Region and Western Region is proposed to be held on 10th June 2008 at 11.00 hrs in the Conference hall of NRPC at 18-A, SJSS Marg, Katwaria Sarai, New Delhi.

Agenda for the meeting is enclosed.

You are requested to kindly make it convenient to attend the meeting.

Encl: as above

(A.K.Asthana)
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1. **Sharing of charges for transmission system associated with Sasan and Mundra UMPPs**

- 1.1 Evacuation system and system strengthening for Sasan and Mundra UMPPs was discussed and agreed in earlier meetings.

Regarding sharing of transmission charges, in WR, it was discussed and agreed that either of the following options were agreeable to WR:

Option-1: Transmission charges for Sasan and Mundra transmission system in WR be pooled in to WR regional pooled transmission charges and NR beneficiaries sharing the same based on their total allocation from WR pool including Sasan and Mundra power. And transmission charges for Sasan and Mundra transmission system in NR shared by NR beneficiaries.

Option-2: Total transmission charges for Sasan and Mundra transmission system in WR as well as in NR be divided in to NR and WR in ratio of their allocation from Sasan and Mundra and pooled in to regional pooled transmission charges of the respective regions.

In NR, option-2 was agreed.

However, signing of BPTA had not materialized due to those not having share in these generation projects opposing the pooling of transmission charges for these systems with the existing regional pooled charges.

- 1.2 In meeting of WR, in context of discussions on transmission system of Krishnapatnam UMPP it was suggested that the total transmission system could be divided into generation specific and common purpose components. The generation specific component was proposed to be shared only by beneficiaries in the generation in ratio of their allocation. Common purpose component which was required to transmit from the other generation projects to be commissioned in the similar time frame as UMPP, was proposed to be pooled with the regional system and the additional generation and its allocations also considered in working out revised transmission charge sharing ratios. In the mean time, CERC, wide its order dated 28.3.2008 have said that additions in regional system would not be pooled unless specifically agreed.

- 1.3 In view of the above developments, proposal for sharing of transmission charges for transmission system for power evacuation from Sasan and Mundra UMPPs and related system strengthening schemes was also reworked and the identification of generation project specific and common purpose components of the transmission system and the transmission charge sharing are as following:

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

1.	<p>Mundra UMPP 4000MW (Transmission charges to be shared only by beneficiaries of Mundra UMPP in ratio of their allocated power)</p> <p>(1) Mundra-Limbdi 400 kV D/C (Triple Snowbird)</p> <p>(2) Mundra-Ranchhodpura 400 kV D/C (Triple Snowbird)</p> <p>(3) Mundra-Jetpur 400 kV D/C (Triple Snowbird)</p>
2.	<p>Sasan UMPP 4000MW (Transmission charges to be shared only by beneficiaries of Sasan UMPP in ratio of their allocated power)</p> <p>(1) Sasan-Satna 765 kV 2x S/C</p> <p>(2) Satna 765/400 kV, 2x1000 MVA S/S</p> <p>(3) Satna- Bina (PG) 765 kV 2x S/C</p> <p>(4) Bina(PG)-Bina(MP) 400 kV D/C (2nd line)</p> <p>(5) LILO of both circuits of one of the Vindhyachal-Satna 400 kV D/C line at Sasan 400 kV 2xD/C</p> <p>(6) FSC on 400 kV Sasan-Satna D/C</p> <p>(7) FSC on both of Satna-Bina 2xD/C</p> <p>(8) Line bays for 765kV operation of Agra-Gwalior-Bina-Seoni lines</p> <p>(9) Sasaram-Fatehpur 765kV S/C</p> <p>(10) Fatehpur-Agra 765kV S/C</p>

1.3.2 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

<p>ATS for Mundra – Regional System for WR</p> <p>(1) LILO of both ckts of Mundra- Ranchhodpura 400kV D/C at Bachau</p> <p>(2) Bhachau 400/220 kV 2x315 MVA S/S</p> <p>(3) Gandhar-Navsari 400 kV D/C</p> <p>(4) Navsari 400/22kV s/s 2x315MVA</p> <p>(5) LILO of both ckts of Kawas-Navsari 220 kV D/C line at Navsari</p> <p>(6) Navsari-Mumbai New (PG) 400kV D/C</p> <p>(7) Wardha 765/400kV s/s, 3x1500 MVA</p> <p>(8) 765kV operation of Seoni-Wardha 2xS/C lines</p> <p>(9) Wardha-Aurangabad 400kV D/C quad with 40% Fixed Series Capacitor (considering long-term perspective, it is proposed to consider the option of 1200kV S/C initially operated at 400kV for this line)</p>
<p>ATS for Sasan – Regional System for WR</p> <p>(1) Bina(PG)- Indore 765 kV S/C</p> <p>(2) New 765 kV substation at Indore , 2x1500 MVA 765/400 kV</p>

1.3.3 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 400kV D/C quad
2.	New 400/200kV 2x315MVA s/s at Sikar with 220kV D/C line interconnecting to 220kV s/s
3.	Sikar – Jaipur PG 400kV D/C
4.	Sikar – Ratangarh 400kV D/C
5.	LILO of both circuits of Nathpajhkri-Abdullapur 400kV D/C at Panchkula with 2x315MVA, 400/220kV S/S at Panchkula

- 1.4 Western Region constituents would utilize 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.
- 1.5 For the Northern Region beneficiaries, Sasan power would get delivered to Northern Region directly and therefore, NR beneficiaries would utilize 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.
- 1.6 In the last discussion in WR held on 16.4.2008, it was desired that calculation for tariff implication should also be informed. Tentative calculation of transmission charges furnished by PGCIL based on estimated costs of various schemes and MW from generation projects as per allocations/proposed allocations are given in Annex-1-NR, Annex-1-WR and Annex-2 for specific. It may be seen that with the proposed separation of transmission system as generation specific and pooled, the transmission workout is as follows:

All figures in paise per unit

Transmission Charges for Regional Pooled Transmission System including inter-regional system for the respective region				
	Existing	By 2011-12 considering already agreed system	With system strengthening evolved with UMPPs proposed to be pooled	With Sikkim/NER system
NR	14.4	26.0	23.9	27.0
WR	12.5	25.0	22.8	27.0

	Transmission Charges for specific system	Total Charges for NR beneficiaries in the UMPP	Total Charges for WR beneficiaries in the UMPP
		Pre-Sikkim/NER	Pre-Sikkim/NER
Sasan UMPP	19.3	19.3+23.9 =43.2	19.3+22.8 =42.1
Mundra UMPP	08.3	8.3+22.8+23.9 = 55.0	8.3+22.8 =31.1
Krishnapatnam UMPP	16.6	N.A	16.6+22.8 =39.4

1.7 Power allocation from Mundra and Sasan UMPPs is as following

	Mundra	Sasan	Total Sasan+Mundra
WR			
M.P.		1500	1500
Chattisgarh			
Gujrat	1900		1900
Maharashtra	800		800
TOTAL WR	2700	1500	4200
NR			
Delhi		450	450
U.P.		500	500
Uttarakhand		100	100
Punjab	500	600	1100
Rajasthan	400	400	800
Haryana	400	450	850
TOTAL NR	1300	2500	3800

1.8 The transmission system elements have already been agreed in the earlier meetings and also concurred by the RPCs. Members may discuss and concur the proposal for sharing of transmission charges for seeking approval of respective RPCs.

2. North East – Northern /Western Interconnection –I - Interregional transmission system

2.1 With regard to the transmission system associated with Lower Subansiri and Kameng and interregional transmission of power from NER to NR/WR, which is proposed to be shared by NR and WR, in the meeting held in MoP on 7/1/2008 regarding allocation of power from Lower Subansiri and Kameng HEPs following allocations were agreed from these project:

- 35% of the power from these projects to be allocated to NER
- 15% of the allocated power to be reserved for NE states
- 50% of the power could be allocated to Northern/Western Region

Based on requisition received from states CEA has made recommendation to MoP for following allocations:

State / Utility	Requisition	Ratio for allocation as per Gadgil formula	Ratio for those states which have requisioned	Power allocated from		Total allocated power from Subansiri Lower and Kameng
	MW	%	%	Subansiri lower	Kameng	
Northern Region				1000	300	1300
U.P./ UPPCL	1000	16.4	16.4	179	54	233
Punjab	800	5.6	5.6	61	18	79
Harayana/HPGCL	1000	3.7	3.7	40	12	52
Chandigarh U.T	20	0.4	0.4	4	1	5
Uttarakhand	300	3	3	33	10	43
Rajasthan	500	8.1	8.1	88	27	115
Delhi	1000	10.3	10.3	113	34	147
J&K	-	5.1				
H.P.	-	2.7				
Sub-Total NR	4620			518	156	674
Western Region						
Madhya Pradesh	500	8.4	8.4	92	28	120
Maharashtra	600	16.3	16.3	178	53	231
Chattisgarh	400	3.4	3.4	37	11	48
Gujarat/GUVN	500	15.4	15.4	168	50	218
Goa	100	0.6	0.6	7	2	9
Daman & Diu	-	0.3				
D & N Havel	-	0.3				
Sub-Total WR	2100			482	144	626
TOTAL NR & WR	6720	100	91.6	1000	300	1300

- 2.2 The transmission schemes and proposed sharing of transmission charges are as following:

NER-NR/WR Inter-connector-I :

Sharing of transmission 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 Biswanath Chariyali (Pooling Point)
- (iv) LILO of Depota -Gohpur 132kV SIC line at Biswanath Chariyali
- (v) HVDC rectifier module of 3,000 MW at Biswanath Chariyali and inverter module of 3,000 MW capacity at Agra together with augmentation of 400 kV Agra s/s by 4x167.5 MVA, 400/220/33 kV transformer alongwith associated bays
- (vi) Establishment of 400/132 kV Pooling Stn. at Biswanath Chariyali with 2x200MVA, 400/132/33 kV transformers alongwith associated bays.
- (vii) Extension of 400 kV line bays at Balipara substation

ATS for immediate evacuation of power from Kameng HEP

Sharing of transmission charges by beneficiaries of Kameng HEP

- (i) Kameng -Balipara 400kV D/C line
- (ii) Balipara -Bongaigaon 400kV D/C line (quad conductor) with 30% Fixed Series Compensation at Balipara end
- (iii) Extension of 400 kV line bays at Bongaigaon and Balipara substations

Part of ATS of Kameng HEP

Sharing of transmission charges by NER constituents only as part of their regional pooled system

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

ATS for immediate evacuation of power from Lower Subansiri HEP

Sharing of transmission charges by beneficiaries of Subansiri HEP

- (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 Stn.

- 2.3 In principle, the above was already agreed in earlier meetings of NR and WR. Participants may now concur to place this proposal for final approval of respective RPCs.

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.

3.1 Proposal for 1000MW HVDC back-to-back between SR and WR at Kolhapur(WR) along with Narendra(SR)-Kolhapur(WR) 400kV D/C line has been evolved to facilitate increased inter-regional exchanges between SR and WR. The 500MW HVDC back-to-back at Sasaram between ER and NR has served very useful purpose so far but with synchronous interconnection between ER and NR in place with Tala transmission system and strengthened with Kahalgaon-II transmission system and to be further strengthened with Barh, DVC projects, North Karanpura and Sasaram transmission system, the HVDC back-to-back between ER and NR could be bypassed so as to use full capacity of the 400kV D/C line and the 500MW b-t-b module would become redundant. This module is therefore proposed to be utilized at Kolhapur.

3.2 Estimated cost of Narendra-Kolhapur scheme utilizing Sasaram module is of the order of Rs 1200 crores. In this value of Sasaram module was estimated at around Rs 200 crores. It was proposed that SR and WR may share this scheme on 50:50 basis. SR constituents have agreed to this proposal but the WR constituents have expressed that considering the power supply position projections, the proposed link would be considerably useful for NR to avail operation surplus power of SR via this link and wheeling through WR system. As the STOA charges would be much less than committed transmission charges, WR have expressed that NR constituents should also share a part of the transmission charges for this link on firm long-term basis.

3.3 Earlier, ER-NR inter-regional system was shared 50:50 between ER and NR. Wide their order of March 2008, CERC have changed this to 100% charges to be paid by NR. As such, tariff for scheme cost of Rs 200 crores for Sasaram 500MW HVDC b-t-b is fully on account of NR constituents. With implementation of Narendra-Kolhapur scheme, this would get off-loaded from NR.

3.4 Considering all the above aspects, it is proposed that NR may seek a share of 50% in the transmission capacity of the Narendra-Kolhapur scheme that is 500MW out of 1000MW capacity and bear 25% transmission charges for the scheme. The capacity allocation and sharing of transmission charges is thus proposed to be as following:

Region	Transmission Capacity	Share of Transmission Charges
SR	1000MW	50%
WR	500MW	25%
NR	500MW	25%

3.5 Importing constituents of NR and WR viz. U.P., Haryana, Punjab, and Rajasthan from NR and Maharashtra from WR may seek higher share and balance could be pooled in the respective regions.

3.6 NR and WR constituent members may consider and decide on the proposal for consideration of respective RPCs for approval.