



भारत सरकार
Government of India
विद्युत मंत्रालय

Ministry of Power
केन्द्रीय विद्युत प्राधिकरण

Central Electricity Authority

प्रणाली योजना एवं परियोजना मूल्यांकन प्रभाग

System Planning & Project Appraisal Division

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No. 1/9/SP&PA-2013 /

Dated: 7.8.2014

-As per list enclosed-

Sub: Additional agenda for 34th Standing Committee Meeting of Power System Planning of Northern Region to be held on 8.8.2014.

Sir,

In continuation to our letter dated 1.08.2014, it is intimated that an additional agenda for 34th Standing Committee Meeting of Power System Planning of Northern Region, proposed to be discussed in the above meeting is also uploaded on CEA website.

Yours faithfully,

s/d

(Goutam Roy)

Director (SP&PA)

-List of Addressee-

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<p>10. Director (Projects) POWERGRID, Saudamini, Plot no. 2, Sector - 29, Gurgaon-122 001 Fax-0124-2571932'</p>	<p>11. Director(Technical) Punjab State Transmission corporation Ltd. (PSTCL), Head Office The Mall, Patiala - 147 001 (Fax-0 1 75-230401 7)</p>	<p>12. Chief Engineer (Operation) Ministry of Power, UT Secretariat, Sector-9 D Chandigarh - 161 009 (Fax-01 72-2637880)</p>
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<p>19. COO (CTU) POWERGRID, Saudamini, Plot no. 2, Sector - 29, Gurgaon-122 001 (Fax-0124-2571809) (Fax : 0124-2555342)</p>		

Additional Agenda note for 34th Standing Committee Meeting on Power System Planning in Northern Region.

1. Provision of 400/220 kV ICTs at Parbati Pooling Station

The issue of evacuation of power from Malana-II was discussed in the 31st Standing Committee Meeting and for reliable evacuation of power from the project following was agreed:

- i) HPPTCL to construct Chhaur – Parbati Plg Station 220 kV D/c line as STU network
- ii) POWERGRID to provide 2 nos. of 400/220 kV, 315 MVA ICTs (7x105 MVA single phase units) alongwith 2 nos. of 220 kV line bays.
- iii) HPPTCL to take up the ownership of 132/220 kV Chhaur S/s from M/s EPPL to make it a part of their STU system.

POWERGRID has already gone ahead for providing the transformers and required bays, HPPTCL need to confirm the status so that the ICTs installed by POWERGRID are utilized.

Members may discuss.

2. Establishment of 400/220 kV substation at Greater Noida

During the 31st Standing committee meeting, Noida Power Company Ltd. (NPCL)'s application for connectivity for drawl of 500MW power for distribution in Greater Noida area in Uttar Pradesh was discussed. During the meeting it was informed that M/s NPCL had executed a Long Term PPA with M/s Essar Power (Jharkhand) Ltd for procurement of 240 MW power from April 2014 for 25 years and CTU had already granted Long Term Access of 400 MW (for Target Beneficiaries) in Northern Region to M/s Essar Power (Jharkhand) Ltd and they have requested to approve / provide LTA of 240 MW to NPCL being the actual beneficiary, out of total approved 400MW LTA in NR.

Presently 400/220 kV, 3x315MVA transformers are installed at Greater Noida substation of UPPTCL and the transformers are loaded heavily and to meet the future power demand another substation is required in the area. Considering the requirement of UP and of Noida

Power Company following system was agreed as system strengthening scheme NRSS-XXXIII to be implemented through Tariff Based Competitive Bidding route:

- Ballabgarh – Greater Noida (New) 400 kV D/c (5 km from Ballabgarh S/s on multi-circuit towers)
- Establishment of 2x500 MVA, 400/220 kV GIS substation at Greater Noida(New) with a short circuit current rating of 50 kA.

Above transmission strengthening scheme was to provide additional drawl of power by UPPTCL to meet future load growth in Noida & Greater Noida area as well as for connectivity & LTA to Noida Power Company and. Subsequently, PPA of NPCL with M/s Essar Power had gone in dispute and presently being heard in UPERC and in view of this, the implementation of NRSS-XXXIII transmission scheme was put on hold.

During the 33rd Standing Committee Meeting, UPPTCL stated that they do not require this proposed new 400/220 kV substation as they have their own plans for supply of power in this area. POWERGRID during the 33rd SCM meeting had informed that NPCL has now applied for Long Term Access for 500 MW with target source from Western (400 MW) and Eastern Region (100 MW). Regarding connectivity of Noida Power Company it was decided that Noida Power Company is already connected to STU grid and additional connectivity could not be provided. As the Greater Noida substation was planned as system strengthening scheme and additional connectivity to Greater Noida was agreed from New Greater Noida substation.

Regarding LTA application of Noida Power Company it was deliberated that the Noida Power Company is a State embedded entity and therefore for providing LTA to Noida Power Company, NOC from STU (UPPTCL) is required as per the CERC regulations. It was decided that after receipt of NOC from UPPTCL, the LTA application shall be processed and discussed with the constituents. It was requested to UPPTCL for early processing of NOC to Greater Noida. In view of the above, it was decided that the implementation of scheme would be kept on hold.

UPPTCL vide their letter dated 11/03/2014 informed that M/s NPCL is not a consumer as it is a distribution Licensee operating at Greater Noida U.P. which does not qualify the condition of applicant for connectivity as per the conditions of connectivity of CERC regulations.

Based on the observations of UPPTCL the matter was relooked. As per the definition of EA 2003 the consumer is defined as :

“Consumer means any person who is supplied with electricity for his own use by a licensee or the Government or by any other person engaged in the business of supplying electricity to the public under this act or any other law for the time being in force and includes any person whose premises are for the time being connected for the purpose of receiving electricity with works of licensee, the Government or such other person, as the case may be;”

Further the provisions of Section 38 of the Electricity Act, 2003 which inter-alia, defines functions of the CTU as follows:

“(a) to undertake transmission of electricity through inter-State transmission system;

(b) to discharge all functions of planning and co-ordination relating to inter-State transmission system with –

- i. STU*
- ii. Central Government*
- iii. State Government*
- iv. Generating Companies*
- v. Regional Power Committee*
- vi. Authority*
- vii. **Licensees***
- viii. Any other person notified by Central Government of their behalf*

(c) to ensure development of an efficient, coordinated and economical system of inter-State transmission lines for smooth flow of electricity from generating stations to the load centres;

(d) to provide non-discriminatory open access to its transmission system for use by-

(i) any licensee or generating company on payment of the transmission charges; or

(ii) any consumer as and when such open access is provided by the State Commission under sub-section (2) of section 42, on payment of the transmission charges and a surcharge thereon, as may be specified by the Central Commission”

From the above it may be seen that CTU has to provide non-discriminatory open access to its transmission system for use by licensee. However, as per the regulations on connectivity, there is no specific mention, that Distribution Licensee can or cannot apply for connectivity and UPPTCL had stated that Distribution Licensee is not a consumer.

From the above it may be seen that there are certain issues for constructing a line and substation under ISTS for providing connectivity to distribution licensee. However, LTA of Noida Power Company can be processed subject to NOC from Uttar Pradesh as till date Noida Power Company is an intra-state entity.

Members may discuss.

3. Transmission Line Constraints in Northern Region

S. No	Corridor	Season/Antecedent Conditions	Description of the constraints	Remarks
1	400kV Dadri-Muradnagar	Winter (Low hydro scenario)	High MW loading along with MVAR loading.	Additional substations such as Hapur and Greater Noida 765 kV (Planned by UPPTCL) are expected and their connectivity with the existing network will relieve this constraint. UPPTCL may inform the status.
2	400kV Dadri-Greater Noida	All time High MW loading		Issue has been discussed in 31 st NR Standing Committee Meeting (SCM) of Northern Region on 2/1/13. Members agreed for construction of 400kV Ballabgarh-Greater Noida (New) D/c (on Multi circuit towers) and 2x500MVA, 400/220 kV GIS substation at Greater Noida (New). UPPTCL had stated that additional 400/220 kV substation at Greater Noida is not required. UPPTCL may respond.

3	400kV Meerut-Muzaffarnagar	Due to non-availability of Vishnuprayag HEP(400 MW)	During high load in Uttarakhand & UP and low hydro (at Vishnuprayag) in Uttarakhand, 400kV Meerut-Muzaffarnagar gets overloaded.	400 kV Bareilly- Kashipur-Roorkee-Saharanpur have been taken up by POWERGRID under NRSS-XXI and expected to be March 2015.
4	400kV Singrauli-Anpara		Due to low generation at Anpara and high generation at Rihand-Singrauli Complex, 400kV Singrauli-Anpara often get overloaded. Suggestion of NRLDC: LILO of 400kV Singrauli-Allahabad or Singrauli-Fatehpur at Anpara so that multiple connectivity would be available for Singrauli-Anpara OR uprating of existing 400kV Singrauli-Anpara	Severe Right Of Way constraints and availability of bays at Singrauli and Anpara. Rihand-Anpara 400kV D/c line being planned for relieving the constraint.
5	400kV Unnao-Panki			A strong 400kV D/c inter-connection between Kanpur and Lucknow has been planned under NRSSXXXII.
7	400kV Rosa-Bareilly			Commissioning of Shahjahanpur S/s will relieve the constraint.
8	Underlying 220kV network of Bhiwadi		400/220kV Bhiwadi has three ICTs(3×315 = 945 MVA). Though 220kV network connectivity at Bhiwadi is: 1. 220kV Bhiwadi-Bhiwadi Raj D/c 2. 220kV Bhiwadi-Khuskhera D/c 3. 220kV Bhiwadi-Rewari (Bus split) & 220kV Bhiwadi-Mau. Both circuit connected to Haryana and import of power from Haryana is restricted through bus split.	The issue has been discussed in 33 rd SCM of NR held on 23/12/13. RVPN stated that the load at Bhiwadi would soon be diverted to Neemrana & Alwar which are going to be commissioned. RVPN may respond.

			220kV Bhiwadi-Bhiwadi Raj D/c always loaded ~200MW each. Any N-1 contingency at 220kV network would cause further tripping at 220kV Bhiwadi.	
9	Non availability of down stream network of the listed substations and under utilization of ICTs		220kV network not available. 1) Haryana: Manesar, Bhiwani & Jind 2) Rajasthan: Kotputli, Neemrana & Jaipur South 3) UP: Sohawal, Shahjahanpur 4) J&K: New Wanpoh & Samba 5) Delhi: Mundka 6) Haryana: Sonapat, Deepalpur & Kabulpur 7) Punjab: Makhu	STUs may respond
10	400kV Singrauli-Lucknow		Singrauli-Lucknow UP is old and long line of 408.6 km of twin moose. Its loading remains in the range of 450-550 MW.	LILO of Singrauli-Lucknow at proposed Unchahar substation decreases the line length of Singrauli-Lucknow and also enhance the connectivity of Unchahar.
11	400kV Nallagarh-Patiala		In monsoon, due to high hydro and skewed load towards Punjab, Nallagarh-Patiala circuit often gets loaded beyond 700MW.	400kV Panchkula-Patiala planned to reduce the skewed loading. Series compensation on 400kV Karcham Wangtoo-Kala Amb D/c line would also help.
12	400 kV Amritsar-Jalandhar		Summer/Monsoon Amritsar at present is fed through Jalandhar & Parbati Pooling. Amritsar-Jalandhar in monsoon gets loaded over 500MW mostly in the month of June.	400kV Kurukshetra-Malerkotla-Amritsar D/c line has been planned as an additional in-feed to Amritsar.
13	400 kV Jhakri-Nallagarh & 400kV Rampur-Nallagarh	Monsoon During monsoon i.e. during high hydro generation at Jhakri/Rampur		Series compensation at Karcham Wangtoo-Abdullapur D/c line has been approved in the 31 st SCM of NR on 2/1/13 to relieve the constraint.

		r/Karcham and due to paddy load at Punjab, skewed loading remains towards Nalagarh. Thus, line loading of Jhakri-Nalagarh & Rampur-Nalagarh is in range 750-800MW during most of time in a day.		
14	Section of a line crossing another line leading to multiple trippings in case of tower collapse		400kV Bhiwani-Jind D/C line crosses 400kV Bhiwadi-Moga D/C line, on 30th May 2014, tower of Bhiwani-Jind collapsed and fell on Bhiwadi-Moga line leading to tripping of 400kV Moga-Bhiwadi D/C line. Multiple trippings in such cases may be prevented by identifying and strengthening these kind of areas	

ICT Constraints in Northern Region

S. No	Corridor	Season/Antecedent Conditions	Description of the constraints	Remarks
1	Allahabad	Summer	Allahabad has two ICTs of 315 MVA each, and loading on both ICTs is in range of 500-550 KW which is not N-1 compliant	1x315 MVA planned under 'Augmentation of Transformers in NR – Part A' anticipated by Oct.'14

2	Ballabgarh		Four ICTs of 315MVA each, totally oaded upto 1000 MW in June or in summer peak load	Augmentationof transformation capacity at 400/220 kV Ballabgarh substation by replacing existing 4x315 MVA ICTs with 4x500 MVA ICTs planned under NRSS-XXXII
3	Bassi	All time	Bassi has two ICTs of315 MVA each and total loading on both the ICTs is in range of500 MW which is not N-1 compliant	1x500 MVA planned under 'Augmentation of Transformers in NR – Part A' anticipated by Oct.'14. Need for commissioning of 220 kV outlets from Jaipur South
4	Bhiwadi	All time	Three ICTs of 315MVA each, loading is in range of 700 MW and underlying network of Bhiwadi is also constrained due to skewed loading at Bhiwadi Rajasthan	The issue has been discussed in 33 rd SCM of NR held on 23/12/13. RVPN stated that the load at Bhiwadi would soon be diverted to Neemrana & Alwar which are going to be commissioned.
5	Jallandhar	June/July	Two ICTs of 315 MVA each, totally loaded to 450-500 MW in summer /Monsoon peak load	1x500 MVA planned under 'Augmentation of Transformation capacity in NR for 2016-17 Conditions'
6	Mandola		Three ICTs of 315MVA each and one ICT of 630 MVA(2X315 MVA ICTs bunched with a common breaker),total loading is upto1000-1100 MW in summer peak load	Augmentationof transformation capacity at 400/220 kV Mandola substation by replacing existing 4x315 MVA ICTs with 4x500 MVA ICTs planned under NRSS-XXXII
7	Moga	Jun/Jul	Two ICTs of 500 MVA, one ICT of 315 MVA& one ICT of 315MVA, total loading is upto1000-1100MW,Underlying network consists of four 220kVMoga-Moga PS feeder & all the four lines loaded beyond200 MW each	Matter discussed in 30 th & 31 st SCMs of NR. Commissioning of Patran and Rajpura400/220 kV substations would alleviate this constraint.
8	Meerut	All time	All the three ICTs are fully loaded and not n-1 compliant.	Need for commissioning of additional substations at Saharanpur and Hapur etc. in Western UP.
9	Mainpuri	Summer	Two ICTs of 315 MVA each loaded in the range of 500-600 MW	
10	Kaithal	Summer	Two ICT of 315 MVA	1x315 MVA, 400/220 kV

			each, total loading is in the range of 500-600 MW, loading depend upon the 220kV connectivity with 400/220kV Abdullapur, 220kV Jorian and generation at 220kV DC RTP	transformer at 400kV substation Kaithal planned under NRSS XXXIV
11	Bamnoli	Summer	Four ICTs of 315MVA each, loaded upto 1000-1100 MW in summer peak load	STU may respond
12	Agra UP	All time	Agra UP has three ICTs of 315 MVA each. One ICT has been replaced with 500 MVA. Total transformation capacity is now 1130. Power flow over the three ICTs is in the order 950 MW which is not N-1 compliant	1X315 MVA, 400/220 kV ICT at Agra (PG) planned under NRSS XXXIV.
13	Muradnagar	All time	All the three ICTs (2X240 MVA and 1X315 MVA) are fully loaded and not n-1 compliant	Need for commissioning of additional substations at Saharanpur, Hapur etc. in Western UP
14	Varanasi	All time	Varanasi has two ICTs of 240MVA and one of 315MVA. Power over the two ICTs has gone above 450MW which is not n-1 compliant	
15	Greater Noida	All time	Four ICTs of 315MVA each, loaded upto 1000-1100 MW	400kV Ballabgarh-Greater Noida (New) D/c (on Multi circuit towers) and 2x500MVA, 400/220 kV GIS substation at Greater Noida (New) has been planned & agreed. There are certain issues in implementation. Separate agenda item for this meeting.
16	Merta	All time	Two ICT of 315 MVA each loaded in the range of 500- 600 MW	STU may respond
17	Muzaffarnagar	Summer	Three ICTs of 315MVA each loaded upto 700-800 MW	STU may respond
18	Obra TPS		Obra TPS has two ICTs; one ICT was repaired recently after 2 year	STU may respond

			outage but that ICT is still not operating continuously Reported by UPPTCL	
19	765/400kV ICTs of Unnao		Security issues of 765kV Anpara-Unnao on n-1 contingency of Unnao ICT. Evacuation of AnparaC TPS through 765kV Anpara-Unnao under N-1 contingency of 765/400kV Unnao ICTs (2X1000 MVA)	STU may respond
20	400/220kV Dhuri ICTs	Monsoon	Dhuri has two ICTs of 500 MVA each, Rajpura TPS of 2x700 MW is directly connected to Dhuri and Dhuri is connected to Talwandi Sabo. Major part of Rajpura TPS generation is being evacuated through Dhuri ICTs only and the loading on the ICTs is in the range of 500 MW each most of the time during paddy season, thus Dhuri ICTs are not N-1 compliant	STU may respond
21	Single ICTs at following 400 kV Nodes:		1. Rajasthan: Bikaner, Barmer, Bhilwara, Chhabra, Hindaun & Kalisindh 2. BBMB: Dehar & Bhiwani 3. UPPTCL: Gorakhpur	STU may respond

4. Establishment of new 400/220 kV substations in Northern Region:

Following new substations are under implementation, which were planned under various transmission schemes:

- a) Kurukshetra 2x500 MVA (400/220 kV system) : March 2015
- b) Parbati Pooling (provision of 2 nos. of 315 MVA ICTs on existing 400 kV switching station):
- c) Dehradun 2x315 MVA : March 2015

d) Bagpat 2x500 MVA: 2015-16

e) Saharanpur 2x315 MVA : 2015-16

It has been observed that at many occasions that the 400/220 kV substations are commissioned, however the implementation of down below 220 kV system, to be implemented by STU, gets delayed. For utilization of the system it is necessary that 220 kV system is also commissioned in the matching time frame.

The above mentioned substations are under implementation and it is requested that the matching 220 kV system also gets commissioned in the matching time frame.

STUs may note the above and inform the planned 220 kV system and their status from these substations to CEA and CTU.

Members may deliberate.

5. Reactive compensation associated with Inter-Regional system strengthening scheme for WR and NR part-B

During the 31st Standing Committee Meeting of Northern Region held on 02/01/2013 the Inter-regional System Strengthening Scheme for NR & WR system was discussed and agreed. In order to facilitate charging and maintaining the voltage within stipulated limits under various network operating conditions, suitable reactive power compensation needs to be provided in EHV system. Accordingly, following reactive compensation at Interstate transmission system as part of Inter-Regional system strengthening scheme for WR and NR part-B:

		Approx Line length	Line Reactor- From bus	Line Reactor- To bus
	Line Reactors			
1.	Jabalpur Pooling station - Orai 765 KV D/c	360km	330 MVAR	330 MVAR
2.	Orai – Aligarh 765kV D/c line	280km	240 MVAR	240 MVAR
3.	Orai – Orai(UPPTCL) 400kV D/c (Quad	30km	-	-
4.	LILO of one circuit of Satna-Gwalior 765 KV D/c at Orai	60 km		
	Existing Satna-Gwalior 765kV S/c	360km	<i>240 MVAR (Switchable)- (to be converted into bus reactor)</i>	<i>240 MVAR</i>
	Satna-Orai 765kV S/c	180km		<i>240 MVAR</i>

		Approx Line length	Line Reactor- From bus	Line Reactor- To bus
	Orai-Gwalior 765kV S/c	300km	240MVAR	240 MVAR**
5.	LILO of Agra-Meerut 765 kV S/c line at Aligarh	30km		
	Existing Agra-Meerut 765kV S/c	270 km		240 MVAR (Switchable)
	Agra-Aligarh 765kV S/c	130km	-	-
	Aligarh-Meerut 765kV S/c	200km		240 MVAR (Switchable)
6.	LILO of Kanpur – Jhatikara 765 kV S/c at Aligarh S/s	30km		
	Existing Kanpur-Jhatikara 765kV S/c	465 km	330 MVAR (Switchable)	330 MVAR (Fixed)
	Kanpur-Aligarh 765kV S/c	330km	330 MVAR (Switchable)	330 MVAR (Switchable)
	Aligarh-Jhatikara 765kV S/c	190km		330 MVAR (Presently fixed to be made Switchable)
	Bus Reactors			
7.	2x1000MVA, 765/400KV substation at Orai	2x330MVAR bus reactor		
8.	765KV Switching Station at Aligarh (GIS)	2x330MVAR bus reactor		

** Existing Line reactor at Satna end of Satna-Gwalior line which is to be LILOed at Orai may be converted into bus reactor