Additional Agenda for 31st Standing Committee Meeting of Power System Planning for Northern Region

a) Power Supply to M/s Noida Power Company Limited (NPCIL)

NPCL has applied to CTU for connectivity for drawl of 500MW power for distribution in Greater Noida area in Uttar Pradesh. The issue of providing connectivity was discussed during the LTA/connectivity meeting held on 19/12/2011, wherein it was proposed to LILO Dadri – Greater Noida 400 kV circuit at Greater Noida (New) along with the establishment of a new 2x500 MVA, 400/220 kV substation at Greater Noida for providing connectivity. However, it was decided that observations / concurrence of UPPTCL would be taken. UPPTCL vide their letter dated 02/02/2012 had communicated their concurrence subject to identification of strengthening & supply to their Greater Noida is not affected.

Subsequently it has been informed by Noida Power Company that they have executed a Long Term PPA with M/s Essar Power (Jharkhand) Ltd for procurement of 240 MW power from April 2014 for 25 years. Here it is to mention that CTU has already granted Long Term Access of 400 MW (for Target Beneficiaries) in Northern Region to M/s Essar Power (Jharkhand) Ltd and they have already requested to approve / provide LTA of 240 MW to NPCL, now being the actual beneficiary, out of total approved 400 MW LTA in NR.

Presently 400/220 kV, 3x315MVA transformers are installed at Greater Noida and the transformers are loaded heavily. Keeping above in view, the matter has been reviewed by CEA and CTU. As the Dadri – Ballabgarh 400 kV D/c line has already been Looped in Looped out at three major substations of NCR with high loads i.e. Maharani Bagh, Greater Noida and Nawada, establishment of one additional substation on the same line at Greater Noida would not be appropriate as it would result into over loading of the lines. Therefore, for supply to Noida Power Company Ltd, it would be ideal to have a separate 400 kV line from Dadri/Ballbgarh to meet their requirement. However due to ROW constraint for constructing line from Dadri, it is proposed to provide connectivity from Ballabhgarh 400/220 kV substation.

Considering the concentration of growing loads in NCR area, it is proposed to establish a new 2x500MVA, 400/220kV substation at Greater Noida (New) along with Ballabhgarh – Greater Noida 400 kV D/c line. From in addition to NPCL, UPPTCL may also draw 220 kV lines to meet their loads from this new substation.

Accordingly following is proposed:

- Ballabhgarh – Greater Noida (New) 400 kV D/c
- Establishment of 2x500 MVA, 400/220 kV GIS substation at Greater Noida (New) with a short circuit current rating of 50 kA.
- Incase of severe ROW constraints, Pole type towers may be used.

Members may discuss and concur.

b) 400kV Power Evacuation System of Gidderbaha TPS (2640MW) and Mansa TPS (1320MW)

Punjab Vide its letter Dated 26/7/2012 has requested to include agenda regarding 400kV intra state Transmission system of Punjab.

Punjab has informed it is establishing Talwandi Sabo TPS (3x660MW +1x660MW) and Rajpura (3x700MW) and Goindwal Sahib (2x270MW) generations. The evacuation system for these plants has already been planned and is under execution. The projects are likely to be commissioned in 2013-14. In addition to above two number thermal power plants namely Gidderbaha TPS (4x660MW) and Mansa TPS (2x660MW) are also likely to come during the XII plan. The evacuation system as intimated by Punjab is as below:

- Gidderbaha-Muktsar 400 kV D/c
- LILO of both circuits of Talwandi Sabo-Muktsar 400 kV D/c at Gidderbaha
- LILO of one circuit of Rajpura TPS -Nakodar at Amloh
- LILO of one circuit of Rajpura TPS-Nakodar 400 kV D/c at Dohra
- Rajpura TPS -Rajpura 400kV D/c (second link)
- Makhu-Batala 400 kV D/c
- Batala-Nakodar 400 kV D/c
- Mansa-Barnala-Amloh 400kV D/c
- Talwandi-Mansa TPS 400kV D/c

- Establishment of 2x500 MVA, 400/220 kV new substation at Batala, Doraha, Amloh, Barnala and Mansa
- Augmentation of 400/220 kV transformer at Rajpura, Dhuri, Muktsar Muktsar

During the studies Interconnection of Mansa TPS and Mansa 400/220kV S/s through LILO of Talwandi-Mansa TPS 400kV D/c at Mansa S/s had been proposed.

Here it may be mentioned that the above system is adequate to consume its share of power within Punjab. As per NTPC's connectivity & LTA application for Gidderbaha about 50% of the project is to be allotted to regional beneficiaries. Further from Mansa TPS also about 396MW is to be evacuated outside the state. During the studies Gidderbaha-Fatehbad 400kV D/c was tentatively proposed for transfer of power outside the Punjab state. However the above system is to be firmed up after the commissioning schedule is finalised. It is mentioned that the connectivity and LTA application for Gidderbah project was put on hold on the request of NTPC in the last SCM.

Members may note.

c) Procurement of Spare 765/400 kV ICTs for Northern Region

POWERGRID is operating fifty four (54) units of 500 MVA and seven (7) units of 333 MVA, 765/400 kV ICTs at Ballia, Lucknow, Fatehpur, Agra, Moga, Bhiwani and Jhatikara Sub-stations. Six (6) more units of 500 MVA, 765/400 kV ICTs are planned for commissioning by 31.03.2013 at Meerut. These transformers were manufactured at off-shore works of Hyosung (South Korea) and BTW (China).

Any major failure of these ICTs shall necessitate repair in their off-shore works only, which is time consuming because of long time for transportation of the unit from site to works & back and manufacture of winding. Any failure of these units may lead to overloading of the other units operating in parallel and may cause transmission constraint at 765 kV level especially in view of ensuing commissioning of various power projects in the Region. In view of the above, it is proposed to procure three (3) nos. single phase 765/400 kV ICTs of 500 MVA capacity and one (1) no. single phase 765/400 kV ICT of 333MVA capacity as spare for Northern Regional Grid.

The above issue was deliberated in the 27th NRPC meeting wherein it was agreed that the issue may be deliberated in Standing Committee Meeting.

Members may deliberate and concur.

d) Replacement of Bus Reactors under Additional Capitalization at Agra & Muradnagar

The replacement of 02 nos. 50 MVAR Bus Reactors installed at Agra & Muradnagr S/s with 80 MVAR reactors under renovation & modernization was approved by CERC for smooth & reliable operation of Grid, however CERC desired that since there is change in capacity, the matter be discussed with beneficiaries at NRPC level and technical requirement of appropriate capacity of the reactor may be finalized after detailed study. Accordingly the matter was discussed in the 27th NRPC meeting held on 30/11/2012. During the meeting POWERGRID had proposed to replace 50 MVAR old reactors with 125 MVAR reactors instead of replacing the 50 MVAR reactors with 80 MVAR reactors (as proposed in CERC).

From the studies it is observed that the reduction in voltage at Agra and Muradnagar would be about 0.5 kV with 50 MVAR bus reactors and about 2 kV with 125 MVAR bus reactors.

Considering the above it is proposed to replace the existing 50 MVAR Bus reactors with 125 MVAR Bus Reactors at Agra and Muradnagar (UPPTCL). The same was in principle agreed by NRPC subject to technical approval in Standing Committee meeting.

Members may deliberate and concur the proposal.

e) Drawl of power from 220 kV level of Agra (POWERGRID) 765/400/220 kV substation

POWERGRID is installing 4x105 MVA, 400/220 kV ICT at Agra (POWERGRID) substation. For supply of power to UP, two nos. of 220 kV line bays are also being constructed which may be utilised by UPPTCL for meeting

the load demand in nearby area. UPPTCL may plan 2 nos. of 220 kV feeders from this substation.

Members may deliberate and concur the proposal.

f) Construction of four (4) nos. 400 kV Bays at 400/200 kV sub-station of PTCUL at Kashipur (Agenda by POWERGRID)

Construction of 400 kV D/C Bareilly-Kashipur & 400 kV D/C Kashipur-Roorkee line was agreed as part of NRSS XXI during 27th Standing Committee meeting of Northern Region held on 30.05.2009. For termination of these lines, four (4) nos. 400 kV bays are to be constructed at 400/220 kV sub-station of PTCUL at Kashipur. The transmission lines are under construction whereas MOU for construction of 400 kV bays at 400/220 kV Kashipur Sub-station could not be finalized due to the various issues being raised by PTCUL. This matter was discussed during the 27th NRPC meeting wherein PTCUL agreed that the practice being followed by POWERGRID with other states for carrying out the deposit works shall be acceptable to PTCUL.

In view of delay in finalisation of the said MOU and likelihood of non-completion of 400 kV bay construction work at Kashipur matching the completion of line, POWERGRID proposed to temporarily connect 400 kV D/C Bareilly-Kashipur & 400 kV D/C Kashipur-Roorkee section directly by-passing 400/220 kV Kashipur Sub-station. The same was agreed during the NRPC meeting.

Members may note.

g) Construction of two (2) nos. 400 kV Bays of POWERGRID at Rajpura substation for termination of LILO of Dehar – Bhiwani 400 kV S/c line associated with NRSS-XXVII

Implementation of LILO of Dehar – Bhiwani 400 kV S/c line at Rajpura substation (PSTCL) was agreed as part of NRSSXXVII. For completion of these works two nos. of 400 kV bays are to be implemented at Rajpura substation of PSTCL. For carrying out the works on deposit basis, as a practice being followed amongst other utilities & POWERGRID, normally 15% overhead charges are

paid. The scope of deposit work includes tendering, placement of awards, engineering, supervision etc

The matter of implementation of 400 kV bays at Rajpura was taken up by POWERGRID with PSTCL and PSTCL vide their letter dated 30/10/2012 have intimated that the works at Rajpura may be carried out by POWERGRID and 12.5% departmental charges of the total project cost may be paid to PSTCL.

In this regard POWERGRID has submitted that they cannot adopt different policy with different constituents. Due to the different stand taken by the State utilities, the implementation of projects is getting delayed. Therefore it is necessary to have standard norms for payment of overhead charges and accordingly POWERGRID has proposed the following:

- For carrying out the works on deposit works basis 15% of the overhead charges shall be payable by POWERGRID and the same shall be charged by POWERGRID. The scope of deposit work shall include tendering, placement of awards, engineering, supervision etc required for completion of works. The procurement of the material shall be in the name of principle owner.
- Alternatively, in case the works are to be carried out by the principle owner in other utility premises, 15% of the overhead supervision charges shall be payable corresponding to the erection works excluding the supply portion.

The finalisation of above norms would facilitate the smooth implementation of the transmission works among all the constituents.

Members may deliberate.

h) High Voltage conditions in RAPP area

The issue of high voltage conditions prevailing in RAPP area under light load condition was discussed in 27th NRPC meeting wherein NPCIL informed that some relief in overvoltage conditions has been observed after the commissioning of 125 MVAR bus reactor at Kankroli. However, the voltages in RAPP area are still high (about 420 kV). During the deliberations RRVPNL suggested that 400

kV D/c RAPP – Kankroli line may be looped in looped out at Chittorgarh substation which is enroute to this line (LILO length is only about 5-10 km). This would result into smaller line sections and provide additional anchoring at Chittorgarh. The NRPC suggested to deliberate the issue in SCM.

The above proposal has been studied and voltage reduction of about 5 kV is observed with the LILO at Chittorgarh.

Accordingly following is proposed as system strengthening ISTS works:

- LILO of both circuits of RAPP – Kankroli 400 kV D/c line at Chittorgarh 400/220 kV substation of RRVPNL

Member may deliberate and concur.

i) Review of Transmission Planning Criteria

The Enquiry Committee headed by Chairperson, CEA for grid events in July 2012 has recommended that transmission planning criteria needs to be reviewed in the context of market scenario within three months. In this regard, a note on the issues relating to "Review of Planning Criteria" has been prepared. . A copy of this note and the existing "Manual on Transmission Planning Criteria" are available on CEA website.

Members of the Standing Committee on Power System Planning of Northern Region are requested to furnish their comments/ suggestions regarding review of transmission planning criteria to the undersigned along with a soft-copy mailed to cea.sppa@yahoo.in.

Members may give their views/observations in regard to review of Transmission Planning Criteria.

j) Integrated planning for State transmission system:

As per section 39 of the Electricity Act, STUs need to carry out their planning function related to intra-state transmission in coordination with the CEA and CTU. There have been a few instances in the past where, the STU has

planned important transmission system or allowed connectivity to large generation capacities without involving CEA and CTU and this may result in congestion/operational difficulties for the ISTS/national grid. To start with, it is proposed that STU should evolve following of their systems involving CEA and CTU, which would subsequently be firmed up through the Standing Committee forum:-

(a) 220 kV and above system

(b) Large scale harnessing of renewable generation

(c) System for evacuation of power from a complex having generation capacity of 250 MW and above in case of conventional and 50 MW and above in case of renewable.

k) State wise assessment of the Load Generation Scenario of Northern Region.

For the assessment of load generation scenario, all STUs of Western Region are requested to provide the seasonal load and generation data in prescribed format given below.

State:

LOAD

	2014-15	2016-17	2019-20
Summer Peak			
Summer Off-Peak			
Winter Peak			
Winter off- Peak			
Monsoon Peak			
Monsoon Off-Peak			

18th EPS Load			

State:

GENERATION

		2014-15		2016-17		2019-20	
		Installed Capacity	Dispatch	Installed Capacity	Dispatch	Installed Capacity	Dispatch
Summer Peak	Thermal						
	Hydro						
	Wind						
	Solar						
Summer Off-Peak	Thermal						
	Hydro						
	Wind						
	Solar						
Winter Peak	Thermal						
	Hydro						
	Wind						
	Solar						
Winter off- Peak	Thermal						
	Hydro						
	Wind						
	Solar						
Monsoon Peak	Thermal						
	Hydro						
	Wind						
	Solar						
Monsoon Off-Peak	Thermal						
	Hydro						
	Wind						
	Solar						

Maximum Export/Import requirement of State considering various contingencies:

	2014-15	2016-17	2019-20
Summer Peak			
Summer Off- Peak			
Winter Peak			
Winter off- Peak			
Monsoon Peak			
Monsoon Off-Peak			