

I/5001/2019



भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
केन्द्रीय विद्युत प्राधिकरण
Central Electricity Authority
विद्युत प्रणाली योजना एवं मूल्यांकन - I प्रभाग
Power System Planning & Appraisal - I Division

To

-As per list enclosed-

विषय: उत्तरी क्षेत्र की ट्रांसमिशन पर स्थायी समिति की तृतीय बैठक के विषय में

Subject: 3rd meeting of Northern Region Standing Committee on Transmission (NRSCT) – Additional Agenda Note

Sir/ Madam,

In continuation to our earlier communication dated 14.05.2019 vide which agenda notes were circulated, it is intimated that Additional Agenda Note for 3rd Meeting of Northern Region Standing Committee on Transmission is available on CEA website: www.cea.nic.in (path to access – Home Page –Wing- Power System- PSPA-I- Standing Committee on Power System Planning- Northern region).

Kindly make it convenient to attend the meeting.

Yours faithfully,

(Goutam Roy)
Chief Engineer

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1.	Member, Secretary, NRPC, 18-A Shajeed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi - 110016 (Fax-011-26865206)	2.	Director (W &P) UPPTCL, Shakti Bhawan Extn,3rd floor, 14, Ashok Marg, Lucknow - 226 001 (Fax:0522-2287822)	3.	Director (Projects) PTCUL, Vidhyut Bhawan, Near ISBT -Crossing, Saharanpur Road, Majra, Dehradun-248002. Uttrakhand Fax-0135-2645744
4.	Director (Technical), Punjab State Transmission Corporation Ltd. (PSTCL) Head Office The Mall Patiala -147001 Fax-0175-2304017	5.	Member (Power) BBMB, Sectot-19 B Madhya Marg, Chandigarh-1 60019 (Fax-01 72-2549857	6.	Director (Operation) Delhi Transco Ltd. Shakti Sadan, Kotla Marg, New Delhi-110002 (Fax-01123234640)
7.	Director (PP&D) RVPN, 3 rd Floor, Room no 330, Vidhyut Bhawan, Janpath, Jaipur-302005. Fax-:0141-2740794 ce.ppm@rvpn.co.in	8.	Director (Technical) HVPNL Shakti Bhawan, Sector-6 Panchkula-134109 Fax-0172-256060640	9.	Director (Technical) HPSEB Ltd. Vidut Bhawan, Shimla -171004 Fax-0177-2813554
10.	Managing Director, HPPTCL, Barowalias, Khalini Shimla-171002 Fax-0177-2623415	11	Chief Engineer (Operation) Ministry of Power, UT Secretariat, Sector-9 D Chandigarh -161009 Fax-0172-2637880	12	Development Commissioner (Power), Power Department, Grid Substation Complex, Janipur, Jammu, Fax: 191-2534284
13.	Director (Projects) POWERGRID Saudamini Plot no. 2, Sector - 29. Gurgaon-122 001 (Fax-0124-2571809)	14	CEO, POSOCO B-9, Qutab Institutional Area, Katwaria Sarai New Delhi – 110010 (Fax:2682747)	15	COO (CTU) POWERGRID, Saudamini, Plot no. 2, Sector -29, Gurgaon-122 001 (Fax-0124-2571809)

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Additional Agenda for 3rd Meeting of Northern Region Standing Committee to be held on 24-05-2019.

1.0 Confirmation of the minutes of 2nd meeting of NRSCT:

In continuation to the agenda item no 1 of the main agenda “Confirmation of the minutes of 2nd meeting of NRSCT”, following is added:

- 1.1 PSTCL vide their letter no 710/P-I dated 6.12.2018 had forwarded the observations on additional 1x1500 MVA (3rd) transformer at Moga 765/440kV S/s covered under Point no. - 2 of the minutes i.e. “Evolution of transmission scheme for integration of envisaged RE generation capacity in Solar & Wind Energy Zones and Transmission Schemes for Solar Energy Zones (REZS) in Rajasthan”. PSTCL had raised that the fault levels at Moga 400kV and 220kV are very high and with the additional transformation capacity, these fault level will further increase.

PSTCL had also mentioned that as per their studies, in the paddy season, the loading on 2x1500 MVA, 765/400kV transformers is only 17% and will further decrease with installation of additional transformer. Therefore, PSTCL requested to review the above proposal and suggested that 400kV Malkana S/s which is under construction may be considered for RE injection.

- 1.2 To deliberate on the above issue, a meeting was held in CEA on 16.5.2019, wherein, PSTCL stated that installation of third 1x1500 MVA, 765/400kV ICT at PGCIL Moga S/s. may not be beneficial on account of power evacuation point of view as the MW flows through the ICTs at Moga remain unaffected because of its direct connectivity with Talwandi-Sabo TPS of 3x660= 1980 MW. In the light load conditions, Punjab's load reduces to about 3000-3500 MW. Especially in winters, problem of high bus voltages at 220kV/ 400kV/ 765kV buses arises. In addition to above, fault level at PGCIL Moga has already gone beyond the rupturing capacity of the switchgear which has also been admitted by CTU in TCC meeting. Under these circumstances, it may not be beneficial for the system to have more 1x1500 MVA, 765/400 kV ICT & 765 kV/400 kV lines to be terminated at Moga. PSTCL also stated that PGCIL brought the agenda in NRPC 41st TCC & 44th NRPC meeting held at Udaypur on 18.03.2019-19.03.2019, wherein, element was discussed where Punjab has put forth its objections. NRPC has decided (minutes awaited) that this element shall be reconsidered in the next standing committee. Also, the matter was referred to Secretary, Central Electricity Regulatory Commission, New Delhi vide Memo No. 234 dated 26.03.2019.

CEA/CTU pointed out that the third transformer at Moga was planned to enable Punjab to draw RE power in order to meet their RPO obligation which is 21% by 2022 for all the States. However, PSTCL clarified that in their State, they could not absorb more than 2000 MW of RE power and they have already raised this issue to MoP.

PSTCL also pointed out that already they have RE generations in the western Punjab. In order to meet their load, ISTS connectivity may be required in eastern Punjab. PSTCL suggested that PGCIL may plan to split 765kV or 400kV bus and the power may be diverted to any other State so that the RE power coming from Bikaner- Moga 765kV network may not flow into 220kV network of PSTCL.

After deliberations, it was decided that PSTCL would share their LGB for peak and off –peak cases and based on which CEA/ CTU would re-study the proposal of 3rd ICT at Moga and explore options for providing ISTS power to eastern part of Punjab.

- 1.3 Members may deliberate.

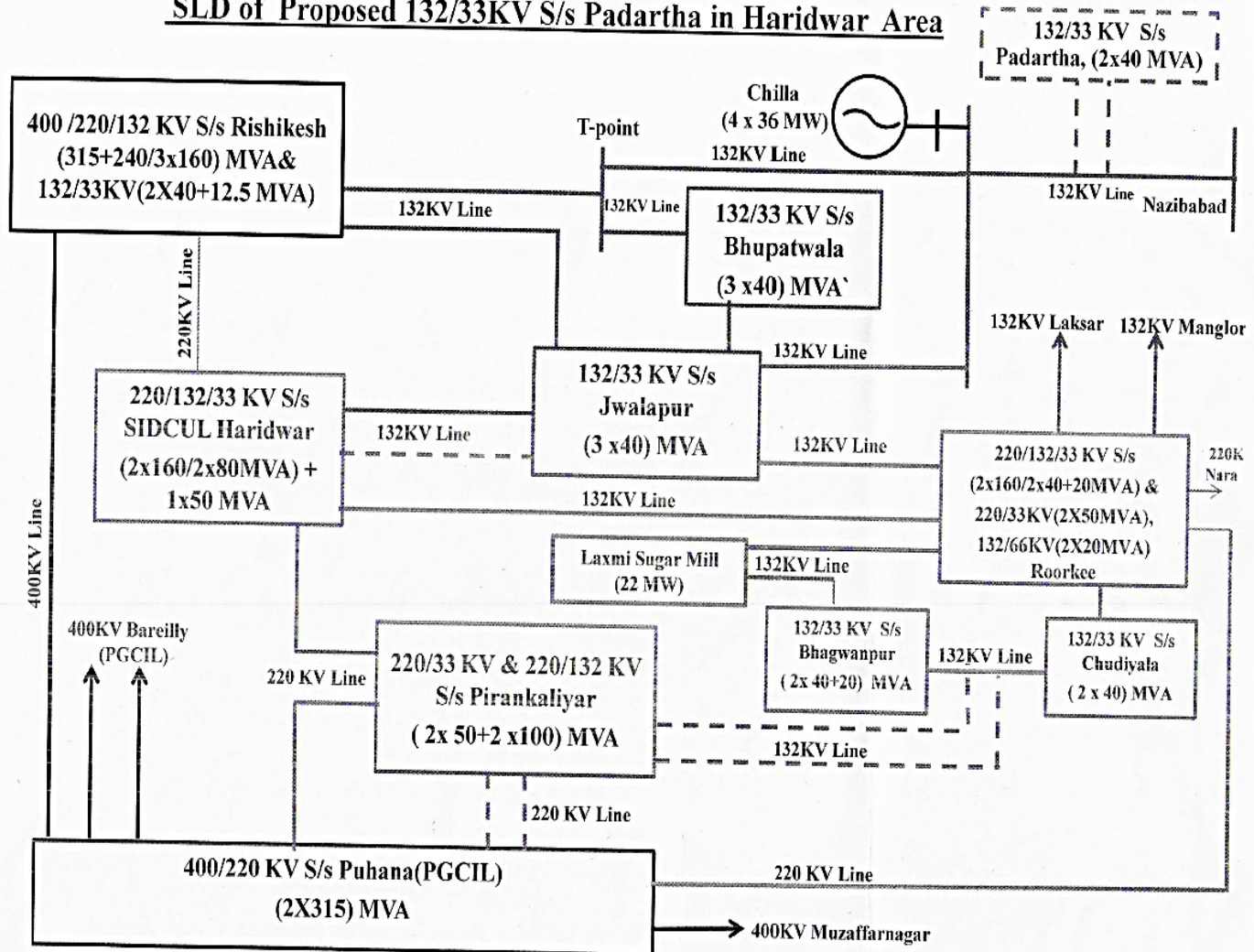
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2. AGENDA RECEIVED FROM PTCUL:

PTCUL vide their email dated 16.04.2019 has forwarded the following agenda item for inclusion in the 3rd meeting of NRSCT.

2.1 Construction of 132/33 kV s/s Padartha(Patanjali), Haridwar and LILO of 132kV Chilla – Nazibabad line at proposed 132/33 kV S/s Padartha(Patanjali), Haridwar.

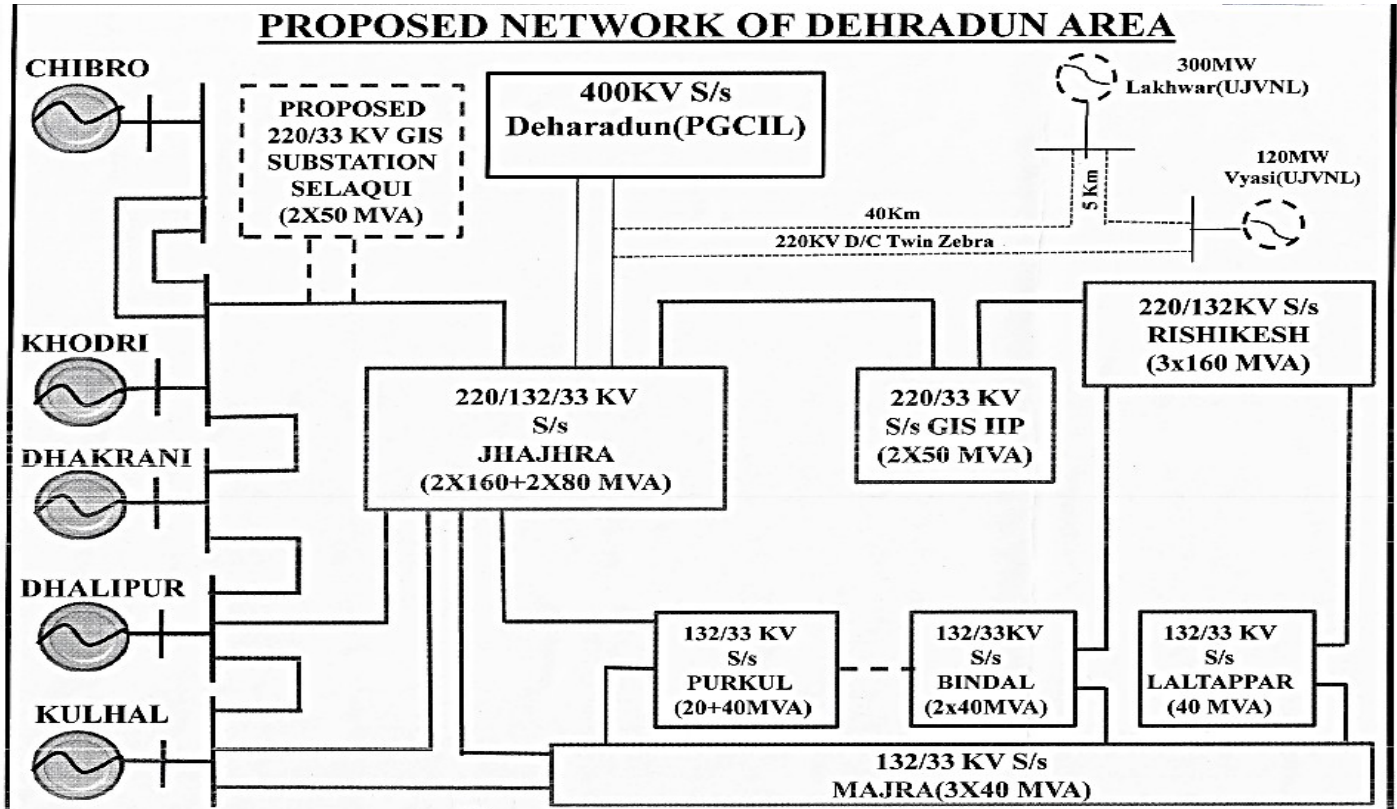
PTCUL has planned to construct 132/33kV S/s Padartha for providing the load to Patanjali and its nearby area of Padartha in district Haridwar. This proposed S/s will be energized through LILO of 132 kV Chilla – Nazibabad line.

SLD of Proposed 132/33KV S/s Padartha in Haridwar Area**2.2 Construction of LILO of 1st ckt. of 220 kV D/c Jhajhra(PTCUL) – Sherpur(PGCIL) line at under construction Vyasi HEPP, 120 MW UJVNL.**

At present, Vyasi HEP (120 MW) of M/s UJVNL in Yamuna basin is under construction and for evacuation of its power, PTCUL has proposed to LILO 1st ckt. of 220 kV D/C Jhajhra (PTCUL) – Sherpur (PGCIL) line at Vyasi HEP. Lakhwar HEP (300 MW) is also proposed in Yamuna basin. For evacuation of its power, PTCUL has proposed to LILO one ckt. of 220 kV D/c Vyasi – Dehradun line at proposed Lakhwar HEP.

PTCUL may present their proposal. Members may deliberate.

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3. AGENDA RECEIVED FROM PSTCL:

3.1 Creation of new 400 kV S/s, 2 x 500 MVA ICTs at Ropar in the premises of existing 220 kV Guru Gobind Singh Super Thermal Plant (GGSSTP) Ropar

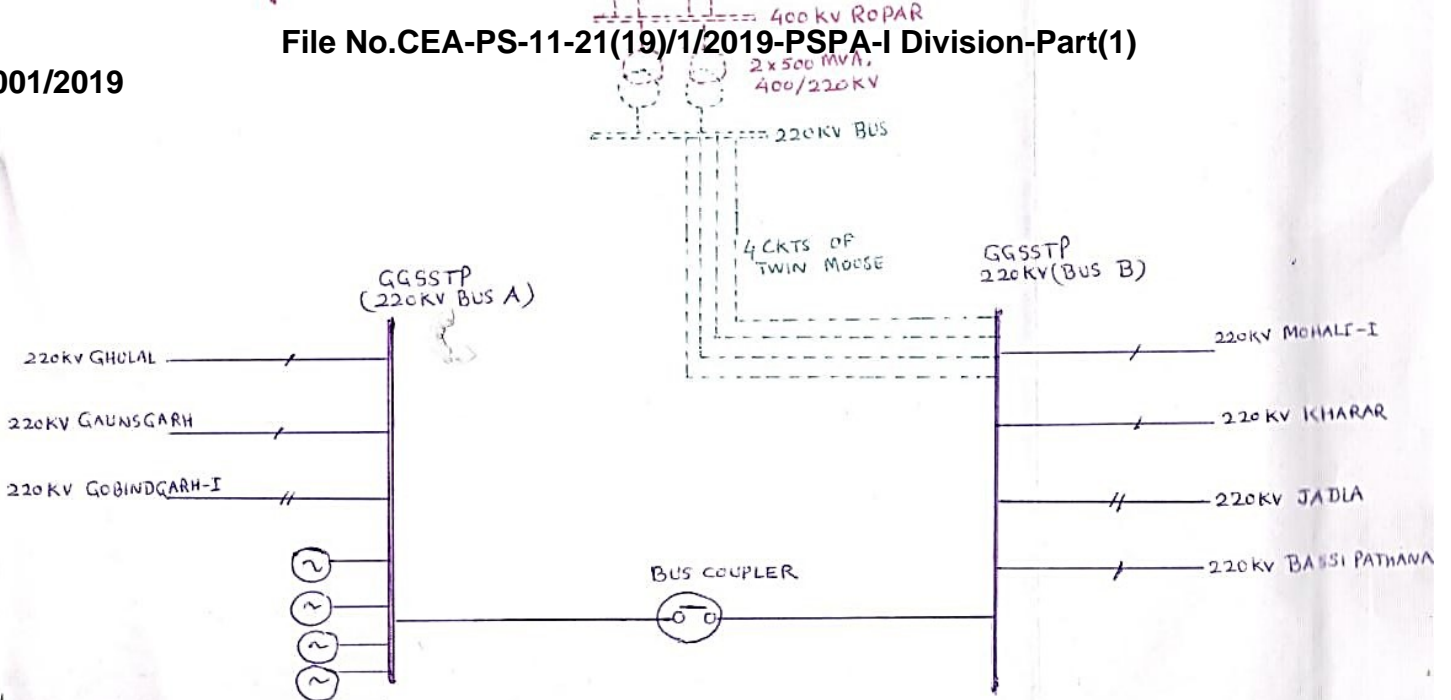
3.1.1 PSTCL vide their letter dated 26.12.2018 has proposed 2 x 500 MVA, 400/220 kV S/s at Ropar with the following connectivity: -

- a. Creation of 400 kV S/s Ropar with installed capacity of 2 x 500 MVA, 400/220 kV ICT's.
- b. LILO of both ckts of 400 kV PGCIL – Koldam at proposed 400 kV S/s Ropar, LILO Length = 15 km (approx.), Triple Conductor(Zebra).

3.1.2 PSTCL has informed that Punjab state has recorded its maximum demand as 12542 MW during paddy season 2018, and is continuously increasing with an average load growth of 6.5% for the last ten years. Its anticipated load as projected by EPS 19th EPS report is 14800 MW in the year 2022. Punjab has an installed generation capacity of 6672 MW (thermal + IPP = 1760 + 3920 MW and hydro = 993 MW). As the hydel generation is water dependent and thermal plants i.e. GNDTP Bathinda and GGSSTP Ropar have completed its life span, therefore, the net generation of Punjab would be approx. 6000 MW. For catering the load during 2022, approx. 9050 MW Power (including Central Sector Share, BBMB share, Power Purchase etc.) shall be required from outside Punjab through ISTS system. At present, installed capacity of ISTS connected with Punjab is 8530 MVA. Therefore, some additional 400 kV grid with its connectivity with Northern Grid network shall be required in PSTCL.



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power absorbing grid from where further 100 KV connectivity shall be planned as per the requirement on the basis of load flow study corresponding to future loading conditions.

Members may deliberate.

3.2. 1 Revision in scope of works of 400 kV Dhanansu:

400 kV S/s Dhanansu was already approved in MYT plan 2017-20 by PSERC. But due to revised loading condition of cycle valley, the scope of this work has been revised as: -

Name of work	Scope of work		Remarks
	Earlier Scope	New Revised Scope	
400KV S/s Dhanansu (New)	Establishment of 400 KV AIS station along with auxiliary, control room building, Gantry structure, extension provision etc. a) 2x500 MVA, 400/220KV ICT's. 400 KV Bays (4 Nos.) 220 KV Bays (10 Nos.) b) LILO of 400 KV Rajpura (Thermal) - 400 KV Nakoder D/C line at 400 KV Dhanansu (2xDC on DC) 11.1 Km LILO length, conductor (Twin Moose)	Establishment of 400 KV AIS station along with auxiliary, control room building, Gantry structure, extension provision etc. a) 2x315 MVA, 400/220KV ICTs 400 KV Bays (2Nos.) 220 KV Bays (6 Nos.) b) LILO of one Ckt. of 400 KV Rajpura (Thermal) - 400 KV Nakoder DC line at 400 KV Dhanansu (1xDC on DC) 11.1Km LILO length, conductor (Twin	(i) Scope of work has been revised as per revised loadings as intimated by PSIEC vide their letter 24037 dt. 02.01.19. (ii) 1x315 MVA, 400/220 KV ICT as spared from 400 KV Nakoder shall be installed at 400 KV Dhanansu. (iii) 2nd 1x315 MVA, 400/220 KV T/F shall also be a spared T/F from the existing 400 KV network of PSTCL, and shall be decided on the basis of study corresponding to 2022-

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	Moose)	2027 system conditions.
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3.2. 2 Its 220 kV downlinks shall be: -

- 1) 400 kV Dhanansu - 220 kV Kohara D/c line Appx. line length - 12 km (0.4sq")
- 2) 400 kV Dhanasu - 220 kV Ikolaha D/c line Appx. line length - 10 km (0.4sq")
- 3) 400 kV Doraha - 220 kV Doraha D/c line Appx. line length - 10 km (0.4sq")

However, keeping in view the closure of 2x210 MW as well as merit order operation of remaining units of GGSSTP, Ropar and in order to meet with the deficiency so created, PSTCL has also identified the connectivity of 400 kV S/s Dhanansu with 400 kV Northern Region system as: -

“Lilo of one ckt of 400 kV Jallandhar – Kurukshetra D/c line at 400 kV Dhanansu (line length = 40 Km appx.), 400 kV bays = 2 Nos.”

3.2. 3 PSTCL may present their studies. Members may deliberate.

3.3. 1 **New transmission lines of PSTCL:**

3.3. 2 PSTCL has informed about the following under construction/ planned 220 kV lines

1. LILO of 220 kV Sunam- Mansa at 400 kV Patran (LILO length 40 km approx, conductor size 0.4” Sq.
2. LILO of 220 kV Himmatpura – Jagraon line at 220 kV Ajitwal, length: 2x1.404 Km, conductor size 0.4” Sq.
3. LILO 220 kV RTP- Jamsher line at 220 kV Banga on multi circuit towers, length: 2x5.685 Km, conductor size 0.4” Sq.
4. 220 kV Gaunsgarh - Ladowal D/c line, length: 17.163 Km, conductor size 0.4” Sq.
5. 220 kV line from 400 kV Nakodar- 220 kV Ladowal, D/c line, length: 70.144, conductor size 0.5” Sq.
6. 220 kV line from 400 kV Muktsar- 220 kV Kotkapura (Sandhwan), S/c on D/c line, length: 39.320 Km conductor size 0.4” Sq.
7. 220 kV line from 400 kV Makhu- 220 kV Algaon, D/c line, length: 2x50.445 Km, conductor size 0.4” Sq.
8. 220 kV line from 400 kV Makhu- 220 kV TaranTaran (Rashiana), D/c line, length: 2x46.169, conductor size 0.4” Sq.
9. 220 kV line from 220 kV Abohar- 220 kV Malout, S/c on D/c line, length: 39.994, conductor size 0.4” Sq.

Members may like to note.

3.5. 1 Augmentation of 400/220 kV S/s Rajpura

PSTCL has informed that presently the transformation capacity at Rajpura is 2 x 500 MVA. As per the peak load observed at this substation, it is (N-1) non-compliant. Therefore, additional 1x500 MVA, 400/220 kV I.C.T. has been planned at 400 KV Rajpura under intra state works.

Members may like to note.

Agenda by CTU:

4. 1 **Switchgear for Neemrana (PG)- Dhanonda (HVPNL) 400 kV D/c (HTLS) line at Dhanonda end:**

4. 2 Neemrana(PG) - Dhanonda(HVPNL) 400 kV D/c(HTLS) line has been executed by Gurgaon Palwal Transmission Limited (GPTL) under “Creation of new 400 kV GIS substation in Gurgaon area and Palwal area as a part of ISTS”. One and half breaker scheme is used at 400kV switchyard of both Neemrana(PG) & it is understood that

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same switching is used at Dhanonda(HVPNL) S/s also. Since Neemrana (PG)-Dhanonda (HVPNL) 400 kV D/c is HTLS line, corresponding circuit breakers of complete diameter(DIA) at both the substation for the line are required to be rated at least for 3150 Amps.

- 4.3 Circuit breakers of complete DIA at Neemrana(PG) for subject line are rated at 3150Amp. However, only one circuit breaker of corresponding DIA at Dhanonda(HVPNL) is rated at 3150 Amp and remaining two circuit breakers are rated at 2000 Amp. This limitation in switch gear current carrying capability shall constrain HTLS line power carrying capability.
- 4.4 Accordingly, it is proposed to upgrade other two circuit breakers of DIA of Neemrana (PG)-Dhanonda (HVPNL) 400 kV D/c(HTLS) at Dhanonda(HVPNL) end with 3150 Amps.

Members may discuss

5.1 Scheme to control Fault level in Northern Region(Phase-II)

- 5.2 Scheme to control Fault level in Northern Region(Phase-II) was discussed and agreed in the 39th Standing Committee Meeting of Power System Planning of Northern Region(NRSCM) held on 29th-30th May, 2017. Subsequently, implementation of the scheme has been entrusted to POWERGRID in 2nd & 3rd ECT held on 06/08/2018 & 21/12/2018 respectively. POWERGRID scope as agreed is given below:

a) At Kanpur:

- i. 12Ω Series Line Reactors in Kanpur(old)–Kanpur(New) 400kV D/c line at Kanpur(old) end and
- ii. Fatehpur–Kanpur(old) 400kV D/c & Kanpur(old)–Panki 400kV lines to be disconnected at Kanpur (old) and connecting them directly to form Fatehpur – Panki 400kV D/c line.

b) At Bhiwani, Hissar and Mohindergarh:

- i. 12Ω Series Bus Reactor at Bhiwani(PG) Substation
- ii. Mohindergarh–Bhiwani(PG) 400kV D/c (one of the two D/c lines) & Bhiwani(PG)–Hissar(PG) 400kV D/c line to be disconnected from Bhiwani(PG) end and directly connected to form Mohindergarh–Hissar 400kV D/c line
- iii. The remaining Bhiwani(PG) – Hissar(PG) 400kV D/c line (one circuit via Bhiwani BBMB) & Hissar(PG) – Moga (one circuit via Fatehabad) 400kV line to be disconnected at Hissar end and directly connected to form Bhiwani(PG) – Moga 400kV line (As a result one circuit shall be as Bhiwani(PG) – Fatehabad – Moga and other circuit shall be as Bhiwani(PG) – Bhiwani(BBMB) - Moga)

Considering implementation complexities for by-passing at Bhiwani(PG) S/s and Hissar(PG) S/s, following minor modifications/clarifications are proposed for by-pass arrangements at these substations:

- 5.3 Out of two 400kV D/c lines between Mohindergarh & Bhiwani, one 400 kV D/c line is owned by Adani and other is under implementation by POWERGRID. It is proposed that Mohindergarh–Bhiwani (PG) 400kV D/c line of POWERGRID and Bhiwani (PG)-Hissar (PG) 400kV D/c line to be by-passed at Bhiwani (PG) end so as to form direct Mohindergarh–Hissar 400kV D/c line of POWERGRID.

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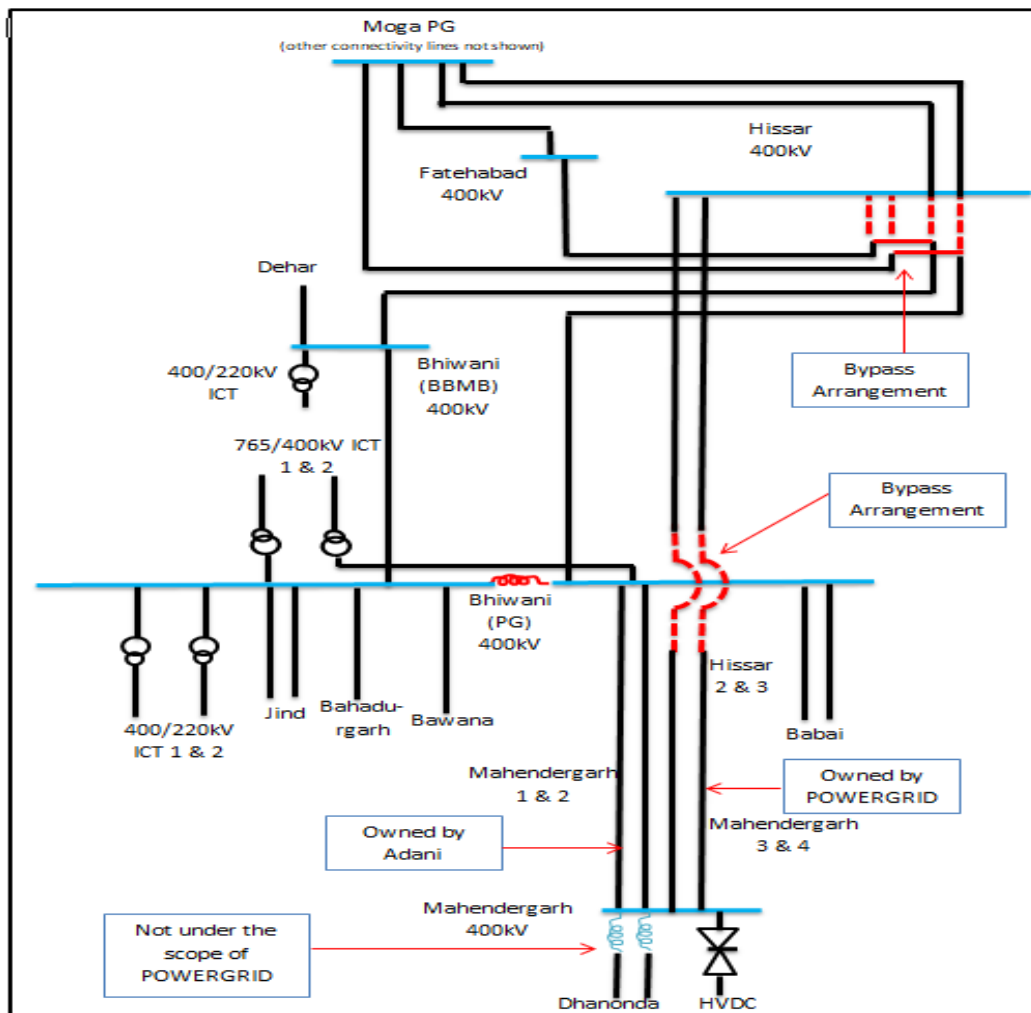
5. 4 Remaining Bhiwani (PG)–Hissar (PG) 400kV D/c line (one circuit via Bhiwani (BBMB)) and Hissar (PG)–Moga (One circuit via Fatehabad) 400kV line is to be by-passed at Hissar end so as to form Bhiwani (PG)–Moga 400kV D/c direct line with following arrangement:
- One Circuit of Bhiwani(PG) – Moga(PG) 400 kV line (via Hissar)
 - One Circuit of Bhiwani(PG) – Bhiwani(BBMB) – Fatehabad – Moga(PG) 400 kV line (via Hissar)
5. 5 Considering line length of 275 km & Lightening Arrestors are rated 390kV at both Bhiwani (PG) and Moga (PG), replacement of circuit breakers with PIR for both ends of Bhiwani – Hissar(bypass)-Moga 400 kV S/c line is proposed.
Existing line reactor of 50 MVAR for Moga – Hissar 400 kV S/c line at Hissar end is retained at existing location after by-pass of Moga-Hissar 400kV S/c and Moga-Bhiwani 400kV S/c at Hissar to form Moga-Hissar(bypass)-Bhiwani line.
5. 6 It was observed that terminating position of Bawana and Hissar lines are inadvertently shown interchanged. The same has been corrected & revised schematic of Bhiwani S/s is given at Exhibit-I. Schematic of the proposed arrangement is shown in the Exhibit-I.
5. 7 Simulation studies indicate that the fault level is within designed limits considering above modification & same are given below:
5. 8 Revised Scope of POWERGRID is summarized given below:
- a) At Kanpur:**
- i. 12Ω Series Line Reactors in Kanpur(old)–Kanpur(New) 400kV D/c line at Kanpur(old) end and
 - ii. Fatehpur–Kanpur(old) 400kV D/c & Kanpur(old)–Panki 400kV lines to be disconnected at Kanpur (old) and connecting them directly to form Fatehpur – Panki 400kV D/c line.
- b) At Bhiwani, Hissar and Mohindergarh:**
- i. 12Ω Series Bus Reactor at Bhiwani(PG) Substation
 - ii. Mohindergarh – Bhiwani (PG) 400kV D/c line of POWERGRID and Bhiwani (PG)-Hissar (PG) 400kV D/c line to be by-passed at Bhiwani (PG) end so as to form direct Mohindergarh – Hissar 400kV D/c line of POWERGRID.
 - iii. Remaining Bhiwani (PG)–Hissar (PG) 400kV D/c line (one circuit via Bhiwani (BBMB)) and Hissar (PG)–Moga (One circuit via Fatehabad) 400kV line is to be by-passed at Hissar end so as to form Bhiwani (PG)–Moga 400kV D/c direct line with following arrangement:
 - One Circuit of Bhiwani(PG) – Moga(PG) 400 kV line (via Hissar)
 - One Circuit of Bhiwani(PG) – Bhiwani(BBMB) – Fatehabad – Moga(PG) 400 kV line (via Hissar).

Note:

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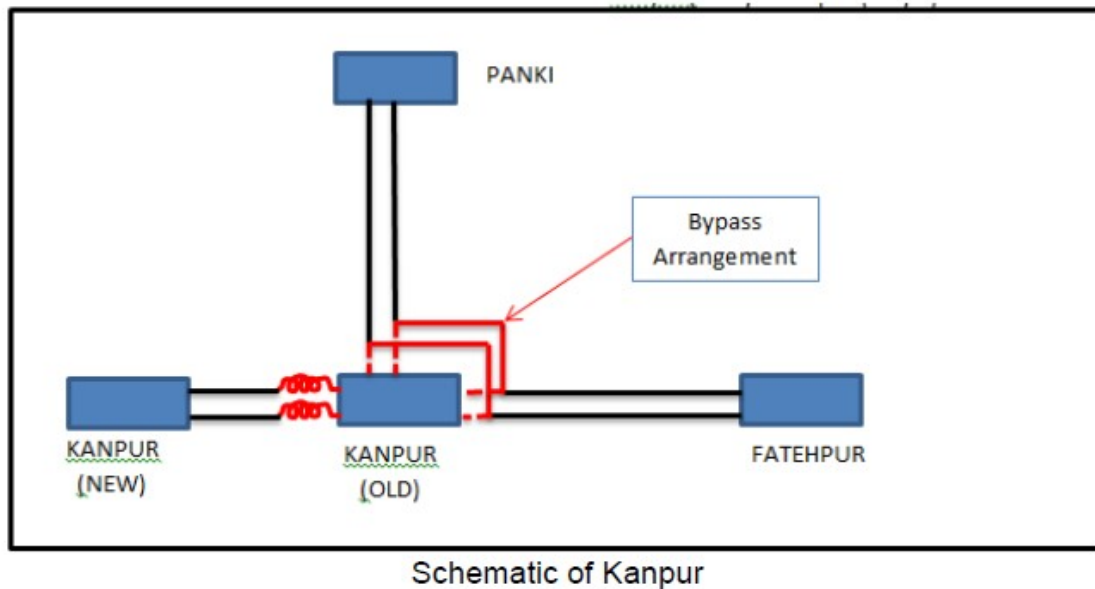
- Considering line length of 275 km & Lightning Arrestors are rated 390kV at both Bhiwani (PG) and Moga (PG), circuit breakers is to be replaced of with PIR for both ends of Bhiwani – Hissar(bypass)-Moga 400 kV S/c line.
- Existing line reactor of 50 MVAR for Moga – Hissar 400 kV S/c line at Hissar end is to be retained at existing location after by-pass of Moga-Hissar 400kV S/c and Moga-Bhiwani 400kV S/c at Hissar to form Moga-Hissar(bypass)-Bhiwani line.

Exhibit-I



Schematic of Bhiwani

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Members may note.

- 6.1. **Establishment of 400/220kV Substations in NCT of Delhi during 12th Plan Period - Change of Scope of 400/220 kV Tughlakabad & Dwarka Substations between POWERGRID & DTL**
- 6.2. Establishment of 400/220kV Tughlakhabad & Dwarka S/s were agreed during 34th & 35th Standing Committee on Power System Planning in Northern Region held on 08/08/2014 & 03/11/2014 respectively with following scope as part of setting up of 400KV Inter State Grid Sub-Stations in Delhi.

400/220kV Tughlakhabad S/s

1. Creation of 4x500MVA, 400/220 kV GIS substation at Tughlakabad
2. LILO of both circuits of Bamnauli – Samaypur 400kV D/c line at Tughlakabad with Twin HTLS conductor.
3. 9 nos. of 400 kV bays (4 incomer, 4 ICT, 1 B/C) with provision for future expansion
4. 23 nos. 220 kV bays (220 kV split bus with 12 bays on each side = 2 incomer, 6 feeder bay, 1 B/C, 1 B/S (only one), 2 ICT)

400 kV Papankalan 1 S/s (Dwarka S/s)

1. Creation of 400/220 kV, 4x 500 MVA Papankalan I S/s (now Dwarka) by LILO of one circuit of Bamnauli –Jatikalán at Papankalan I.
The 400 KV Papankalan I S/S to be created by upgrading the existing 220kV Papankalan S/S to 400 kV and due to scarce ROW, the existing route of the 220 kV Papankalan I- Bamnauli D/c to be converted to Multi Circuit tower.
2. 7 nos. of 400 kV bays (2 incomer, 4 ICT, 1 B/C) with provision for future expansion
3. 23 nos 220 kV bays (220 kV split bus with 12 bays on each side = 2 incomer, 6 feeder bay, 1 B/C, 1 B/S (only one), 2 ICT)

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- 6.3. Subsequently, the matter was discussed during meeting held on 11/04/2017 between POWERGRID and DTL and it was decided in-principle that 220 kV (GIS) for Tuglakabad & Dwarka shall be owned by DTL (except for 4 nos. ICT bays). The same is also discussed and agreed in 42nd NRPC meeting held on 27-28th June, 2019. Accordingly, the revised scope of work under ISTS is given below:

Revised Scope of Wok under ISTS – Tuglakabad S/s

1. Creation of 4x500MVA, 400/220 kV GIS substation at Tughlakabad
2. LILO of both circuits of Bamnauli – Samaypur 400kV D/c line at Tughlakabad with Twin HTLS conductor.

400 kV bays

- Line bays : 4 nos. (with provision for future expansion)
 500 MVA, 400/220 kV ICTs : 4 Nos.
 125MVAR Bus Reactor : 1 No.

220 kV bays

- Transformer bay : 4 Nos.

Revised Scope of Wok under ISTS – Dwarka S/s

1. Establishment of 4x500MVA, 400/220kV GIS at Dwarka-I(earlier named as Papankalan-I)
2. LILO of one circuit of Bamnauli - Jattikalan 400kV line at Dwarka-I

400 kV bays

- Line bays : 2 nos. (with provision for future expansion)
 500 MVA, 400/220 kV ICTs : 4 Nos.
 125MVAR Bus Reactor : 1 No.

3. 220 kV bays

- Transformer bay : 4 Nos.

Members may note.

7.1. LTA/Connectivity for hydro projects in Uttarakhand:

- 7.2. Connectivity/LTA have been granted to various Generation projects in Uttarakhand associated with UITP scheme (deemed ISTS) and the transmission system under implementation by PTCUL were discussed during 2nd NRSCT meeting held on 13/11/2018 & 17th meeting of Connectivity/LTA meeting of Northern Region held on 26/11/2018. As per discussion held during these meetings, Connectivity/LTA intimations to Generators have been issued/revised, details of which is given below:

TABLE 1

S. No.	Applicant	Application Date (Connectivity /LTA)	Connectivity/LTA grant Date	Revised Connectivity /LTA Grant Date(Subsequent to 17th LTA meeting)

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i.	Lanco Mandakini Hydro Energy Pvt. Ltd. (Phata Byung HEP)	Aug'15/ May'08	Connectivity: Oct'17. LTA : July'09, Later revised in Oct'17	Connectivity: 20/12/2018 LTA : 20/12/2018
ii.	L&T Uttaranchal Hydropower Ltd. (Singoli Bhatwari HEP)	May'15/ April'17	Connectivity: Apr'16, revised in Oct'17. LTA put on hold due to non- concurrence from PTCUL	Connectivity: 20/12/2018 & 02/01/2019 LTA : 20/12/2018
iii.	NTPC Ltd. (Tapovan Vishnugad HEP)	Oct'15/ Jan'07	Connectivity: Aug'16 LTA : July'09, later revised in Oct'17	Connectivity: 20/12/2018 LTA : 20/12/2018
iv.	THDC Ltd. (Vishnugad Pipalkoti HEP)	July'14/ Not applied	Connectivity: Aug'16 LTA Application : Not Received	Connectivity: 20/12/2018 LTA Application : Not Received
v.	SJVN Ltd. (Naitwar Mori HEP)	Apr'16 / Nov'17	Connectivity: Oct.'17 LTA proposal in present agenda.	Connectivity: 20/12/2018 & 17/01/2019 LTA : 20/12/2018 & 04/01/2019
vi.	SJVN Ltd. (Devsari HEP)	Apr'16	Connectivity : Oct'17 LTA Application: Not Received.	Connectivity : 26/12/2018 LTA Application: Not Received

7.3. As per the meeting, Connectivity/LTA intimations have been required. However, the Tripartite TA & Transmission LTA Agreements are yet to be signed by PTCUL/applicant/beneficiary.

7.4. As per the intimations issued Tripartite Transmission Agreement in respect of Connectivity & Tripartite LTA Agreement in respect of LTA need to be signed, however these agreements are yet to be signed by Generators/PTCUL/beneficiary. Subsequently, PTCUL has filed petition No. 106/MP/2019 before CERC.

Members may deliberate.

8.1. Down Stream network by State utilities from ISTS Station:

Augmentation of transformation capacity in various existing substations as well as addition of new substations along with line bays for downstream network are under implementation at various locations in Northern Region. For utilization of these transformation capacities, implementation of downstream 220kV system needs to be commissioned:

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S. No.	Substation	Downstream network bays	Commissioning status of S/s /Transformer	Planned 220kV system and Implementation Status
1	400/220kV, 3x315 MVA Samba	2 nos. bays utilized under ISTS. Balance 4 nos to be utilized	Commissioned	<ul style="list-style-type: none"> LILO of 220 kV Bishnha–Hiranagar D/c line. Target completion -Nov, 2019. <ul style="list-style-type: none"> 220kV D/c Samba (PG) – Samba (JKPDD) approved in 1st NRSCT. PDD, J&K to update.
2	400/220kV, 2x315 MVA New Wanpoh	6 Nos. of 220 kV bays to be utilized	Commissioned	<ul style="list-style-type: none"> 220 kV New Wanpoh -Mirbazar D/c line. Target completion – March, 2019. <ul style="list-style-type: none"> 220 kV Alusteng - New Wanpoh Line. Target completion - March, 2019. PDD, J&K to update.
3	400/220kV, 2x315 MVA Parbati Pooling Station (Banala)	2 Nos. of 220 kV bays to be utilized.	Commissioned	<ul style="list-style-type: none"> 220 kV Charor- Banala D/c line (18 km). Target completion –Dec'18. HPSEBL to update.
4	400/220kV, 2x500 MVA Kurukshetra (GIS)	8 nos. of 220 kV bays to be utilized	Commissioned	<ul style="list-style-type: none"> LILO of one circuit of Kaul-Pehowa 220 kV D/c line at Bhadson (Kurukshetra). LILO of one circuit of Kaul-Bastara 220 kV D/c line Bhadson(Kurukshetra). Target completion – 31.12.2018. <ul style="list-style-type: none"> 220kV D/c Bhadson (Kurukshetra) – Salempur with HTLS conductor equivalent to twin moose. Target completion - 31.03.2020. HVPNL to update.
5	400/220kV, 2x500 MVA Bagpat GIS	5 nos. of 220 kV Downstream lines to Baraut, Shamli, Muradnagar and Bagpat commissioned. Balance 3 Nos. of	Commissioned	<ul style="list-style-type: none"> Bagpat(PG) - Modipuram-II 220kV D/c line. Target completion - Jan'20. <ul style="list-style-type: none"> LILO of 220kV S/c Muradnagar II –Baghat (PG) at Baghat SS.

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S. No.	Substation	Downstream network bays	Commissioning status of S/s /Transformer	Planned 220kV system and Implementation Status
		220 kV bays to be utilized.		Target completion- Mar'19 UPPTCL to update.
6	400/220 kV, 2x315 MVA Saharanpur	2 nos. 220 kV downstream lines commissioned. (Saharanpur (UP) and Nanauta) Balance 4 Nos. of 220 kV bays to be utilized	Commissioned	<ul style="list-style-type: none"> LILO of Khara-Shamli 220 kV S/C line at SRN(PG). 220 kV SRN(PG)-Sarasawa D/C Line. LILO of SRN-Nanauta 220 kV S/C line at SRN(PG). UPPTCL to update.
7	400/220kV, 2x315 MVA Dehradun	Out of 6 bays, only two bays used. Balance 4 bays to be utilised.	Commissioned	<ul style="list-style-type: none"> 220 kV Dehradun-Jhajra line. Target completion: Nov, 2021 PTCUL to update.
8	400/220 kV, 2x315 MVA Sohawal	4 Nos 220 kV bays utilized. 2 Nos 220 kV bays to be utilized.	Commissioned	<ul style="list-style-type: none"> 220 kV D/C Sohawal (PG) – New Tanda line. Target completion- Dec, 2018. UPPTCL to update.
9	Shahjahanpur, 2x315 MVA 400/220 kV	Partially utilized. Balance 5 Nos. of 220 kV bays to be utilized.	Commissioned	<ul style="list-style-type: none"> 220 kV D/C Shajahnapur (PG) - Azizpur D/C line. Target completion - Sept, 2019. <ul style="list-style-type: none"> 220 kV D/C Shahajahanpur (PG) - GolaLakhimpur line. Target completion - Sep, 2019. UPPTCL to update.
10	02 nos. bays at Moga	Partially utilized. Balance 2 nos. of 220kV bays to be utilized.	Commissioned	<ul style="list-style-type: none"> Moga–Mehalkalan 220 kV D/c line. Target completion - Dec'18. PSTCL to update.
11	Hamirpur 400/220 kV 2x 315 MVA Sub-station (Augmentation by 3x105 MVA ICT)	04 nos. 220 kV downstream lines commissioned under ISTS. Balance two bays to be utilised by HPSEBL	Sep'18	<ul style="list-style-type: none"> 220 kV D/C Hamirpur-Dehan line. Target completion - Apr, 2020. HPSEBL to update.
12	Kaithal 400/220 kV 1x 315 MVA Sub-station	July 2017 (Shifting of transformer from Ballabgarh)	Commissioned	<ul style="list-style-type: none"> 220 kV Kaithal(PG)-Neemwala D/c line. Target completion - 31.01.2020.

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S. No.	Substation	Downstream network bays	Commissioning status of S/s /Transformer	Planned 220kV system and Implementation Status
				HVPNL to update.
14	Bhiwani 400/220kV S/s	6 nos. of 220kV bays	Commissioned	<ul style="list-style-type: none"> •220kV Bhiwani (PG) - Isherwal (HVPNL) D/c line. Target completion - 31.06.2020. HVPNL to update.
15	Jind 400/220kV S/s	6 nos. of 220kV bays	Commissioned	<ul style="list-style-type: none"> •LILO of both circuits of 220kV D/c Narwana – Mund line at Jind (PG). Target completion - 31.06.2020. HVPNL to update.
16	400/220kV Tughlakabad GIS (6 no of bays utilized out of 8 no of 220kV bays)	4x 500	Commissioned	<ul style="list-style-type: none"> • RK Puram – Tughlakabad (UG Cable) 220kv D/c line. Target completion – 2020-21. •DTL to update.
17	400/220kV Kala Amb GIS (TBCB) (6 nos. of 220kV bays)	7x105	Commissioned (Jul'17)	HPSEBL has planned one no. of 220kV D/c line from Kala Amb 400/220kV S/s to 220/132kV Kala Amb S/s. Details for remaining 4 nos. of line bays may be provided. • HPSEBL to update.

Members may update and expedite the downstream system.

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

Sl. No.	Name of Substation	MVA Capacity	Expected Schedule	Downstream connectivity furnished by States in 40 th SCSPNR
1	400/220kV Dwarka-I GIS (8 nos. of 220kV bays)	4x 500	Sep'19	DTL to update.
2	220/66kV Chandigarh GIS (8 nos. of 66kV bays)	2x 160	Feb'19	Chandigarh to update.
3	400/220kV Jauljivi GIS (6 nos. of 220kV bays)	2x315	Dec'2019	<ul style="list-style-type: none"> • 220kV Almora-Jauljibi line. • 220kV Brammah-Jauljibi line PTCUL to update.

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Sl. No.	Name of Substation	MVA Capacity	Expected Schedule	Downstream connectivity furnished by States in 40 th SCSPNR
4	400/220kV Sohna Road Sub-station (TBCB) (8 nos. of 220kV bays)	2x500	May'19	<ul style="list-style-type: none"> • LILO of both circuits of 220kV D/c Sector-69 - RojKaMeo line at 400kV Sohna Road. • LILO of both circuits of 220kV D/c Badshahpur-Sec77 line at 400kV Sohna Road. <p>HVPNL to update.</p>
5	400/220kV Prithla Sub-station (TBCB) (8 nos. of 220kV bays)	2x500	May'19	<ul style="list-style-type: none"> • LILO of existing 220kV Palwal–RangalaRajpur D/c line at Prithla. <p>Target completion - March 2020.</p> <ul style="list-style-type: none"> • 220 kV D/c Prithla (400) –Sector-78, Faridabad S/s. <p>Target completion - July 2020.</p> <p>HVPNL to update.</p>
6	400/220kV Kadarapur Sub-station (TBCB) (8 nos. of 220kV bays)	2x500	May'19	<p>M/s Sterlite has been asked to change the orientation of LILO in order to ensure the proper emanation of 220 kV line.</p> <p>HVPNL to update.</p>

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C.6.1. Connectivity for Thermal/Hydro Projects, Stage-I/Stage-II for RE Projects and LTA

The details of Connectivity, Stage-I Connectivity, Stage-II Connectivity & LTA granted/agreed for grant to various IPPs from 16th to 22nd LTA/Connectivity meeting of NR during November, 2018 to April, 2019.

I. Connectivity Applications from Thermal/Hydro Generators

The details of Connectivity granted to various IPPs are as below:

TABLE 2

Sl. No.	Application No. & Date (Online/Physical)	Applicant	Location	Connectivity Sought (MW)	Connectivity Agreed/ Granted From	Nature of Applicant	Transmission system for Connectivity
1.	1200001689 (31/08/2018)/ (14/09/2018)	Chenab Valley Power Projects [P] Ltd. (PakalDul HEP Project)	Kishtwar, J&K	1000	01/02/2024	Hydro	<ul style="list-style-type: none"> i) 400 kV D/c (Triple HTLS Conductor) line from PakalDul HEP – Kishtwar GIS Pooling station along with associated bays at both ends – under scope of generation developer ii) Establishment of 400 kV GIS Pooling station at Kishtwar by LILO one circuit of Kishenpur – Dulhasti 400kV D/c (Quad) line (Single Circuit Strung) – under ISTS iii) GIS switchyard equipment and XLPE cables and other associated equipment provided may be designed for carrying 4000 Amps current - under scope of generation developer

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Sl. No.	Application No. & Date (Online/Physical)	Applicant	Location	Connectivity Sought (MW)	Connectivity Agreed/ Granted From	Nature of Applicant	Transmission system for Connectivity
							iv) 420 kV, 125 MVAR Bus Reactor at PakalDul HEP – under scope of generation developer v) 420 kV, 125 MVAR Bus Reactor at Kishtwar (GIS) Pooling Station– under ISTS vi) One and half breaker switching scheme for 400 kV Generation switchyard – under scope of generation developer.
2.	120000525 (08/11/2016)/ (18/11/2016)	SJVN Limited (Luhri HEP St-I)	Shimla, Kullu, Himachal Pradesh	210	31/05/2024	Hydro	Under the scope of Developer Luhri Stage-I – 400/220kV Nange GIS Pooling Station 220kV D/c line along with associated bays at both ends ^s
3.	1200001205 (10/08/2018)/ (23/08/2018)	SJVN Limited (Luhri HEP St-II)	Shimla, Kullu, Himachal Pradesh	172	31/03/2026	Hydro	Under the scope of Developer Luhri Stage-II – 400/220kV Nange GIS Pooling Station 220kV D/c line along with associated bays at both ends ^s
4.	1200001720 (12/10/2018)/ (22/10/2018)	SJVN Limited (Sunni Dam HEP)	Shimla &Mandi, Himachal Pradesh	382	31/03/2025	Hydro	Under the scope of Developer Luhri Stage-III – 400/220kV Nange GIS Pooling Station 220kV D/c (High Capacity) line along with associated bays at both ends ^s
5.	1200001879 (Stage-I)	NTPC Limited	NTPC Auraiya	20	22/10/2019	Solar	It was agreed to grant Connectivity to NTPC considering it as a renewable generating

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Sl. No.	Application No. & Date (Online/Physical)	Applicant	Location	Connectivity Sought (MW)	Connectivity Agreed/ Granted From	Nature of Applicant	Transmission system for Connectivity
	&1200001884 (Stage-II)		ISGS				station to be developed by a generating company intending to get connected to the existing connection point with ISTS (NTPC Auraiya generation plant switchyard) through the electrical system of principal generating station.

Note:

^sIn addition to dedicated transmission system, following common transmission system is also required for evacuation of power from Luhri HEP St-I, St-II and Sunni Dam HEP of SJVNL

- Establishment of 1x500 MVA, 400/220kV Nange GIS Pooling Station (Tentatively Identified near Luhri Stage-II HEP)
- Nange GIS Pooling Station - Koldam 400kV D/c line along with associated bays at both ends
- 125 MVAR Bus Reactor at Nange GIS Pooling Station.

II. Stage-I Connectivity Applications

The details of Stage-I Connectivity granted to various IPPs is given below:

TABLE 3

Sl. No.	Application No.	Applicant	Location	Date of Application	Connectivity Sought (MW)	Nature of Applicant	Proposed location for Connectivity	Dedicated Tr. System
	1200001920	Mahoba Solar (UP)	Jaisalmer,	25-Feb-19	500	Generator	Fatehgarh-II PS (New)	Mahoba Solar (UP) Pvt. Ltd. Generation Switchyard – Fatehgarh-II PS (New)

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Sl. No.	Application No.	Applicant	Location	Date of Application	Connectivity Sought (MW)	Nature of Applicant	Proposed location for Connectivity	Dedicated Tr. System
		Pvt. Ltd.	Rajasthan			r (Hybrid)		220 kV D/C line
	1200001926	Acme Solar Holdings Limited	Jodhpur, Rajasthan	28-Feb-19	300	Generator (Solar)	Bhadla-II PS (New)	ACME Bhadla I Solar Power Plant – Bhadla –II (New) PS 220 kV D/C line
	1200001947	ReNew Solar Energy (Jharkhand Four) Private Limited	Jaisalmer, Rajasthan	2-Mar-19	300	Generator (Solar)	Fatehgarh-II PS (New)	<ul style="list-style-type: none"> • Construction of 220kV S/c lines from Jaisalmer I Project&Jaisalmer II Project upto common point. • Common point of Jaisalmer I Project&Jaisalmer II Project - Fatehgarh-II 220kV D/c line
	1200001971	ReNew Solar Energy (Jharkhand Four) Private Limited	Jaisalmer, Rajasthan	15-Mar-19	300	Generator (Solar)	Fatehgarh-II PS (New)	
	1200001951	SBSR Power Cleantech Eleven Private Limited	Bikaner, Rajasthan	8-Mar-19	300	Generator (Solar)	Bikaner	SBSR Eleven Solar Power Plant – Bikaner 220 kV S/C line
	1200001955	Acme Solar Holdings Limited	Jaisalmer, Rajasthan	7-Mar-19	300 (sought at 400kV)	Generator (Solar)	Fatehgarh-II PS (New)	Acme Fatehgarh VI Solar Power Plant – Fatehgarh-II PS (new) 220kV S/C line
	1200002008	Eden	Jaisalmer	28-Mar-19	300	Generator	Fatehgarh-II PS	EDEN Cite ISTS Raj Power Plant –

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Sl. No.	Application No.	Applicant	Location	Date of Application	Connectivity Sought (MW)	Nature of Applicant	Proposed location for Connectivity	Dedicated Tr. System
		Renewable Cite Private Limited	r, Rajasthan			r (Solar)	(New)	Fatehgarh-II PS (new) 220kV S/C line
	1200002002	Azure India Power Pvt. Ltd.	Bikaner, Rajasthan	28-Mar-19	500	Generator (Solar)	Bikaner	Azure Bikaner 2 Power Plant – Bikaner 220 kV D/C line

TABLE 4

Sl. No.	Application No.	Applicant	Location	Date of Application	Connectivity Sought (MW)	Nature of Applicant	Proposed primary location for Connectivity	Dedicated Tr. System	Proposed Alternative location for Connectivity / Tr. System under ISTS	Dedicated Tr. System for alternative connectivity
	1200001700	Acme Solar Holdings Limited	Jaisalmer, Rajasthan	12.09.2018	300	Generator (Solar)	Fatehgarh (400kV Pooling Station along with Fatehgarh-Bhadla 765kV D/c line to be operated at 400kV : under implementation by Transmission Licensee)	<ul style="list-style-type: none"> Pooling of power from ACME – V (1200001688) & VI (1200001700) (Fatehgarh) Solar Power Plants at Common Pooling Station of ACME–V & VI (Fatehgarh) Solar Power Plants Common pooling Station of ACME -V (Fatehgarh) & ACME – VI (Fatehgarh) Solar Power Plants - Fatehgarh 	Fatehgarh-II (New) <ul style="list-style-type: none"> Establishment of 400kV Pooling station at Fatehgarh-II (New) Fatehgarh – Fatehgarh-II (New) 400kV D/c (Quad) 	<ul style="list-style-type: none"> Pooling of power from ACME– V (1200001688) & VI (1200001700) (Fatehgarh) Solar Power Plants at Common Pooling Station of ACME–V & VI (Fatehgarh) Solar Power Plants. Common pooling Station of ACME -V & ACME -VI (Fatehgarh) Solar Power Plants -

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III. Stage-II Connectivity Applications

The details of Stage-II Connectivity granted to various IPPs is given below :

TABLE 5

Sl. No.	Application No.	Applicant	Location	Date of Application	Quantum of Stage-I Sought/Granted (MW)	Stage-II Connectivity Sought (MW)/date	Quantum won in SECI/State bids (MW)	Proposed location for Grant of Stage-II Connectivity	Dedicated Tr. System
1.	1200001797	Adani Renewable Energy Park Rajasthan Ltd (SPPD)	Jaisalmer, Rajasthan	30/11/18	500 (Stage-I : 1200001123) Granted Stage-I connectivity in July'18 at 400kV Fatehgarh PS and alternate location at 765/400/220 kV Bhadla PS	500/31.12.2020	Land & Auditor Certificate basis	Fatehgarh-II PS (New)*	<ul style="list-style-type: none"> Adani Renewable 500 MW Solar Project – Fatehgarh-II 400kV S/c line (with minimum capacity of 900 MW at nominal Voltage) Bay at Fatehgarh-II shall be under the scope of ISTS (as per AREPRL email dated 05/01/2019). <p>In principally agreed.</p>
2.	1200001989	ReNew Solar Energy (Jharkhand Four) Private	Jaisalmer, Rajasthan	19-Mar-19	300 (1200001971)	300 (31/03/21)	300 MSEDCL	Fatehgarh-II PS (New)*	<ul style="list-style-type: none"> Construction 220kV S/c lines from Jaisalmer I Project&Jaisalmer II Project

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Sl. No.	Application No.	Applicant	Location	Date of Application	Quantum of Stage-I Sought/Granted (MW)	Stage-II Connectivity Sought (MW)/date	Quantum won in SECI/State bids (MW)	Proposed location for Grant of Stage-II Connectivity	Dedicated Tr. System
		Limited							upto common point.
3.	1200001967	Renew Solar Energy (Jharkhand Four) Private Limited	Jaisalmer, Rajasthan	11-Mar-19	300 (1200001947)	300 (20/11/2020)	300 SECI-III(ISTS)	Fatehgarh-II PS (New)*	<ul style="list-style-type: none"> Common point of Jaisalmer I Project&Jaisalmer II Project - Fatehgarh-II 220kV D/c line
4.	1200001999	ACME Solar Holdings Limited	Jodhpur, Rajasthan	20-Mar-19	300 (1200001926)	300 (15/01/21) (Sought at 400kV)	300 MSEDCL	Bhadla-II PS (New)**	ACME Bhadla I Solar Power Plant – Bhadla-II(New) PS 220kV S/c line
5.	1200002013	Azure Power India Private Limited	Bikaner, Rajasthan	29-Mar-19	500 (120002002)	300 (05/12/2020)	300 SECI-III(ISTS)	Bikaner ^s	Azure Bikaner 2 Power Plant – Bikaner 220 kV S/c line
6.	1200001941	Mahoba Solar (Up) Private Limited	Jaisalmer, Rajasthan	7-Mar-19	500 (1200001920)	390 (30/11/2020)	390 SECI-Hybrid (4no. LOA-100+100 + 100+90)	Fatehgarh-II PS (New)*	Mahoba Solar(UP) Private Limited Power Project – Fatehgarh-II(New) PS 220 kV D/c line

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Sl. No.	Application No.	Applicant	Location	Date of Application	Quantum of Stage-I Sought/Granted (MW)	Stage-II Connectivity Sought (MW)/date	Quantum won in SECI/State bids (MW)	Proposed location for Grant of Stage-II Connectivity	Dedicated Tr. System
7.	1200001980	SBSR Power Cleantech Eleven Private Limited	Bikaner, Rajasthan	18-Mar-19	300 (1200001951)	300 (31/10/2020)	300 SECI-III(ISTS)	Bikaner ^s	SBSR Eleven Solar Power Project – Bikaner 220 kV S/c line
8.	1200002009	Eden Renewable Cite Private Limited	Jaisalmer, Rajasthan	28-Mar-19	300 (1200002008)	300 (30/10/2020)	300 SECI-III(ISTS)	Fatehgarh-II PS (New)*	EDEN Cite ISTS Raj Power Plant – Fatehgarh-II(New) PS 220kV S/C line

1. @ For effecting the Connectivity at Fatehgarh-II(new) S/s, following ISTS elements may be required:

- i. Establishment of 1x1500MVA (765/400kV), Fatehgarh-II Pooling station at suitable location near Fatehgarh 400kV S/s in JaisalmerDistt.
- ii. LILO of Fatehgarh (TBCB) – Bhadla (PG)^{@@} D/c (765kV line op.at 400kV) line at Fatehgarh-II so as to establish Fatehgarh (TBCB) – Fatehgarh-II 400kV D/c line (765kV line op. at 400 kV) and Fatehgarh-II - Bhadla 400kV D/c line (765kV line op. at 765 kV) Fatehgarh PS – Bhadla(PG) 765 kV D/c line (to be operated at 400 kV) along with Fatehgarh S/s is being implemented through TBCB by Fatehgarh Bhadla Transmission Limited(FBTL)

2. * For effecting the Connectivity at Fatehgarh-II PS (New) S/s, following ISTS elements may be required:

- i. Establishment of 1x1500MVA, 765/400kV, Fatehgarh-II Pooling station at suitable location near Fatehgarh.
- ii. Establishment of 1x500 MVA, 400/220kV ICT at Fatehgarh-II Pooling station

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- iii. LILO of Fatehgarh (TBCB) – Bhadla (PG) 765kV D/c line (to be operated at 400kV) at Fatehgarh-II so as to establish Fatehgarh (TBCB) – Fatehgarh-II 400kV D/c line (765kV line operated at 400 kV) and Fatehgarh-II - Bhadla 765kV D/c line or Fatehgarh-II – Bhadla-II 765 kV D/c line

Fatehgarh PS(TBCB) – Bhadla(PG) 765 kV D/c line (to be operated at 400 kV) along with Fatehgarh S/s is being implemented through TBCB by Fatehgarh Bhadla Transmission Limited (FBTL)

3. ** For effecting the Connectivity at Bhadla-II(New) S/s, one of the following ISTS elements may be required:
- Establishment of 1x1500MVA, 765/400kV, Bhadla-II Pooling station
 - Establishment of 1x500 MVA, 400/220kV ICT at Bhadla-II Pooling station
 - Bhadla PS – Bhadla-II(New) 400kV D/c or
 - LILO of Ajmer – Bikaner 765 kV D/c at Bhadla-II S/s(New) or
 - Bhadla-II – Fatehgarh-II 765kV D/c line & LILO of Fatehgarh (TBCB) – Bhadla (PG) 765kV D/c line (to be operated at 400kV) at Fatehgarh-II so as to establish Fatehgarh (TBCB) – Fatehgarh-II 400kV D/c line (765kV line operated at 400 kV) and Fatehgarh-II - Bhadla 765kV D/c line
4. § For effecting the Connectivity at Bikaner S/s, 1x500MVA, 400/220kV ICT at Bikaner S/s may be required

IV. LTA Applications of RE Generators:

The details of Stage-II Connectivity granted to various IPPs is given below:

TABLE 6

Sl. No	Application No./Date (Online)/ (Physical)	Applicant	Connectivity/ Injection Point	Drawl Point	LTA (MW)/ Start & End Date (Sought)	Transmission System
	1200001737 (23/10/18)/ (26/10/18)	ACME Solar Holdings Limited	Fatehgarh, Rajasthan, NR	Target Basis - Haryana in NR	300 (Start : 26/10/20 End : 25/10/45)	As enclosed at Appendix-I

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Sl. No	Application No./Date (Online)/ (Physical)	Applicant	Connectivity/ Injection Point	Drawl Point	LTA (MW)/ Start & End Date (Sought)	Transmission System
	1200001742 (23/10/18)/ (26/10/18)/	ACME Solar Holdings Limited	Fatehgarh, Rajasthan, NR	Target Basis - Haryana in NR (100MW)	300 (Start : 26/10/20 End : 25/10/45)	As enclosed at Appendix-I
	1200001664 (27/08/18)/ (29/08/18)	Acme Solar Holdings Limited	Fatehgarh	Delhi/NR (Target)	300 (Start : 19/10/20 End : 18/10/45)	As enclosed at Appendix-I
	1200001669 (29/08/18)/ (29/08/18)	Acme Solar Holdings Limited	Fatehgarh	Delhi/NR (Target)	300 (Start : 19/10/20 End : 18/10/45)	As enclosed at Appendix-I
	1200001645 (23/08/18)/ (24/08/18)	Mahindra Susten Private Limited	Bhadla	Chhattisgarh, WR (Target)	250 (Start : 01/09/20 End : 01/09/45)	As enclosed at Appendix-II
	1200001651 (22/08/18)/ (30/08/18)/	Azure Power India Private Limited	Bhadla	WR (Target)	50 (Start : 15/10/20 End : 15/10/45)	As enclosed at Appendix-II
	1200001653 (22/08/18) (23/08/18)	Acme Solar Holdings Limited	Bhadla	Maharashtra, WR (Target)	250 (Start : 16/09/19 End : 15/09/44)	As enclosed at Appendix-II
	1200001663 (24/08/18)/ (24/08/18)	Hero Solar Energy Private Limited	Bhadla	Jharkhand/ER (Target)	250 (Start : 02/09/20 End : 30/11/45)	As enclosed at Appendix-II
	1200001640 (21/08/18)/ (23/08/18)	Renew Solar Power Private Limited	Bikaner	WR (Target)	250 (Start : 26/10/19 End : 25/10/44)	As enclosed at Appendix-III
10.	1200001650	Azure Power India	Bikaner	ER	300	As enclosed at

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Sl. No	Application No./Date (Online)/ (Physical)	Applicant	Connectivity/ Injection Point	Drawl Point	LTA (MW)/ Start & End Date (Sought)	Transmission System
	(22/08/18)/ (30/08/18)	Private Limited		(Target)	(Start : 15/10/20 End : 15/10/45)	Appendix-III
11.	1200001655 (22/08/18)/ (30/08/18)	Azure Power India Private Limited	Bikaner	100 (NR) 200 (ER) Target	300 (Start : 15/10/20 End : 15/10/45)	As enclosed at Appendix-III
12.	1200001792 (29/11/18)/ (03/12/18 & 05/12/2018)	Mahoba Solar (UP) Pvt. Ltd.	Bhadla, Rajasthan, NR	WR (Target) Entity- MSEDCL	200 MW (Start : 27/08/19 End : 27/08/44)	As enclosed at Appendix-II
13.	1200001991 (20/03/2019)/ (20/03/2019)	ReNew Solar Energy (Jharkhand Four) Pvt. Ltd.	Fatehgarh-II PS (New) Rajasthan, NR	WR (Target)	300 (Start : 30/06/2021 End : 30/06/2046)	As enclosed at Appendix-IV
14.	1200002014 (29/03/2019)/ (01/04/2019)/	ReNew Solar Energy (Jharkhand Four) Pvt. Ltd	Fatehgarh-II PS (New) Rajasthan, NR	ER (Target)	300 (Start : 03/12/2020 End : 03/12/2045)	As enclosed at Appendix-IV

V. LTA applications of Conventional Generators

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TABLE 7

Sl. No	Application No./Date (Online)/ (Physical)	Applicant	Connectivity / Injection Point	Drawl Point	LTA (MW)/ Start & End Date (Grant)	Transmission System
1.	1200000954 (01/01/18/ 08/01/18)	NTPC Ltd	Tanda, Uttar Pradesh, NR	UPCL(Uttarakhand) -35.94 MW HPPC(Haryana)- 41.76 MW RUNL(Rajasthan) – 83.35 MW PDD(J&K) – 65.75 MW EDC(Chandigarh)- 4.91 MW Unallocated Quota- 125.07 MW	356.78 Unit-I (178.39 MW) (Start : 01/07/19 End : 30/06/44) Unit-II(178.39 MW) (Start : 01/01/20 End : 30/06/44)	(i) <u>1st Unit (178.39 MW LTA with proportionate quantum of NR beneficiaries w.e.f. 01/07/2019 or availability of following UPPTCL Transmission system, whichever is later) :</u> i) LILO of Azamgarh–Sultanpur 400 kV S/c line at Tanda TPS by UPPTCL ii) 400/220 kV, 2x315 MVA ICTs at Tanda TPS by NTPC iii) Tanda (NTPC)-Tanda (New) (UPPTCL) 220 kV D/c line including 220 kV bays Tanda (NTPC) by UPPTCL (ii) <u>2nd Unit [balance 178.39 MW (cumulative 356.78 MW LTA) w.e.f. 01/01/2020 or availability of following</u>

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Sl. No	Application No./Date (Online)/ (Physical)	Applicant	Connectivity / Injection Point	Drawl Point	LTA (MW)/ Start & End Date (Grant)	Transmission System
						<p><u>UPPTCL transmission system, whichever is later]:</u></p> <p>As per UPPTCL, implementation of Tanda- Gonda- Shahjahanpur 400 kV D/C Quad line may take time and there may be mismatch w.r.t. commissioning of 2nd Unit of NTPC project. Accordingly, following alternate transmission system till availability of Tanda- Gonda- Shahjahanpur 400 kV D/C Quad line was agreed:</p> <p>i) Establishment of 400/220/132 kV, (2x500 + 2x200) MVA GIS substation at Basti</p> <p>ii) Construction of Tanda TPS–Basti 400 kV D/c quad line</p> <p>iii) On completion Tanda-Gonda 400 kV D/c Quad line, one ckt. of Tanda (400) Basti 400 kV D/C line and one ckt of Tanda- Gonda would be connected bypassing Tanda TPS 400 kV switchyard (due to limited 400 kV</p>

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Sl. No	Application No./Date (Online)/ (Physical)	Applicant	Connectivity / Injection Point	Drawl Point	LTA (MW)/ Start & End Date (Grant)	Transmission System
						bays at Tanda TPS), resulting in following configuration: a) Tanda TPS–Gonda 400 kV S/c Quad line. b) Tanda TPS–Basti 400 kV S/C Quad line. c) Gonda–Basti 400 kV S/c Quad line.
2.	1200001785(19/12/2018) / 27/12/2018)	GreenkoBudhi l Hydro Power Pvt. Ltd.	Himachal Pradesh, NR	Uttarakhand (NR)- 61.6 MW Firm	61.6 MW (Start : 01/02/19 End : 31/03/26)	Existing Transmission System

Appendix-I

Transmission system for LTA applications at Fatehgarh S/S**A. Tr. System in Rajasthan for LTA applications at Fatehgarh (TBCB) - Proposed**

- 1) Establishment of 765/400kV, 3X1500MVA, pooling station at suitable location near Fatehgarh in JaisalmerDistt (Fatehgarh-II PS)
- 2) Establishment of 765/400kV, 2x1500MVA pooling station at suitable location near Phalodi/ Bhadla in Jodhpur (Bhadla-II PS)
- 3) Establishment of 765/400kV, 2x1500 MVA S/s at suitable location near Khetri
- 4) LILO of both circuits of Fatehgarh (TBCB) – Bhadla (PG) 765 kV D/c line (operating at 400kV) at Fatehgarh-II PS so as establish Fatehgarh (TBCB)-Fatehgarh-II 765kV D/c line (to be op. at 400kV) and Fatehgarh-II- Bhadla (PG) 765kV D/c line
- 5) Charging of Fatehgarh-IIPS–Bhadla section at 765kV level
- 6) LILO of both ckts of 765kV Ajmer – Bikaner D/c line at Bhadla-II PS
- 7) Fatehgarh-II PS – Bhadla -IIPS 765kV D/c line
- 8) Bhadla-II PS – Bhadla (PG) 400kV D/c Line (Twin HTLS)
- 9) Bikaner(PG) – Khetri S/s 765kV D/c line
- 10) Khetri – Jhatikara 765kV D/c line
- 11) Khetri – Sikar (PG) 400kV D/c line (twin AL59)
- 12) Augmentation with 765/400kV, 1x1500MVA transformer (3rd) at Moga S/s
- 13) Augmentation with 1x1000MVA,765/400kV transformer (3rd) at Bhiwani (PG)
- 14) Ajmer (PG)– Phagi 765kV D/c line
- 15) 1x125 MVA_r (420kV), 2x240 MVA_r (765kV) Bus Reactor each at Fatehgarh-II PS, Bhadla-II PS &Khetri Substation
- 16) 1x240 MVAR Switchable Line reactors for each circuit at Jhatikara end of Khetri – Jhatikara 765kV D/c line
- 17) 1x240 MVA_r Switchable line reactor for each circuit at each end of Bikaner – Khetri 765kV D/c line
- 18) 1x330 MVA_r Switchable line reactor for each circuit at Bhadla-IIPS end for Ajmer-Bhadla-IIPS 765kV line (after LILO)
- 19) 1x240 MVA_r Switchable line reactor for each circuit at Bhadla-IIPS end for Bikaner-Bhadla-II PS 765kV line (after LILO)

Appendix-II**Transmission system for LTA applications at Bhadla S/S****B. Tr. System in Rajasthan for LTA application at Bhadla (PG) - Proposed**

- 1) Establishment of 765/400kV, 3x1500MVA pooling station at suitable location near Phalodi/ Bhadla in Jodhpur (Bhadla-2 PS)
- 2) Establishment of 765/400kV, 2x1500 MVA S/s at suitable location near Khetri
- 3) Augmentation of transformation capacity at Bhadla (PG) by 400/220kV, 2x500MVA (6th& 7th) transformers
- 4) LILO of both ckts of 765kV Ajmer – Bikaner D/c line at Bhadla-2 PS
- 5) Bhadla-2 PS – Bhadla (PG) 400kV D/c Line (Twin HTLS)
- 6) Bikaner(PG) – Khetri S/s 765kV D/c line
- 7) Khetri S/s – Jhatikara 765kV D/c line
- 8) Khetri – Sikar (PG) 400kV D/c line (twin HTLS)
- 9) Augmentation with 765/400kV, 1x1500MVA transformer (3rd) at Moga S/s
- 10) Augmentation with 765/400kV, 1x1000MVA transformer (3rd) at Bhiwani (PG)
- 11) Ajmer (PG)– Phagi 765kV D/c line
- 12) 1x125 MVA_r (420kV), 2x240 MVA_r(765kV) Bus Reactor each at Bhadla-2 PS &Khetri Substation
- 13) 1x330 MVA_r Switchable Line reactors for each circuit at each end of Ajmer – Jhatikara 765kV D/c line
- 14) 1x240 MVA_r Switchable line reactor for each circuit at each end of Bikaner – Khetri 765kV D/c line
- 15) 1x330 MVA_r Switchable line reactor for each circuit at Bhadla-2 PS end for Ajmer-Bhadla-2 PS 765kV line (after LILO)
- 16) 1x240 MVA_r Switchable line reactor for each circuit at Bhadla-2 PS end for Bikaner-Bhadla-2 PS 765kV line (after LILO)

In addition to the above, augmentation of transformation capacity at Bhadla (PG) by 400/220kV, 1x500MVA (5th) transformer agreed in 1st NRSCT held on 11/09/2018 shall also be a part of LTA system.

Annexure-III

Transmission system for LTA applications at Bikaner S/S**C. Tr. System in Rajasthan for LTA applications at Bikaner(PG)**

- 1) Establishment of 765/400kV, 2x1500 MVA S/s at suitable location near Khetri
- 2) Bikaner(PG) – Khetri S/s 765kV D/c line
- 3) Khetri S/s – Jhatikara 765kV D/c line
- 4) Khetri – Sikar (PG) 400kV D/c line (twin AL59)
- 5) Augmentation with 765/400kV, 1x1500MVA transformer (3rd) at Moga S/s
- 6) 1x125 MVar (420kV), 2x240 MVar (765kV) Bus Reactor at Khetri Substation
- 7) 1x240 MVar Switchable line reactor for each circuit at each end of Bikaner – Khetri 765kV D/c line
- 8) 1x240 MVAR Switchable Line reactors for each circuit at Jhatikara end of Khetri – Jhatikara 765kV D/c line

Annexure-IVTransmission system for LTA applications at Fatehgarh-II S/STransmission System for LTA

- 1) Establishment of 765/400kV, 2X1500MVA, pooling station at suitable location near Fatehgarh in JaisalmerDist(Fatehgarh-II PS)
- 2) Establishment of 400/220kV, 1X500MVA, ICT at Fatehgarh-II Pooling station
- 3) Establishment of 765/400kV, 2x1500MVA pooling station at suitable location near Phalodi/ Bhadla in Jodhpur (Bhadla-II PS)
- 4) Establishment of 765/400kV, 2x1500 MVA S/s at suitable location near Khetri
- 5) LILO of both circuits of Fatehgarh (TBCB) – Bhadla (PG) 765 kV D/c line (operating at 400kV) at Fatehgarh-II PS so as establish Fatehgarh (TBCB)-Fatehgarh-II 765kV D/c line (to be op. at 400kV) and Fatehgarh-II- Bhadla (PG) 765kV D/c line
- 6) Charging of Fatehgarh-II PS–Bhadla section at 765kV level
- 7) LILO of both ckts of 765kV Ajmer – Bikaner D/c line at Bhadla-II PS
- 8) Fatehgarh-II PS – Bhadla -II PS 765kV D/c line
- 9) Bhadla-II PS – Bhadla (PG) 400kV D/c Line (Twin HTLS)
- 10) Bikaner(PG) – Khetri S/s 765kV D/c line
- 11) Khetri – Jhatikara 765kV D/c line
- 12) Khetri – Sikar (PG) 400kV D/c line (twin AL59)
- 13) Augmentation with 765/400kV, 1x1500MVA transformer (3rd) at Moga S/s
- 14) Augmentation with 1x1000MVA,765/400kV transformer (3rd) at Bhiwani (PG)
- 15) Ajmer (PG)– Phagi 765kV D/c line
- 16) 1x125 MVAR (420kV), 2x240 MVar (765kV) Bus Reactor each at Fatehgarh-II PS, Bhadla-II PS &Khetri Substation
- 17) 1x240 MVAR Switchable Line reactors for each circuit at Jhatikara end of Khetri – Jhatikara 765kV D/c line
- 18) 1x240 MVAR Switchable line reactor for each circuit at each end of Bikaner – Khetri 765kV D/c line
- 19) 1x330 MVAR Switchable line reactor for each circuit at Bhadla-IIPS end for Ajmer-Bhadla-IIPS 765kV line (after LILO)
- 20) 1x240 MVAR Switchable line reactor for each circuit at Bhadla-IIPS end for Bikaner-Bhadla-II PS 765kV line (after LILO)