I/2803/2018(2)

सत्यमेव जयते

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

-As per list enclosed-

विषय: उत्तरी क्षेत्र की ट्रांसमिशन पर स्थायी समिति की दूसरी बैठक - अतिरिक्त एजेंडा-II

Sub: 2nd Meeting of Northern Region Standing Committee on Transmission- Additional Agenda-II

Sir/ Madam,

Additional Agenda-II (as received from RVPNL, CTU and UPPTCL) for 2nd Meeting of Northern Region Standing Committee on Transmission scheduled to be held on 13.11.2018 (Tuesday) at 11:30hrs at conference Room, NRPC Katwaria Sarai, New Delhi 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).

Yours faithfully,

रवीन्द्र गुप्ता

(Ravinder Gupta) 12/11/2018

Chief Engineer

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, 3rd 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)

Additional Agenda-II for 2nd Meeting of Northern Region Standing Committee on 13-11-18

A. AGENDA RECEIVED FROM RVPNL:

RVPNL vide their email dated 6.11.2018 has forwarded the following agenda item for inclusion in the 2nd meeting of NRSCT.

1.0 Agenda for proposal of 400kV/220kV GSS at Sangod (New GSS) or Anta (existing 765kV GSS) with 220kV GSS at Sangod and associated interconnections for removing evacuation constraint in Kalisind-Chhabra-Kawai Generation Complex.

1.1 The issue of evacuation constraints in Chhabra, Kalisindh & Kawai Generation Complex of approx. 4840 MW due to single 315 MVA, 400/220kV ICT each at Chhabra and Kalisindh has been continuously raised by NRLDC for the past 2 years in meetings at various levels viz. OCC, NRPC and Standing Committee.

TABLE - 1

S.No.	Generating Plant	Installed capacity in MW	
1.	Kalisindh	2x 600	1200
2.	Kawai	2x 660	1320
3.	Chhabra TPS	4x 250	1000
4.	Chhabra SCTPS	2x 660	1320
TOTAL			**4840**

1.2 A sub-committee of NRSCT was formed to resolve the above issue and its first meeting was held on 2.04.2018 wherein CEA advised to explore the possibility of creating a new 400kV GSS of RVPN in this corridor in place of additional ICT each at Chhabra and Kalisindh. It is further to submit that to mitigate load contingencies in this corridor, 220kV GSS at Sangod is essential.

1.3 Accordingly, various proposals viz. creating 400kV GSS at Dahara/ Sangod/ Anta or placing additional ICTs at Chhabra and augmenting capacity of ICTs at Kalisindh by 500MVA-315MVA were considered and two most suitable alternatives are being submitted along with Exhibits of Load Flow Studies for the consideration of Northern Standing Committee meeting on Transmission.

1.4 LOAD FLOW STUDY

Load flow studies have been carried out for the total system load of 14430 MW corresponding to 2021-22 for base case and proposed case with 400kV GSS at Anta/ Sangod & 220kV GSS at Sangod (Distt. Kota) the study results are enclosed as **Annexure-A1**. The load flow studies for 2Nos. N-1 contingency cases have also been carried out and results of load flow studies under normal conditions and N-1 contingency (2 cases) i.e. Con-1: when ICT at Kalisindh is out and Con.-2: when ICT at Chhabra is out for proposed cases 1 & 2 is placed at Exihibit-2A,2B & 2C and Exihibit-3A,3B & 3C respectively. The Exihibit-1 displays result of base case.

(i) Base Case :- With existing transmission system the power plots of load flow study for Base Case are placed at **Exhibit-1.**

(ii) Proposed Case-1 :- With 400/220kV system at existing 765kV GSS Anta & 220kV GSS at Sangod area Distt. Kota along with following interconnections.

- 2x500MVA, 400/220 kV Power Transformer at existing 765kV GSS Anta (Distt. Kota).
- 2x160MVA, 220/132kV Power Transformer at proposed 220kV GSS Sangod (Distt. Kota).
- 6 kM 220kV D/C Anta (765kV)-Baran (220kV) line.
- 30kM 220kV D/C Sangod (220kV)(Proposed)-Anta (765kV) line.
- 44kM 220kV S/C line extension of existing 220kV S/C Dahara (220kV)-Anta (NTPC) line upto Anta (765kV).

(Power plots of load flow study for Proposed Case-1 are placed at Exhibit-2A, 2B & 2C).

(iii) Proposed Case-2:- With 400/220kV GSS at Sangod area Distt. Kota along with following interconnections.

- 2x500MVA, 400/220 kV Power Transformer at proposed 400kV GSS Sangod (Distt. Kota).
- 20kM LILO of one circuit of 400kV D/C Kalisindh TPS (400kV)-Anta (765kV) line at 400kV GSS Sangod.
- 2x160MVA, 220/132kV Power Transformer at 400kV GSS Sangod (Distt. Kota).
- 30kM 220kV D/C line Sangod (400kV)-Baran (220kV) line.

(Power plots of load flow study for Proposed Case are placed at Exhibit- 3A, 3B & 3C).

From the results of load flow studies it may be noted that under normal conditions, total system losses in base case (existing transmission system) are 503.203 MW and in proposed case-1 (with 400/220 kV ICT's at Anta) are 493.818 MW and in proposed case-2 (with 400/220 kV ICT's at Sangod) are 496.154 MW, thus saving of 9.385 MW (355.158 LU's) and 7.049 (266.75 LU's) in proposed case -1 & 2 respectively is envisaged. Further under N-1 contingency i.e. when ICT is out either at Kalisind or Chhabra the loadings on all the transmission elements is within safe limits and on subsequent opening / closing of interconnections can be further managed.

In addition to above benefits the power flow on recently commissioned Ant-Kota 400 kV S/C line also reduces from 827 MW in base case to 616 MW in proposed case -1 and 643 MW in proposed case -2.

1.5 The above 2 proposals are submitted for deliberation of NRSCT and approval of any one proposal so that the evacuation constraint in Chhabra, Kalisindh & Kawai Generation Complex is under contingency is obviated.

1.6 RVPNL may present their proposal. Members may deliberate.

B. AGENDA RECEIVED FROM CTU:

CTU vide their email dated 8.11.2018 has forwarded the following agenda items for inclusion in the 2nd meeting of NRSCT:

2.0 Grant of LTA to M/s NTPC Ltd. for Tanda TPS Stage-II (2x660 MW) for transfer of 356.78 MW power to NR Beneficiaries

2.1 LTA was agreed for grant to NTPC for transfer of 356.78 MW power from Tanda Stage-II (2x660MW) TPS located in Uttar Pradesh to Northern region beneficiaries during 40th SCM of NR and 12th meeting of Connectivity/LTA for NR held on 22.06.2018. During these meetings, NTPC informed that their 1st unit of Tanda TPS Stage-II generation is expected to be commissioned by 31st March, 2019 and 2nd unit by 31st July, 2019. It was agreed to grant the LTA of 356.78 MW to NTPC with following unit wise transmission system of UPPTCL:

a) 1st Unit (178.39 MW LTA with proportionate quantum of NR beneficiaries w.e.f. 01.04.2019 or availability of following UPPTCL Transmission system, whichever is later) :

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

b) 2nd Unit [balance 178.39 MW (cumulative 356.78 MW LTA) w.e.f. 01.08.2019 or availability of following UPPTCL transmission system, whichever is later]:

During the 40th SCM of NR, it was informed by UPPTCL that implementation of Tanda- Gonda- Shajahanpur 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- Shajahanpur 400 kV D/C Quad line was agreed:

i) Establishment of 400/220/132 kV, 2x500 + 2x200 MVA GIS s/s at Basti
ii) Construction of Tanda TPS–Basti 400 kV D/c quad line
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 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.

2.2 NTPC vide letter dated 03.10.2018 has stated that as per work progress at Tanda Stage-II TPS, the expected COD dates of Unit-I & II are June'19 and Dec'19 respectively. NTPC has requested to grant LTA for 1st and 2nd units from 01.07.2019 and 01.01.2020 respectively with aforementioned transmission system.

2.3 The matter was taken up in 16th meeting of Connectivity/LTA for NR held on 24.10.2018. However, UPPTCL vide email dated 24.10.2018 requested for postponement of the meeting for detailed discussion. UPPTCL has also stated that that dates of grant of LTA for 1st and 2nd units may be considered as 01.03.2019 and 01.01.2020.

Members may deliberate.

3.0 **Various Connectivity/LTA Applications received by CTU**

3.1 Stage-I Connectivity Applications

The details of Stage-I Connectivity granted to various IPPs in 15th LTA/Connectivity meeting of NR held on 11/09/2018 are attached at **Annexure-B1.**

3.2 Stage-II Connectivity Applications

As per Clause 5.3.1 of the RE Connectivity Procedure, terminal bays at the ISTS sub-station shall be under the scope of transmission licensee owning the ISTS sub-station subject to compliance of relevant provision of tariff policy. Under Para 5.3.2, an option has been provided to wind power generators/developers who have emerged successful in the bidding conducted by Central/State Government designated agency before coming into force of the RE Connectivity Procedure (i.e. 15.05.2018) to implement the terminal bays on their own.

In the 15th Connectivity/LTA meeting for NR held on 11.09.2018, considering the time lines of implementation of bays under ISTS, it was suggested by the applicants that even Solar Generators/Solar Park Developers should also have the option of implementing the bay on their own.

Keeping in view the requirement of matching of terminal bays at ISTS substation for RE generators and based on the confirmation to implement the bays by the applicants at their own cost, Renewable generators have been granted Stage-II Connectivity with the implementation of respective bays in their scope at ISTS substations. The same has also been informed to Hon'ble CERC vide letter dated 08/08/2018 & 15/10/2018 for inclusion of option of implementation of terminal bays at ISTS Substation by RE generators in the Detailed Procedure.

The following Connectivity transmission system for grant of Stage-II Connectivity was agreed in the 15th Connectivity/LTA meeting of NR held on 11/09/2018 and the same has been granted.

TABLE 1

Sl. No.	Application No.	Applicant	Location	Date of Application	Quantum of Stage-I Sought/ Granted (MW)	Stage-II Connectivity Sought (MW)/date	Proposed location for Grant of Stage-II Connectivity	Dedicated Tr. System
Connectivity applications near Bhadla								
1.	1200001627	Mahindra Susten Private Limited	Jodhpur, Rajasthan	08/08/18	250 (Stage-I : 120000151 9)	250/ 01.06.2019	**765/400/220 kV Bhadla S/s** (Under Implementation)	Mahindra Susten 250 MW Solar Project– Bhadla 220kV S/c line
2.	1200001644	Azure Power India Private Limited	Jodhpur, Rajasthan	18/08/18	500 (Stage-I: 120000116 3)	50/ Revised from 01.09.2018 to 15.10.2020	**765/400/220 kV Bhadla S/s** (Under Implementation)	Azure Solar PV Plant Bhadla 2 - Bhadla 220kV S/c line (250 MW Stage-II is already granted with above line. Considering 50 MW, total Stage-II connectivity with above line shall become 300 MW)
3.	1200001654	Mahoba Solar (UP) Private Limited	Jodhpur, Rajasthan	22/08/18	300 (Stage-I : 120000137 0)	50 (Stage-II Enhancement) / 01.07.2020	**765/400/220 kV Bhadla S/s (Under Implementation)**	Mahoba Solar Power Plant Switch Yard – Bhadla 220kV S/c line (200 MW Stage-II is already granted with above line. Considering 50 MW, total Stage-II connectivity with above line shall become 250 MW)
Connectivity applications near Fatehgarh (being implemented by FBTL)								
4.	1200001643	ACME Solar Holdin	Jaisalmer, Rajasth	22/08/18	300 (Stage-I :	300 (Fatehgarh	**400 kV Fatehgarh***	• Pooling of

Sl. No.	Application No.	Applicant	Location	Date of Application	Quantum of Stage-I Sought/ Granted (MW)	Stage-II Connectivity Sought (MW)/date	Proposed location for Grant of Stage-II Connectivity	Dedicated Tr. System
		gs Limited	an		1200 00163 4)	III) / 26.10.2020	**(Under Implementation)**	power of ACME Fatehgarh III & IV Solar Power Plant at common pooling station of ACME Fatehgarh I & II Solar Power Plant • Common Pooling Point of ACME Fatehgarh I, II, III & IV Solar Power Plant - Fatehgarh 400 kV S/c line (already agreed with Fatehgarh I & II Solar Power Plant) suitable to carry at least 1200 MW at nominal voltage
5.	1200001642	ACME Solar Holdings Limited	Jaisalmer, Rajasthan	22/08/18	300 (Stage-I : 1200 00163 6)	300 (Fatehgarh IV)/ 26.10.2020	**400 kV Fatehgarh* (Under Implementation)**	

* For effecting the Connectivity at Fatehgarh S/s, following ISTS elements (being implemented by ISTS Licensee through TBCB) shall be required:

i. Fatehgarh Pooling Station - Bhadla (PG) 765kV D/c line (to be operated at 400kV level)
ii. Establishment of 400kV Fatehgarh Pooling Station
iii. 2 nos. 400kV line bays at Fatehgarh Pooling Station
iv. 2 nos. 400kV line bays at Bhadla (PG)
v. 1x 125 MVAR Bus reactors at 400kV Fatehgarh Pooling Station

3.3 LTA Applications:

The following LTA applications were agreed for grant in 15th Connectivity/LTA meeting of NR held on 11/09/2018:

TABLE 2

Sl. No	Application No./Date (Online)/ (Physical)	Applicant	Connectivity/ Injection Point	Drawl Point	LTA (MW)/ Start & End Date (Sought)	Proposal/Remarks
	1200001645 (23/08/18)/ (24/08/18)	Mahindra Susten Private Limited	220kV Bhadla	Chhattisgarh, WR (Target)	250 (Start : 01/09/20 End : 01/09/45)	For transfer of power, transmission system finalised under Agenda item (2) of the present meeting shall be required. Accordingly grant may be processed.
	1200001651 (22/08/18)/ (30/08/18)/	Azure Power India Private Limited	220kV Bhadla	WR (Target)	50 (Start : 15/10/20 End : 15/10/45)	For transfer of power, transmission system finalised under Agenda item (2) of the present meeting shall be required. Accordingly grant may be processed.
	1200001653 (22/08/18) / (23/08/18)	Acme Solar Holdings Limited	220kV Bhadla	Maharashtra, WR (Target)	250 (Start : 16/09/19 End : 15/09/44)	For transfer of power, transmission system finalised under Agenda item (2) of the present meeting shall be required. Accordingly grant may be processed.
	1200001663 (24/08/18)/ (24/08/18)	Hero Solar Energy Private Limited	220kV Bhadla	Jharkhand/ ER (Target)	250 (Start : 02/09/20 End : 30/11/45)	For transfer of power, transmission system finalised under Agenda item (2) of the present meeting shall be required. Accordingly grant may be processed.
	1200001640 (21/08/18)/ (23/08/18)	Renew Solar Power Private Limited	400kV Bikaner	WR (Target)	250 (Start : 26/10/19 End : 25/10/44)	For transfer of power, transmission system finalised under Agenda item (2) of the present meeting shall be required. Accordingly grant may be processed.

Sl. No	Application No./Date (Online)/ (Physical)	Applicant	Connectivity/ Injection Point	Drawl Point	LTA (MW)/ Start & End Date (Sought)	Proposal/Remarks
	1200001650 (22/08/18)/ (30/08/18)	Azure Power India Private Limited	400kV Bikaner	ER (Target)	300 (Start : 15/10/20 End : 15/10/45)	For transfer of power, transmission system finalised under Agenda item (2) of the present meeting shall be required. Accordingly grant may be processed.
	1200001655 (22/08/18)/ (30/08/18)	Azure Power India Private Limited	400kV Bikaner	100 (NR) 200 (ER) Target	300 (Start : 15/10/20 End : 15/10/45)	For transfer of power, transmission system finalised under Agenda item (2) of the present meeting shall be required. Accordingly grant may be processed.
	1200001664 (27/08/18)/ (29/08/18)	Acme Solar Holdings Limited	400 kV Fatehgarh	Delhi/NR (Target)	300 (Start : 19/10/20 End : 18/10/45)	For transfer of power, transmission system finalised under Agenda item (2) of the present meeting shall be required. Accordingly grant may be processed.
	1200001669 (29/08/18)/ (29/08/18)	Acme Solar Holdings Limited	400 kV Fatehgarh	Delhi/NR (Target)	300 (Start : 19/10/20 End : 18/10/45)	For transfer of power, transmission system finalised under Agenda item (2) of the present meeting shall be required. Accordingly grant may be processed.

Note : Transmission System required for LTA from Fatehgarh, Bhadla & Bikaner to be identified and segregated.

Application No. (1) to (4) are for evacuation of power from Bhadla onwards. The total LTA from Bhadla including evacuation of power from solar parks along with these applications shall become 3130 MW (Earlier-2330 MW + Present 800 MW).

Regarding, injection of power by solar generators, the applicants informed they shall be setting up higher capacities on DC side so as to ensure full injection of LTA quantum on AC

side. After detailed deliberations, it was agreed that full dispatch as given in the application may be considered for finalizing the scheme and also the "N-1" criteria may not be applied to the immediate connectivity of wind/solar farms with the ISTS/Intra-STS grid i.e. the line connecting the farm to the grid and the step-up transformers at the grid station as mentioned in Transmission Planning Criteria.

Members may like to note.

4.0 Augmentation of 1x1500MVA, 765/400kV ICT (3rd) at Moga S/s

4.1 Augmentation of transformation capacity at Moga S/s by 1x1500MVA, 765/400kV ICT was discussed in 1st Northern Region Standing Committee on Transmission held on 11.09.2018 under scheme "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". A site visit was made to explore possibility of using GIS switchgears in place of AIS due to space constraints.

4.2 Based on the site visit, installation of 1x1500MVA, 765/400kV ICT at Moga was found to be feasible using GIS switchgears and GIB interconnections. Accordingly, 1500MVA ICT at Moga may be installed considering outdoor 765kV & 400kV GIS switchgear and GIB interconnections (in place of AIS).

Members may deliberate and concur.

5.0 Connectivity to Luhri St-I, II and Sunni Dam HEPs

5.1 Three nos. of Hydro Projects, as detailed below are proposed to be developed by SJVNL. Connectivity applications for the same have been received by CTU.

TABLE 3

Sl. No.	Project	Location	Connectivity Sought (MW)
1.	Luhri HEP St-I	Shimla, Kullu, Himachal Pradesh	210
2.	Luhri HEP St-II	Shimla, Kullu, Himachal Pradesh	172
3.	Sunni Dam HEP	Shimla & Mandi, Himachal Pradesh	382

5.2 SJVNL had submitted a Connectivity Application for Luhri Stage-I HEP for 210 MW in Nov'16. To discuss the issues regarding transmission system required for evacuation of power from Luhri Stage-I HEP, a meeting was held on 10/01/2017 at CEA among CEA, CTU, SJVNL and HPPTCL/HPSEB. During the meeting, representative from SJVNL informed that Luhri project is on Satluj river and its upstream and downstream projects are Rampur and Koldam, respectively. Initially, Luhri HEP was contemplated as single stage project of 775 MW. Thereafter, project layout was reviewed and it was decided to develop Luhri HEP in three stages with capacity of 210 MW (St-I), 207 MW (St-II) and 363 MW (St-III). All three stages of Luhri HEP are to be implemented by SJVNL only.

5.3 The connectivity application of Luhri Stage-I was discussed in 10th LTA/Connectivity meeting of NR held on 30/05/2017 wherein it emerged that transmission system for grant

of Connectivity for Luhri Stage-I HEP may be taken up under integrated planning with future stages of the project and one Pooling Station may be proposed for the same.

5.4 Connectivity to Luhri HEP Stage-I was also discussed in 40th Standing Committee Meeting of NR held on 22/06/2018 wherein CEA informed that a team of officers from CEA, SJVNL HPPTCL, HPSEB and CTU visited 3 sites of Luhri-I, II and III on 14/06/2018. The team also saw the tentative locations of the pooling station. The team proposed that power from all the three stages of Luhri HEP would be evacuated at 220 kV level and would be pooled at 400/220 kV proposed ISTS pooling station tentatively identified at a place 'Nange' located near Luhri-II HEP and further evacuated to Koldam through 400 kV D/C line. System beyond Koldam sub-station shall be finalized after system studies. For taking up the implementation of the associated transmission system, SJVNL was advised to apply for Connectivity/LTA at the earliest.

5.5 Subsequently, after receipt of Connectivity Application from SJVNL for Luhri Stage-II for 172 MW in Aug'18 the matter was discussed during 15th LTA/Connectivity meeting for NR held on 28/09/2018 and following transmission system was agreed subject to confirmation from NTPC Ltd. regarding availability of space for 2 nos. of 400kV bays at Koldam switchyard.

1. Connectivity system for Luhri Stage-I 210MW (with effect from 30.04.2023) : Under the scope of Generation Developer
   - Luhri Stage-I – 400/220kV Nange Pooling Station 220kV D/c line along with associated bays at both ends

2. Connectivity system for Luhri Stage-II 172MW (with effect from 31.03.2026): Under the scope of Generation Developer
   - Luhri Stage-II – 400/220kV Nange Pooling Station 220kV D/c line along with associated bays at both ends

3. Common system for connectivity of Luhri Stage-I & II: : Under ISTS
   - Establishment of 400/220kV Nange Pooling Station(Tentatively Identified near Luhri Stage-II HEP)
   - Nange Pooling Station - Koldam 400kV D/c line along with associated bays at both ends

5.6 Now SJVNL has also submitted Connectivity Application for Sunni Dam (Luhri Stage-III) for 382 MW Connectivity in Oct'18 and has sought Connectivity with effect from 31.03.2024.

In view of the above, following system is proposed:

1. **Connectivity system for Luhri Stage-I 210MW** (with effect from 30.04.2023) : Under the scope of Generation Developer
   - Luhri Stage-I – 400/220kV Nange Pooling Station 220kV D/c line along with associated bays at both ends

2. **Connectivity system for Luhri Stage-II 172MW** (with effect from 31.03.2026): Under the scope of Generation Developer

- Luhri Stage-II – 400/220kV Nange Pooling Station 220kV D/c line along with associated bays at both ends

3. **Connectivity system for Sunni Dam (Luhri Stage-III) 382MW** (with effect from 31.03.2024): Under the scope of Generation Developer
   - Sunni Dam (Luhri Stage-III) – 400/220kV Nange Pooling Station 220kV D/c line along with associated bays at both ends

4. **Common system for connectivity of Luhri Stage-I & II: : Under ISTS**
   - Establishment of 400/220kV Nange Pooling Station(Tentatively Identified near Luhri Stage-II HEP)
   - Nange Pooling Station - Koldam 400kV D/c line along with associated bays at both ends

5.7 Confirmation from NTPC Ltd. for availability of space at Koldam switchyard for construction of 2 nos. of 400kV bays was sought during the last meeting, however their response is still awaited. Grant of Connectivity is pending as confirmation from NTPC Ltd. Is yet to be received.

Members may deliberate.

6.0 Downstream network by State Utilities from ISTS Stations

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. States are requested to implement the 220kV system for proper utilization of the line bays and inform the status of planned 220kV system identified with following sub-stations:

TABLE 4

S. No.	Substation	Downstream network requirement	Schedule	Planned system and Implementation Status
1	400/220kV , 3x315 MVA Samba	2 nos. bays utilized under ISTS. Balance 4 Nos to be utilized	Commissioned	LILO of 220kV Bishnha – Hiranagar D/c line: Under Tendering (PMDP LoA has been issued and Material has reached the site. Targeted Completion – Nov 2019 **PDD, J&K to update.**
2	400/220kV, 2x315 MVA New Wanpoh	6 Nos. of 220 kV bays to be utilized	Commissioned	220kV New Wanpoh –Mirbazar D/c line: Under Tendering (PMDP)-Anticpated-Mar'19 220kV Alusteng – New Wanpoh line Targeted Completion – Dec 2018 **PDD, J&K to update.**

S. No.	Substation	Downstream network requirement	Schedule	Planned system and Implementation Status
3	400/220kV, 2x315 MVA Parbati Pooling Station	2 Nos. of 220 kV bays to be utilized.	Commissioned	220kV Charor- Banala D/c line (18km): Under Construction Targeted Completion- Dec'18 **HPSEBL to update.**
4	400/220kV, 2x500 MVA Kurukshetra (GIS)	8 nos. of 220 kV bays to be utilized	Commissioned	LILO of one circuit of Kaul-Pehowa 220kV D/c line LILO of one circuit of Kaul-Bastara 220kV D/c line Kurukshetra – Salempur 220kV D/c line with HTLS conductor equivalent to twin moose Work awarded on 12.03.2018 with contractual completion date 31.10.2019. 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 220 kV bays to be utilized	Commissioned	Bagpat- Baraut 220kV S/c Line-Commissioned Bagpat(PG)-Modipuram-II 220kV D/c line -exp. by Jan'20 Revision in Connectivity LILO of 220kV Muradnagar II -Baghpat (PG) at Baghpat UP-Severe Row- Mar'19 **UPPTCL to update.**
6	400/220 kV, 2x315 MVA Saharanpur	6 nos. 220 kV downstream lines commissioned. (Khara, Shamli, Nanauta, Saharanpur (UP) and Sarsawa)	Commissioned	LILO of Khara- Shamli 220 kV S/c line at Saharanpur PG-Commissioned Saharanpur(PG)-Sarsawa (new) 220kV D/c- Commissioned LILO of Saharanpur- Nanauta 220 kV S/c line at Saharanpur PG- Commissioned
7	400/220kV, 2x315 MVA Dehradun	Out of 6 bays, only two bays used. Balance 4 bays to be utilised.	Commissioned	2 bays for 220 kV Dehradun – Jhajra line One bay for proposed Naugaon S/s 2 bays for proposed S/s at Selakui **PTCUL to update.**
8	400/220 kV, 2x315 MVA Sohawal	4 Nos 220 kV bays utilized balance 2 Nos 220 kV bays to	Commissioned	2 nos of bays utilized for Sohawal 220kV UP-Commissioned 2 nos for Barabanki 220 kV s/s-

S. No.	Substation	Downstream network requirement	Schedule	Planned system and Implementation Status
		be utilized.		Commissioned 2 nos of bay utilized for 220kV New Tanda-Sohawal line Severe RoW **UPPTCL to update.**
9	Shahjahanpur, 2x315 MVA 400/220 kV	Partially utilized. Balance 5 Nos. of 220 kV bays to be utilized.	Commissioned	One bay used for 220 kV Shahjahnpur-Hardoi line commissioned. 2 no of bays for 220kV Shahjahnpur - Azizpur D/c line- Sep'19 2 no of bays for 220kV Shahjahnpur – Gola,Lakhimpur D/c line- Sep'19 **UPPTCL to update.**
10	02 nos. bays at Moga	Partially utilized. Balance 2 nos. of 220kV bays to be utilized.	Commissioned	PSTCL informed that Moga–Mehalkalan 220kV D/c line- Works Completed but Commissioning Pending. **PSTCL to update.**
11	Hamirpur 400/220 kV 2x315 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	Dehan-Hamirpur 220 kV D/c line- Expected by Apr'20 **HPSEBL to update.**
12	Kaithal 400/220 kV 1x 315 MVA Sub-station	2 Nos. of 220kV bays to be utilized	Commissioned	220kV Kaithal(PG)- Neemwala D/c line - Work awarded on 08.06.2018. Tentative completion date is 31.01.2020. **HVPNL to update.**
13	Sikar 400/220kV, 1x315 MVA S/s	2 Nos. of 220 kV bays	Commissioned	RRVPNL representative stated that studies would be conducted to formulate how bays could be utilized. **RRVPNL to update.**
14	400/220kV Kota Sub-station (1 No. of 400 kV Bay)	1 No. of 400 kV Bay	Commissioned	Anta- Kota 400kV line commissioned.
15	Bhiwani 400/220kV S/s	6 nos. of 220kV bays	Commissioned	220kV D/c line from Bhiwani (PG) to 220kV Isherwal (HVPNL) S/s 220kV D/c line from Bhiwani (PG) to 220kV Isherwal

S. No.	Substation	Downstream network requirement	Schedule	Planned system and Implementation Status
				(HVPNL) S/s Likely to be completed by 31.06.2020 **HVPNL to update.**
16	Jind 400/220kV S/s	6 nos. of 220kV bays	Commissioned	LILO of both circuits of 220kV D/c Narwana – Mund line at Jind (PG) NIT floated on 20.08.2018 Likely to be completed by 31.06.2020 **HVPNL to update.**

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

TABLE 5

Sl. No.	Name of Substation	MVA Capacity	Expected Schedule	Downstream connectivity furnished by States in 41st NRPC
1	400/220kV Dwarka-I GIS (8 nos. of 220kV bays)	4x 500	Dec'18	2x160MVA, 220/66kV ICTs – expected by 2021-22 2x160MVA, 220/66kV ICTs – Future LILO of 220kV Papankalan-III – Naraina & Papankalan-I Line at Dwarka-I – expected along with charging of 400kV S/s **DTL to update**
2	400/220kV Tughlakabad GIS (8 nos. of 220kV bays)	4x 500	Charged	LILO of Badarpur-Mehrauli 220kV D/c line at Tughlakabad – Expected with 400kv S/s Okhla-Tughlakabad 220kV D/c line- Expected with 400kv S/s Masjidmoth-Tughlakabad 220kV D/c line- Expected by 2020-21 R.K.Puram-Tughlakabad (U?G cable) 220kV D/c line- Expected by 2020-21 **DTL to update**
3	220/66kV Chandigarh GIS (8 nos. of 66kV bays)	2x 160	Feb'19	**Chandigarh to update.**

Sl. No.	Name of Substation	MVA Capacity	Expected Schedule	Downstream connectivity furnished by States in 41st NRPC
4	400/220kV Jauljivi GIS (6 nos. of 220kV bays)	2x315	Dec'2019	2 bays for 220kV Almora-Jauljibi line 2 bays for 220kV Brammah-Jauljibi line **PTCUL to update.**
5	400/220kV Sohna Road Sub-station (TBCB) (8 nos. of 220kV bays)	2x500	May'19	LILO of both circuits of 220kV D/c Sector-69 - Roj Ka Meo line at 400kV Sohna Road – Under Survey LILO of both circuits of 220kV D/c Badshahpur-Sec77 line at 400kV Sohna Road – Under Survey **HVPNL to update.**
6	400/220kV Prithla Sub-station (TBCB) (8 nos. of 220kV bays)	2x500	May'19	LILO of both ckt of 220kV D/c Ranga Rajpur – Palwal line – Expected by Mar'20 220kV D/C for Sector78, Faridabad – Expected by Jul'20 **HVPNL to update.**
7	400/220kV Kadarpur Sub-station (TBCB) (8 nos. of 220kV bays)	2x500	May'19	Land details submitted by M/s Sterlite recently. M/s Sterlite has been asked to change the orientation of GELO in order to ensure proper emanation of 220 kV line. The survey of line to evacuate power is in process and downline of 400 kV substation Kadarpur will be finalized shortly. **HVPNL to update.**
8	400/220kV Kala Amb GIS (TBCB) (6 nos. of 220kV bays)	2x315	Commissioned	HPSEBL has planned one no. of 220kV D/c line from Kala Amb 400/220kV S/s to 220/132kV Kala Amb S/s. HPSEBL informed that they have planned 220kV Kala Amb- Trilokpur

Sl. No.	Name of Substation	MVA Capacity	Expected Schedule	Downstream connectivity furnished by States in 41st NRPC
				220kV D/c line. The site for the substation has been identified **HPSEBL to update.**
9	400/220kV Amargarh GIS (TBCB) (6 nos. of 220kV bays)	2x315	Oct'18	LILO of both circuits of Zainkote – Delina 220kV D/c line at Amargarh Works Completed but line yet to be charged **PDD, J&K to update.**

7.0 Renaming of Srinagar-Kashipur 400kV D/c (Quad) line

Renaming of Srinagar-Kashipur 400kV D/C (Quad) line as Khandukhal-Rampura 400 kV D/C (Quad) line has been agreed in 1st Northern Region Standing Committee on Transmission (NRSCT) meeting held on 11/09/2018. However, the matter regarding renaming of terminal Substations Srinagar & Kashipur are to be discussed. Accordingly, PTCUL may clarify regarding renaming of Srinagar & Kashipur substations alongwith Srinagar-Kashipur 400kV D/C (Quad) line as Khandukhal-Rampura 400 kV D/C (Quad) line.

8.0 LTA/Connectivity for hydro projects in Uttarakhand

8.1. Following Connectivity and Long Term Access (LTA) applications/grants were discussed in the earlier SCM and Connectivity/LTA meetings, however there were certain issues. To resolve the issues various meetings were convened by CEA. Based on the discussions held during the meetings following is summarized and is proposed for approval:

TABLE 6

S. No.	Applicant	Application Date (Connectivity / LTA)	Revised time frame	Connectivity/ LTA grant
i.	Lanco Mandakini Hydro Energy Pvt. Ltd. (Phata Byung HEP)	Aug'15/ May'08	Uncertain	Connectivity: Oct'17. LTA : July'09, Later revised in Oct'17
ii.	L&T Uttaranchal Hydropower Ltd. (Singoli Bhatwari HEP)	May'15/ April' 17	Mar'19	Connectivity: Apr'16, revised in Oct'17. LTA put on hold due to non-concurrence from PTCUL
iii.	NTPC Ltd. (Tapovan Vishnugad HEP)	Oct'15/ Jan'07	Dec'19	Connectivity: Aug'16 LTA : July'09, later revised in Oct'17

iv.	THDC Ltd. (Vishnugad Pipalkoti HEP)	July'14/ Not applied	June'20	Connectivity: Aug'16 LTA Application : Not received in conformity with CERC regulations.
v.	SJVN Ltd. (Naitwar Mori HEP)	Apr'16 / Nov'17	Nov'21	Connectivity: Oct.'17 LTA proposal in present agenda.
vi.	SJVN Ltd. (Devsari HEP)	Apr'16	Jul'22 (Original)	Connectivity : Oct'17 LTA Application : Not Received.

8.2. To discuss various issues related to generation projects in Uttarakhand and implementation of UITP Scheme (deemed ISTS) by PTCUL, a meeting was held in CEA on 12/09/2018. During the meeting PTCUL insisted on inclusion of Complete Associated Transmission System to be implemented by PTCUL. After insistence of PTCUL, CTU/CEA agreed that revised LTA intimations may be issued indicating connectivity system also, which would be required in addition to LTA system for affecting the LTA.

8.3. Further, renaming of Srinagar-Kashipur 400kV D/C (Quad) line as Khandukhal-Rampura 400 kV D/C (Quad) line was agreed during 1st Northern Region Standing Committee on Transmission (NRSCT) meeting held on 11/09/2018 and therefore name of the terminal stations also needs to be changed. Accordingly, details of transmission system to be included in Connectivity/ LTA intimation is given below:

A. Connectivity and LTA to Phata Byung Hydro project (76 MW) of M/s Lanco Mandakini Hydro Energy Pvt. Ltd. in Uttarakhand.

Connectivity and revised LTA intimations have been issued in October, 2017, however in view of PTCUL request for name change and inclusion of connectivity system in LTA intimations, it is proposed to revise the system of Connectivity and LTA intimations as given below:

Transmission System for Connectivity	
Existing Intimation	**Revised Intimation**
i. Interim Arrangement: • Phata Byung generation switchyard – Proposed site of Baramwari (PTCUL) 220kV D/c (To be implemented by the applicant including 220kV bays at generation end). • ***Common transmission system required for Connectivity(Deemed ISTS):*** Proposed site of Baramwari (PTCUL) – Srinagar (PTCUL) 220kV D/c line (To be implemented by PTCUL) **ii. Final Arrangement:**	• Phata Byung generation switchyard – Baramwari (PTCUL) 220kV D/c (To be implemented by the applicant including 220kV bays at both ends) • ***Common transmission system required for Connectivity(Deemed ISTS):*** o Baramwari 220 kV S/s (PTCUL) – Srinagar (PTCUL) 220kV D/c line (To be implemented by PTCUL) o Establishment of Baramwari 220 kV Pooling station In case of change of name in Srinagar

• Phata Byung generation switchyard – Baramwari 220kV D/c (To be implemented by the applicant including 220kV bays at both ends).	substation, connectivity system to be suitably amended.

Transmission System for LTA	
Existing Intimation	**Revised Intimation**
<u>Transmission System for LTA :</u> Srinagar- Kashipur 400kV D/c line along with associated 400 kV bays at both ends (to be implemented by PTCUL)	**<u>Transmission System for LTA :</u>** Khandukhal-Rampura 400 kV D/C (Quad) line [earlier named as Srinagar- Kashipur 400kV D/C (Quad) line] along with associated 400 kV bays at both ends (to be implemented by PTCUL-Deemed ISTS) **Note**: in addition to above LTA system, following Connectivity transmission system (being implemented by PTCUL as deemed ISTS Licensee) shall also be required for LTA: • Phata Byung generation switchyard – Baramwari (PTCUL) 220kV D/c (To be implemented by the applicant including 220kV bays at both ends) • ***Common transmission system required for Connectivity(Deemed ISTS):*** o Baramwari 220 kV S/s (PTCUL) – Srinagar (PTCUL) 220kV D/c line (To be implemented by PTCUL) o Establishment of Baramwari 220 kV Pooling station In case of change of name in Srinagar substation, connectivity system to be suitably amended.

B. Connectivity and LTA to Singoli Bhatwari HEP (99MW) of M/s L&T Uttaranchal Hydropower Ltd. in Uttarakhand.

The connectivity to Singoli Bhatwari HEP (99MW) of M/s L&T Uttaranchal Hydropower Ltd. in Uttarakhand was granted with transmission system mentioned in table below (Existing section) considering Phata Byung HEP would come up before Singoli Bhatwari HEP, however, as now Phata Byung HEP has become uncertain, the interim connectivity system needs to be modified in line with the Minutes of Meeting held in CEA on 25/09/2017. The revised proposal for interim connectivity is:

- 220 kV D/C line from generation switchyard to point of interconnection of Baramwari - Srinagar 220 kV D/C line (to be implemented by generation developer).

- 220 kV D/C line from point of interconnection of Baramwari-Srinagar 220 kV D/C line to Srinagar S/s (to be implemented by PTCUL as deemed ISTS).

However, the final connectivity system shall remain same as mentioned above. Accordingly, Connectivity intimation to L&T Uttaranchal Hydropower Ltd. for Singoli Bhatwari HEP shall be revised with transmission system as given below:

Transmission System for Connectivity	
Existing Intimation	**Revised Intimation**
i. Interim Arrangement: • LILO of one circuit of Baramwari (Initially line shall be from Phata Byung as Phata Byung is coming before Singoli Bhatwari) – Srinagar 220kV D/c at Singoli Bhatwari generation switchyard (LILO portion to be implemented by the applicant including 220kV bays at generation end). • ***Common inter-state transmission system required for Connectivity:*** proposed site of Baramwari substation (PTCUL) – Srinagar (PTCUL) substation 220kV D/c line (To be implemented by PTCUL) as deemed ISTS. **ii. Final Arrangement:** • Singoli Bhatwari generation switchyard – Baramwari substation 220kV D/c, with the opening of LILO as mentioned above in interim arrangement (To be implemented by applicant including 220kV bays at both ends). • ***Common inter-state transmission system required for Connectivity:*** proposed site of Baramwari substation (PTCUL) – Srinagar (PTCUL) substation 220kV D/c line (To be implemented by PTCUL) as deemed ISTS. **Note:** Baramwari 220 kV switching station and Baramwari – Srinagar 220 kV D/c line to be implemented by PTCUL as	**i. Interim Arrangement:** • 220 kV D/C line from generation switchyard to point of interconnection of Baramwari Srinagar 220 kV D/C line (to be implemented by generation developer). • ***Common inter-state transmission system required for Connectivity:*** 220 kV D/C line from point of interconnection of Baramwari-Srinagar 220 kV D/C line to Srinagar S/s (to be implemented by PTCUL as deemed ISTS). **ii. Final Arrangement:** • Singoli Bhatwari generation switchyard – Baramwari substation 220kV D/c, with the opening of LILO as mentioned above in interim arrangement (To be implemented by applicant including 220kV bays at both ends). • ***Common inter-state transmission system required for Connectivity:*** Baramwari substation (PTCUL) – Srinagar (PTCUL) substation 220kV D/c line (To be implemented by PTCUL) as deemed ISTS. **Note:** Baramwari 220 kV switching station and Baramwari – Srinagar 220 kV D/c line to be implemented by PTCUL as part of Common Transmission system for Connectivity of Phatabyung and Singoli Bhatwari HEPs. The commissioning of Baramwari may be matched with the later

part of Common Transmission system for Connectivity of Phatabyung and Singoli Bhatwari HEPs. The commissioning of Baramwari may be matched with the later (2nd) generator, out of the two.	(2nd) generator, out of the two.

Proposal for LTA:

Proposal for grant of LTA was circulated to the constituents vide CTU letter C/CTU/NR/LTA dated 06/11/2017 with Srinagar- Kashipur 400kV D/c line along with associated 400 kV bays at both ends (under scope of PTCUL as part of deemed ISTS).

However, PTCUL had stated that considering the uncertainty of Phata Byung HEP, the status of 220 kV D/C line to Srinagar needs to be reviewed and accordingly, did not give its consent to issue the LTA intimation to Singoli Bhatwari HEP due to which intimation could not be issued. Subsequently, in a meeting held at CEA on 04/04/2018, PTCUL informed that they have issued the LOA for the line with commissioning schedule as March, 2019.

Subsequently, during the meeting held at CEA on 12/09/2018, it was agreed that 99 MW LTA intimation to Singoli Bhatwari HEP may be issued by CTU. Accordingly, it is proposed to grant LTA to L&T Uttaranchal Hydropower Ltd. in Uttarakhand for Singoli Bhatwari HEP with following transmission system.

Transmission System for LTA :

Khandukhal-Rampura 400 kV D/C (Quad) line [earlier named as Srinagar- Kashipur 400kV D/c (Quad) line] along with associated 400 kV bays at both ends (to be implemented by PTCUL-Deemed ISTS)

Note: in addition to above LTA system, completion of following Connectivity transmission system (being implemented by PTCUL as deemed ISTS Licensee) shall also be required for effecting the LTA:

Interim Arrangement:

- 220 kV D/C line from generation switchyard to point of interconnection of Baramwari Srinagar 220 kV D/C line (to be implemented by generation developer).

- ***Common inter-state transmission system required for Connectivity:*** 220 kV D/C line from point of interconnection of Baramwari-Srinagar 220 kV D/C line to Srinagar S/s (to be implemented by PTCUL as deemed ISTS).

Final Arrangement:

- Singoli Bhatwari generation switchyard – Baramwari substation 220kV D/c, with the opening of LILO as mentioned above in interim arrangement (To be implemented by applicant including 220kV bays at both ends).

- ***Common inter-state transmission system required for Connectivity:*** Baramwari substation (PTCUL) – Srinagar (PTCUL) substation 220kV D/c line (To be implemented by PTCUL) as deemed ISTS.

Note: Baramwari 220 kV switching station and Baramwari – Srinagar 220 kV D/c line to be implemented by PTCUL as part of Common Transmission system for Connectivity of Phatabyung and Singoli Bhatwari HEPs. The commissioning of Baramwari may be matched with the later (2nd) generator, out of the two.

It may be reiterated that during the meeting held on 25/09/2017 in CEA, PTCUL was advised to implement the proposed Baramwari-Srinagar 220kV D/C line in two phases, Phase-I from LILO point to Srinagar matching with Singoli Bhawari HEP and Phase-II matching with Phatabyung HEP.

Members may discuss.

C. Connectivity and LTA to Tapovan Vishnugarh HEP (520 MW) of NTPC Ltd.

Connectivity and revised LTA intimations have been issued in August, 2016 & October, 2017 respectively. However in view of PTCUL request for name change and inclusion of connectivity system in LTA intimations, it is proposed to revise the system of Connectivity and LTA intimations as given below:

Transmission System for Connectivity	
Existing Intimation	**Revised Intimation**
<u>Connectivity system:</u> i) Tapovan Vishnugad HEP– Proposed site of Pipalkoti 400 kV S/s 400kV D/c (Twin Moose) line ii) Proposed site of Pipalkoti 400 kV S/s-Srinagar 400kV D/c (Quad Moose) line Note: The bays at Generation end are to be implemented by NTPC	**No change** However, in case of change of name in Srinagar substation, connectivity system to be suitably amended.

Transmission system proposed in amended LTA intimation

The connectivity to Tapovan Vishnugad HEP(520 MW) of NTPC Ltd. was granted with transmission system mentioned in table below(Existing section).Now, as per PTCUL request, it is proposed to revise transmission system in the LTA intimation as given below :

Transmission System for LTA	
Existing Intimation	**Revised Intimation**
<u>Transmission System for LTA :</u> Srinagar- Kashipur 400kV D/c line along with associated 400 kV bays at both ends (to be implemented by PTCUL)	**<u>Transmission System for LTA :</u>** • Khandukhal-Rampura 400 kV D/C (Quad) line [earlier named as Srinagar- Kashipur 400kV D/c (Quad) line] along with

	associated 400 kV bays at both ends (to be implemented by PTCUL-Deemed ISTS) **Note**: in addition to above LTA system, following Connectivity transmission system (being implemented by PTCUL as deemed ISTS Licensee) shall also be required for effecting the LTA: • Tapovan Vishnugad HEP– Proposed site of Pipalkoti 400 kV S/s 400kV D/c (Twin Moose) line • Proposed site of Pipalkoti 400 kV S/s-Srinagar 400kV D/c (Quad Moose) line Bays at generation end are to be implemented by NTPC.

D. Connectivity to Vishnugarh Pipalkoti HEP (444 MW) of THDC Ltd.

Connectivity intimation has been issued in August, 2016 through following Transmission system to be implemented by PTCUL as deemed ISTS Licensee:

Transmission System for Connectivity	
Existing Intimation	**Revised Intimation**
i. Pipalkoti HEP– 400 kV Pipalkoti switching station 400kV D/c (Twin Moose) line ii. Establishment of 400 kV Pipalkoti switching station iii. Diversion of Tapovan Vishnugad HEP– Proposed site of Pipalkoti (400 kV S/s) 400kV D/c (Twin Moose) line at Pipalkoti switching station iv. Diversion of Proposed site of Pipalkoti (400 kV S/s)– Srinagar 400kV D/c (Quad) line at Pipalkoti switching station Note: The bays at Generation end are to be implemented by THDC	**No change** However, in case of change of name in Srinagar substation, connectivity system to be suitably amended. Regarding connectivity intimation, PTCUL has observed that under connectivity system, Srinagar-Kashipur 400kV D/C line, Srinagar-Srinagar (HEP) 400 kV line alongwith 400 kV Srinagar substation may be included which have already been suitably replied by CTU.

LTA application in conformity with CERC regulation is not yet received from THDC Ltd for Vishnugarh Pipalkoti HEP (444 MW).

Members may discuss.

E. Connectivity and LTA to Naitwar Mori HEP (2X30MW) of SJVN Ltd.

Connectivity was granted to Naitwar Mori HEP of SJVNL in October, 2017 through following transmission system:

- Naitwar Mori HEP - # Location of Mori 220/132kV (PTCUL) Substation 220kV D/c line (to be implemented by applicant alongwith 220kV bays at generating end)
  # Location of Mori 220/132kV (PTCUL) – Dehradun 220kV D/c line (to be implemented by PTCUL)
  # Mori 220/132 kV substation is not required in the time frame of connectivity of Naitwar Mori HEP.

Meanwhile, PTCUL desired to change the location of their proposed Mori substation. In the meeting held on 04/04/2018 at CEA to discuss the status and issues related to transmission elements of UITP scheme under implementation by PTCUL, the following was agreed:

- PTCUL to finalize the location of Mori substation jointly with M/s SJVNL within 15-20 days
- PTCUL to review the status of hydro generation projects in Yamuna basin and submit a report to CEA in 15 days time.
- Based on the report of PTCUL regarding Yamuna Basin hydro generation projects, decision regarding the capacity of Mori-Dehradun 220 kV D/c line would be taken

PTCUL may update the status.

Proposal for LTA:

Grant of LTA to SJVN Limited for Naitwar Mori Hydro Electric Power Project has been agreed during 12th Connectivity/LTA meeting of Northern Region system held on 22/06/2018 with existing transmission. Details of which are mentioned below:

Name of the Applicant	**M/s SJVN Limited.**
Application no:	**1200000925**
Name of Power Plant	**Naitwar Mori Hydro Electric Power Project**
Applied for	**LTA**
Quantum (MW)	**60 (Target – NR)**
Time Frame	**30th Nov'2021**
Connectivity Point	**Location of Mori 220/132kV (PTCUL)**

In view of PTCUL request to include Connectivity System in LTA intimations, it is proposed to include following transmission system in the LTA intimation.

Transmission System to be included in LTA intimation

LTA is granted on existing transmission system.

However, following Connectivity transmission system shall also be required for effecting the LTA:

- Naitwar Mori HEP - # Location of Mori 220/132kV (PTCUL) Substation 220kV D/c line (to be implemented by applicant alongwith 220kV bays at generating end)

- # Location of Mori 220/132kV (PTCUL) – Dehradun 220kV D/c line (to be implemented by PTCUL as ISTS Licensee)
- # Mori 220/132 kV substation is not required in the time frame of connectivity of Naitwar Mori HEP.

Members may discuss.

F. Connectivity to Devsari HEP (252 MW) of SJVN Ltd.

Connectivity was granted to Devsari HEP of SJVNL in October, 2017 through following to be implemented by PTCUL as deemed ISTS Licensee::

Transmission System for Connectivity	
Existing Intimation	**Revised Intimation**
➢ Devsari HEP generation switchyard – Karanprayag 400/220 kV Substation 220 kV D/c(Twin Zebra) line. ➢ Establishment of 2x315 MVA, 400/200 kV Karanprayag substation of PTCUL by LILO of both circuits of Pipalkoti-Srinagar 400 kV(Quad) D/c line at Karanprayag	**No change** However, in case of change of name in Srinagar substation, connectivity system to be suitably amended.

9.0 Proposal for grant of LTA for drawl of power in Northern Region

i. LTA Agreed in Connectivity/LTA meeting of Southern region

Grant of LTA has been discussed & agreed for injection of power in Southern Region and drawl of power in other regions including Northern Region as per deliberations held in 27th Connectivity/LTA meeting of Southern region held on 24/10/2018 as detailed below.

TABLE 7

Sl. No.	Application No.	Applicant	Location	Date of Application	Status of connectivity	LTA Sought (MW)	Date of Start of LTA
1	1200001694	Mytrah Energy (India) Private Limited	Palakkad, Kerala	31/08/2018	Stage-II grantee	300 (NR target)	29/02/2020

10.0 Finalization of switching Scheme for GIS substations

10.1 Generally double circuit lines are terminated in separate diameter to avoid tripping of both lines under tie breaker stuck condition (if terminated in the same diameter). This

guideline is also being specified in RFP documents for Inter State transmission system under TBCB projects. In line with above, for 765 & 400kV substations, one & half CB switching scheme is followed by POWERGRID.

10.2 In the 42nd WR SCM held on 17.11.2017, members had decided that in view of the complexities involved in the interfacing of GIS modules of different manufacturers, the complete diameter (with 3 CB bays) shall be installed in the beginning itself even though the third CB would be used for an upcoming feeder in future. This would not only facilitate ease of integration of future transmission elements as and when they are planned, but would also enhance system reliability.

10.3 Recently in Nagapattinam 400kV GIS substation case, CERC has not allowed the capitalization of unutilized (future) GIS bays. Matter was again taken up with CERC to allow capitalization considering complexities involved in GIS substations. CERC suggested for construction of full diameter (Present-Tie-Future bay), only if there is concrete plan for utilization of future bay.

10.4 As per the clause 15.7 of CEA Manual on Transmission Planning Criteria, 'One and half breaker' scheme should be used for 400kV and 765kV sub-stations and it should be continued to be used for all the 400 kV and 765 kV S/s. Accordingly, in cases where there is no plan in near future to utilize the bays, POWERGRID proposed to construct 2 diameters with double breaker switching scheme (in place of one & half CB scheme) & continue to operate as Double CB scheme as it will not be possible to convert them in one & half CB scheme in future, due to GIS complexities mentioned above.

10.5 After deliberations in 1st Meeting of WRSCT held on 05/09/2018, members reiterated their views already agreed in the 42nd SCM of WR on the above issue that in view of the complexities involved in the interfacing of GIS modules of different manufacturers, the complete diameter (with 3 CB bays) shall be installed in the beginning itself even though the third CB would be used for an upcoming feeder in future.

Members may discuss.

11.0 Improvement in Reliability with outdoor AIS bus bar in GIS S/s

11.1 It has been observed that during failure of any GIS switchgear or GIB, long duration outage is involved in restoration of GIS bay due to proprietary nature of GIS equipment & skilled efforts are needed.

11.2 Many a time since limited quantity of spares are procured, restoring of the bay takes more time (example of Maharanibagh GIS) as required spares are to be sourced from abroad.

11.3 Considering the same & to have more availability & reliability of power system, an scheme is developed where on both side of GIS building, outdoor AIS bus bar is provided with one hot spare bay. This arrangement can act as hot standby arrangement (like 1-Ph 765kV hot spare ICT/Reactor).

11.4 This may be deliberated for in principal approval so that it can be considered for new S/s & at existing S/s wherever feasible (due to space requirements).

Members may discuss

C. AGENDA RECEIVED FROM UPPTCL:

RVPNL vide their email dated 12.11.2018 has forwarded the following agenda item for inclusion in the 2nd meeting of NRSCT.

12.0 Change in the connectivity of 765/400/220 kV Sub-station Moradabad.

Moradabad 765 kV Sub-station was approved in 38th Standing Committee Meeting on Power System Planning of Northern Region held on 30 May, 2016 at NRPC Katwaria Sarai, New Delhi. Now land for 765 kV Sub-station's is available at Rampur near Moradabad so connectivity will be change as proposed under :-

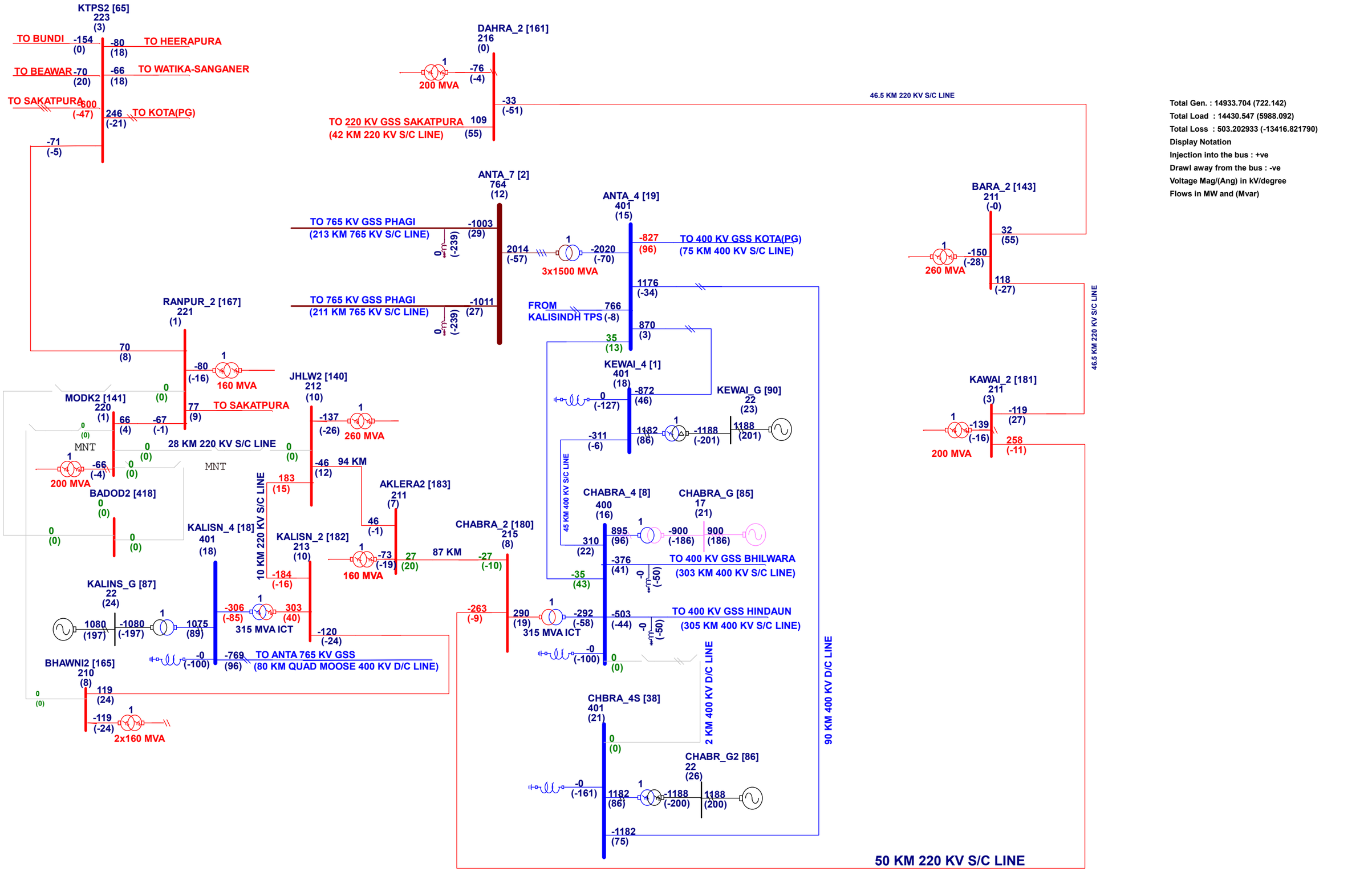
Sl. No.	Agreed in 38th Standing Committee Meeting	Modification Suggested by UPPTCL
1-	Construction of 765/400 kV, 2x1500 MVA; 2x500 MVA, 400/220 kV substation at Moradabad	Construction of 765/400 kV, 2x1500 MVA; 2x500 MVA, 400/220 kV substation at Rampur(GIS) with 330 MVAR Bus Reactor
2-	LILO of approved Ghatampur TPS-Hapur 765 kV S/C line at Moradabad	LILO of approved Ghatampur TPS-Hapur 765 kV S/C line at Rampur-55 Km. with 240 MVAR line reactor at Rampur end for Rampur-Ghatampur section.
3-	Moradabad (765 kV)-Sambhal 400 kV D/C line- 50 Km.	Rampur (765 kV)-Sambhal 400 kV D/C line- 70 Km.
4-	Moradabad (765 kV)-Moradabad 400 kV D/C line-25 Km.	LILO of one ckt. Of existing 400 kV DC PGCIL Bareilly(PG)-Moradabad line at Rampur(765)- 03 Km.
5-	Creation of 400/220 kV, 2x500 MVA S/S Sambhal	Creation of 400/220 kV, 2x500 MVA S/S Sambhal
6-		LILO of 220 kV existing SC line Moradabad(400)-Rampur(220) at Rampur(765) – 10 Km.
7-		Rampur(765)-Moradabad-II 220 kV (Proposed) DC line on Moose conductor - 70 Km.

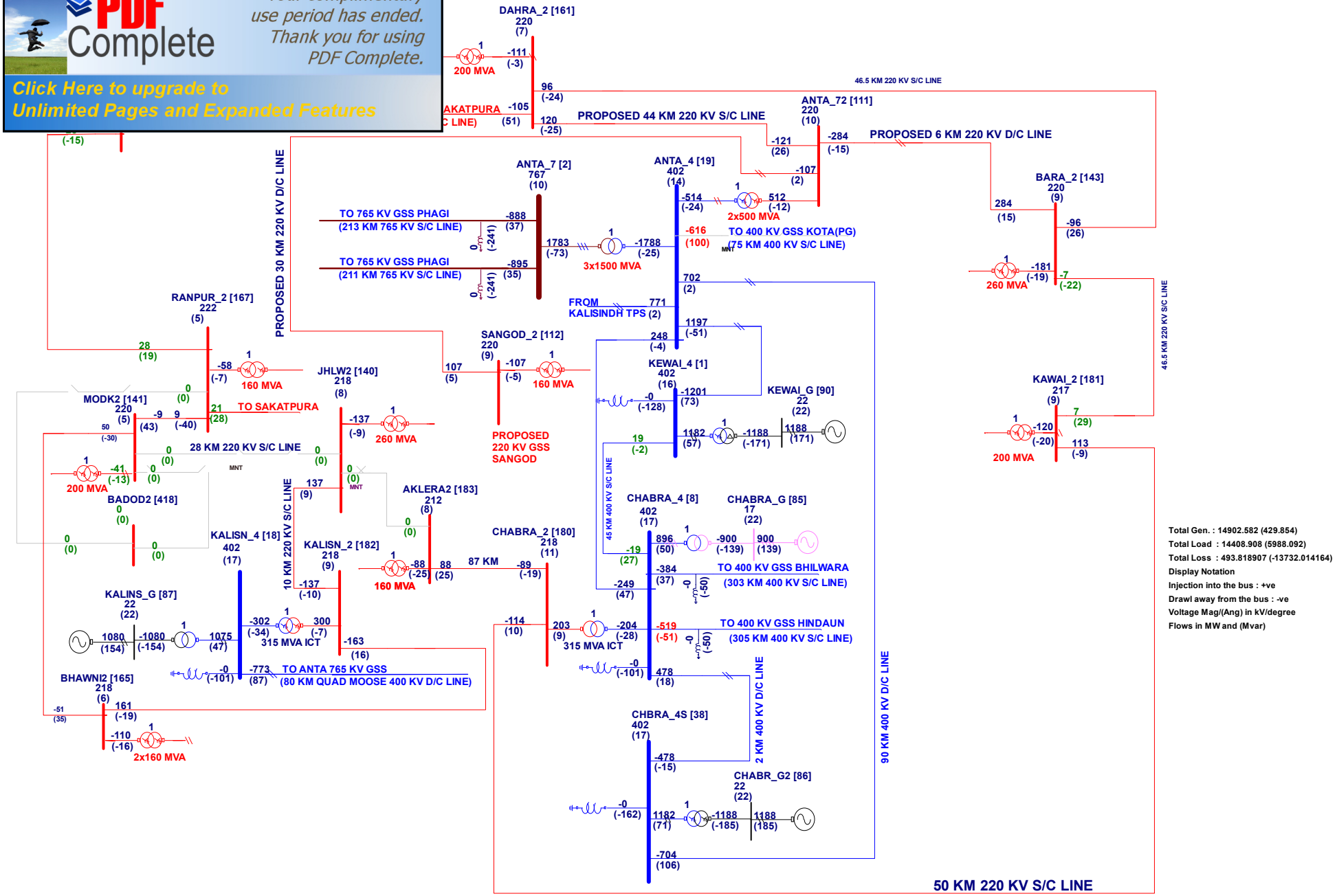
UPPTCL may present their proposal. Members may like to deliberate.

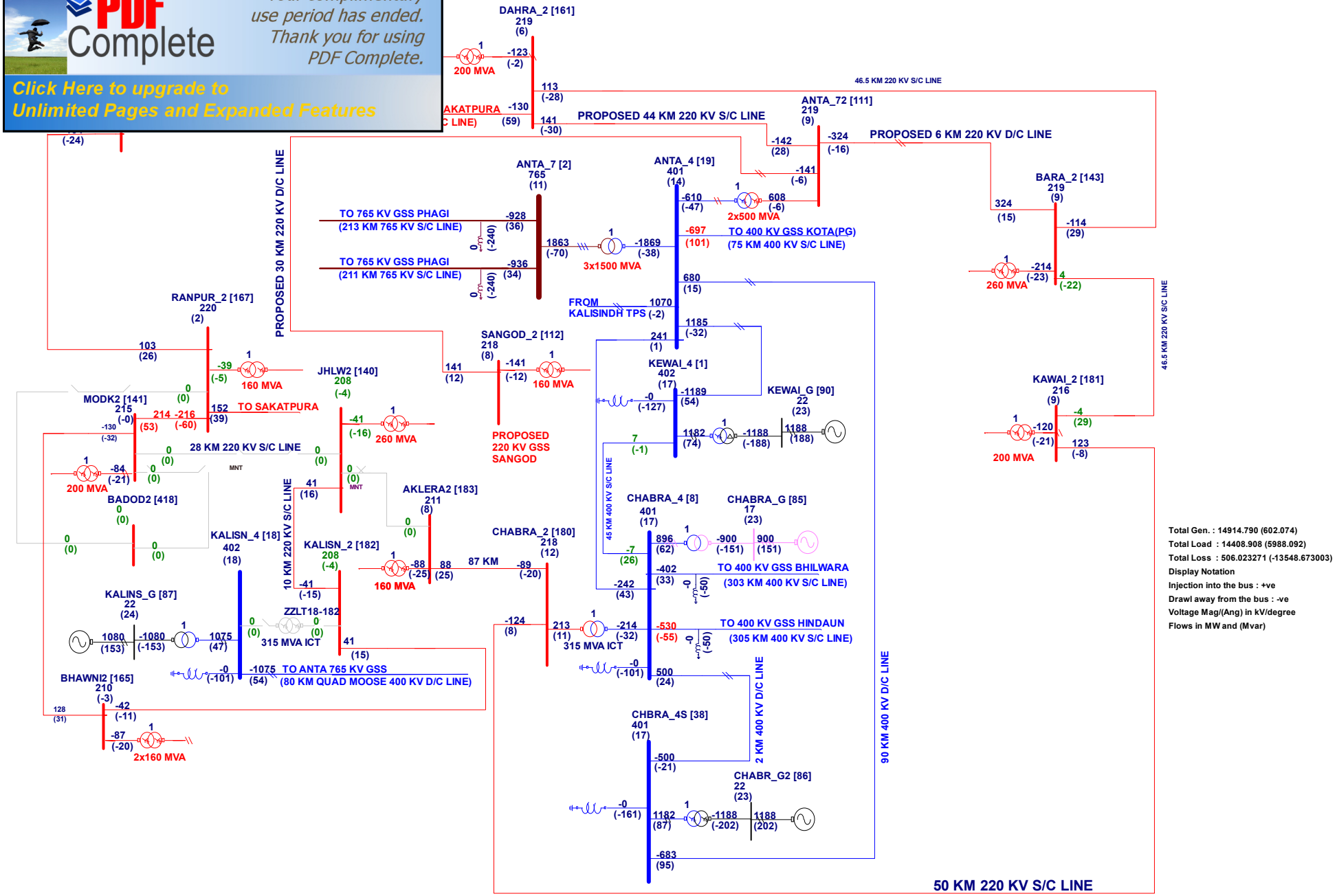
Annexure-A1

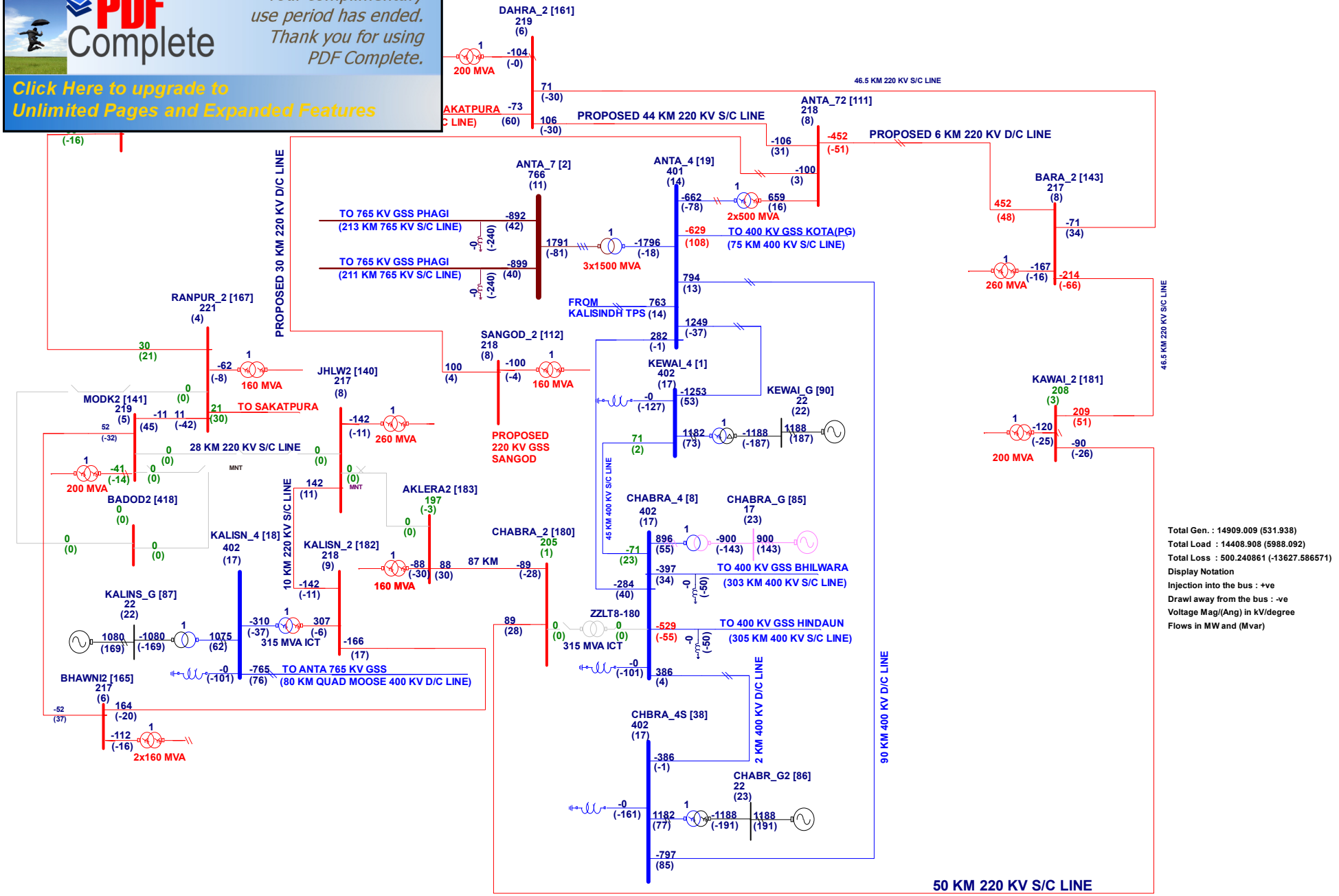
BASE CASE

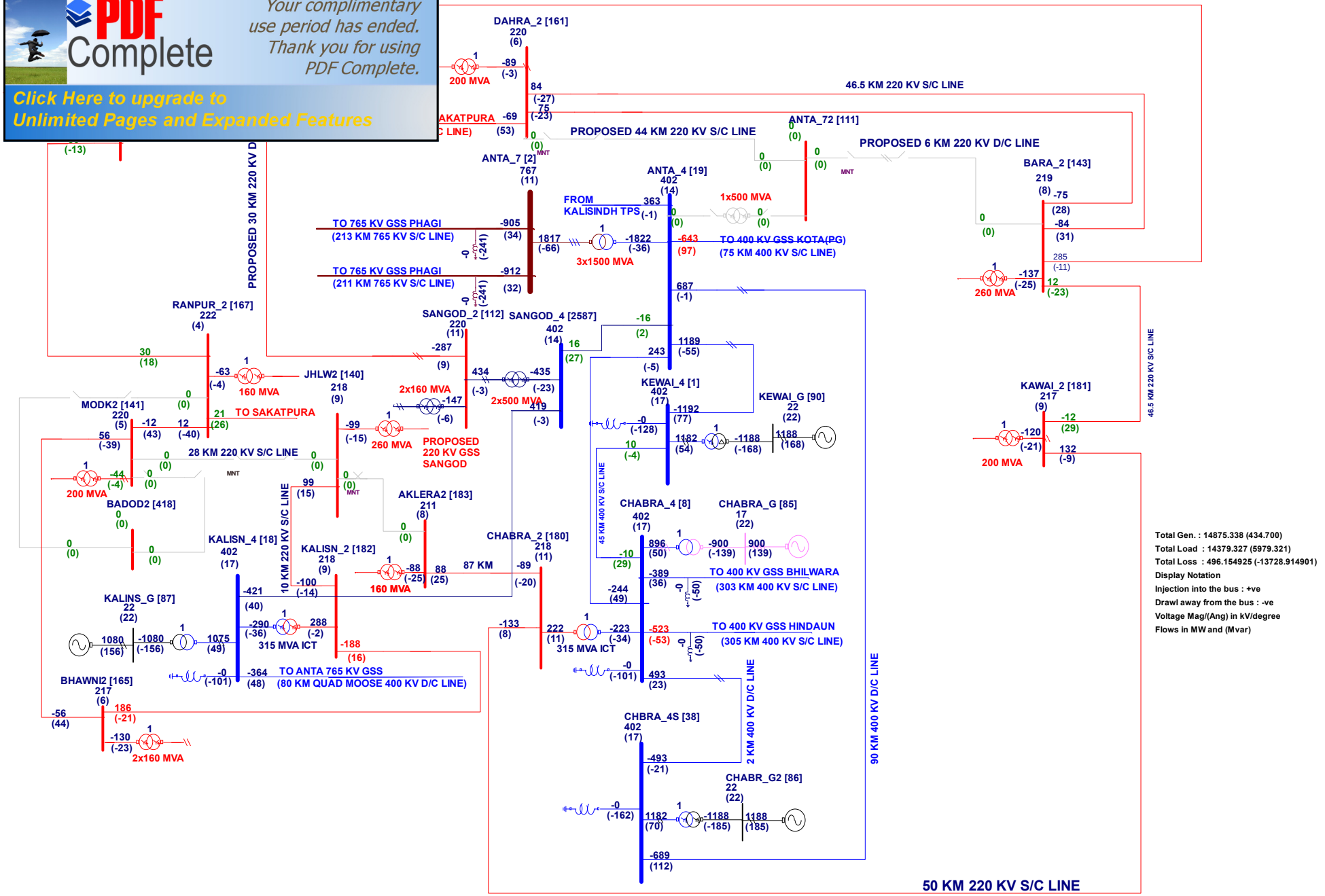
EXHIBIT-1

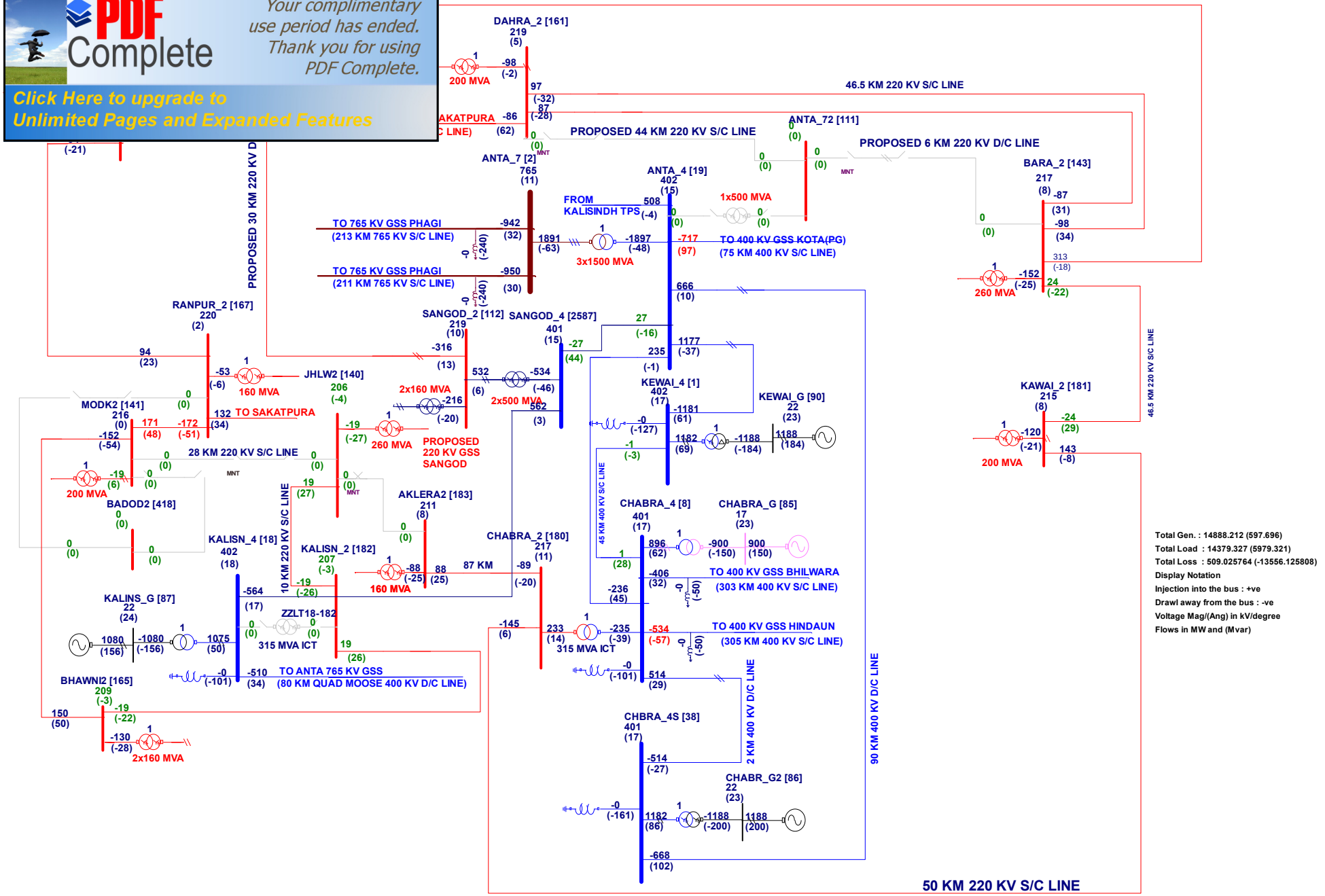


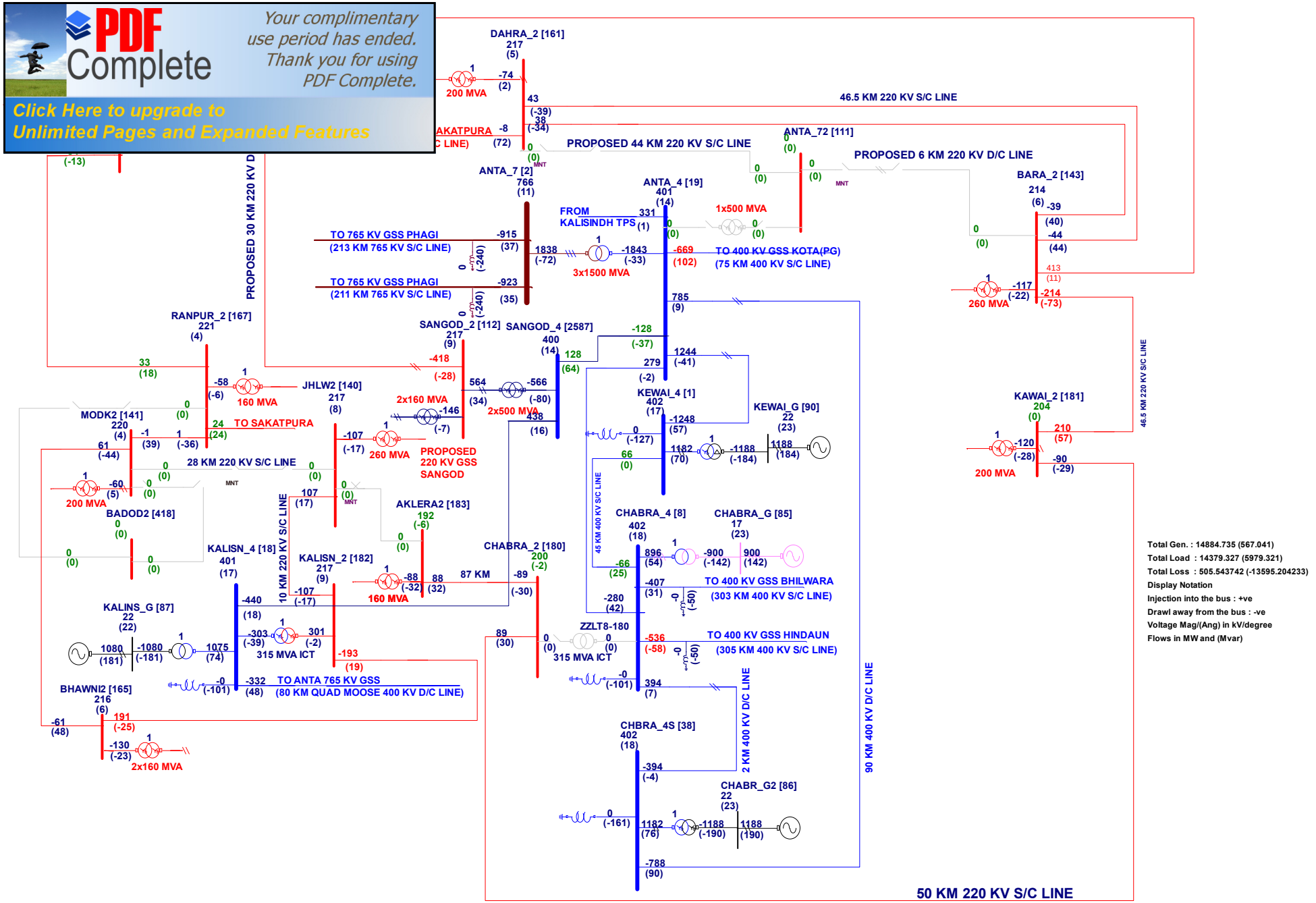












Total Gen. : 14884.735 (567.041)
Total Load : 14379.327 (5979.321)
Total Loss : 505.543742 (-13595.204233)
Display Notation
Injection into the bus : +ve
Drawl away from the bus : -ve
Voltage Mag/(Ang) in kV/degree
Flows in MW and (Mvar)

Annexure-B1

Stage-I Connectivity applications

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
Connectivity applications near Bhadla										
1.	1200001542	ReNew Solar Energy (Jharkhand Four) Private Limited	Jodhpur, Rajasthan	02/08/18	500	Solar	Bhadla (Under Implementation)	ReNew Solar Energy (Jharkhand Four) Pvt Limited 500 MW Project – Bhadla 220 kV D/c line	Fatehgarh (400kV Pooling Station along with Fatehgarh-Bhadla765kV D/c line to be operated at 400kV under Implementation by TBCB licensee) • Installation of 1x500MVA, 400/220kV transformer at Fatehgarh Pooling Station	ReNew Solar Energy (Jharkhand Four) Pvt Limited 500 MW Project – Fatehgarh 220 kV D/c line
2.	1200001626	Electro Solaire Private Limited	Jodhpur, Rajasthan	07/08/18	300	Solar		Electro Solaire Generation Switchyard – Bhadla 220 kV S/c line		Electro Solaire Generation Switchyard – Fatehgarh 220 kV S/c line
3.	1200001629	Sprng Ujjvala Energy Private Limited	Jodhpur, Rajasthan	09/08/18	300	Solar		Sprng Ujjvala Bhadla - Bhadla 220 kV S/c line		Sprng Ujjvala Bhadla - Fatehgarh 220 kV S/c line
Connectivity applications near Bikaner										
4.	1200001621	ReNew Solar Energy (Jharkhand Four) Private Limited	Bikaner, Rajasthan	06/08/18	500	Solar	Bikaner (Under Implementation) • Installation of 1x500MVA, 400/220kV transformer at Bikaner S/s	ReNew Solar Energy (Jharkhand Four) Pvt Limited 500 MW Project – Bikaner 220 kV D/c line	Bikaner-II (New) • Establishment of 400/220 kV, 1x500 MVA Pooling Station at Bikaner-II(New) S/s • Bikaner-II(New)-Bikaner(Existing)	ReNew Solar Energy (Jharkhand Four) Pvt Limited 500 MW Project – Bikaner-II (New) 220 kV D/c line
5.	1200001630	Giriraj Renewables Private Limited	Bikaner, Rajasthan	09/08/18	600	Solar & Wind		Giriraj Solar PV & Wind Hybrid Project– Bikaner 220 kV D/c line		Giriraj Solar PV & Wind Hybrid Project– Bikaner-II (New) 220 kV D/c line

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
6.	1200001628	Sprng Ujjvala Energy Private Limited	Bikaner, Rajasthan	09/08/18	300	Solar		Sprng Ujjvala Bikaner - Bikaner 220 kV S/c line	400 kV D/c	Sprng Ujjvala Bikaner - Bikaner-II (New) 220 kV S/c line
Connectivity applications near Fatehgarh										
7.	1200001636	ACME Solar Holdings Limited	Jaisalmer, Rajasthan	11/08/18	300	Solar	Fatehgarh (400kV Pooling Station along with Fatehgarh-Bhadla765kV D/c line to be operated at 400kV under Implementation by TBCB licensee)	• Pooling of power of ACME Fatehgarh III,IV & V Solar Power Plants at Common Pooling Station of Common pooling station of ACME Fatehgarh III,IV & V Solar Power Plants • Common pooling Station of ACME Fatehgarh III (1200001634), ACME Fatehgarh IV (1200001636) & ACME Fatehgarh V (1200001688) Solar Power Plants – Fatehgarh 400 kV S/c line (with minimum capacity of at least 900 MW at nominal Voltage)	Fatehgarh – II (New) • Establishment of 400kV Pooling Station at Fatehgarh – II (New) • Fatehgarh – Fatehgarh – II(New) 400kV D/c(Quad))	• Pooling of power of ACME Fatehgarh III,IV & V Solar Power Plants at Common Pooling Station of Common pooling station of ACME Fatehgarh III,IV & V Solar Power Plants • Common pooling station of ACME Fatehgarh III (1200001634), ACME Fatehgarh IV (1200001636) & ACME Fatehgarh V (1200001688) Solar Power Plants – Fatehgarh- II (New) 400 kV S/c line (with minimum capacity of at least 900 MW at nominal Voltage)
8.	1200001634	ACME Solar Holdings Limited	Jaisalmer, Rajasthan	11/08/18	300	Solar				
9.	1200001688	ACME Solar Holdings Limited	Jaisalmer, Rajasthan	31/08/18	300 (sought at 400kV)	Solar				
Connectivity applications near Bhinmal										

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
10.	1200001631	Giriraj Renewables Private Limited	Jalore, Rajasthan	09/08/18	300	Solar	Bhinmal (Existing)	Bhinmal Solar PV Project – Bhinmal 220kV S/c line	Bhinmal-II (New) • Establishment of 400/220 kV, 1x 500 MVA Pooling Station at Bhinmal (New) • LILO of Kankroli – Zerda 400kV S/c at Bhinmal (New)	Bhinmal Solar Project – Bhinmal-II (New) Substation 220kV S/c
Connectivity applications near Sikar										
11.	1200001632	Giriraj Renewables Private Limited	Sikar, Rajasthan	9/08/18	300	Solar	Sikar (Existing)	Giriraj Solar PV Project – Sikar 220 kV S/c line (with GIS bay at Sikar)	Sikar-II (New) • Establishment of 400/220 kV, 1x 500 MVA Pooling Station at Sikar (New) • Sikar-II(New)-Sikar (Existing) 400 kV D/c	Giriraj Solar PV Project – Sikar-II(new) 220 kV S/c line