



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

क. सं. : 26/10/2017/ वि प्र. यो. & प. मू. -I/ 1234-1248

दिनांक: 08.11.2017

1. सदस्य (विद्युत प्रणाली), केन्द्रीय विद्युत प्राधिकरण, सेवा भवन, आर के पुरम, नई दिल्ली-110066
2. सदस्य सचिव, पश्चिमी क्षेत्रीय विद्युत समिति, एम. आई. डी. सी क्षेत्र, मेरोल, अंधेरी पूर्व, मुम्बई-400094 फ़ैक्स सं. 022-28370193
3. निदेशक (परियोजना), पावरग्रिड कार्रपोरेशन ऑफ इंडिया लि., सौदामिनी, प्लाट सं. 2, सैक्टर-29, गुडगाँव-122001 फ़ैक्स सं. 0124-2571760
4. अध्यक्ष एवं प्रबन्ध निदेशक, एम.पी.पी.टी.सी.एल. शक्ति भवन, रामपुर, जबलपुर-482008 फ़ैक्स सं. 0761-2664141
5. प्रबन्ध निदेशक छत्तीसगढ़ रा. वि. बोर्ड, दानगनिया, रायपुर (छत्तीसगढ़) -492013 फ़ैक्स सं. 0771-2574246
6. प्रबन्ध निदेशक, जी.ई.ट्रां.नि.लि, सरदार फ़टेल विद्युत भवन, रेस कोर्स, बड़ोदा-390007 फ़ैक्स सं. 0265-2338164
7. निदेशक (प्रचालन), महाद्रांसको, प्रकाशगड, प्लॉट संख्या-जी 9, बांद्रा-पूर्व, मुम्बई-400051 फ़ैक्स 022-26390383/26595258
8. मुख्य अभियंता (पारेषण), न्यूक्लीयर पावर कॉरपोरेशन ऑफ इंडिया लि, 9एस30, वीएस भवन, अणुशक्ति नगर, मुम्बई-400094 फ़ैक्स सं. 022-25993570
9. कार्यपालक निदेशक (अभियांत्रिकी), नेशनल थर्मल पावर कॉरपोरेशन लि, इंजीनियरिंग ऑफिस कॉम्प्लैक्स, ए-8, सैक्टर-24, नोएडा-201301 फ़ैक्स सं. 0124-2410201
10. मुख्य अभियंता, विद्युत विभाग, गोवा सरकार, पणजीफ़ैक्स सं. 0832-2222354
11. कार्यपालक इंजीनियर (परियोजनाएं), दादरा एवं नागर हवेली संघ शासित क्षेत्र, विद्युत विभाग, सिलवासा, फोन नं. 0260-2642338
12. कार्यपालक इंजीनियर, विद्युत विभाग, दमन एवं दीव संघशासित क्षेत्र प्रशासन, मोती दमन, पिन-396220 फोन नं. 0260-2250889, 2254745
13. कार्यपालक निदेशक, (विशेष आमंत्रित), डब्लू आर एल डी सी, प्लॉट संख्या-एफ 3, एम आई डी सी एरिया, मेरोल, अंधेरी पूर्व, मुम्बई-400093, फ़ैक्स संख्या-022-28235434
14. कार्यपालक निदेशक, एनएलसीसी बी-9, कुतुब इन्स्टीट्यूशनल एरिया, कटवारिया सराय, नई दिल्ली-110016 फ़ैक्स 011-26852747
15. निदेशकए पारेषणए विद्युत मंत्रलयए श्रम शक्ति भवनए रफी मार्गए नई दिल्ली

विषय :- पश्चिमी क्षेत्र विद्युत प्रणाली योजना की स्थाई समिति की 42 वीं बैठक की कार्यसूची ।

महोदय / महोदया ,

पश्चिमी क्षेत्र के विद्युत प्रणाली योजना स्थायी समिति की 42 वीं बैठक की अतिरिक्त कार्यसूची
केन्द्रीय विद्युत प्राधिकरण की वेबसाइट www.cea.nic.in के लिंक
<http://www.cea.nic.in/compsplanning.html> (i.e. Home page-Wings-Power Systems-PSP&PA-I -
Standing Committee on Power System Planning-Western Region) पर उपलब्ध हैं ।

धन्यवाद

संलग्न : उपरोक्त

भवदीय

(रवींद्र गुप्ता)

मुख्य अभियंता

विशेष आमंत्रक: निदेशक, विद्युत अभियांत्रिकी (पीएस), रेलवे बोर्ड, रेल भवन, नई दिल्ली



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Power System Planning & Appraisal-I Division

No. 26/10/2017/PSP&PA-I/ 1234-1248

Date: 08.11.2017

1. The Member (PS), Central Electricity Authority, Sewa Bhawan, R. K. Puram, New Delhi-110066
2. The Member Secretary, Western Regional Power Committee, MIDC Area, Marol, Andheri East, Mumbai Fax 022 28370193
3. The Director (Projects), GCIL, Saudamini, Plot No. 2, Sector-29, Gurgaon-122001 Fax 0124-2571760/2571932
4. Chairman and Managing Director, MPPTCL, Shakti Bhawan, Rampur, Jabalpur-482008 Fax 0761 2664141
5. The Managing Director, CSPTCL, Dangania, Raipur (CG)-492013 Fax 0771 2574246/ 4066566
6. The Managing Director, GETCO, Sardar Patel Vidyut Bhawan, Race Course, Baroda-390007 Fax 0265-2338164
7. Director (Operation), MAHATRANSCO, 'Prakashgad', Plot No.G-9, Bandra-East, Mumbai-400051 Fax 022-26390383/26595258
8. Chief Engineer (Trans), NPCIL, 9S30, VS Bhavan, Anushakti Nagar, Mumbai-400094 Fax 022-25993570
9. The Executive Director (Engg.), NTPC Ltd., Engg. Office Complex, A-8, Sector-24, NOIDA 201301 Fax 0120-2410201/2410211
10. The Chief Engineer, Electricity Department, The Government of Goa, Panaji Fax 0832 2222354
11. Executive Engineer (Projects) UT of Dadra & Nagar Haveli, Department of Electricity, Silvassa Ph. 0260-2642338/2230771
12. Executive Engineer, Administration of Daman & Diu (U.T.), Department of Electricity, Moti Daman-396220 Ph. 0260-2250889, 2254745
13. GM, WRLDC, Plot no F-3, MIDC Area, Marol, Andheri(East) Mumbai-400093 Fax no 022-28235434
14. CEO, POSOCO, B-9, Qutab Institutional Area, Katwaria Sarai, New Delhi-110016 Fax 011-26852747
15. Director (Trans), MoP, Shram Shakti Bhawan, Rafi Marg, New Delhi

Sub: Additional agenda notes of 42nd meeting of the Standing Committee on Power System Planning of Western Region

Sir / Madam,

The additional agenda notes of 42nd Meeting of Standing Committee on Power System Planning of Western Region is available on CEA website (www.cea.nic.in) at the following link: <http://www.cea.nic.in/compsplanning.html> i.e. Home page-Wings-Power Systems-PSP&PA-I - Standing Committee on Power System Planning-Western Region).

Enclosures: as above

Yours' faithfully,

(Ravinder Gupta)
Chief Engineer

Special invitee: Director, Electrical Engg. (PS), Railway Board, Rail Bhawan, New Delhi

Additional agenda notes for 42nd Meeting of Standing Committee on Power System Planning of Western Region

1. Connectivity of Railways' TSS with ISTS Network:

The agenda item no. 9 in main agenda may be considered as follows:

- 1.1. In the 41st meeting of Standing Committee on Power System Planning of Western Region (SCPSPWR) held on 21.12.2016, the issue of connectivity to Railways TSS (Traction Sub Station) from various ISTS points along Delhi – Bharuch route was discussed. PGCIL had confirmed the availability of space for two nos. of 220 kV bays at ISTS substations along the Delhi – Bharuch route i.e., space for 2 no. of 220 kV AIS bays at Rajgarh, Dehgam, Pirana, Kota, Bassi substations and space for 2 no. of GIS bays at Vadodara. In the meeting, it was mentioned that as per the Railways Act, 1989, Railways can build transmission lines, maintain & operate the same for its own utilization and as per CERC petition no. 197/MP/2015 order dated 05.11.2015, Railways is authorized to undertake transmission and distribution activities in connection with the working of Railways independent of its status under the Electricity Act, 2003.
- 1.2. The issue of Connectivity of Railways' TSS with ISTS network along Delhi – Bharuch route was also discussed in the 39th meeting of Standing Committee on Power System Planning of Northern Region held on 29th – 30th May 2017 (as Kota and Bassi 400/220 ISTS substations fall in Northern Region). Members were of the view that Railway networks are already connected with STU networks and they are getting reliable power from STU network. Creating a parallel infrastructure through connectivity with ISTS network would not be economical. With Railways getting connected with ISTS network, the STU transmission assets supplying power to Railways would become stranded. Also, the maximum anticipated load of Railways at each ISTS point would be of the order of 80 to 100 MW, which means under utilization of ISTS asset.

In the 39th meeting of SCPSPNR, it was agreed that Railways would once again look into the cost economics of connectivity to ISTS points vis-a-vis open access through STUs network and share the same with CEA.

- 1.3. South East Central Railways, Bilaspur vide its dated 24.05.2017 had intimated that PGCIL has granted connectivity to South East Central Railway (SECR) at Raipur (Kumhari – PGCIL). In order to provide uninterrupted Traction Power Supply, SECR has proposed an alternate standby arrangement at Raigarh 400/220 kV substation i.e., connectivity of Railways 220/132 kV substation to 400/220 kV Raigarh ISTS substation. Subsequently, South East Central Railways, Bilaspur vide its dated 26.07.2017 has proposed one more connectivity at Bhatpara (between Kumhari and Raigarh) 400/220 kV ISTS substation. The copy of the letter dated 24.05.2017 and 26.07.2017 from SECR is enclosed at Annexure – 9.1 & 9.2 of main agenda.

SECR has requested for inclusion of the following proposal in the Standing Committee meeting:

- i) Connectivity to Railway's 220/132 kV substation at Raigarh with 400/220 kV Raigarh ISTS substation.
- ii) Connectivity to Railway's 220/132 kV substation at Bhatpara with 400/220 kV Bhatpara ISTS substation.
- iii) Reconfirmation of connectivity of SEC Railway 220/132 kV substation at Bhilai in Chhattisgarh to Raipur (Kumhari) 400/220 kV PGCIL substation.

- 1.4. The connectivity at Raipur (Kumhari) 400/220 kV PGCIL substation to SECR has been granted as a bulk consumer. Railways may clarify, whether the connectivity being sought at Raigarh and Bhatpara as Bulk Consumer or Licensee.
- 1.5. Railway / CSPTCL may furnish the details of the connectivity of the existing TSS with Chhattisgarh system. Railways may present the economic analysis of seeking connectivity through ISTS points vis-à-vis seeking open access from STUs (CSPTCL in this case).
- 1.6. CSPTCL may intimate their willingness for granting open access to Railways.
- 1.7. **Members may deliberate.**

2. Signing of Transmission Service Agreement (TSA) by Long Term Transmission Customers (LTTC) for the transmission scheme “Additional 400 kV Feed to Goa and Additional System for Power Evacuation from Generation Projects pooled at Raigarh (Tamnar) Pool” – Agenda by PFCCL

- 2.1. The transmission scheme “Additional System for Power Evacuation from Generation Projects pooled at Raigarh (Tamnar) Pool” was agreed in 39th meeting of SCPSPWR held on 30.11.2015 and transmission scheme “Additional 400 kV feed to Goa” was agreed in 40th meeting of SCPSPWR held on 01.06.2016.
- 2.2. Empowered Committee on Transmission in its 36th meeting held on 26.07.2016 clubbed the above schemes under scheme “**Additional 400 kV Feed to Goa and Additional System for Power Evacuation from Generation Projects pooled at Raigarh (Tamnar) Pool**” with following **scope of work** and recommended for its implementation through TBCB.

Scope of the Transmission scheme - Additional 400 kV Feed to Goa and Additional System for Power Evacuation from Generation Projects pooled at Raigarh (Tamnar) Pool

a) Additional 400kV feed to Goa

- LILO of one ckt. of Narendra (existing) – Narendra (New) 400kV D/c quad line at Xeldem
- Xeldem – Mapusa 400kV D/c (quad) line
- Establishment of 2x500MVA, 400/220kV substation at Xeldem

b) Additional System for Power Evacuation from Generation Projects pooled at Raigarh (Tamnar) Pool

- Dharamjaygarh Pool Section B – Raigarh (Tamnar) Pool 765 kV D/c line.

- 2.3. Ministry of Power vide Gazette Notification dated 28.10.2016 appointed PFC Consulting Limited (PFCCL) as Bid Process Coordinator for the purpose of selection of Bidder as Transmission Service Provider (TSP) to establish transmission system for the above transmission scheme.
- 2.4. As per the Guidelines issued by Ministry of Power, a Transmission Service Agreement (TSA) has to be signed among the SPV and the concerned beneficiaries / LTTC for payment of the transmission charges finalized on the basis of competitive bidding and accepted by the appropriate Commission. In line with the requirement of the RfP documents, the copy of the duly executed TSA is to be made available to the bidders, 7 days prior to the last date of submission of RfP bids

i.e. by 12.09.2017. Accordingly, PFCCL vide its letter dated 12.06.2017 has requested to the following 7 nos. LTTC for signing of the TSA.

- i) Maharashtra State Electricity Distribution Company Limited
- ii) Gujrat Urja Vikas Nigam Limited
- iii) M. P. Power Management Company Limited
- iv) Chattisgarh State Power Distribution Company
- v) Goa Electricity Department
- vi) DNH power Distribution Corporation Limited
- vii) Electricity Department, Daman & Diu

2.5. However, as on date only the following 5 LTTCs have signed the said TSA.

- i) Gujrat Urja Vikas Nigam Limited,
- ii) M. P. Power Management Company Limited,
- iii) Goa Electricity Department,
- iv) DNH power Distribution Corporation Limited
- v) Electricity Department, Daman & Diu

and the following two (2) LTTCs are yet sign the TSA

- i) Maharashtra State Electricity Distribution Company Limited.
- ii) Chhattisgarh State Power Distribution Company

2.6. The status of the bidding process for the above scheme is as follows:

- RfQ stage completed on 25.04.2017 and bidders were short listed for RfP.
- RfP documents were issued to the shortlisted bidders w.e.f. 06.06.2017.
- The submission of RfP Bid (Non - Financial & Financial) was scheduled on 19.09.2017.
- RfP (Financial) bid was opened on 11.10.2017 and the evaluation is under progress.

2.7. PFCCL has made a request for expediting the signing of TSA by remaining two LTTCs i.e. MSEDCL and CSPDCL.

2.8. MSETCL and CSPTCL are requested to get the TSA signed by MSEDCL and CSPDCL.

Members may deliberate.

3. Extension of Essar Power Gujarat Ltd (EPGL) - Bhachau 400 kV D/c (Triple) line of POWERGRID upto Bhogat substation – Agenda by PGCIL

3.1. The utilization of EPGL-Bhachau 400kV D/C line was deliberated in the 41st meeting of SCSPWR held on 21.12.2016, wherein, GETCO stated that POWERGRID should come out with a win - win solution for the reconfiguration proposal for EPGL (Essar) – Bhachau 400 kV D/C line, which entails no loss to Gujarat, even if benefits are not envisaged immediately. It was also requested that POWERGRID shall work out the burden to be shared by GUVNL for various conditions i.e., existing case and additional burden on GUVNL with any kind of reconfiguration and power flow benefits thereof.

3.2. The above matter was further discussed in a meeting between GETCO and CTU on 17.06.2017 at Vadodara, wherein POWERGRID presented various alternatives of utilization of Essar – Bhachau 400kV D/C line followed by discussions regarding modalities of implementation, impact on tariff, discussions regarding PoC, etc.

3.3. CERC vide its order dated 11.10.2017 in reference to petition no. 187/MP/2015 filed by Essar power Gujarat Limited (EPGL) has stated that CTU in consultation with CEA, GETCO and EPGL may explore the possibility of optimum utilization of the Essar Gujarat TPS – Bachau 400 kV D/C (Triple) Line. Till the alternative arrangements for utilization of the said transmission line, the EPGL shall continue to pay the transmission charges as determined by the Commission.

3.4. POWERGRID has informed that as per the wind power potential map available at MNRE website, the South-West part of Gujarat has a high wind potential. Hence, the proposed extension of EPGL-Bhachau 400kV D/C (triple) line upto Bhogat substation of GETCO, would provide a strong inter-connection of the STU network in the RE rich areas of Gujarat with the ISTS system facilitating evacuation of RE power from Bhogat area and also for supplying power to nearby load centers of Gujarat. Also, certain connectivity applications for inter-connection with ISTS have been received in the vicinity of Devbhumi Dwarka region of Gujarat, for which a new 400/220kV pooling station near Jam Khambhaliya is being envisaged. The proposed extension of EPGL - Bhachau (PG) 400 kV D/c (triple) line up to Bhogat could also be LILOed at the proposed Jam Khambhaliya PS in future, for facilitating evacuation of power from RE projects in the area

3.5. **Members may deliberate.**

4. Operational feedback of NLDC period from April’2017 to Jun’2017

Section 1: Operational Constraints

4.1.1 Transmission Line Constraints

Sl. No	Corridor	Constraints	Deliberation in 41 st Meeting of SCSPWR
1	Constraints in –Bableshwar – Padghe corridor Antecedent Conditions: With high Maharashtra Demand of the order of 18500-23000 MW during morning peak and no generation at TAPS, low generation at Parli, RGPPL, Jaigad and SSP.	400 kV Bableshwar - Padghe corridors carrying more than 500 MW in each ckt. The corridor is N-1 non-compliant.	Remedial Actions: Commissioning of 400 kV Bableshwar – Kudus D/C and Kudus Sub-station to be expedited by MSETCL. In 41 st SCM, STU-MSETCL informed that it would be commissioned by Dec’17. In the last OCC (496), MSETCL informed that it will be commissioned in July’18.
2	765/400 kV ICT at Tirora and 765/400 kV ICT at Akola II Antecedent Conditions: When generation at APML Tirora is above 2400 MW and Rattan India (5x270 MW) is in service.	The system is not n-1 compliant.	Remedial Actions: Single ICT at Tirora and Akola-II is a constraint leading to n-1 non-compliance and at present managed by SPS. Commissioning of ICTs need to be expedited. In the meeting, MSETCL intimated that clearance from MERC was still awaited for 1x1500 MVA ICT, (4 x 500 MVA single phase units with 1 spare) at Tirora & Akola II. These were expected to be commissioned by Dec, 2017.

Sl. No	Corridor	Constraints	Deliberation in 41 st Meeting of SCSPWR
3	<p>Transmission system for Koradi St-II (3x660 MW) and IEPL (2x270 MW)</p> <p>Antecedent Conditions: Koradi-II station is connected with 400 kV Koradi II-Koradi III D/C, 220 kV Koradi II-Kaulewada D/C and LILO of 400 kV Wardha-Warora one circuit (Interim arrangement).</p>	<p>At present Koradi-II 3x660 MW are commissioned and managed with SPS. System is N-1 non-compliant and there is no generation at IEPL.</p>	<p>Remedial Actions: The Evacuation plan for APML, Tirora (5x660 MW) Rattan India, Amravati (5x270 MW), Chandrapur st-2 (2x500 MW), IEPL (2x270MW), and Dhariwal (1x300 MW) need to be studied by the STU in order to check whether the existing plan and available network will provide secure evacuation under various contingency during N-1 criteria.</p> <p>In 41st SCM MSETCL was requested for evacuation plan for Koradi-II (beyond Chandrapur). CTU to advise the removal of the interim LILO connection of 400 kV Warora-Wardha one ckt at Koradi-II.</p>
4	<p>400 kV Bina-Sujalpur D/C</p> <p>Antecedent Conditions: N-1 insecure operation of Bina -Sujalpur D/C after commissioning of Shujalpur – RAPS D/C coupled with high Demand in MP of above 11000 MW.</p>	<p>High loading observed above 600 MW/ckt on most of the occasions</p>	<p>Remedial Actions: Commissioning of HVDC Champa-Kurukshetra Bipole may help in reduced loading on these lines.</p> <p>Present Status: One Pole of Champa-Kurukshetra has been commissioned in Mar'17 and reduced the loading to some extent. Other Pole of HVDC testing has started and is expected by July-Aug'17.</p>
5	<p>220 kV Gwalior-Malanpur D/C</p> <p>Antecedent Conditions: High loading observed when MP demand is more than 8500MW.</p>	<p>The system is n-1 insecure, currently managed by load trimming scheme by MPPTCL.</p>	<p>Remedial Actions: Network strengthening may be planned in this area.</p>
6	<p>220 kV Navsari (PG) - Navsari (GETCO) D/C</p> <p>Antecedent Conditions: With High generation at DGEN, Ukai, Jhanor.</p>	<p>High loading observed more than 220 MW and N-1 non-compliant</p>	<p>Line implementation under scope of TSP through TBCB route. TSP has not started the work.</p> <p>Remedial Actions: Early commissioning of Navsari- Bhesthan (Popada) 220 kV D/C line which is under TBCB.</p>
7	<p>400 kV Jhanor-Navsari (PG) S/C and 400 kV Sugan-Vapi S/C</p> <p>Antecedent Conditions: With less generation at TAPS and nil generation at KAPS and DGEN, Jhanor-Navsari S/C loading is high.</p>	<p>400 kV Jhanor-Navsari and 400 kV Sugan-Vapi loading are high and N-1 Non-Compliant.</p>	<p>At present, one ckt of Jhanor – Navsari and one ckt of Ukai – Kosamba is clubbed and operated as Jhanor –Kosamba and Ukai-Navsari as an interim arrangement by Gujarat.</p> <p>Remedial Actions: 400 kV KAPS – Navsari D/C and 400 kV KAPS – Vapi D/C are commissioned and there is no anchoring at KAPS between 400 kV KAPS and 220 kV KAPS. 220 kV KAPS generation will be restored in 2018. 400 kV Jhanor-Navsari other circuit need to be restored.</p>

4.1.2 ICT Constraints

S. No	ICT	Description of the constraints	Deliberation in 41 st Meeting of SCSPWR
1	2 x 315 MVA 400/220 kV Chakan ICTs Antecedent Conditions: All time	It is observed that the loading on ICTs at Chakan (2 x 315 MVA) are above 200 MW and additional ICT has to be proposed.	Presently, MSETCL has implemented load trimming scheme to take care of overloading. In 41 st meeting of SCSPWR, MSETCL intimated that additional ICT is under planning.
2	3x315 MVA + 1x600 MVA 400/220 kV Padghe ICTs Antecedent Conditions: All time	It is observed that the Padghe ICTs are fully loaded and system is N-1 non-compliant.	MSETCL has implemented load trimming scheme to take care of overloading. In 41 st SCM MSETCL intimated that it has planned 5 th ICT, 1 x 500 MVA at Padghe and is expected to be commissioned by March 2017. Kudus S/s is expected to commission by Dec, 2017. Present Status: MSETCL informed that 2 nd unused ICT of 500 MVA at Warora is being shifted to Padghe. However, commissioning schedule is not updated. Kudus Substation Commissioning status is given in 496 OCC Meeting as July'18.
3	2x315+1x500 MVA 400/220 kV Parli (MS) ICTs Antecedent Conditions: All time	It is observed that loading on these ICTs are N-1 non-compliant	MSETCL has implemented load trimming scheme to take care of overloading. However Severe low voltage has been observed at Parli and Sholapur area due to high loading. Remedial Actions: Nanded Sub-station with 2x500MVA 400/220 kV ICTs and 220 kV lines commissioned in Mar16 and Parli ICTs are relieved to some extent. Discussion in 41st meeting of SCSPWR: ICTs and bays at Parli (PG) commissioning schedule by PGCIL is Jun/July'18. MSETCL schedule for 220kV lines associated with ICTs is Dec-2018.
4	2 x 315 + 500 MVA 400/220 kV Kolhapur (MS) ICTs Antecedent Conditions With High Demand in Maharashtra and Low Wind generation in Southern Maharashtra	It is observed that loading on these ICTs are N-1 non-compliant.	In April 2017, two blackouts have occurred at Karad and Kolhapur S/s causing load loss of more than 1800 MW. MSETCL thereafter planned and implemented load trimming scheme. Remedial Actions: Additional ICTs to be planned for Kolhapur S/s. Load has to be shifted to 400/220 kV Alkud and Sholapur PG S/s with augmentation of 220 kV Lines.

S. No	ICT	Description of the constraints	Deliberation in 41 st Meeting of SCPSPWR
5	3x315 MVA 400/220 kV Karad ICTs Antecedent Conditions With High Demand in Maharashtra and Low Wind generation in Southern Maharashtra	It is observed that loading on these ICTs are N-1 non-compliant.	However, in April 2017, two blackouts have occurred at Karad and Kolhapur S/s causing load loss of more than 1800 MW. MSETCL thereafter planned and implemented load trimming scheme. Remedial Actions: Additional ICTs to be Planned for Karad S/s. Load has to be shifted to 400/220 kV Alkud and Sholpaur PG S/s with augmentation of 220 kV Lines.
6	2x500 MVA 400/220 kV Sholapur (MS) ICTs Antecedent Conditions With High Demand in Maharashtra system above 18500 MW	It is observed that loading on these ICTs are N-1 non-compliant.	MSETCL has implemented load trimming scheme to take care of overloading. Remedial Actions: Shifting of Loads to the 400/220 kV ICTs of Sholapur (PG) in order to reduce the loading on these ICTs.
7.	2 x 315 MVA 400/220 kV Wardha (PG) ICTs Antecedent Conditions With Commissioning of Koardi Units 3x660 MW.	The ICTs are loaded are above 200 MW most of the time with the commissioning of Koradi stage 2.	Remedial Actions: Earlier there were three 400/220 kV ICTs at Wardha S/s where on request of Maharashtra one ICT was shifted as there were many generators connected at 220kV Wardha and Maharashtra was not drawing power from these ICTs. However, now due to less generation at 220kV Wardha, Maharashtra has started drawing large quantum of power from the remaining two ICTs causing their overloading. 2x500 MVA 400/220 ICTs of Koardi 2 are lightly loaded. Network augmentation and load distribution to be done so that loads of Wardha should be shifted to these ICTs.
8.	2x500 MVA + 1x600 MVA 400/220 kV Kalwa ICTs	With increased demand and low network augmentation in the area, the system is not N-1 compliant.	Remedial Actions: The Navi Mumbai substation need to be utilized with 220 kV network augmentation.
9.	2x315 MVA 400/220 kV Satna ICTs	It is observed that the loading on	MPPTCL has implemented Load trimming scheme for overloading of ICTs.

S. No	ICT	Description of the constraints	Deliberation in 41 st Meeting of SCSPWR
	Antecedent Conditions High Demand in Madhya Pradesh above 9000 MW	ICTs at Satna (2 x 315MVA) are above 200 MW and additional ICT has to be proposed.	Remedial Actions: Discussion in 41st meeting of SCSPWR: Commissioning of 500 MVA additional ICT was approved & is expected to be commissioned by PGCIL in July 2018. PGCIL intimated that installation of 3 rd 1x315 MVA ICT in parallel with existing one 315 MVA ICT at Satna as an interim arrangement under progress & expected to be commissioned by 15.01.2017. Present Status: On 11 th may contingency arrangement of 2 x 315 MVA ICTs in parallel operation through same bay has been commissioned with Load trimming scheme in operation.
10	3x315 MVA 400/220 kV Gwalior PG ICTs Antecedent Conditions High Demand in Gwalior and nearby area.	The high loading on these ICTs is due to absence of required 220 kV outlets, low generation at Auraiya.	Remedial Actions: SPS has to be implemented by MP SLDC/PGCIL for n-1 compliance of these ICTs, 220 kV Gwalior-Malanpur D/C. 220 kV network Augmentation in the area has to be done to ensure N-1 compliance. 400/220 kV Morena S/s (TBCB) and 220 kV LILO of one circuit of Malanpur – Mehgaon 220 kV line at 400/220 kV Morena S/s (TBCB); 220 kV Morena (TBCB)-Morena (MP)-Sabalgarh and 220 kV Morena (TBCB) – Sabalgarh circuits would be expedited. (by March 2018)
11	3x315 MVA 400/220 kV Bhopal ICTs Antecedent Conditions Madhya Pradesh meeting high demand of above 9000 MW	It is observed that the loading on ICTs at Bhopal (3x315MVA) are above 200 MW and additional ICT has to be proposed	Remedial Actions: MPPTCL has informed that 4 th ICT (315MVA) is Planned. Discussion in 41st meeting of SCSPWR: 1x315 MVA, 400/220 kV ICT (4th) at Bhopal is under implementation by MPPTCL. Award has been placed on 04.04.2016 and is expected to be completed by June 2017.
12	315 MVA 400/220 kV Itarsi ICT Antecedent Conditions Madhya Pradesh meeting high demand of above 9000 MW	Single ICT with loading above 200 MW for more than 20 % of the time.	Remedial Actions: 2 nd 500MVA ICT approved in 38 th SCM. Discussion in 41st meeting of SCSPWR: POWERGRID informed that 1x500 MVA 400/220 kV ICT along with two nos. of 220 kV bays at Itarsi (PG) would be commissioned by March 2018.

S. No	ICT	Description of the constraints	Deliberation in 41 st Meeting of SCSPWR
13	2x315 MVA Dehgam ICTs Antecedent Conditions Gujarat meeting high demand and generation at Wanakbori being low.	It is observed that the loading on ICTs at Dehgam (2 x 315 MVA) are above 180 MW and additional ICT has to be proposed.	Remedial Actions: Discussion in 41st meeting of SCSPWR: One 500 MVA, 400/220 kV ICT commissioning schedule by PGCIL is March 2019.
14	2 x 315 MVA APL Mundra ICTs Antecedent Conditions With High Wind Generation in 220 kV Network near Nanikhakar area and Low APL Generation.	It is observed that loading on these ICTs are high	Remedial Actions: Additional 500MVA ICT charged at Varsana. Varsana ICTs to be used for evacuation of Intra State Renewable generation in Gujarat.

4.1.3 Nodes Experiencing Low Voltage:

400 kV – Boisar, Padghe, Lonikhand, Pune (PG), Jejuri, Chakan, Parli (MSETCL), Sholapur (MSETCL), Vapi (PG), Sholapur (MSETCL), Vapi (PG), Magarwada, Kala, Gwalior (PGCIL)

4.1.4 Nodes Experiencing High Voltage:

400 kV – Aurangabad, Chandrapur, Dhule, Karad, Kolhapur, Mapusa, Rajgarh
765 kV – Aurangabad, Wardha, Durg

4.1.5 Lines opened on High Voltage: NLDC intimated that in order to control voltage, the following lines were opened 10 times and above during the period from Apr, 2017 to Jun, 2017.

S. No.	Name of Elements	Owner Name	No. of times line opened
1	400 kV Dhule-SSP One Ckt	MSETCL	55
2	400 kV Kolhapur(PG)-Mapusa One Ckt	PGCIL	52
3	765 kV Aurangabad-Wardha one ckt	PGCIL	43
4	400 kV Bhusawal-Aurangabad S/C	MSETCL	29
5	765 kV Pune(PG)-Solapur(PG) S/C	PGCIL	25
6	400 kV SSP-Rajgarh One Ckt	MPPTCL	23
7	765 kV Raipur PS(Durg)-Wardha(PG) One Ckt	PGCIL	17
8	400 kV Khandwa-Rajgarh One Ckt	PGCIL	16
9	765 kV Dharamjaygarh(PG)-Jabalpur(PS) One Ckt	PGCIL	10

4.2.1 Lines / ICTs opened to control overloading

Sl. No	Transmission Element (s) opened	Overloaded corridor	Remarks
1.	400/220 kV Pune(PG) one ICT	To control loading in 220 kV Pune (PG) –Talegaon D/C lines	<p>Additional 220 kV outlets from Pune (PG) to be expedited by MSETCL.</p> <p>Discussion in 41st meeting of SCSPWR: MSETCL intimated that Pune -Hingewadi 220 kV D/C is under implementation, however, due to urbanization it has severe RoW constraints and this line is expected to get commissioned by Dec, 2018. Further, it was stated that Talegaon - Chinchwad 200 kV D/C is under implementation & expected to get commissioned by March, 2017. There are constraints beyond Urse only. MSETCL to update.</p>
2	400/220 kV 2x315 MVA + 1x500 MVA Sholapur(PG) ICTs	2x500 MVA Sholapur (MS) ICTs loading will reduce if loads are shifted to Sholapur PG ICTs	<p>South Solapur has been connected which is around 100 MW. Further 2x500MVA Sholapur (MS) ICTS are heavily loaded. Therefore, loads from Solapur (MS) need to be transferred to Sholapur (PG) for reducing ICT loading at Solapur (MS) and better utilization of ICTS at Sholapur (PG).</p> <p>Discussion in 41st meeting of SCSPWR: MSETCL intimated that about 50 MW load connected with Solapur (PG) and the around 200 MW load of Solapur (MS) would be transferred to Solapur (PG) by March 2017. Solapur – Bale 220 kV D/C would be implemented by Dec, 2017.</p> <p>Present: Load connected is in tune of 200-250 MW. 220 kV Sholapur (PG)-Jeur line has been made as an interim arrangement by reconfiguration of 400 kV Karad-Sholapur (PG) Circuit.</p>
3.	400/220kV 2 x 500 MVA Warora ICTs	Idle charged in the absence of 220kV downstream network.	<p>Present Status: MSETCL intimated that one ICT has been shifted to Bableshtar & commissioned on 27.11.2016.</p> <p>Second ICT has to be shifted to Padghe. Present status of commissioning to be informed by MSETCL.</p>
4.	400/220 kV 1 x 500 MVA Alkud ICT	Idle charged in the absence of 220kV downstream network.	The Loading on these ICTs will help in reducing the loading on Kolhapur (MS) and Sholapur (MS) ICTs. However, 220 kV System is not yet ready.

Sl. No	Transmission Element (s) opened	Overloaded corridor	Remarks
5	400/220 kV 2x500 MVA ICTs at Vadodara	Idle charged in the absence of 220kV downstream network.	The Loading on these ICTs will help in reducing loading on Jambua and other nearby ICTs. Discussion in 41st meeting of SCSPWR: GETCO has informed that 220 kV Venkatpura-Vadodara D/C Line to be commissioned by Dec'17 and 220 kV Jambua – Vadodara D/C Line by Dec'18. GETCO to update.
6	400/220 kV 2x315 MVA ICTs at Betul	Idle charged in the absence of 220kV downstream network.	The loading on these ICTs will help in reducing the 220 kV loading circuits in the area and N-1 security. As per 41 st SCM, 220 kV Betul (PG) - Betul D/C 220 kV line by Mar'18 and LILO of Sarni - Pandhurna 220 kV line at Betul GIS by Jan'18.

Section 3: Delay in Transmission / Generation

4.3.1 Delay in transmission lines affecting grid operation adversely

S. No.	Transmission Corridor	Scheduled Commissioning Date	Actual/ Likely Commissioning Date	Transmission Constraint Caused
1.	400 kV Essar Vadinar – Amreli D/C	July'13	Dec'17	Would complete Vadinar evacuation and relieve Hadala - Chorania S/C. However, interim arrangement with completed portion of Amreli - Vadinar one ckt terminated at Jetpur and one ckt at Hadala relieved loading of Chorania – Kasor.
2.	400 kV Amreli – Kasor D/C	June'13	Mar'18	Would relieve Chorania-Kasor S/C. However, interim arrangement with completed portion of Amreli-Vadinar D/C, one ckt terminated at Jetpur and one ckt at Hadala has relieved the loading of Chorania –Kasor. Discussion in 41st meeting of SCSPWR: GETCO representative stated that in this area, no transmission line is over loaded. However, it was stated that 60 % of the line has been completed and now the work is stranded due to RoW issues. This line expected to be commissioned by Dec, 2017
3.	400 kV Essar Mahan-Bilaspur Pooling Station D/C	Mar'13	June'17	This would complete transmission system planned for evacuation of Essar Mahan (2x600 MW) which is on interim connectivity with LILO of 400 kV Korba-V'chal-1. Bilaspur pooling station is commissioned in Mar'12 and dedicated lines from Essar Mahan to Bilaspur are delayed indefinitely by developer

S. No.	Transmission Corridor	Scheduled Commissioning Date	Actual/ Likely Commissioning Date	Transmission Constraint Caused
				causing constraints in the transmission system from Korba. This interim connectivity has also resulted in poor maintenance of line and bay equipment as several time outages are being cancelled as generator. Discussion in 41st meeting of SCSPWR: - Essar Mahan initially gave a schedule after 6 months, but extended to Dec'17. Committee advised Essar Mahan to complete the lines by June'17. Essar Mahan has again requested for extension.
4.	400 kV Kudus S/s along with 400 kV Bableshtar-Kudus D/C and associated 220 kV system	Mar'16	Dec'17	Due to delay in commissioning of 400 kV Bableshtar –Kudus D/C, heavy loading are observed on 400 kV Bableshtar-Padghe S/s. 41st SCM Discussion : Kudus substation is expected to commission by Dec, 2017 & Kudus –Bableshtar would be commissioned along with the Kudus S/s.
5.	400 kV KSK-Champa 2xD/C	2015	Dec'16	Present Status: 400 kV KSK-Champa PS ckts 3 & 4 were charged on 4 th October 2016. KSK to submit the status of 400kV KSK-Champa ckt 1&2.
6.	400kV Mouda-Betul D/C by PGCIL and 220kV lines from Betul S/S by MPPTCL.	Dec'16	July'17	These are the lines planned for Mouda-St-II (2x660MW). One unit of Mouda St-II is commissioned and the evacuation lines are delayed which is causing constraints in the existing 400kV Mouda-Wardha D/C lines which are for Stage-I (2x500MW) evacuation. At present unit 3 is connected with SPS at Mouda.

4.5.1 Transmission Elements under long outage :

S No	Transmission Elements	Affected Areas	Expected Revival date
1	50 MVAR LR of 400 kV PARLI(MS)-LONIKAND (NEW)-2 at PARLI (MS)	Parli	Under Procurement
2	240 MVAR BR at 765 kV TIRODA	Tirora, Koradi3	Shall be restored in 15 Days
3	50 MVAR LR of 400 kV KANSARI-BHINMAL-1 at KANSARI	Kansari	Status shall be intimated
4	400/220/33 kV BHADRAWATI ICT	HVDC Bhadrawati	No Status
5	125 MVAR BR at 400 kV JHABUA	Jhabua, Jabalpur PS	No Status
6	80 MVAR BR at 400 kV RAIPUR	Raipur	No Status

7	50 MVAR LR of 400 kV ITARSI-INDORE-2 at ITARSI	Itarsi	No Status
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4.5.2 Important lines / ICTs under construction from Transfer Capability and Reliability view point

These envisaged lines would enhance the reliability or increase the inter-regional transfer capability between different regions as per the present conditions and can be expedited.

Sl. no	Name of the transmission element (Line / ICT)	Implementing agency	Remarks
1	±800 kV Champa Pooling Station - Kurukshetra HVDC Second pole	POWERGRID	Improvement in Transfer Capability to Northern region from Western region
2	765 kV Jabalpur-Orai D/C	POWERGRID	Improvement in Transfer Capability to Northern region from Western region
3	400 kV Aurangabad - Boisar D/C	POWERGRID	Will reduce loading of 400 kV Bableshwar-Padghe D/C if comes with 400/220 kV Kudus Substation.
4	765 kV Aurangabad (PG) - Padghe (PG) D/C	POWERGRID	Will reduce loading of 400 kV Bableshwar-Padghe D/C if comes with 400/220 kV Kudus Substation along with 220 kV Network at Kudus and 400 kV Bableshwar-Kudus D/C.
5	400 kV D/C Bableshwar-Kudus	MSETCL	Will reduce loading of 400 kV Bableshwar-Padghe D/C
6	400 kV Mouda- Betul D/C	POWERGRID	For Evacuation of Mouda Stage 2
7	400 kV Vindhyachal PS-Vindhyachal Stage 4 2 nd D/C	ATIL	For N-1 security of VSTPS Stage 4, 5 generation

4.7.1 High Fault current observation at 400 kV Vindhyachal and 400 kV Kotra Substation in Western region

NLDC intimated that in Western Region fault level is more than 40 kA at several substations. Recently in three cases, very high fault currents have been observed which are given below:

Name of Substation	Date and Time	Fault	Fault Current in KA
Vindhyachal	23-05-17 17:43	Y phase LA Failure of 400 kV Vindhyachal-Jabalpur 1 circuit	59 kA
Vindhyachal	23-05-17 17:43	Y phase GT failure of Vindhyachal Unit 8	79 kA
Kotra	27-05-17 18:34	R phase to E/F on 400 kV Kotra-Lara 1 circuit	40 kA

Such high fault current results in stress across the breaker and can result in their failure. So, all steps need to be taken in order to reduce the fault level of the substation.

4.7.2 Requirement of 220 kV System Augmentation in Maharashtra System: NLDC intimated that during the real time operation in Maharashtra system, it has been observed that most of the 400/220 kV ICTs are being operated with load trimming scheme due to high loading. Further, various 220 kV lines are operated with load trimming scheme due to high loading in the absence of adequate 220 kV network. In addition, planned lines which were required for reducing the loading on existing system are delayed in commissioning schedule. Recent example is the blackout of Karad-Kolhapur substations

on 13 and 26 April 2017 where more than 1900 MW of load loss has occurred with large scale blackout in the 220 kV system.

In view of this, the Maharashtra STU with the help of CEA and CTU may kindly review the planning and network augmentation in the state of Maharashtra so that real time operation can be made N-1 and N-1-1 secure.

- 4.7.3 **Requirement of 220 kV System Augmentation in Chhattisgarh System:** NLDC intimated that on 25th May 2017, due to tripping of one 220kV line, a large part of Bhilai system went dark. This incident involved tripping of most of the 220/132 kV ICTs, 220 kV incoming feeders on overcurrent protection. During the event 220/132 kV Bhilai, Gurur, Siltara, Basoor and 132 kV Sector C, Rajnanandgaon and Dongargrah got blackout causing 876 MW load loss. Further, one similar tripping has occurred in the past on 3rd June 2016 also in which large load loss has occurred due to tripping on overload protection.

In view of this, Chhattisgarh STU with the help of CEA and CTU may kindly review the planning and network augmentation in the state of Chhattisgarh so that real time operation can be made N-1 and N-1-1 secure.

Members may discuss this

5. Implementation modalities on provision of 400/220 kV, 315 MVA or 500 MVA ICT along with one no. of 400 kV ICT bay and one no. of 220 kV bay ICT bay at M/s CGPL Switchyard – agenda by WRPC

- 5.1. In the 40th meeting of SCSPWR held on 01.06.2016, in order to interconnect CGPL UMPP and APL Mundra STPS, the following possible interconnections were discussed:

- i) Provision of 400/220 kV, 315 or 500 MVA transformer along with one no. of 400 kV bay and one no. of 220 kV bay at M/S CGPL 400 kV / 220 kV switchyard.

The space for provision of transformer and bays are available at CGPL switchyard. The transformer would be normally kept disconnected either at 400 kV side or 220 kV side. In case of emergency start up power could be extended from Nanikhakar 220 kV substation to 400 kV CGPL bus.

- ii) LILO of Adani Mundra STPS -Varsana 400 kV S/C line -1 at CGPL UMPP 400 kV switchyard. Implementation of this alternative would require one or two nos. of 400 kV bays at CGPL switchyard. The LILO line has to cross two nos. of 220 kV D/C lines emanating from Adani Mundra switchyard and three nos. of 400 kV D/C lines emanating from CGPL switchyard.

- iii) A direct 400 kV interconnection between CGPL UMPP and Adani Mundra STPS.

For implementation of this 400 kV S/C line, one 400 kV line bay each at Adani Mundra STPS and CGPL UMPP is required. Space for bays are available at both the switchyard but there are constraints in taking out the line from the Adani Mundra STPS 400 kV switchyard. This line has to cross Mundra - Mahendragarh HVDC line, Adani Mundra STPS to Earth electrode station line, three nos. of 400 kV D/C lines, two nos. of 220 kV lines emanating from Adani Mundra switchyard and three nos. of 400 kV D/C lines emanating from CGPL switchyard.

In the meeting option was agreed i.e., provision of 400/220 kV, 315 or 500 MVA transformer along with one no. of 400 kV ICT bay and one no. of 220 kV ICT bay at M/S CGPL 400 kV/220 kV switchyard. The direct interconnection between Adani Mundra STPS and CGPL UMPP would be normally open and would be used whenever required. It was also agreed that the implementation modalities of the above scheme may be finalized in the WRPC.

5.2. Now, WRPC vide its letter no. WRPC/Protection/CGPL/1316 dated 17.10.2017 intimated that the above matter was discussed in the 33rd & 34th meetings of WRPC. In the 34th meeting of WRPC, it was agreed for independent funding and work to be executed by PGCIL as regards to the implementation modalities for the scheme. The extracts of the discussions held on the issue in the 34th WRPC meeting is enclosed at Annexure – A 5.1.

5.3. **Members may deliberate.**

6. 400 kV Grid connectivity for the proposed new smelter plant of 0.51 MTPA at Balco Complex

6.1. In continuation to the point no. 5 of main agenda, BALCO vide its letter no. BALCO / CEA/2017/01 dated 24.10.2017 (Annexure – A6.1) has made the following submission:

- i) The installed capacity of Balco complex is 2010 MW (4 x 67.5 + 4 x 135 + 4 x 300) and 0.57 Metric Ton Per Annum (MTPA) Aluminium smelter (two smelters – 0.245 MTPA and 0.325 MTPA) with total load of 950 MW. Out of the existing 2010 MW installed capacity, 1410 MW (4 x 67.5 + 4 x 135 + 2 x 300) is CPP and 600 MW (2 x 300) is IPP.
- ii) Another new Aluminium smelter plant with a capacity of 0.51 MTPA is planned in the existing BALCO complex, which may require power of around 750 MW. The process for statutory clearances / approvals and contract for finalization of smelter is advanced stage. As per project implementation schedule, the commissioning activities would start from March, 2019 and full load operation may be achieved by Oct, 2019.
- iii) To meet the demand of this new smelter BALCO has proposed the following:
 - A 400/220 kV switchyard along with 2 x 315 MVA ICT and 400 kV D/C transmission line for grid connectivity from 400 kV PGCIL Dharamjaygarh pooling station. Further, Unit – 2 of 300 MW (due to surrendering of power by Chhattisgarh, the unit 2 of 2 x 300 MW IPP is under utilized) and 4 x 67.5 MW existing CPP once upgraded to 5 x 75 MW unit to be connected to switchyard of this new smelter at 220 kV level (efficiency improvement of 270 MW of stage I (4 x 67.5 MW), R & M and capacity upgradation to 375 MW (5 x 75) is under consideration). The 400 kV transmission line would facilitate import of power from under open access.
 - The existing BALCO smelter plant (0.57 MTPA) and power plant capacities of 1440 MW (4 x 135 MW + 2 x 300 MW) shall remain with existing 400 kV grid connectivity from 400 kV PGCIL Dharamjaygarh PS and shall be utilized to serve the existing power sales contract and other long term obligations

6.2. BALCO has requested the following:

- i) BALCO requests for an import connectivity for new smelter plant of capacity 0.51 MTPA to 765 / 400 kV PGCIL Dharamjaygarh (Urga) Poling Station, where BALCO having additional 2 no. of 400 kV bays which is presently unutilized and paying monthly O & M charges of bays

- ii) The above connectivity is requested under “Consumer Category” and considering average power import of 150 MW from the grid as per CERC (Grant of connectivity, Long Term access and Medium Term Open Access in Inter State transmission and related matters open access in inter state transmission) Regulations, 2009 and subsequent amendments envisaged.

6.3. Members may deliberate.

7. Implementation of the future GIS bay along-with the planned GIS bay in the same diameter in view of complexities involved with interfacing different manufacturer make GIS bay modules

7.1. PGCIL vide its email dated 03.11.2017 intimated that, one and a half breaker scheme is generally followed in all 400 kV and 765 kV substations of POWERGRID. For a given transmission element requiring one bay in an AIS substation, a half equipped diameter (consisting of main and tie CBs) is generally implemented and the future CB bay is taken up separately as when a new transmission element is planned in the substation. However, in case of a GIS substation, it is not practical to install the future CB bay at a later date in a half equipped GIS diameter on account of following parameters which differ from manufacturer to manufacturer:

- Dimension of GIS modules (with respect to layout).
- Bus Orientation (i.e. vertical, horizontal, triangular etc.)
- Switchgear Height of various GIS components (CB, Isolator, CT, PT etc.)
- Proprietary Technology

7.2. Also, in order to join the two different make GIS, interface modules are additionally required which increase the space requirement in GIS hall or else an irregular shaped GIS building is required to be designed. Further, existing vendors charge exorbitant cost as opportunity cost to share proprietary information regarding dimensional details and technical parameters of existing GIS modules with the upcoming GIS manufacturer. Moreover, during erection of an upcoming GIS, alignment with existing GIS active parts is very vulnerable and any disturbance to the same may result in damage of the existing GIS, which may affect reliability in power transfer.

7.3. In view of the complexities involved in the interfacing of GIS modules of different manufacturers, it is proposed that the complete diameter (with 3 CB bays) 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.

7.4. Members may deliberate.

8. Converting Fixed Line Reactors into Switchable Line Reactors in Kankroli – Zerda line at Kankroli end

8.1. PGCIL vide its email dated 03.11.2017 intimated that Zerda – Kankroli 400kV S/c line is a 234 km. long inter-regional line between WR and NR grids. Fixed reactive compensation (63MVAR at Zerda end and 50MVAR at Kankroli end) have been provided for this line to facilitate charging and to contain dynamic over voltage.

- 8.2. With wide variation in the grid conditions, line reactors are often required to be switched off under low voltage conditions (especially during peak load conditions) and switched on during high voltage conditions (especially during the winter months in Northern Region). Since, initially the line reactors on the Zerda – Kankroli line were planned as fixed line reactors, switching on/off the line reactors based on requirement is not possible. In view of the above, the scheme for “Conversion of fixed line reactors to switchable line reactors” was discussed and agreed during 39th meeting of Standing Committee of Northern Region held on 29-30th May, 2017 which includes conversion of fixed line reactors to switchable reactors at both ends of Zerda – Kankroli 400kV S/c line.
- 8.3. Based on the feedback from site, space is not available at Zerda end for conversion of fixed line reactor into switchable line reactor. Accordingly, it is proposed to convert the fixed line reactor (420 kV, 50MVAR) at Kankroli end of Zerda – Kankroli 400kV line into switchable line reactor. The DOV studies indicate that the dynamic over-voltages are within limits even when the line reactor at Kankroli end is switched off.
- 8.4. **Members may deliberate**



भारत सरकार
Government of India
केन्द्रीय विद्युत प्राधिकरण
Central Electricity Authority
पश्चिम क्षेत्रीय विद्युत समिति
Western Regional Power Committee
एफ -3, एमआयडीसी क्षेत्र, अंधेरी (पूर्व), मुंबई - 400 093
F-3, MIDC Area, Andheri (East),
Mumbai - 400 093



आई एस ओ : 9001-2008
IS/ISO: 9001-2008

दूरभाष Phone: 022- 28209506, 28200195; 28200196; फैक्स Fax : 022 - 28370193

Website : www.wrpc.gov.in E-mail : ms-wrpc@nic.in protectionwrpc@gmail.com

No. : WRPC/Protection/CGPL/

13 16 - 3

Date:

17 अक्टूबर 2017
OCT 2017

To,

Chief Engineer,
PSP & P-I Division,
Sewa Bhawan, R.K.Puram,
New Delhi-110066.

Subject: implementation modalities on provision of 400/220 kV, 315 or 500 MVA transformer along with one no. of 400 kV ICT bay and one no. of 220 kV ICT bay at M/S CGPL 400 kV/220 kV switchyard.- Reg.

Sir,

Reference is invited to the discussions on the above subject matter in the 40th SCM held on 01.06.2016, wherein members agreed on option of provision of 400/220 kV, 315 or 500 MVA transformer along with one no. of 400 kV ICT bay and one no. of 220 kV ICT bay at M/S CGPL 400 kV/220 kV switchyard. The direct interconnection between Adani Mundra STPS and CGPL UMPP would be normally open and would be used whenever required. Further, members agreed that the implementation modalities for the scheme may be finalized in the WRPC.

Accordingly the matter was discussed in the 33rd & 34th WRPC meetings. In the 34th WRPC meeting, WRPC agreed for independent funding and work to be executed by PGCIL as regards to the implementation modalities for the scheme.

The extracts of the discussions held on the issue in the 34th WRPC meeting is enclosed at Annexure.

Yours' faithfully

A. Balan
16/10/2017
A. Balan,

Member Secretary.

Copy to :

- 1) MD, GETCO, Sardar Patel Vidyut Bhavan, Race Course, Baroda-390007.
- 2) CEO (CTU), Saudamini Plot No.2, Sector-29, Gurgaon-122 001 (Haryana)-Fax-0124-2571762.

1176/17/CE/PSP/AF
2.01.27

to. incl. 09
site. agreed item
Dr. Shiva
23/10/17

WRPC Discussions:

MP requested that they are also included in the study group. Tata Power opined that if committee agrees for studying by IIT-B, then the report has to be submitted to WRPC for deciding further course of action.

WRPC agreed for Chairman TCC suggestion as above.

Item No. 9:**Interconnection between CGPL UMPP and Adani Mundra STPS in Gujarat – provision of 400/220 KV ICT at CGPL Mundra and compensation mechanism for 220 KV S/C CGPL Mundra – Nanikhakhar line & bays**

Background:

In the 33rd WRPC meeting, WRPC recommended that since this ICT is being brought for system benefit, it should be under PSDF funding. Therefore it was recommended that GETCO shall apply for the project with PSDF authorities and WRPC approval for the same is accorded.

Managing Director, GETCO vide letter no MD/STU/505/07 dated 05.07.2017(Copy enclosed) that technical requirement of 400/220 KV ICT at CGPL Mundra is already agreed in SCM as well as TCC / WRPC forums.

In this regard this is to clarify that the generation switchyard belongs to a private party (CGPL) and entire evacuation scheme is developed by PGCIL under ISTS scheme. GETCO being a STU for Gujarat State has no direct role in entire project. Therefore, if GETCO will apply for PSDF funding then there will be issues related to implementation / execution, ownership and operation & maintenance of the said asset at CGPL switchyard.

At this juncture, it is pertinent to note that 2 Nos. of 400 KV feeder bays at CGPL Mundra switchyard is under implementation by PGCIL for accommodation of 400 KV D/C CGPL Mundra – Bhuj Pool line identified as a strengthening scheme after implementation of planned evacuation scheme. Therefore, looking to the above mentioned issues and PGCIL presence in CGPL switchyard, it is suggested that PGCIL shall apply for PSDF funding for 400/220 KV ICT at CGPL Mundra and implement the same.

Also, 220 KV S/C CGPL Mundra – Nanikhakhar line & associated 220 KV bay at Nanikhakhar is to be maintained by GETCO, suitable commercial mechanism may be developed for compensation.

TCC Discussion:

PGCIL stated that the interlinking ICT work between CGPL UMPP and Adani Mundra STPS has to go through SCM for acceptance. It was opined that generators can also carry out such ICT work. Further, it was informed that the ICT work cannot be done under PSDF scheme by PGCIL, but it could be done under "cost plus" basis. PGCIL also opined that if it is part of an ISTS work, then it can be done.

MP stated that before starting the ICT work, commercial issues (i.e. fixed cost, O&M cost, etc.) are to be addressed first. Further it was stated by MP that cost of such ICT work has to be borne by the Generators' (CGPL) beneficiaries only and not others.

CE, NPC/CEA clarified that if ICT work as part of ISTS asset, then it may not be eligible for PSDF scheme.

After detailed discussion, TCC suggested that the opinions of the TCC members for funding through PSDF to be appraised to Standing Committee for WR planning.

It was also proposed by TCC that installation of the ICT shall be carried out by PGCIL after completing the formalities by moving the proposal through Empowered Committee (on Transmission) constituted by Ministry of Power.

WRPC Discussion:

MD, GETCO informed that the provision of ICT at CGPL is for facilitating the black-start to Mundra complex & it is certainly for system requirements. He further informed that the matter has already been decided in 33rd WRPC meeting to be funded through PSDF. He stated that entire CGPL evacuation system is done by PGCIL & also commissioning of two feeder bays for Bhuj pooling station has been done by them. Therefore he requested PGCIL, having expertise and well conversant with system, to carry out the project through PSDF after completing all formalities.

Director, PGCIL stated that the proposal is not qualified for PSDF. He also stated that if WRPC want this work to be carried out by PGCIL then a letter from WRPC is

required to be communicated to Ministry and CEA. He also stated that 100% PSDF funding involves ownership and O&M charges issue. He asked CEA representative (CE, NPC) to throw more light on the matter of PSDF funding. CEA representative stated that this work can be given by WRPC to PGCIL on nomination basis. The representative of MP stated that it is a having lot of commercial implication and if POC mechanism is to be applied then the POC charges should only be borne by beneficiaries of the project not all the beneficiaries of WR. In response, Director, PGCIL stated that the project is for black start facility and therefore it is a project for system requirement. He further added that the cost of project could be around Rs. 20 to 30 Crores and therefore for this meager expenditure the commercial implication would be very small.

After detailed discussion, WRPC agreed for independent funding and work to be executed by PGCIL.

Item No. 10

Reliable Communication Scheme under Central Sector for Western Region

PGCIL informed vide email dated 12.07.2017 that WRPC in its 33rd TCC/WRPC meeting held on 31st Jan 17 and 01st Feb'17 at Diu, approved Reliable Communication scheme of 3402 Kms of OPGW based communication network at an estimated cost of Rs. 85 Cr. Subsequently, POWERGRID worked out detailed cost estimate of the scheme and prepared DPR for the same. The estimated cost comes out to Rs. 89.74 Cr. Tender activities have also been initiated based on DPR.

TCC Discussion:

During the discussion, PGCIL intimated that the basic Cost estimate was Rs. 90 Crores and after DPR it got escalated to Rs. 106 Crores which includes IDC, OPGW and terminal equipment on either side. TCC asked PGCIL to submit DPR and reasons for cost escalation. Subsequently DPR has been submitted by PGCIL (Copy enclosed at **Annexure-10**).

WRPC agreed as above.

BALCO/CEA/2017/01

Date: 24.10.2017

To,
Chief Engineer
Power System Planning & Appraisal-II Division,
Central Electricity Authority,
Sewa Bhawa, R K Puram, Sector-1,
New Delhi - 110066

Subject: 400 KV CTU Grid Connectivity for Proposed New Smelter Plant of 0.51 MTPA Capacity at BALCO Complex, Korba, Chhattisgarh.

Dear Sir,

Bharat Aluminium Company Ltd. (BALCO) was incorporated in 1965 as a Public Sector Undertaking (PSU). BALCO has pioneered and first Integrated Aluminium Company in India. Presently Government of India holding 49% stake in BALCO.

Existing BALCO Plant consist of Aluminium Smelting capacity of 0.57 Million Ton Per Annum (MTPA) (Two Smelter Potline with capacity 0.245 & 0.325 MTPA) at Korba, Chhattisgarh. In addition to this BALCO has total installed Power Plant with generating capacity of 2010 MW, consisting of Captive Power Plants (CPPs) with aggregating capacity of 1410 MW (4x67.5 MW+4x135 MW+2x300 MW) and IPP with aggregating capacity of 600 MW (2x300 MW) and connected with 400KV double circuit line to URG A Dharamjaygarh Pooling station.

Now, BALCO has undertaken to set up the New Smelter Plant of 0.51 MTPA capacity in the existing BALCO complex. Power requirement for the proposed smelting plant shall be ~750 MW (additional).

1. BALCO has already initiated the process for obtaining the required statutory approvals for project implementation. Environmental Clearance from MoEF, Proposed Project TOR has already been approved by MoEF. (copy attached)
2. Contract finalization for proposed Smelter is in advanced stage and expected to be concluded within one month. As per the project implementation schedule, commissioning activities shall start from March 2019, power requirement shall increase in phased manner and full load operation expected to be achieved by October 2019.
3. To meet the load requirement of the new 0.51 MTPA Smelter Project, following is BALCO's action plan:

1803/17/CE/PSPA-1
30/10/17

→

For Approval
C. S. S.
20/11/17

3/11/17

PSPA

- a. BALCO to undertake Energy Efficiency Oriented R&M and capacity Up-gradation of 270MW captive Power Plant (4x67.5 MW) to ~5x75 MW (375 MW), techno commercial discussion is under progress.
- b. Unit -2 of BALCO's 2X300 MW IPP Units is severely under-utilized due to Government of Chhattisgarh's decision not to offtake 30% of Power on regulated tariff vide order 1992/f21/03/PPA/2011/13/2/2013 dated 24th August 2013 . As per MoU/Implementation Agreement signed between BALCO and GoCG, GoCG were to offtake 5% of net generated power on variable cost & additional 30% power of aggregated capacity on regulated tariff. Hence it is envisaged to deploy presently unutilized Unit-2 to service new Smelter project.
- c. As total power requirement for the new smelter plant is ~750 MW, additional power requirement of ~ 150 MW for the new smelter plant shall be met through import from grid by having medium term Power Purchase Agreements.
- d. BALCO has already floated EoI for sourcing additional power requirement and received proposals form 8-10 Nos. Generator.

As per the details brought out above, power requirement for the proposed new smelter plant shall be met through existing available generation capacities of BALCO in part and rest through Power Import under Open Access. Therefore no new power generating capacity addition is envisaged.

In line with above, BALCO has considered to reorganise the available generation capacity to meet the power demand for the Proposed New Smelter Plant, Existing Smelter Plant and other existing obligations. Power import from grid has been considered to meet the total power requirements of Proposed New Smelter Plant.

For the Proposed Smelter Plant of 0.51 MTPA capacity, New Grid Connectivity is envisaged and required essentially for reliable operation. As detailed above Existing Smelter Plant (Total Load ~930 MW) and Proposed New Smelter Plant (Total Load ~750 MW) shall operate as entirely separate block.

Also, as per RPO obligation, presently BALCO is required to purchase the REC considering limitations of present export connectivity. Considering quantum of RPO obligation, as long term viable options, BALCO intends to have tie-up for the import of Renewable Energy as per availability and time to time basis.

Proposed final configuration and connectivity arrangement for the Existing Smelter Plant & Proposed New Smelter Plant with Power Plants capacities are enlisted below -

1. A new 400 / 220 KV Switchyard along with 2x315 MW ICT and 400 KV double circuit transmission line for Grid Connectivity from 400 KV PGCIL Dharamjaygarh pooling substation for the new Smelter Plant . Unit-2 of 300MW Unit # 2 and 4x67.5 MW existing CPP once upgraded to ~5x75 MW unit to be connected to New Smelter Plant of 220 KV Switchyard. The new Transmission line would facilitate import of power under Open Access.
2. Existing BALCO Smelter Plant (0.57 MTPA) and Power Plant with capacities 1440 MW (4x135 MW + 2x300 MW CPP + 1x300 MW) shall remain with existing 400 KV Grid Connectivity from 400 KV PGCIL Dharamjaygarh pooling substation and shall be utilized to service the existing Power Sales contracts and other long term obligations.

BALCO's Submission:

1. BALCO hereby requests for an Import Connectivity for New Smelter Plant of capacity 0.51 MTPA to 765/400KV PGCIL URGA Dharamjaygarh Pooling Station, where BALCO is having additional 02 nos. 400 KV bays which is presently unutilized and paying monthly O&M Chargers of bays. .
2. This connectivity is requested under the "Consumer Category" and considering average power import of ~150 MW from the grid as per Central Electricity Regulatory Commission (Grant of Connectivity, Long-term Access and Medium-term Open Access in inter-State Transmission and related matters Open Access in inter-State Transmission) Regulations, 2009 and subsequent amendments is envisaged.

As per the consideration brought out above, BALCO once again requests to consider our application for the 400 KV Grid Connectivity for New Smelter Plant through 400 KV Double Circuit Transmission Line from the 765/400 KV PGCIL Dharamjaygarh Pooling Substation to enable implementation of future Growth Plans of BALCO.

**With Best Regards
For Bharat Aluminium Company Limited**

**Devendra Kumar Patel
Associate Vice President,
(Head - Projects, BALCO)**



EXHIBIT - I: Exiting Arrangement and Grid Connectivity Details for Existing Plant

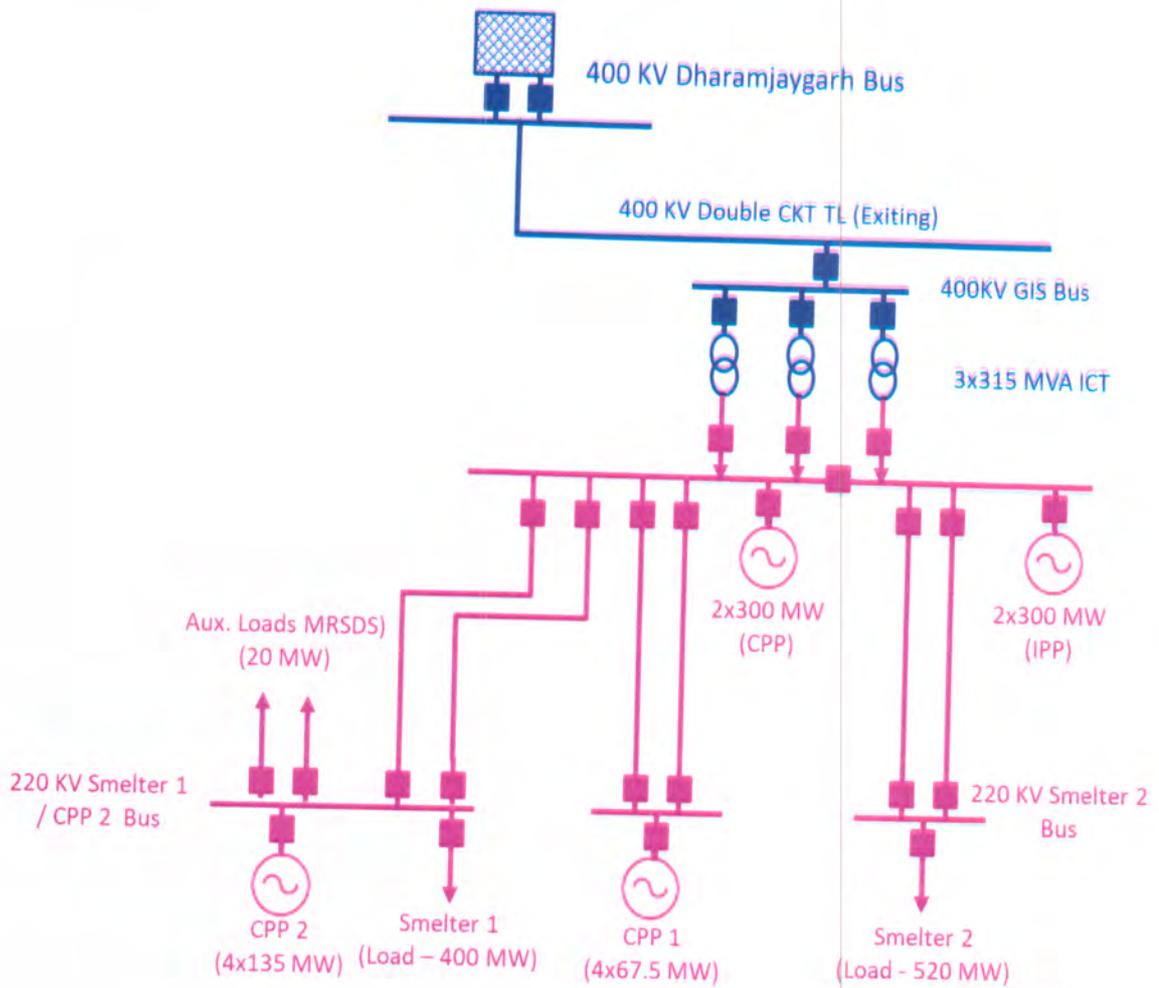


EXHIBIT - II: Proposed Arrangement and Grid Connectivity Details for Proposed and Existing Plant

