Agenda

for

39th TCC Meeting

of

EASTERN REGIONAL POWER COMMITTEE

Date: 16th November, 2018

Venue: Jaipur

Index

EASTERN REGIONAL POWER COMMITTEE, KOLKATA

AGENDA FOR 39TH TCC MEETING

Date: 16th November, 2018 (Friday) **Place: Jaipur**

ITEM NO.A1:	CONFIRMATION OF THE MINUTES OF 38TH TCC MEETING

The minutes of the 38th TCC meeting held on 29th June, 2018 at Kolkata were circulated vide letter no. ERPC/TCC&Committee/14/2018/2392-2461 dated 18th July, 2018.

No comments have been received from constituent members on the minutes of the meeting.

Members may confirm the minutes of 38th TCC meeting.

PART B: ITEMS FOR DISCUSSION

ITEM NO. B1:	STATUS OF STATCOM PROJECT IN EASTERN REGION

In the 15th meeting of SCM held on 27-08-2013, it was agreed to install STATCOM in combination with mechanically switched Reactors (MSR) and Capacitors (MSC) and co-ordinated control mechanism of MSCs and MSRs at Ranchi, Rourkela, Jeypore and Kishanganj substations in Eastern Region.

The matter was again discussed in the 28th ERPC/TCC meeting held on 12th -13th September, 2014 at Goa, wherein, it was decided that POWERGRID may go ahead with implementation of the STATCOM project in Eastern Region with debt – equity ratio of 70:30 funding. The debt part should be funded through PSDF and Equity Component (30%) to be funded by POWERGRID, which was to be recovered through regulated tariff mechanism.

1. Performance of STATCOMS installed in Eastern Region

Out of four STATCOMs, three STATCOMs at Rourkela, Jeypore, and New Ranchi were already commissioned. The latest status as updated in 150th OCC Meeting is as follows:

Sl No	Location of PGCIL Sub-Station	Dynamic Shunt Controller (MVAr)	Mechanically Switched Compensation (MVAr)		Latest status
			Reactor (MSR)	Capacitor (MSC)	
1	Rourkela	±300	2x125		*In service from March 2018.*
2	Ranchi(New)	±300	2x125		*Commissioned on 12th July 2018*

3	Jeypore	±200	2x125	2x125	*Commissioned on 30th June 2018*
4	Kishanganj	±200	2x125		*70% civil work completed. 30% switchyard equipment supplied. Expected to complete by December, 2018*

ERLDC may give a presentation on the performance of the STATCOMs in the Eastern Region and the consequent benefits accrued to the Grid.

2. Installation of PMUs for observation of the dynamic performance of STATCOMS

STATCOM is a dynamic VAR compensation device and provides the fast reactive support to the grid during transient as well steady state operation. The steady-state response of STATCOM can be monitored through conventional SCADA data. However, **the dynamic response, which comes within milliseconds, can not be well captured through conventional SCADA system**. In order to analyze the dynamic performance of STATCOM (STATCOM+ MSR /MSC) during day-to-day operation, it is desired to install PMU on the Coupling Transformer of the STATCOM as a part of the URTDSM project. This will help the operator in monitoring and analyze the STATCOM dynamic response in real time as well as off-line mode.

Based on the above and for better monitoring of the STATCOM devices, it was felt to install PMU at all the four STATCOMs of Eastern region.

In 146th OCC, Powergrid was recommended to install PMUs on the Coupling Transformer of the four STATCOMs as a part of the URTDSM project.

Powergrid informed that the proposal for installation of PMUs in above substations were not covered in the scope of the original URTDSM project. They had taken up the matter with their Engineering Wing.

In 38th ERPC Meeting it was decided that,

i) Power Grid would first explore the possibilities by diverting the unutilized PMUs under URTDSM project and would complete the work on urgent basis.

ii) If adequate no. of PMUs are not available under URTDSM project, balance PMUs will be implemented under project "Upgradation of SCADA / RTUs / SAS in the Central sector stations and strengthening of OPGW network".

In 150th OCC, Powergrid informed that GE representative would visit the respective substations on 23rd October 2018 to assess the possibilities to provide PMU on the coupling Transformer of STATCOM.

OCC advised Powergrid to give a detailed presentation on implementation along with cost implication details, if any, in the 39th TCC Meeting.

Powergrid may give presentation.

TCC may deliberate.

ITEM NO. B2:	IMPLEMENTATION OF 4TH PHASE AMR INCLUDING REQUIREMENT OF AMR DATA FOR SCADA DATA COMPARISON

In 37th ERPC/TCC Meeting, 4th Phase implementation of AMR at Eastern Region was discussed where in a tentative cost estimate to the tune of **Rs. 93,56,948/-** (Rs. Ninety three lacs fifty six thousand nine hundred forty eight only) was approved. In that estimate, total 150 New SEM along with 20 new locations were considered. The cost estimate calculated on the basis of standard price hike of 20% on the previous LOA value of 249 SEM (2nd Phase AMR).

In 137th OCC meeting, ERLDC informed that, report of 15 minute tie line data from AMR is required to be made available so that the same could be utilised for developing comparison / error checking for SCADA. ERLDC is planning to develop SCADA Vs. SEM comparison report which can identify the error in SCADA or time drift in SEM. The same is planned to be developed considering the need for improvement of the system. Accordingly, the concern will take necessary action to validate the SCADA / SEM.

OCC requested POWERGRID to take up the matter with TCS for implementation of the same.

In 150th OCC, Powergrid informed that 4th Phase AMR implementation had been taken up with M/s Tata Consultancy Services. M/s Tata Consultancy Services has submitted offer for the implementation of 4th Phase AMR, including availability of AMR Energy Meter Data at ERLDC compatible to SCADA data comparison as per ERLDC requirement.

As per revision of work, final offer of Rs. 1.75 Crores received from M/S TCS, where in the followings were considered:

a) Considering increasing growing of network, total 200 New SEM & 25 New locations are taken for calculation.

b) For increasing the reliability of the communication between DCU to ERLDC, LAN connectivity considered, instead of conventional GPRS communication. Accordingly, a new item considered.

c) As per requirement of SCADA department (ERLDC) for generating new Report section in AMR application, this is also a new requirement and accordingly a new item is considered.

d) AMC portions & additional items required for integration of both Kiosk based SEM & conventional SEM are also considered.

Considering all above quantity & taking AMC for fresh locations for 04 Years after implementation, total Cost Implication comes to Rs. 1.75 Crore only. Details price break up provided for further reference:

Details of Supply				
SL No	Item	Qty	Unit Price	Total Price
1	Supply of all required H/W along With Accessories	200	1050.00	210000.00
2	Armoured RS-485 Cable	11300	116.39	1315207.00
3	PVC Pipes of ISI make min 50 mm dia or higher	6500	101.33	658645.00
4	Data Concentrator Unit	25	112057.00	2801425.00
5	MOXA Converter	50	5258.97	262948.50
Total				5248225.50

Details of Impl+Warranty+LAN Connectivity+SCADA Report				
SL No	Item	Qty	Unit Price	Total Price
1	Installation at Data Center	200	9363	1872600.00
2	Installation at Sub Station	200	11988	2397600.00
3	Laying of Armoured Cable	11300	30	339000.00
4	Integrating PGCIL LAN with existing DCU	40	15564	622560.00
5	Generating new report section in AMR Application for ERLDC SCADA	1	802662	802662.00
Total				6034422.00

Details of 4 years AMC				
SL No	Item	Qty	Unit Price	Total Price
1	Four Years Comprehensive AMC	200	31104	6220800
Total				6220800.00

Total Cost For Supply	**5248225.50**
Total Cost For Service	**6034422.00**
Total Cost for AMC	**6220800.00**
Total	**17503447.50**

The price component differs from earlier value mainly because of inclusion of new locations, increment in SEM to be integrated, conversion from conventional GPRS to LA & additional requirement for SCADA report section. Also, increased amount in AMC of installed locations increased due to increment of manpower cost & repeated problem faced due to SIM/Network problem.

POWERGRID emphasized that above figures are based upon received offer only from M/S TCS. Already negotiation process is going on with M/S TCS and once finalized, the value will be intimated during placement of LOA.

TCC may approve.

ITEM NO. B3:	REPLACEMENT OF OLD RTUS IN EASTERN REGION FOR REPORTING OF RTU/SAS TO BACKUP CONTROL CENTRES (INCLUSION OF CHANDWA, KISHENGANJ & DALTONGANJ S/S)

In 36th TCC/ERPC meeting, proposal of replacement of RTU (as per Committee constituted in 35th ERPC meeting), was approved. It was also advised that replacement of OPGW on older ULDC lines might be deliberated in lower forum before submitting for TCC/ERPC approval.

In 37th TCC/ERPC Meeting, ERPC authorized POWERGRID to undertake the works related to replacement of the old RTUs of the Eastern Region. It was also decided by the ERPC that the investment made in this regard shall be recovered by POWERGRID **through tariff**. However, subsequent O&M shall be the responsibility of the concerned constituents.

In 38th TCC/ERPC Meeting, ERPC accorded in-principle approval to undertake the works related to "Upgradation of SCADA / RTUs / SAS in the Central sector stations and strengthening of OPGW network" with the following scope:

A) *Replacement of Old RTUs/SAS and Upgradation of SAS in Eastern Region.*
B) *Implementation of BCU based Substation Automation System at 05 nos. substations in Eastern Region.*
C) *Replacement of Old DCPS & UPS in Eastern Region.*
D) *Laying of OPGW (903 Km) in Eastern Region.*

*The detailed scope of the project is enclosed in **Annexure-B3.***

In the meeting it was also decided that Power Grid would prepare necessary DPR for cost estimation and the same should be placed in the next ERPC Meeting for according the financial approval.

In 150th OCC, Powergrid requested to include 400kV Chandwa, Kishenganj & Daltonganj Substations of Powergrid ER-I in the above project. The total nos. of Sub-station of POWERGRID/ER -1 for RTU/SAS Upgradation under the aforementioned project shall become 18 (namely Biharsharif, Jamshedpur , Purnea 400 , Purnea 220, Sasaram HVDC, Muzaffarpur, Patna, Banka, Lakhisarai, Ranchi, New Ranchi, Chaibasa, Gaya, Sasaram 765, Ara, Chandwa, Kishenganj & Daltonganj).

OCC in principle agreed to include 400kV Chandwa , Kishenganj & Daltonganj Substations in the project.

OCC advised Powergrid to give a detailed presentation on scope of work of the project along with cost implication in 39th TCC Meeting.

In 22nd SCADA O & M meeting held on 30th October 2018, it has been clarified that as per Annexure-B3, POWERGRID's scope shall be limited to replacement / up-gradation of old RTUs / SAS only for POWERGRID sub-stations in the Eastern Region. Other utility/constituents have to take up the replacement / up-gradation activity of their own. However, utility/constituents can approach POWERGRID for the same on consultation basis through POWERGRID.

Powergrid may give a presentation.

ITEM NO. B4:	ALTERNATE PATH FOR MALDA-FARAKKA OPGW LINK

On 06th December 2017 at 17:26Hrs due to OPGW communication link failure between Malda - Farakka, data and voice communication interrupted between ERLDC and 17 nos of stations located in North Bengal and Sikkim area for 16 Hrs 23 minutes. It was envisaged to form protection path using Purnea – Biharshariff OPGW link but due to recent tower collapse, the formation of protection path yet to be completed. As per information received from M/s ENICL in 150th OCC meeting held on 10th October 2018, it would take approximately Six (6) month to restore the line which was out since 10th August 2018 due to tower collapse.

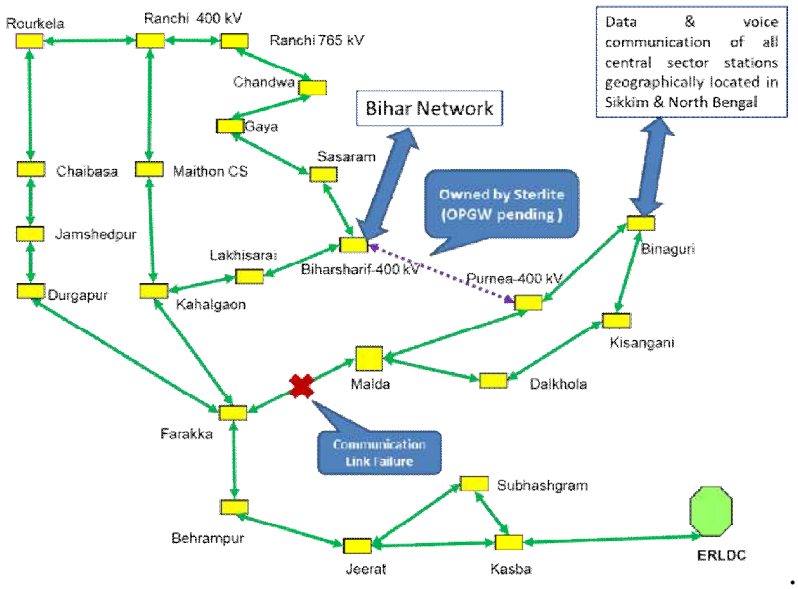

Figure 1 OPGW connectivity diagram for reporting of stations installed in North Bengal and Sikkim area.

In 22nd SCADA O & M meeting held on 30th October 2018, ERLDC requested POWERGRID to provide another alternate protection path for Malda – Farakka OPGW link till the restoration of 400 kV Purnea – Biharsharif line.

POWERGRID informed that they would explore the possibility of providing protection path using POWERTEL link / other service provider as an interim arrangement.

Member Secretary, ERPC advised POWERGRID to give a presentation on implementation of interim alternate path for Malda – Farakka OPGW link in 39th TCC meeting.

POWERGRID may give a presentation.

ITEM NO. B5:	ARRANGEMENT FOR AUXILIARY POWER SUPPLY OF MAKE-UP WATER PUMP HOUSE FOR TTPS-III PROJECT OF NTPC

As informed by NTPC, a power project namely Talcher Thermal power Project Stage –III (TTPS-III) of NTPC with capacity of 2X660MW is coming up in the vicinity of existing TTPS station (460 MW). The make-up water for TTPS-III is proposed to be taken from reservoir of Samal barrage, which is at a distance of approximately 28 Km from the project. The route for laying the power supply for 28Km involves forest and densely populated residential /Agricultural land as such it would not be feasible to get ROW for laying the line.

The make-up water pump house of TTPS-III has three pumps with each having power rating of 600KW. During normal operation, two pumps would be running and one standby. The maximum power consumption would be 1.8MW.The pump house is in the vicinity (at a distance of 7 Km) of TSTPS-I.

Due to non-feasibility of getting ROW for laying power supply line from TTPS-III to pump house, it is proposed to take the power supply from existing TSTPS-I and treat it as supply taken from TTPS-III for accounting.

Even if, it would have been feasible to lay power supply line from TTPS-III to the pump house, it would have been beneficial for beneficiaries to draw power of TSTPS-I. This is because the length of power supply line would go down from 28Km to 7Km and also voltage level required for supply would also go down from 66KV to 33 KV. This would itself reduce the cost of power supply line from 17 Cr to 5Cr. i.e., a saving of 12 Cr in the capital cost. The reduction in capital cost would be passed on to ER beneficiaries through reduction in Tariff.

The following has been proposed by NTPC:

1. To provide power supply for make-up water pump house of TTPS-III project from nearby NTPC station of TSTPS-I with separate metering for energy consumed.
2. The consumption of power by pump house will be included in Auxiliary power consumption of TTPS-III and the same will be reduced from the APC of TSTPS-I.

During 38th CCM, NTPC representative elaborated in detail the following:

a) Proposal of drawing power supply for make-up water pump house of TTPS-III project from the nearby NTPC station TSTPS-I and
b) Adjustment of energy consumed by the pump house in auxiliary power between both the NTPC stations.

Member secretary, EPRC informed that the proposed scheme of NTPC is a unique type of arrangement and it must follow the standards of CEA (Technical standards for construction of electrical plants and electric lines) regulations.

During deliberation the committee felt the following:

i) The Pump house for make-up water is an electrical load, so the power supply required for pump house could be availed form nearest Discom of Odisha at 33 kV or 66 kV level.
ii) The proposed scheme must be agreeable by all beneficiaries of TSTPS-I for meeting the supply of the pump house of TTPS –III from the Auxiliary power of TSTPS-I.
iii) The treatment/value of Auxiliary power at ex-bus of TSTPS-I would not be same as the auxiliary power at ex-bus of TTPS-III.
iv) At present the energy accounting is done based on meters at ex-bus and there is no accounting for Auxiliary supply.

The views as expressed by the beneficiaries of TSTPS-I are as given below:

i) West Bengal and DVC: NTPC should get the above proposal ratified from CERC or get the power supply for Pump house from nearby Discom of Odisha.

ii) Odisha: NTPC should place their proposal in detail. They need to carry out detailed study including the change in power flow due to drawing of power supply of Pump house from TSTPS-I.

iii) Bihar: NTPC should place the detailed proposal; they would give their feedback after detailed study.

iv) Jharkhand & Sikkim: No comments received as they were not available in the meeting.

After detailed deliberation, the committee decided to refer the issue to the forthcoming TCC meeting and advised NTPC to give a detailed presentation on the issue.

NTPC may explain.

Members may discuss.

ITEM NO. B6:	**PERSISTENT OVER DRAWL BY DVC, ODISHA AND WEST BENGAL**

As furnished by ERLDC, monthly deviation, % Daily Average Deviation of DVC, Odisha and West Bengal from June – 2018 to October – 2018 are shown below:

		Schedule (Mu)	**Actual (Mu)**	**Monthly Deviation (Mu)**	**% Deviation (Daily Average)**
DVC	**June**	-1079	-1059	20	2
	July	-950	-941	10	1
	August	-880	-744	137	**16**
	September	-717	-561	157	**22**
	October*	-468	-379	90	**19**
Odisha	**June**	1304	1416	112	9
	July	1171	1313	142	**12**
	August	1499	1602	103	**7**
	September	928	1005	77	**8**
	October*	836	916	80	**10**
West Bengal	**June**	1505	1581	76	**5**
	July	1526	1627	102	**7**
	August	1717	1839	123	**7**
	September	1897	2004	107	**6**
	October*	743	767	25	3

**October Data compiled till 14th October, 2018*

It has been observed that, for the last few months, DVC, Odisha and West Bengal have been over-drawing from grid which, at times, exceeded 500 MW. The issue was discussed a number of times in 148th OCC Meeting held on 20th August, 2018, 149th OCC Meeting held on 18th September and 150th OCC Meeting held on 11th October, 2018 wherein ERLDC and ERPC apprised the seriousness of the situation to the respective constituents and advised them to strictly maintain their net drawal as per schedule.

During the above OCC meetings, the concerned constituents also agreed to take necessary corrective measures to ensure that their drawls remain within their respective schedules. However, it has been reported by ERLDC that, till date, no substantial improvement had been observed.

Continuous over-drawal by DVC, Odisha and West Bengal indicated that there is inherent deficit in their respective system. It was suggested that constituents should properly assess their demand and meticulously balance the total availability from all sources with the estimated demand, if necessary, by entering into bilateral contract or other mode of procurement of power to increase their purchase quantum. They should not lean on the regional grid to bridge the difference between demand and supply. It would be in the interest of the entire regional grid that they exercise strict control over their drawl and adhere to the grid norms. Moreover, every constituent should make provision for maintaining spinning reserves, as per guideline specified by CERC.

It has been submitted by ERLDC that, in case repetitive non-compliance of ERLDC instruction to curtail overdrawal during real time operation continues in future, ERLDC would be left with no other option but to approach CERC with respect to erring entities.

ERLDC may elaborate.

TCC may deliberate.

ITEM NO. B7:	**IMPLEMENTATION OF AUTOMATIC DEMAND MANAGEMENT SCHEME (ADMS)**

The latest status along with proposed logic as follows:

Sl No	**State/Utility**	**Logic for ADMS operation**	**Implementation status/target**	**Proposed logic (if different from under implementation logic)**
1	West Bengal	F <49.7 AND deviation > 12 % or 150 MW	Implemented on 25.11.16	F <49.9 AND deviation > 12 % or 150 MW
2	DVC	F <49.7 AND deviation > 12 % or 150 MW	Implemented on 17.06.2016	
3	Bihar	F <49.7 AND deviation > 12 % or 150 MW	3 months Feeders identified. Implemented by June 2018	F <49.9 AND deviation > 12 % or 150 MW
4	Jharkhand	1. System Frequency < 49.9 Hz AND deviation > 12 % or 25 MW 2. System Frequency < 49.9 Hz AND deviation > 12 % or 50 MW 3. System Frequency < 49.9 Hz AND deviation > 12 % or 75 MW	9 Months Tendering for RTU installation is in progress. Implemented by December 2018	Condition 1: Block I feeders will be selected for load shedding Condition 2: Block I & II feeders will be selected for load shedding Condition 3: Block I, II & III feeders will be selected for load shedding
5	Odisha	1. System Frequency < 49.9 Hz 2. Odisha over-drawl > 150 MW 3. DISCOM over-drawl > (40 MW)	10 Months Sent for PSDF approval.	Logic 2 and 3 is AND or OR, in case it is AND then ADMS may not operated when discom are in schedule but GRIDCO is overdrawing due to less generation at state embedded generators
6.	Sikkim			Sikkim informed that they have submitted a proposal to PSDF Committee for installation of OPGW

				cables which is under approval stage. Sikkim added that ADMS scheme would be implemented after installation of OPGW.

In 142nd OCC, members opined that uniform logic should be implemented for all the states. OCC decided to review the logic of ADMS after implementation of the scheme by all the states.

In 38th ERPC Meeting, Bihar informed that they are interacting with M/s Chemtrols for implementation of ADMS but M/s Chemtrols is not responding. After detailed deliberation, ERLDC and PGCIL agreed to extend the necessary support to Bihar for implementation of the same.

In the 22nd SCADA O & M meeting held on 30th October 2018, M/s Chemtrols (SCADA Vendor) informed that ADMS is not in the scope of the contract. M/s Chemtrols further informed that LSS is already implemented in BSPTCL. M/s Chemtrols will submit a quote for implementation of ADMS in BSPTCL system and the same would be implemented once BSPTCL agreed for the same.

BSPTCL, OPTCL, JUSNL and Sikkim may update.

ERLDC may present the performance of ADMS in West Bengal and DVC System.

TCC may discuss.

ITEM NO. B8:	**CONSISTENT OVER DRAWL BY INDIAN RAILWAYS IN DVC CONTROL AREA**

DVC vide letter dated 03.09.2018 informed that drawal schedule of Indian Railways on LT mode have been a meager 30 to 40 MW for most time of a day during the past three months. However, the actual drawal, as derived from DVC SCADA data, was often found to exceed 100 MW for considerable periods throughout the day. It has been observed that sometimes the drawal quantum goes beyond 2 to 3 times of their schedule. Due to such overdrawal of power, DVC is facing acute problem in load management.

*The issue of consistent overdrawal by Indian Railways in DVC control area was discussed at ERPC on 24.09.2018 wherein Indian Railway agreed to maintain the schedule. Minutes of the meeting are enclosed at **Annexure-B8**.*

In the meeting, it was decided that DVC and Railways shall sit together to thrash out issue.

Subsequently, SLDC DVC vide letter dated 30.10.2018 had intimated that recently (from 23.10.18) Railway has again started overdrawing to the tune of 50-70 % of their schedule.

DVC may update the present status on the issue.

ITEM NO. B9:	**REPEATED UNCOORDINATED TRIPPINGS AT 220/132KV LALMATIA S/S**

In view of repeated uncoordinated tripping and mal-operation of relays at 220/132/33kV Lalmatia S/s in the past, PCC in its 69th Meeting decided to form a Committee with members from NTPC, Powergrid, JUSNL, ERLDC and ERPC.

The Committee visited 220/132/33kV Lalmatia S/s on 16th August 2018 for on-site inspection and Third Party Protection Audit.

In 70th PCC, Audit team had presented the report highlighting the major issues with respect to 220/132/33kV Lalmatia substation.

ERPC Secretariat had also communicated the audit observations to JUSNL and NTPC vide letter dated 4th September 2018 for early compliances.

In 72nd PCC, JUSNL had submitted the action taken report.

The consolidated report is attached at **Annexure-B9**.

JUSNL and NTPC may update.

ITEM NO. B10:	**LOAD TRIMMING SCHEME FOR 400/132 KV MOTIHARI ICTs**

400/132 kV Motihari substation in Bihar is having a two ICTs each with 200 MVA capacity. It has been observed that, due to higher load catering of Bihar along with Nepal, the ICTs are running without N-1 reliability. On 22nd August 2018 at 14:59 Hrs, the ICTs combined load increased to 280 MW and one ICT got tripped on mal-operation of OSR relay due to moisture ingress. This led to overloading of other ICT, which tripped in over-current protection. This led to the loss of 280 MW of Bihar and Nepal.

Such unreliable operation of ICTs due to higher load is not desirable and following action point may be desired:

1. Implementation of Load Trimming Scheme (LTS) on Motihari ICTs.
2. BSPTCL long term plan to ensure the meeting such high demand in the areas.
3. Prevention of Tripping of Motihari ICT on OSR relay mal-operation during moisture ingress in rainy season.
4. Capacity augmentation as long term measures may be planned.

In 149th OCC, it was informed that one more ICT of 315 MVA, 400/132 kV had been planned in 13th Plan, which would be commissioned by May 2020.

OCC advised Bihar to plan a load-trimming scheme till the availability of 3rd ICT at Motihari S/s.

BSPTCL may update.

ITEM NO. B11:	**LOW VOLTAGE PROBLEM IN WEST BENGAL SYSTEM**

Jeerat and Subhasgram are the major load centers of West Bengal having 4 X 315 MVA 400/220 kV ICTs at Jeerat and 4 X 315 MVA + 1X 500 MVA 400/220 kV ICTs at Subhasgram with peak load of around 800 MW at each of these S/Stns. Although Jeerat has connectivity with Subhasgram, Kolaghat TPS and Bakreswar TPS besides Behrampur (now Sagardighi) via 400 kV single circuit lines, the reactive compensation provided at 132 kV and below S/stns. is inadequate. During the Peak hrs, demand of West Bengal sharply increases causing dip in Jeerat voltage even below 380 kV as there is no adequate reactive power compensation or nearby generator for VAR support. Further, to boost voltage of 132KV level, West Bengal frequently operates on line Tap changer of its 220/132 kV ATRs during peak hours causing further deterioration of voltage profile at 400 kV level. In case of contingency at 400 kV networks, the voltage can further degrade and there may be a chance of voltage collapse in the area.

The issue was highlighted in the 146th OCC Meeting of Eastern Region held on 15th June 2018 where *WBSETCL informed that they are planning to install 590 MVAR additional capacitor banks in distribution network to improve the voltage. Tendering had been completed. The work shall be awarded after approval of high-level committee.*

However, the situation has not improved in the last four months and the issue was found to be persisting in the month of July, Aug, Sept and Oct 2018.

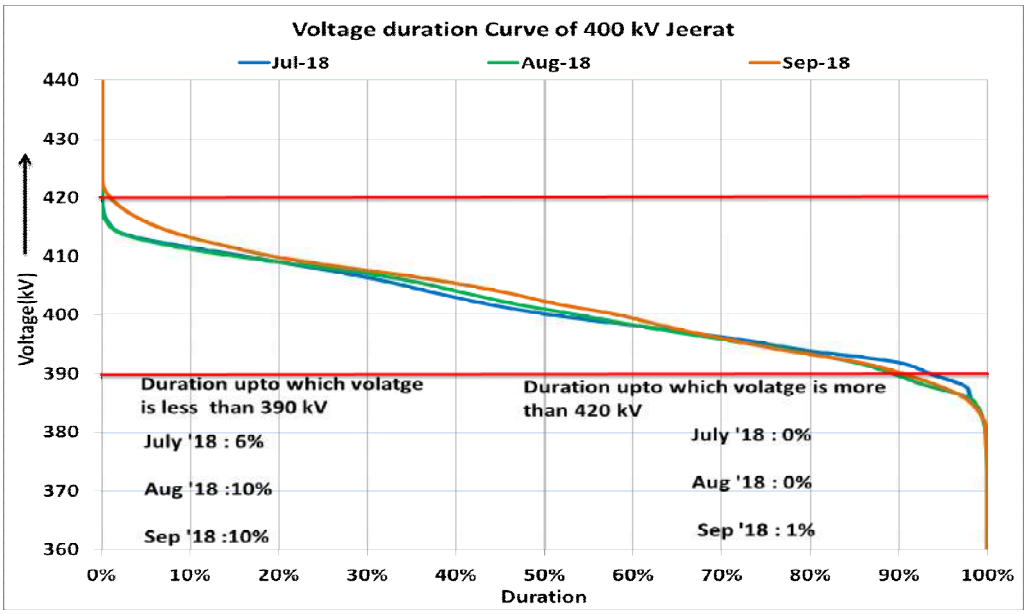

Figure- Voltage duration curve of Jeerat

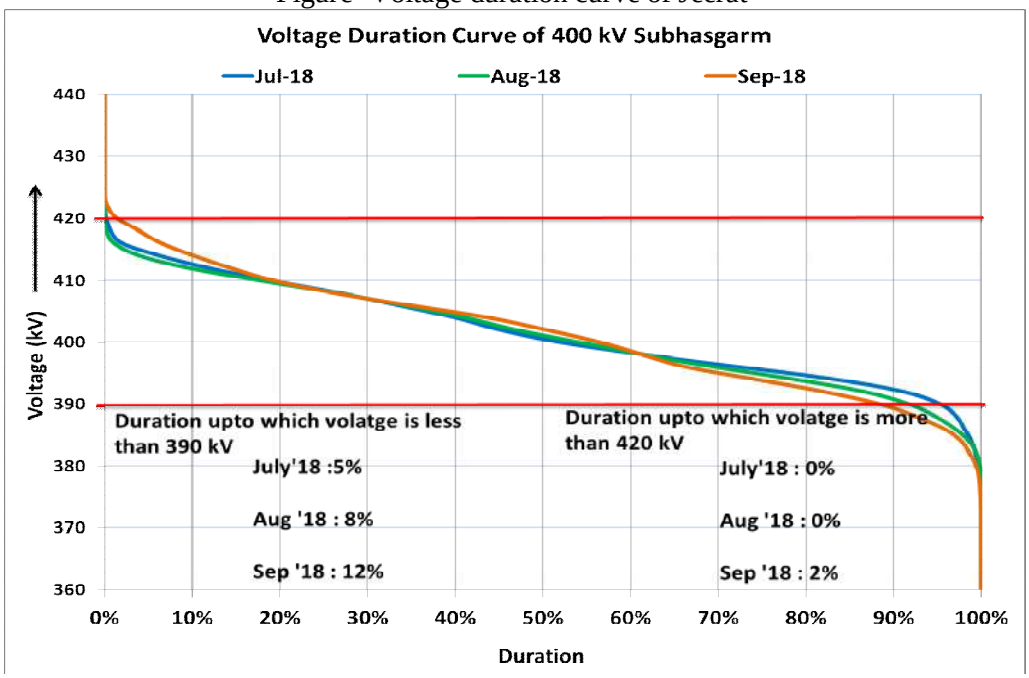

Figure-Voltage duration curve of Subhasgram

In view of the above, TCC may discuss the followings:

1. Action Plan of WBSETCL for Installation of capacitor bank and its time frame for installation.
2. Proposal of Under voltage load shedding (UVLS) scheme to avoid operation below 375 kV under any contingency (As per IEGC 5.2.t)
3. Feasibility of Installation of STATCOM at Subhasgram substation in view of future increase in the load in the area and the load variation during peak and off peak hour.

ITEM NO. B12:	OUTSTANDING ISSUES TOWARDS CHARGING OF 220KV TENUGHAT- BIHARSHARIF S/C LINE AT 400 KV LEVEL

The issue was discussed in several TCC Meetings.

As per the decision of 37th TCC, a Special Meeting was convened on 21st May, 2018 at ERPC, Kolkata to finalize the course of action for charging of 220kV Tenughat- Biharsharif line at 400 kV level.

In the meeting, it was informed that JUSNL has completed the survey and submitted the report for strengthening of line. However, BSPTCL furnished a report based on walkover survey. The followings were emerged from the reports:

a) Conductor of the line needs to be rectified or replaced due to ageing, bulging and rusting of the conductors.

b) The hardware fittings and jumpering were need to be replaced completely.

c) The complete Earth wire needs to be replaced with OPGW as the existing earth wire is missing at many locations.

d) There will be requirement of forest clearance and ROW clearances before charging the line at 400 kV level due to enhancement of corridor width from 35m to 53m (for 400 kV level).

e) The cost estimates for strengthening of line for JUSNL and BSPTCL portions would be approximately ₹ 65.12 Cr. and ₹ 55 Cr. respectively.

After detailed deliberations, it was concluded that the 220 kV Tenughat- Biharshariff line should be charged at 400 kV level only after strengthening of the line.

In 38th TCC Meeting, BSPTCL informed that no direct benefit shall be obtained by Bihar due to up gradation of the said line to 400kV level.

Jharkhand proposed that the line being inter-state in nature, should be taken over by CTU.

MS, ERPC advised Jharkhand to forward a detailed proposal to ERPC Secretariat for study. Thereafter, if necessary, views of the CTU shall be obtained and placed in the TCC meeting.

*Thereafter, JUSNL vide letter dated 16-10-2018 (copy of the letter is enclosed at **Annexure-B12**) informed that JUSNL would not get benefit due to the proposed upgradation. Hence JUSNL is not willing to invest on the augmentation of the said line.*

JUSNL has suggested that that, this line being inter-state in nature, it would be proper that CTU may take action for strengthening and maintenance of the line.

JUSNL may elaborate.

TCC may discuss and advise.

ITEM NO. B13:	LONG OUTAGE OF IMPORTANT TRANSMISSION LINES IN EASTERN REGION

1. 400KV PURNEA-BIHARSARIFF-D/C

Line was out of service from 10/08/18 due to tower collapse of tower no. 47/0 as Ganga River has changed its course near Begusarai.

In 149th OCC, ENCIL informed that one more tower of 400 kV Purnea-Biharsharif D/C line had collapsed and restoration of the line using interim arrangement is not possible now. They are planning for permanent restoration of the line, which would take long time. ENCIL agreed to communicate the schedule to ERPC and ERLDC.

In 150th OCC, ENICL informed that the line would be restored by June 2019.

ENICL may present the restoration plan.

2. 400 KV PATNA – KISANGANJ - D/C

Line was out of service from 01/09/18 due to tower collapse as Ganga River has changed its course.

In 150th OCC, Powergrid informed that they would put all the efforts to bring the line by March 2019.

Powergrid also informed that they were planning for erection of twin moose conductor instead of quad moose as a temporary arrangement for early restoration of the line with reduced capacity. Powergrid agreed to place the details after detailed study.

Powergrid may present the restoration plan.

ITEM NO. B14:	STATUS OF 400KV TEESTA III-RANGPO-KISHANGANJ D/C LINE AND 400KV DIKCHU- RANGPO S/C LINE IN SIKKIM

A. STATUS OF 400KV TEESTA III-RANGPO-KISHANGANJ LINE

In special meeting held at ERPC, Kolkata on 25th April 2018, TPTL informed that 400kV Rangpo-Kishanganj D/C line would be commissioned by 31st July 2018.

CTU has granted LTA of 174 MW for transferring power from Teesta-III HEP to UPPCL w.e.f 12th May, 2018.

During 38th TCC meeting, Member Secretary, ERPC informed that, as per the latest information available with ERPC Secretariat, the works were scheduled to be completed by June 2018. He further observed that based on the past trend of performance, there was little likelihood that this target date would be adhered to.

The latest status as on 23.10.2018 as updated by Teesta valley Power Transmission Ltd. (TPTL) is as given below:

	Total	Completed	Balance Qty.	Remarks
Locations/ Foundation	590 Locs.	586 nos.	4	Work is under progress in 3 locations
Erection	590 Nos.	583 nos.	7	Work is under progress in 3 locations
Stringing	213.5 Km	197.65Km	15.85	Stringing works in progress in 6.93km

ISSUES STILL PREVAILING IN TEESTA III- KISHANGANJ LINE

S.No.	State	Issues	Status as on 23th October 2018
1	**West Bengal**	**1no. location, lakpatar village in Bijonbari block**	Work commenced but was stopped by local people demanding higher compensation. The work could not be re-started since November 2017.FIR has been registered on 30.04.2018 and the issues is being resolved with help of District Administration.
2	**West Bengal**	**Sukhia Pokhari Block**	Stringing work held up at WB Hillsdue to as locals obstructed the work. The issue is being resolved with help of District Administration.
3	**West Bengal**	**Tree Felling permission in Private Land**	Tree felling permission in Darjeeling District is yet to be received. Joint inspections are completed in all revenue blocks of Merik&Bijanbari for tree felling and clearance from DLLRO is awaited.
4	**West Bengal**	**Naxalbari block**	Stringing work held up at WB plains as locals obstructed the work demanding high compensations. The issue is being resolved with help of District Administration.

TPTL may update.

TCC may discuss.

B. STATUS OF 400KV DIKCHU- RANGPO S/C LINE

As informed by TPTL, the 400 kV Dikchu-Rangpo S/C line was charged on 30th June, 2018 and was in operation for 6 days from 30.06.18 to 05.07.18. The line was taken under shutdown on 06.07.18 for clearing the trees/bamboos falling under the corridor of the transmission line. But the line could not be charged due to some incidents of sparking/short circuit which occurred on 4th, 5th & 6th July, 2018 in Singbel area of Sikkim. The District Collector of East District, Sikkim has ordered TPTL to shutdown the line and directed to carry out independent third party investigation into the incidents by CEA.

Subsequently, on request of TPTL the inspection was carried out by RIO (E), CEA on 09.07.2018 in presence of all the concerned and the report was submitted to District Collector. The report clarifies the possible reasons of the incidents and also ruled out any possibility of damages due to operation of 400 kV Dikchu-Rangpo S/C line.

However, the permission from the District Collector, East District, Sikkim is yet to be received for charging the 400 kV Dikchu-Rangpo S/C line.

TPTL may update.

ITEM NO. B15:	**REDUNDANCY OF SPS SCHEME FOR 400 KV RANGPO-BINAGURI CIRCUIT**

On 13th June 2018, the Non-operation of 400 kV Rangpo-Binaguri SPS on 13th June 2018 during tripping of one circuit has led to loading of other circuit beyond 1600 MW for duration of 15 minutes. The unsafe operation of the line above its thermal limit due to lack of SPS redundancy is not desirable for safer system operation and may result in the permanent damage to the transmission line causing bottleneck in Sikkim Hydro evacuation for longer duration. Thus, the issue of Redundancy of SPS scheme at Rangpo as well Binaguri was discussed in the 148th OCC held on 20th August 2018.

Further, in the CERC order 114/MP/2017 on 400 kV Rangpo-Binaguri it is quoted that "*While commissioning of full-fledged SPS in coordination with ERLDC, Powergrid would implement the agreed modification in the existing SPS as suggested by ERLDC for increasing the effectiveness of the SPS in case the Rango-Siliguri line is tripped from Siliguri end only*".

In the Indian Power System, Major SPS Scheme like 765 kV Gwalior-Agra, 765 kV Sholapur-Raichur are having redundant SPS Scheme i.e. SPS are implemented at both ends of the line and the operation of either of the SPS will cause the desired relief operation. This is in view to avoid any detrimental effect on the line loading and system security.

However, as on date the full-fledged redundant SPS has not been implemented for the 400 kV Rangpo-Binaguri circuits. The SPS presently operate based on the local information of CB/Isolator/Analog value at Rangpo end and presently the information from Binaguri end is not integrated.

In view of the above, TCC may discuss the following:

1. Implementation of Binaguri Circuit Breaker logic in the Existing SPS Scheme at Rangpo.
2. DTPC Based SPS Scheme in place of PLCC to improve the reliability of SPS signals extension to generating station.
3. Redundancy of SPS Scheme by implementation of SPS Scheme at Binaguri end for these circuits and their exchange of signal with Rangpo.

ITEM NO. B16:	**ESTABLISHMENT OF RENEWABLE ENERGY MANAGEMENT CENTRE (REMC) IN EASTERN REGION**

The Government of India has taken up an ambitious programme for capacity addition from Renewable Energy Sources (RES). The installed capacity of RES is expected to touch 175 GW by March, 2022. This comprises of 100 GW of Solar, 60 GW of Wind, 10 GW of Biomass and 5 GW of Small Hydro.

The tentative State wise break-up of renewable energy target to be achieved by March, 2022 by Eastern Region are as follows:

(ALL FIGURES IN MW)

State / UTs	**Solar Power**	**Wind Power**	**Small Hydro Power + Biomass Power**	**TOTAL**
Bihar	2,493	Nil	269	2,762
Jharkhand	1,995	Nil	10	2,005
Orissa	2,377	Nil	115	2,492
West Bengal	5,336	Nil	398.5	5,735
Sikkim	36	Nil	52.11	88
Eastern Region	**12,237**	Nil	**845**	**13,082**

The present installed capacity of Renewable Energy Sources in Eastern Region is 1083.64 MW.

The potential of the Renewable Energy Sources in the Eastern Region is considerably lower than that of Northern, Western & Southern Region.

The generation from the Renewable Energy Sources is characterised by variability and uncertainty. Therefore, integration of the RES into the grid is considered to be a challenging work. The aspect of variability and uncertainty associated with the Renewable Energy Sources requires implementation of the state-of-art, renewable energy forecasting and monitoring system.

Keeping this in view, Ministry of Power, Government of India, has decided to establish Renewable Energy Management Centre at Western, Northern and Southern Region as a part of Green Energy Corridor Scheme.

Further, in order to facilitate integration of the targeted 175 GW of Renewable capacity by 2022, a comprehensive transmission plan is chalked out comprising of intra-state and inter-state transmission system strengthening infrastructure as well as Control infrastructure i.e. establishment of REMC at SLDC/RLDC/NLDC level.

The REMC scheme would help the grid operator to effectively manage power system operations with economy, reliability & security. REMC would also forecast RE generation on different levels such as state/ region/ aggregated pooling station wise etc. based on information from Forecast Service Provider (FSP) as well as Weather Service Provider (WSP). REMC would also help in Renewable Generation Scheduling, real time tracking of generation of RE sources, integration with REMC SCADA & its Visualization & close coordination with respective LDC for RE generation & integration with existing SCADA. Owner of REMC will be the existing SLDCs, RLDCs & NLDC.

At present, the REMC scheme is proposed for the Renewable rich States / regions i.e. Tamil Nadu, Andhra Pradesh & Karnataka in Southern Region. Gujrat, Madhya Pradesh & Maharashtra in Western Region and Rajasthan in Northern Region co-located with SRLDC, WRLDC, NRLDC & NLDC. **No REMC has been decided yet for Eastern Region & North Eastern Region.** The Scheme is proposed to be financed from 100 % Gross Budgetary Support. No financial component / support is involved from the State Govts. / State Discoms.

PGCIL, the CTU will be implementing the scheme and will hand over the REMC to respective states / POSOCO upon commissioning.

To address the issues of RE power integration, commissioning of REMC is a necessary step. GRIDCO is proposing REMC under the 'Green Energy Corridor scheme' for Eastern Region States (to be established in ER state LDCs & at ERLDC).

In the 150th OCC Meeting members felt that REMC is required to be established in Eastern Region also.

TCC may deliberate.

ITEM NO. B17:	FORECASTING OF DEMAND AND RENEWABLE ENERGY GENERATION

1. LOAD FORECASTING BY SLDC

For better grid management and shutdown planning, RLDCs need to do short term load forecasting. Accuracy and effectiveness of load forecasting depends on input data. As per current practice, day ahead load forecasting is being done at ERLDC by analysing trend of past data. However, for further tuning and achieving better accuracy of load forecasting result, each SLDC should carry out its own demand estimation from the historical data and weather forecast data and share the same with ERLDC for estimation of Eastern Regional demand. Section 5.3 of the IEGC may be referred to in this regard.

147th OCC advised all the SLDCs to share the relevant demand forecasting data to ERLDC.

In 150th OCC DVC shared its load forecasting methodology.

However, at present no SLDC is sharing its daily load forecast data.

TCC may kindly advise the constituents to share their forecasted demand data on day ahead basis.

2. PRESENTATION BY KREATE TECHNOLOGIES LLP ON FORECASTING OF DEMAND, SOLAR GENERATION AND WIND GENERATION

M/s Kreate Technologies LLP has developed the state of the art, data analytics and machine learning software which provide powerful tools for forecasting on Week Ahead, Day Ahead and Intraday Ahead of demand as well as generation from Solar and wind.

A presentation on the innovative key features and benefits on the above mentioned software would be made by M/s Kreate Technologies LLP.

M/s Kreate Technologies LLP may give a presentation.

ITEM NO. B18:	PRIMARY FREQUENCY RESPONSE OF GENERATORS IN EASTERN REGION

1. POOR FREQUENCY RESPONSE OF GENERATORS AND NON-SUBMISSION OF HIGH RESOLUTION DATA

As informed by ERLDC, inadequate response was observed from most of the power plants. The FRC response of Eastern region generators is enclosed at **Annexure-B18**. For proper analysis of machine response, high resolution data (1 sec) was requested from concerned plants multiple times and generating plants agreed for submission of same in earlier OCC meeting. However even after repeated persuasion with CGS/IPP, high resolution data could be received only from MPL and Barh for the events occurred in the month of July and August 2018.

In fulfilment of IEGC clause 5.2(F) generators are required to be kept on RGMO/FGMO mode. Further all generating stations are required to ensure that the functionality of extracting high resolution data is enabled and the same are provided to RLDC whenever an event takes place.

TCC may deliberate and advise.

2. TESTING OF PRIMARY FREQUENCY RESPONSE OF GENERATORS AS PER IEGC CLAUSE 5.2(G)

NLDC vide letter dated 12th October 2018 informed that The Hon'ble Commission, vide notification dated 12th April 2017, had notified Indian Electricity Grid Code (Fifth Amendment) Regulations, 2017. As per this notification "The following proviso shall be added at the end of Regulation 5.2 (g) of Part 5 of the Principal Regulations:
"Provided that periodic checkups by third party should be conducted at regular interval once in two years through independent agencies selected by RLDCs or SLDCs as the case may be. The cost of such tests shall be recovered by the RLDCs or SLDCs from the Generators. If deemed necessary by RLDCs/SLDCs, the test may be conducted more than once in two years."

In compliance to the regulation mentioned above, National Load Despatch Centre (NLDC) on behalf of RLDCs has formulated a procedure for carrying out the primary frequency response tests. The notice inviting Expression of Interest (EOI) from interested agencies was released in leading daily newspapers of 1st October 2018 and 3rd October 2018 edition of Indian Trade Journal (ITJ). As per IEGC regulations, costs for carrying out the tests are to be recovered by the RLDC or SLDC from the generators. Pursuant to implementation of GST, raising of invoice for testing by POSOCO as well as by testing agencies have working implications. In view of the same, the following course of action is suggested:

a) Generators will directly place the Letter of Award (LoA) on the identified/allocated agency as per the rate finalized by POSOCO.
b) Generators will cooperate with testing agency to facilitate the tests on site by providing the facilities mentioned in Terms of Reference(ToR) document available on POSOCO website with EOI.
c) Generators will provide the necessary information/Technical data to testing agency for carrying out tests.
d) After completion of this task, the report will be submitted by agency to POSOCO and after approval of report by POSOCO, the payment to the agency will be made by owner of generator as per LoA.

The above modalities have been submitted to Hon'ble Commission.

TCC may note.

ITEM NO. B19:	**MINUTES OF 1ST MEETING OF EASTERN REGION STANDING COMMITTEE ON TRANSMISSION (ERSCT)**

Ministry of Power, Govt. of India vide its order dated 13th April 2018, has constituted Eastern Region Standing Committee on Transmission (ERSCT) for planning of Transmission System in the Eastern Region in place of existing Standing Committee on Power System Planning.

1st meeting of Eastern Region Standing Committee on Transmission (ERSCT) was held at Kolkata on 16th July 2018. Member (Power System), CEA, chaired the meeting. The Minutes of the meeting are enclosed at **Annexure-B19**.

TCC may note.

ITEM NO. B20:	DEDICATED TRANSMISSION NETWORK OF RAILWAYS FOR MUGHAL SARAI – HOWRAH AND LUDHIANA-DELHI-SONENAGAR ROUTES

The proposal of Railway was discussed in 19th Standing Committee meeting of Power System Planning for Eastern Region held on 01.09.2017 at Kolkata, wherein many issues including economic analysis of dedicated transmission network of Railways for Mughalsarai-Howrah and Ludhiana-Delhi-Sonnagar routes were raised by constituent states of Eastern Region.

After receiving the comments from Railways and ER constituents, CEA convened a meeting at Kolkata on 16th July 2018. Member (Power System), CEA, chaired the meeting. The Minutes of the meeting are enclosed at **Annexure-B20**.

TCC may note.

ITEM NO. B21:	DESPATCH OF POWER FROM KBUNL STG-II(2X195 MW) UNDER RRAS

The eligibility for participation for Reserves Regulation Ancillary Services under clause 5.1 of Ancillary Services Operations regulation states that:

Quote:
"5.1. All Generating Stations that are regional entities and whose tariff is determined or adopted by the Commission for their full capacity shall provide RRAS."
Unquote

Since KBUNL Stg-II (2X195 MW) is a regional Entity of ER and its scheduling is being done by ERLDC since 01.04.18 and its tariff to be determined by CERC for their full capacity. Therefore, KBUNL Stage-II should come under the ambit of RRAS and shall provide necessary formats such as AS-1, AS-2. Till now KBUNL Stg-II has not submitted AS-1 & As-2 Format.

ERLDC may explain.

Members may please discuss

ITEM NO. B22:	STATUS OF CONSTRUCTION OF CHUZACHEN 132 kV BAYS AT RANGPO S/S OF POWERGRID

Construction of 132 kV bays at Rangpo S/s meant for evacuation of power from Chuzachen HPS has been undertaken by Department of Power, Govt of Sikkim, under consultancy with POWERGRID.

In 35th TCC, Sikkim informed that retendering work was in progress.

Sikkim assured that they would commission the bays within the target date i.e. December, 2017.

In 36th TCC, Sikkim informed that the work has been awarded and commissioning is expected by March, 2018.

In 37th TCC, Sikkim assured that they would resolve the issue in coordination with PGCIL ER-II.

In 38th TCC, Sikkim informed that work is in progress and it will be completed by September 2018.

Sikkim may update.

ITEM NO. B23:	REPAIR/RECTIFICATION OF TOWER AT LOCATION 79 OF 132KV RANGPO-MELLI D/C LINE AND CHUZACHEN (RANGPO) -GANGTOK TRANSMISSION LINES

POWERGRID had informed that their patrolling team had observed bent in part of tower no. 79 of 132kV Rangpo-Melli D/c line and 132 kV Chuzachen(Rangpo)-Gangtok transmission lines which might further degrade the condition of tower.

In 137th OCC, POWERGRID informed that tower no. 79 of 132kV Rangpo-Melli D/c line and Chuzachen(Rangpo)-Gangtok transmission lines falls under the jurisdiction of Energy & Power Department, Govt. of Sikkim.

In 37th TCC, it was decided that Sikkim would give a comprehensive proposal to PGCIL within one week regarding handing over of the relevant segments of the line to PGCIL. Thereafter, PGCIL and Sikkim would sit together and resolve the issues involved therein.

In 145th OCC, Sikkim informed that the proposal had been sent to State Govt. for approval.

In 148th OCC, Sikkim informed that State Govt. for approval is pending.

OCC took serious note of delay in tower rectification and referred to TCC for further guidance.

Sikkim may update.

TCC may deliberate.

ITEM NO. B24:	PREPONEMENT OF COMMISSIONING OF 4TH 400/220KV, 500MVA ICT AT BIHARSHARIF SS UNDER ERSS XX

4th 400/220KV, 500MVA ICT at Biharsharif SS has been planned for installation under ERSS XX with schedule date of Commissioning in **December'19**.

However, M/S BSPTCL vide letter dt 31.08.2018 had requested to expedite the commissioning of the said Transformer citing various constraint in grid condition and not fulfilling N-1 criteria. To mitigate the said problems as mentioned by M/S BSPTCL, POWERGRID has expedited the commissioning of the said Transformer with the executing party and the same is expected to be commissioning by **January/February'19**.

TCC may approve advancement of commissioning of 4th 500MVA ICT at Biharsharif SS before its schedule date.

ITEM NO. B25:	PREPONEMENT OF COMMISSIONING OF 400/220 KV TRANSFORMERS AT DURGAPUR & MALDA S/S UNDER ERSS-XVII

1. **Durgapur ICT:**

Under ERSS-XII package, 01 No 315 MVA ICT diverted from Purnea was supposed to be installed at Farakka. However, due to constraint in road transportation near Farakka barrage (Due to transportation weight the consignment opposed by Ministry of Waterways), the ICT was diverted to Durgapur S/S. The schedule date of Commissioning is **June 2019.**

In ERSS-XVII, 01 No ICT is to be commissioned at Durgapur S/S which was supposed to be diverted from Muzzafarpur S/S. However, as the ICT diverted from Farakka reached at Durgapur, the provision for further diversion of ICT from Muzzaffarpur is not required and early commissioning activity started for the diverted ICT under ERSS-XVII.

Based upon present situation the Durgapur ICT is expected to be commissioned by **December-2018**.

2. **Malda ICT:**

Under ERSS-XVII, existing 2 X 315 MVA ICT at Malda are to be upgraded to 2 X 500 MVA Capacity. The schedule date of Commissioning is **June 2019.** As Malda is a heavily loaded S/S in terms of loading at 132 KV level (132 KV Malda-Malda-D/C loading reaches to almost 250 MW-260 MW in summer), winter season is the perfect season for carrying out the replacement activity. Also the upgradation work is to be carried out in a stepped manner i.e. one by one, POWERGRID has proposed to replace one of the ICT in **January-2019**.

As both the ICT will increase the reliability and flexibility of the system, **it is proposed to prepone the commissioning of ICT's** and subsequent DOCO on successful completion of trial run.

TCC may discuss.

ITEM NO. B26:	COMMISSIONING OF 2 NOS 80MVAR LINE REACTORS AS 400 kV BUS REACTOR AT NEW PURNEA S/STN

New Purnea 400/220kV sub-station of POWERGRID is connected with 400kV Malda, Binaguri, Muzaffarpur, Kishenganj,Biharsharif with D/C lines with two no 125MVAR bus reactor. The power drawal from New Purnea SS during lean period is very less due to low hydel power generation. The 400kV voltage at New Purnea frequently rises above the acceptable limit (420KV) posing dielectric stresses on the equipment.

400KV New Purnea-Gokarna-Farakka D/C line is being constructed by POWERGRID with 80MVAR Line Reactor in each circuit. However, the commissioning of the said line will be delayed considerably due to forest clearance/ROW problem. In the mean time, 02 nos 80MVAR line reactors of the said line have arrived at site and commissioning is under progress.

Proposal: It is proposed that these 02 nos. 80 MVAR reactors may be installed & commissioned as Bus Reactors at New Purnea Sub-station to contain the voltage problems. Till commissioning of said line, the Reactors shall be treated as Bus reactors as part of Eastern Regional Pool.

After completion of the said line, these Reactors will be commissioned along with the line as Line Reactors.

The proposal was discussed in 149th OCC Meeting wherein ERLDC presented the voltage profiles at 400kV New Purnea, Malda, Binaguri & Muzafarpur S/s and informed that high voltage scenario was observed during winter season.

OCC opined that Bus reactors at New-Purnea would help in controlling high voltage and hence agreed for commissioning of 02 nos 80MVAR reactors at New Purnea as Bus reactors till commissioning of 400KV New Purnea-Gokarna-Farakka D/C line.

The above contingency arrangement along with the commercial agreement for tariff may be deliberated for resolution.

TCC may discuss.

ITEM NO. B27:	OPERATIONALIZING BLACK START FACILITY AT PURULIA PUMP STORAGE PROJECT (PPSP) OF WBSEDCL

The issue was discussed in last several OCC meetings. However, till date, no progress has been achieved for operationalising the black-start capability. As the orders passed by honorable CERC and APTEL for operationalization of black start facility at PPSP is already in force, under this condition, only two options are available before WBSEDCL: either to perform mock black start test or to obtain an exemption from CERC/APTEL.

The ER grid is already deprived of the reliability benefits that could have been made available by PPSP.

In 38th TCC/ERPC meeting WBSEDCL/WBSETCL informed that they were taking necessary steps regarding the study. They would take expeditious steps depending on the outcome of the study.

WBSEDCL please share the study and explain in detail the actions taken by them during the last two years for operationalizing the black-start facility at PPSP.

WBSEDCL may update.

TCC may discuss.

ITEM NO. B28:	FLEXIBLE OPERATION OF THERMAL POWER STATIONS-IDENTIFICATION OF PILOT PROJECTS

Central Electricity Authority vide letter dated 16th February 2018 informed that a special Task Force was constituted under IGEF Sub-Group-I for enhancing the flexible operation of existing coal-fired power plants. The Committee has recommended for implementation of measures for 50%, 40% and 25% minimum load in thermal power stations. The measures for 50% minimum load operation requires no investment or minimal investment. (Report is available on CEA website under TRM division)

Subsequently, a meeting was held under the Chairmanship of Member (Thermal) on 8th February 2018 wherein it was decided that 55% minimum load operation would be implemented nationwide in first phase. Further, six units, comprising of two units of NTPC and one unit each from DVC, GSECL, APGENCO, MSPGCL, would be taken up for 55% minimum load operation on pilot basis as 55% minimum load operation in line with the CERC notification dated 6th April 2016 and 5th May 2017 (IEGC 4th Amendment).

In 142nd OCC Meeting, NTPC informed all the units of NTPC were capable of 55% minimum load operation.

In 37th TCC meeting, *DVC informed that they would demonstrate the capability of 55% minimum load operation for one unit of DSTPS.*

In 150th OCC meeting, DVC informed that they could not demonstrate the capability of 55% minimum load operation due to coal issues.

DVC may explain.

TCC may note.

ITEM NO. B29:	**ISSUANCE OF TAKING OVER CERTIFICATE (TOC) FOR DSTPS-RTPS OPGW LINK BY DVC**

In 19th SCADA O & M meeting held on 7th April 2017 at ERLDC, Kolkata, POWERGRID had informed that they were not able to complete the OPGW work in 400 kV DSTPS – RTPS in DVC Sector under Microwave Replacement Package due to severe ROW issue. POWERGRID further informed that they had mobilized the team several times, but work could not be completed due to heavy ROW / compensation issues related to TL construction resulting non-completion of 2 nos. OPGW drum (approx. 9 Km) out of total 69.182 Km. POWERGRID again informed that this issue was discussed in various fora, but the solution could not be provided by DVC. DVC informed that they are not able to resolve the issue as this was an old ROW / compensation issue related to TL construction. OPGW work in this link could not be completed due to ROW/Compensation issues since September-2013.
In 36th ERPC meeting, matter was deliberated and DVC informed that they would try to resolve ROW issues by 31st October-2017. Otherwise, they would provide the necessary certificate.

In 20th SCADA O&M meeting held on 15th December-2017, POWERGRID informed that DVC had not yet issued Taking over Certificate for this link. DVC confirmed that they would issue TOC and request for a letter from POWERGRID. POWERGRID issued the request letter on 20.12.2017. However, Taking over Certificate is yet to be issued by DVC.

In 37th TCC, DVC informed that the ROW issue would likely to be resolved after the Panchayat Election of West Bengal.

In 21st SCADA O & M meeting held on 19th June 2018, POWERGRID proposed the following:

(A) DVC shall issue of trial operation certificate for completed portion (69.182 Km completed out of total 70 Km).

OR

(B) Deletion of the link from MW replacement Package and DVC shall reimburse the cost incurred for DSTPS-RTPS link along with requisite overhead charges (15%) to POWERGRID.

DVC informed that their higher management is taking up the matter and decision for appointing separate agency for laying of the said OPGW is under process. POWERGRID requested DVC to provide space in their premises for keeping the OPGW materials. DVC agreed and informed that they will revert back by 28th June 2018.

In 38th TCC, DVC assured that the issue would be resolved by July 2018.

DVC may update.

ITEM NO. B30:	PAYMENT/RECEIPT STATUS FROM VARIOUS POOL ACCOUNTS IN ER

1) PAYMENT OF DEVIATION CHARGE – PRESENT STATUS

Deviation Pool Account Fund of ER is being maintained & operated by ERLDC, in accordance with the CERC Regulations. As per Regulations 10 (1) of "Deviation Settlement Mechanism and related matters". The payment of charges for Deviation shall have a high priority and the concerned constituents shall pay the indicated amounts within 10 days of issue of statement of Charges for Deviation including Additional Charges for Deviation by the Secretariat of the respective Regional Power Committee in to the "Regional Deviation Pool Account Fund" of the concern region.

The status of Deviation Charge payment as on 29.10.2018 is enclosed at **Annexure – B.30.1**. The current principal outstanding Deviation Charge of BSPHCL & JUVNL is **₹15.76 Cr & ₹ 16.37 Cr** respectively considering bill up to 14.10.2018.

Further SIKKIM & APNRL is not paying DSM charges in Pool since last 4-5 Years and waiting for adjustment with the receivable amount.

SIKKIM & APNRL may please pay the Payable amount as per bill within due date instead of waiting for adjustment.

As per the decision of 38th Commercial sub-Committee Meeting (CCM), ERPC Secretariat had already written letters to the above constituents to liquidate the outstanding amount by 10th Nov, 2018

BSPHCL, JUVNL, SIKKIM & APNRL may update.

2) INTEREST DUE TO DELAYED PAYMENT OF DEVIATION CHARGES.

Outstanding deviation charges including interest for all the ER constituents (except Vedanta of **₹ 3, 51,637** towards interest) along with Inter-regional Pool during FY 2016-17 are fully settled. Issue of Outstanding Interest i.r.o Vedanta was also discussed in 36th CCM & 37th CCM. In 37th CCM, GRIDCO assured that the issue related to outstanding of M/s Vedanta would be resolved positively by 25th June 2018 and they would confirm it in forthcoming TCC Meeting. However Vedanta/GRIDCO is yet to make the payment.

Further due to delayed payment of deviation charges in DSM Pool in FY 2017-18, Interest was computed for all the DSM Pool Member. ERLDC vide letter No. ***पूक्षेभारप्रेके/एम.ओ/यू-11 / 2126*** dated 26.06.18 was issued the interest statement for FY 2017-18.

The statement of interest amount is enclosed in **Annexure-B30.2**. Settlement of delayed payment Interest for 2017-18 for the recipient constituents has been done on 01.06.18. SIKKIM & IBEUL are yet to clear the outstanding Interest amount of 2017-18.

In 38th CCM, ERLDC informed that the outstanding charge of Vedanta for FY 2016-17 has been settled. The house appreciated the efforts of GRIDCO for resolving the issue.

IBEUL & SIKKIM representatives were not present.

As per the decision of CCM, ERPC Secretariat had already written letters to the above constituents to liquidate the outstanding amount by 10th Nov, 2018

Sikkim may update.

3) REACTIVE ENERGY CHARGES – PRESENT STATUS.

The updated position of Receipt/Payment of Reactive Energy Charges in the pool as on 29.10.2018 (considering bill up to 30.09.2018) is indicated in **Annexure –B30.3**. The total outstanding receivable on account of Reactive charges from West Bengal is ₹ **2.09 Cr** & fromSIKKIMis**₹ 3.1 Lac**. SIKKIM has not paid the Reactive energy Charges since more than last one year. JUVNL and DVC has also the outstanding of **₹ 2.20 Lac** and**₹ 3.03 Lacs** respectivelypayable to Reactive Pool.

In 38th CCM, WBSEDCL informed that except for ₹ 1.82 Cr, rest of the payment is being done on regular basis.

WBSEDCL assured that the outstanding amount prior to 04.01.2016 would be liquidated in 6 monthly instalments starting from end of October, 2018.

SIKKIM & JUVNL representative were not present.

As per the decision of CCM, ERPC Secretariat had already written letters to SIKKIM & JUVNL to liquidate the outstanding amount by 10th Nov, 2018

WBSETCL/WBSEDCL, SIKKIM, JUVNL & DVC may respond.

ITEM NO. B31:	**OPENING OF LC BY ER CONSTITUENTS FOR DEVIATION CHARGES PAYMENTS**

Clause 10 (4) of CERC Deviation Settlement Mechanism and related matters Regulations, 2014 vide notification No. L-1/132/2013/CERC dated 6th January, 2014 to be implemented from 17.02.2014 is reproduced below:

Quote

All regional entities which had at any time during the previous financial year failed to make payment of Charges for Deviation including Additional Deviation Charges for Deviation within the time specified in this regulations shall be required to open a Letter of Credit (LC) equal to 110% of its average payable weekly liability for Deviations in the previous financial year, in favour of the concerned RLDC within a fortnight from the date these Regulations come into force……..
……..Provided further that LC amount shall be increased to 110% of the payable weekly liability in any week during the year, if it exceeds the previous LC amount by more than 50%.

Unquote

As intimated by ERLDC, the details of LC amount required to be opened in 2018-19 by ER constituents is given in **Annexure – B31**. Letters to this effect has been issued by ERLDC to the defaulting entities.

In 38th TCC/ERPC Meeting, JUVNL and Sikkim had assured to open the LC with requisite amount shortly.

As updated in 38th CCM,

i) IBEUL & Tashiding (SHIGA) have to open Fresh LC; they have not opened the LC till date.
ii) JUVNL, SIKKIM, Chuzachen, NVVN(Ind-Nep) & JLHEP(Dans Energy) have not renewed their LC after expiry of the same.

As per the decision of CCM, ERPC Secretariat had already written letters to the above constituents to liquidate the outstanding amount by 10th Nov, 2018

JUVNL, SIKKIM, IBEUL, TASHIDING, CHUZACHEN, NVVN and JLHEP may respond.

ITEM NO. B32:	**REFUND OF STOA WITHDRAWL POC CHARGES TO DICs PAID BY EMBEDDED CUSTOMERS TO PGCIL TOWARDS THEIR DRAWL IN STOA**

As per the 3rd proviso of regulation 11.9 of sharing regulation 2010,

"the injection PoC charge/Withdrawal PoC charges for short term open access given to a DIC shall be offset against the corresponding injection PoC charges or withdrawal PoC charges to be paid by the DICs for approved injection/Approved withdrawal corresponding to net withdrawal (load minus own injection) considered in base case."

And the 4th proviso of regulation 11.9 of sharing regulation 2010, states that

"For withdrawal DIC, this adjustment is given only for STOA transaction by DIC and not applicable to other intra-state entity embedded in state and engages in STOA"

Gridco is taking up matter with PGCIL with respect to adjustment is given only for STOA transaction by directly availed by itself for one to one correspondence. Regarding the short term drawls by intra-state entity embedded in state, it is of the same nature i.e., such STOA transaction by intra-state entity embedded in state is also captured/accounted for while determining the POC charge calculation of the state /DICs for the respective quarters. Surprisingly there is no provision in the extant regulation for adjustment of total STOA charges availed by intra-state embedded entities in the bill #1, the reason being cited by NLDC is the difficulty & complexity involved in calculation keeping in view the no of entities embedded in DIC. Gridco submits that the calculation modalities may be difficult but not impossible.

Hence in absence of any such modality, for the same drawl quantum, entities are doubly charged which violated the purpose of 3rd amendment regulation11.9 as existing returns do not have to one to one correspondence since these transactions are paid back to these DICs in

proportion to POC charges. Moreover since such scenario is prevalent in most of the DICs, necessary modalities may be prescribed at ERPC level in absence of regulations towards such adjustment.

The PoC charges of Odisha amounts to ₹ 38.46 Cr per month in 2018-19 in Q1, which has gone up to ₹ 56.26 Cr per month in 2018-19 in Q2. Although the YTC has increased and the total LTA of all the DICs has been decreased due to relinquishment of LTA by some DICs, the major impact on Odisha is due to high STOA drawl of M/s. Vedanta Ltd. in 2018-19 Q2. Ultimately, the consumers of the state shall suffer due to such differential PoC charges which is attributable due to drawl of an embedded Entity like M/S. Vedanta.

In 38th CCM, after detailed deliberation the committee advised GRIDCO to prepare a resolution for considering the refund of STOA withdrawl charges to DICs (i.e. GRIDCO), paid by embedded customers of GRIDCO to PGCIL. The same would be placed before forthcoming TCC and ERPC for discussion and further course of action.

GRIDCO may elaborate. TCC may deliberate.

ITEM NO. B33:	**METER RELATED ISSUES**

The status of meter related issues are as given below:

SN	Meter location	Issue	Status as updated in 38th CCM
A	**Erroneous recording of data by Interface Meters**		
1	Rourkela (PG)	Meter NP-5931-A installed at Rourkella(PG) end of 400 KV Chaibasa (PG) Line-2 is erroneous and recording Less (almost 2/3rd) compared to actual flow through the Line	Powergrid assured that the meter at Rourkela and Chaibasa end would be replaced by the 22nd Oct, 2018.
2	Ara (PG)	Meter No ER-1353-A installed at 132 KV side of 220/132 Ara ICT-3 is recording less compared to HV side.	Powergrid informed that the meter would be checked and if required, the meter would be replaced with new meter by the end of Oct, 2018
B	**Replacement of defective Meters**		
1	Ranchi	Ranchi PGCIL (NP-7402-A) for 400 KV Ranchi New Line-3	Powergrid informed that the meters cited above would be replaced by the 20th October, 2018
2	Angul	Angul PGCIL (NP-7995-A) for 765 KV side of 1500 MVA ICT-3	
3	Baripada	Baripada PGCIL(ER-1568-A) for 220 KV side of 160 MVA ICT-2	
4	Rourkella	Rourkella PGCIL(NP-5929-A) for 220 KV Tarkera-1	
C	**Non Receipt of SEM data from Various Locations**		
1	Ind-Barath (IBEUL)	Six (6) nos of SEM are installed at Ind-Bharath end for energy accounting of IBEUL. IBEUL is not sending the SEM data since April'17	IBEUL was not available in the meeting.
2	Darbhanga (BSPTCL)	BSPTCL end meter data from Darbhanga & Laukahi end of 220 KV DMTCL Darbhanga Line is not being sent by	BSPHCL informed that they had started sending the meter data from Darbhanga end.

3	Laukahi (BSPTCL)	BSPTCL since charging of the Line	BSPHCL assured that the software related issues would be resolved within a week.
4	Baisi (BSPTCL)	Meter of Kishanganj BSPTCL was shifted to Baisi but the Data is not being sent to ERLDC.	BSPHCL informed that the required data would be sent manually by 20th Oct, 18
5	Fatua (BSPTCL)	Meter NP-7850-A installed at Fatua end of 220 KV Patna Line is not being sent by BSPTCL to ERLDC since very long	BSPHCL vide mail dated 31.10.18 informed that the defective meter at Fatua (BSPTCL) end have been replaced on 24.10.18.
6	Khizirsarai(BGCL)	BGCL Khizirsarai end meter data of 220 KV Gaya (PG) D/C Line is not being sent to ERLDC since charging of Line	BSPHCL representative assured to take up the issue with appropriate authority for regularisation of sending the meter data at the earliest
7	Malbase(Bhutan)	Malbase end meter data of 220 KV Malbase-Birpara(PG) and 400 KV Malbae-Binaguri(PG) D/C Line is not being sent by Bhutan since last 2 months due to non-working of DCD.	PGCIL was advised to collect the unutilized DCD from Teesta –III (TUL) and the same may be handed over to Malbase.
8	Rammam (WBSETCL)	Rammam (WB) end meter data of 132 KV Rangit(NHPC) line is not being sent to ERLDC since last few weeks	After deliberation the committee advised WBSETCL to send the meter data on timely basis.

Respective constituents may respond.

ITEM NO. B34:	**SPLITTING OF 400kV BUS OF KAHALGAON STPS STAGE I&II, NTPC**

In 24th ERPC meeting held on 27.04.2013, ERPC advised NTPC to go ahead with the bus-splitting scheme as it is a technical requirement for safe, secure operation of the grid.

In 32nd TCC, NTPC informed that they are going ahead with the implementation of Bus Splitting of Kahalgaon STPS Stage I&II and the implementation is expected to be completed by December, 2018.

In 126th OCC, NTPC has given the present status as follows:

- 400/132kV Switchyard package - bid opened on 14.03.16. Awarded on 04.05.2016.
- Site levelling – Site levelling work has been completed.
- Transformer package and Shunt reactor– have been awarded.

In 35th TCC, NTPC informed that the work is in progress as per the schedule and the bus splitting will be completed by December, 2018.

In 146th OCC, NTPC informed that bus splitting would be implemented by December, 2018.

NTPC may update.

ITEM NO. B35:	ISSUES RELATED TO ASSOCIATED / DOWNSTREAM SYSTEMS

WEST BENGAL

1. **2 nos. 220 KV line bays at Subhashgram (PG) s/s**: Bays are ready and idle charged under ERSS-VIII due to non readiness of 220 KV D/C Subhashgram – Baruipur Tr. line and associated bays at Baraipur.

2. **6 nos. 220 KV bays at Rajarhat GIS substation under ERSS-V -** 02 no. bays of 220 KV will be utilized through LILO of 01ckt of 220 KV Jeerat - New Town Tr. line (WBSETCL) at Rajarhat. Construction activity of 220 kV line bays was completed. Due to public agitation, work was stopped from January' 2017 and during the agitation miscreants have damaged several panels, cables etc. Work for commissioning of the station has commended from Sept 18 and expected to be completed by Dec 18.

In 150th OCC, WBSETCL updated the completion schedule of inter-connecting system as follows:

Sl. No.	Name of the transmission line	Completion schedule
1.	**2x500MVA, 400/220kV Rajarhat---**	
a.	Rajarhat-N. Town-3 (WBSETCL) 220 kV D/C line	Matching
b.	Rajarhat-N. Town-2 (WBSETCL) 220 kV D/C line	December 2019
c.	Rajarhat- Barasat (WBSETCL) 220 kV D/C line	February 2019
2	**Subashgram400/220kVS/s**	
a	Subashgram–Baraipur220kVD/cline	June 2019, 75% of work has been completed.

ODISHA

1. **6 nos. 220 KV bays at Pandiabil GIS: 06 nos.** 220 kV bays at Pandiabil (PG) substation are ready for commissioning since July '16. Utilisation of the bay is held up due to non-readiness of 220 KV lines of OPTCL. Readiness of 220 KV Feeders by OPTCL is critical for downstream power flow from Pandiabil (PG) S/S.

In 150th OCC, OPTCL updated the completion schedule of inter-connecting system as follows:

Sl. No.	Name of the transmission line	Completion schedule
1.	**400/220kV Pandiabil Grid S/s:**	
a.	Pratapsasan(OPTCL)-Pandiabil(PG) 220 kV D/C line	By Dec, 2018.

JHARKHAND

The following downstream network is being constructed by JUSNL to draw power from 220kV & 132kV level from Daltonganj (PG) :

220 kV Level :
- Daltonganj (POWERGRID) – Latehar 220 kV D/C
- Daltonganj (POWERGRID) – Garhwa 220 kV D/C

132 kV Level :
- Daltonganj (POWERGRID) – Daltonganj (JUSNL) 132 kV D/C

- Daltonganj (POWERGRID) – Chatarpur/Lesliganj 132 kV D/C

In 150th OCC, JUSNL updated the latest status as follows:

Sl. No.	Name of the transmission line	Completion schedule
1.	**Daltonganj 400/220/132kV S/s:**	
a.	Daltonganj(POWERGRID)–Latehar220kVD/c	By April, 2019.
b.	Daltonganj (POWERGRID) – Garhwa 220kV D/c	The line expected to be completed by May, 2018 but – Garhwa 220kV is expected to be completed by Dec 2018.
c	Daltonganj (POWERGRID) – Daltonganj (JUSNL) 132kV D/c	The line charged as per original configuration on 26th July 2018.
d	Daltonganj (POWERGRID) – Chatarpur/Lesliganj 132kV D/c	Tendering is in progress. Expected to be completed by October 2019
2	**Chaibasa400/220kVS/s**	
a	Chaibasa(POWERGRID)–Noamundi220kVD/c	Not yet started

Members may please update.

ITEM NO. B36:	**ADDITIONAL AGENDA**

With the permission of Chair.

PART C: ITEMS FOR INFORMATION

The following items are placed before TCC for noting and compliance:

ITEM NO. C1 :	STATUS OF PROJECTS FUNDED UNDER PSDF SCHEMES

Latest status as updated in 150th OCC Meeting is as follows:

A. Projects approved:

SN	Name of Constituent	Name of Project	Date of approval from PSDF	Target Date of Completion	PSDF grant approved (in Rs.)	Amount drawn till date (inRs.)	Latest status
1	WBSETCL	Renovation & up-gradation of protection system of 220 kV & 400 kV Substations in W. Bengal	31-12-14	October 2018	108.6 Cr	37 Cr.	100 % Supply and Erection has been completed.
2		Renovation & modernisation of transmission system for relieving congestion in Intra-State Transmission System.	22-05-17	25 months from date of release of 1st instalment	70.13	21.03 Cr	Order has been placed and work is in progress.
3		Installation of switchable reactor at 400kV & shunt capacitors at 33kV	22-05-17	19 months from date of release of 1st instalment	43.37	6.59 Cr	Order has been placed and work is in progress.
4	WBPDCL	Implementation of Islanding scheme at Bandel Thermal Power Station	*10.04.17*	*March 2018*	1.39 Cr	1.25 Cr	*The implementation would be completed by July 2018.*
5		Upgradation of Protection and SAS			23.48	2.348 Cr	Bid opened and order has been placed.
6	OPTCL	Renovation & Up-gradation of protection and control systems of Sub-stations in the State of Odisha in order to rectify protection related deficiencies.	10.05.15	30.11.18	162.5 Cr.	37.79 Cr	Total contract awarded for Rs. 51.35 Cr
7		Implementation of OPGW based reliable communication at 132kV and above substations	15.11.17		25.61 Cr.		Agreement signed on 03.01.2018
8		Installation of 125 MVAR Bus Reactor along with construction of associated bay each at 400kV Grid S/S of Mendhasal, Meramundali& New Duburi for VAR control &stabilisation of system voltage	27.07.18		27.23 Cr		
9	OHPC	Renovation and up-gradation of protection and control system of 4 nos.OHPC substations.		*U.Kolab-March 19 Balimela-Feb 2019 U.Indravati-Jan 19 Burla-Nov 2018, Chiplima Dec 2018*	*22.35 Cr.*	2.235 Cr	Placed work order for Balimela.
10	BSPTCL	Renovation and up-gradation of 220/132/33 KV GSS Biharshariff, Bodhgaya, Fatuha, Khagaul, Dehri -on-sone& 132/33 kV GSS Kataiya	11/5/15	31.07.2018	64.02 crore	56.04 crore	85% of work has been completed. Contract awarded for Rs.71.37 Cr till date. The work would be completed by October 2018.
11		Installation of capacitor bank at		12th March		Nil	Work awarded for all GSS.

		different 35 nos. of GSS under BSPTCL	5/9/2016	2019	18.88 crore		
12		Renovation & up-gradation of protection and control system of 12 nos. 132/33 KV GSS under BSPTCL.	02.01.17	31st March 2018	49.22 Cr.		75% work completed for seven no. GSS as part of R & M work. Revised DPR is to be submitted for rest 5 no. GSS.
13	JUSNL	Renovation and up-gradation of protection system	*September 2017*	*2 years*	*138.13 crores*		LOA placed on 28th Sep 2018.
14	DVC	Renovation and upgradation of control & protection system and replacement of Substation Equipment of 220/132/33 kV Ramgarh Substation	02.01.17	01.06.2019	25.96 Cr	2.596 Crore on 01.06.2017	Work awarded for 28.07 Cr. Work would be completed by May 2019.
15		Renovation and upgradation of control & protection system including replacement of substation equipment at Parulia, Durgapur, Kalyaneshwari, Jamshedpur, Giridih, Barjora, Burnpur, Dhanbad and Burdwan Substation of DVC	27.11.17	24 Months from the date of release of fund.	140.5 Cr.	1st installment of 14.05 Cr. received on 21.12.2017	Work awarded for 6.45 Cr. Price bid opened for West Bengal portion and technical bid opened for Jharkhand portion.
16	POWERGRID	Installation of STATCOM in ER		June 2018	*160.28 Cr*	*16.028 Cr*	Work is in progress, expected to complete by June 2018. STATCOM at Rourkela has been commissioned.
17	ERPC	Creation & Maintenance of web based protection database and desktop based protection calculation tool for Eastern Regional Grid	17.03.16	Project is alive from 30th October 2017	20 Cr.	4.94 Cr. + 9.88 Cr.	1) Protection Database Project has been declared 'Go live' w.e.f. 31.10.17. 2) Pending training on PDMS at Sikkim and 3rd training on PSCT has been also completed at ERPC Kolkata.
18a	ERPC	Training for Power System Engineers	*27.07.18*		0.61 Cr.	Nil	Approved
18b		Training on Power market trading at NORD POOL Academy for Power System Engineers of Eastern Regional Constituents	*27.07.18*		5.46 Cr.	Nil	

B. Projects under process of approval:

SN	Name of Constituent	Name of Project	Date of Submission	Estimated cost (in Rs.)	Latest status
1	Sikkim	Renovation &Upgradation of Protection System of Energy and Power Department, Sikkim.	09-08-17	68.95 Cr	The proposal requires third party protection audit. Issue was discussed in the Monitoring Group meeting in Siliguri on 8.6.2018. Sikkim was asked to coordinate with ERPC.
2		Drawing of optical ground wire (OPGW) cables on existing 132kV & 66kV transmission lines and integration of leftover substations with State Load Despatch Centre, Sikkim	09-08-17	25.36 Cr	Scheme was approved by Appraisal Committee. It was sent to CERC for concurrence.
3	JUSNL	Reliable Communication & Data Acquisition System upto 132kV Substations.	23-08-17	102.31 Cr	Scheme was approved by Appraisal Committee. It was sent to CERC for concurrence.
4	OPTCL	Implementation of Automatic Demand Management System	22-12-17	3.26 Cr	Scheme was approved by Appraisal Committee. It was sent to CERC for

		(ADMS) in SLDC, Odisha			concurrence.
5		Protection upgradation and installation of SAS for seven numbers of 220/132/33kV Grid substations (Balasore, Bidanasi, Budhipadar, Katapalli, Narendrapur, New-Bolangir&Paradeep).	12-03-18	41.1 Cr.	Scheme examined by TSEG on 20.03.2018. Inputs sought from the entity are awaited.
6	WBSETCL	Implementation of Integated system for Scheduling, Accounting, Metering and Settlement of Transactions (SAMAST) system in West Bengal	22-12-17	25.96 Cr	TSEG has decided to put up this proposal in the Appraisal Committee. Final cost estimates shall be worked out after the decision of the appraisal committee.
7		Installation of Bus Reactors at different 400kV Substation within the state of West Bengal for reactive power management of the Grid	12-03-18	Initial estimate: 78.75 Cr Revised estimate: 82.10 Cr	The proposal was found to be in order by the TESG committee of PSDF in the 45th meeting held on 19.09.18. Now the proposal would be put up for recommendation of the Appraisal Committee.
8		Project for establishment of reliable communication and data acquisition at different substation at WBSETCL.	10-05-18	80.39 Cr.	Inputs submitted by WBSETCL were provided to the members of TESG recently. The same shall be examined in the next meeting.
9	BSPTCL	Implementation of Schedulling, Accounting, Metering and settlement of Transcation in Electricity (SAMAST)in SLDC Bihar.	27-02-18	93.76 Cr.	Scheme examined by TSEG on 20.03.2018 & 31.05.2018. Further inputs furnished by BSPTCL on 1.8.2018. Shall be examined in the next meeting of TESG.

ITEM NO. C2 :	**CERTIFICATION OF OPTCL LINES AS NON-ISTS LINES CARRYING ISTS POWER**

OPTCL vide no. RT&C-NON-ISTS/2017/281 dated 21.08.2018 had sought the Certification of non-ISTS line carrying ISTS power as per the direction of CERC in ROP dated 08.08.2018 under Petition No. 25/TT/2018.

Accordingly, in line with 34th TCC decision, ERPC Secretariat and ERLDC jointly conducted the load flow study using WebNet software for all the quarters of 2014-15, 2015-16, 2016-17, 2017-18 & 2018-19 (upto Q2). The summary of the results for percentage utilization of the OPTCL transmission line by Odisha to meet the own demand was presented in OCC and CC Meetings.

Also, in 129th OCC held on 17.01.2017 it was decided that STU lines carrying ISTS power greater than 50% of the total power as per the WebNet software of the validated data for each quarter would be considered as non-ISTS line carrying ISTS power. The same was also approved by 35th TCC/ERPC.

Accordingly, as per the study result, it emerged that the following OPTCL lines are mostly being utilized more than 50% for carrying ISTS power. Hence these elements may be considered as non-ISTS line carrying ISTS power for the tariff period 2014-19.

SN	Name of Line	Remarks
1	400 kV Indravati-Indravati S/C	
2	400 kV Rengali-Keonjhar S/C	
3	400 kV Keonjhar-Baripada S/C	
4	400 kV Baripada-Kharagpur S/C	Natural ISTS
5	220 kV Jeypore-Jaynagar D/C	
6	220 kV Rengali-Rengali D/C	

7	220 kV Balimela-U.Sileru S/C	Natural ISTS
8	220 kV Joda-Jindal S/C	
9	132 kV Joda-Kenduposi S/C	Natural ISTS

The issue was deliberated in 150th OCC and 38th CCM wherein, based on the study results and in line with the decision of 35th TCC/ERPC meetings, the committee agreed to certify the above nine (9) lines of OPTCL as non-ISTS lines carrying ISTS power.

ITEM NO. C3 :	**STATUS OF THIRD PARTY PROTECTION AUDIT**

1. Status of 1st Third Party Protection Audit:

The compliance status of 1st Third Party Protection Audit observations is as follows:

Name of Constituents	Total Observations	Complied	% of Compliance
Powergrid	54	46	85.19
NTPC	16	14	87.50
NHPC	1	1	100.00
DVC	40	26	65.00
WB	68	49	72.06
Odisha	59	42	71.19
JUSNL	34	25	73.53
BSPTCL	16	5	31.25
IPP (GMR, Sterlite and MPL)	5	5	100.00

** Pending observations of POWERGRID are related to PLCC problems at other end.*

The substation wise status of compliance are available on ERPC website (Observations include PLCC rectification/activation which needs a comprehensive plan).

2. Status of 2nd Third Party Protection Audit:

The ERPC Protection Audit team visited one 400 kV, 9 nos 220kV and 21 nos 132kV Substations during July 2018 to October 2018. The audit observations are enclosed at **Annexure-C3**. Audit observations of 220/132kV Lalmatia S/s are enclosed at Annexure-B9.

Respective constituents are requested to comply and submit the report to ERPC for regular update.

ITEM NO. C4 :	**Simultaneous Operation SPS-1 and SPS-2 of 400 kV Rangpo-Binaguri D/C and change in setting of SPS-2**

In the past simultaneous operation of both SPS-1 and SPS-2 was observed on few occasions, even after successful operation of SPS-1 sometimes SPS-2 also operated. For avoiding repeated operation of SPS-2 and consequent total loss of Teesta-3 generation, in 148th OCC meeting it was decided to modify the logic for SPS-2 so that it operates at a line flow of 900 MW instead of at 850 MW. The time delay for actuation of SPS-2 would continue to be set at 700 ms and might be reviewed in future, if required. However, all the generators selling power on STOA through Rangpo-Binaguri corridor should strictly adhere to their respective schedules as agreed earlier in RPC forum, in case of loss of any Rangpo-Binaguri circuit.

ITEM NO. C5 :	Guidelines for the charging of Transmission line connecting two generating plants after tripping on fault or outage

There is a prevailing issue on the charging of transmission line connecting two generating complex after its outage/tripping. It has been observed sometimes that either of the utility is not ready for charging of the line from their end after its tripping on fault/outage. This results in the delay in the restoration of line and thus affecting the reliability of both the generating station. In view of this, there is a need of guideline on charging of such transmission lines.

List of such transmission lines is given below:

I. 400 kV Farakka-Kahalgaon Q/C.
II. 400 kV Kahalgaon-Barh D/C.
III. 400 kV Farakka-Sagardighi D/C.
IV. 400 kV RTPS-DSTPS D/C.

As a general guideline following may be considered

- If voltage difference between two system is more than 5 kV system which have lower voltage should charge the line
- In case voltage difference is less than 5 kV system which have higher fault level should charge
- If only one end has line reactor than the end which did't have the line reactor should attempt to charge first.

In 150th OCC meeting concerned members agreed to adhere to above philosophy.

ITEM NO. C6 :	Multiple Contingency due to the Tower Collapse of 400 kV Purnea-Biharsharif D/C and 400 kV Kishenganj-Patna D/C in the Eastern Region

On 01-09-18 400 kV Kishenganj-Patna D/C got tripped on Tower Collapse. With this tower collapse and already ongoing outage of 400 kV Purnea-Biharsharif D/C on tower collapse (since 10-08-18) the network in NR/ER/NER corridor has become significantly depleted. The high hydro generation scenario prevailing at Tala, Chukha, Sikkim and NER is causing high flow in the chicken neck corridor. Under such condition, it is pertinent to note that contingency of Purnea-Muzaffarpur or Purnea-Malda D/C line will lead to islanding of Sikkim, Bhutan, N. Bengal, NER and the HVDC from the rest of the system.

In order to ensure the system reliability following actions have been taken:

1. All Poles of Agra-BNC-Alipurdwar multi-terminal HVDC are in service all the time in integrated mode along with reactive power in auto mode. In case one pole trips, power order will be compensated by other poles. Further inter station compensation at BNC and Alipurdwar are kept in service for automatic power transfer between rectifier stations in case of both poles tripping on substation internal fault.
2. The power order of Agra-BNC-Alipurdwar HVDC is being kept at 2000-2200 MW (APD-Agra: 1500 MW and BNC-Agra: 700 MW) so that in case of Purena substation outage, the system may survive through 220 kV Binaguri-NJP- Kishenganj-Dhalkhola-Malda. Depending on system condition, BNC-Agra HVDC power order will be increased to 1000 MW.
3. Voltage at Kishenganj is being kept at the higher side so that under contingency of

complete outage of N. Purnea substation, the voltage at 220 kV Kishenganj and Dhalkhola can sustain within the limit.

4. 220 kV Siliguri-Kishenganj-Dhalkoha-Malda / Purnea is kept under closed loop so that a parallel path is available under contingency. The lines connected to Dalkhola(PG) 220kV S/Stn are distributed suitably between the two 220kV buses, so that in the event of high power flow resulting in tripping of bus-coupler CB, supply to WBSETCL s/stns would not be affected.
5. In view of grid security, all planned outage from Binaguri, Purnea, Malda, Farakka, Muzaffarpur, BNC, Balipara, Alipurdwar and Bongaigaon is being differed until the end of sept i.e. High Hydro season.
6. Any emergency outage in Chicken neck area, in ER-NER corridor, in Sikkim Area and in ER-NR corridor will be facilitated with close coordination with NLDC.
7. All Circuits in ER-NER, ER-NR and WR-NR corridor are kept in service with A/R enabled. FSCs of 400 kV Purnea-Mujaffarpur D/C to be kept in service.

Desired Actions from All Utilities in the Eastern region:

1. **ENCIL and PGCIL:**To expedite the restoration of 400 kV Purnea-Biharsharif D/C and 400 kV Kishenganj-Patna D/C on war footing basis.
2. **PGCIL:**
    a. Any untoward contingency of Kishenganj and Purnea substation to be informed to ERLDC/NLDC at the earliest and to be ready for handling any emergency like flood/equipment failure etc.
    b. Protection System at Binaguri, Kishenganj and Purnea to be kept healthy. No unwanted tripping of transmission lines is desired from these substations because of protection mal-operation.
    c. Communication System along with SCADA data to ERLDC to be ensured at all points of time.
3. **All Utilities of the Eastern region:**
    a. Keeping the Lines/ICTs available all the time.
    b. Any outage at 220 kV level affecting the East Bihar, North Bengal and Sikkim to be done with prior information to ERLDC.
    c. All defense mechanism such as UFR, SPS and df/dt to be kept in service all the time.
4. **All SLDCs and Generators:**All constituents to adhere drawl according to their schedule to avoid any stress in the grid and corridor.
5. **All Generators of Eastern Region:**RGMO/FGMO for all eligible generating unit to be kept in service.
6. **All Hydro Generation of Sikkim/Bhutan:**Blocking of high-frequency tripping of Units in Hydro station of NER/Sikkim/Bhutan during the contingency of system separation and high Rate of change of frequency (3.5 to 4 Hz/sec).

ITEM NO. C7 :	**PAYMENT/RECEIPT STATUS FROM VARIOUS POOL ACCOUNTS IN ER**

1) DSM Account Mismatch between ER & NR

A huge mismatch between DSM accounts for ER-NR Link published by ERPC & NRPC has been observed since April 2018. Prior to April 2018 such mismatch was not significant. Actual Meter data of ER-NR Inter regional link, published in NRPC DSM Bill is matching with ERPC/ERLDC/NRLDC Actual SEM data. However, Schedule energy data of ER-NR

Inter regional link published in NRPC DSM statement is not matching with ERPC data. It was gathered that some software related issue at NRPC is the main reason for this mismatch. DSM statement for ER-NR Link prepared by ERPC secretariat is correct.

Such huge mismatch in two DSM account is causing problem in settlement of DSM as well RRAS account. A consolidated statement of ER-NR Inter regional DSM Bill issued by NRPC & ERPC is given in **Annexure-C7.1** for reference.

In 38th CCM, ERLDC elaborated that the issue regarding the mismatch of DSM & RRAS accounts was due to the accounting software problem at NRPC.

ERLDC further informed that the accounts were found to be matching from 03.09.2018

It was informed that ERLDC had already been taken up the issue with NRPC through NRLDC in for sorting out the issue and for the revision of respective accounts prior to 03.09.2018.

2) RRAS ACCOUNT ----PRESENT STATUS.

The updated position of Payments to the RRAS Provider(s) from the DSM pool and Payments by the RRAS Provider(s) to the DSM pool as on 26.09.2018 (considering bill up to 09.09.2018) is indicated in **Annexure – C7.2**. So far **₹ 162.2 Cr** have been settled under RRAS in ER during FY 2018-19.

3) CONGESTION ACCOUNT - PRESENT STATUS

The status of congestion charge payment after full settlement is enclosed at **Annexure –C7.3.**

4) STATUS OF PSDF

An amount of **₹ 6.15 Cr** from Reactive account have been transferred to PSDF after 37th Commercial sub-committee meeting held on 11.06.18. With this the total amount of ₹ 949.8 Cr has been transferred to PSDF so far. No amount from Deviation pool has been transferred to PSDF A/c since 29.06.16 and surplus amount in deviation pool is being utilized for settlement of RRAS Bill. The break up details of fund transferred to PSDF (till 30.09.18) is enclosed in **Annexure-C7.4.**

ITEM NO. C8 :	**RECONCILIATION OF COMMERCIAL ACCOUNTS**

1) RECONCILIATION OF DEVIATION ACCOUNTS.

At the end of 1st quarter of 2018-19, the reconciliation statement (Period: 01.04.18 to 30.06.18) has been issued by ERLDC on 09.07.18 and statements had been sent to the respective constituents and also uploaded the same at ERLDC website at https://erldc.in/market-operation/dsmreconcilation/ The constituents were requested to verify /check the same & comments if any on the same were to be reported to ERLDC by 14.08.2018. The status of reconciliation is enclosed in **Annexure-C8.1**.

IBEUL have not reconciled the statement for more than one and half year.

Teesta-III & DICKCHU have not signed reconciliation statement for last 2 or more quarter.

BSPHCL, JUVNL, SIKKIM, GMR, TPTCL (DAGACHU), BRBCL, Power grid (ER-II) & NPGC have not signed reconciliation statement for 1st quarter of 2018-19.

As updated in 38th CCM, Dikchu, BRBCL and Powergrid had reconciled their statements and Teesta-III & IBEUL have not reconciled for last 2 or more quarters.

NPGC assured to reconcile the statements shortly.

JUVNL, SIKKIM, GMR, TPTCL & BRBCL were not present in the meeting.

As per the decision of 38th CCM, ERPC secretariat has already written letters to the respective utilities to reconcile the DSM accounts at the earliest.

2) RECONCILIATION OF REACTIVE ACCOUNT

At the end of 1st quarter of 2018-19, the reconciliation statement (Period: 01.04.18 to 30.06.18) has been issued by ERLDC on 19.07.18 and statements had been sent to the respective constituents and also uploaded the same at ERLDC website at link https://erldc.in/market-operation/reactivereconcilation/. Constituents were requested to verify /check the same & comments if any on the same were to be reported to ERLDC.

As updated in 38th CCM, WBSETCL had reconciled the account and sent the signed statement.

As per the decision of 38th CCM, ERPC secretariat has already written letters to SIKKIM to reconcile the Reactive account at the earliest.

3) RECONCILIATION OF RRAS ACCOUNT

At the end of 1st quarter of 2018-19, the reconciliation statement (Period: 01.04.18 to 30.06.18) has been issued by ERLDC on 19.07.18 and statements had been sent to the respective constituents (i.e NTPC and BRBCL) and also uploaded the same at ERLDC website at link https://erldc.in/market-operation/rrasreconcilation/. NTPC has reconciled the RRAS Account.

In 38th CCM, it was informed that BRBCL had also reconciled the RRAS Account statements.

4) RECONCILIATION FOR STOA PAYMENTS MADE TO SLDC / STU:

The reconciliation statements of STOA payments for the period of Apr'18 to Jun'18 have been sent to the DVC, OPTCL and WBSETCL for checking at their end and confirmation from their side. Only DVC has confirmed for the above period OPTCL and WBSETCL are yet to confirm for the above period.

In 38th CCM, ERLDC informed that DVC, OPTCL and WBSETCL had reconciled their statements.

5) RECONCILIATION FOR PAYMENTS RECEIVED FROM STOA APPLICANTS:

The reconciliation statements of STOA payments for the period of Apr'18 to Jun'18 have been sent to the CESC, JITPL, JUVNL and WBSEDCL for checking at their end and confirmation.

CESC and JITPL have confirmed for the above period. JUVNL and WBSEDCL are yet to confirm for the above period.

As per clause 15.1 of CERC approved STOA bilateral procedure since the confirmations have not been received within 2 weeks from the date of issuance of the letters the statement issued by ERLDC have been deemed to be reconciled. The details are attached in the **Annexure-C8.5.**

Since there is a serious audit objection on non-signing of DSM, Congestion and STOA reconciliation statement it is once again requested that all regional pool members may check and sign the statement sent by ERLDC.

In 38th CCM, ERLDC informed that CESC, JITPL & WBSEDCL have reconciled.

JUVNL representative was not present in the meeting.

As per the decision of 38th CCM, ERPC secretariat has already written letter to JUVNL to reconcile the statements of STOA payments at the earliest.

ITEM NO. C9 :	**REPLACEMENT OF GPRS COMMUNICATION WITH OPTICAL FIBER FOR AMR**

In ER, 80% meters are connected through Automated Meter Reading (AMR). At present the communication system used for data transfer from each location is GPRS. It has been observed that many locations are not communicating with AMR system due to poor/no GPRS signal. Many substations have their own optical fiber which is also used for the LAN network of respective stations. TCS has successfully connected 03 locations (Malda-PG, Subhasgram-PG and Binaguri-PG) in ER-II with PGCIL intranet and these two locations are smoothly reporting to AMR system after connecting with PGCIL LAN. The proposed network will not only provide better communication but also reduce the cost of GSM. The above matter was last discussed in 145th OCC meeting also.

In 38th CCM, POWERGRID informed that the replacement of GPRS communication for the remaining 38 locations would be completed by December 2018.

The committee also advised to other utilities to explore possibilities of using their own optical fiber network, wherever it is available, for communicating with AMR for smooth functioning of AMR.

ITEM NO. C10 :	**PROCUREMENT OF NEW SEMS**

In 30th ERPC meeting procurement of 965 no of SEM's and 110 nos of Laptop/DCD (in 111th OCC meeting) was approved. Further 31st TCC/ERPC approved the cost sharing mechanism of expenditure on SEM's and DCD/Laptops along with POWERGRID overhead charges @ 15% to be shared by the beneficiaries constituents of Eastern Region in proportional to the share allocation for the month in which the proposal was approved in the ERPC meeting.

In 35th CCM held at ERPC on 02.08.17, PGCIL informed that in 1st phase, 300 meters and 40 laptops with software had been supplied by M/s Genus so far.

In 145th OCC, PGCIL informed that meter of 2nd lot has been supplied. Time drifted meters/Elster meters are being replaced by Genus meters phase wise.

In 38th CCM, POWERGRID informed that 364 nos. (approx.) of SEMs would be delivered in 3rd phase and the inspection of the same is scheduled by December, 2018.

ITEM NO. C11 :	ACCOUNTING OF STATE DRAWL FROM SUBSTATION OF PGCIL/ISTS LICENSEE IN ER

State net drawl from Substation of PGCIL/ISTS Licensee in ER is being computed considering meter installed at feeders on LV side of Transformer due to the fact that for a few ICTs, multiple states used to draw through same ICT. Further, Sub stations where auxiliary requirement is met through tertiary of the IST ICT, States net drawl is computed by adding drawl through feeders after LV side of Transformer and auxiliary consumption through tertiary. Presently with network strengthening and re-configuration in ER, such case of multiple State/entity drawing power from same ICT of PGCIL/ISTS Licensee does not exist anymore.

As per Clause 7(1) (C) of CEA (Installation and Operation of Meters) Regulations, 2006 & its subsequent amendments, Main Meters for drawl computation through ICT should be installed on HV side of ICT and meters installed on LV side of ICT should be considered as Standby meters. In view of the above it is proposed that Sate drawl from PGCIL/ISTS Licensee S/S may be computed by using the meter installed on HV side of ICTs in line with CEA regulation. In order to enable ERLDC compute the state drawl through ICTs of PGCIL & other ISTS Licensees in ER as per CEA Regulations, PGCIL is requested to install meters at HV and LV side of ICTs at the stations.

In 144th OCC, Powergrid informed that SEMs are already available at some stations. OCC advised Powergrid to check the healthiness & time synchronization of the installed SEMs and install new SEMs wherever it is required.

In 149th OCC, Powergrid informed that the replacement of SEMs would be completed by September 2018. The Pending status as on 28.09.2018 is enclosed in **Annexure-C11.**

In 38th CCM, Powergrid informed that the required installation and replacement of SEMs would be completed by October, 2018.

ITEM NO. C12 :	AGENDA RELATED TO POWERGRID

1. Non Opening of LC requisite amount of LC

Following constituents are required to enhance/ extend LC towards Payment Security Mechanism, as per CERC Regulations:

Amount(in Cr.)

Sl No	Name of DIC's	Present Value of LC	Value of LC Required
(i)	North Bihar Power Distribution Company Limited(NBPDCL)	**9.73**	**34.50**
(ii)	South Bihar Power Distribution Company Limited(SBPDCL)	**8.89**	**51.83**

(iii)	Ind-Barath Energy (Utkal) Limited	--	**17.50**
(iv)	South Eastern Railway(SER)	--	**3.15**
(v)	East Central Railway(ECR)	--	**43.07**
(vi)	GRIDCO	--	**42.77**

2. Following constituents are required to open new LC towards grant of LTA from Kanti Bijlee Utpadan Nigam Limited Stage –II (2x195 MW) :

Amount (in Cr.)

Sl No	**Name of DIC's**	**Value of LC to be open**
(i)	DVC	**0.42**
(ii)	GRIDCO	**0.92**
(iii)	Jharkhand Bijli Vitran Nigam Limited(JBVNL)	**0.22**
(iv)	Power Deptt. Govt. of Sikkim	**0.03**
(v)	West Bengal State Electricity Distribution Company Ltd.(WBSEDCL)	**0.83**

The above LC for requisite value and validity required as per CERC Regulations, non-availability causing serious problem for POWERGRID to comply with the provisions of CERC Regulations and Loan covenants.

In 38th CCM, It was decided that a special meeting would be convened with concerned stake holders to resolve LC related issues.

3. Payment of Outstanding dues more than 60 days :

Amount(in Cr.)

Sl No	**Name of DIC's**	**Total Outstanding dues**	**Outstanding due more than 60 days**
(i)	Vedanta Ltd.	11.59	11.59
(ii)	GMR Kamalanga Energy Ltd.	44.36	29.42
(iii)	Jindal India Thermal Power Limited	2.55	2.55
(iv)	Ind-Bharat Energy (Utkal) Limited	201.25	187.00
(v)	Dans Energy Pvt. Limited	58.44	52.18
(vi)	Jal Power Corporation Limited	43.95	42.20
(vii)	Damodar Valley Corporation(DVC)	167.29	148.72
(viii)	West Bengal State Electricity Distribution Company Ltd.(WBSEDCL)	95.73	8.59
(ix)	GRIDCO Ltd	23.26	23.26
	Total	648.42	505.51

(viii) The outstanding pertaining to WBSEDCL (Surcharge @ 6.7 Cr & Bill # 4 @ 1.89 Cr). WBSEDCL has agreed to pay Surcharge bill in 24 monthly instalment & started making payment in the month of September'18. Till date they had paid 2 instalments. However, WBSEDCL has not admitted 1.89 Cr towards Bill # 4.

(ix) The outstanding pertaining to GRIDCO (Surcharge @ 23.26 Cr)

In 38th CCM, DVC informed that there was a petition before APTEL regarding the LTA dispute and they had some legal observations regarding this issue.

WBSEDCL requested for the breakup of total outstanding dues.

4. DOCO of 220 KV Subhasgram - Baruipur D/C line bays at Subhasgram (Project-ERSS-VIII)

Under above mentioned project, 2nos. 220KV line bays for 220 KV Subhasgram-Baruipur D/C Bays are commissioned at Subhasgram on 27.01.2015. Trial run completed on 28.01.2015.

Considering, Non-readiness of 220 KV D/C line by WBSETCL, commercial operation of 02 numbers 220 KV bays may be allowed w.e.f. 29.01.2015.

The matter has already been endorsed in minutes of 148th OCC vide item C.12.

In 38th CCM, Powergrid representative elaborated that, as per the schedule the 2nos. 220KV line bays for 220 KV Subhasgram - Baruipur D/C ine were commissioned at Subhasgram on 27.01.2015. The recovery of charges corresponding to the bays is getting delayed due to non-completion of the downstream system of 220 KV D/C line by WBSETCL.

It was informed that the progress of the line is being monitored in OCC meetings and the line is not coming in near future.

After detailed deliberation, the committee noted that the bays are commissioned since 27.01.2015 by PGCIL but the same could not be declared in commercial operation due to non-completion of line by WBSETCL

5. List of Assets commissioned by POWERGRID.

List of Assets commissioned by POWERGRID is enclosed at ***Annexure-C12.5.***

ITEM NO. C13 :	**STATUS OF START-UP POWER DRAWL, INFIRM INJECTION AND COD**

Status of Start-up power drawl, infirm injection and CoD Declaration of Generator as Regional entity and Pool member is as follows:

1. Start Up power:

S. No	**Generator**	**Startup power granted**	
		From	**To**
1.	OPGC(2x660MW)	15.01.2018	31.12.2018
2.	NPGC(2X660 MW)	10.05.2018	31.12.2019
3.	NTPC, Darlipalli(2X800MW)	31.05.2018	31.12.2018
4.	BRBCL U#3(250 MW)	14.09.2018	31.03.2019

2. Infirm Power:

S. No	Generator	Infirm Injection Started From	6 month period would end by	Extension granted by CERC
	NIL	NIL	NIL	NIL

3. COD Declared: NIL

ITEM NO. C14 :	ISLANDING SCHEME AT BANDEL TPS

In 148th OCC, WBPDCL and WBSETCL informed that islanding scheme had been implemented and it can be put in service.

In 149th OCC, OCC decided to put the islanding scheme in service after Puja.

In 150th OCC, it was decided to put the islanding scheme in service from 1st week of November 2018.

ITEM NO. C15 :	HIGHLIGHTS & GRID PERFORMANCE FOR THE PERIOD FROM JUN' 2018 TO SEP' 2018 : ERLDC

A) Real time operation:

During the period under review, power supply position in the region was as under:

	JUN-17	JUL-17	AUG-17	SEP-17	JUN-18	JUL-18	AUG-18	SEP-18
AvgFrq. (Hz)	50.00	50.00	49.99	49.97	49.98	49.98	49.97	49.97
PkDmd (MW)	20326	20274	20187	21015	22677	22440	22719	22190
Energy Consum. (MU/day)	416	400.5	412	435	456	443	463	454
ISGS Gen (MU)	4195.9	4756	5066	4697	4753	5376	5514	5204
Region Gen (MU)	14878.0	15258.3	15316	14913	15538	15960	15706	15046
% increase in Reg Gen.					4.4	4.6	2.5	0.9

B) System Operational Discipline during the period from Jun-18 to Sep-18

i) The month-wise energy drawls of ER constituents were as given hereunder:

	JUN-18		JUL-18		AUG-18		SEP-18	
	SCH	ACT	SCH	ACT	SCH	ACT	SCH	ACT
BSPHCL	2636	2610	2682	2678	2789	2810	2749	2768
JUVNL	529	548	570	568	567	583	511	537
DVC	-1079	-1059	-950	-941	-880	-744	-717	-561
OPTCL	1304	1416	1171	1313	1499	1602	928	1005
WBSETCL	1505	1581	1526	1627	1717	1839	1897	2004
SIKKIM	40	37	42	38	41	36	34	36

C) Frequency & Voltage

i) Frequency profile for the period during **Jun-18 to Sep-18** is given hereunder. The frequency mostly remained within the allowable range for the entire period

Month	% of time for which frequency			
	<49.9	**49.9-50.05**	**> 50.05**	**IEGC band 49.9-50.05**
JUN-18	11.81	77.08	11.11	77.08
JUL-18	10.25	78.48	11.28	78.48
AUG-18	8.92	80.44	10.64	80.44
SEP-18	13.20	80.23	6.56	80.23

ii) Maximum and minimum voltages recorded at some important 765/400 kV sub-stations were as follows:

	JUN-18		JUL-18		AUG-18		SEP-18	
SUB-STATION/	MAX.	MIN	MAX.	MIN	MAX.	MIN	MAX.	MIN
POWER STN.	(KV)	(KV)	(KV)	(KV)	(KV)	(KV)	(KV)	(KV)
(765 KV) NEW RANCHI	799	752	790	754	788	762	791	764
MUZAFFARPUR	416	384	416	385	415	384	417	384
BINAGURI	421	393	416	396	414	393	415	375
JEERAT	423	376	419	375	418	372	424	372
MAITHON	425	406	421	404	421	404	422	404
BIHARSHARIFF	422	395	421	398	420	396	417	384
JAMSHEDPUR	425	402	423	406	420	405	422	404
ROURKELA	413	401	414	399	412	403	412	392
JEYPORE	426	385	424	397	415	402	414	401
MERAMUNDALI	412	397	411	400	412	399	414	399
SASARAM	412	378	429	403	415	385	415	384
SUBHASHGRAM	426	369	421	376	419	373	425	372

D) Constituent-wise demand met is given below:

		JUN-17	**JUL-17**	**AUG-17**	**SEP-17**	**JUN-18**	**JUL-18**	**AUG-18**	**SEP-18**
BSPHCL	AVG MAX DMD(MW)	3944	3789	3934	4219	4627	4622	4669	4759
	MU/DAY	81	75	79	86	91	90	93	94
JUVNL	AVG MAX DMD(MW)	1109	1107	1172	1141	1119	1131	1161	1155
	MU/DAY	23	22	24	25	24	24	24	25
DVC	AVG MAX DMD(MW)	2725	2537	2522	2663	2759	2752	2630	2605
	MU/DAY	66	64	63	66	71	70	67	65
ODISHA	AVG MAX DMD(MW)	3633	3820	3917	4002	4200	4027	4798	4516

	MU/DAY	76	80	81	87	96	85	103	97
W. BENGAL	AVG MAX DMD(MW)	7980	7717	8098	8253	8270	7842	8011	7990
	MU/DAY	169	160	161	171	175	174	176	173

E) Inter-regional energy exchange during the review period were as follows: (Figures in MU)

Region	JUN-18		JUL-18		AUG-18		SEP-18	
	SCH	ACT	SCH	ACT	SCH	ACT	SCH	ACT
NER	14	271	-45	370	33	519	11	481
SR	-590	662	307	713	-329	556	755	1169
WR	-412	-1439	-663	-1630	-592	-2083	-704	-1992
NR	2704	1958	2509	2362	2198	1906	1143	1151
TOTAL	1716	1451	2109	1815	1310	897	1205	809

F) Reservoir levels of important hydro stations in ER during review period (as on last day of the month) is given below:

STATION	MDDL/	**JUN-18**	**JUL-18**	**AUG-18**	**SEP-18**
	FRL				
BURLA	590/630 FT	600.79	610.93	623.12	629.5
BALIMELA	1440/ 1516 FT	1448.1	1478.2	1512.3	1515.3
RENGALI	109.7/ 123.5 MTR	111.09	116.21	121.3	121.75
U. KOLAB	844/ 858 MTR	845.86	850.58	856.05	857.12
INDRAVATI	625/ 641 MTR	626.98	634.64	640.04	641.12
MACHKUND	2685/ 2750 FT	2704.4	2728.5	2748	2748.2

G) IMPORTANT EVENTS :

Jun-18:

SL NO	Element Name	Owner	Charging Date	Charging Time	Remarks
1	220kV Darbhanga(DMTCL)-Darbhanga(BSPTCL)-I	BSPTCL	12-06-2018	16:06	
2	125MVAR Bus Reactor II at Baripada	PGCIL	28-06-2018	18:45	404/398 kV
3	400kV Dikchu-Rangpo	PGCIL	30-06-2018	14:45	
4	+-550MVA Jeypore STATCOM	PGCIL	30-06-2018	21:58	Started on 27/06/18 (2X125 MVAR MSR, 2X125MVAR MCR, 2X150MVAR VSC)

JUL-18:

SL NO	Element Name	Owner	Charging Date	Charging Time	Remarks
1	STATCOM 150 MVAR VSC - 2 AT NEW RANCHI	PG	03-07-18	15:34	TEST COMPLETED AT 20:20 HRSWITH FULL CAPACITY (+/- 150 MVAR)
2	STATCOM 150 MVAR VSC - 1 AT NEW RANCHI	PG	04-07-18	15:52	During testing VSC reached max. MVAR (+150 MVAR) at 19:31 hrs and Min MVAR at 19:51 hrs (-150 MVAR) . +/-2 KV Voltage changed observed
3	132kV Daltonganj(PG)-Daltonganj(J'Khand)-I	JSUNL	27-07-18	17:20	
4	400KV Sagardighi Farakka-2 Line	PGCIL	28-07-18	21:23	400kV Farakka-Baharampur reconfigured as 400kV Farakka-Sagardighi-II
5	125 MVAR Bus Reactor 4 at Durgapur	PGCIL	31-07-18	17:14	

AUG-18:

SL NO	Element Name	Owner	Charging Date	Charging Time	Remarks
1	400kV Jeerat-Sagardighi	PGCIL	05-08-2018	19:20	(400kV-Farakka-Baharampur-Jeerat reconfigured)
2	220kV Muzaffarpur-Dhalkebar-1	PGCIL	16-08-2018	22:17	Earlier line was charged on 132kV
3	220kV Muzaffarpur-Dhalkebar-2	PGCIL	16-08-2018	23:13	Earlier line was charged on 132kV

SEP-18:

SL NO	Element Name	Owner	Charging Date	Charging Time	Remarks
1	400kV Farakka-Baharampur-I	PGCIL	01-09-2018	18:28	
2	400kV Farakka-Baharampur-II	PGCIL	01-09-2018	18:34	
3	125MVAR Bus Reator II at Banka	PGCIL	27-09-2018	11:32	
4	50MVAR Line reactor of 400kV Sasaram-Daltonganj-I at Daltonganj	PGCIL	27-09-2018	17:09	Non switchable
5	125MVAR Bus Reator II at Bolangir	PGCIL	28-09-2018	23:29	

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ANNEXURES

Annexure-B3

Scope of work of the project'Upgradation of SCADA/RTUs/SAS in Central Sector stations and strengthening of OPGW network in Eastern Region'

A. Replacement of RTUs/SAS and Upgradation of SAS:

Replacement of existing S-900 and C264 RTUs installed in ULDC phase-I along with upgradation of RTU/SAS/ Remote Operation RTUs for dual reporting to both Main ERLDC & Backup ERLDC over IEC 60870-5-104 Protocol and lack of maintenance support due to non-availability of spares.

S.no	Region	Name of Substations	Remarks
1	ER-II	Durgapur	RTU to be replaced
2	ER-II	Malda	RTU to be replaced
3	ER-II	Binaguri	RTU to be replaced
4	ER-II	Siliguri220	RTU to be replaced
5	ER-II	Birpara	RTU to be replaced
6	ER-II	Subhasgram	RTU to be replaced
7	ER-II	Dalkhola	RTU to be replaced
8	ER-II	Gangtok	RTU to be replaced
9	ER-II	Maithon	RTU to be replaced
10	ER-II	Newmelli	Hardware/License upgradation
11	ER-II	Berhampore	Hardware/License upgradation
12	ER-II	Rangpo	Hardware/License upgradation
13	ER-I	Biharsharif	RTU to be replaced
14	ER-I	Jamshedpur	RTU to be replaced
15	ER-I	Purnea 400	RTU to be replaced
16	ER-I	Purnea 220	RTU to be replaced
17	ER-I	Sasaram HVDC	RTU to be replaced
18	ER-I	Muzaffarpur	RTU to be replaced
19	ER-I	Patna	SAS to be replaced
20	ER-I	Banka	Hardware/License upgradation
21	ER-I	Lakhisarai	Hardware/License upgradation
22	ER-I	Ranchi	SAS to be replaced
23	ER-I	New Ranchi	Hardware/License upgradation
24	ER-I	Chaibasa	Hardware/License upgradation
25	ER-I	Gaya	Hardware/License upgradation
26	ER-I	Sasaram 765	Hardware/License upgradation
27	ER-I	Ara	Hardware/License upgradation
28	Odisha Projects	Jeypore	RTU to be replaced
29	Odisha Projects	Baripada	RTU to be replaced
30	Odisha Projects	Indravati	RTU to be replaced
31	Odisha Projects	Rourkela	RTU to be replaced
32	Odisha Projects	Rengali	RTU to be replaced
33	Odisha Projects	Angul	Hardware/License upgradation
34	Odisha Projects	Jharsuguda	Hardware/License upgradation
35	Odisha Projects	Bolangir	Hardware/License upgradation
36	Odisha Projects	Pandiabili	Hardware/License upgradation
37	Odisha Projects	Keonjhar	Hardware/License upgradation
38	Odisha Projects	Talcher HVDC	Hardware/License upgradation

B. Implementation of BCU based Substation Automation System at Purnea 220 KV, Ara 220 KV, Birpara220KV, Siliguri220KV, Sasaram S/s in addition to the replacement of RTUs for data reporting to ERLDC through single RTU/SAS as per advice of ERLDC.

C. Replacement of DCPS for replacement of old DCPS commissioned in ULDC phase-I:
Following old DCPS & UPS in 18 nos.Central Sector locations is decided to be replaced:

Sr. No.	Location	Item
1	Durgapur	UPS
2	ERLDC, Kolkata	2x4 kw DCPS with parallel operation
3	Durgapur	DCPS
4	Kanchanpur	
5	Barkot	
6	Jamui	
7	Maldah	
8	Siliguri 400	
9	Jamshedpur	
10	Siliguri 220	
11	Rengali	
12	Birpara	
13	Rourkela	
14	Purnea 220	
15	Indravati	
16	Muzaffarpur	
17	Biharsharif	
18	Sasaram HVDC	

D. Laying of OPGW in the second circuit of following links commissioned in ULDC Phase-I:

S/n	**Name of links**	**Length (Km)**
1	Rourkela-Talcher	171
2	Durgapur-Jamshedpur	175
3	Durgapur-Farakka	150
4	Biharsharif-Sasaram	193
5	Biharsharif-Kahalgaon	202
6	LILO portion of Biharsharif-Balia at Ara	12
	Total	**903**

Eastern Regional Power Committee, Kolkata

Minutes of Special Meeting to discuss consistent over drawl by Indian Railways in DVC Control Area under open access transaction held on 24.09.2018 at ERPC Kolkata.

List of participants is given in **Annexure-I**.

Member Secretary, ERPC welcomed all the participants in the meeting. He informed that the special meeting has been convened to discuss consistent over drawl by Indian Railways in DVC Control Area under open access transaction. He also briefly highlighted the implications of consistent over drawl by Indian Railways in DVC Control Area.

DVC gave a detailed presentation on the pattern of over drawl by Indian Railways in DVC Control Area under open access transaction. The presentation captured the whole over drawl scenario of Indian Railways starting from August-2017.

Executive Director, ERLDC stressed the need to adhere to the schedule in the interest of smooth operation of the grid. He noted that consistent overdrawal, besides creating security and stability issues in the grid, is a violation of CERC regulation. Therefore he advised Railways to take immediate action for curtailing the over drawal.

Railways admitted that there had been over drawal by Railways from the grid. Railways attributed a number of reasons like low DC of BRBCL etc. to the over drawal from the grid. They are also equally concerned about this and would like to take corrective action in this regard. Railways informed that they have a standby agreement with DVC for supply to Railways. Railways proposed to hold a bilateral meeting with DVC to revisit the existing agreement to have a standby arrangement wherein any power required by Railways in DVC command area in excess of the entitled quantum from BRBCL would be treated as DVC supply to Railways and would be accordingly scheduled and settled.

Participants present in the meeting welcomed the suggestions made by Railways and hoped that the proposed meeting with DVC would be able to address the over drawal issue successfully, keeping into consideration stability and security of the grid.

DVC and Railways both agreed to meet on 27.09.2018 at Rail Bhawan, Delhi to settle the issue.

MS, ERPC finally thanked the participants in the meeting and appreciated the approach taken by Railways in this matter and hoped that the matter would be resolved as early as possible.

Jayadeva Bandyopadhyay 24/9/18

(J. Bandyopadhyay)
Member Secretary

Protection Audit Report of 220/132/33 kV Lalmatia Substation

Date: 16-08-18

Introduction: Due to the multiple tripping of circuits from 220/132/33 kV Lalmatia substation and associated protection issues, Eastern Region Protection Committee has decided in the 69th PCC meeting to carry out the Protection Audit of Lalmatia substation. Accordingly, a team comprising of ERPC, ERLDC, NTPC, PGCIL andJUSNL visited the 220/132/33 kV Lalmatia substation on 16th August 2018 and performed the protection audit.The Team Members of the Protection Audit Group comprises of following members:

1. ERPC: Pranay P Jena, AEE
2. ERLDC: Chandan Kumar, Sr. Engineer and Laldhari Kumar, Engineer
3. NTPC: RohitAgarwal, Manager, NTPC Farakka
4. PGCIL: Randhir Kumar Ranu, Engineer, Banka Substation
5. JUSNL: Vinod Gupta (JE), V.K.Bhoi (EEE)

Substation: Lalmatia substation is having a historical background. The substation was created in around 1989 for catering to the ECL coalmine load. It is 220/132/33 kVsubstation owned by ECL which was later being maintained by NTPC Farakka. However, subsequently, with the other distribution load coming up, the switchyard was extended by JUSNL with augmentation of 220/132 kV ICT, 132 kV lines and 132/33 kV transformers.

The substation is thus subdivided into two parts out of which one looked after by NTPC Farakka and other by JUSNL. NTPC Farakka is looking after the 220/132 kV switchyard consisting of 220 kVFarakka-Lalmatiackt and 220/132 kV ICT. While the JUSNL looks after the 220/132 kV ICT 2 (Kanohar Make), 132 kVKahalgaon(NTPC)-Lalmatia, 132 kV Kahalgaon (BSPTCL)-Lalmatia,132 kV Kahalgaon (BSPTCL)-Sahebganj, 132 kVLalmatia-Dumka 1 & 2, 2 X 50 MVA 132/33 kV ICTs and 33 kV switchyard with 6 33 kV feeders (Godda, Mahagama, Patahargaon, Meharama, Barijor and ECL) for JUSNL load.The 132 kV buses maintained by NTPC and JUSNL are coupled and having isolator arrangement decoupling.

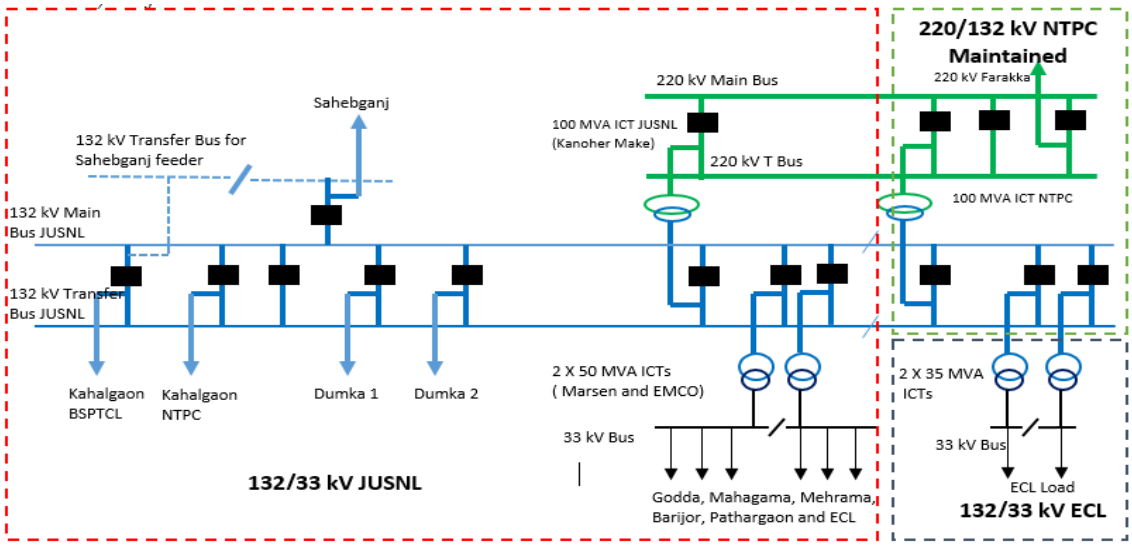


Fig:220/132/33 kV Lalmatia Substation Single Line Diagram

TheProtection Audit findingsare thus subdivided into two parts i.e. One for 220/132 kV NTPC Maintained section and other 132/33 kV JUSNL ownedsection for this substation.

132/33 kV Lalmatia (JUSNL)Section

1. **Switchyard and its Maintenance:** The whole switchyard was in bad shape. As per the details, the JUSNL part switchyard was commissioned in 1991 (27 years old). Following were observed when switchyard inspection during protection audit was carried out:
    - **Old Equipment:** The switchyard equipment's (Isolator/CT/PT/LA/Breaker) are old and rusty and need immediate attention. Adequate spare management is also required for any emergency. The bays which has been commissioned in 2011 onwards were also found in bad shape due to lack of proper maintenance.
    - **PCC and Gravelling:** Long grasses and weeds were observed throughout the switchyard. Proper graveling was not observed in entire switchyard which may be hazardous to human safety, equipment health and can cause unwanted tripping. There is a need for proper PCC and Gravelling in switchyard along.
    - **132/33 kV Transformers:** Severe oil leakage in one of the132/33 kV ICT wasobserved and its oil has also penetrated the panel box of OTI/WTI and can result in unwanted tripping.The ICT panel box also needs proper care as gasket was found to be missing and rainwater can ingress which may also result in unwanted tripping. Silica Gel in 132/33 kV ICTs was found pink and needs to be replaced or recovered by heating.2 no's of the cooling fan in one of the 50 MVA ICT was not working due to non-replacement of the faulty connector.
    - **Bay Equipment Nomenclature:** Proper Bay equipment numbering and phase segregation for identification of equipmenthavenot been done which may result inthe wrong operation of equipment and can cause hazard to O & M Personnel.
    - **Earthing of LA:** Proper earthing was not provided to Las in the switchyard.
    - **O&M Activities:** There was no proper O&M for equipment at the substation. This is the major concern that was observed at the substation. No Records were available for the O&M at the substation level. Even the JUSNL Testing team were not able to tell regarding the O&M plan of the substation and its monitoring.
2. **Equipment O & M and Testing:** During the audit, records were asked for equipment(CT/PT/Breakers) testing and it was observed that:
    - Equipment and relay have been tested only at the time of Commissioning and after that, no routine test and maintenance has been done. Proper record of the pre-commissioning tests were also not available.
    - It was also observed that there was a lack of Testing equipment for Routine testing at the substation level.
    - Details of past equipment failure were also not available at the substation.
3. **Relay and Associated issues:**

- **132 kV Transmission Line Protection:** It was found that only one numerical relay has been provided whose Distance and O/C and E/F feature has been utilized to provide the Main as well as backup protection. Only in 132 kV Sahebganj Circuit, separate electromechanical type backup O/C and E/F protection have been provided.
    - **A.** 132 kV Kahalgaon NTPC(40.3 km)
    - **B.** 132 kV Kahalgaon BSPTCL (46.66 km)
    - **C.** 132 kV Sahebganj (48.45 km)
    - **D.** 132 kV Dumka 1 (95.88 km)
    - **E.** 132 kV Dumka 2 (96 km)

  The impedance setting for various zones along with time setting was found to be not in order in the line relays. Further, Power swing blocking philosophy was not founduniform.
- **100 MVA 220/132 kV Transformer (Kanoher Make):** Differential protection isNumerical relaywhile Backup protection is of Electromagnetic type. The REF protection for ICT is of static type and it is a combined REF for HV/LV rather than separate for 220 and 132 kV. Rest of the protection like OTI/WTI/OSR/ Buchholz were found for the ICTs. The over flux protection is not enabled in Numerical relay due to non-extension of CVT wiring from 220 kV adjacent relay panel room of NTPC to 132 kV relay panel room of JUSNL.
- **2 X 50 MVA 132/33 kV Transformers (EMCO and Marsen make):** Differential protections are Numerical relay while Backup protections are of Electromagnetic type. Rest of the protection like OTI/WTI/OSR/ Buchholz were found for the ICTs. The Overflux and REF protection is enabled for one transformer (Mersan) in its differential relay while the same is not done for EMCO make transformer where neutral bushing CT is not present.
- **LBB and Bus Bar Protection:** 132 kV LBB and Bus Bar Protection of static type has been provided in the substation but it has not operated till now as per the substation staff. The testing and checking has also not been done for both these protections. That's why its operational status is also of concern. The bus bar protection extension is possible or not was also not known to anyone.
- There was no proper record for testing and commissioning of relay along with any relay setting change done at the substation. The JUSNL team also could not provide the complete details for the substation.
- Two under frequency relays, one each for 132 KV Kahalgaon (BSPTCL) and 132 KV Kahalgaon (NTPC) feeder has been provided under the Islanding Scheme of Farakka. The relays have been set at 47.7 Hz without any time delay for tripping of these feeders to isolate 220/132 kV Lalmatia substation and its radial loads with 220 kV Farakka-Lalmatia feeder with Farakka's Unit. When enquired, the operators in the Control Room/ Testing team were not aware of this relay and in one of these,alarm was persisting.

4. AC Distribution Board:

- Overcurrent relay for ACDB protection and Alarm System were not operational.

- Changeover switch for one bus of the ACDB was found in broken condition. This is a serious concern in case of the failure of one of the AC supply as the operator will not be able to transfer the load on the alternate source by coupling of the ACDB buses.

5. **DCDB and Battery Bank:**
   - 220 V Battery Bank: Make: EXIDE Wet Type, Commissioned in 2016.
   - 48V Battery Bank: Make: EXIDE Wet type, Commissioned in 2016.
   - Alarm System was not operational so any failure of DCDB will not be immediately known to the operator.
   - Exhaust fan in Battery Room was not working and cable trench of Battery room was in damaged condition and not covered.
6. **DC System Healthiness**: No major DC earth fault was observed however DC Voltage measurement done during the audit are as follows:

Measurement	Battery	Nearest Feeder	Farthest Feeder
+ve to -ve	255 V	254 V	244 V
+ve to Earth	108 V	113 V	109 V
-ve to Earth	134 V	139 V	134 V

7. **Display Panel:**
   - Voltage difference wasobserved in 132 kV feeders connected to the same bus in the control room panel box. There is a need forCVT testing and metering equipment calibration at the substation so that correct data can be displayed to the operator.
   - For the 220/132 kV ICT, many of the digital display for current and voltage were found not working. One of the issue with voltage display was the non-availability of CVT extension from NTPC side to JUSNL side.
8. **UFR Relay:** As per the data available with ERPC, one UFR relay should have been on the 33 kV Mahagama feeder, however, the same was not found on Mahagama feeder (Max load 14 MW).
9. **Transmission Line Issues:** It was observed that the transmission lines from the substation is maintained by various utilities. 132 kV Kahalgaon NTPC and 132 kV Kahalgoan BSPTCL lines are being maintained by JUSNL and BSPTCL. While 220 kV Farakka feeder is being maintained by NTPC.

   It was intimated that maximum number of tripping has been observed in 132 kV Kahalgaon NTPC and 132 kV Kahalgoan BSPTCL which are on same towers. For these circuits, 1-48 Towers are maintained by BSPTCL while 49-123 towers are maintained by JUSNL. JUSNL intimated that most of the fault are observed in BSPTCL maintained section due to large trees and broken/poor condition for earth wire between 21-34 towers. JUSNL explained that they have recently carried out the complete line patrolling and cut the trees in BSPTCL section after which the number of faults has reduced.
10. **Other Observation:**

- 132/33 kV ICT II has been tripping on the differential for any 33 kV through fault on several occasion. This was also observed during the period of Audit. This also necessities the testing of relay and checking and review of its relay setting.
- It was found that whenever 220 kV Farakka -Lalmatia trips on fault, then 132 kV Kahalgaon (NTPC) Lalmatia feeder also trip from lalmatia end indicating that the line is tripping on through fault. This may be due to CT polarity, wrong zone protections setting, PSL logic etc. This also needs immediate action.
- This similar issue was also observed with 132 kV Kahalgaon BSPTCL-lalmatia feeder which trip for through fault on 132 kV Sahebganj, 132/33 kV ICTs. This indicates the need of checking of CT Polarity, relay setting, Zone 4 protections setting and time delay and relay testing.
- The JUSNL CRITIL team who were present during the audit were asked regarding the Disturbance recorder files for tripping however they have not extracted the same for any tripping in this year. This is a serious concern and violation of Grid code and Grid standards.

11. **ManpowerTraining:** Based on the various inputs received , the audit team observed that substation staff, as well as CRITIL Team of Jharkhand, do not have proper training on O&M, Testing etc. This is one major concern and there is a need of immediate action at this front.

220/132/33 kV Lalmatia (NTPC)

1. **Switchyard and its Maintenance:** The whole switchyard was in bad shape. As per the details the NTPC Maintained section of switchyard was commissioned in 1989 (29 years old). Following were observed when switchyard inspection during protection audit was carried out:
    - **Old Equipment:** The switchyard equipment's (Isolator/CT/PT/LA/Breaker) are old and rusty and need immediate attention. Adequate spare management is also required for any emergency. These were found in bad shape due to lack of proper maintenance. Severe oil leakage was found in one of the CT in the substation.
    - **PCC and Gravelling:** Long grasses and weeds were observed throughout the switchyard. Proper graveling was not observed in entire switchyard which may be hazardous to human safety, equipment health and can cause unwanted tripping. There is a need for proper PCC and Gravelling in switchyard along.
    - **100 MVA 220/132 kV Transformer (Maintained by NTPC):** Severe oil leakage was observed in the ICT. The ICT panel box also needs proper care as gasket was found to be missing and rainwater can ingress which may also result in unwanted tripping. Silica Gel in ICT was found pink and needs to be replaced or recovered by heating. 3 Fans of the ICT cooling system were not found in working condition.
    - **Bay Equipment Nomenclature:** Proper Bay equipment numbering and phase segregation for identification of equipment have not been done which may result inthe wrong operation of equipment and can cause hazard to O & M Personnel.
    - **Earthing of LA:** Proper earthing was not provided to Las in the switchyard.

- **O&M Activities:** There was no proper O&M for equipment at the substation. This is the major concern that was observed at the substation. No Records were available for the O&M at the substation level. Even the NTPC Operating Staff were not able to tell regarding the O&M plan of the substation and its monitoring.

2. **Equipment O & M and Testing:** During the audit, records were asked for equipment(CT/PT/Breakers) testing and it was observed that:
    - Breaker Overhauling of 220 kV breakers was done last in 2009 and for 132 kV breakers in 2010. After that, no testing and overhauling has been done.
    - All 220 and 132 kV CTs have been tested in 2014 and after that, there has not been any routine test and maintenance.
    - It was also observed that there was a lack of Testing equipment for Routine testing at the substation level.
    - Details of past equipment failure were also not available at the substation.
3. **Relay and Associated issues:**
    - All the protection relay for lines and ICTs are of electro-mechanical in nature and are very old.
    - Last relay testing and setting have been done in the year 1999 and after that, it has not been done. Records for relay setting calculation were available in the substation.
    - **LBB and Bus Bar Protection:**220 kV & 132 kV Differential as well as LBB is provided but has not operated till now. The Busbar protection Is combined scheme for both the switchyard, however, no details on its extension is known to the operator/testing person.
    - **2 X 50 MVA 132/33 kV Transformers and 100 MVA 220/132 kV Transformer:** There was no Differential relay, REF relay, over flux relay available for both 220/132 kV ICT and 2 X 50 MVA 132/33 kV ICTs.
    - **LBB and Bus Bar Protection:** 132 kV LBB and Bus Bar Protection of static type has been provided in the substation but it has not operated till now as per the substation staff. The testing and checking has also not been done for both these protections. That's why its operational status is also of concern. The bus bar protection extension is possible or not was also not known to anyone.
4. **AC Distribution Board:**
    - In Good Condition.
5. **DCDB and Battery Bank:**
    - 220 V Battery Bank and 50 V Battery Bank: Commissioned in 2011
    - Two sets of battery charger for 220 and 50 V are there out of which one set for each voltage level was found in faulty condition
6. **DC System Healthiness**: No major DC earth fault was observed however DC Voltage measurement done during the audit are as follows:

Measurement	Battery	Nearest Feeder 132 kV bay	Farthest Feeder 132v kv bay	220 kV bay
+ve to -ve	239.5 V	237.6 V	238.1 V	238.1 V

+ve to Earth	78.4 V	78 V	78.3 V	77.8 V
-ve to Earth	161.1 V	159.5 V	*160.5*V	160.3 V

7. **Control Room:** No AC were found in the control room and relay panel room which are adjoined.
8. **Manpower Training:** One person from NTPC has been stationed at Lalmatia along with outsourcing of remaining staff for substation maintenance. It was observed that no hourly record for voltage and various other parameters are being maintained at the substation by the operating control room staff.

Conclusion from Protection Audit:

1. The substation needs a complete renovation along with resolution of the ownership issue in order to improve the O & M. The impact due to the lack of O & M has been observed in the entireswitchyard which is in shabby condition. The Human life working in the switchyard is also exposed to threat due to improper earthing, aging equipment, lack of graveling and PCC etc.
2. JUSNL who is presently owning the major portion of equipment has not done the maintenance leading to deterioration of newly constructed bays since 2006. Proper O & M practice need to be reinforced by JUSNL in its own portion to avoid unwanted tripping. **JUSNL may kindly take up the same at earliest.**
3. A complete check of equipment(CT/CVT/LA/Breakers) and their healthiness through testing need to be ensured for entire switchyard at earliest to avoid unwanted tripping. **JUSNL/NTPC may kindly take up the same at earliest.**
4. The old electromechanical relays in the substation need to be replaced with numerical relays and their coordinated setting also to be done subsequently. In the present relay, there is need setting review, wiring and logic check, CT polarity etc. to ensure there is no unwanted tripping as happening on daily basis. Further, the panels/relays which are not in use need to be removed to improve the space utilization. **JUSNL/NTPC may kindly take up the same at earliest.**
5. Existing Manpower need to be properly trained for proper O & M activities, daily operational activity, Record Maintenance, Extracting of DR for Events and others. **JUSNL/NTPC may kindly take up the same at earliest.**
6. AC and DC distribution system also need Maintenance at the substation. **JUSNL/NTPC may kindly take up the same at earliest.**

It may kindly be noted that 220/132/33 kV Lalmatia substation is of vital importance for NTPC Farakka, NTPC Kahalgaon andJUSNL. This substation will help in ensuring the proper coal supply as well as act as a path for the black start during emergency between these two large generating stations. So, there is a need for immediate attention in order to improve the condition of this substation at earliest.

Some Pictures from the substation






In 72nd PCC Meeting held on 29.10.2018, JUSNL submitted the compliance/status report for the aforesaid audit observations. The same is attached below:

S.N.	Issue Raised by Protection Audit Team	Compliance/Action Taken by JUSNL
1	The substation needs a complete renovation along with resolution of the ownership issue in order to improve the O & M. The impact due to the lack of O & M has been observed in the entire switchyard which is in shabby condition. The Human life working in the switchyard is also exposed to threat due to improper earthing, aging equipment, lack of graveling and PCC etc.	1. Ownership issue will be resolved at HQ level. 2. We have already taken initiative to replace the old/defective equipments. 3. Proper manpower has been deployed to carry out operation and maintenance of switchyard equipments and associated works. Scheduled and preventive maintenance of equipment etc. are being executed and recorded in registers. Since some areas of switchyard were gravelled during the time of grid commissioning(30 yrs ago), therefore some parts of the grid need renovation work which includes gravelling and PCC work. All equipments are properly earthed which will be clear after pursuing measured earth pit resistance values. However we are doing our best for improvement of the system.
2	JUSNL who presently owes the major portion of equipment has not done the maintenance leading to deterioration of newly constructed bays since 2006. Proper O & M practice need to be reinforced by JUSNL in its own portion to avoid unwanted tripping	1. O&M of equipment are being carried out with the help of deputed personnel periodically as without maintenance of system it would not be possible to run it continuously. 2. Unwanted tripping is related to relay coordination. The work will be accomplished shortly.
3	A complete check of equipment(CT/CVT/LA/Breakers) and their healthiness through testing need to be ensured for entire switchyard at earliest to avoid unwanted tripping	1. Testing of equipments will be done shortly. Framing of estimate is in progress.
4	The old electromechanical relays in the substation need to be replaced with numerical relays and their coordinated setting also to be done subsequently. In the present relay, there is need setting review, wiring and logic check, CT polarity etc. to ensure there is no unwanted tripping as happening on daily basis. Further, the panels/relays which are not in use need to be removed to improve the space utilization	1. Numerical relays have already been installed in 100 MVA, 50 MVA, 132 KV feeders, C&R panels. EM relays of 33kV feeders are going to be replaced through "protection up gradation of JUSNL Transmission system project." 2. Testing, Setting and coordination of relays will be done shortly. Framing of estimate is in progress.
5	Existing Manpower need to be properly trained for proper O & M activities, daily operational activity, Record Maintenance, Extracting of DR for Events and others.	1. Induction training of O&M personnel is being arranged periodically by technical experts of JUSNL of particulars field at side. Maintenance work is being carried out and recorded in relevant registers. However NPTI/PRDC simulator training of JUSNL Engineers/working personnel (O&M) is urgently required and should be arranged per yearly. 2. DR &EL provisions has not been implemented in the GSS Lalmatia system. We are going to propose further.
6	AC and DC distribution system also need Maintenance at the substation.	Rectification of AC and DC distribution system is in progress.

Annexure-B12

JHARKHAND URJA SANCHARAN NIGAM LIMITED
Office of the Director (Project), Kusai Colony, Doranda, Ranchi

Letter No 28, Ranchi Date 16/10/2018
File No.GM(SLDC) /Ranchi/44/2018

From,
Atul Kumar,
Director (Project), JUSNL.

To,
Member Secretary,
ERPC, Kolkata.

Subject: Charging of 220 KV Tenughat-Biharsharif single circuit transmission line at 400 KV level.

Reference: Agenda item no. B13 of 38th TCC meeting of ERPC.

Sir,

The matter of Charging of 220 KV Tenughat-Biharsharif single circuit transmission line at 400 KV level was discussed at various platforms of ERPC and after detailed deliberations it was concluded that the 220 KV Tenughat-Biharsharif single circuit transmission line should be charged at 400 KV level only after strenghthening of the line.

As per direction of ERPC, both JUSNL and BSPTCL have conducted survey and submitted report for strengthening the said line and the cost estimate for JUSNL and BSPTCL portion would be approximately Rs.65.12 Cr and Rs.55 Cr. respectively.

But at this juncture it is to submit very categorically that as JUSNL is no way benefited due to the proposed upgradation, JUSNL is not willing to invest on the augumanetation of the said line.

Further also as this line is of inter state in nature it would be proper that CTU may take action for strengthening and maintenance of the line.

Yours Faithfully
16/10/18
(Atul Kumar)
Director (Project)

Annexure-B18

Poor Frequency Response of Generators in Eastern region

The observed FRC of Eastern region generators for July to October (No event occurred in September and October) as per SCADA data for the is as follows

Event No	Date	Time	Net Frequency Change
Generation loss at Teesta III (Event 1)	10-07-18	08:14	0.062 Hz Dip
Generation loss at Teesta III (Event 2)	30-07-18	20:48	0.071 Hz Dip
Load loss at Chakan (Event 3)	06-08-18	13:06	0.13 Hz Rise
Generation loss at KSK (Event 4)	07-08-18	14:17	0.035 Hz Dip
Generation loss at Karcham (Event 5)	29-08-18	04:02	0.056 Hz Dip

Event	Farakka stage 1 & 2	Farakka stage 3	Kahalgaon Stage 1	Kahalgaon Stage 2	Talcher Stage 1	Barh	GMR	MPL	Adhunik	JITPL	BRBCL
Event 1	0%	0%	45%	9%	22%	0%	0%	0%	35%	0%	75 %
Event 2	9%	78%	34%	0%	18%	2%	30 %	50 %	43%	0%	0%
Event 3	86%	24%	0%	15%	1%	35%	0%	50 %	21%	0%	0%
Event 4	17%	0%	**270% (Suspected)**	14%	0%	0%	78 %	102 %	46%	15 %	0%
Event 5	0%	0%	0%	13%	0%	0%		0%	0%	50 %	0%
Average	**22%**	**20%**	**20%**	**10%**	**8%**	**7%**	**27 %**	**40 %**	**29 %**	**13 %**	**15 %**

Minutes of 1st meeting of Eastern Region Standing Committee on Transmission (ERSCT) held on 16th July 2018 at Kolkata

List of the participants is enclosed at **Annexure-I**.

Member (PS), CEA welcomed the participants. He stated that Ministry of Power, Govt. of India vide its order dated 13th April 2018, has constituted Eastern Region Standing Committee on Transmission (ERSCT) for planning of Transmission System in the Eastern Region in place of existing Standing Committee on Power System Planning. Accordingly, this is the first meeting of newly constituted Standing Committee. He thanked POWERGRID for hosting the meeting in the "City of Joy" Kolkata. After brief introduction of the participants, he requested Chief Engineer, CEA to start the proceedings.

Chief Engineer (PSPA-II), CEA stated that agenda points for this meeting inter-alia includes perspective intra-State transmission plan of Jharkhand, system strengthening schemes/ proposals of Orissa, West Bengal and follow up actions of the previous Standing Committee Meeting on Power System Planning. He informed that this is the first meeting of ERSCT. He stated that the MoP vide letter dated 13th April 2018, (copy enclosed at **Annexure-II**) have reconstituted the "Empowered Committee on Transmission" (ECT), "National Committee on Transmission"(NCT) and Regional Standing Committees on Transmission (SCT) for planning of Transmission System.

- The constitution of the "Eastern Region Standing Committee on Transmission" (ERSCT) for planning of Transmission System in the Region has been revised as given below:

    1. Member (Power System), Central Electricity Authority (CEA) as Chairperson
    2. Chief Operating Officer, Central Transmission Utility (POWERGRID) as Member
    3. Director (System Operation), Power System Operation Corporation Ltd. as Member
    4. Heads of State Transmission Utilities (STUs) of Bihar, Jharkhand, West Bengal, Odisha, Sikkim, Andaman Nicobar Islands as Member
       (STUs to coordinate with their respective Distribution Companies DISCOMs)
    5. Member Secretary of Eastern Region Power Committee as Member
    6. Chief Engineer (from Power System Wing), Central Electricity Authority (CEA) as Member Secretary

- The Terms of Reference (ToR) of ERSCT are as follows:

    (i) Evolve and finalize system strengthening schemes for removal of operational constraints and transfer of surplus power through inter- regional corridors

(ii) Examine the proposals for transmission systems for access/ connectivity applications

(iii) Examine the associated transmission systems with electricity generators

(iv) Review the up- stream and down -stream network associated with transmission schemes

(v) Examine and evaluate the intra- state transmission proposals

Further, Chief Engineer (PSPA-2), CEA informed that as per new notification of committee, STU has to coordinate with respective Discoms for development of intra-state as well as inter-state transmission system in the region.

He requested Director (PSPA-II), CEA to take up the agenda.

1. Minutes of 19th Standing Committee Meeting on Power System planning of Eastern Region (SCPSPER).

1.1 Director, CEA informed that the minutes of the 19th meeting of the Standing Committee on Power System Planning, held on 01st September, 2017 at Kolkata were circulated vide CEA letter no. 66/5/2017/PSPA-2/1430-1444 dated 09th November, 2017. No comments have been received on the minutes of meeting.

Follow up issues of Previous Standing Committee Meetings

2. Installation of 3rd 400/220kV, 500MVA ICT at Patna (POWERGRID) S/s

2.1 Director, CEA stated that in the 19th meeting of SCPSPER held on 01-09-2017, installation of 400/220kV, 500MVA 3rd ICT at Patna (POWERGRID) S/s was agreed with following scope:

(a) Shifting of one of the existing 420kV, 125MVAr bus reactors at Patna and installation of the same in one of the circuit of Barh-Patna lines as switchable line reactor, which can be used as bus reactor in case of outage of line.

(b) Space created by shifting of bus reactor would be utilised for placement of 500MVA ICT.

(c) Additional 400/220kV, 500MVA ICT (3rd) along with associated bays at Patna.

2.2 He further informed that MoP vide letter no. 15/2/2017 (Part-I)-Trans dated 10-01-2018 has entrusted POWERGRID to implement the above works through Regulated Tariff Mechanism(RTM) as part of ERSS-XII scheme.

2.3 POWERGRID informed that the 3rd 400/220kV ICT at Patna (POWERGRID) S/s has already been commissioned.

2.4 Members noted the same.

3. Modifications in the scope of works under the on-going ERSS-XVIII scheme

3.1 Director, CEA informed that in the 19th meeting of SCPSPER held on 01-09-2017, it was decided that LILO of Jeerat-Subhasgram 2nd 400kV line at Rajarhat S/s under ERSS-XVIII (being implemented by M/s POWERGRID Medinipur Jeerat Transmission Ltd.) needs to be deleted from the scope of the scheme. It was also decided that final decision with regard to deletion of scope of LILO and associated bay extension works at Rajarhat S/s would be taken up in a separate meeting by CEA with all LTTCs of ERSS-XVIII project. Accordingly, a meeting was held at CEA on 28-12-2017, wherein it was decided to drop the scope of implementation of LILO of Jeerat-Subhasgram 2nd 400kV line at Rajarhat S/s under ERSS-XVIII scheme. As none of the LTTCs were present in the meeting, they were requested to communicate their views on the decision within 30 days from date of issue of minutes. Further a time extension till 15-03-2018 was provided to LTTCs for furnishing comments on the matter. As no comments were received, the decision of deletion of LILO of 2nd circuit of Jeerat – Subhasgram 400kV line at Rajarhat was considered as final. Accordingly, the revised scope of works under ERSS-XVIII would be as follows:

Sl. No.	Transmission Element	Remarks
Under the scope of M/s POWERGRID Medinipur Jeerat Transmission Ltd. (TBCB route)		
1.	Establishment of 765/400kV, 2x1500MVA substation at Medinipur **765kV** • ICTs: 7×500 MVA, 765/400kV (1-phase unit including 1 spare unit) • ICT bays: 2 no. • Line bays: 4 no. • Bus reactor: 7×110 MVAR single phase units including one (1) spare unit • Bus reactor bay: 2 no. • Space for future line bays (along with space for switchable line reactor): 4 no. • Space for future ICT bays: 2 no. • Space for future 765/400 kV ICT: 6x500MVA single phase units **400kV** • ICT bays: 2 no. • Line bays: 4 no. • Bus reactor: 2×125 MVAR • Bus reactor bay: 2 no.	No change

Sl. No.	Transmission Element	Remarks
	• Space for future line bays (along with space for switchable line reactor): 6 no. • Space for future ICT bays: 2 no.	
2.	Establishment of 765/400kV, 2x1500MVA substations at Jeerat (New) **765kV** • ICTs: 7×500MVA, 765/400kV (1-phase unit including 1 spare unit) • ICT bays: 2 no. • Line bays: 2 no. • Bus reactor: 7×110 MVAR single phase unit including one (1) spare unit • Bus reactor bay: 2 no. • Space for future line bays (along with space for switchable line reactor): 4 no. • Space for future ICT bays: 2 no. • Space for future 765/400 kV ICT: 6x500MVA single phase units **400kV** • ICT bays: 2 no. • Line bays: 4 no. • Bus reactor: 2×125 MVAR • Bus reactor bay: 2 no. • Space for future line bays (along with space for switchable line reactor): 4 no. • Space for future ICT bays: 2 no.	No change
3.	Ranchi (New) – Medinipur 765kV D/c line with Hexa ACSR Zebra conductor along with 765kV, 240 MVAR switchable line rector with 750Ω NGR in each circuit at Medinipur end (total: 765kV, 7x80 MVAR single phase units, 1 unit as spare)	No change
4.	Medinipur - Jeerat (New) 765kV D/c line with Hexa ACSR Zebra conductor along with 765kV, 240 MVAR switchable line rector with 600 Ω NGR in each circuit at Jeerat (New) end (total: 765kV, 7x80 MVAR single phase units, 1 unit as spare)	No change
5.	LILO of both circuits of Chandithala – Kharagpur 400kV D/c line at Medinipur	No change
6.	Jeerat (New) – Subhasgram 400kV D/c line (ACSR Quad Moose current rating at 85° C)	No change
7.	Jeerat (New) – Jeerat (WBSETCL) 400kV D/c line (ACSR Quad Moose current rating at 85° C)	No change

Sl. No.	Transmission Element	Remarks
8.	LILO of Jeerat (WBSETCL) – Subhasgram (PG) 400kV S/c section at Rajarhat (POWERGRID)	**Deleted**
9.	2 no. 400kV GIS line bays at Jeerat (WBSETCL)	No change
Under the scope of M/s POWERGRID		
1.	2 no. 400 kV line bays at Subhasgram for termination of Jeerat (New) - Subhasgram 400 kV D/c line [ACSR Quad Moose] line	No change
2.	2 no. 400 kV line bays at Rajarhat for termination of LILO of Jeerat (WB) – Subhasgram (PG) 400 kV S/c section at Rajarhat (POWERGRID)	**Deleted**
3.	2 no. 765 kV line bays at Ranchi (New) for termination of Ranchi (New)- Medinipur 765 kV D/c line	No change
4.	240MVAR 765kV (765kV, 3x80 MVAR single phase units) switchable line reactor with 750Ω NGR in each circuit at Ranchi (New) end of Ranchi (New) – Medinipur 765kV D/c line.	No change

3.2 Members agreed for above revised scope of works under the ERSS-XVIII scheme. POWERGRID Medinipur Jeerat Transmission Ltd. was advised to approach CERC for change of scope in the scheme.

4. Termination of 400kV lines at Jeerat (WBSETCL) S/s under the ERSS-XV and ERSS-XVIII schemes

4.1 Director, CEA informed following 400kV lines are existing / under construction at 400/220kV substation of Jeerat (WBSETCL):

Existing:

(i) Jeerat (WBSETCL) – Baharampur/Farakka 400kV S/c line of POWERGRID

(ii) Jeerat (WBSETCL) – Rajarhat/Subhashgram 400kV S/c line of POWERGRID

(iii) Jeerat (WBSETCL) – Barkeshwar (WBSETCL) 400kV S/c line of WBSETCL

(iv) Jeerat (WBSETCL) – Kolaghat (WBSETCL) 400kV S/c line of WBSETCL

Under Construction:

(v) LILO of Sagardighi – Subhashgram 400kV S/c line at Jeerat (WBSETCL) as a part of ERSS-XV by POWERGRID

(vi) Jeerat (New) – Jeerat (WBSETCL) 400kV D/c line (Quad) as a part of ERSS-XVIII being implemented under TBCB by POWERGRID Medinipur-Jeerat Transmission Ltd.

4.2 He stated that there was problem for termination of new 400kV lines being implemented under ERSS-XV and ERSS-XVIII at Jeerat (WBSETCL) S/s. In the 19th meeting of SCPSPER, following was decided to resolve the issue:

(i) Dismantling of dead end towers and termination of existing lines mentioned at 4.1 (i) to (iv) through GIS duct, at the existing 400kV Jeerat AIS S/s (WBSETCL) as ISTS.

(ii) Termination of the new lines mentioned at 4.1 (v) and (vi) in GIS extension area of Jeerat (WBSETCL) substation on separate double circuit towers at normal height (around 45 meters).

(iii) Further, it was also acknowledged that implementation of LILO of Sagardighi-Subhasgram 400kV S/c line at Jeerat along with associated line bays would get delayed due to addition of above mentioned GIS duct arrangement.

4.3 Since the work to be carried out under ISTS may not match the timeline of ERSS-XV & ERSS-XVIII schemes, representative of CTU requested to extend the completion of ERSS-XV & ERSS-XVIII schemes.

4.4 After deliberations, it was agreed that, after finalization of implementing agency for the work, a separate meeting would be held in CEA with CTU, POWERGRID, WBSETCL and implementing agency to discuss the extension of completion schedule of ERSS-XV & ERSS-XVIII schemes. Decision of the meeting will be put up before ERSCT for ratification.

5. Modifications in the scope of works under the on-going ERSS-XII and ERSS-XVII (Part-B) schemes

5.1 Director, CEA informed that the ERSS-XII and ERSS-XVII (Part-B) schemes inter alia includes following scope of works:

ERSS-XVII (Part-B):

(a) Sasaram ICT-1 (released after replacement) may be diverted to Durgapur instead of Farakka

ERSS-XII:

(a) New Purnea ICT-2 (released after replacement) may be diverted to Farakka instead of Durgapur

(b) Patna ICT-1 (released after replacement) may be diverted to Jamshedpur as ICT-3

5.2 Representative of CTU stated that Sasaram ICT-1 (released after replacement) has been diverted to Durgapur. However, Patna ICT-1 (released after replacement), which was diverted to Jamshedpur, burnt after installation. Accordingly, New Purnea ICT-2 (released after replacement) has been sent to Jamshedpur instead of Farakka. A new ICT, which was under procurement process to replace the burnt Patna ICT-1, is now proposed to be installed at Farakka as ICT-2. As delivery and installation of new ICT would take about 15-18 months time, CTU requested for extension in completion schedule of ERSS-XII by about 18 months.

5.3 Director, CEA enquired about the funding for procurement of the new ICT to replace the burnt ICT. Representative of CTU clarified that the new ICT would be procured through the insurance claim against burnt ICT.

5.4 Chief Engineer, CEA stated that there is only one transmission line in Farakka, therefore, the ICT may not be required on urgent basis. He suggested that the new ICT may be utilized at some other location, where immediate requirement can be met. It is opined that the necessity of ICT at Farakka has already been agreed in the previous Standing Committee meeting.

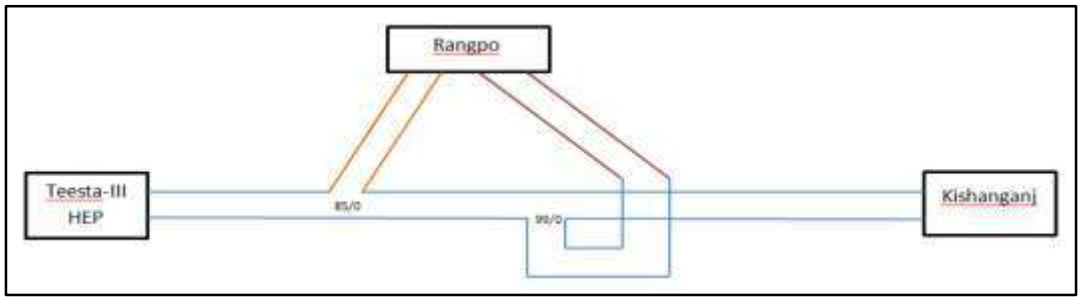
5.5 After deliberations, following modifications in ERSS-XII scheme was agreed with extension in completion schedule by 18 months from the scheduled COD:

(a) New Purnea ICT-2 (released after replacement) to be diverted to Jamshedpur for installation as ICT-3.

(b) New ICT, which is being procured to replace the burnt ICT at Patna, to be diverted to Farakka for installation as ICT-2.

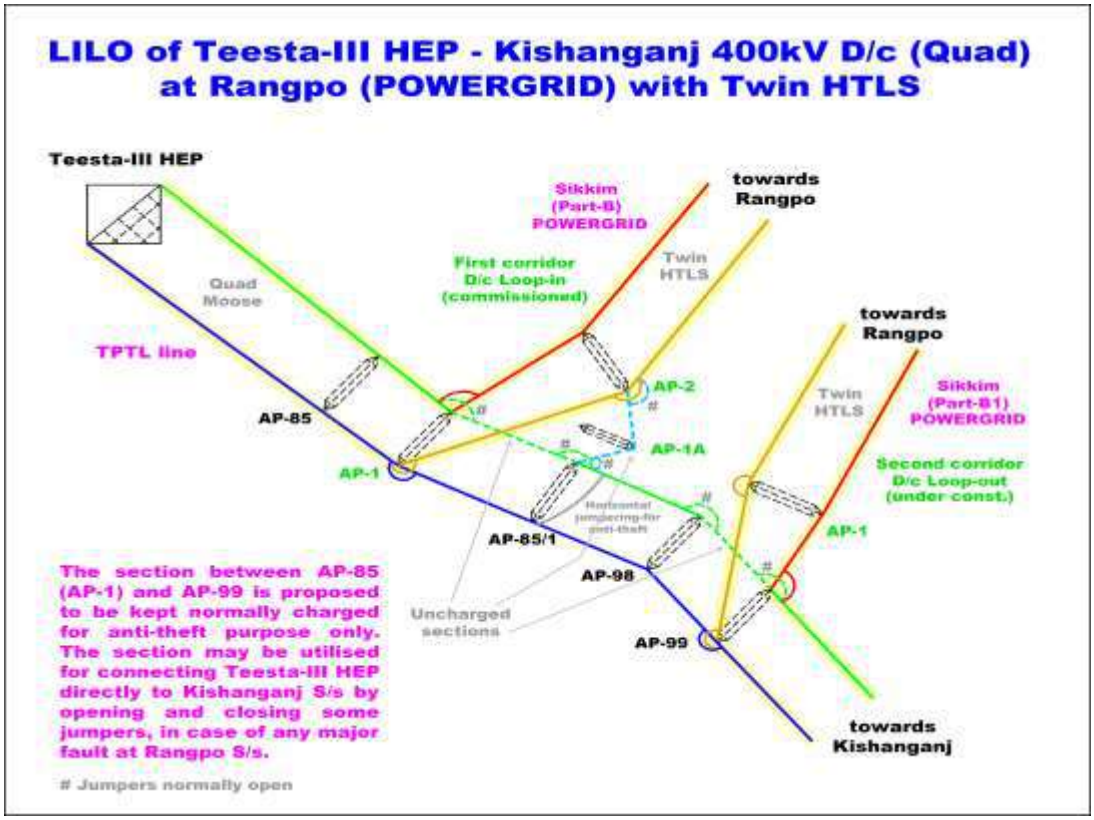
6. LILO of Teesta-III HEP – Kishanganj 400kV D/c (Quad) line at Rangpo

6.1 Representative of CTU informed that LILO of one circuit of Teesta-III HEP – Kishanganj line of M/s TPTL at Rangpo(at tower location No. AP-85/0) has been completed by POWERGRID as part of Transmission System for Transfer of power from generation projects in Sikkim to NR/WR (Part-B) scheme. However, since Rangpo – Kishanganj section of Teesta-III HEP – Kishanganj 400 kV line is not ready, the LILO section is being utilised for connecting Teesta-III and Dikchu HEPs to Rangpo S/s. LILO of second circuit of Teesta-III HEP – Kishanganj 400 kV line of M/s TPTL at Rangpo(at tower location No. AP-99/0) is under the scope of POWERGRID and is being implemented as part of Transmission System for Transfer of power from generation projects in Sikkim to NR/WR (Part-B1) scheme.



6.2 He further stated that due to difficult terrain involving steep hills and forest area it would be difficult to cross the LILO of 2nd circuit of Teesta-III HEP – Kishanganj 400kV D/c (Quad) line at Rangpo S/s to the other circuit (as shown in above arrangement). Moreover, this would also result in high cost (due to increased line length and usage of heavy towers with uneven leg extensions) and damage to forest area.

6.3 In view of above constraints, CTU had proposed D/C Loop-in of Teesta-III HEP – Kishanganj line at Rangpo at location AP-85 (AP-1) and D/c Loop-out of Teesta-III HEP – Kishanganj line from Rangpo at location AP-99 (or any adjacent location) (the proposed arrangement is shown below). It was also proposed to keep the section between AP-85 (AP-1) and AP-99 charged as an anti-theft measure, which may be utilised for connecting Teesta-III HEP directly to Kishanganj S/s bypassing Rangpo S/s by opening and closing some jumpers at tower locations of the line, in case of any major fault at RangpoS/s.



6.4 After deliberations, the proposal of CTU was agreed.

7. Connectivity and LTA application of Odisha Integrated Power Ltd. (Odisha UMPP) and transmission system for power evacuation

7.1 Director, CEA stated that in the 19th meeting of SCPSPER held on 01-09-2017, the following transmission system was finalized for Odisha-UMPP (6x660MW) of Odisha Integrated Power Limited (OIPL):

a) Split bus arrangement at Odisha UMPP (3x660MW in Section-A and 3x660MW in Section-B)
b) LILO of Sundargarh-A – Dharamjaygarh 765kV D/c line at Odisha UMPP-A
c) Odisha UMPP-B – Sundargarh-B 765kV D/c line
d) Ranchi (New) – Gaya 765kV D/c line

7.2 Representative of CTU stated that connectivity and LTA applications for 4000MW Odisha UMPP was submitted by Odisha Integrated Power Ltd.

(OIPL), wholly owned subsidiary of PFCCL in June, 2014. OIPL in their Connectivity and LTA applications, had not clarified the unit size of the generation project and the decision of choosing unit size was left to the successful bidder. OIPL vide email dated 13-03-2018 has informed the unit size as 5x800MW. Further, OIPL has provided a letter of MoP in which the tentative allocation agreed in the meetings held on 10-07-2006 and 19-09-2006 is mentioned. As the evacuation system was planned considering 6x660MW units with split bus arrangement at the UMPP bus (3x660MW in Section-A and 3x660MW in Section-B), revised studies for 2023-24 timeframe has been carried out with 5x800MW capacity (3x800MW in Section-A and 2x800MW in Section-B and vice-versa) for Odisha UMPP.

7.3 Considering the developments, the issue was discussed in a meeting held on 03-07-2018 at CEA, wherein, the revised studies for evacuation of Odisha UMPP was deliberated. Based on load flow analysis, following revised transmission system for evacuation of power from Odisha UMPP was proposed:

(a) Generation voltage to be stepped-up to 765kV
(b) Switchgears should be designed for short time current rating of 50kA (or higher) (for 1sec)
(c) Split bus at Odisha UMPP (3x800MW in Section-A and 2x800MW in Section-B)
(d) LILO of both circuits of Sundargarh-A – Dharamjaygarh 765kV D/c line at Odisha UMPP-A
(e) Odisha UMPP-B - Sundargarh-B 765kV D/c line
(f) Ranchi (New) – Gaya 765kV D/c line

7.4 Director, CEA stated that power from the UMPP can be evacuated, without Ranchi – Gaya 765 kV D/c line, accordingly, the line may not be required as a part of the evacuation system of project. Representative of CTU stated that with construction of Ranchi – Gaya 765 kV D/c line, the 765kV ER-WR and ER-NR corridors would be connected and it would reduce the power losses also. Director, CEA stated that for above of 765kV connectivity with NR & WR, the line can be proposed as system strengthening scheme.

7.5 Member (Power System), CEA enquired about the commissioning schedule of Odisha UMPP. Representative of CTU replied that as per information available with them, the first unit would be commissioned in April, 2024 and each subsequent unit at an interval of 6 months thereafter. He also informed that Standard Bidding Documents (SBD) is under modification by Ministry of Power. After finalization of the SBD, bidding for the UMPP would take place.

7.6 Representative of BSPTCL stated that TBCB projects are normally implemented in 2-3 years, therefore the evacuation system may be planned before 2-3 years of commercial operation of the project. Representative of CTU stated that the system may be finalised now, however, the system would be implemented in matching time frame of the UMPP.

7.7 Chief Engineer, CEA suggested that the transmission system of the UMPP can be optimised by placing sectionaliser between two split buses proposed at UMPP switchyard. He added that in case of fault in any of the transmission lines, the power could be evacuated by closing the secitonaliser. He also opined that LILO of one circuit of the Sundargarh-A – Dharamjaygarh 765kV D/c line at Odisha UMPP-A would be sufficient to evacuate the power at UMPP-A.

7.8 Member Secretary, ERPC stated that any new proposal /system strengthening should include implication of POC charges on each state. Representative of CTU replied that it is difficult to get an accurate estimation of the PoC charges on each state for the future proposals of system strengthening likely to come in next 4 to 5 years.

7.9 Member Secretary, ERPC stated that tentative allocation could also change as the states can change their opinion depending on time frame of implementation of the project. States agreed with the views of MS, ERPC.

7.10 Representative of CTU stated that CERC vide Amendment dated 17-02-2016, has directed CTU not to hold any connectivity/Access application in abeyance and process them within the timeline prescribed in Regulation 7 of the Connectivity Regulations.

7.11 Keeping in view the schedule commissioning of Odisha UMPP in 2024 and the issues raised on proposed transmission elements, it was decided that CEA, CTU, OPTCL and OIPL may jointly study the evacuation system of Odisha UMPP. The recommendations would be put up before the ERSCT in its next meeting for discussion.

8. Perspective transmission plan of JUSNL up to 2021-22

8.1 Director, CEA informed that perspective transmission plan of JUSNL was discussed in the 19th meeting of SCPSPER, wherein it was decided that a separate meeting would be held at CEA to discuss the perspective intra-state transmission plan of JUSNL along with DVC. Accordingly, various rounds of discussions were held with stakeholders at CEA on 23-10-2017, 15-11-2017, 04-12-2017 and 13-12-2017, wherein the perspective intra-state transmission plan of JUNSL was finalised. On the basis of studies, following five (5) new 400/220 kV SS were agreed in-principle in intra-state system of JUSNL:

(a) Jarsidih Substation, (400/220 kV, 2x500 MVA)

(b) Chandil Substation (New) (400/220 kV, 2x500 MVA)

(c) Koderma Substation (400/220 kV, 2x500 MVA)

(d) Mander Substation (400/220 kV, 2x500 MVA)

(e) Dumka Substation (New) (400/220 kV, 2x500 MVA)

Creation of above substation and interconnections between them would complete the 400kV high-capacity ring viz. Patratu TPS – Koderma – Jasidih-Dumka– Dhanbad (ISTS) – New Chandil – Patratu TPS in Jharkhand, which shall improve reliability of power transfer within the state.

8.2 Representative of JUSNL stated that detailed scope of works (enclosed as **Annex-III**) included in their perspective transmission plan for 2021-22 is proposed to be implemented through PPP mode, World Bank funding, and State funding.

8.3 Representative of CTU enquired about the commissioning schedule of Patratu (3x800MW) TPS. Representative of JUSNL replied that Patratu Vidyut Urja Nigam Ltd (PVUNL), Unit-1, Unit-2 and Unit-3 are scheduled for commissioning in March 2022, September 2022 and March 2023 respectively.

8.4 On query about the progress of Tariff Base Competitive Bidding (TBCB) schemes, representative of JUSNL stated that total work which is to be carried out through TBCB mode is divided into 4 packages, 2 of the packages are under RfP stage and remaining 2 packages are under RfQ stage.

8.5 Representative of JUSNL stated that following additional projected loads of Jharkhand, which were not envisaged in 19th EPS, have been taken into consideration for arriving at the total load projection (4561 MW) in JUSNL's jurisdiction by 2021-22:

- The additional bulk industrial load of 950 MW across JBVNL supply area as per the assessment of Industries Department based on the MOUs signed with Govt. of Jharkhand and JBVNL's plan for electrification of 30, 29,567 number of house hold during 2017-2022.
- Bulk load of 70 MW for supply to NTPC and SAIL.
- A load of 20 MW considered for proposed Airport at Deogarh.

8.6 The representative of CTU stated that there were proposal of new 220kV substation at Patratu, Jasidih and Tamar, whereas these were not discussed in the meetings at CEA.

8.7 Representative of JUSNL stated the following, in support of additional transmission elements :

(i) <u>220/132/33 kV system extension of under construction 400/220 kV Patratu S/s so as to form 400/220/132/33kV Patratu substation</u>: Due to space constraint, 400/220 kV Patratu_New S/s(under construction) would be linked to 220/132/33 kV Patratu New S/s (proposed in nearby location) through 1.5km 220kV D/c line (with twin moose ACSR conductor).

(ii) <u>Upgradation of under constructing 220/132 kV Jasidih S/s to 400/220/132 kV substation</u>: Due to constraint of space in the Jasidih <u>220/132 kV</u> S/s(under construction), JUSNL have identified land in nearby location(about 2km away) for 400/220 kV Jasidih_New S/s(proposed), which would be linked to Jasidih 220/132 kV S/s through 220kV D/c line(with twin moose ACSR conductor).

(iii) <u>Upgradation of existing 132/33 kV Tamar S/s to 220/132/33 kV substation:</u> Due to constraint of space in the existing Tamar substation, JUSNL have identified land in nearby location (about 2km away) for 220/132 kV

Tamar_New S/s(proposed), which would be linked to existing Tamar 132/33kV S/s through 132kV D/c line(with single moose conductor).

8.8 Chief Engineer, CEA opined that creation of new substation would definitely be more costly than augmentation of the existing substation because of establishment of complete infrastructure and various auxiliary facilities.

8.9 Member (Power System), CEA opined that planned intra-state transmission system for Jharkhand in the time frame of 2021-22 seems to be excess considering projected demand of Jharkhand for 2021-22. This would result higher tariff burden on consumers of Jharkhand. Therefore, optimum system may be planned commensurate with the projected demand.

8.10 Representative of POSOCO stated that entire power of Patratu Vidyut Utpadan Nigam Limited (PVUNL) (3x800 MW) could not be absorbed in Jharkhand system. Therefore, there is need for strong inter-connectivity with ISTS. Representative of CTU replied that 85% power of the project is allocated to Jharkhand. He also stated that Patratu generating station has strong ISTS connectivity of PVUNL with ISTS through Ranchi and Chandwa Pool (ISTS) substations. Moreover, the 400kV ring is proposed to be connected to ISTS substations at Dhanbad and Chaibasa.

8.11 On the query of Member Secretary, ERPC about consideration of Tenughat power generating station in the studies, PRDC/JUSNL replied that existing station and extension project of Tenughat has also been considered.

8.12 After deliberations, members were of the view that Jharkhand may not be able to attain the demand projected by them for 2021-22 time-frame, considering present trend in demand and also projections in 19th EPS. However, the system proposed by JUSNL at 8.2 was agreed with suggestion that the implementation of system may be done in phased manner matching with the growth of the electricity demand in the state.

9. System strengthening in southern Odisha

9.1 Director, CEA informed that in the 19th meeting of Standing Committee on Power System Planning for Eastern Region (SCPSPER) held on 01.09.2017, it was decided that a separate meeting would be held at CEA to discuss the intra-state system strengthening issue of Odisha. Subsequently, a meeting was held on 03.07.2018 to discuss above issues and following transmission system for additional feed to Southern Odisha was finalised.

a) Narendrapur – Therubali – Jeypore 400kV D/c line along with 400kV switching station at Therubali and suitable reactive compensation.

b) 765/400kV, 2x1500MVA new substation at Begunia.

c) Switchgears at Begunia should be designed for 50kA or higher(for 1 sec) and 63kA (for 1 sec) at 765kV and 400kV levels respectively.

d) Angul – Begunia 765kV D/c line

e) LILO of Pandiabil – Narendrapur 400kV D/c line at Begunia

9.2 Representative of POSOCO stated that instead of proposing Therubali as a switching station, it can be connected to Bolangir. Representative of OPTCL stated that Narendrapur-Jeypore 400 kV D/c line is around 340 km, therefore, switching stations is proposed at Therubali. He also stated that a pumped storage hydro power plant is also under planning stage near Therubali.

9.3 Representative of the POWERGRID stated that space availability for 2 no. 400kV bays at 400 kV Jeypore substation would be checked and it would be intimated.

9.4 Representative of the CTU enquired about the reactive compensation at various substations of Orissa. Representative of the OPTCL stated that 1x125 MVAR(400 kV) bus Reactor each at Mendhasal, Meramundli and New Dubri are planned. The funding for the above reactors is proposed from Power System Development Fund (PSDF). After the grant of fund, these reactors would be implemented in 15 months. OPTCL also stated that bus reactors of 1x125 MVAR (400 kV), 2x240 MVAR (765 kV) reactor are also planned at Narendrapur and Begunia substations respectively.

9.5 Representative of the CTU stated that 2x125 MVAR (400 kV) bus reactors may be planned at Therubali. Representative of the OPTCL agreed for the same.

9.6 On query regarding the status of substations, approved in previous standing committee meetings, representative of OPTCL stated that Meramundli-B substation has already been awarded and the same would be completed by June, 2019. Tendering is in process for Khuntuni substation, this would be implemented by 2020-21. The survey has been completed for Narendrapur substation, this would also be implemented by 2021-22.

9.7 After deliberations, the system-strengthening proposal in Odisha as mentioned at para 9.1 above alongwith 2x125 MVAR (400 kV) bus reactors at Therubali, 1x125MVAR (400 kV) bus reactor at Narendrapur and 2x240MVAR (765 kV) bus reactors at Begunia were agreed and the system would be implemented by OPTCL as an intra-state system.

10. Evacuation system for Kamakhyanagar (4x800MW) generation project

10.1 Director, CEA stated that in the 19th meeting of Standing Committee on Power System Planning for Eastern Region (SCPSPER) held on 01.09.2017, evacuation plan of Kamakhyanagar TPS (3200MW - 3x800MW in phase-1 and 1x800MW in phase-II) of Odisha was discussed. Wherein, it was decided that a separate meeting would be held at CEA to finalize the evacuation system of Kamakhyanagar generation project. Subsequently, a meeting was held on 03.07.2018 at CEA wherein the issue was deliberated alongwith system study results. In the meeting, following evacuation system for Kamakhyanagar TPS (2400MW) was finalized.

a) Generation step-up to 765kV

b) Switchgears should be designed for 50kA (or higher) for 1 sec

c) LILO of Angul – Begunia 765kV D/c line at Kamakhyanagar

10.2 Representative of CTU stated that, as per study Odisha could be surplus of about 4000MW in 2023-24 [considering allocations from various newly proposed generation projects like Talcher-III (1320MW), Kamakhyanagar (3200MW), Talabira (3200MW), and Odisha UMPP (4000MW)].

10.3 On the query of commissioning schedule of Kamakhyanagar generation project, GRIDCO stated that scheduled COD of unit-1, unit-2 and unit-3 is June 2022, December 2022 and June 2023 respectively.

10.4 Member (Power System), CEA expressed that Odisha is planning many intra-state generation projects. They are also having share in ISGS, therefore, Odisha may not be able to absorb the total generation in their system.

10.5 Member Secretary, EPRC stated that existing thermal power plants are underutilized, therefore planning of new power plant needs to be done with proper analysis.

10.6 Representative of GRIDCO, Odisha stated that Orissa Government is planning to implement this project, as the cost of the generation is less being a pithead power plant. He mentioned that some of the old thermal generating stations in Odisha might be decommissioned. He also stated that some of the planned generation projects may not be commissioned due to various reasons.

10.7 After deliberations, the evacuation system for Kamakhyanagar TPS (2400MW) as mentioned at para 10.1 above was agreed which would be implemented by OPTCL as an intra-state scheme. Further, Odisha was advised to prepare load - generation plans such that there should not be any stranded/under-utilized assets in the timeframe 2022-23.

11. Status of downstream 220kV or 132kV network by STUs from the various commissioned and under-construction ISTS substations

11.1 Director, CEA informed that many ISTS sub-stations have been commissioned and some are under construction for which the downstream system is being implemented by the STUs. Based on the information provided by the states, updated information on status of implementation of planned/under-construction downstream transmission system is as follows:

A. Existing substations

(a) Chaibasa 400/220kV S/s

i. Chaibasa (POWERGRID) – Jadugoda (JUSNL) 220kV D/c – Nov, 21.

(b) Daltonganj 400/220/132kV S/s

i. Daltonganj (POWERGRID) – Latehar 220kV D/c – Apr'19

ii. Daltonganj (POWERGRID) – Garhwa 220kV D/c – Dec'18

iii. Daltonganj (POWERGRID) – Chatarpur/Lesliganj 132kV D/c – Oct'20

(c) Bolangir 400/220kV S/s

i. LILO of one ckt of Sadeipalli – Kesinga 220kV D/c at Bolangir – Dec '18

(d) Keonjhar 400/220kV S/s

i. Keonjhar (POWERGRID) – Keonjhar (OPTCL) 220kV D/c – July '18

ii. Keonjhar (POWERGRID) – Turumunga (OPTCL) 220kV D/c – Dec '19

(e) Pandiabil 400/220kV S/s

i. Pratapsasan (OPTCL) – Pandiabil (POWERGRID) 220kV D/c – Dec'18

(f) Subashgram 400/220kV S/s

i. Subashgram (POWERGRID) – Baraipur 220kV D/c line – Dec'19

B. Under Construction substations

(a) Rajarhat 400/220kV S/s: Expected by Dec'19

i. Rajarhat (POWERGRID) – New Town AA3 220kV D/c – Dec '19

ii. Rajarhat (POWERGRID) – New Town AA2 220kV D/c – Dec '19

iii. Rajarhat (POWERGRID) – Barasat 220kV D/c – Dec '19

(b) Dhanbad 400/220kV S/s:

Director, CEA stated that Dhanbad substation was awarded to North Karanpura Transmission Ltd. (NKTL) under TBCB. Since, NKTL has served TSA termination notice to LTTCs and the issue of cancellation of transmission license is pending in CERC. Therefore, time line of Dhanbad substation could not be ascertained.

Representative of JUSNL stated that Tenughat – Govinpur 220kV D/c line would be built and LILO of this line would be done at Jainamore (Bokaro) and Dhanbad in future.

12. Interim connectivity to generation projects through LILO arrangement

12.1 Representative of CTU stated that numbers of generation projects were granted Connectivity / Long Term Access (LTA) with strengthening of transmission system. In few cases generation projects were to be commissioned ahead of the anticipated commissioning of the associated transmission system. In such cases, generation projects were given temporary connectivity through loop-in & loopout (LILO) of nearby transmission lines so as to enable them to get connected with the grid and commission their generation projects. The temporary connectivity through LILO was to be withdrawn after commissioning of the associated transmission system. Associated transmission system of some of such generation projects have been commissioned and their temporary connectivity through LILO has been disconnected; however, some are still connected through LILO arrangement.

12.2 CERC in its order dated 07-102015 on Petition No.112/TT/13 and dated 28-09-2016 in Petition no. 30/MP/2014 has directed that the interim (LILO) arrangement has to be removed.

12.3 The progress of dedicated transmission lines of IPPs in Eastern Region, which were connected through interim arrangement, was reviewed and updated status is summarized below:

Generation Project in ER connected through temporary LILO arrangement					
Sl. No.	**Generation Project**	**IC (MW)**	**Present Connectivity through LILO**	**Final Connectivity Arrangement**	**Anticipated Completion Schedule**
1	Ind Barath Energy (Utkal) Ltd.	2x350	**LILO removed. Presently disconnected from Grid.**	Ind Barath - Jharsuguda 400kV D/c	The project is currently disconnected from the Grid. IBEUL has placed order to increase the tower heights at 4 locations. **CTU vide letter dated 18-06-2018, has served notice to IBEUL for termination of TSA in view of not opening/renewing LC as per CERC order dated 08-03-2018 in petition no. 229/RC/2015.**
2	Gati Infrastructure Ltd. (Chuzachen)	2x55	LILO of Rangpo - Gangtok 132kV S/c line *(granted in Nov'07)*	Chuzachen - Rangpo 132kV D/c (with Zebra conductor)	Line completed. Project commissioned on interim arrangement. Line bays at Rangpo end are being implemented by E&PD, Govt. of Sikkim is expected by **September'18.**
3	Sneha Kinetic Power Projects Pvt. Ltd. (Dikchu)	2x48	LILO of one circuit of Teesta-III – Rangpo 400kV D/c line at Dikchu *(granted in Dec'14 by CERC)*	Dikchu – Dikchu Pool 132kV D/c	**Separate meeting will be held with Sikkim Government at CEA.**
4	Shiga Energy Pvt. Ltd. (Tashiding)	2x48.5	LILO of one circuit of RangpoNew Melli 220kV D/c line at Tashiding through Tashiding-New Melli 220kV D/c	Tashiding – Legship Pool 220kV D/c line	Legship Pool S/s is expected by **Dec, 19.** Representative of **E&PD, Govt. of Sikkim stated that** status of 2 no. 220kV line bays at New Melli **would be intimated later.**

New Transmission system proposals

13. Proposal for installation of 125 MVAR, 420 kV Bus Reactors each at Gokarna, Kharagpur, New Chanditala, New PPSP and Durgapur 400 kV sub-stations of WBSETCL for proper reactive power management of the grid

13.1 Representative of WBSETCL stated that, in view of high ratio of peak vs off-peak demand of West Bengal, they were experiencing very high leading VAR

dominating in the state grid. During winter off-peak hours, very high MVAR is generated from the lightly loaded EHT lines resulting in very high system voltage (beyond IEGC specified limit) at different buses of important 400 kV substations of WBSETCL. This scenario of the EHV grid of West Bengal is well supported by the fact that the state has paid Rs.23.76 Cr as VAR charge during the year 2016-17, in which the maximum charge is paid for leading VAR or for injecting VAR to the grid during off-peak hours.

13.2 In view of the above, WBSETCL had proposed 420kV Bus Reactors (BRs) at following locations.

Sl. No.	Name of 400 kV sub-station	Existing Capacity (MVAR)	Proposed Capacity (MVAR)	Max. Bus Volt. in Dec'17 (kV)
1	Durgapur	1x50 (BR)	1x125 (BR)	422
2	Kharagpur	1x80 (BR)	1x125 (BR)	429
3	New Chanditala	1x80 (BR)	1x125 (BR)	430
4	Gokarna	1x80 (BR)	1x125 (BR)	425
5	New PPSP (GIS)	1x80 (BR)	1x125 (BR)	428

13.3 After deliberations, the proposal of WBSETCL at para 13.2 for installation of bus reactors was agreed.

14. Establishment of one 220/132/33kV sub-station near Falakata in Jalpaiguri/Coochbehar by LILO of Birpara - Alipurduar 220kV D/C line of POWERGRID

14.1 Representative of WBSETCL stated that the load growth at Coochbehar, Dinhata, Falakata & Mathabanga area in Jalpaiguri & Coochbehar district is taking place rapidly. Presently, power supply in these areas is met from Coochbehar 132 kV & Mathabanga 132 kV sub-stations. One 132 kV sub-station is under construction at Dinhata which is expected to be commissioned by 2018-19. Main source of supply to this area is from Alipurduar 220 kV sub-station. There is another 132 kV connectivity with Mathabanga from Moinaguri 132 kV sub-station. Again, Moinguri 132 kV sub-station get power supply from Birpara 220 kV & NJP 220 kV sub-station via Mohitnagar 132 kV sub-station.

14.2 For reliable power supply in the area, WBSETCL has proposed to establish 220/132/33 kV sub-station with 2x160 MVA, 220/132 kV Transformers near Falakata with LILO of existing Birpara (PG) – Alipurduar (PG) 220 kV D/C line and 132 kV D/C interconnections to the nearby Mathabanga, Dinhata & Coochbehar 132 kV sub-stations.

14.3 After deliberations, following proposals of WBSETCL was agreed for implementation as an intra state scheme/system.

(a) Establishment of one 220/132/33kV sub-station (with 2x160 MVA, 200/132 kV transformer) near Falakata in Jalpaiguri/Coochbehar

(b) LILO of Birpara (PG)- Alipurduar(PG) 220kV D/C line at Falakata.

(c) Falakata-Mathabanga 132 kV D/c line

(d) Falakata- Dinhata 132 kV D/c line

(e) Falakata- Coochbehar 132 kV D/c line

15. Construction of 2 nos. 132 kV feeder bays at Malda 400 kV substation of POWERGRID for evacuation of power

15.1 Representative of WBSETCL stated that the main source of power/supply in Malda district is from 400/220/132 kV sub-station of POWERGRID at Malda. The transformation capacity at 220/132 kV level of Malda 400 kV sub-station is 3x160 MVA, 220/132 kV. But for evacuation of power, there exists only one Malda (POWERGRID)-Malda (WBSETCL) 132kV D/c HTLS line. Due to increase in load in this area, desired voltage could not be maintained properly at the consumer premises due to long 33 kV incoming line from Malda 132kV sub-station of WBSETCL.

15.2 To overcome this problem, WBSETCL had proposed establishment of one 132kV sub-station at Manikchak/Paranpur in Malda district with 132kV D/C connectivity from Malda (POWERGRID) sub-station, for which 2 nos. 132kV bays at Malda (POWERGRID) sub-station would be required.

15.3 Regarding space availability for bays at Malda (POWERGRID) S/s, representative of POWERGRID stated that space for two 132kV bays is not available in AIS. However, GIS bays can be accommodated by extending the bus using GIS technology.

15.4 Representative of POWERGRID also stated that at present there is Single Main & Transfer (SMT) scheme at 132 kV level in Malda (POWERGRID) S/s. Since, WBSETCL needs two more 132 kV bays, the bus bar/switching scheme at 132kV level may be replaced with Double Main (DM) scheme for reliability. The scheme needs to be implemented with GIS due to space constraint. Representative of ERLDC and WBSETCL supported the views of POWERGRID.

15.5 After deliberations, replacement of existing Single Main & Transfer (SMT) scheme with Double Main (DM) scheme at 132kV level at Malda (POWERGRID) substation using GIS technology was agreed. It was also agreed to provide 2 no. of 132kV GIS line bays for Manikchak/Paranpur – Malda (POWERGRID) 132kV D/c line. These works would be implemented as ISTS.

16. Evacuation of 280MW Solar Power in Odisha

16.1 Representative of OPTCL stated that they had proposed following transmission system for evacuation of 280 MW (out of 1000 MW) Ultra Mega Solar Park Project of MNRE in the district of Sambalpur & Boudh in Odisha under Green Energy Corridor Phase-II. The 280 MW Solar Park Project, will be implemented at two locations i.e at Jujumara cluster and Manmunda cluster.

Sl. No.	District	Tehasil	Village	Area (in ACS.)	Capacity (MW)	Power Evacuation proposal.

1	Sambalpur	Jujumora	Niladungri	287.0	55	Pooling substation 400/220/132kV at Nildungri/Jujumara with 400kV LILO of 400kV Meramundali-Lapanga and connectivity to 220kV Kiakata GSS & 132kV Maneswar GSS
			Kuturajori	274.2	55	
			Beldungri	582.1	115	
2	Boudh	Kantamal	Junani	87.5	30	Will be connected to 132/33 kV Sonepur & Boudh GSS through 132/33 kV pooling station at Manmunda
			Ghugulapadar	64.5		
			Kadampal	272	25	
Total				**1415.3**	**280**	

16.2 Member (PS), CEA stated that for evacuation of 280MW of power, 220kV lines with HTLS conductor would be sufficient. Two levels of transformation (400/220kV and 220/132kV) as proposed by OPTCL will not be required.

16.3 Representative of OPTCL stated that they have to build the transmission system in matching time frame with Green Energy Development Corporation Of Odisha Ltd. (GEDCOL) solar projects. It was also informed that the existing 220kV level substation is about 70 kM from the solar park location and the 220kV line would have to pass through forest area that would require more time. Therefore, LILO of Meramundli- Lapanga 400kV D/c line at Jujumara (about 9-10km) has been planned.

16.4 Director, CEA stated that a meeting was held at 03-07-2018 at CEA, the issue was discussed, wherein it was agreed that the 132kV level would be dropped and 220kV level would be planned at 400/220 kV Jujumera pooling station for interconnecting solar parks. It was also agreed that LILO of one circuit of Meramudli-Lapanga 400kV D/c line at Jujumera would be sufficient for evacuation of around 400MW. It was also mentioned that as per point 16(2) of the Manual on Transmission Planning Criteria of CEA, the 'N-1' criteria may not be applied to the immediate connectivity of wind/solar farms with the ISTS/Intra-STS grid. The following revised proposal was finalised for Jujumera and Manmunda substations :

	Scope of Works
1.	**2x315MVA 400/220 Jujumara Pooling Station & Associated Lines**
	LILO of one circuit of Lapanga- Meramundali 400kV D/c line at Jujumara
	220kV lines from solar generating stations to Jujumara Pooling station
2.	**2x40 MVA 132/33 kV Manmunda Pooling Station & Associated Line**

	2nd Ckt Stringing from Manmunda to Boudh & 132kV LILO of Sonepur-Boudh line at 132 kV Manmunda
	33kV line from Iiterconnecting point to Manmunda Pooling Station

16.5 Representative of OPTCL stated that the proposed location of solar power plant has huge solar power potential and the LILO length is only about less 9kms, therefore LILO of both circuit of 400kV Meramundali- Lapanga D/C line would be beneficial, keeping in view future 400 kV connectivity with proposed substation.

16.6 Chief Engineer, CEA suggested that to take care of future growth, transformers of 500MVA (400/220 kV)capacity may be considered in place of 315MVA (400/220 kV).

16.7 After detail deliberations, following evacuation system for Jujumara and Manmunda substations was agreed for implementation by Odisha as intra-state scheme:

	Scope of Works
1.	**2x500MVA, 400/220 Jujumara Pooling Station & Associated Lines**
	LILO of both circuits of Lapanga- Meramundali 400kV D/c line at Jujumara
	220kV lines from solar park generating stations to Jujumara Pooling station
2.	**2x40MVA, 132/33 kV Manmunda Pooling Station & Associated Line**
	2nd Ckt Stringing from Manmunda to Boudh & LILO of Sonepur-Boudh 132 kV line at 132 kV Manmunda
	33kV line from solar park to Manmunda Pooling Station

16.8 Further, Odisha was suggested to plan suitable 420kV bus reactor(s) at the proposed Jujumara 400/220kV S/s for voltage control.

17. Grant of 200MW Connectivity to India Power Corporation Limited (IPCL)

17.1 Representative of CTU stated that M/s India Power Corporation Ltd. (IPCL - erstwhile DPSC) had earlier been granted Connectivity of 500MW (based on CERC order in petition no. 158/MP/2012 dated 21-09-2012) through establishment of Chalbalpur S/s along with LILO of one circuit of Mejia –

Maithon 400kV D/c line at Chalbalpur (to be implemented by M/s IPCL) vide intimation dated 12-10-2012.

17.2 Subsequently, vide letter dated 28-09-2016, M/s IPCL stated that in view of lower load growth, M/s IPCL has revised its transmission plan and now proposes to establish a 220kV substation at Debipur with 220kV line from Maithon (POWERGRID) S/s instead of its earlier proposed 400kV S/s at Chalbalpur.

17.3 Pursuant to above, M/s IPCL vide application dated 30-01-2017 had applied for Connectivity of 200MW to ISTS as Bulk Consumer. Further, M/s IPCL vide its letter dated 03-04-2017 informed that it is a Distribution Licensee and not a Bulk Consumer. Accordingly, CTU vide letter dated 12-04-2017 closed the Connectivity application of M/s IPCL citing that a Distribution Licensee doesn't qualify for grant of Connectivity to ISTS as per the prevailing Connectivity Regulations/Detailed Procedure, 2009.

17.4 The matter regarding change in location and system was also discussed in the 12th Connectivity and LTA meeting of ER held on 01-09-2017. After detailed deliberations, M/s IPCL was requested to approach CERC in this regard.

17.5 Subsequently, against Petition No. 168/MP/2017 filed by M/s IPCL, CERC has passed an order on 29-01-2018 (order available at CERC website), main extract of order is as follows:

(a) *"If the CTU network is located near to the load centre and connectivity to the ISTS would result in development of efficient, coordinated and economical transmission system, then connectivity to ISTS cannot be denied to a distribution licensee." [Para-18]*

(b) *"The Petitioner is already connected to the ISTS as the transmission of DVC has been declared as ISTS. There is no reason, why the Petitioner should be disallowed to be connected to the ISTS of PGCIL." [Para-21]*

Further, CERC had directed CTU to grant ISTS Connectivity to M/s IPCL. *[Para-22]*

17.6 Accordingly, as per system studies it was proposed to grant ISTS Connectivity for 200MW to M/s IPCL (for its application dated 30-01-2017) through Debipur (IPCL) – Maithon (POWERGRID) 220kV D/c line along with associated line bays at both ends w.e.f 30-06-2018 (as per application). Agenda note in this regard was circulated through letter dated 05-02-2018, which inter alia also proposed revocation of earlier granted connectivity of 500MW to M/s IPCL (erstwhile M/s DPSC Ltd.) at Chalbalpur substation. Comments on the proposal were received from WBSETCL vide letter dated 12-02-2018, which was replied by CTU on 16-02-2018. CTU vide letter dated 16-02-2018 granted connectivity for 200MW to M/s IPCL in line with CERC order dated 29-01-2018 against petition no. 168/MP/2017 w.e.f 30-09-2019 through Debipur (IPCL) – Maithon (POWERGRID) 220kV D/c line along with associated line bays (2 no. each) at both ends. At the same time, CTU vide letter dated 16-02-2018 revoked the

earlier granted connectivity of 500MW to M/s IPCL (erstwhile M/s DPSC Ltd.) at Chalbalpur substation.

17.7 Member noted the information.

Operational feedback report of POSOCO

18. Patna (POWERGRID) – Sipara (BSPTCL) 220kV lines

18.1 Representative of POSOCO stated that there are three 220kV lines between Patna (POWERGRID) and Sipara (BSPTCL) S/s. The third line (200m) has been commissioned recently and length of the same is 50% of that of first two lines (400m). This results in uneven loading on the circuits. Major loads of Patna are fed from 220kV Sipara substation. Further, Sipara is connected with Khagaul as well as Fatuah at 220kV level. These are also major load centres normally fed in radial mode from Patna (except Fatuah, which is usually supplied radially from Biharshariff). Whenever 220kV Sipara-Khagaul is kept in service, it leads to very high loading of 220kV Patna-Sipara D/c and it does not satisfy N-1security criteria for most of the time. The third 220kV circuit between Patna-Sipara has been commissioned recently. However at present this line could not be operated in parallel with the other two circuits as impedance of the third circuit is 50% of that of other two circuits. So, it is being operated as Patna-Sipara-Khagaul line with no off-take at Sipara (implemented by split-bus operation at Sipara).

18.2 Representative of BSPTCL stated that to increase the impedance of the third line, wave traps have been installed in all the three phases of the 3rd line to balance the loading on the three circuits.

18.3 Members noted.

19. Overvoltage at 400/220kV Arambagh (WBSETCL) S/s

19.1 Representative of POSOCO stated that Arambagh is a major load centre of West Bengal. It is connected to the grid via 5 nos. of 400kV lines. Depending upon mode of operation of pump storage plant at Purulia and load requirements, it is observed that many a times these lines become lightly loaded. Further, after commissioning 400/220kV Chanditala S/s (with LILO of Kolaghat – Jeerat 400 kV D/c line) loading of Arambagh ICTs have reduced. With no shunt reactive compensation at Arambagh, VAr injection from lightly loaded lines along with reduced drawl from 400/220kV ICTs, bus voltage goes very high during night time, particularly in lean hours during winter. Further, he informed that maximum bus voltage has gone up to 438 kV.

19.2 Representative of WBSETCL stated that 420kV, 125MVAr bus reactor is being installed at Arambagh S/s, which is expected by Apr 2019.

19.3 WBSETCL was requested to expedite installation of bus reactor at Arambagh.

Other items

20. Evacuation system for Talcher-III (2x660MW) generation project

20.1 Representative of NTPC stated that they were planning to establish a 2x660MW generating plant within the existing Talcher Thermal Power Station Complex in Odisha. He further informed that 50% (622.05MW) of the power is allocated to home state viz. Odisha, 35% to various ER beneficiaries (435.41MW), and 15% is unallocated (186.64MW). Further, PPA has been signed with ER beneficiaries (35%). Accordingly, NTPC requested for finalisation of evacuation voltage level and evacuation system for the Talcher-III generation project.

20.2 Director, CEA stated that the evacuation system for Talcher-III was discussed in 19th meeting of SCPSPER held on 01.09.2017 wherein following tentative evacuation system was discussed:

(a) Talcher-III – Meramundali / Meramundali-B 400kV D/c line (with Quad Moose ACSR conductor) such that one circuit is terminated at Meramundali and other at Meramundali-B

However, Members opined that as the implementation of Talcher-III has been deferred in a high level meeting of Odisha Government, therefore the evacuation system for Talcher-III may be planned and finalized in Standing Committee Meeting after finalization of its implementation schedule.

20.3 Representative of GRIDO, Odisha stated that the project has not been cleared by the Odisha Government so far.

20.4 Representative of NTPC stated that Odisha government has given various clearances like pollution clearance and other clearances. Coal linkages was also finalised for the project. Odisha Government is yet to give single window clearance for the project. He further stated that various packages of the project are under tendering stage. NTPC requires information regarding step up voltage/voltage for evacuation of power from generating station and number of bays at NTPC's switchyard for finalization of the switchyard package.

20.5 Representative of Bihar stated that there should not be any STU connectivity to the project as other states has to pay STU charges for their share of power in addition to ISTS charges.

20.6 Director, CEA stated that evacuation system of Talcher-III would be discussed in detail after finalization of implementation schedule as per decision in 19th meeting of SCPSPER. However, the present request of NTPC regarding evacuation voltage and number of bays may be discussed.

20.7 Representative of CTU stated that Odisha wants to draw their share from Talcher-III thermal generating project of NTPC through their own transmission system. However, segregation of units is not possible as Odisha has 50% share from each unit of Talcher-III. However, as discussed in the 19th meeting of SCPSPER, the evacuation voltage level of Talcher-III may be kept as 400kV.

20.8 After deliberations, NTPC was advised to consider 400 kV as the step-up voltage/voltage for evacuation of power from Talcher-III generation project. Further, 2 no. of 400kV line bays [with switchgears suitable for short time current rating of 63 kA (for 1 sec)] may be considered at generating station for evacuation of power and space may be kept for additional 2 no. of 400kV line bays.

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I/2566/2018

File No.CEA-PS-12-15/17/2018-PSPA-II Division

Minutes of the meeting held on 16th July, 2018 at Kolkata regarding dedicated transmission network for Railways on Mughalsarai-Howrah and Ludhiana-Delhi-Sonnagar routes.

List of participants is enclosed at **Annexure-I**.

1. Member (Power System), CEA welcomed the participants and requested Chief Engineer (PSPA-II) to take up proceedings of the meeting. Chief Engineer (PSPA-II) briefed the agenda and requested Director (PSPA-II), CEA to take up the matter for discussion.

2. Director (PSPA-II), CEA informed that Railway Board, vide its letter dated 09.09.2016, had requested for connectivity to Railways from various ISTS points to feed their TSS (Traction Sub Station) for Mughal Sarai(NR) – Howrah(ER) route. Thereafter, a meeting was held on 07.10.2016 in CEA, wherein following ISTS substations were preliminarily identified for giving connectivity to the Railways TSS for its Mughalsarai (NR) – Howrah (ER) route:

    a) Arrah or Patna
    b) Gaya or Chandauti
    c) Maithon
    d) Durgapur
    e) Lakhisarai
    f) Subhashgram

3. Similarly, Indian Railways has requested for connectivity from various ISTS points (preferably at 220kV level) to connect its Traction Substations (TSSs) for Ludhiana-Delhi-Sonnagar routes. In Eastern Region, Railways had requested for connectivity at Sasaram for this route.

4. A meeting was held on 20.04.2017 at CEA to discuss above proposal of Railways, in which state utilities and DVC had opposed the proposal of Railways.

5. In 19th Meeting of Standing Committee on Power System Planning for Eastern Region held on 01.09.2017, constituent States, DVC & ERPC opposed the proposal of Railways and it was decided that Railways would submit economic analysis report for Mughalsarai (NR) – Howrah (ER) route.

6. Railways had submitted the details on ISTS connectivity for the dedicated transmission network for Railway on Mughalsarai – Howrah and Ludhiana-Delhi-Sonnagar routes vide their letter dated 29.11.2017. CEA vide letter dated 28.12.2017 had requested all the constituent states of Eastern Region to furnish their comments/observations on the remarks of Railways. CEA has received comments from DVC (enclosed at Annexure-II) & GRIDCO, Odisha (enclosed at Annexure-III).

7. Representative of Railways stated that the economics, reliability and increase in load with Dedicated Freight Corridor are the drivers for planning connectivity with ISTS instead of STU system. It would be more beneficial with increase in traction load. Railways also stated that disconnection from STU network would be carried out in Mughalsarai – Howrah route in 3-4 years after getting approval from Eastern Region Standing Committee on Transmission (ERSCT). He also requested that STUs should provide Non-discriminatory open access to Railways, wherever required.

8. Representative of DVC stated that, as per Railway's economic analysis report, the per unit cost of electricity for Railways would be Rs. 5.85 after getting connected to ISTS, whereas present DVC tariff is only Rs. 4.80 per unit, which is less by Rs. 1.05. Therefore, disconnection of Railways from DVC would not be economical to them. Moreover, the annual growth projection for electricity demand, as presented by Railways, cannot be uniform across the nation and present trends in ER may not support such projections. Further, the Traction infrastructure (Traction Transformers, 25KV infrastructures) created by DVC at different substations for railways traction system is dedicated to Railways and cannot be subsumed against growth anticipated at other voltage levels.

9. Representative of Railways stated that Railways have been paying at an average rate of Rs 7-8 per unit of electricity to STUs, therefore Railways is planning for disconnection from STU network and to get connected with ISTS in holistic way in this route.

10. Member Secretary (ERPC) stated that Eastern region is surplus in power. The average cost per unit of electricity would be comparable to cost

mentioned in economic analysis, therefore economically it would not make any difference with the Railway's proposal.

11. On query about funding of system required for Railway's connectivity, Railways stated that in most of the cases, it was funded by them. However, representative of DVC stated that system required for Railways connectivity from their system was being developed and funded by DVC.

12. Representative of BSPTCL stated that although STU network/system developed for Railways is being funded by Railways in Bihar, the system is being maintained by STU, and Railways is supposed to pay maintenance charges as per CERC norms. He further stated that States have carried out many system strengthening works including dedicated sub-stations for Railways for providing reliable power supply. If Railways get connected exclusively to ISTS through their dedicated links, the existing STU system created for Railways would remain unutilized/ underutilized resulting in wastage of public money. In the ISTS substations, space is generally kept for future expansion for 220kV or 400kV bays to meet their future load demand/requirement. In case Railways uses the existing space at ISTS substations for their 220kV connectivity, future expansion/system strengthening of inter/intra state system to meet the load growth will be affected. Moreover, maximum load of Railways TSS generally varies between 80 to 100 MW in each 220kV line and this would lead to underutilization of bays/lines/space at each ISTS point and thus it is not an optimal planning.

13. Representative of Railways stated that at present, Railway's electricity demand is included in demand of respective state, therefore ISTS connectivity has to be given to railways after disconnection from STU network.

14. Representative of OPTCL also strongly opposed to the proposal of Railways. He mentioned that Railways are yet to decide upon their identity as deemed licensee in view of the fact that, presently they are being treated as bulk consumer pan India. Whereas, they have claimed of being a deemed distribution licensee based on the Ministry of Power Letter dated 6th May, 2014 and the matter is sub-judice before the Hon'ble Odisha

Electricity Regulatory Commission in Case No.55 of 2016. OPTCL stated that Railways has also asked for connectivity with OPTCL's intra-state system at many locations for their TSS. OPTCL has already started work for these connectivity works. In case the proposal is agreed, the assets already created/ under-construction for supplying power to Railways would be unutilized which is wastage of public money.

15. He also stated that, from the economic analysis provided by Railways, it is observed that Railways have to bear 44 Paise/kWh for cost of construction of own transmission line to avoid STU charges of 48Paise/kWh payable to OPTCL. However, the STU charges differs from State to State and as far as Odisha is concerned, the STU charges (i.e. sum of both transmission charges of 25 Paise/kWh and losses of 3.5%) shall be well below the per Unit cost of construction of new dedicated transmission lines by Railways. Therefore, it may not be a commercially viable option for Railways.

16. Representative of Railways emphasized that Railways has done economic analysis for some other routes and the report indicates that ISTS connectivity for railways would be economical and reliable. Railways was asked to share their route specific economic report, if any.

17. After detail deliberations, members were of the opinion that dedicated connectivity of Railway with ISTS and disconnection from existing and under construction intra-state system of STUs would lead to non-utilization/ underutilization of transmission assets created by various states, and wastage of expenditure being carried out by the States for connectivity requests of Railways with their network. This also goes against optimum utilization of RoW & space in substations of ISTS (e.g. space for 220kV / 132kV bays created exclusively for railways).

Meeting ended with vote of thanks to chair.

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Annexure - B30.1

SUMMARY OF DEVIATION CHARGE RECEIPT AND PAYMENT STATUS

BILL UPTO 14.10.18 (Week-28 of 2018 - 19)

Last Payment Disbursement Date - 29.10.18

Figures in Rs. Lakhs

CONSTITUENTS	Receivable	Received	Payable	Paid	Outstanding
WR	173.67693	173.67688	171442.14431	148978.38419	-22463.76007
SR	115167.15255	110604.75363	1.17869	0.00000	4561.22023
NER	52167.93361	43696.65960	2181.33267	777.39494	7067.33628
NR	12519.45803	768.93796	45341.73663	35623.39403	2032.17747
BSPHCL	4111.88737	2275.49728	259.59852	0.00000	1576.79157
JUVNL	5605.71276	3956.05090	12.08184	0.00000	1637.58002
DVC	12209.04748	8841.86613	626.31003	623.91993	3364.79125
GRIDCO	16249.50929	12481.97876	0.40634	0.00000	3767.12419
WBSETCL	16669.02441	15224.63084	0.37879	0.00000	1444.01478
SIKKIM	125.69475	0.00000	617.59898	254.38587	-237.51836
NTPC	2838.24767	2278.17533	4.37476	0.00000	555.69758
NHPC	6.13288	4.94876	1519.97332	1312.70913	-206.08007
MPL	143.06705	150.32906	166.22670	125.09996	-48.38875
MTPS STG-II(KBUNL)	875.69640	696.42316	0.00000	0.00000	179.27324
APNRL	270.76201	0.00000	220.28740	0.00000	50.47461
CHUZACHEN (GATI)	85.53195	67.73325	363.87946	350.65169	4.57093
NVVN(IND-BNG)	305.88303	189.88581	136.29137	84.87421	64.58006
JITPL	135.47198	94.22138	255.32367	236.10614	22.03307
GMR	819.06054	562.09689	20.83635	20.83635	256.96365
IND BARATH	5.26491	0.00000	0.00000	0.00000	5.26491
TPTCL(DAGACHU)	3028.28735	2372.36410	0.00000	0.00000	655.92325
JLHEP(DANS ENERGY)	149.55444	83.73996	282.67128	271.94768	55.09088
BRBCL(Nabinagar)	66.22377	47.68687	147.20225	114.58433	-14.08102
NVVN (IND-NEPAL)	1408.49903	846.62858	182.58880	182.58880	561.87045
HVDC SASARAM	0.00000	0.00000	109.11770	106.46372	-2.65398
HVDC ALIPURDUAR	0.00000	0.00000	136.37732	122.25926	-14.11806
TEESTA-III	180.85582	128.15176	1086.14481	933.11716	-100.32359
DIKCHU(Sneha Kinetic)	90.40264	82.74912	350.73107	325.44564	-17.63191
TASHIDING(Shiga Energy)	191.26728	173.53557	445.92220	415.49696	-12.69353
OPGC	211.47900	179.77522	0.00000	0.00000	31.70378
NPGC	337.52591	242.09999	0.00000	0.00000	95.42592
Pool Balance	0.00000	172.75575	-1077.24037	0.00000	904.48462
Addl Deviation charge	11003.81641	16708.12448	0.00000	0.00000	-5704.30807
IRE	0.00000	0.00000	60.88369	0.00000	-60.88369
VAE	0.00000	0.00000	10080.03003	0.00000	-10080.03003
TOTAL	246148.31084	206224.59679	234974.38861	190859.65999	

% Realization **83.78** **As on** **29.10.18**

Receivable: Receivable by ER POOL Payable Payable by ER POOL

Received Received by ER POOL Paid Paid by ER POOL

"- ve" Payable by ER pool "+ ve" Receivable by ER pool

Annexure-B30.2

Deviation Interest Bill due to delay payment during FY 2017-18

As on 29.10.18

Sl No.	Name of Constituents	Interest amt Payable by Party(in Rs)	Amount Paid/ recovered by Party(in Rs)	Interest amt receivable by Party(in Rs)	Amount paid to the Party(in Rs)	Outstanding Interest as on 30.09.18 (in Rs)
1	BSPHCL	16974993	16974993			**0**
2	JUVNL	15419205	15419205			**0**
3	DVC			14278	14278	**0**
4	GRIDCO			25776	25776	**0**
5	WBSETCL	0				**0**
6	SIKKIM	1143998				**1143998**
7	NTPC	0				**0**
8	NHPC			5860	5860	**0**
9	MPL	1443	1443			**0**
10	APNRL			57900	57900	**0**
11	CHUZACHEN	8617	8617			**0**
12	NVVN(IND-BD)	765	765			**0**
13	JITPL	38619	38619			**0**
14	GMR	56974	56974			**0**
15	IND BARATH	1554233				**1554233**
16	TPTCL(DAGACHU)	304143	304143			**0**
17	JLHEP	230359	230359			**0**
18	BRBCL	5315	5315			**0**
19	NVVN(IND-NEP)	5268	5268			**0**
20	TUL(TEESTA-III)			5772	5772	**0**
21	DIKCHU			9475	9475	**0**
22	HVDC-PSL			127	127	**0**
23	HVDC-ALPD			355	355	**0**
24	TASHIDING	138753	138753			**0**
25	OPGC	0				**0**
	Total	**35882684**	**33184453**	**119543**	**119543**	**2698231**

Annexure - B30.3

STATUS OF REACTIVE CHARGES

RECEIVABLE IN ER POOL AS PER PUBLISHED A/C UPTO 30.09.18 (2018 -19)
AS ON 29.10.18

CONSTITUENT	AMOUNT RECEIVABLE IN THE POOL (Rs.)	AMOUNT RECEIVED IN THE POOL (Rs.)	TOTAL OUTSTANDING(Rs.)
BSPHCL	378537	378537	0
JUVNL	1358202	1137688	220514
DVC	660320	357122	303198
GRIDCO	239932341	239932341	0
WBSETCL	624812040	603897396	20914644
SIKKIM	635432	325817	309615
TOTAL	867776872	846028901	21747971

Note: (+ve) means payable by utility & (-ve) means receivable by utility

Annexure - B31

Current Status of Letter of Credit (LC) amount against DSM charges for ER constituents

Figures in Lacs of Rupees

Sl No	ER Constituents	No. of weeks in which Deviation Charge payable	No of times payment was delayed during 2017-18	Total Deviation charges payable to pool during 2017-18	Average weekly Deviation Charge liability	LC Amount	Due date of expiry	Remarks
					(C)/52 weeks	110% of (B)		
		(A)	(B)	(C)	(D)	(E)	(F)	(G)
1	JUVNL	50	50	10486.92151	201.67157	221.83872	Expired on 31.01.2018	Letter Issued but Not Renewed
2	SIKKIM	26	26	577.40815	11.10400	12.21440	Expired on 07.03.2018	Letter Issued but Not Renewed
3	CHUZACHEN	9	4	43.51171	0.83676	0.92044	Expired on 31.03.2018	Letter Issued but Not Renewed
4	NVVN(IND-NEP)	36	7	2742.53984	52.74115	58.01527	Expired on 26.09.2018	Letter Issued but Not Renewed
5	JLHEP	37	24	652.25964	12.54345	13.79780	Expired on 24.09.2018	Letter Issued but Not Renewed
6	IND-BARATH	47	47	107.23938	2.06230	2.26853	Not Opened	Not Opened
7	SHIGA ENERGY(TASHIDING)	25	15	148.94874	2.86440	3.15084	Not Opened	Not Opened
8	BSPHCL	48	48	12297.15842	236.48382	260.13220	16.11.2018	Opened for 213.53049 Lac
9	JITPL	18	3	656.5622	12.62620	13.88882	31.03.2019	Opened for 13.88882 Lac
10	GMR	21	10	257.62983	4.95442	5.44986	18.04.2019	Opened for 7.62525 Lacs
11	MPL	12	2	148.83104	2.86214	3.14835	31.03.2019	Opened for 3.14835 Lac
12	APNRL	18	16	307.81318	5.91948	6.51143	31.12.2018	Opened for 6.51143 Lac
13	TPTCL	49	7	2092.89162	40.24792	44.27271	31.03.2019	Opened for 112.03686 Lacs
14	BRBCL	21	4	198.25119	3.81252	4.19378	30.04.2019	Opened for 4.19378 Lacs
15	TEESTA-III(TUL)	12	2	1039.16725	19.98399	21.98238	05.06.2019	Opened for 21.98238 Lacs
16	SNEHA KINETIC(DIKCHU)	9	7	53.96014	1.03770	1.14146	20.05.2019	Opened for 1.14146 Lacs

Third Party Protection Audit Observations of OPTCL Sub-stations

Sl. No.	Name of Sub-station	Date of Audit	Observations/Remarks	Category
1	Balasore 220/132/33kV - OPTCL	31-08-2018	1. LBB protection and busbar protection is not available for 132kV system	B
			2. Event logger is not available for 132kV and 33kV system	B
			3. Isolation of 220 V DC supply positive w.r.t. Ground is not proper. All DC cables are 37 years old and needs replacement.	B
			4. Panels in the control room and control cable wirings are 37 years old and needs replacement.	B
			5. Electromechanical relays of primary and backup protection are to be replaced with IEC 62439 protocol complied numerical relays	B
			6. Some numerical relays are not time synchronised and provision for time synchronisation is not available.	B
			7. Autorecloser feature and inter tripping schemes are not in service for most of the lines.	B
			8. Binary input contacts are not available in some numerical relays for configuration in EL	B
			9. All indicating instruments in control room may be upgraded to digital meters as old analog instruments give high burden to CT	B
			10. Display of main protection of 160 MVA 220/132kV ATR is not working properly.	A
			12. Old PLCC panels are being used in some 220kV and 132kV lines. PLCC system may be upgraded to new system.	B
			13. Overload alarm may be provided for 220/132 kV ATRs and 132/33 kV Transformers	A
			14. Most of the isolators are manual type. Isolators and breakers are not having interlock facilities. Soft interlocks may be provided.	B
			15. ACDB and DCDBs are old and do not have provision for future expansion.	B
			16. Centralised auto download DR system may be implemented	B
			17. Power swing blocking and unblocking settings are to be reviewed for all the lines.	A
2	Narendrapur 220/132/33kV - OPTCL	29-08-2018	1. Event logger is not available for 132kV and 33kV system	B
			2. Electromechanical relays of primary and backup protection are to be replaced with IEC 62439 protocol complied numerical relays	B
			3. One 220 V DC battery bank and battery charger is very old and needs replacement.	B
			4. Only one DCDB is available. Other DCDB may be provided and protection relays should be subdivided into two groups to provide redundancy	B
			5. Isolators, Bus PTs and some CTs are old and these equipments may be upgraded to present fault level. Pneumatic type CB may be replaced with spring type CB.	B
			6. Panel and control cable wirings are old and needs replacement.	B
			7. All indicating instruments in control room may be upgraded to digital meters as old analog instruments give high burden to CT	B
			8. ACDB and one DCDB panels are old and do not have provision for future expansion.	B
			9. Isolation of 220 V DC supply negative w.r.t. Ground is not proper. All DC cables are old and needs replacement.	B
			10. Faulty Overflux protection relays of 132/33 kV ATRs and Primary protection of 132kV Berhmapur line are to be replaced	B
			11. Huge vegitation upto 2 feet observed through out the switchyard. The same should be removed and proper gravelling should be done.	B
			12. Centralised auto download DR system may be implemented	B
			13. Most of the isolators are manual type. Isolators and breakers are not having interlock facilities. Soft interlocks may be provided.	B
			14. Autorecloser and carrier tripping are not in service for all the lines due to PLCC issues. Communication system may be upgraded.	B
3	Paradeep 220/132/33kV - OPTCL	30-08-2018	1. LBB protection and busbar protection is not available for 132kV system. Installation of busbar protection for 220kV is in progress.	B
			2. Event logger is not available	B
			3. Isolation of 220 V DC supply positive w.r.t. Ground is not proper. All DC cables are 37 years old and needs replacement.	B
			4. Panels in the control room and control cable wirings are 37 years old and needs replacement.	B
			5. Electromechanical relays of primary and backup protection are to be replaced with IEC 62439 protocol complied numerical relays	B
			6. Some numerical relays are not time synchronised and provision for time synchronisation is not available.	B
			7. Autorecloser feature and inter tripping schemes are not in service for most of the lines.	B

			8. Binary input contacts are not available in some numerical relays for configuration in EL	B
			9. All indicating instruments in control room may be upgraded to digital meters as old analog instruments give high burden to CT	B
			10. Backup Overcurrent Earth Protection is not available for 132/33kV Transformers.	B
			12. Old PLCC panels are being used in some 220kV and 132kV lines. PLCC system may be upgraded to new system.	B
			13. Overload alarm may be provided for 132/33 kV Transformers	A
			14. Most of the isolators are manual type. Isolators and breakers are not having interlock facilities. Soft interlocks may be provided.	B
			15. ACDB and DCDBs are old and do not have provision for future expansion.	B
			16. Centralised auto download DR system may be implemented	B
			17. Main II distance protection relays of 220kV Essar line I & II are faulty and the same are to be replaced	A
4	Bidanasi 220/132/33kV - OPTCL	30-08-2018	1. LBB protection and busbar protection is not available for 132kV system	B
			2. Main II distance protection relay of 220kV Mendhasal line is faulty and the same is to be replaced	B
			3. Isolation of 220 V DC supply negative w.r.t. Ground is not proper. All DC cables are 25 years old and needs replacement.	B
			4. Panels in the control room and control cable wirings are 25 years old and needs replacement.	B
			5. Electromechanical relays of primary and backup protection are to be replaced with IEC 62439 protocol complied numerical relays	B
			6. Some numerical relays are not time synchronised and provision for time synchronisation is not available.	B
			7. Autorecloser feature and inter tripping schemes are not in service for most of the lines.	B
			8. Binary input contacts are not available in some numerical relays for configuration in EL	B
			9. All indicating instruments in control room may be upgraded to digital meters as old analog instruments give high burden to CT	B
			10. Old PLCC panels are being used in some 220kV and 132kV lines. PLCC system may be upgraded to new system.	B
			11. Most of the isolators are manual type. Isolators and breakers are not having interlock facilities. Soft interlocks may be provided.	B
			12. ACDB and DCDBs are old and do not have provision for future expansion.	B
			13. Centralised auto download DR system may be implemented	B
			14. Power swing blocking and unblocking settings are to be reviewed for all the lines.	A
5	Budhipadar 220/132/33kV - OPTCL	27-08-2018	1. Busbar protection is not available for 132kV system	B
			2. Event logger is not available for 132kV and 33kV system	B
			3. Isolation of 220 V DC supply positive w.r.t. Ground is not proper. All DC cables are 23 years old and needs replacement.	B
			4. Panels in the control room and control cable wirings are 23 years old and needs replacement.	B
			5. Electromechanical relays of primary and backup protection are to be replaced with IEC 62439 protocol complied numerical relays	B
			6. Some numerical relays are not time synchronised and provision for time synchronisation is not available.	B
			7. Autorecloser feature and inter tripping schemes are not in service for most of the lines.	B
			8. Binary input contacts are not available in some numerical relays for configuration in EL	B
			9. All indicating instruments in control room may be upgraded to digital meters as old analog instruments give high burden to CT	B
			10. 0.5 class CTs are to be replaced with 0.2 class CTs	B
			11. Old PLCC panels are being used in some 220kV and 132kV lines. PLCC system may be upgraded to new system.	B
			12. Overload alarm may be provided for 220/132 kV ATRs and 132/33 kV Transformers	A
			13. Old Isolators and LAs may be upgraded to present fault level. Pneumatic type CB may be replaced with spring type CB.	B
			14. Most of the isolators are manual type. Isolators and breakers are not having interlock facilities. Soft interlocks may be provided.	B
			15. ACDB and DCDBs are old and do not have provision for future expansion.	B
			16. Centralised auto download DR system may be implemented	B
			17. Line CVTs are to be provided for all 220kV and 132kV lines and voltage input for distance protection should be taken from line CVT	B

			18. Main II distance protection relay of 220kV SPS line is faulty and the same is to be resolved	A
			19. Vegitation is observed in 13 nos 220kV bays and 220kV transfer bus bays. The same should be removed and proper gravelling should be done.	B
6	New Balangir 220/132/33kV - OPTCL	28-08-2018	1. LBB protection and busbar protection is not available for 220 kV and 132kV system	B
			2. Old Event logger (ABB make) is available which is not in service. EL should be provided.	B
			3. Some numerical relays are not time synchronised and provision for time synchronisation is not available.	B
			4. Autorecloser feature and inter tripping schemes are not in service for most of the lines.	B
			5. Binary input contacts are not available in some numerical relays for configuration in EL	B
			6. All indicating instruments in control room may be upgraded to digital meters as old analog instruments give high burden to CT	B
			7. Overload alarm may be provided for 220/132 kV ATRs and 132/33 kV Transformers	A
			8. Isolators and breakers are not having interlock facilities. Soft interlocks may be provided.	B
			9. Centralised auto download DR system may be implemented	B
			10. Main II distance protection relays of 220kV New Bargarh and Bolangir (PG) line are faulty and the same are to be replaced	B
			11. Pneumatic type CB may be replaced with spring type CB.	B
7	Katapalli 220/132/33kV - OPTCL	27-08-2018	1. Old Event logger (ABB make) is available which is not in service. EL should be provided.	B
			2. Busbar protection is not working. The same should be provided for 220kV and 132kV	B
			3. Autorecloser feature and inter tripping schemes are not in service for most of the lines.	B
			4. Some numerical relays are not time synchronised and provision for time synchronisation is not available.	B
			5. Binary input contacts are not available in some numerical relays for configuration in EL	B
			6. All indicating instruments in control room may be upgraded to digital meters as old analog instruments give high burden to CT	B
			7. Overload alarm may be provided for 220/132 kV ATRs and 132/33 kV Transformers	A
			8. Isolators and breakers are not having interlock facilities. Soft interlocks may be provided.	B
			9. Centralised auto download DR system may be implemented	B

Note:

1. As per CERC order dated 21st Feb 2014 protection deficiencies are categorised as
Category-A : The deficiencies which can be corrected without any procurement.
Category-B : The deficiencies involving procurement of equipments.

Third Party Protection Audit Observations of WBSETCL Sub-stations

Sl. No.	Name of Sub-station	Date of Audit	Observations/Remarks	Category
1	Sonarpur 132/33/25 kV - WBSETCL	26-07-2018	1. LBB protection and busbar protection is not available for 132kV system	B
			2. Event logger is not available for 132kV and 33kV system	B
			3. Isolation of 220 V DC supply positive w.r.t. Ground is not proper. All DC cables are old and needs replacement.	B
			4. Panels in the control room and control cable wirings are old and needs replacement.	B
			5. Electromechanical relays of primary and backup protection are to be replaced with numerical relays.	B
			6. Time synchronising equipment is not available.	B
			7. Autorecloser feature and inter tripping schemes are not in service for all the lines.	B
			8. All indicating instruments in control room may be upgraded to digital meters as old analog instruments give high burden to CT.	B
			9. Old PLCC panels are being used only for speech and data transmission . PLCC system may be upgraded to new system.	B
			10. Overload alarm may be provided for 132/33 kV Transformers	B
			11. Most of the isolators are old and manual type. Isolators and breakers are not having interlock facilities. Soft interlocks may be provided.	B
			12. Surge Arrestors of transformers are old and needs replacement.	B
			13. ACDB and DCDBs are old and do not have provision for future expansion.	B
			14. Power swing blocking and unblocking settings are to be reviewed for all the lines.	A
			15. The relay settings shall be reviewed based on the ERPC protection philosophy.	A
2	Behela 132/33/11 kV - WBSETCL	26-07-2018	1. LBB protection and busbar protection is not available for 132kV system	B
			2. Event logger is not available for 132kV and 33kV system	B
			3. Isolation of 220 V DC supply positive w.r.t. Ground is not proper. DC cables are old and needs replacement.	B
			4. Panels in the control room and control cable wirings are old and needs replacement.	B
			5. Electromechanical relays of primary and backup protection are to be replaced with numerical relays.	B
			6. Time synchronising equipment is not available.	B
			7. Autorecloser feature and inter tripping schemes are not in service for all the lines.	B
			8. All indicating instruments in control room may be upgraded to digital meters as old analog instruments give high burden to CT.	B
			9. Old PLCC panels are being used only for speech and data transmission . PLCC system may be upgraded to new system.	B
			10.Some of the LA's are very old and needs replacement.	B
			11. Overload alarm may be provided for 132/33 kV Transformers	A
			12. Most of the isolators are old and manual type. Isolators and breakers are not having interlock facilities. Soft interlocks may be provided.	B
			13. ACDB and DCDBs are old and do not have provision for future expansion.	B
			14.Backup protection for 132kV Serakhol line is disabled. It must be enabled.	A
			15. Power swing blocking and unblocking settings are to be reviewed for all the lines.	A
			16. Minor oil leakage was found in 50 MVA transformer-II. Necessary corrective measure may be taken.	A
			27.The relay settings shall be reviewed based on the ERPC protection philosophy.	A
3	Titagarh132/33/25 kV - WBSETCL	27-07-2018	1. LBB protection and busbar protection is not available for 132kV system	B
			2. Event logger is not available for 132kV and 33kV system	B
			3. Panels in the control room and control cable wirings are very old and needs replacement.	B
			4.. Electromechanical relays of primary and backup protection are to be replaced with numerical relays.	B
			5. Time synchronising equipment is not available.	B
			6. Autorecloser feature and inter tripping schemes are not in service for all the lines.	B
			7. All indicating instruments in control room may be upgraded to digital meters as old analog instruments give high burden to CT.	B
			8. Old PLCC panels are being used only for speech and data transmission . PLCC system may be upgraded to new system.	B
			9. Overload alarm may be provided for 132/33 kV Transformers	A
			10. Most of the isolators are manual type. Isolators and breakers are not having interlock facilities. Soft interlocks may be provided.	B
			11. ACDB and DCDBs are old and do not have provision for future expansion.	B
			12.Some of the LA's are very old and needs replacement.	B
			13. Power swing blocking and unblocking settings are to be reviewed for all the lines.	A
			14.The relay settings should be reviewed based on the ERPC protection philosophy.	A
			15.Switchyard gravelling shall be made properly. Antiweeding to be done on regular interval.	B

4	Dharampur 132/33 kV - WBSETCL	27-07-2018	1. LBB protection and busbar protection is not available for 132kV system	B
			2. Event logger is not available for 132kV and 33kV system	B
			3. Isolation of 220 V DC supply positive w.r.t. Ground is not proper. All DC cables are old and needs replacement.	B
			4. Panels in the control room and control cable wirings are old and needs replacement.	B
			5. Electromechanical relays of primary and backup protection are to be replaced with numerical relays.	B
			6. Time synchronising equipment is not available.	B
			7. Autorecloser feature and inter tripping schemes are not in service for132 kv lines.	B
			8. All indicating instruments in control room may be upgraded to digital meters as old analog instruments give high burden to CT.	B
			9. Old PLCC panels are being used only for speech and data transmission . PLCC system may be upgraded to new system.	B
			10. Overload alarm may be provided for 132/33 kV Transformers	A
			11. Most of the isolators are manual type. Isolators and breakers are not having interlock facilities. Soft interlocks may be provided.	B
			12. ACDB and DCDBs are old and do not have provision for future expansion.	B
			13.Some of the LA's are very old and needs replacement.	
			14. Power swing blocking and unblocking settings are to be reviewed for all the lines.	A
			15.The relay settings should be reviewed based on the ERPC protection philosophy.	A
			16.Switchyard gravelling shall be made properly. Antiweeding to be done on regular interval.	B
5	Ashoknagar 132/33/25 kV - WBSETCL	31-07-2018	1. LBB protection and busbar protection is not available for 132kV system	B
			2. Event logger is not available for 132kV and 33kV system	B
			3. Isolation of 220 V DC supply positive w.r.t. Ground is not proper. All DC cables are old and needs replacement.	B
			4. Panels in the control room and control cable wirings are old and needs replacement.	B
			5. Electromechanical relays of primary and backup protection are to be replaced with numerical relays.	B
			6. Time synchronising equipment is not available.	B
			7. Autorecloser feature and inter tripping schemes are not in service for132 kv lines.	B
			8. All indicating instruments in control room may be upgraded to digital meters as old analog instruments give high burden to CT.	B
			9. Old PLCC panels are being used only for speech and data transmission . PLCC system may be upgraded to new system.	B
			10. Overload alarm may be provided for 132/33 kV Transformers	A
			11. Most of the isolators are manual type. Isolators and breakers are not having interlock facilities. Soft interlocks may be provided.	B
			12.Some of the LA's are very old and needs replacement.	B
			13. ACDB and DCDBs are old and do not have provision for future expansion.	B
			14. Power swing blocking and unblocking settings are to be reviewed for all the lines.	A
			15.The relay settings should be reviewed based on the ERPC protection philosophy.	A
			16.Switchyard gravelling shall be made properly. Antiweeding to be done on regular interval.	B
			17.RTU was in damaged condition. It needs replacement.	B
6	Barasat 132/33/11 kV - WBSETCL	31-07-2018	1. LBB protection and busbar protection is not available for 132kV system	B
			2. Event logger is not available for 132kV and 33kV system	B
			3. Isolation of 220 V DC supply positive w.r.t. Ground is not proper. All DC cables are old and needs replacement.	B
			4. Panels in the control room and control cable wirings are old and needs replacement.	B
			5. Electromechanical relays of primary and backup protection are to be replaced with numerical relays.	B
			6. Time synchronising equipment is not available.	B
			7. Autorecloser feature and inter tripping schemes are not in service for132 kv lines.	B
			8. All indicating instruments in control room may be upgraded to digital meters as old analog instruments give high burden to CT.	B
			9. Old PLCC panels are being used only for speech and data transmission . PLCC system may be upgraded to new system.	B
			10. Overload alarm may be provided for 132/33 kV Transformers	A
			11. Most of the isolators are manual type. Isolators and breakers are not having interlock facilities. Soft interlocks may be provided.	B
			12. ACDB and DCDBs are old and do not have provision for future expansion.	B
			13.Some of the LA's are very old and needs replacement.	B
			14. Power swing blocking and unblocking settings are to be reviewed for all the lines.	A
			15.The relay settings should be reviewed based on the ERPC protection philosophy.	A
			16.RTU was in damaged condition. It needs replacement.	B

7	Ranaghat 132/66/33/25/11 kV - WBSETCL	07-08-2018	1. LBB protection and busbar protection is not available for 132kV system	B
			2. Event logger is not available for 132kV and 33kV system	B
			3. Isolation of 220 V DC supply positive w.r.t. Ground is not proper. All DC cables are old and needs replacement.	B
			4. Panels in the control room and control cable wirings are old and needs replacement.	B
			5. Electromechanical relays of primary and backup protection are to be replaced with numerical relays.	B
			6. Time synchronising equipment is not available.	B
			7. Autorecloser feature and inter tripping schemes are not in service for132 kv lines.	B
			8. All indicating instruments in control room may be upgraded to digital meters as old analog instruments give high burden to CT.	B
			9. Old PLCC panels are being used only for speech and data transmission . PLCC system may be upgraded to new system.	B
			10. Overload alarm may be provided for 132/33 kV Transformers	A
			11. Most of the isolators are manual type. Isolators and breakers are not having interlock facilities. Soft interlocks may be provided.	B
			12.Some of the LA's are very old and needs replacement.	
			13. ACDB and DCDBs are old and do not have provision for future expansion.	B
			14. Power swing blocking and unblocking settings are to be reviewed for all the lines.	A
			15.The relay settings should be reviewed based on the ERPC protection philosophy.	A
8	Kalyani 132/33 kV - WBSETCL	07-08-2018	1. LBB protection and busbar protection is not available for 132kV system	B
			2. Event logger is not available for 132kV and 33kV system	B
			3. All DC cables are old and needs replacement.	B
			4. Panels in the control room and control cable wirings are old and needs replacement.	B
			5. Electromechanical relays of primary and backup protection are to be replaced with numerical relays.	B
			6. Time synchronising equipment is not available.	B
			7. Autorecloser feature and inter tripping schemes are not in service for132 kv lines.	B
			8. All indicating instruments in control room may be upgraded to digital meters as old analog instruments give high burden to CT.	B
			9. Old PLCC panels are being used only for speech and data transmission . PLCC system may be upgraded to new system.	B
			10.Some of the LA's are very old and needs replacement.	B
			11. Overload alarm may be provided for 132/33 kV Transformers	A
			12. Most of the isolators are manual type. Isolators and breakers are not having interlock facilities. Soft interlocks may be provided.	B
			13. ACDB and DCDBs are old and do not have provision for future expansion.	B
			14. Power swing blocking and unblocking settings are to be reviewed for all the lines.	A
			15.The relay settings should be reviewed based on the ERPC protection philosophy.	A
9	Liluah 132/33 kV - WBSETCL	08-08-2018	1. LBB protection and busbar protection is not available for 132kV system	B
			2. Event logger is not available for 132kV and 33kV system	B
			3. Isolation of 220 V DC supply positive w.r.t. Ground is not proper.	B
			4. Panels in the control room and control cable wirings are old and needs replacement.	B
			5. Electromechanical relays of primary and backup protection are to be replaced with numerical relays.	B
			6. Time synchronising equipment is not available.	B
			7. Autorecloser feature and inter tripping schemes are not in service for132 kv lines.	B
			8. All indicating instruments in control room may be upgraded to digital meters as old analog instruments give high burden to CT.	B
			9. Old PLCC panels are being used only for speech and data transmission . PLCC system may be upgraded to new system.	B
			10. Overload alarm may be provided for 132/33 kV Transformers	A
			11. Most of the isolators are manual type. Isolators and breakers are not having interlock facilities. Soft interlocks may be provided.	B
			12. ACDB and DCDBs are old and do not have provision for future expansion.	B
			13.Some of the LA's are very old and needs replacement.	B
			14. Power swing blocking and unblocking settings are to be reviewed for all the lines.	A
			15.N-1 contingency for the transformers during peak loading is not being satisfied.	B
			16.DR time duration to be increased and digital status need to be configured.	A
			17.The relay settings should be reviewed based on the ERPC protection philosophy.	A
			18.For most of the lines, only main protection(distance) is present. Back up protection for those lines shall be provided.	A
			19.Sockets to be covered in Junction boxes/Panel boxes.	A
10	Adisaptagram 132/33/25/11 kV - WBSETCL	08-08-2018	1. LBB protection and busbar protection is not available for 132kV system	B
			2. Event logger is not available for 132kV and 33kV system	B

			3. Isolation of 220 V DC supply positive w.r.t. Ground is not proper.	B
			4. Panels in the control room and control cable wirings are old and needs replacement.	B
			5. Electromechanical relays of primary and backup protection are to be replaced with numerical relays.	B
			6. Time synchronising equipment is not available.	B
			7. Autorecloser feature and inter tripping schemes are not in service for132 kv lines.	B
			8. All indicating instruments in control room may be upgraded to digital meters as old analog instruments give high burden to CT.	B
			9. Old PLCC panels are being used only for speech and data transmission . PLCC system may be upgraded to new system.	B
			10. Overload alarm may be provided for 132/33 kV Transformers	A
			11. Most of the isolators are manual type. Isolators and breakers are not having interlock facilities. Soft interlocks may be provided.	B
			12. ACDB and DCDBs are old and do not have provision for future expansion.	B
			13.Some of the LA's are very old and needs replacement.	B
			14. JB/Panel boxe are quite old and need to be replaced to avoid unwanted tripping due to external stimuli.	B
			15. Power swing blocking and unblocking settings are to be reviewed for all the lines.	A
			16. Definite time sttings of E/F and O/C relay may be reviewed.	A
			17. DR time duration to be increased and digital status need to be configured.	A
			18.N-1 contingency for the transformers during peak loading is not being satisfied.	B
			19.The relay settings should be reviewed based on the ERPC protection philosophy.	A
			20.Anti-weeding at substation shall be done regularly.	A
11	Kolaghat 132/33/11 kV - WBSETCL	09-08-2018	1. LBB protection and busbar protection is not available for 132kV system	B
			2. Event logger is not available for 132kV and 33kV system	B
			3. Isolation of 220 V DC supply positive w.r.t. Ground is not proper.	B
			4. Panels in the control room and control cable wirings are old and needs replacement.	B
			5. Electromechanical relays of primary and backup protection are to be replaced with numerical relays.	B
			6. Time synchronising equipment is not available.	B
			7. Autorecloser feature and inter tripping schemes are not in service for132 kv lines.	B
			8. All indicating instruments in control room may be upgraded to digital meters as old analog instruments give high burden to CT.	B
			9. Old PLCC panels are being used only for speech and data transmission . PLCC system may be upgraded to new system.	B
			10. Most of the isolators are manual type. Isolators and breakers are not having interlock facilities. Soft interlocks may be provided.	B
			11. ACDB and DCDBs are old and do not have provision for future expansion.	B
			12. Some of the LA's are very old and needs replacement.	B
			13. O/C protection in KTPP lines is set as non-directional and definite time which need to be reviewed.	A
			14.Distance protection is absent for for 132 kV Madras Cement feeder.	A
			15.DR time duration to be increased and digital status need to be configured.	A
			16.The relay settings should be reviewed based on the ERPC protection philosophy.	A
12	Haldia 132/33/25/11 kV - WBSETCL	09-08-2018	1. LBB protection and busbar protection is not available for 132kV system	B
			2. Event logger is not available for 132kV and 33kV system	B
			3. Panels in the control room and control cable wirings are old and needs replacement.	B
			4. Electromechanical relays of primary and backup protection are to be replaced with numerical relays..	B
			5. Time synchronising equipment is not available.	B
			6. Autorecloser feature and inter tripping schemes are not in service for132 kv lines.	B
			7. All indicating instruments in control room may be upgraded to digital meters as old analog instruments give high burden to CT..	B
			8. Old PLCC panels are being used only for speech and data transmission . PLCC system may be upgraded to new system.	B
			9. Overload alarm may be provided for 132/33 kV Transformers	A
			10. Most of the isolators are manual type. Isolators and breakers are not having interlock facilities. Soft interlocks may be provided.	B
			11.Some of the LA's are very old and needs replacement.	B
			12. Power swing blocking and unblocking settings are to be reviewed for all the lines.	A
			13. DR time duration to be increased and digital status need to be configured.	A
			14.N-1 contingency for the 50 MVA transformer is not being satisfied.	B
			15.As the substation is a part of islanding scheme(TPCL), synchronising trolley is required at the station.	B
			16.The relay settings should be reviewed based on the ERPC protection philosophy.	A
			17.Differential protection shall be put for short cable portion of 132 kV IOCL line.	B
			18.Open sockets to be covered in Junction boxes/Panel boxes.	A

			19.Silica gel of transformer to be replaced.	A
13	Hizli 132/33/11 kV - WBSETCL	10-08-2018	1. LBB protection and busbar protection is not available for 132kV system	B
			2. Event logger is not available for 132kV and 33kV system	B
			3.Isolation of 220 V DC supply positive w.r.t. Ground is not proper.	A
			4. Panels in the control room and control cable wirings are old and needs replacement.	B
			5. Electromechanical relays of primary and backup protection are to be replaced with numerical relays.	B
			6. Time synchronising equipment is not available.	B
			7. Autorecloser feature and inter tripping schemes are not in service for132 kv lines.	B
			8. All indicating instruments in control room may be upgraded to digital meters as old analog instruments give high burden to CT.	B
			9. Old PLCC panels are being used only for speech and data transmission . PLCC system may be upgraded to new system.	B
			10. Overload alarm may be provided for 132/33 kV Transformers	A
			11. Most of the isolators are manual type. Isolators and breakers are not having interlock facilities. Soft interlocks may be provided.	B
			12. ACDB and DCDBs are old and do not have provision for future expansion.	B
			13.Some of the LA's are very old and needs replacement.	B
			14.The relay settings should be reviewed based on the ERPC protection philosophy.	A
			15.O/C setting of V. Park & Hizli TSS feeders are made non-directional which need to be reviewed.	A
			16. Anti-weeding at substation shall be done regularly.	A
14	Chandrakuna Road 132/33/11 kV - WBSETCL	10-08-2018	1. LBB protection and busbar protection is not available for 132kV system	B
			2. Event logger is not available for 132kV and 33kV system	B
			3. Panels in the control room and control cable wirings are old and needs replacement.	B
			4. Electromechanical relays of primary and backup protection are to be replaced with numerical relays.	B
			5. Time synchronising equipment is not available.	B
			6. Autorecloser feature and inter tripping schemes are not in service for132 kv lines.	B
			7. All indicating instruments in control room may be upgraded to digital meters as old analog instruments give high burden to CT.	B
			8. Old PLCC panels are being used only for speech and data transmission . PLCC system may be upgraded to new system.	B
			9. Overload alarm may be provided for 132/33 kV Transformers	A
			10. Most of the isolators are manual type. Isolators and breakers are not having interlock facilities. Soft interlocks may be provided.	B
			11. ACDB and DCDBs are old and do not have provision for future expansion.	B
			12.Some of the LA's are very old and needs replacement.	B
			13. Definite time sttings of E/F and O/C relay may be reviewed.	A
			14. DR time duration to be increased and digital status need to be configured.	A
			15.The relay settings should be reviewed based on the ERPC protection philosophy.	A
			16.O/C and E/F settings of Birsingha feeders need to be reviewed.	A
			17.SOTF function shall be enabled in Bishnupur line.	A
			18.Anti-weeding at some of the bays need to be done.	A
			19.Silica gel of some of the transformer to be replaced.	A
			20.Sockets to be covered in Junction boxes/Panel boxes.	A
15	Falta 132/33/11 kV - WBSETCL	14-08-2018	1. LBB protection and busbar protection is not available for 132kV system.	B
			2. Event logger is not available for 132kV and 33kV system.	B
			3. Panels in the control room and control cable wirings are old and needs replacement.	B
			4. Electromechanical relays of primary and backup protection are to be replaced with numerical relays..	B
			5. Time synchronising equipment is not available.	B
			6. Autorecloser feature and inter tripping schemes are not in service for132 kv lines.	B
			7. All indicating instruments in control room may be upgraded to digital meters as old analog instruments give high burden to CT.	B
			8. Old PLCC panels are being used only for speech and data transmission . PLCC system may be upgraded to new system.	B
			9. Overload alarm may be provided for 132/33 kV Transformers	A
			10. Most of the isolators are manual type. Isolators and breakers are not having interlock facilities. Soft interlocks may be provided.	B
			11. ACDB and DCDBs are old and do not have provision for future expansion.	B
			12.Some of the LA's are very old and needs replacement.	B
			13. Power swing blocking and unblocking settings are to be reviewed for some the lines.	A
			14. DR time duration to be increased and digital status need to be configured.	A
			15.O/C and E/F settings of Joka feeders shall be enabled.	A
			16.N-1 contingency for the 50 MVA transformer is not being satisfied.	B

			17.The relay settings should be reviewed based on the ERPC protection philosophy.	A
			18.Sockets to be covered in Junction boxes/Panel boxes.	B
16	Raiganj 132/33/11 kV - WBSETCL	31-08-2018	1. LBB protection and busbar protection is not available for 132kV system	B
			2. Event logger is not available for 132kV and 33kV system	B
			3. Isolation of 220 V DC supply positive w.r.t. Ground is not proper.	B
			4. Panels in the control room and control cable wirings are old and needs replacement.	B
			5. Electromechanical relays of primary and backup protection are to be replaced with numerical relays.	B
			6. Time synchronising equipment is not available.	B
			7. Autorecloser feature and inter tripping schemes are not in service for132 kv lines.	B
			8. All indicating instruments in control room may be upgraded to digital meters as old analog instruments give high burden to CT.	B
			9. Old PLCC panels are being used only for speech and data transmission . PLCC system may be upgraded to new system.	B
			10. Overload alarm may be provided for 132/33 kV Transformers	A
			11. Most of the isolators are manual type. Isolators and breakers are not having interlock facilities. Soft interlocks may be provided.	B
			12. ACDB and DCDBs are old and do not have provision for future expansion.	B
			13.Some of the LA's are very old and needs replacement.	B
			14. Power swing blocking and unblocking settings are to be reviewed for all the lines.	A
			15. DR time duration to be increased and digital status need to be configured.	A
			16.N-1 contingency for the transformers during peak loading is not being satisfied.	B
			17.The relay settings should be reviewed based on the ERPC protection philosophy.	A
17	Malda 132/33/11 kV - WBSETCL	31-08-2018	1. LBB protection and busbar protection is not available for 132kV system	B
			2. Event logger is not available for 132kV and 33kV system	B
			3. Panels in the control room and control cable wirings are old and needs replacement.	B
			4. Electromechanical relays of primary and backup protection are to be replaced with numerical relays.	B
			5. Time synchronising equipment is not available.	B
			6. Autorecloser feature and inter tripping schemes are not in service for132 kv lines.	B
			7. All indicating instruments in control room may be upgraded to digital meters as old analog instruments give high burden to CT.	B
			8. Old PLCC panels are being used only for speech and data transmission . PLCC system may be upgraded to new system.	B
			9. Overload alarm may be provided for 132/33 kV Transformers	A
			10. Most of the isolators are old and manual type. Isolators and breakers are not having interlock facilities. Soft interlocks may be provided.	B
			11. ACDB and DCDBs are old and do not have provision for future expansion.	B
			12. Lightning Arrestors are quite old and spare not available.	B
			13. Power swing blocking and unblocking settings are to be reviewed for all the lines.	A
			14. DR time duration to be increased and digital status need to be configured.	A
			15.N-1 contingency for the transformers during peak loading is not being satisfied.	B
			16.The relay settings should be reviewed based on the ERPC protection philosophy.	A
18	NBU 132/33/11 kV - WBSETCL	06-09-2018	1. LBB protection and busbar protection is not available for 132kV system	B
			2. Event logger is not available for 132kV and 33kV system	B
			3. Panels in the control room and control cable wiringsas well as DC wirings are old and needs replacement.	B
			4. Electromechanical relays of primary and backup protection are to be replaced with numerical relays.	B
			5. Autorecloser feature and inter tripping schemes are not in service for132 kv lines.	B
			6. All indicating instruments in control room may be upgraded to digital meters as old analog instruments give high burden to CT.	B
			7. Old PLCC panels are being used only for speech and data transmission . PLCC system may be upgraded to new system.	B
			8. Overload alarm may be provided for 132/33 kV Transformers	A
			9. Most of the isolators are manual type. Isolators and breakers are not having interlock facilities. Soft interlocks may be provided.	B
			10. ACDB and DCDBs are old and do not have provision for future expansion.	B
			11. Back up protection is absent in Lebong Feeder. The same must be enabled.	A
			12. DR time duration to be increased and digital status need to be configured.	A
			13.The relay settings should be reviewed based on the ERPC protection philosophy.	A
19	Maynaguri 132/33/11 kV - WBSETCL	06-09-2018	1. LBB protection and busbar protection is not available for 132kV system	B
			2. Event logger is not available for 132kV and 33kV system	B
			3. Isolation of 220 V DC supply positive w.r.t. Ground is not proper. Annunciation for DC earth fault is not working.	A
			4. Panels in the control room and control cable wirings are old and needs replacement.	B

			5. Electromechanical relays of primary and backup protection are to be replaced with numerical relays.	B
			6. Autorecloser feature and inter tripping schemes are not in service for132 kv lines.	B
			7. All indicating instruments in control room may be upgraded to digital meters as old analog instruments give high burden to CT..	B
			8. Old PLCC panels are being used only for speech and data transmission . PLCC system may be upgraded to new system.	B
			9. Overload alarm may be provided for 132/33 kV Transformers	A
			10. Most of the isolators are manual type. Isolators and breakers are not having interlock facilities. Soft interlocks may be provided.	B
			11. ACDB and DCDBs are old and do not have provision for future expansion.	B
			12.Some of the LA's are very old and needs replacement.	B
			13. DR time duration to be increased and digital status need to be configured.	A
			14.The relay settings should be reviewed based on the ERPC protection philosophy.	A
			15.Oil leakage found in 30 MVA transformer. The corrective measures may be teken.	A
			16.Fire wall between the transformers shall be built.	B
20	Birpara 132/66/33/11 kV - WBSETCL	07-09-2018	1. LBB protection and busbar protection is not available for 132kV system	B
			2. Event logger is not available for 132kV and 33kV system	B
			3. Isolation of 220 V DC supply positive w.r.t. Ground is not proper. Annunciation for DC earth fault is not working.	A
			4. Panels in the control room and control cable wirings are old and needs replacement.	B
			5. Electromechanical relays of primary and backup protection are to be replaced with numerical relays.	B
			6. Autorecloser feature and inter tripping schemes are not in service for132 kv lines.	B
			7. All indicating instruments in control room may be upgraded to digital meters as old analog instruments give high burden to CT..	B
			8. PLCC are not in service.	B
			9. Overload alarm may be provided for 132/33 kV Transformers	A
			10. Most of the isolators are manual type. Isolators and breakers are not having interlock facilities. Soft interlocks may be provided.	B
			11. ACDB and DCDBs are old and do not have provision for future expansion.	B
			12.Some of the LA's are very old and needs replacement.	B
			13. DR time duration to be increased and digital status need to be configured.	A
			14.REF protection is absent in all the 132/66 kV transformers. The same must be implemented.	B
			15.Directional component of O/C & E/F relay of the 132/66 kV transformers may be reviewed.	A
			16.Line differential protection shall be implemented in Birpara(PG) feeders.	B
			17.The relay settings should be reviewed based on the ERPC protection philosophy.	A
			18.N-1 criteria for 132/66 kV transformers during summer and puja period is not being fulfilled.	B
			19.Proper PCC and graveling should be done in the substation.	B
21	Alipurduar 220/132/66/33/11 kV - WBSETCL	07-09-2018	1. LBB protection and busbar protection is not available for 132kV system	B
			2. Event logger is not available for 132kV and 33kV system	B
			3. Isolation of 220 V DC supply positive w.r.t. Ground is not proper. Annunciation for DC earth fault is not working.	A
			4. Panels in the control room and control cable wirings are old and needs replacement.	B
			5. Electromechanical relays of primary and backup protection are to be replaced with numerical relays.	B
			6. Autorecloser feature and inter tripping schemes are not in service for132 kv lines.	B
			7. All indicating instruments in control room may be upgraded to digital meters as old analog instruments give high burden to CT..	B
			8. Old PLCC panels are being used only for speech and data transmission . PLCC system may be upgraded to new system.	B
			9. Most of the isolators are manual type. Isolators and breakers are not having interlock facilities. Soft interlocks may be provided.	B
			10. Some of the LA's are old and needs replacement.	B
			11. DR time duration to be increased and digital status need to be configured.	A
			12.Proper PCC and graveling should be done in the substation.	B
			13.The relay settings should be reviewed based on the ERPC protection philosophy.	A

Note:

1. As per CERC order dated 21st Feb 2014 protection deficiencies are categorised as
Category-A : The deficiencies which can be corrected without any procurement.
Category-B : The deficiencies involving procurement of equipments.

Third Party Protection Audit Observations of BSPTCL and NTPC Sub-stations

Sl No.	Name of Sub-station	Date of Audit	Observations/Remarks	Category
1	132/33 kV Kahalgaon(BSPTCL)	18.08.2018	1. LBB protection and busbar protection is not available for 132kV system.	B
			2. Event logger is not available for 132kV and 33kV system.	B
			3. Time synchronising equipment is not available.	B
			4. Autorecloser feature and inter tripping schemes are not in service for all the lines.	B
			5. PLCC are not operational for any of the 132 kv feeders. The same shall be installed for all the lines.	B
			6.Air Conditioning shall be provided in main control room.	B
			7.Cable trench/glands in panel box in main control room need to be sealed properly to avoid entrance of rodents/external stimuli.	A
			8.Periodical relay testing and equipment testing need to be done as there was no testing of equipments since installation.	A
			9. Power swing blocking and unblocking settings are to be reviewed for all the lines.	A
			10.Earth wire is broken in some section of Lalmatia line. The same need to be restored at the earliest.	B
			11.REF protection isabsent in 50 MVA transformers. The same need to be enabled.	A
			12.Differential and REF protection was absent for idle charged 20 MVA transformers. The same need to be enabled.	A
2	400/132 kV Kahalgaon(NTPC)	17.08.2018	PCC has been completed for some part of the switchyard.PCC for rest of the switchyard shall be planned.	B

Note:

1. As per CERC order dated 21st Feb 2014 protection deficiencies are categorised as
Category-A : The deficiencies which can be corrected without any procurement.
Category-B : The deficiencies involving procurement of equipments.

Annexure-C7.1

Difference in DSM account for ERPC & NRPC

All figs Rupees in Lacs

Week No.	Financial Year	Bill Period	As per ERPC Fig	As per NRPC Fig	Diff
42		15-Jan-18 to 21-Jan-18	38.97137	39.29811	-0.32674
43		22-Jan-18 to 28-Jan-18	1818.71461	1819.54751	-0.83290
44		29-Jan-18 to 04-Feb-18	487.19714	487.57902	-0.38188
45		05-Feb-18 to 11-Feb-18	-646.59265	-646.02624	-0.56641
46		12-Feb-18 to 18-Feb-18	1584.50023	1585.10833	-0.60810
47	**2017-18**	19-Feb-18 to 25-Feb-18	476.0878	476.43103	-0.34323
48		26-Feb-18 to 04-Mar-18	1031.32822	1031.76241	-0.43419
49		05-Mar-18 to 11-Mar-18	3770.82179	3769.44801	1.37378
50		12-Mar-18 to 18-Mar-18	747.61039	748.42405	-0.81366
51		19-Mar-18 to 25-Mar-18	1375.16618	1368.40764	6.75854
52		26-Mar-18 to 01-Apr-18	210.04301	210.42000	-0.37699
1		02-Apr-18 to 08-Apr-18	1009.60994	1278.46919	-268.85925
2		09-Apr-18 to 15-Apr-18	-654.32388	-692.66860	38.34472
3		16-Apr-18 to 22-Apr-18	-1284.45597	-1390.85092	106.39495
4		23-Apr-18 to 29-Apr-18	-2159.58592	-2257.12707	97.54115
5		30-Apr-18 to 06-May-18	353.29802	180.20509	173.09293
6		07-May-18 to 13-May-18	146.92212	-599.83702	746.75914
7		14-May-18 to 20-May-18	-3368.88035	-4112.30688	743.42653
8		21-May-18 to 27-May-18	-2796.00937	-3900.47619	1104.46682
9		28-May-18 to 03-Jun-18	-2591.71233	-3203.81689	612.10456
10		04-Jun-18 to 10-Jun-18	-3967.18649	-4640.58132	673.39483
11		11-Jun-18 to 17-Jun-18	-5122.51604	-6386.98958	1264.47354
12	**2018-19**	18-Jun-18 to 24-Jun-18	-6473.51666	-7954.42305	1480.90639
13		25-Jun-18 to 01-Jul-18	-1685.53423	-2975.43419	1289.89996
14		02-Jul-18 to 08-Jul-18	-385.14665	-2663.69127	2278.54462
15		09-Jul-18 to 15-Jul-18	-2801.19246	-5350.27882	2549.08636
16		16-Jul-18 to 22-Jul-18	-1799.16426	-4037.75088	2238.58662
17		23-Jul-18 to 29-Jul-18	1118.66298	1109.37759	9.28539
18		30-Jul-18 to 05-Aug-18	766.69794	-1644.61889	2411.31683
19		06-Aug-18 to 12-Aug-18	-86.22433	-2601.46292	2515.23859
20		13-Aug-18 to 19-Aug-18	-2350.19739	-4349.83849	1999.64110
21		20-Aug-18 to 26-Aug-18	-1551.02649	-3609.48205	2058.45556
22		27-Aug-18 to 02-Sep-18	-2337.21583	-4670.94369	2333.72786

Note : +Ve is Receivable by ER/-Ve payable by ER

Annexure - C7.2

SUMMARY OF RRAS CHARGE RECEIPT AND PAYMENT STATUS

BILL from 02.04.18 to 14.10.18 (upto Week - 28 of 2018 - 19)
Last Payment Disbursement Date -29.10.18

Figures in Rs. Lakhs

CONSTITUENTS	Receivable	Received	Payable	Paid	Outstanding
FSTPP STG-I & II	193.34664	193.34664	2903.43247	2732.58746	**-170.84506**
FSTPP STG-III	39.01086	39.01086	1789.50148	1740.72467	**-48.77674**
KhSTPP STG-I	93.80255	93.80255	3780.12228	3658.71100	**-121.41129**
KhSTPP STG-II	26.84365	26.84365	5667.18802	5566.53686	**-100.65118**
TSTPP STG-I	32.28819	32.28819	91.48803	87.80449	**-3.68354**
BARH STG-II	175.37779	175.37779	2861.32944	2550.95759	**-310.37187**
BRBCL (Nabinagar)	10.97707	10.97707	1080.47146	942.50580	**-137.96569**
TOTAL	**571.64674**	**571.64674**	**18173.53318**	**17279.82787**	**-893.70537**

As on 29.10.18

Receivable:	Receivable by ER POOL	Payable	Payable by ER POOL
Received	Received by ER POOL	Paid	Paid by ER POOL

"- ve" Payable by ER pool "+ ve" Receivable by ER pool

Annexure - C7.3

SUMMARY OF CONGESTION CHARGE RECEIPT AND PAYMENT STATUS

Bill upto 07.01.2013
Last Payment Disbursement Date - 13.05.2013

Figures in Rs. Lakhs

CONSTITUENTS	Receivable	Received	Payable	Paid	Outstanding
BSEB	0.67823	0.67823	0.39118	0.39118	0.00000
JSEB	16.37889	16.37889	2.61323	2.61323	0.00000
DVC	0.00000	0.00000	6.24040	6.24040	0.00000
GRIDCO	5.34488	5.34488	0.00000	0.00000	0.00000
WBSETCL	0.00000	7.42249	4.32834	11.75083	0.00000
SIKKIM	0.65609	6.20909	0.00000	5.55300	0.00000
NTPC	6.93152	6.93152	7.42249	7.42249	0.00000
NHPC	0.70445	0.70445	0.05875	0.05875	0.00000
MPL	4.81694	4.81694	0.85169	0.85169	0.00000
STERLITE	7.70504	7.70504	0.00000	0.00000	0.00000
Pool Balance	0.00000	0.00000	21.30996	21.30996	0.00000
TOTAL	**43.21604**	**56.19153**	**43.21604**	**56.19153**	0.00000

% Realization **As on 31.05.2015**

Receivable: Receivable by ER POOL Payable Payable by ER POOL

Received Received by ER POOL Paid Paid by ER POOL

"- ve" Payable by ER pool "+ ve" Receivable by ER pool

Annexure - C7.4

DETAILS OF DISBURSEMENT TO POWER SYSTEM DEVELOPMENT FUND

Sl No	Nature of Amount	Amount transferred to PSDF (Rs in Lac)	Date of Disbursement	Cheque No	Remarks
1	Opening Balance (upto 31.03.16)	86464.58111			
2	Addl. Dev	83.33978	01.04.16		Addl Dev Charge 15-16
3	Addl. Dev	43.77416	05.04.16		Addl Dev Charge 15-16
4	Addl. Dev	31.83984	07.04.16		Addl Dev Charge 15-16
5	Addl. Dev	52.08622	11.04.16		Addl Dev Charge 15-16
6	Addl. Dev	107.23773	13.04.16		Addl Dev Charge 15-16
7	Addl. Dev	220.15330	19.04.16		Addl Dev Charge 15-16
8	Addl. Dev	76.84824	21.04.16		Addl Dev Charge 15-16
9	Addl. Dev	20.84026	26.04.16		DSM Interest 2014-15(Paid by APNRL)
10	Addl. Dev	10.01920	26.04.16		Addl Dev Charge 16-17
11	Addl. Dev	432.25696	28.04.16		Addl Dev Charge 16-17
12	Addl. Dev	117.08707	02.05.16		Addl Dev Charge 16-17
13	Addl. Dev	41.65418	04.05.16		Addl Dev Charge 16-17
14	Addl. Dev	9.17422	06.05.16		Addl Dev Charge 16-17
15	Addl. Dev	105.15627	06.05.16		Addl Dev Charge 15-16
16	Deviation Interest	38.50018	06.05.16		Deviation Interest
17	Addl. Dev	35.54178	10.05.16		Addl Dev Charge 16-17
18	Addl. Dev	448.87953	31.05.16		Addl Dev Charge 16-17
19	Addl. Dev	170.51274	29.06.16		Addl Dev Charge 16-17
20	Reactive Energy Charge	530.57497	28.09.16		Reactive Charges_15-16
21	Reactive Energy Charge	1000.00000	26.12.16		Reactive Charges_16-17
27	Reactive Energy Charge	248.26904	31.07.17		Reactive Charges_17-18
28	Reactive Energy Charge	128.44284	29.08.17		Reactive Charges_17-18
29	Reactive Energy Charge	103.22685	26.09.17		Reactive Charges_17-18
30	Reactive Energy Charge	249.14078	31.10.17		Reactive Charges_17-18
31	Reactive Energy Charge	172.20693	30.11.17		Reactive Charges_17-18
32	Reactive Energy Charge	200.00000	15.12.17		Reactive Charges_17-18
33	Reactive Energy Charge	100.00000	05.01.18		Reactive Charges_17-18
34	Reactive Energy Charge	558.45339	06.02.18		Reactive Charges_17-18
35	Reactive Energy Charge	171.95546	06.03.18		Reactive Charges_17-18
36	Reactive Energy Charge	129.35497	04.04.18		Reactive Charges_17-18
37	Reactive Energy Charge	126.21494	07.05.18		Reactive Charges_18-19
38	Reactive Energy Charge	183.31081	06.06.18		Reactive Charges_18-19
39	Reactive Energy Charge	215.58816	05.07.18		Reactive Charges_18-19
40	Reactive Energy Charge	176.54245	03.08.18		Reactive Charges_18-19
41	Reactive Energy Charge	39.54556	06.09.18		Reactive Charges_18-19
42	Reactive Energy Charge	34.03973	01.10.18		Reactive Charges_18-19
	Total	**95010.71242**			

Annexure-C8.1

	2017-18				2018-19	
DSM account Reconciliation Status of ER constituents and Inter Regional						
Name of The Utility	**Q1(04.07.17)**	**Q2(09.10.17)**	**Q3(08.01.18)**	**Q4(09.04.18)**	**Q1(19.07.18)**	**Q2(08.10.18)**
Inter Regional						
WR	NO	NO	NO	NO	NO	NO
SR	YES	NO	NO	NO	NO	NO
NER	YES	NO	YES	NO	YES	NO
NR	NO	NO	YES	NO	NO	NO
Intra Regional						
BSPHCL	YES	YES	YES	YES	NO	NO
JUVNL	YES	YES	YES	YES	NO	NO
DVC	YES	YES	YES	YES	YES	NO
GRIDCO	YES	YES	YES	YES	YES	NO
WBSETCL	YES	YES	YES	YES	YES	YES
SIKKIM	YES	YES	YES	YES	NO	NO
NTPC	YES	YES	YES	YES	YES	YES
NHPC	YES	YES	YES	YES	YES	NO
MPL	YES	YES	YES	YES	YES	YES
KBUNL	N/A	N/A	N/A	N/A	YES	YES
APNRL	YES	YES	YES	YES	YES	NO
CHUZACHEN(GATI)	YES	YES	YES	YES	YES	YES
NVVN(Ind-Bng)	YES	YES	YES	YES	YES	YES
NVVN(Ind-Nep)	YES	YES	YES	YES	YES	YES
GMR	YES	YES	YES	YES	NO	NO
JITPL	YES	YES	YES	YES	YES	YES
INBEUL	NO	NO	NO	NO	NO	NO
TPTCL (DAGACHU)	YES	YES	YES	YES	YES	YES
JLHEP(DANS ENERGY)	YES	NO	NO	NO	YES	YES
BRBCL	YES	YES	YES	YES	YES	YES
POWERGRID (ER-I)	YES	YES	YES	YES	YES	NO
POWERGRID (ER-II)	N/A	N/A	YES	YES	YES	YES
TUL (TEESTA-III)	YES	YES	YES	YES	YES	YES
DIKCHU	YES	YES	YES	YES	YES	YES
SHIGA (TASHIDING)	N/A	N/A	NO	NO	YES	YES
OPGC	N/A	N/A	N/A	YES	YES	NO
NPGC	N/A	N/A	N/A	N/A	YES	YES

Note:
(1)The dates in the bracket indicates the date of sending the Reconciliation statements by ERLDC to utilities.
(2) YES Indicates that signed reconciliation statement received by ERLDC
(3) NO Indicates that signed reconciliation statement is not received by ERLDC

Annexure-C8.5

Reconciliation Between Open Access department of ERLDC and SLDCs, STUs					
Sl. No.	**STUs / SLDCs Name**	**Quarter-I (Apr-18-June-18)**			
1	DVC - SLDC	YES			
2	OPTCL-SLDC and STU	YES			
3	West Bengal - SLDC and STU	YES			

Reconciliation Between Open Access department of ERLDC and Applicants					
Sl. No.	**Applicants Name**	**Quarter-I (Apr-18-June-18)**			
1	Calcutta Electric Supply Company	YES			
2	Jindal India Thermal Power Limited	YES			
3	Jharkhand State Electricity Board	NO			
4	West Bengal State Distribution Company Ltd.	YES			

Annexure-C11

SEM Installation/Replacement Pending at ICTs in PGCIL Location

Location	Bay	S No	Time Drift	over all Status of meters on Icts
ARA(PG)	220 KV SIDE OF 160 MVA ICT-3	NP-8860-A	11	
ARAH(PG)	220/132 KV ICT-1	NP-6055-A	11	02 replacement pending
KISHANAGNJ(PG)	400 KV SIDE OF 500 MVA ICT-1		-	02 IV pending for installation
KISHANGANJ(PG)	400 KV SIDE OF 500 MVA ICT-2		-	
PATNA(PG)	400KV SIDE OF PATNA ICT-1	NP-5270-A	9	
PATNA(PG)	220KV SIDE OF PATNA ICT-1	NP-5271-A	12	
PATNA(PG)	400KV SIDE OF PATNA ICT-2	NP-5839-A	11	
PATNA(PG)	220KV SIDE OF PATNA ICT-2	NP-5866-A	10	04 pending for replacemer
PURNEA(PG)	400 KV SIDE 315 MVA ICT-1			
PURNEA(PG)	400 KV SIDE of 400/220 KV ICT-2			2 IV pending for installatio
PUSAULI(PG)	400/220KV ICT-2		-	
PUSAULI(PG)	400/220KV ICT-1		-	02 IV pending
BARIPADA(PG)	BARIPADA 220/132 KV ICT -1			02 IV side Pending & One HV meter defective ER-1568-A
BARIPADA(PG)	BARIPADA 220/132 KV ICT -2		-	
BARIPADA(PG)	400/220 315 MVA ICT-1			
BARIPADA(PG)	400/220 315 MVA ICT-2			02 HV side Pending
BOLANGIR(PG)	400 KV BOLANGIR ICT-II		-	01 IV pending
KEONJHAR(PG)	HV SIDE OF 315 MVA 400/220 ICT-1	ER-1589-A	-	
KEONJHAR(PG)	HV SIDE OF 315 MVA 400/220 ICT-2	ER-1587-A	-	02 IV pending
MALDA(PG)	220 KV SIDE OF 400/220 MALDA ICT-1	NP-7925-A	18	
MALDA(PG)	220 KV SIDE OF 400/220 ICT-2	NP-7926-A	18	02 pending for replacemer

Annexure- C12.5

Date of Commercial Operation(DOCO) of the Asstes

A	Eastern Region Strengthening Scheme-XIV	DOCO	Approved Cost	Standing Committee Reference	RPC Meeting Reference	Sharing of Charges
01	Installation of 400kV 1X125 MVAR Bus Reactor along-with GIS bay at Baripada Substation	30/06/18	Rs. 167.01 Cr. (including IDC of Rs. 10.09 Cr.).	16th SCM meeting of ER on 02/05/2014 at NRPC, New Delhi	26th ERPC meeting on 18.01.14 & 27th ERPC meeting on 31.05.14	As per New Sharing methodology of PoC
02	Installation of 400kV 125 MVAR Bus Reactor II along-with bay at Chaibasa Substation	28/07/18				
B	**Eastern Region Strengthening Scheme-XI.**	**DOCO**	**Approved Cost**	**Standing Committee Reference**	**RPC Meeting Reference**	**Sharing of Charges**
01	STATCOM System (+/-) 300MVAR complete in all respect including Coupling transformer, Mechanically switched compensation (2x125 MVAR reactor), cooling system & STATCOM protection / controller etc at Ranchi(New)Substation	16/07/18	Rs. 766.21 Cr. (including IDC of Rs. 0.0 Cr.).	14th & 15th SCM Meeting of ER on 05th January'13 & 27th August'13 respectively	25th TCC/ERPC meeting on 20th -21st September, 2013 & 28th TCC/ ERPC meeting on 12th -13th September, 2014	As per New Sharing methodology of PoC
02	Installation of (+/-) 200MVAR STATCOM along-with 2x 125 MVAR Mechanically switched Reactor & 2X125 MVAR Mechanically switched Capacitor Jeypore Substation	01/07/18				
03	Installation of (+/-) 300MVAR STATCOM along-with 2x 125 MVAR Mechanically switched Reactor at Rourkela Substation	30/03/18				
C	**Transmission System for Development of Pooling Station in Northern Part of West Bengal and Transfer of Power from BHUTAN to NR/WR**	**DOCO**	**Approved Cost**	**Standing Committee Reference**	**RPC Meeting Reference**	**Sharing of Charges**
01	2nos 220kV line bays at Alipurdwar Substation	01/03/18	Rs.4404.57 Cr.(including IDC of Rs. 383.38 Cr.).	6th, 8th , 10th , 11th, & 16th SCM meeting of ER on 22.06.06,05.11.07,14.09.09,20.09.10&02.05.14 respectively.	-	As per New Sharing methodology of PoC