Agenda

for

158th OCC Meeting

Date: 27.06.2019

Eastern Regional Power Committee

14, Golf Club Road, Tollygunge

Kolkata: 700 033

Eastern Regional Power Committee

Agenda for 158th OCC Meeting held on 27th June, 2019 at Bakreswar TPS

Item no. 1: Confirmation of minutes of 157th OCC meeting of ERPC held on 20.05.2019

The minutes of 157th OCC meeting were uploaded in ERPC website and circulated vide letter dated 06.06.2019 to all the constituents.

Members may confirm the minutes.

PART A : ER GRID PERFORMANCE

Item no. A1: ER Grid performance during May, 2019

The average consumption of Eastern Region for May- 2019 was 473 Mu. Eastern Region energy consumption reached a monthly maximum of 517 Mu on 20th May - 2019. Total Export schedule of Eastern region for May – 2019 was 1715 Mu, whereas actual export was1620 Mu.

ERLDC may present the performance of Eastern Regional Grid covering the followings:

1. **Frequency profile**
2. **Over drawal/under injection by ER Entities**
3. **Performance of Hydro Power Stations during peak hours**
4. **Performance of ISGS during RRAS**
5. **Reactive Power performance of Generators**
6. **Restricted Governor /Free Governor Mode Operation of generators in ER**

During the Month of May 2019, two events have occurred for which Frequency Response Characteristic has been analyzed pan India. The details of the event and the overall response of each region have been summarized in the below Table 1.

Table 1: Region Wise Frequency Response Characteristic (FRC) for the event

Event	Frequency Change	ER FRC
On 16th May 2019, at 19:10 hrs Smelter load loss occurred at Sterlite Vedanta Plant along with its Captive Units in Orissa (Eastern Region)	49.98 Hz to 50.08 Hz	**53%**
On dated 19-May-2019 at 10:35 hrs around 3000 MW generation loss occurred at Vindhyachal Power Plant in Western Region	50.01 Hz to 49.80 Hz	12.4 %

Detailed report is enclosed at **Annexure-A1.6**

Member may discuss.

PART B: ITEMS FOR DISCUSSION

Item No. B.1: Power assistance to Deoghar and Dumka during Shrawani Mela-2019 w.e.f 17.07.19 to 18.08.19—JUSNL

Sharwani Mela 2019 at Deoghar & Basukinath is going to start w.e.f 17.07.19 to 18.08.19. Pilgrims from all parts of the country would visit at these locations during this period.

As such sufficient power assistance will be required throughout the above period to provide uninterrupted, unrestricted quality power to Deoghar and Dumka area and accordingly it is requested to kindly provide power as follows:

1. 30-35 MW assistance through 132KV Deoghar-Sultanganj tie with BSPTCL.
2. 55-60 MW assistance through 132KV Jamtara-Maithon tie with DVC.
3. 30-35 MW assistance through 132KV Kahalgaon (BSPTCL)-Lalmatia tie with BSPTCL.

In addition to tie all incoming 220KV source to Dumka GSS and Lalmatia GSS should also be remain available during the above period.

Members may discuss.

Item No. B.2: Persistent Low Voltage at 400/220 kV Nodes in West Bengal System -- ERLDC

Low voltage chronic issues have been observed in few pockets of West Bengal System. These pockets include

1. 400 kV Rajarhat, 400 kV Shubhasgram, 400 kV Jeerat and their downstream area,
2. 132 kV Malda and downstream areas

The chronic low voltage problem is still persisting and momentarily reliefs are observed only on the days of load crash in south Bengal due to inclement weather. Many letters are also written to WBSETCL highlighting the severity of the condition. However till date any improvement in low voltage problem is not observed.

The matter was also discussed in last OCC meeting where OCC advised SLDC, WB to prepare a plan for implementation of Under-Voltage Load Shedding (UVLS) in WBSETCL system to avoid voltage stability problem.

WBSLDC may please share the plan for implementation of UVLS and other actions which they have taken to limit the voltage fall during peak load condition.

Powergrid vide mail dated 24th June 2019 suggested that for improving system voltage during peak summer, “Static Var Compensator” (SVC), may be installed at Subhashgram S/s. Necessary sizing will be detailed further, upon approval of forum.

It is proposed to provide in-principal approval for installation of SVC at Subhashgram S/s, for maintain system voltage during summer, and upon approval detailed report, with implementation plan will be submitted further.

Members may discuss.

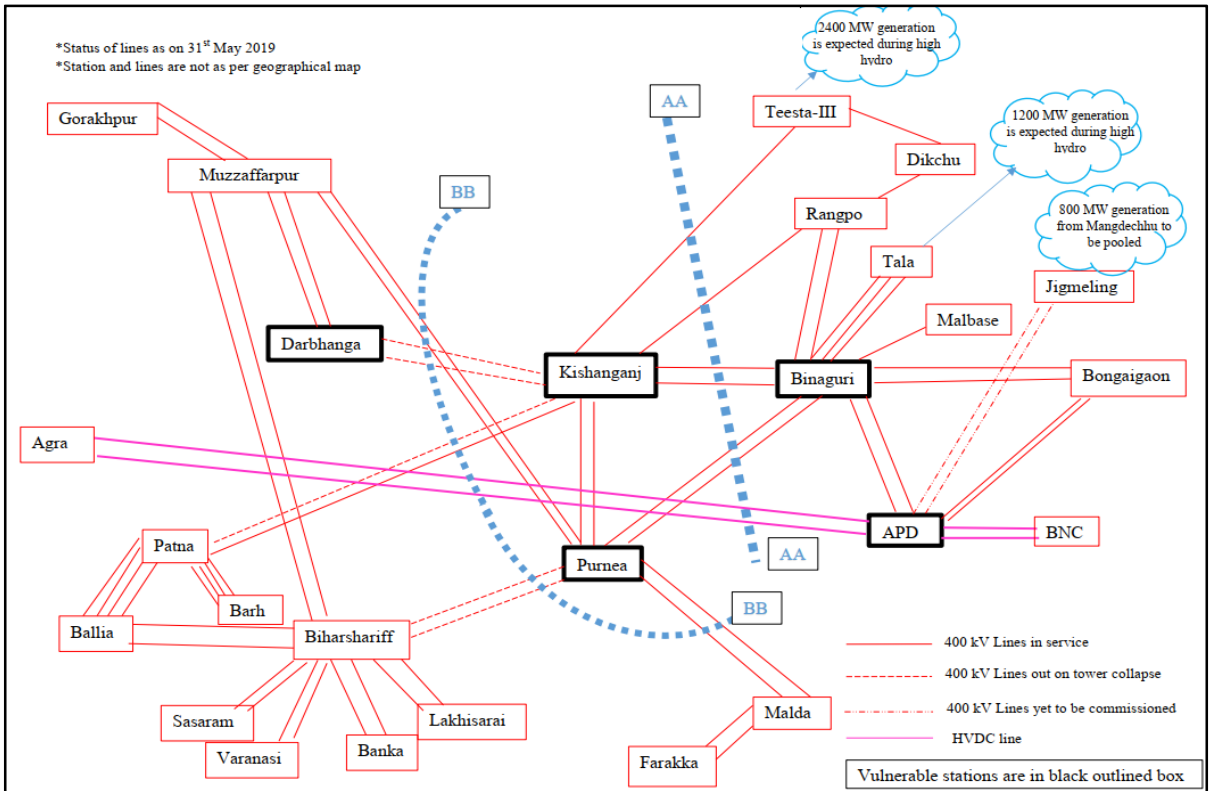
Item No. B.3: Ensuring reliability of the transmission network involving Eastern Region and North Eastern region through Binaguri/Siliguri area and beyond for high hydro generation during upcoming monsoon season----NLDC

The All India electricity demand has already crossed 182.5 GW this summer and is expected to further rise in the coming months. Reliable operation of the generation and transmission system

becomes very much necessary to ensure reliable operation of the electricity grid besides ensuring security of supply to the customers.

The June to September months sees a sharp rise in hydro generation in the North Eastern Region, Sikkim and Bhutan and the exports from this part of the grid to rest of the country had crossed 4000 MW last year. This is expected to further rise to 5500 MW this season due to removal of transmission constraints related to Sikkim hydro evacuation as well as the anticipated commissioning of the 720 MW Mangdechhu project in Bhutan.

An area of concern is the reliable operation of the transmission system emanating from Bongaigaon in the North East to the Farakka/Kahalgaon/Biharshariff/Muzaffarpur area. This system is very important for the security of the entire North Bengal/North Bihar/Sikkim/Bhutan/North East and Bangladesh system. A schematic diagram of power network indicating the vulnerabilities in the network is given below. This is based on adding the impact of 1500 MW extra generation in Sikkim, Bhutan and North Eastern region this season as compared to last year.



Vulnerability on axis 'AA'

S. No.	Name of Line	Owner	Current Status	Remarks
1	HVDC BNC-APD-Agra	POWERGRID	In Service	54 no. of trippings associated with four HVDC Poles during June-Sep 2018
2	400 kV Binaguri-Purnea-D/c	POWERGRID	In Service	No tripping
3	400 kV Binaguri-Kishenganj-D/c	POWERLINK	In Service	No tripping, During Aug 2017, complete 400/220 kV Kishanganj station had to be manually switched off due to flooding for 2 days.

4	400 kV Teesta 3-Kishenganj	Teesta Valley Power Transmission Ltd.	Commissioned on 4th Jan '19 In Service	1 tripping in April 2019
5	400 kV Rangpo-Kishanganj	Teesta Valley Power Transmission Ltd.	Commissioned on 11th Feb '19 In Service	3 tripping on 12th,16th and 25th April 2019

Vulnerability on axis 'BB'

S.No.	Name of Line	Owner	Current Status	Remarks
1	HVDC BNC-APD-Agra	POWERGRID	In Service	54 no. of trippings associated with four HVDC Poles during June-Sep 2018(last monsoon season)
2	400 kV Kishanganj-Patna-I	POWERGRID	Under outage on account of tower collapse since 2nd Sep 2018	Tower collapses in 2016 & 2018
3	400 kV Kishanganj-Patna-II	POWERGRID	In service (On ERS Tower)	Tower collapses in 2016 & 2018.
4	400 kV Kishanganj-Darbhanga-D/c	Alipurduar Transmission Limited(ATL)	Under outage on account of tower collapse	Commissioned on 12th Mar 2019. Out on Tower collapse since 29th May 2019. Restored in June 2019.
5	400kV Purnea – Biharsarif D/C	East-North Interconnection Company Ltd.	Under outage on account of tower collapse since 10th Aug'18	Tower collapses in 2016 & 2018
6	400 kV Purnea-Muzzafarpur-D/c	POWERLINK	In service	No Tripping
7	400 kV Purnea-Malda-D/c	POWERGRID	In service	Twin moose circuit with length 167 km, concern for n-1 reliability during loadings of more than 500 MW on each circuit.

In view of the above, following emergent actions may be taken to ensure the following:

1. Restoration of 400 kV Kishenganj-Patna ckt 1 and ckt 2 by POWERGRID on normal towers, latest by 15th June 2019.
2. Restoration of 400 kV Purnea-Biharshariff D/c by ENICL on normal towers, latest by 15th June 2019.
3. Deferring planned maintenance activities on all lines and substations involved in axis AA and axis BB unless of an emergency nature. The planned outage of 400 kV Rangpo-Binaguri (one by one) for reconductoring may be deferred to Oct 2019.

4. Ensuring adequate steps to prevent flooding of the related substation(s) in case of heavy rainfall.
5. Ensuring proper availability of spares and availability of the required manpower to take care of any forced outages on the above section.
6. Availability of all filter banks and other controls at HVDC BNC, Alipurduar and Agra terminals and ensuring that the automatic shifting of power flow takes place in case of tripping of any pole as per the compensation logic indicated by RLDCs/NLDC. The MTDC is expected to be loaded in the range of 2500 MW-3500 MW. Any outage of the entire MTDC can cause a cascading failure.

Members may discuss

Item No. B.4: Shut down plan of 400 KV Rangpo-Binaguri for Reconductoring work--Powergrid

Under ERSS-XX, reconductoring work of 400 KV Rangpo-Binaguri-D/C from existing twin moose to Twin HTLS has been approved with scheduled completion target of May-2020. Previously, there are only Rangpo-Binaguri-D/C connectivity was present for transferring power from Sikkim to rest of the grid, accordingly, the S/D for reconductoring work was kept on hold till commissioning of 400 KV Rangpo-Kishanganj & 400 KV Teesta-3-Kishanganj circuit.

After commissioning of above links by M/S. TVPTL, both 400 KV Rangpo-Binaguri S/D was allowed but with a condition that, in case of any breakdown of available links, any one circuit required to be brought back within 24 Hours of intimation.

As all aware that Rangpo-Binaguri, line corridor is completely passing through hilly terrain (Almost 70% of the line) & mostly populated by angle towers. Height of the towers in the peaks also make the task double difficult as approach and carrying of T&P's are itself a gigantic task. Although the work commenced on 19.03.2019 after getting approval of S/D till 25.04.2019, but as the returning conditions are there, work cannot be speed up as in every span, respective gangs used to complete one after another circuit and moving for next span.

However, due to certain issues of generation back down, the double circuit S/D was asked to return and finally both the circuit again charged on 26.05.2019. Merely two month period of S/D was allowed in which due to condition of return of S/D the work could not take pace as envisaged.

After that numerous communications made from ER-II end for further S/D but citing system security & constraints the S/D deferred continuously. In this regard a letter from ED/ER-II dated 17.05.19 also given to POSOCO (Enclosed).It may be noted that, the work is very tedious and time taking activity as most of the work will be carried out at Hills. Again, entire work will take 10-12 months and allowing a small window in lean period will not serve the purpose.

As such again, the S/D for reconductoring is placed as below, for completion of scheduled scope:

SL NO	Name of Element	From	To	Nature	Remarks
01.	400 KV Rangpo-Binaguri-Circuit-I	01.09.2019	30.07.2020	OCB	Other Rangpo-Binaguri Circuit will be charged.
02.	400 KV Rangpo-Binaguri-Circuit-II.	01.11.2019	30.05.2020	OCB	Both the Rangpo-Binaguri D/C will be under shut down.

In continuation, it may be noted, that during S/D of circuits of Rangpo-Binaguri, SPS will be implemented at Rangpo end for maintaining safe operating limits, in case of any eventuality. S/D for both circuits asked in lean period only.

Members may discuss.

Item No. B.5: Rectification of bent Tower leg & bracing at Loc. No. 170 (DD+0) of 400kV D/C Nabinagar-Sasaram Line--Powergrid

Powergrid informed that during line patrolling, the main leg-A and connected bracing between Leg-A & Leg-D was found deformed and bend inside, following the summer cyclone in the month of May 2019.

It is proposed to replace the bend bracing by de-stringing of conductor and after that replacement of leg with support of derrick / hydra with proper guying arrangements. The above lines shall be under shut-down to carry out such rectification work for a period of about ten days. To avoid collapse of said tower, POWERGRID has provided stitching with additional tower member to safeguard the tower and kept under regular vigil. Due to severe bending of leg members, collapse of the said tower cannot be overruled and hence required to be replaced the bend members at the earliest.

The replacement of deformed / bulged leg & bracing has been planned from 1st to 10th July' 2019 for which shutdown requisition has already been proposed. Since this tower has been deformed due to severe cyclone, the rectification period of the subject tower may be considered as force majeure condition for the purpose of calculation of availability.

Members may discuss.

Item No. B.6: Cost recovery from different constituents involving AMR implementation in different phases.--Powergrid

For implementation of AMR in different constituents area in principle approval accorded in 18th& 19th ERPC meetings & afterwards POWERGRID in through different LOA has implemented AMR in three phases till now and also some new S/S or elements are under integration in 4th phases. Till now total 165 No of locations and 1019 no's of SEM are integrated in AMR. Apart from integration of or implementation of AMR, the integrated system also comes under comprehensive AMC till date. Final payments of initial package is almost completed and subsequent packages are on the verge of completion.

For data transmitting to ERLDC server generally SIM are used and for that also POWERGRID has to enter with the contract with Telecom service providers namely Airtel, BSNL & Vodafone. However, lately (Since last one year) most of the POWERGRID/NTPC S/S are transmitting data through available OPGW network instead of SIM.

Total cost for implementation and AMC comes to **Rs. 3, 87,31,776/-** including implementation cost for TCS and cost for telecom service provider, but excluding consultancy charges. As per minutes of 19th ERPC the recovery mode of AMR will be like mechanism followed for SEM procurement. As such, considering the same methodology, including consultancy charges (@ 15%), total cost comes to **Rs. 4, 45, 41,543/-. (Rs. Four crore forty five lacs forty one thousand five hundred forty three only).**

All necessary payments are getting verified by the statute auditor and certified for acceptance. Now it is proposed to recover the cost incurred for the implementation of AMR from available constituents as per earlier minutes. However, for recovery purpose, complete installation base against constituents wise are given below for reference:

SL NO	Name of the constituents	Number of SEM Installed (NO'S)
01.	BIHAR	81
02.	CESC	04
03.	DMTCL	30
04.	DVC	45
05.	OPGC	10
06.	JHARKHAND	30
07.	NHPC	21
08.	NTPC	120
09.	SIKIM	20
10.	WEST BENGAL	29
11.	ADHUNIK	04.
12.	CHUZACHEN	07.
13.	IND-BHARATH	06.
14.	JINDAL	04.
15.	MPL	12.
16.	STERLITE	14.
17.	PGCIL	544.

It is proposed, to recover the incurred cost, mentioned above, by the ratio of allocation of LTA among the DIC's of Eastern Region.

Members may discuss.

Item No. B.7: Realignment of existing 132 KV configuration of Rangpo Bus for facilitating termination of 132 KV Rangpo-Chuzachen-D/C.--Powergrid

Sikkim EPD is constructing dedicated 132 KV Rangpo-Chuzachen-D/C along with new bays at Rangpo GIS S/S. However, as 132 KV GIS is having two tier gantry it is difficult to terminate the newly constructed 132 KV Rangpo-Chuzachen-D/C, due to low clearance issue. Powergrid is planning to change the bay configuration. Details are given in **Annexure-B7**.

Necessary Metering arrangement also will be implemented in consultation with Metering department/ERLDC. Presently, 132 KV Bus-I extension is under implementation and shortly 132 KV Bus-II, will also be completed and afterwards, HV testing will be conducted for both extension portion.

Powergrid may explain. Members may discuss.

Item No. B.8: Ahead of schedule commissioning of 160 MVA ICT-IV of Malda S/S in place of 50 MVA ICT-IV.---Powergrid

Under ERSS-XX package, existing 50 MVA ICT-IV of Malda SS is going to be replaced by 160 MVA ICT. Already other two ICT's are replaced (From 50 MVA to 160 MVA) & against approved project the other 50 MVA ICT will also be replaced under ERSS-XX.

As per Investment Approval, the commissioning schedule of the said ICT is February-2020, however, the ICT has already reached at Malda S/S and considering the present load flow scenario, it is evident that, if S/D provided, entire commissioning activity of the supplied ICT can be finished before festive season.

As such considering the present load in the 50 MVA ICT-IV and flexibility in system it is proposed, that ahead of schedule commissioning of the subject ICT at Malda S/S may be agreed.

Members may discuss.

Item No. B.9: Revised Overhauling Schedule proposal of NTPC ER-I stations--NTPC

NTPC vide letter dated 11th June 2019 informed that capital overhauling of unit 5 of Farakka STPS is required urgently to address the safety and reliability issues (NTPC letter is enclosed at **Annexure-B9**).

NTPC requested to allow the shutdown of unit 5 of Farakka STPS from 24.07.2019 to 22.08.2019 for 30 days.

In 157th OCC, NTPC requested for shutdown of unit 1 of TSTPS from 1st August 2019 for 45 days.

Members may decide.

Item No. B.10: Motihari Load Trimming Scheme and its Operation on 16th June 2019--ERLDC

DMTCL has informed that they have implemented the load trimming scheme as finalised in the 155th OCC meeting. The scheme finalised for load trimming on ICTs was:

1. **Logic:** Detection of ICT overload (ICT overload limit should be considered Not at full load but above this value as per the IEC Curve)
2. **SPS Command:** Tripping to be provided within 5 seconds or more to 132 kV breakers of 132 kV Motihari-Betiya D/C and 400 kV Motihari-Motihari D/C. Time delay is to ensure the LTS do not operate during transient like faults.

DMTCL has implemented the following logic in first week of June 2019:

1. **Logic:**ICT Thermal Overload Alarm (105 % of rated of rated HV current)
2. **SPS Command:** Tripping of 132 kV breakers of 132 kV Motihari-Betiya D/C and 400 kV Motihari-Motihari D/C.

Event: On 16th June 2019, at 21:05 Hrs, 400/132 kV 200 MVA ICT 1 and 2 were loaded above 180 MW per ICT. In addition, Voltage of the substation was low due to outage of 400 kV Motihari-Barh D/C. The current in the ICT 2 has exceeded its thermal overload alarm limit (105 % of rated current). However, the SPS operation was observed when the ICT has issued the thermal overload trip command. However, during this also only one circuit each of 132 kV Motihari-Betiya D/C and 400 kV Motihari-Motihari D/C got tripped. Later in next 5 seconds, the other ICT i.e. ICT 1 also got tripped on thermal overload trip and with this also SPS operated after thermal overload trip command causing other remaining circuit of 132 kV Motihari-Betiya D/C and 400 kV Motihari-Motihari D/C.

Operational Issues observed:

1. Major Operational issue observed high loading of Motihari ICT (2 X 200 MVA) beyond N-1 Loading criteria by Bihar SLDC (BSPTCL). Such high loading of ICTs is not desirable in view of secure grid operation. **SLDC Bihar and BSPTCL may kindly shift these loads to alternate sources to ensure reliability.**
2. Low Voltage at Motihari due to planned outage of 400 kV Barh-Motihari D/C. voltage at 400 as well as 132 kV were low during this due to radial feeding of connected loads from Gorakhpur end.
3. Logic Implementation of Load Trimming Scheme at DMTCL is not correct. The LTS should be able to give trip command to the 132 kV Breakers of line prior to overload trip command. In addition, with LTS operation all the four circuits have to trip to reduce the loading of ICTs.

DMTCL may kindly share the Detailed Scheme and Changes done based on this event to ensure proper Load trimming scheme operation.

Members may discuss

Item No. B.11: Operationalization of 400 kV Durgapur Bus Splitting Scheme

In 151st OCC Meeting, it was decided to discuss the issue in a separate meeting. In line with the OCC decision three meetings were held at ERPC, Kolkata on 26.12.2018, 17.01.2019 and 08.04.2019.

The minutes of the 3rd Special Meeting on "Operationalization of 400 kV Durgapur Bus Splitting Scheme" held at ERPC, Kolkata on 8th April 2019 at 11:00hrs is enclosed at **Annexure-B11**.

In 156th OCC, ERLDC informed that protection coordination with the adjacent substations should be completed before putting the bus splitting scheme in service.

It was informed that the protection coordination issues were discussed in 78th PCC Meeting held on 22nd April 2019. As per the decision, Powergrid had to coordinate with adjacent substations.

OCC advised NTPC, WBPDCL and WBSETCL to review the settings and submit the confirmation to ERPC and ERLDC by end of April 2019.

Regarding utilization of 3rd ICT at Durgapur, it was informed that the Committee met on 10th April 2019. The report will be placed in next OCC meeting.

In 157th OCC, OCC decided to put the Bus Splitting Scheme at 400 kV Durgapur S/s in operation in 1st week of June 2019.

Protection settings to be reviewed:

Durgapur Substation

Section	Name of Line	Length and Conductor Type	Group 1 setting from the Remote end (Bus Split Mode)			Group 2 setting from the remote end (Bus Close Mode)		
			Longest Line data	Shortest Line data		Longest Line data	Shortest Line data	
Durgapur A (Bus 1 & 2)	400 kV Durgapur-Farakka 1	146 km, Twin Moose	**DGP-JSR: 177KM (Twin Moose S/C)**	**DGP-BDHN: 11KM (Twin Moose D/C)**	Not Required	**DGP-JSR: 177KM (Twin Moose S/C)**	**DGP-BDHN: 11KM (Twin Moose D/C)**	Not Required
	400 kV Durgapur-Bidhan Nagar 1	11 km, Twin Moose	R1=0.0288 X1=0.3280 B1=3.5500 R0=0.2850 X0=1.0200 B0=2.6100 R0m= 0 X0m= 0	R1=0.0288 X1=0.3070 B1=3.7700 R0=0.2690 X0=1.0700 B0=2.2900 R0m=0.2080 X0m=0.6750	Not Required	R1=0.0288 X1=0.3280 B1=3.5500 R0=0.2850 X0=1.0200 B0=2.6100 R0m= 0 X0m= 0	R1=0.0288 X1=0.3070 B1=3.7700 R0=0.2690 X0=1.0700 B0=2.2900 R0m=0.2080 X0m=0.6750	Not Required
	400 kV Durgapur-Bidhan Nagar 2	11 km, Twin Moose			Not Required			Not Required
	400 kV Durgapur-Jamshedpur	177 km, Twin Moose			Not Required			Not Required
	400 kV Durgapur-Sagardighi 1	127 km, Twin moose			Not Required			Not Required
	400 kV Durgapur-Sagardighi 1	127 km, Twin moose			Not Required			Not Required
	400/220 kV ICT 1							
Durgapur B (Bus 3 & 4)	400 kV Durgapur Maithon 1	70.1 km. Twin Lapwing	**DGP-JSR: 150.4KM (Twin Moose S/C)**	**DGP-JSR: 70.1KM (Twin Moose D/C)**	Yes Required due to change in short/long line	**DGP-JSR: 177KM (Twin Moose S/C)**	**DGP-BDHN: 11KM (Twin Moose D/C)**	Yes Required due to change in short/long line
	400 kV Durgapur Maithon 2	70.1 km. Twin Lapwing	R1=0.0288 X1=0.3280 B1=3.5500 R0=0.2850 X0=1.0200 B0=2.6100 R0m= 0 X0m= 0	R1=0.0197 X1=0.3060 B1=3.8000 R0=0.2050 X0=0.9010 B0=2.3700 R0m=0.1700 X0m=0.5020	Yes Required due to change in short/long line	R1=0.0288 X1=0.3070 B1=3.7700 R0=0.2690 X0=1.0700 B0=2.2900 R0m=0.2080 X0m=0.6750	R1=0.0288 X1=0.3070 B1=3.7700 R0=0.2690 X0=1.0700 B0=2.2900 R0m=0.2080 X0m=0.6750	Yes Required due to change in short/long line
	400 kV Durgapur-Farakka 2	150.4 km, Twin Moose			Yes Required due to change in short/long line			Yes Required due to change in short/long line
	400/220 kV ICT 2							

Members may update.

Item No. B.12: Bus Splitting at Kahalgaon NTPC--ERLDC

NTPC Kahalgaon Bus Split Arrangement is ready for operationalization. The only aspect which is still not ready is the Protection coordination with remote end substations due to change in long/short lines. NTPC Kahalgaon has shared the list of change in short and long lines for both the buses so that protections setting changes required at remote end can be taken up with the

respective utilities (PGCIL ERTS -1 , PGCIL ERTS-2, NTPC Farakka). Based on the details received from NTPC, Utilities have to confirm ERLDC with their readiness of protection group setting. With the confirmation of readiness of relay group setting for remote end **(PGCIL)**, ERLDC will go ahead with the operationalization of Bus Splitting of Durgapur Substation.

Protection settings to be reviewed:

Kahalgaon Substation								
Section	Name of Line	Length and Conductor Type	Group 1 setting from the Remote end (Bus split mode)			Group 2 setting from the Remote end (Bus close mode)		
			Longest Line data (per km)	Shortest Line data (per km)	Remarks	Longest Line data (per km)	Shortest Line data (per km)	Remarks
Kahalgaon A (Bus 1 & 2)	400 kV Kahalgaon-Lakhisarai 1	145 km, Twin Moose	KHSTPS A- MTN B (172 KM) Twin moose D/C R1=0.0288 X1=0.3070 B1=3.7700 R0=0.2690 X0=1.0700 B0=2.2900 R0m=0.2080 X0m=0.6750	KHSTPS-FRK # 3/4 (95 km) twin moose D/C R1=0.0288 X1=0.3070 B1=3.7700 R0=0.2690 X0=1.0700 B0=2.2900 R0m=0.2080 X0m=0.6750	Yes Required due to change in long & short line	KHSTPS-BARH # 1/2 (217 km) Quad moose D/C R1=0.0147 X1=0.2530 B1=4.5800 R0=0.2480 X0=1.0000 B0=2.6400 R0m=0.2030 X0m=0.6620	KHSTPS-BANKA#1/2 (54km) twin moose D/C R1=0.0288 X1=0.3070 B1=3.7700 R0=0.2690 X0=1.0700 B0=2.2900 R0m=0.2080	Yes Required due to change in long & short line
	400 kV Kahalgaon-Lakhisarai 2	145 km, Twin Moose			Yes Required due to change in long & short line			Yes Required due to change in long & short line
	400 kV Kahalgaon A- Maithon B	172 km, Twin Moose			Yes Required due to change in long & short line			Yes Required due to change in long & short line
	400 kV Kahalgaon-Farakka 3	95 km, Twin Moose			Yes Required due to change in long & short line			Yes Required due to change in long & short line
	400 kV Kahalgaon-Farakka 4	95 km, Twin Moose			Yes Required due to change in long & short line			Yes Required due to change in long & short line
	400/132 kV ICT 1 (200 MVA)							
	400/132 kV ICT 2 (200 MVA)							
Kahalgaon B (Bus 3 & 4)	400 kV Kahalgaon-Banka 1	53.735 km, Twin Moose	KHSTPS-BARH # 1/2 (217 km) Quad moose D/C R1=0.0147 X1=0.2530 B1=4.5800 R0=0.2480 X0=1.0000 B0=2.6400 R0m=0.2030 X0m=0.6620	KHSTPS-BANKA#1/2 (54km) twin moose D/C R1=0.0288 X1=0.3070 B1=3.7700 R0=0.2690 X0=1.0700 B0=2.2900 R0m=0.2080 X0m=0.6750	No change required	KHSTPS-BARH # 1/2 (217 km) Quad moose D/C R1=0.0147 X1=0.2530 B1=4.5800 R0=0.2480 X0=1.0000 B0=2.6400 R0m=0.2030 X0m=0.6620	KHSTPS-BANKA#1/2 (54km) twin moose D/C R1=0.0288 X1=0.3070 B1=3.7700 R0=0.2690 X0=1.0700 B0=2.2900 R0m=0.2080 X0m=0.6750	No change required
	400 kV Kahalgaon-Banka 2	53.735 km, Twin Moose			No change required			No change required
	400 kV Kahalgaon-Barh 1	217.2 km, Quad Moose			No change required			No change required
	400 kV Kahalgaon-Barh 2	217.2 km, Quad Moose			No change required			No change required
	400 kV Kahalgaon B - Maithon A	172 km, Twin Moose			No change required			No change required
	400 kV Kahalgaon-Farakka 1	95 km, Twin Moose			No change required			No change required
	400 kV Kahalgaon-Farakka 2	95 km, Twin Moose			No change required			No change required

NTPC and PGCIL may kindly confirm the readiness for final protection coordination and protection group setting at respective substations.

Members may discuss

Item No. B.13: Replacement of defective Tie-line energy meter of one circuit of 132kV Patratu(DVC)-Patratu TPS --DVC

DVC vide letter dated 6th June 2019 informed that the old energy meter one circuit of 132kV Patratu(DVC)-Patratu TPS (L#85) is not working since long. One new energy meter has been collected by DVC from Powergrid for replacement. DVC requested Powergrid to install the meter at the earliest.

DVC and Powergrid may update.

Item No. B.14: Reliability of 220 kV Ranchi-Hatia D/C--ERLDC

Major part of Jharkhand's capital city Ranchi's load and nearby area is supplied from, 220 kV Hatia substation. Further, Bihar imports significant power through 220kV Hatia-PTPS-Tenughat& 220kV Hatia – Ranchi(PG) D/C routes. PTPS power station has been decommissioned and in the event of less generation or outage of unit at Tenughat, 220 KV Ranchi(PG)-Hatia D/C gets overloaded and N-1 security criteria is not satisfied during that period. Any outage /tripping of this circuit or low generation at Tenughat will directly impact on the reliability of the the power supply to the Capital City.

400/220/132kV Daltonganj S/Stn of POWERGRID together with 400kV Sasaram-Daltonganj D/C line were commissioned on 31st Jan 2018. Further, 132 kV Latehar-Daltonganj D/C line of JUSNL has been LILOed at 132kV Daltonganj(PG). As the LILO has been constructed using Panther conductor, only Daltonganj load is supplied radially from DaltonganjPG S/Stn.The

existing 132 kV Hatia-Lohardaga-Latehar-Daltonganj D/C line of JUSNL is rated for 220 kV Operation however is being operated at 132 kV level thus reducing the overall drawal from Daltonganj. This further reduces the effective utilization of 400 kV alternate source of power to meet the Ranchi load.

In view of the above following remedial actions are suggested

1. Maintaing good generation at Tenughat and expediting commissioning of 3X800MW thermal power plant at Patratu by PUVNL.
2. Reducing drawl by Bihar through 220 kV Tenughat-Biharsariff.
3. Planning for utilization of HTLS conductor 220 kV Ranchi – Hatia D/C may also be envisaged.
4. Upgradation of the existing 132 kV Hatia-Lohardaga-Latehar-Daltonganj D/C line of JUSNL to 220 kV level to meet the Lohardaga, Latehar, Gumla and Daltonganj keeping the voltage profile within IEGC band. This will reduce the loading on 220 kV Ranchi-Hatia D/C.

Members may discuss

Item No. B.15: Issues related to installation/integration of PMU under URTDSM project in ER---ERLDC

It was informed that installation/integration of PMU under URTDSM project could not be completed at following stations:

Sl no	Name of S/s / Locations	Site Visit of GE Engineer	Status/Action Plan
1	**TTPS**	**M/s. GE Engineer available at site from 04.06.2019 to 08.06.2019**	M/s. GE engineer and POWERGRID engineer visited TTPS for completion of the pending interfacing work in PMU (Analog & Digital). Shutdown was accorded by ERLDC on 7th June-2019 in afternoon time. TTPS didn't allow for the work in afternoon time. Subsequently, shutdown was again requested by POWERGRID on 08th June-2019 from 09:30 hrs to 17:00 hrs and shutdown accorded from 13:00 hrs onwards. Shutdown taken for 02 nos. feeders (Rengali & TSTPS) and TTPS allowed for only CT interfacing. TTPS intimated that PT interfacing & Digital interfacing will be done by them in any opportunity shutdown. For other 2 nos. feeders (Meramandali-1 & 2), TTPS didn't allowed in evening time and intimated that they will do the interfacing during any opportunity shutdown. **ERLDC may instruct TTPS for completing the pending interfacing.**
2	**Budhipadar**	**M/s. GE engineer presently available at site**	Shutdown approved in 157th OCC for Budhipadar-Korba-1,2 & 3 and also approved in WR OCC. POWERGRID requested on for accord of shutdown on 11.06.2019 & 12.06.2019, but shutdown is not accorded till now. OPTCL testing team is not available for interfacing work. **ERLDC may advise OPTCL for deployment of testing team.**

3	**Talcher**	**GE Site engineer will be deployed after confirmation from NTPC.**	**ERLDC may kindly advise Talcher NTPC for confirmation of permission for work & avail of shutdown & providing testing team.**
4	**Kahalgaon**	**GE Site engineer will be deployed after confirmation from NTPC.**	M/s. GE earlier completed the interfacing works for majority of the feeders. But NTPC requested for armour cable. Later on NTPC laid armour cable. The armour cables still not glanded & terminated at respective panels. After confirmation from NTPC, M/s. GE will deploy team at site for interfacing under shutdown.

Members may discuss.

Item No. B.16: Recurring incidences of fault in 132KV kahalgaon(NTPC)- Lalmatia line-- ERLDC

As per records in the recent past there had been many instances of line faults in 132KV Kahalgaon(NTPC)- Lalmatia line during the period between April'2019 & May'2019 as detailed below:

S.No	Date	Time	Phase	Fault Location	Fault current	Zone
1	29.04.2019	10:23 hrs	B	26.4KM	3.26KA	Zone#1,Distance Protection
2	30.04.2019	11:35hrs	B	26.6KM	3.26KA	
3	01.05.2019	12:26hrs	B	26.5KM	3.14KA	
4	07.05.2019	10:39hrs	B	26.4KM	3.13KA	
5	08.05.2019	12:24 hrs	B	26.4KM	3.11KA	
6	11.05.2019	10:59 hrs	B	26.4KM	3.12KA	
7	12.05.2019	11:46 hrs	B	26.5KM	3.12KA	
8	14.05.2019	13:12hrs	B	26.4KM	3.14KA	
9	20.05.2019	10:25 hrs	B	26.4KM	3.13KA	
10	20.05.2019	11:11 hrs	B	26.4KM	3.13KA	
11	21.05.2019	12:28 hrs	B	26.5KM	3.15KA	
12	21.05.2019	14:50 hrs	B	26.4KM	3.13KA	
13	26.05.2019	11:40 hrs	B	26.4KM	3.14KA	
14	27.05.2019	10:01 hrs	B	26.6KM	3.20KA	
15	27.05.2019	11:23 hrs	B	26.4KM	3.17KA	

On every such occasion the line trips on distance protection on B-Phase indicating a distance of about 26KM from NTPC- Kahalgaon Sub-station. Heavy fault current about 3KA flows every time the fault occurs in this line associated with system disturbances. Due to recurring faults , systems are getting badly affected which cause operational hindrances in Kahalgaon power station apart from equipment failure threats to ICTs, Circuit Breakers & its other associated systems by handling the repeated fault current.

In the interest of safety & security of the grid and safe operation of Kahalgaon power station, it is requested to JUSNL to resolve the issue at the earliest.

JUSNL may respond.

Item No. B.17: Frequent Tripping of 220kV TTPS-Biharshariff and TTPS-PTPS transmission lines--TVNL

TVNL vide letter dated 6th June 2019 informed that 220kV TTPS-Biharshariff and TTPS-PTPS transmission lines got tripped multiple times during last two months resulting heavy generation and revenue loss to TVNL. The details of tripping are given below:

S.N.	Date /Time of Tripping	Date / Time of Synchronization	Feeder/ Transmission Line	Unit Load before Tripping	Unit Load after Tripping
01.	02/04/2019 11.29 Hrs.	02/04/2019 11.44 Hrs.	TTPS-Biharsharif	U#1 – 164 MW U#2 – 209 MW	U#1 – 165 MW U#2 – 135 MW
02.	04/04/2019 12.47 Hrs.	11/04/2019 17.27 Hrs.	TTPS-Biharsharif	U#1 – 175 MW U#2 – 209 MW	U#1 – 162 MW U#2 – 126 MW Again, load reduced and finally boxed up at 24.00 Hrs.
03.	17/04/2019 10.16 Hrs.	17/04/2019 18.04 Hrs.	TTPS-Biharsharif	U#1 – 170 MW U#2 – 193 MW	Total Power Failure Both Units tripped
04.	29/04/2019 12.37 Hrs.	29/04/2019 13.22 Hrs.	TTPS-PTPS	U#1 – 174 MW U#2 – 193 MW	U#1 – 160 MW U#2 – 82 MW
05.	23/05/2019 16.27 Hrs.	23/05/2019 17.47 Hrs.	TTPS-Biharsharif	U#1 – 167 MW U#2 – 168 MW	Both Units tripped
06.	25/05/2019 12.02 Hrs.	25/05/2019 21.20 Hrs.	TTPS-PTPS	U#1 – 0 MW (S/D) U#2 – 180 MW	U#1 – 0 MW (S/D) U#2 – 176 MW
07.	28/05/2019 12.06 Hrs.	29/05/2019 21.56 Hrs.	TTPS-Biharsharif	U#1 – 161 MW U#2 – 172 MW	U#1 – 156 MW U#2 – 88 MW Finally, Unit#2 was boxed up at 01.00 Hrs.

BSPTCL, JUSNL and TVNL may explain.

Item No. B.18: REPLACEMENT OF OLD RTUS IN EASTERN REGION FOR REPORTING OF RTU/SAS TO BACKUP CONTROL CENTRES

In 39th ERPC Meeting, it was decided that,

i) ERPC approved the proposal of Power Grid for replacement of the old RTUs in the Eastern Region for reporting of RTU / SAS to backup control centres at an estimated cost of Rs. 88.57 Crore with an implementation time of 36 months.

ii) Power Grid shall place a proposal before PSDF Committee for financing the above project from PSDF.

In 40th TCC, Powergrid informed that the DPR for PSDF would be submitted by April, 2019.

In 157th OCC, Powergrid informed that the DPR for PSDF would be submitted by 31st May, 2019.

Powergrid may update.

Item No. B.19: Unavailability of Video Conference facility at Sikkim SLDC--Sikkim

Sikkim vide mail dated 15th May 2019 informed that their Video Conference unit was having problem of HDMI port since last two years and it was not attended by M/s Chemtrols until January 2019. After that they took entire VC unit for repair.

Sikkim added that they raised the issue in last SCADA meeting wherein M/s Chemtrol assured to get it repaired by 30.04.2019 but the same is not yet returned.

Members may discuss.

Item No. B.20: Low Frequency Oscillation at DSTPS Power Plant on 24th April from 17:37-17:54 Hrs--ERLDC

The DSTPS Power plant is having two units each of 500 MW capacity. On 24th April 2019, on multiple occasions low frequency oscillation was observed at DSTPS Power plant from 17:37-17:54 Hrs. The time plot of the net generation of DSTPS power plant based on data recorded by PMUs installed on its evacuation lines is given below for this event. It is known that severe oscillation had been observed in the past also at DSTPS power plant due to hunting of governor in the year 2013 and tripping of Boiler Feed Pump Trip in the year 2018. All these three events of oscillation have led to grid-scale oscillation. ERLDC has gathered the details of last PSS tuning activity at DSTPS power Plant that was completed in the year 2016. In recent past, one major network change has occurred around DSTPS Power plant which involves splitting of 400 kV Maithon Bus. Thus, along with above cases of LFO, the network changes also necessitate review of the PSS tuning of the generating units at DSTPS.

DSTPS (DVC) may kindly submit the following details:

1. Reason for such oscillation observed in DSTPS power plant.
2. Performance of the Last PSS tuning Exercise (No Details submitted so far to ERLDC)
3. Firm Timeline for PSS tuning activity as per discussion in 31st Jan 2019 meeting and above agenda item and in compliance to IEGC 5.2.K and CEA (Technical standards for connectivity to the Grid) Regulation, 2007 6.g

In 157th OCC, DVC informed that they would submit the detailed report to ERPC and ERLDC at the earliest.

DVC added that they were planning to conduct the PSS tuning during overhauling of the units.

DVC may update.

Item No. B.21: Review of the PSS Tuning of Generators in Eastern Region

On 31st January 2019, PSS Tuning Meeting was held at ERPC. All generating utilities were advised to complete the PSS tuning of their plant at earliest for improvement of damping in the grid during transients. In addition, the tuning reports have also to be submitted to ERLDC/ERPC for their validation.

In line with this ERLDC has communicated to following utilities in view of the recent oscillation observed during various events:

Generating Power Plant	Remarks	Status of Action Plan to be informed to OCC
All Units of DVC Generating Plant	Oscillation Observed at DSTPS on 24th April 2019 and other Oscillation events in the past.	*During overhauling of the units.*
Sikkim Hydro Complex (Teesta3, Teesta 5, Chujachen, Dikchu, Tashiding, Jorethang)	In view of Oscillation during the 16th April 2019 events and changes in Network configuration in Sikkim hydro Complex with augmentation of lines	During lean generation period
MPL Plant	Due to Change in Network configuration dur to bus splitting at Maithon.	MPL Unit-2: 14th June-2019 in the AOH. MPL Unit-1: Planned in the AOH on Nov-2019.
APNRL Plant	Oscillation with Low Damping during transient and switching	*During overhauling of the units.*

	observed at the plant	
Farakka NTPC Power Plant	With Augmentation of new lines and changes in network configuration with upcoming bus split at Kahalgaon.	*During overhauling of the units.*
NPJC/BRBCL/KBUNL NTPC Power Plant	The new units have been commissioned however there is no details on the PSS tuning activity in line with Indian Electricity Grid Code and CEA Grid Connectivity Standards	

Detailed status of other Plants regarding their tuning/data submission and Validation of PSS Tuning Data given as Annexure B21.

Members may update.

Item No. B.22: Power Assistance at Manique GSS from DVC and at Kendposi GSS from OPTCL –JUSNL

JUSNL vide letter dated 8th February 2019 informed that they are planning shutdown of 132 KV D/C RCP-ADP line for erection of 05 nos. Multi Circuit Tower in place of existing transmission tower. Erection of Multi Circuit Tower is inevitable for new 132 KY RCP-Jadugoda transmission line due to limitation of vacant corridor.

In 154th OCC, JUSNL explained that they needed around 35 MW power from Manique (DVC) and 40 MW power from Joda (OPTCL) S/s during the shutdown of 132kV Ramchandrapur-Adityapur D/C line for 31 days.

DVC informed that, due to network constraints in DVC system, DVC would not be in a position to give power from Manique (DVC).

OPTCL informed that the ATRs at Joda are quite old and they are planning to augment the ATRs. Power could be extended to JUSNL only after completion of augmentation of ATR.

Underlining the need to facilitate the shut-down to JUSNL and at the same time, to ensure system integrity, OCC advised Member Secretary, ERPC to convene a special meeting at ERPC Secretariat to discuss the issue with JUSNL, DVC, OPTCL, ERPC and ERLDC to arrive at an acceptable solution.

Accordingly, a separate meeting was held on 1st March 2019.

In 155th OCC, OPTCL informed that in view of Lok Sabha Elections, they had not taken the shutdown of 220/132kV ATR at Joda for augmentation work. OPTCL added that they would take the shutdown after the Elections.

In 156th OCC, JUSNL informed that they are ready to take the shutdown of 132 KV Ramchandrapur-Adityapur D/C line but they needed around 35 MW power from Manique (DVC).

It was informed by ERPC Secretariat that DVC vide mail had informed that power Assistance at Manique GSS through 132kV Chandil-Manique Tie would be provided after putting the ICT#2 at BTPS-A on load which may take few more days.

In 157th OCC, DVC vide mail dated 9th May 2109 conveyed approval for power assistance through 132kV Chandil-Manique tie from 15-05-19 onwards for 31days under following conditions:

1. The maximum drawl must be restricted to 35MW in Off-peak period and 25MW in Peak period.
2. 220kV Jamshedpur-Jindal tie must remain in service during the period.

JUSNL agreed and requested OPTCL to provide 25 MW power support from Joda(OPTCL) to meet their traction load.

OPTCL agreed to give their consent within 2 days.

Members may update.

Item No. B.23: Status of projects funded under PSDF schemes

In the PSDF review meeting, it was advised to RPCs to monitor the status of all the projects funded by PSDF. Therefore, constituents are requested to update the status of projects which are being funded by PSDF in the desired format.

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	April 2018 Extended till March 2019	108.6 Cr	37 Cr.	Project has been completed. Final value of the project is 51.22 Cr.
2		Renovation & modernisation of transmission system for relieving congestion in Intra-State Transmission System.	22-05-17	March 2020	70.13	63.12 Cr	Order has been placed . Work is in progress.
3		Installation of switchable reactor at 400kV & shunt capacitors at 33kV	22-05-17	November 2019	43.37	11.69 Cr	Order had 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 islanding scheme had been implemented and in operation wef**15.11.2018***
5		Upgradation of Protection and SAS		April 2020	23.48	2.348 Cr	Bid opened and order has been placed. Work started.
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.	11.05.15	31.03.19	162.5 Cr.	37.79 Cr	90% work has been completed. Total expenditure may not exceed 68 Cr.
7		Implementation of OPGW based reliable communication at 132kV and above substations	15.11.17		25.61 Cr.	2.56 Cr	Agreement signed on 03.01.2018. Tender has been floated.
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	2.72 Cr	Tender has been floated.
9	OHPC	Renovation and up-gradation of protection and control system of 4 nos.OHPC substations.		*U.Kolab, Balimela, U.Indravati, Burla, Chiplima March 2019*	*22.35 Cr.*	2.235 Cr	Placed the work order.
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 Feb 2019.
11		Installation of capacitor bank at		31st March		Nil	Work awarded for all GSS.

		different 35 nos. of GSS under BSPTCL	5/9/2016	2019	18.88 crore		90% supply and 60% of erection had been completed.
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*	*15 Months*	*138.13 crores*	*39.02 Cr*	LOA placed to Siemens 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 77.97 Cr.
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 (ADMS) in SLDC, Odisha	22-12-17	3.26 Cr	Scheme was approved by Appraisal Committee. It was sent to CERC for concurrence.
5		Protection upgradation and installation of SAS for seven numbers of 220/132/33kV Grid substations (Balasore, Bidanasi, Budhipadar,	12-03-18	41.1 Cr.	Scheme examined by TSEG on 20.03.2018. Inputs sought from the entity are awaited.

		Katapalli, Narendrapur, New-Bolangir&Paradeep).			
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	Proposal recommended for approval of 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	78.75 Cr.	Proposal recommended by Appraisal committee as communicated on 16.11.2018.
8		Project for establishment of reliable communication and data acquisition at different substation at WBSETCL.	10-05-18	80.39 Cr.	Proposal recommended by Appraisal committee as communicated on 16.11.2018.
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.

Respective constituents may update the status.

Item No. B.24: Issue of Control Room Coordination during Outage and Restoration at Substations having multiple control room and lines with different ownership.--ERLDC

With the introduction of TBCB, multiple utilities are part of the Indian power System. As on date six (7) transmission licensees own various transmission assets of Eastern Region. The entities are **Powergrid, Sterlite (ENICL,PKTCL, OGPTL), Cross Border Power transmission Corp Ltd(CBPTCL), Darbhanga Motihari Transmission Cop Ltd(DMTCL), Powerlinks, Alipurduar Transmission Ltd(ATL) and Teesta Valley power Transmission Ltd (TVPTL).** Other than Powergrid& Sterile, no other licensee has any dedicated operational control room for coordination with ERLDC during tripping/shutdown or any other switching operations. Only mobile number of few nodal executives of other transmission licensees is available to ERLDC, which are sometimes unreachable during odd hours. Due to non-availability of dedicated control center, it is very difficult to coordinate with associated transmission licenses during tripping of lines in odd hours, which causes delay in restoration of transmission asset and collection of tripping related information. ERLDC Real time operators are facing few difficulties which are presented on case to case basis:

Case 1: Transmission line owner and substations owner are different: In this case, in case of line tripping, ERLDC has to coordinate with three different utilities for trial attempt or restoration of the line. Also, in case of planned outage the ERLDC has to coordinate with three separate utilities resulting in unavoidable delays

Case 2: In same Substation two different control room: In one of the substations, it is observed that new transmission line integration is coming up with separate control room. This makes it quite difficult to coordinate the charging attempt as Bus/line both owners even though in same substation has to be coordinated. Again, this results in unavoidable delays and confusion among operators in calling two separate operators at same substation.

In view of the above, to avoid any confusion and unwanted delays during real time operation, a strategy and responsibility has to be fixed to ease out the RLDC Real time operator job.following is suggested:

For better co-ordination between transmission licensee and control center, all transmission licenses are requested to formulate their own control center and share the details with all.

For minimizing time and efforts required in coordinating with different agencies and facilitating decision making by ERLDC, it is proposed that representatives of the private transmission

licensees in ER may be deployed at RTAMC-1 / RTAMC-2 with their own infrastructure or one executive of the private transmission licensee to be deployed at the substation from which transmission licensees line emanate.

Members may discuss.

Item No. B.25: Collection of daily Renewable Energy (RE) Generation data--CEA

Renewable Energy Project Monitoring Division CEA has been entrusted with the work of collection and compilation of Renewable Energy (RE) generation data. The monthly generation report for RE generation is published by CEA. It is also decided that compilation and publication of daily RE generation data will also be done by CEA. It is understood that all State Load Dispatch Centers (SLDCs) are furnishing daily RE generation data to concerned RLDCs, which is being used for publication of daily Power Supply reports.

RLDCs may be requested to send the compiled Excel file of daily RE generation data collected from SLDCs to CEA by 12 AM everyday so that the tentative daily, RE generation report may be published by CEA. The information may be forwarded at e-mail address: cerpmcea@gmail.com.

This data is only for operational reporting purpose and have no commercial implication.

SLDCs and ERLDC may comply.

Item No. B.26: Non-submission of daily energy data in PSP portal during night hours for preparation of PSP report--ERLDC

ERLDC is preparing daily Power Supply Position (PSP) around 04:00hrs on daily basis based on energy data provided by the generators, states& transmission licenses.The correctness of the data in this report is very essentials as the energy data furnished in this report are being shared with various important organizations. As per current procedure, generators, transmission licenses & states are submitting the energy data to ERLDC web based reporting portal during night hours using their user credentials. However,it has been observed that some of the stakeholders are not submitting the data to ERLDC portal during night hours and in some cases data furnished by the stakeholders are erroneous.

Following are the ERLDC observation regarding data submission by the stake holders:

1. ISGS NTPC generators like Talcher, Barh and BRBCL submitted data regularly. However generators like Kahlagaon, Farakka and KBUNL are submitting data during very late night hours after repeated persuasion from ERLDC control room.
2. Inter-regional data submitted by the RTAMC ER - 1 & 2 sometimes differ significantly from the data recorded by SEMs installed in Inter Regional Link.
3. West Bengal SLDC always submits partial data.
4. SLDCs need to submit state generators Ex-Bus generation data at desired field of web based reporting software. However some SLDC submit gross generation data of state generator at their desired data field.

The above discrepancies are making the Daily Power Position Report vulnerable to errors / inaccuracies besides causing difficulty in timely preparation of the report. Submission of correct and complete data by the stake holders is very much essential for publication of correct Daily Power Position Report.

Stakeholders are requested to submit correct and all required data field available in web based reporting software during night hours.

Members may discuss.

Item No. B.27: Reliability Indices Submission by PGCIL ERTS-1/ERTS-2 to ERLDC in Line with CERC Regulation--ERLDC

As per the CERC (Standards of Performance of inter-State transmission licensees) Regulations, 2012 all ISTS Licensee must submit the reliability Indices to the POSOCO. These include Correct operation/Incorrect Operation/Unwanted Operation of protection system for ISTS lines. This data must be submitted along with the ISTS Monthly Availability Data as the same has to be reported by POSOCO on monthly basis to Commission as per the regulation.

All ISTS Licensee in Eastern region are providing these details along with their Transmission availability details on monthly basis except PGCIL ERTS-1 and ERTS-2. ERLDC has requested PGCIL ERTS-1/ERTS-2 to submit these details for ISTS lines of PGCIL on number of occasions however the same has not yet been furnished thus non-compliance of the regulatory provision as given above.

In 157th OCC, ERLDC informed that all ISTS Licensee in Eastern region are providing the details along with their Transmission availability details on monthly basis except PGCIL ERTS-1 and ERTS-2.

Powergrid agreed to submit the details from next month.

Powergrid may update.

Item No. B.28: Deferment of shutdown of 315 MVA ICT at Malda S/S since Dec-18--Powergrid

Under ERXX-XVII package, at Malda S/S, 02 No's 400/220/33 KV, 315 MVA ICT is supposed to be augmented by 500 MVA ICT. One ICT has already reached Malda S/S in the month of December-18. Apart from augmentation of ICT, total 06 No's bay also to be upgraded at Malda S/S, as follows:

1. 220 KV Transfer Bus Coupler Bay.
2. 400 KV Transfer Bus Coupler Bay.
3. 400 KV Side bay of ICT-3 & ICT-5.
4. 220 KV Side bay of ICT-3 & ICT-5.

Since the arrival of ICT at Malda S/S, POWERGRID is continuously pursuing for the S/D of any one ICT along with 220 KV TBC Bay, however, citing the difficulty of loading and Board exams/Elections, the S/D is continuously deferred. Now the erection agency has also pressurized for taking the S/D such that commissioning of the ICT can be completed and greater flexibility can be provided in the ongoing system.

Apart from replacement of the ICT, the removed ICT will go to Binaguri S/S for commissioning as 3rd ICT (Under ERSS-XX), which also delayed as the original is not getting freed for want of S/D. Considering above scenario, it is proposed to provide S/D of 315 MVA ICT-III of Malda S/S from 10-07-2019 to 15-08-2019, for commissioning of new 500 MVA ICT.

Members may discuss.

Item No. B.29: Maintenance of bays of M/s BSPTCL located at POWERGRID Sub-stations--Powergrid

The matter regarding signing of O&M agreement between BSPTCL and POWERGRID for O&M of bays of M/s BSPTCL at Banka, Gaya, Patna & Muzaffarpur has been taken up with M/s BSPTCL no. of times and also been discussed in various forums of ERPC. After several follow up, M/s BSPTCL vide their letter no. 192 dtd. 14.06.2019 (copy enclosed), has informed that the bays owned by BSPTCL in the premises of POWERGRID S/S shall be maintained by them self.

BSPTCL and Powergrid may discuss.

Item No. B.30: Finalization Outage Request and processing timeline--ERLDC

The procedure for timeline regarding submission of outage request till approval of the outage formulated by ERLDC has been circulated and discussed in 156th OCC meeting held at NTPC, Kahalgaon. The same had also been presented in 157th OCC meeting held at ERPC, Kolkata for beneficiary's comments/suggestion. Till date ERLDC did not receive any objection/suggestion from the utilities. Under this circumstance, the procedure mentioned through a flow chart in **Annexure-B30** may be approved and minute unless any modification/suggestion recommended.

Members may discuss.

Item No. B.31: Maintenance and support (AMC) renewal of PSSE software.

Siemens vide letter dated 20th March 2019 informed that the AMC for PSSE software has ended on 30th November 2018.

Siemens requested ERPC Secretariat to renew the maintenance and support period for all the existing supplied licenses of states for next five years.

In 156th OCC, All the SLDCs in the meeting agreed for renewal of the AMC of PSSE software for next five years and requested to take up the AMC contract jointly for all the states with the Siemens as it was done during the procurement of software.

OCC advised ERLDC to take up the issue with NLDC and CTU.

In 157th OCC, ERLDC informed that AMC for PSSE software had been done by POSOCO for all the RLDCs.

Thereafter, Siemens submitted the Budgetary offer for five years AMC for Eastern Region state utilities which is enclosed at ***Annexure-B31****.*

Members may update.

Item No. B.32: Additional agenda

PART C: ITEMS FOR UPDATE

Item no. C.1: Status of UFRs healthiness installed in Eastern Region

UFR Healthiness Certification for the month of May, 2019 has been received from OPTCL, CESC, WBSETCL, DVC, BSPTCL and JUSNL.

Members may note.

Item no. C.2: Status of Islanding Schemes healthiness installed in Eastern Region

At present, the following islanding schemes are in service:

1. CESC as a whole Islanding Scheme, CESC
2. BkTPS Islanding Scheme, WBPDCL
3. Tata Power Islanding Scheme, Haldia
4. Chandrapura TPS Islanding Scheme, DVC
5. Farakka Islanding Scheme, NTPC
6. Bandel Islanding Scheme, WBPDCL

In 108th OCC meeting, respective constituents agreed to certify that the islanding schemes under their control area are in service on monthly basis.

The healthiness certificate for Islanding Scheme for May, 2019 has been received from CTPS, DVC, NTPC, West Bengal, JUSNL, WBPDCL and CESC.

Members may note.

Item no. C.3: Healthiness of SPS existing in Eastern Region

The Status of healthiness certificate for May, 2019 is given below:

Sl. No.	Name of the SPS	Healthiness certificate received from	Healthiness certificate not received from
1.	*Talcher HVDC*	*NTPC,GMR,*	*JITPL, Powergrid,*
2.	SPS in CESC system	*CESC*	*Nil*
3.	SPS at Chuzachen	*Chuzachen*	*Nil*

Members may update.

Item no. C.4: Implementation of Automatic Demand Management Scheme (ADMS)-ERLDC

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	They would place the order to Chemtrol for implementation.	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 <	9 Months Tendering for RTU installation is in progress. Offer	Condition 1: Block I feeders will be selected for load shedding Condition 2: Block I & II feeders will be selected for load shedding

		49.9 Hz AND deviation > 12 % or 50 MW 3. System Frequency < 49.9 Hz AND deviation > 12 % or 75 MW	received from Chemtrol for implementation.	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, it was 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 40th TCC, ERLDC informed that in SCADA O&M Meeting held on 6th March 2019, Chemtrol has agreed to implement ADMS in Bihar and Jharkhand system without any additional charges. However necessary consent for making payment of Rs 4 lakhs (excluding GST) for remaining period of maintenance contract shall be given before implementing the same.

In the TCC Meeting, both Bihar and Jharkhand gave consent for making necessary payment.

In 156th OCC, it was informed that in SCADA O&M Meeting held on 24th April 2019, Chemtrol had informed that ADMS had already been implemented in Bihar and testing was to be done. Chemtrol had added that, for implementation ADMS for Jharkhand, they needed the list feeders as per the blocks.

OCC advised Bihar and Jharkhand to do the needful to implement the ADMS.

Members may update.

Item no. C.5: 220 kV inter-connecting lines of OPTCL with 400/220 kV Bolangir (PG), Keonjhar & Pandiabil S/s

PGCIL has already commissioned the 2x315MVA 400/220kV Bolangir S/s by LILOing of 400kV Meramandali-Jeypore S/C line and 400/220 kV Keonjhar S/s with an objective of supplying power from ER grid to its adjoining areas in Odisha.

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

Sl. No.	Name of the transmission line	Completion schedule
1.	**2x315MVA 400/220kV Bolangir S/s**	
a.	LILO of one circuit of Sadeipalli-Kesinga220 kV D/C line at Bolangir S/S	*Only 7 towers left (Severe ROW problem).**By July, 2019.***
2.	**400/220kV Pandiabil Grid S/s:**	
a.	Pratapsasan(OPTCL)-Pandiabil(PG) 220 kV D/C line	***By July, 2019.***
3.	**400/220 kV Keonjhar S/S**	
a	Keonjhar (PG)-Turumunga(OPTCL) 220kV D/C line	By June 2020

OPTCL may update.

Item no. C.6: 220 kV inter-connecting lines of JUSNL with 2x315 MVA, 400/220 kV sub-stations at Chaibasa, Daltonganj & Dhanbad

In last 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 Dec, 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 June 2019.
c	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
3	**Dhanbad400/220kVS/s**	
A	LILO of Govindpur–Jainamore/TTPS 220kVD/c at Dhanbad	ROW issues.Target date April 2020.

JUSNL may update.

Item no. C.7: 220 kV inter-connecting lines of WBSETCL with 400/220 kV, 2x315 MVA Subashgram & 2x500 MVA Rajarhat sub-stations

In last OCC, *WBSETCL updated the latest status as follows:*

Sl. No.	Name of the transmission line	Completion schedule
1.	**2x500MVA, 400/220kV Rajarhat---**	
a.	Rajarhat-N. Town-2 (WBSETCL) 220 kV D/C line	ROW problem, August 2020
b.	Rajarhat- Barasat (WBSETCL) 220 kV D/C line	The line is charged from Rajathat and Jeerat. The line would be charged from Barasat end after completion of rest of the work by September 2020.
2	**Subashgram400/220kVS/s**	
a	Subashgram–Baraipur220kVD/cline	December 2019, 80% of work has been completed.

WBSETCL may update.

Item no. C.8: Bypassing arrangement of LILO of 400kV Lines at Angul

LILO of Meramundali-Bolangir/Jeypore 400 kV S/C line and LILO of one Ckt of TalcherMeramundali 400 kV D/C line has been done at Angul 765/400kV Sub-station. The bypass arrangement for these circuits were under implementation at Angul by Powergrid.

In 156th OCC, Powergrid informed that bypass arrangement would be completed by June 2019.

OPTCL may please inform the commissioning schedule of the 2nd circuit of 400kV Meramundali-Mendhasal line.

Powergrid and OPTCL may update.

Item no. C.9: Update on status of telemetry

CERC vide order dated 28.02.2016 on Petition No. 007/SN/2014 directed NLDC and respective RLDCs to update the status of telemetry every month at their respective websites and take up the issue of persistent non-availability of data from Generating Stations/substations at RPC meetings for appropriate action.

Major issues are given below:

i. Regarding frequent intermittent of real time SCADA data from Talcher STPS Stage 1 & 2, NTPC agreed to provide additional ports by March 2019.
ii. Alternate path for Malda–Farakka OPGW link

In 153rd OCC, Powergrid was advised to implement alternate OPGW link through 400 kV Kishenganj- Darbhanga-Muzaffarpur lines.

In 40th TCC, it was informed that in SCADA O&M Meeting held on 6th March 2019, both DMTCL and KPTL agreed to extend the necessary support to implement the scheme. DMTCL has insisted on payment for extending the facility.

In the TCC Meeting, Powergrid clarified that as per the terms of TBCB project, DMTCL and KPTL are not entitled for any charges for using the OPGW for SCADA.

TCC advised Powergrid to implement the scheme within three months as indicated by Powergrid in SCADA O&M Meeting.

Members may update.

Item no. C.10: Transfer capability determination by the states

In order to ensure, safe and secure operation of the grid, the states should carry out the power system study for operational planning and power transfer capability through their respective transmission links with the rest of the grid.

It was decided in the NPC meeting that to begin with, power system study for assessment of operational limits / power transfer capability for each state will be done by the concerned RLDC in association with concerned SLDC. Monthly TTC /ATC will be uploaded by the SLDCs at their respective websites and also communicated to concerned RLDC & NLDC subsequently.

Latest status of State ATC/TTC declared by states for the month of September-2019

SlNo	State/Utility	TTC import(MW)		RM(MW)		ATC (Import) MW		Remark
		Import	Export	Import	Export	Import	Export	
1	BSPTCL	5130	--	100	--	5030	--	Aug-19
2	JUSNL	1289	--	32	--	1257	--	Sep-19
3	DVC	1171.6	3142	61.46	48.26	1110.14	3093.7	Sep-19
4	OPTCL	2391	--	90	--	2301	--	Sep-19
5	WBSETCL	4180	--	400	--	3780	--	July-19
6	Sikkim	--	--	--	--	--	--	

Members may update.

Item no. C.11: 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 02 locations (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.

In 157th OCC,Powergrid informed that optical fiber for AMR had been implemented at 35 locations and rest of the locations would be completed by July 2019.

POWERGRID may please update the progress.

Item no. C.12: Mock Black start exercises in Eastern Region – ERLDC

Mock black start date for financial year 2019-20 is as follows:

Sl no	Name of Hydro Station	Schedule	Tentative Date	Schedule	Tentative Date
		Test-I		Test-II	
1	U.Kolab	Last week of May, 2019		Last Week of January 2020	
2	Maithon	1stweek of June 2019		1st Week of February 2020	
3	Rengali	2ndweek of June 2019		Last week of November 2020	
4	U. Indarvati	3rdweek ofJune 2019		2nd week of February 2020	
5	Subarnarekha	1stweek of October 2019		1st week of January 2020	
6	Balimela	3rdweek of October 2019		1st week of March 2020	
7	Teesta-V	2ndweek of May 2019	May 2019	Last week of February 2020	
8	Chuzachen	Last Week of Dec 2019		Last week of February 2020	
9	Burla	Last Week of June 2019		Last week of February 2020	
10	TLDP-III	1st Week of June 2019		2nd Week of January 2020	
11	TLDP-IV	Last Week of June 2019		1st Week of February 2020	
12	Teesta-III	Last Week of Oct 2019		First Week of March 2020	
13	Jorthang	First Week of May 2019		First Week of Feb 2020	
14	Tasheding	2nd Week of May 2019		2nd Week of Feb 2020	
15	Dikchu	Sep 2019		3rd Week of Feb 2020	

Members may update.

Item no. C.13: Submission of Thermal Loading of Transmission line and associated terminal equipment by ISTS licensee

Thermal Loading of Transmission line and associated terminal equipment is one of the most vital data which is utilized for Operation Purpose, calculation of ATC/TTC and various other studies. This information has to be submitted by the utilities however even after so much follow-up, significant delay has been observed in submission. All Utilities are advised as quoted below are advised to submit the details by next OCC Meeting to ERLDC. In case of non-submission, the information on non-sharing of details will be shared with **National Power Committee.**

Name of Utility	Whether End Equipment Rating Submitted or Not?
PGCIL ERTS-1 and ERTS-2	
DMTCL	
Sterlite (ENICL, OGPTL, PKTCL)	
TVPTL	
Alipurduar Transmission Limited	
Powerlink	
CBPTCL	
OPTCL	**Submitted**
WBSETCL	**Submitted**
BSPTCL	
DVC	**Submitted**
JUVNL	

Members may update.

Item no. C.14: Summary of Status Update on Previous agenda items in OCC

OCC	Agenda	Decision	Status Update
152	**Item No. B3: Installation of PMUs for observation of the dynamic performance of STATCOMs**	Powergrid informed that M/s GE had agreed to supply and install of 4 no's PMUs for 4 STATCOMs in the Eastern Region within the quantity variation clause under the existing URTDSM Project.	In 157th OCC Meeting Powergrid informed that the work would be completed by July 2019.
154	**Item No. B.18: Details of Capacitor bank installed in Distribution/Sub transmission network**	OCC advised all the states to submit the updated capacitor bank list in their control area to ERLDC and ERPC.	Bihar/Orissa has submitted the Details. Jharkhand and DVC does not have any capacitor bank installed. **West Bengal/ Sikkim May kindly update the status**
155	**C.22: Collection of modeling data from Renewable as well as conventional energy generators: ERLDC**	OCC advised all the constituents to submit the details of renewable power plants of 5 MW and above.	157th OCC advised all the SLDCs to submit the details to ERPC and ERLDC.
156	**Low frequency Oscillation at MTDC BNC-ALP-Agra**	OSS Advised ERTS-2 to submit the analysis report to ERLDC/ERPC	157th OCC advised ERTS-2 to submit the analysis report to ERLDC/ERPC. **Even after repeated persuation ERTS-2 is not submitting the report**.
156	**Item no. C.20: Updated Black Start and Restoration procedure of State--ERLDC**	DVC and Orissa have submitted the updated restoration procedure.	In 157th OCC Jharkhand, West Bengal, Sikkim and Bihar agreed to share the details within a week. **However restoration procedure form above are still not recived.**
156	**Item No. B.12: Status of Auto-Reclosure on Lines from Tala and Chukha Hydro Power Plant (Bhutan)**	DGPC informed that an expert Committee was constituted to enable the autorecloser for transmission lines connected to Tala and Chuka hydro stations. The Committee had recommended for implementation of the autorecloser at Tala and Chuka.	In 157th OCC meeting DGPC informed that they are implementing autorecloser at Tala. Powergrid informed that autorecloser had been implemented at their end..

		DGPC added that they are planning to implement the autorecloser scheme for the transmission lines connected at Chuka by May 2019. Based on the experience gained, they would implement the autorecloser scheme for the transmission lines connected at Tala.	**DGPC may update**

Item no. C.15: Delay in furnishing information to ERLDC/ERPC regarding of Commissioning of new Transmission Elements/ Generating Units within State and integration of SCADA data with ERLDC--ERLDC

The above matter was deliberated in several past OCC meetings and format for data submission was also circulated. All states and transmission licensees agreed to submit the list of transmissions elements (ISTS & within state) synchronized **for the first time**during last month and new elements to be commissioned during next month, within 7th day of the current month to ERLDC through mail.

For the Month of April-2019, except Odisha no state and transmission licensee has submitted its list of transmission element /generators synchronised **in the previous Month** and List of Transmission element and generators expected to be synchronised during next Month.

The absence of updated information regarding new elements energized in the previous month and elements expected to be commissioned during the next month poses difficulty in integration of SCADA data of intra state lines in ERLDC SCADA system, which in turn severely impairs monitoring and supervising the regional grid – both in real time as well as off-line, at RLDC level. It is also observed that in ERLDC SCADA network and SLDC SCADA network some of the 220 and 132 kV transmission lines and substations are yet to be updated.

ERLDC is in the process of checking and updating the intra-state transmission network models of all states up to 132 KV using SCADA network availability at ERLDC and the transmission map available in the SLDC/STU website. Five groups (one for each state and one group for DVC & Sikkim) have already been formed at ERLDC to validate all state networks up to 132 kV level. In this regard all SLDCs are requested to nominate two executives(one from system operation and one from SCADA side) who shall help and coordinate with ERLDC executives during state network validation process for successful updating of SCADA and off-line models.

In the 157th OCC meeting members were requested to nominate two executives. However, till date nomination has been received from SLDC Jharkhand only.

In the interest of smooth and expeditious execution of this important work of validation / updation of state SCADA models, constituents are once again requested to please cooperate by nominating their concerned representatives.

Members may please note and nominate two executives.

PART D:: OPERATIONAL PLANNING

Item no. D.1: Anticipated power supply position during July 19

The abstract of peak demand (MW) vis-à-vis availability and energy requirement vis-à-vis availability (MU) for the month of July 19 were prepared by ERPC Secretariat on the basis of LGBR for 2019-20 and feedback of constituents, keeping in view that the units are available for generation and expected load growth etc. is at **Annexure-D.1**.

Members may confirm.

Item no. D.2: Shutdown proposal of transmission lines and generating units for the month of July 19

In 151st OCC, it was observed that constituents had not submitting the shutdown requisition within stipulated time as a result ERLDC had been facing difficulty in properly analyzing the shutdown.

OCC decided the following procedure for submission of transmission elements outage requisition:

1. ***Shutdown of Intra Regional Lines*** *- Transmission licensee/SLDCs/Transmission Asset owners shall apply shutdown of their respective Intra Regional Lines for the next month to ERLDC strictly by **8th** of every Month. Based on this, ERLDC shall prepare the list which would be placed in OCC Agenda. Any shutdown requisition received after 8th of the month would not be normally considered for discussion in the OCC meeting unless it is considered to be an emergency requirement.*
2. ***Shutdown of Inter Regional Lines*** *- Transmission licensee/ SLDCs/Transmission Asset owners shall send their shutdown requisition of Inter Regional Lines for the next month directly to NLDC strictly by **5th** of every month with a copy to respective RLDCs.*

Generator shutdown for July 2019:

System	Station	Unit	Capacity (MW)	Period		No. of Days	Reason
				From	To		
JHARKHAND	Tenughat TPS	1	210	15.07.19	10.08.19	17	Overhauling
DVC	Mezia TPS	3	210	25.06.19	30.07.19	30	COH (Blr-RLA,Turb-RLA,Gen.)
ODISHA	IB TPS	1	210	11.07.19	31.07.19	21	AOH
	Talcher TPS	2	60	25.06.19	09.07.19	9	AOH
		3	60	20.07.19	03.08.19	12	AOH
WBPDCL	SgTPS	1	300	12.07.19	15.08.19	20	Capital Overhauling
	SgTPS	2	300	01.07.19	7.07.19	7	Boiler License renewal
	Bandel TPS	1	60	16.06.19	14.08.19	31	Capital Overhauling
	BkTPS	4	210	01.07.19	07.07.19	7	Boiler License renewal
NTPC	FSTPS	5	500	07.06.19	06.07.19	6	Boiler+Gen+ESP R&M
	KhSTPS	4	210	01.07.19	30.07.19	30	Boiler+Gen+ESP R&M
BRBCL	Nabinagar TPS	1	250	26.07.19	19.08.19	6	LP turbine

							inspection,Rotor threading,Generator inspection.
	KUBNL,MTPS-II	4	195	01.07.19	04.08.19	31	LP rotor inspection,Boiler OH
IPP	MPL	2	525	15.06.19	14.07.19	14	AOH
	GMR	1	350	01.06.19	05.07.19	5	Turbine Overhauling

ERLDC may place the list transmission line shutdown discussed on 24th June 2019 through VC.

Members may confirm.

Item no. D.3: Prolonged outage of Power System elements in Eastern Region

(i) Thermal Generating units:

S.No	Station	Location	Owner	Unit No	Capacity	Reason(s)	Outage		Expected Revival Date
					(MW)		Date	Time	
1	GMR	ODISHA	GMR	1	350	CAPITAL OVER HAULING	26-May-19	04:51	28-Jun-19
2	FARAKKA	WEST BENGAL	NTPC	6	500	ANNUAL MAINTAINANCE	7-Jun-19	00:15	23-Aug-19
3	KOLAGHAT	WEST BENGAL	WBPDCL	1	210	POLLUTION CONTROL PROBLEM	10-May-18	23:05	NO DEFINITE PROGRAM
4	KOLAGHAT	WEST BENGAL	WBPDCL	3	210	POLLUTION CONTROL PROBLEM	23-Feb-17	11:51	NO DEFINITE PROGRAM
5	CTPS	JHARKHAND	DVC	3	130	TURBINE BLADE DAMAGE	30-Jul-17	00:00	NO DEFINITE PROGRAM
6	JITPL	ODHISA	JITPL	2	600	BOTTOM ASH SCRAPER CLEANING JOB	8-Jun-19	01:15	18-Jun-19
7	STERLITE	ODHISA	GRIDCO	2	600	DUE TO PROBLEM IN OLTC SYSTEM OF Unit Transformer	10-Apr-19	00:29	15-Jun-19
8	WARIA	WEST BENGAL	DVC	4	210	BTL	11-Apr-19	02:45	14-Jun-19
9	SAGARDIGHI	WEST BENGAL	WBPDCL	4	500	DRY ASH SYSTEM PROBLEM	27-Apr-19	13:13	14-Jun-19
10	MEJIA	WEST BENGAL	DVC	2	210	UAT# 2B differential realy operated	12-Jun-19	20:16	14-Jun-19
	Sub Total (SS)				**3520**				

Generators/ constituents are requested to update the expected date of revival of the units.

(ii) Hydro Generating units:

Sl. No.	Station	Unit No.	Capacity (MW)	Reason (s) of outage	Outage date	Expected Revival
I.	Balimela	Unit- 1	60	Renovation &Modernizationwork (Planned)	05-08-2016	30-09-2019
		Unit- 2	60	Renovation &modernization work (Planned).	20-11-2017	30-09-2019
2	Burla	Unit-1	49.5	Turbine &Generator coupling cover water leakage (Forced)	14-03-2018	31-12-2019
		Unit-5	37.5	Renovation. Modernization & up rating work (Planned)	25-10-2016	09-12-2019
		Unit-6	37.5	Renovation, Modernization & up rating work (Planned)	16-10-2016	07-11-2019
		Unit-4	32	Intake Gate Problem (Forced)	25-10-2018	31-07-2019
		Unit-7	49.5	Replacement of GT (Planned)	06-06-2019	30-06-2019
-	Chiplima	Unit-3	24	Renovation &Modernization work (Planned)	15-10-2015	15-06-2019
4	Rengali	Unit-2	50	Capital Maintenance (Planned)	12-12-2018	30-07-2019
5	Upper Kolab	Unit-4	80	Capital Maintenance (Planned)	01-02-2019	31-07-2019
		Unit-3	80	Generator stator Inter tum/ Earth fault	28-03-2019	15-07-2019

It is seen that about 560 MW hydro capacities in Odisha is under forced outage / planned outage and therefore not available for providing the much needed peaking support during evening peak. SLDC / OHPC may please indicate restoration plan of the units.

Members may update.

(iii) Transmission elements

SL NO	Transmission Element / ICT	Agency	Outage From		Reasons for Outage
			DATE	TIME (HRS)	
1	220 KV BALIMELA - U' SILERU	OPTCL / APSEB	10-03-2018	22:45	LINE ANTITHEFT CHARGED FROM UPPER SILERU ON 17-04-18
2	400 KV IBEUL JHARSAGUDA D/C	IBEUL	29-04-2018	17:30	TOWER COLLAPSE AT LOC 44,45
3	400KV NEW PURNEA-BIHARSARIFF(PG)-D/C	ENICL	10-08-2018	10:28	TOWER COLLAPSE AT LOC 47/0
4	400 KV PATNA KISHANGANJ- I	POWERGRID	01-09-2018	00:32	TOWER COLLAPSE AT LOC 129. PILING DAMAGED
5	400KV FARAKKA - KAHALGAON- I	POWERGRID	06-03-2019	08:28	FOR TAKING UP BAY UP GRADATION WORK OF BAY-22 AT FSTPP END
6	220KV BEGUSARAI-NEW PURNEA-I	BSTPCL	29-05-2019	22:12	NEW PURNEA: Y-B, 58 km, IY-3.67 kA, IB- 3.52 kA

7	220KV BEGUSARAI-NEW PURNEA-II	BSTPCL	27-05-2019	12:54	B-N, 1.17 kA, 149.7 km from New Purnea
8	765 KV JHARSUGUDA - RAIPUR II	POWERGRID	08-06-2019	14:36	Tripped ON Y-N,12.3 KA,20 KM, PRESENTLY OUT ON HIGH VOLTAGE
9	400KV BINAGURI-TALA-IV	POWERGRID	05-06-2019	09:24	OUT DUE TO HIGH VOLTAGE
16	220KV Budhipadar- IB TPS-III & IV	OPTCL	02-06-2019	14:35	TOWER COLLAPSE AT LOC 13 & 14
17	220 KV PANDIABILI - SAMANGARA D/C	OPTCL	03-05-2019	11:10	49 nos of tower collapsed.As reported by SLDC OPTCL, total 60 nos of tower in between 220KV Pandiabili – Samangara line in which 48 nos towers fully damaged and 12 nos towers partially damaged. Line survey work under progress.

(Reported as per Clause 5.2(e) of IEGC)

** Transmission licensees whose line were out due to tower collapse/ bend, may please update the detail restoration plan and as on date work progress status in OCC.

Also Monthly progress report to be submitted to ERLDC/ERPC till restoration of the element.

Members may update.

PART E::ITEMS FOR INFORMATION

The following agenda items are placed for information and necessary compliance:

Item No. E.1: Preparation of crisis management plan for Cyber Security in Power Sector in line with CERT-IN.

The activity of the preparation of Crisis Management Plan for countering the cyber attacks and its implementation including the Mock Drills, audits etc. is being monitored by CEA regularly in line with crisis management plant of Ministry of Power. Power Utilities (including generation, transmission & distribution utilities) of eastern region are to furnish regularly the updated status to on the same to Chief Engineer, Distribution Planning & Development Division, CEA.

In 142nd OCC, ERLDC informed that, in line with Enquiry Committee Recommendation, cyber security audit is being conducted on regular basis for SCADA system installed at ERLDC and SLDC as well but cyber security audit for telecom infrastructure installed in Eastern Region is not being carried out.

OCC advised all the constituents to conduct the cyber security audit on telecom infrastructure installed in Eastern Region. It is further advised that compliance / mitigation of the points observed during the audit should also be completed for improvement of the telecom infrastructure in ER.

In 37th TCC meeting, it was decided that a workshop would be conducted by CEA at ERPC for further benefit of ER Constituents.

In 144th OCC, ERLDC informed that they have already conducted a workshop with the help of NPTI, Durgapur on 21st March 2018.

A workshop on cyber security was conducted by CEA at ERPC, Kolkataon 09-05-2018.

As suggested by CEA, a format would be circulated among ER constituents for furnishing the information of the their respective systems for discussion in OCC Meeting. The format is enclosed at **Annexure-E1**.

OCC advised all the constituents to submit the information to ERPC as per Annexure-E1.

Item No. E.2: 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 Powergridare related to PLCC problems at other end.*

The substation wise status of compliance are available at ERPC website (Observations include

PLCC rectification/activation which needs a comprehensive plan).

In 118th OCC, all the constituents were advised to comply the pending observations at the earliest. All the STUs informed that most of the observations are related to funding from PSDF. DPRs have been submitted to PSDF committee.

Item No. E.3: Commissioning of new transmission elements in Eastern Region

The details of new units/transmission elements commissioned in the month of May-2019 based on the inputs received from beneficiaries

Monthly commissioning List of Transmission element and generators: May 2019					
SL NO	Element Name	Owner	Charging Date	Charging Time	Remarks
1	132KV Biharsharif-Sheikhpura ckt-2	BSPTCL	06-05-2019	17:37	Charged on no load
2	50MVA Transformer-T2@GSS Bihta new	BSPTCL	08-05-2019	16:00	Charged on no load
3	160MVA ICT-2 @ NARHAT(BGCL) GIS	BSPTCL	09-05-2019	17:24	Charged on no load
4	132KV Biharsharif-Nawada ckt-2	BSPTCL	10-05-2019	18:14	Charged upto loc. no. 142.
5	400 kV North Karanpur II Bay (430) @ Gaya	PGCIL	24-05-2019	17:54	
6	401 kV North Karanpur I Bay (427) @ Gaya	PGCIL	24-05-2019		
7	132kv Purulia-Jhalda	WBSETCL	29-05-2019	17:15	132kv Purulia-Bagmundi#1 & Jhalda-Bagmundi#2 shorted ph. To ph. outside Bagmundi 5/S to form Purulia-Jhalda line (R.L. 118.565km)

Item No. E.4: UFR operation during the month of May '19

System frequency touched a maximum of 50.33 Hz at 18:02Hrs of 01/05/19 and a minimum of 49.65 Hz at 14:16 Hrs of 09/05/19 and 21:17 Hrs on 21/05/19. Hence, no report of operation of UFR has been received from any of the constituents.

Item No. E.5: Grid incidences during the month of May, 2019

Sr No	GD/ GI	Date	Time	S/S involved	Summary	Load loss (MW)	Gen loss (MW)
1	GI-II	02-05-2019	01:08	Angul	At 01:08 Hrs, 765 KV Angul-Jharsuguda III tripped due to R_ph CT failure of its tie bay at Angul end. 765 KV Bus I at Angul also tripped along with the line.	0	0

2	GD-I	08-05-2019	13:05	Mendasal, Pandiabili	220 kV Mendasal - Bhanjanagar S/C was under breakdown. While taking charging attempt 400/220 kV ICT - II at Mendasal, B phase LA of its HV side burst and subsequently all 400 kV and 220 kV lines at Mendasal tripped. Pandiabili which was being supplied through Mendasal end only also became dead	0	0
3	GI-II	16-05-2019	19:10	Vedanta	One flying metal sheet was in induction zone of two smelter SEZ transmission line due to heavy localized windy storm which created line fault. Hence SEZ lines (2nos) got tripped on earth fault protection and third line tripped on over current protection. Unit -1 came to home load operation and HP/LP bypassed of other units (unit-3&4) immediately by CILMS (Internal SPS) action	1332	540
4	GI-I	18-05-2019	22:34	Bakreswar	At 22:34 hrs 220 kV main bus I at Bakreswar (BkTPP) tripped on bus differential protection leading to the tripping of 220 KV Bakreswar-Satgachia I, 220 KV Bakreswar Sadaipur I, 220 KV Bakreswar Durgapur II & 315 MVA ICT II at Bakreswar. U#3 and U#5 of Bakreswar switched to house-load mode, resulting into generation loss of around 350 MW (House load catered: 15 MW apex.) Load at Satgachia was interrupted due to an inter-tripping scheme which trips Satgachia' s load during peak hours if any one of the 220 KV Bakreswar-Satgachia D/c trips.	18	350
5	GI-II	22-05-2019	19:57	OPGC	At 19:57 hrs 400 kV Jharsuguda - OPGC - II tripped at 19:57 hrs from OPGC end only. At 19:59 hrs 400 kV Jharsuguda OPGC - I tripped at 19:59 hrs on R-N fault resulting tripping of GT#4 & interruption of auxiliary supply to plant followed by tripping of all station compressors. At 20:15 hrs U#3 at OPGC was hand tripped.	0	650
6	GI-I	29-05-2019	21:44	Darbhanga	400 kV Darbhanga - Kishangunj D/C along with 400 kV bus II at Darbhanga tripped at 21:44 hrs due to collapse of Tower No 385(Loc. 96/0) suspension type collapsed due to high speed cyclone at Supaul Area (Bihar)-Near Koshi River.	0	0

****

For the event of frequency rise on 16th May 2019, response was not satisfactory for MPL, Teesta V, Teesta III, Dikchu, APNRL, JITPL and as per PMU data recorded at ERLDC. In case of MPL and Teesta V response was withdrawn within 10 seconds and in case of APNRL, JITPL & GMR, oscillation in power output has been observed. This may introduce forced oscillation in the system. As per generation data received from HEL & BBGS, no response observed in case of frequency rise incident.

In case of event on 19th May 2019, response observed at MPL was satisfactory as per PMU data as well as DCS data received from MPL. But response was withdrawn within 10 seconds in case of Teesta V, APNRL, JITPL& GMR. Oscillatory response has been observed in case of output at Teesta V.

Based on the performance observed, one report has been prepared and attached in annexure.

Table 2: Response Based on ERLDC SCADA Data for the events in the month of May 2019 (generation end data yet to be received)

Generating Station	Remarks	Action plans to be taken by generating stations/SLDCs as per decision taken in special meeting on 31-01-19 at ERPC
FSTPP I & II	Non-Satisfactory for event II	DCS to be replaced in next overhauling for unit I, II & III; Fine tuning of logic for RGMO to be completed by March 2019. **NTPC to share the status of RGMO tuning, DCS replacement and reason for non-satisfactory response.**
FSTPP III	Non-Satisfactory	
KhSTPP I	Non-Satisfactory	NTPC intimated that by 4th Feb 2019 the fine-tuning activity would be completed **NTPC to share the status of RGMO tuning and reason for non-satisfactory response.**
KhSTPP II	Non-Satisfactory	
Talcher I & II	Non-Satisfactory as per ERLDC SCADA data.	Fine-tuning of RGMO was going on and expected to be completed by Next Overhauling. **NTPC to share the status of RGMO tuning and response observed at the time of the event.**
Barh	Non satisfactory	NTPC to take up the matter of data collection in .csv format and the issue of fine tuning of the RGMO with their OEM. **NTPC to share the status of RGMO tuning and the status of data collection in .csv format.**
BRBCL	Non-Satisfactory	BRBCL to take up the issue of fine tuning of the RGMO with their OEM. **BRBCL to share the status of RGMO tuning and reason for non-satisfactory response.**
GRIDCO	Non-Satisfactory	GRIDCO SLDC to calculate FRC observed at the boundary of the control area and reason for non-satisfactory response. Format for calculation of FRC has been circulated.

Jharkhand	Non-Satisfactory	Jharkhand SLDC to calculate FRC observed at the boundary of the control area and reason for non-satisfactory response. Format for calculation of FRC has been circulated.
WB	Non-Satisfactory	WB SLDC to calculate FRC observed at the boundary of the control area and reason for non-satisfactory response. Format for calculation of FRC has been circulated.

Table 3: Response from High-Resolution Data recorded at generating stations/SLDCs /ERLDC for the events in the month of May 2019*

Generating Station/ SLDC	Responses observed	Action plans to be taken by generating stations/SLDCs as per decision taken in special meeting on 31-01-19 at ERPC
MPL***	**Non-satisfactory for the first event; response withdrawn within 10 seconds.** Satisfactory response observed in case of second event.	MPL to share the reason for non-satisfactory response during frequency rise incident.
Teesta V***	**Non-satisfactory for the both events and in case of second event initial response withdrawn within 10 seconds; MW generation was oscillatory in nature for first 5 seconds.**	NHPC to share reason for non-satisfactory response in case of both events. In case of second event, delayed response has been observed after the withdrawal of initial response.
APNRL, GMR & JITPL***	**Oscillatory response for first event i.e. frequency rise.** In case of second event, below satisfactory response has been observed and response was withdrawn within 10-15 seconds.	APNRL, GMR & JITPL to share the reason for non-satisfactory & short timed response.
Teesta III & Dikchu	Satisfactory response has been observed for total generation of Teesta III & Dikchu for the second event. **In case of first event, response was non-satisfactory.**	Teesta III & Dikchu to share the reason for non-satisfactory response for the event of frequency rise.
BBGS	**Generation reduction was not satisfactory for the event of frequency rise.** Response did not sustain for more than 10 seconds. For second event, response yet to be received.	BBGS to share the reason for non-satisfactory and short time response.

HEL**	**Non-Satisfactory for the first event.** In case of second event, increased generation reduced within one minute. As per HEL, it was due to rapid change in pressure and temperature as machine was running at full load.	HEL informed suitable action taken to achieve satisfactory response for frequency rise event. HEL may take action to deal with the issue of rapid change in temperature and pressure observed in second event.
Budge Budge	Total station response was below satisfactory level. Generation output was more than I/C.	CESC to share the reason for oscillatory unit output.
FRC shared by DVC	**Non-Satisfactory**	**Same issue was highlighted in the meeting held on RGMO issue at ERPC conference room on 31st January 2019. DVC was to share action plan by 04th February 2019, which is yet to be received**

**** Based on data received on or before 10-06-2019***

*****Based on data received from generating end***

******Based on data captured in PMU installed at lines connecting the generating stations.***

In view of the above Generating Power Plants of Eastern Region and SLDC may kindly explain the following points:

1. Inadequate RGMO/FGMO response for such critical Contingency and Large Frequency Drop in the grid in line with IEGC5.2.f to 5.2.i.
2. Non-submission of data for RGMO Response in line with IEGC 5.2.r , IEGC 5.9.4.b, CEA Technical standards for connectivity to the Grid Regulation 6.4.d, CEA Grid Standard 15.3. Generation data/FRC is only received from Adhunik, MPL, Budge Budge and DVC SLDC. Other regional generating stations/SLDCs may furnish the reason for not sharing high resolution generation data/FRC at their control area. Even resolution of shared data may be increased in order to improve analysis of governor operation. In case of data shared by APNRL, no oscillatory response has not been observed, which is clearly visible in PMU data.
3. Non-Receipt of Computed FRC from SLDC for their Control Areas as per the Approved FRC procedure by CERC (In line with CERC order 84/MP/2015 dated 31-07-17)

Unit Name	**Overhauling date**
CTPS #7	**09-02-19**
KhSTPP #1	**12-03-19**
Barh #4	**17-02-19**
Mejia #2	**08-05-19**

KhSTPP #7	**21-04-19**
GMR #1	**26-05-19**
FSTPP #6	**07-06-19**

4. Status of action plans taken as per decision taken in special meeting on 31-01-19. After the meeting, overhauling has been taken for following units:

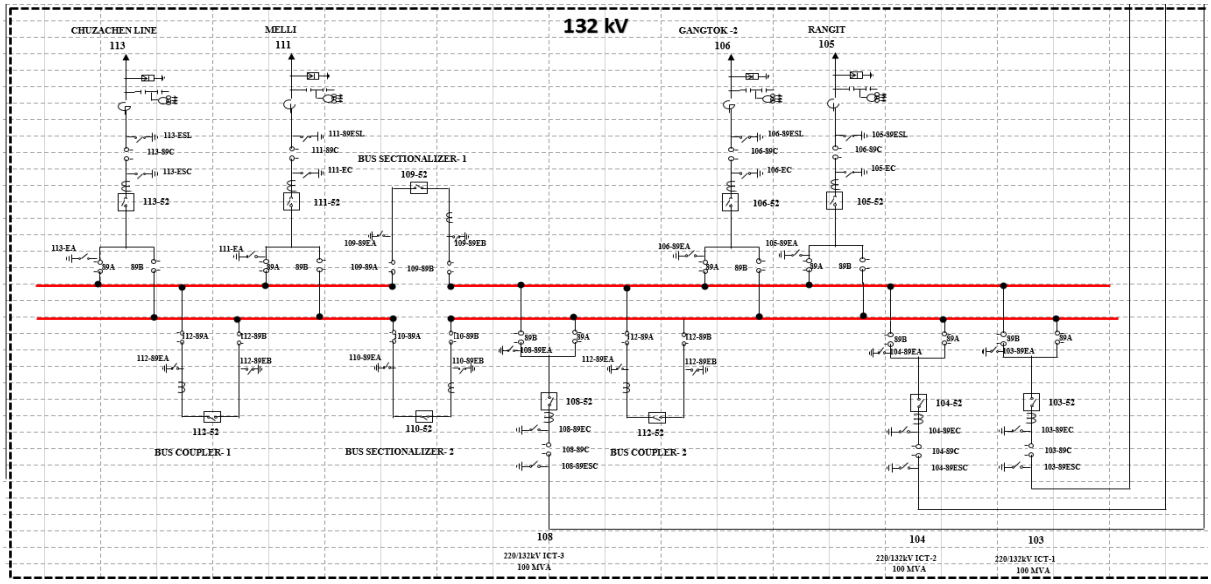
In Addition, many units are kept out for Low Demand/RSD for longer duration and for these also the governor response can be tuned. In view of this, ERPC may kindly enforce the tuning of the Governor in line with IEGC FGMO/RGMO regulations.

In Addition, ERLDC has also utilized the PMU data for calculating the Power Plant response based on summing the outgoing line power flow. Several new aspects have been observed for generators (**APNRL, GMR and JITPL**) in regard to Governor Response which are summarized below:

1. Incorrect Tuning is resulting in oscillatory response of the generators Active power. (Giving response and its immediate withdrawal within 10 seconds)
2. The magnitude of oscillation is around 5-10 % of the generation.
3. Oscillatory response can result in hunting in other nearby units

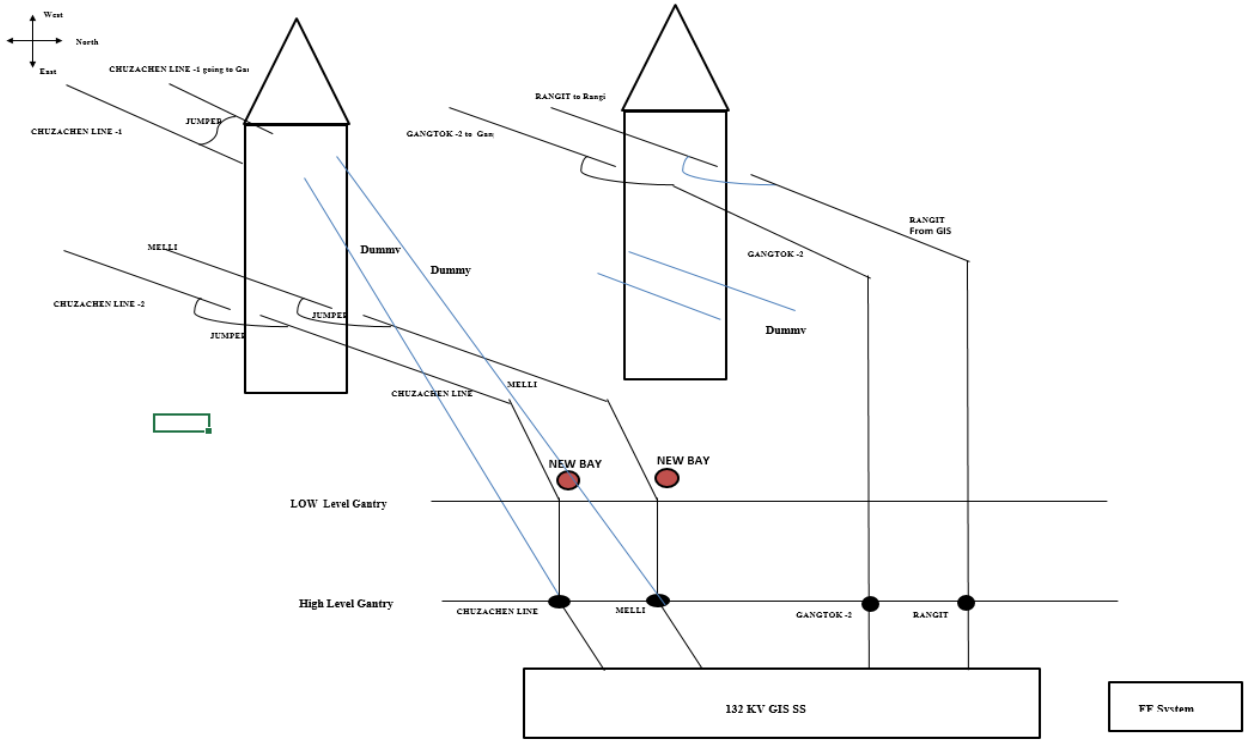
Even after so many discussions over Governor Response in the OCC and ERPC board meeting, there has not been any significant improvement of performance of Eastern Region Generating Station which resulted non-satisfactory primary frequency response at regional boundary of ER grid.

Existing Arrangement:-



132 KV Bay No	Present Bays
101	Future bay
102	Future bay
103	100MVA ICT -1
104	100MVA ICT -2
105	RANGIT
106	GANGTOK -2
107	Bus coupler -2
108	100MVA ICT -3
109	Bus Sectionalizer
110	Bus Sectionalizer
111	MELLI
112	Buscoupler -1
113	CHUZACHEN -2

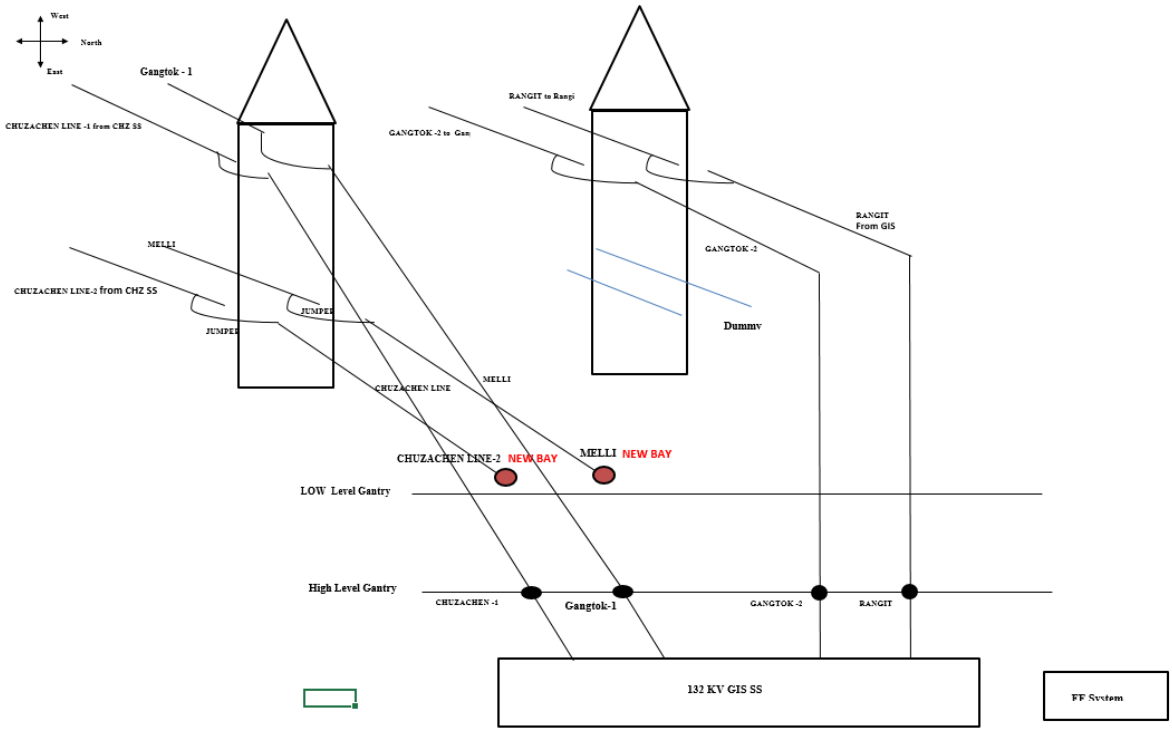
Existing 132 kV TOWER and Bay location



Proposed bay configuration after change:-

132kv Bays	Present Bays	After New Bay commissioning
101	future bay	**MELLI 132 KV**
102	future bay	**CHUZACHEN -2**
103	100MVA ICT -1	100MVA ICT -1
104	100MVA ICT -2	100MVA ICT -2
105	RANGIT	RANGIT
106	GANGTOK -2	GANGTOK -2
107	Buscoupler -2	Bus coupler -2
108	100MVA ICT -3	100MVA ICT -3
109	Bus Sectionalizer	Bus Sectionalizer
110	Bus Sectionalizer	Bus Sectionalizer
111	MELLI	**GANGTOK -1 (previously GTK - Chuzachen)**
112	Buscoupler -1	Buscoupler -1
113	CHUZACHEN -2	**CHUZACHEN-1 - (previously GTK - Chuzachen)**

132 kV TOWER and NEW Bay location



Annexure-B9

एनटीपीसी NTPC
एक महारत्न कम्पनी

FSTPS

Ref. No. FSTPS: 42: CGM (O&M) /05

Date: 11.06.2019

To
The Member Secretary
Eastern region Power Committee
14,Golf Club Road, Tallygunj
Kolkata-700033

Dear Sir,

With reference to the final LGBR of Eastern Region for the year 2019-20, vide No. ERPC/MS/LGBR/2019-20/985-1026 dated 30th April 2019 issued by the Hon'ble Member Secretary, ERPC; we would like to submit the following:

As per the LGBR, Overhauling of FSTPS U#5 was scheduled from 07.06.2019 to 06.07.2019 for 30 days. But considering liabilities of U#6 it was requested by FSTPS to ERPC for swapping U#6 with U#5 and with due approval in 156th OCC meeting , FSTPS U#6 has been taken out for COH from 07.06.2019 for 45 days.

Further, it is to be mentioned here that FSTPS U#5 is running with the following critical safety & reliability issues which are to be attended urgently.

- Supporting structures of cable tray carrying the power & control cables of vital equipments like ID fan, FD fan, PA fan, ESP etc are in collapsed condition posing serious safety threat.
- Turbine HP Control Valve no-4 is not modulating, causing asynchronous control valves operation, which is a serious issue.

It is, therefore, requested that from safety & reliability point of view, shut down of FSTPS U#5 may please be allowed from 24.07.2019 to 22.08.2019 for 30 days.

Thanking you in anticipation of your kind consideration and consent in this regard.

Regards,

D.S.G.S.S Babji
CGM (O&M)
FSTPS

Copy:

1) RED (ER-I) - for kind information please
2) E.D (O.S) -EOC NOIDA – for kind information please -
3) ED (F) – for kind information please

Eastern Regional Power Committee, Kolkata

Minutes of 3rd Special Meeting on "Operationalization of 400 kV Durgapur Bus Splitting Scheme" held at ERPC, Kolkata on 8th April 2019 at 11:00hrs

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

In the second meeting on "Operationalization of 400 kV Durgapur Bus SplittingScheme" held on 17thJanuary 2019 at ERPC, it was decided to conduct a detailed study to find out any network constraint in DVC and West Bengal network after operationalization of 400 kV Bus Splitting scheme at Durgapur and utilization of 3rd 315 MVA, 400/220 kV ICT at Durgapur S/s. DVC and West Bengal were advised to submit the relevant details to ERLDC for carrying out the study.

1. **Operationalization of 400 kV Bus Splitting scheme at Durgapur**

ERLDC informed that they had received the details from DVC and West Bengal, however, the expected schedule of commissioning of new transmission elements was not available from the concerned utilities.

On query, DVC informed that they had submitted the details of transmission elements which are going to be commissioned in a year.

Members observed that there is no network constraint in DVC and West Bengal system after operationalization of 400 kV Bus Split at Durgapur except the N-1 reliability issues of 220kV Durgapur (PG)-Parulia (DVC) D/C line.

DVC informed that no cascade tripping of the transmission lines would occur during the tripping of any one line of 220kV Durgapur (PG)-Parulia (DVC) D/C line, as part of the power flow in the line would be diverted to other parallel paths i.e. 220kV Maithon-Kalyaneswar D/C line and 220kV Waria-Bidhannagar D/C line. DVC added that the loading of the healthy line in case of tripping any one line of 220kV Durgapur (PG)-Parulia (DVC) D/C line would be within the safe limit and no Special Protection Scheme would be required for that.

DVC further informed that 220kV Waria (DTPS)-Parulia (DVC) D/C line would be LILO'ed at DSTPS and it would be completed within a year. Thereafter, the loading of 220kV Durgapur (PG)-Parulia (DVC) D/C line would be reduced.

Members opined that the line distance protection settings at local and remote ends of 400kV Durgapur S/s are to be modified as per the new configuration after commencement of split bus operation. All the concerned constituents were advised to check the reach settings for both the cases (with and without bus splitting at Durgapur) and to review the Zone 2/zone 3 settings. The PLCC and carrier protection should be kept in healthy condition to ensure fault clearance in Zone 1 time and prevent uncoordinated line trippings. It was decided to communicate the decision to NTPC, WBPDCL, Powergrid ER-I for reviewing the reach settings of following lines:

- 400kV Sagardhigi-Durgapur line
- 400kV Bidhannagar-Durgapur line
- 400kV Farakka-Durgapur line
- 400kV Jamshedpur-Durgapur Lines.

After detailed discussion, Members agreed for operationalization of 400 kV Split Bus arrangement at 400kV Durgapur S/s and decided to place the issue in 156th OCC Meeting for further decision.

2. Utilization of 3rd 315 MVA, 400/220 kV ICT at Durgapur S/s

Powergrid informed that 3rd 315 MVA, 400/220 kV ICT at Durgapur S/s would be commissioned by end of April 2019.

DVC once again requested to conduct a detailed study on utilization of 3rd 315 MVA, 400/220 kV ICT at Durgapur S/sconsidering the present and future network conditions.

Members decided to form a committee with the following members for the above study:

1. S. Banerjee, SE(E), WBSETCL
2. Sandip Ghosh, SDE(E), SPE, DVC
3. Santhosh Kumar Panda, EE, SLDC, DVC
4. J G Rao, EE, ERPC
5. Members from ERLDC

It was decided that the committee members would meet on 10th April 2019 at 11:30 hrs at ERPC for detailed discussion.

Based on the report submitted by the Committee, utilization of 3rd 315 MVA, 400/220 kV ICT at Durgapur S/s would be referred to the appropriate forum for further decision.

****

A. The list of generators where PSS is not tuned however kept in service and no details have been provided for PSS tuning:

Power Plant	Unit No	PSS tuned (Yes/No)	PSS in Service (Yes/No)	Timeline and Plan for PSS tuning Activity
Kolaghat-WBPDCL	1	No	Yes	
Kolaghat-WBPDCL	2	No	Yes	
Kolaghat-WBPDCL	3	No	Yes	
Kolaghat-WBPDCL	4	No	Yes	
Kolaghat-WBPDCL	5	No	Yes	
DPL	8	No	Yes	
PPSP	1	No	Yes	
PPSP	2	No	Yes	
PPSP	3	No	Yes	
PPSP	4	No	Yes	
Bokaro A1	500 MW	No	Yes	

B. Generating Power Plants whose Excitation details or PSS tuning status or both have not been received at ERLDC/ ERPC:

Generating Utility	Unit		Generating Utility	Unit
WBSEDCL			**OHPC**	
TLDP III	4 x 33		Upper Indravati	1,2,3,4
TLDP IV	4 X 44		Balimela	6 X 60
DVC			Balimela	2 X 75
Bokaro -DVC	500 MW		Upper Kolab	4 X 80
Bokaro	3 X 210 MW		Rengali	4 X 50
Waria	4		**Orissa SLDC**	
Chandrapura B	2 X 250 MW		Sterlite	4 X 600
ISGS			**Jharkhand**	
Talcher Stage 1	1,2 (PSS tuning Received)		Subarnrekha	2 X 65
Nabinagar NPGC	1		**Bihar**	
BRBCL	1,2,3		KBUNL	1,2
KBUNL	3,4		**Bhutan**	
Rangit	3 x 20		Tala	6 X 170
			Chukha	4 X 84

C. Generating Power Plants where PSS is tuned and kept in service however, PSS Tuning report/plots/data have not been submitted to ERLDC/ERPC is as following:

Power Plant	Unit No		Power Plant	Unit No
Sagardighi-WBPDCL	3		Farakka NTPC	5
Sagardighi-WBPDCL	4		Farakka NTPC	6
Budge Budge-CESC	3		Talcher Stage 2	4
HEL-CESC	1		Talcher Stage 2	5
HEL-CESC	2		Talcher Stage 2	6
Mejia-DVC	4		Teesta-III	1
Mejia-DVC	5		Teesta-III	2
Mejia-DVC	6		Teesta-III	4
Mejia-DVC	7		Teesta-III	5
Mejia-DVC	8		Teesta-III	6
Durgapur-DVC	1		Tashiding	1
Durgapur-DVC	2		Maithon Power Limited	1
Koderma-DVC	1		Maithon Power Limited	2

Koderma-DVC	2		ADHUNIK	1
Farakka NTPC	1		ADHUNIK	2
Farakka NTPC	2		IB TPS	1
Farakka NTPC	3		IB TPS	2
Farakka NTPC	4			

D. Generators where PSS tuning has been done more than 3 years back:

Power Plant	Unit No	Last PSS Tuning Date	Whether Done in Last 3 Years	Timeline for Next PSS Tuning
Sagardighi-WBPDCL	4	Commissioning	No	
Budge Budge-CESC	1	2015	No	
Budge Budge-CESC	2	2015	No	
Budge Budge-CESC	3	2010	No	
HEL-CESC	1	2015	No	
HEL-CESC	2	2015	No	
Mejia-DVC	4			
Mejia-DVC	7	2010	No	
Mejia-DVC	8	2011	No	
Koderma-DVC	1			
Koderma-DVC	2			
Kahalgaon NTPC	4	2015	No	
Kahalgaon NTPC	5	2009	No	
Kahalgaon NTPC	6	2009	No	
Kahalgaon NTPC	7	2010	No	
Farakka NTPC	1	2008	No	
Farakka NTPC	2	2008	No	
Farakka NTPC	3	2008	No	
Farakka NTPC	4	2008	No	
Farakka NTPC	5	2008	No	
Farakka NTPC	6	2015	No	
Talcher Stage 1	1	2015	No	
Talcher Stage 1	2	2014	No	
Talcher Stage 2	3	No Details		
Talcher Stage 2	4	No Details		
Talcher Stage 2	5	No Details		
Talcher Stage 2	6	No Details		
Teesta V	1	2008	No	
Teesta V	2	2008	No	
Teesta V	3	2008	No	
Jorethang	1	2015	No	
Jorethang	2	2015	No	
Chuzachen HEP	1	2013	No	
Chuzachen HEP	2	2013	No	
ADHUNIK	1	2013	No	
ADHUNIK	2	2013	No	
GMR	1	2013	No	
GMR	2	2013	No	
GMR	3	2013	No	
IB TPS	1	2011	No	
IB TPS	2	2012	No	

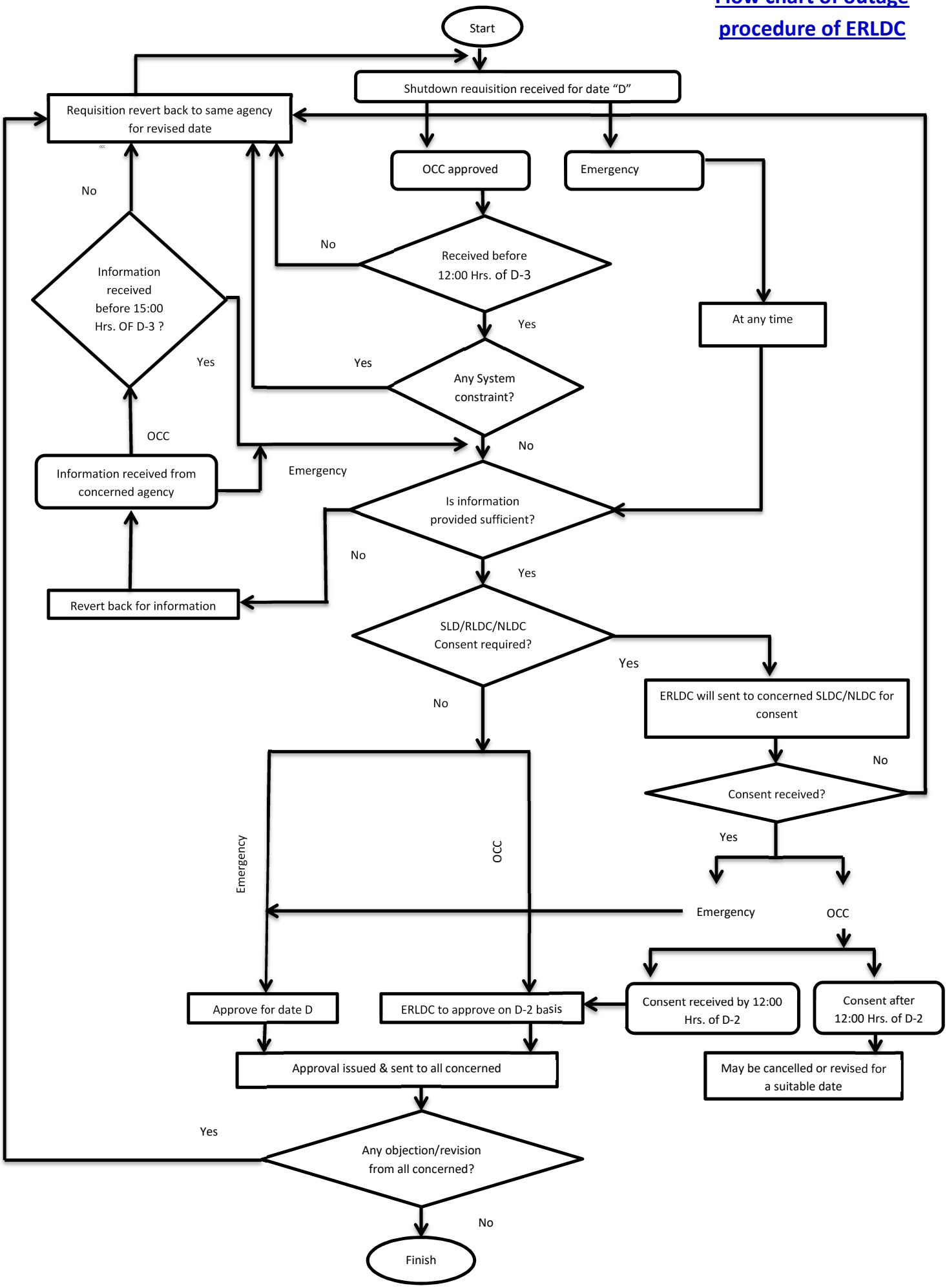
E. Generators where PSS tuning has been done and have submitted the report and the observation

Name of the Unit	Intra Plant Mode (Hz)	Step Size of U_{ref}	Oscillation periodwith out PSS	Oscillation period with PSS	Whether PSS is effective as per step response test	Year of Tuning	Whether Recommended for Tuning
Kahalgaon Unit 1		3 %	3 cycle	1 cycle	Yes	2017	Yes after Bus Split
Kahalgaon Unit 2	1.5 Hz	3 %	3 cycle	1 cycle	Yes	2016	Yes after Bus Split
Kahalgaon Unit 3		6 %	-	-	Provided picture not clear to analyze response	2016	To be decided after explanation by NTPC, Also after bus split, returning is required
Kahalgaon Unit 4	1.876	3 %	5 cycle	3 Cycle	Yes	2015	Yes after Bus Split
Kahalgaon Unit 5		4 %			No Appreciable Response	2009	To be decided after explanation by NTPC, Yes after Bus Split
Kahalgaon Unit 6		4 %			No Appreciable Response	2019	
Kahalgaon Unit 7		2 %			Provided picture not clear to analyze response	2010	
Teesta V Unit 1		2 %	5 cycle	2 cycle	Yes	2008	Yes in view of changes in network
Teesta V Unit 2		2 %	5 cycle	1 cycle	Yes	2008	
Teesta V Unit 3		2 %	5 cycle	1 cycle	Yes	2008	
Talcher Unit 3		3 %	-	-	PSS is showing response but noappreciable change in active power is seen.		NTPC may explain the details after which requirement of retuning to be decided.
Talcher Unit 6		3 %	3 cycle	2 cycle	Yes	2008	No
Budge Budge 1		2 %	5 cycle	1 cycle	Yes (Tuned for various contingency)	2015	No
Budge Budge 2		2 %	5 cycle	1 cycle	Yes (Tuned for various contingency)	2015	No
JITPL Unit 1		5 %	-	-	No Appreciable Response	2016	JITPL to explain the response based on which it will be decided.
JITPL Unit 2		5 %	-	-	No Appreciable Response	2016	
Chujachen Unit 1		2 %	6 cycle	1 cycle	Yes	2013	Yes in view of changes in network
Chujachen Unit 1		2 %	6 cycle	1 cycle	Yes	2013	
Tashiding Unit 2	1.5 Hz	4 %	5 Cycle	1 Cycle	Yes	2017	Yes in view of changes in network
Bandel Unit 5	1.5 Hz	5 %	6 Cycle	3 cycle	Yes	2019	Adequate
Teesta 3 Unit 5		2 % and 3 %	3 Cycle	2 Cycle	Yes	2017	Retuning to be done due to network change

Talcher Unit 1		1 %	2 cycle	2 cycle	No Appreciable Response	2015	Yes (Either NTPC explain why there is no appreciable change in damping or better resolution data to be submitted if damping has been observed)
Talcher Unit 2		3 %	4 cycle	2 Cycle	Yes	2014	Adequate
Bakreshwar Unit 1		3 %	3 cycle	2 cycle	Yes	2019	Adequate
Bakreshwar Unit 2		3 %	4 cycle	4 cycle	No Appreciable Response	2019	Yes, Returning required as PSS signal is in phase with disturbance which is not good for unit.
Bakreshwar Unit 3		3 %	3 Cycle	4 cycle	Negative Response	2019	Yes, PSS response is negative which is highly undesirable
Bakreshwar Unit 4		3 %	No Change in Power	No Change in Power	No Response	2019	Yes, tuning to be done at reduced power level as at full load transient response is not observed which also need to be checked.
Bakreshwar Unit 5		3 %	No Change in Power	No Change in Power	No Response	2019	Yes, tuning to be done at reduced power level as at full load transient response is not observed which also need to be checked.
Santaldih Unit 5		3 %	3 cycle	2 cycle	Yes (more observable in Excel Data)	2019	Adequate
Santaldih Unit 6		3 %	3 cycle	2 cycle	Yes (more observable in Excel Data)	2019	Adequate
GMR Unit 1		3 %	3 cycle	1 cycle	Yes	2013	Yes, as done long time back
GMR Unit 2		3 %	4 cycle	1 cycle	Yes	2013	Yes, as done long time back
GMR Unit 3		3 %	3 cycle	1 cycle	Yes	2013	Yes, as done long time back

Annexure-B30

Flow chart of outage procedure of ERLDC



ERLDC Shutdown approval process flow and time line-reg.

With the ever increase in transmission elements, the Grid is getting more secure and reliable. Still, outage of one element may affect severely to adjacent control area depending on system condition that area. Hence, planning and co-ordination between different control areas is absolute necessary. It has been seen that, due to lack of mutual consent/communication between two control area/license, outage of transmission elements are getting delayed or denied due to which monetary loss occurred as well as condition of that particular element worsen. ERLDC wants to draw the attention on the following points which are seen in Eastern constituents/license.

1. There is a shortage of designated outage coordinators in ER constituents /license. Sometimes proper communication is not possible with them.
2. E-mails are not reaching to them in time which is sent from ERLDC (particularly in GRIDCO case). Most of the time mails are seen when ERLDC inform them verbally.
3. It also leads to delayed consent thereby delaying the shutdown.
4. There is no substitute for the absence of outage co-ordination. Sometimes SLDC control room person are coordinating shutdown which is not a good practice. Progress tracking of any outage will be lost once shift change occurred.
5. Planned outages are being sent on holidays also which is very difficult to process.
6. We have seen that, in absence of competent authority (SLDC Hawarh and SLDC Patna for example), OCC approved shutdowns are also get cancelled.

To tackle all the above following suggestions may be considered:

1. Every Transmission license, generators and SLDCs must have dedicated outage co-coordinators and the contact information of all such co-coordinators shall be shared with all.
2. In absence of the designated outage co-coordinator, suitable substitute should be provided and the same shall be intimated to all.
3. All the indenting agencies are requested to communicate with their counterpart outage co-coordinator for smooth and speedy consent if it require.
4. Getting consent timely is very important. All the agencies, whose consent is required for a particular outage, are requested to adhere the time line given by ERLDC fails to which the outage will be cancelled or delayed accordingly.
5. All the agencies are requested to submit holiday list in their control area or any other contingencies well in advance to all.
6. All the agencies must provide their official as well as personal E-mail of their outage coordinators to ERLDC and ensure that checking of the both email are being done simultaneously.

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Techno commercial offer to ERPC for PSS®E Software Maintenance & Support of ER Entities

Version A

Project reference	
Date	2019-06-10
Editor	Vikas Chaturvedi
Release (technical)	
Release (commercial)	

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Revision History

Rev.	Status / Changes	Date	Author
Version A	Initial release	2019-06-10	Vikas Chaturvedi

Table of Contents

Copyright and Confidentiality

This Technical Proposal is a custom offering and has been developed and submitted by and on behalf of Siemens Software & Consulting (Siemens SI DG SW&C) which is a part of digital grid business unit for Smart Infrastructure division to the organization shown on the title page strictly for purchasing evaluation purposes.

The material contained in this Proposal represents proprietary, confidential information pertaining to Siemens SW&C and its methods. By accepting this document, the parties hereby agree that the information in this document shall not be duplicated, used, or disclosed for any purpose other than evaluation. However, if a contract is awarded to Siemens Ltd for this Proposal as a result of, or in conjunction with, the submission of this information, all parties will have the right to duplicate, use or disclose the material contained herein to the extent provided for in the resulting contract.

Executive Summary

Siemens Smart Infrastructure Digital Grid's Software & Consulting (SW&C) is pleased to present this Proposal to Eastern Regional Power Committee (ERPC) for maintenance & support (M&S) of 20 No's PSS®E Licenses which were supplied in the year 2012-13 to different ER Entities.

In section 1 and 2 of this proposal you will find the technical offerings of maintenance & support solution Also along with the benefits of maintenance & support of PSS®E licenses on a multiyear horizon.

In Section 3 is detailing the planned updated for PSS®E for year 2019 followed by section 4 is the terms and conditions for maintenance & support

Siemens SW&C looks forward to working with ERPC by providing you with a solution that meets your needs. Please do not hesitate to contact us if you require any additional information.

Price Proposal

Siemens SW&C is pleased to offer a package price for renewal of Maintenance and support contract for PSS®E licenses supplied to different state entities in Eastern region under PGCIL bulk license contract issued to us in the year 2012-13. The Maintenance & Support package price is based on following license distribution among the different stake holders/entities.

Table-1

S.No	Entity Name	Number of PSS®E licenses
1	Damodar Valley Corporation	4
2	Jharkhand State Electricity Board (SLDC)	4
3	Odisha Power Transmission Company Ltd	4
4	West Bengal State Electricity Company Ltd	4
5	Bihar State Power Transmission Company Ltd	4
		20

Price Table

Sr No.	PSS®E Maintenance & Support Unit Price (INR)	PSS®E Maintenance & Support Price for 20 no's Licences (INR)	Total 5 Years Maintenance & Support Price (INR)
1	226,130/-	4,522,600/-	22,613,000/-

Please note:

Above prices are valid only for a package of this project of 20 No's of PSS®E licenses distributed to entities as per **Table-1**

- Above prices are exclusive of GST which shall be charged extra on above price. The present rate of GST is 18%.
- The M&S duration of any additional licenses procured by any SR entity (as per Table-1) under this agreement will not extend the M&S period.

1 Maintenance and Support (M&S) for ER Entities.

The M&S program has its goal to seamless usage of PSS®E at ER Entities for productive use by all its engineers in more than one hundred different locations spread across the country. Siemens is firmly committed to this and the comprehensive program offered to ERPC goes well beyond the standard M&S components of software support and product upgrades. It is a comprehensive program intended to address the specific requirements of ERPC so that the continuous usage of updated PSS®E is ensured at ER Entities.

Please note Maintenance & support is a full featured programme that provides significant additional value to the end users and majorly include the following inherent benefits which shall be covered as part of these services.

- Free Software subscription: This keeps PSS®E users current with the most up-to-date PSS®E features and functions. With this service PSS®E users automatically get the latest release of PSS®E with all its new features, models, and bug fixes. In addition, to the latest version releases, users who have reported a bug that needs to be fixed can download software patches. All new releases during the maintenance & support (M&S) period**, two new versions are released every year free of cost with enhanced features based on customer feedback**.
- Technical Support: Specific features include **free unlimited 24-hour access to Siemens SW&C Support website for 24-hour web-based reporting and case tracking**, 24/7 technical support by expert product engineers with guaranteed response within 24 hours.
- **Direct link to product managers & roadmaps** through access to PSS® Ideas Portal (www.siemens.com/pss-ideas) community for submitting, voting, and commenting on PSS® product ideas.
- Beta test participant: Licensee may be invited to participate in Beta testing of future releases.
- **Free updates and patches to the current and previous versions of the program.**
- Access to the "users-only" area of our World Wide Website where you get details of all the updates of the software and details recently added new models (e.g. renewable) which can be directly downloaded
- **Conducting the Indian Users Group Meetings (UGM)** and address the key topics, issues, performance review and best practice. The following is included.

  Performance Review: This will include a meeting with a senior PSS®E support engineer on site in India. It will be an open forum discussion on the PSS®E product roadmap, and any PSS®E operational topics. Engineers will be able to engage with the PSS®E support expert to get many of their questions and issues resolved instantaneously.

  Best practice Check: This is an appraisal of all aspects of STU's implementation of PSS®E by experienced Siemens technical staff. This program is intended to help utilities establish best-in-class operational procedures and optimal use of PSS®E
- **Free License support even in case of broken dongles**

- A reasonable amount of support in the installation and operation of the program for the current revision and last previous revision of the program. Support requests are accepted via telephone or email or personnel visit

Additional M&S Support: Siemens SW&C would also conduct a survey on an all-India basis where every stakeholder would be approached for any support and training needs for PSS®E software. However, Siemens SW&C is committed to support the stakeholders as following:

- Siemens SW&C to conduct **one basic PSS®E training per quarter in all 4 regions** across the country to cater to the needs of various regions on planning & operational planning studies.

- Siemens SW&C to support entities who are currently not using PSS®E by providing the required support to migrate to PSS®E.

- Siemens SW&C would also be in touch with ERPC on a quarterly basis for addressing any issues in PSS®E and provide possible resolutions to the issues

2 PSS®E Software updates and planned updates for year 2019

Your enrollment in the PSS®E Maintenance and Support program entitles you to the valuable benefits outlined in the attached Maintenance Plan.

In 2018 PSS®E versions 33.11, 33.12, 34.4 and 34.5, with over 50 new program enhancements, plus additional program corrections, were released. Selected major new feature and enhancements by version are:

Exclusively in PSS®E 34.4:

- Ability for remote bus regulation of buses on nodes within a substation that has been sectionalized
- Sectionalized buses shown on slider diagrams

PSS®E 34.4 and PSS®E 33.12:

- Dynamic model additions including IEEE 421.5 models and Distributed Energy Resources Model DER_A
- Several updates to the GIC module including to NERC TPL-007-2 standard alpha and beta factors, GIC(t) profile of Benchmark Event and Supplemental Events

Exclusively in PSS®E 34.5 and 34.5.1:

- Slider Diagram improvements to address customer specific usability requests and increase performance
- Several node-breaker improvements based on industry working groups and customers including ability to monitor flows on substation switching devices
- 11 Ideas from the Idea's Portal

PSS®E 33.12 and PSS®E 34.5:

- Dynamic model debug option to quickly determine which model is causing the program to crash during dynamic initialization and runs.
- Dynamic model additions including IEEE 421.5, WECC approved and vendor specific models
- Increased limits for the number of CONs, ICONs, STATEs and VARs

Beyond the recent improvements to PSS®E, the PSS®E roadmap for 2019 includes many enhancements, including:

- Our next major release PSS®E v35 which will include
  - Extensible raw format to allow ability to add custom fields to a data record
  - 64-bit support to improve performance and memory management
  - Multiple independent switched shunts on the same bus
  - Generator reactive capability curve data (GCAP) stored with machine data
- Transmission transfer capability calculation module (New module)
- Harmonics module (New module)
- Usability enhancements (to GUIs, workflows, messaging, etc.) identified as priorities through the PSS®E Idea's Portal
- Features identified from the PSS®E Idea's Portal for fast tracking to get features to user quicker

14/06/19

3 Additional Support & Trainings needs

Siemens SW&C would also conduct a survey on all India basis where every stakeholder would be approached for any support and training needs for PSS®E software. However, Siemens SW&C is committed to support the stakeholders as following:

1. Siemens SW&C to conduct a regional PSS®E trainings in all 5 regions across the country on quarterly basis to cater the needs of various regions on planning & operational planning studies.

2. Siemens SW&C to support entities who are currently not using PSS®E by providing the required support and trainings to support them to migrate to PSS®E.

3. Siemens SW&C would also be in touch with ERPC on quarterly basis for addressing any issues in PSS®E and provide possible resolutions to the issues

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4 Terms and conditions

4.1 Export Reservation Clause

Purchaser acknowledges that Siemens Power Transmission & Distribution, Inc is required to comply with applicable export laws and regulations relating to the sale, exportation, transfer assignment, disposal and usage of the Software / Services under the Contract, including any export license requirements. Purchaser agrees that such Software / Services shall not at any time directly or indirectly be used, exported, sold, transferred, assigned or otherwise disposed of in a manner which will result in non-compliance with such applicable export laws and regulations. It shall be a condition of the continuing performance by Siemens Power Transmission & Distribution, Inc. of the obligations hereunder that compliance with such export laws and regulations be maintained at all times.

PURCHASER AGREES TO IDEMNIFY AND UPHOLD SIEMENS POWER TRANSMISSION AND DISTRIBUTION, INC HARMLESS FROM ANY AND ALL COSTS, LIABILTIES, PENALTIES, SANCTIONS AND FINES RELATED TO NON-COMPLIANCE WITH APPLICABLE EXPORT LAWS AND REGULATIONS.

This order confirmation is made subject to all necessary Export Licenses and other permissions being obtained by the recipient, from the relevant authorities, for the destination and intended use of the goods and/or services.

The fulfillment of the agreement on our part is subject to the provision that this shall not be prevented by impediments on the grounds of national and international legal requirements, in particular export control provisions.

4.2 Materials and Services Delivered

The deliverables for executable programs include the following:
For your PSS®E base and optional sections for which you are licensed, payment entitles you to the following during the calendar year for which you have paid:

- All new releases
- Updates and patches to the current and previous version of the program
- Access to the "users-only" area of our World Wide Website
- No fee access to the regional Users Group Meetings.
- A reasonable amount of support in the installation and operation of the program for the current revision and last previous revision of the program. Support requests are accepted via telephone or email or through person visits. Requests for excessive support, engineering, or application assistance are not included in the annual maintenance fee but may be purchased from Siemens SW&C at an hourly rate.

4.3 Addition of Optional Sections

Following the initial license, optional executable sections may be added at any time. There is no cost penalty for adding optional sections after the initial license, except that the Lessee is required to have purchased annual maintenance for the current period.

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4.4 Program Version

This quotation applies only to the current standard version of PSS®E Version as it exists at Siemens SW&C at the time that the program is installed on the Lessee's computer system.

4.5 Computer System Configuration

This quotation applies only to use of the PSS®E program on a computer meeting Siemens SW&C's current hardware and software environment requirements. Current recommended system requirements can be located on our website (http://www.SW&C-us.com/SW&C/software/psse/user_support.cfm#configs).

4.6 Program Maintenance

The annual maintenance fee is billed in the fourth quarter of each year for the following calendar year. For the remainder of the first year after expiration of warranty, a pro-rated maintenance fee will be billed. The maintenance fee is not mandatory. However, it is Siemens SW&C's policy not to support installations not paying the fee. An unsupported customer wishing to reinstate support will be charged retroactively for up to 1/2 year's fee, plus the fee for the ensuing year.
New optional modules or additional installations will be made available to clients under active maintenance support at the current list price for the option.

The annual maintenance fee schedule is subject to change.

4.7 Validity of offer

This offer is Valid till 10.8.2019. After that it is subject to our written confirmation.

4.8 Delivery

Within 4 – 6 weeks from the receipt of Purchase Order

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Annexure-D.1

Anticipated Power Supply Position for the month of
Jul-19

SL.NO		PARTICULARS	PEAK DEMAND MW	ENERGY MU
1		**BIHAR**		
	i)	NET MAX DEMAND	5180	2950
	ii)	NET POWER AVAILABILITY- Own Source (including bilateral)	517	354
		- Central Sector	3892	2433
	iii)	SURPLUS(+)/DEFICIT(-)	-771	-163
2		**JHARKHAND**		
	i)	NET MAX DEMAND	1340	825
	ii)	NET POWER AVAILABILITY- Own Source (including bilateral)	305	116
		- Central Sector	932	573
	iii)	SURPLUS(+)/DEFICIT(-)	-104	-135
3		**DVC**		
	i)	NET MAX DEMAND (OWN)	2930	1970
	ii)	NET POWER AVAILABILITY- Own Source	5401	2780
		- Central Sector	510	326
		Long term Bi-lateral (Export)	1644	1223
	iii)	SURPLUS(+)/DEFICIT(-)	1337	-86
4		**ODISHA**		
	i)	NET MAX DEMAND	4620	2685
	ii)	NET POWER AVAILABILITY- Own Source	3628	1831
		- Central Sector	1604	906
	iii)	SURPLUS(+)/DEFICIT(-)	613	53
5		**WEST BENGAL**		
5.1		**WBSEDCL**		
	i)	NET MAX DEMAND (OWN)	7290	3992
	ii)	CESC's DRAWAL	83	62
	iii)	TOTAL WBSEDCL's DEMAND	7373	4054
	iv)	NET POWER AVAILABILITY- Own Source	4191	1878
		- Import from DPL	160	0
		- Central Sector	2570	1772
	v)	SURPLUS(+)/DEFICIT(-)	-452	-404
	vi)	EXPORT (TO B'DESH & SIKKIM)	-662	-564
5.2		**DPL**		
	i)	NET MAX DEMAND	305	210
	ii)	NET POWER AVAILABILITY	465	207
	iii)	SURPLUS(+)/DEFICIT(-)	160	-3
5.3		**CESC**		
	i)	NET MAX DEMAND	1850	1070
	ii)	NET POWER AVAILABILITY - OWN SOURCE	750	510
		FROM HEL	540	388
		Import Requirement	560	172
	iii)	TOTAL AVAILABILITY	1850	1070
	iv)	SURPLUS(+)/DEFICIT(-)	0	0
6		**WEST BENGAL (WBSEDCL+DPL+CESC)** **(excluding DVC's supply to WBSEDCL's command area)**		
	i)	NET MAX DEMAND	9445	5272
	ii)	NET POWER AVAILABILITY- Own Source	5406	2595
		- Central Sector+Others	3670	2160
	iii)	SURPLUS(+)/DEFICIT(-)	-369	-518
7		**SIKKIM**		
	i)	NET MAX DEMAND	90	46
	ii)	NET POWER AVAILABILITY- Own Source	8	3
		- Central Sector+Others	171	111
	iii)	SURPLUS(+)/DEFICIT(-)	89	68
8		**EASTERN REGION** **At 1.03 AS DIVERSITY FACTOR**		
	i)	**NET MAX DEMAND**	22918	13748
		Long term Bi-lateral by DVC	1644	1223
		EXPORT BY WBSEDCL	-662	-564
	ii)	**NET TOTAL POWER AVAILABILITY OF ER (INCLUDING C/S ALLOCATION)**	26044	14190
	iii)	**PEAK SURPLUS(+)/DEFICIT(-) OF ER (ii)-(i)**	2145	-217

Quarterly Preparedness Monitoring -AGENDA

(Status as on :)

S.No.	State	Sector (G/T/D)	Utilities	Status of CISO Nomination	Critical Infra Identified	Crisis management Plan Prepared	Status of CS mock drill	Status of Training/ Workshops organized/ participated by utility	Action taken on CERT-In/NCIIPC Advisories
1	Tamilnadu	T	TANGEDCO	Yes/No	Yes/No	Yes/No	Done on ____		