Agenda

for

127th OCC Meeting

Date: 28.11.2016

Eastern Regional Power Committee

14, Golf Club Road, Tollygunge

Kolkata: 700 033

Eastern Regional Power Committee

Agenda for 127th OCC Meeting to be held on 28th November, 2016 at ERPC, Kolkata

Item no. 1: Confirmation of minutes of 126th OCC meeting of ERPC held on 21.10.2016

The minutes of 126th OCC meeting were uploaded in ERPC website and circulated vide letter dated 07.11.2016 to all the constituents.

Members may confirm the minutes.

PART A

(List of Items to be discussed for which the details are given at "Part B")

B.1. Commissioning of new transmission elements in Eastern Region
B.2. Status of projects funded under PSDF schemes
B.3. Operational load flow study for Off-peak period
B.4. Preparation of Load Generation Balance Report (LGBR) of ER for 2017-18
B.5. Ratification of projected Demand and generation for POC transmission charges and loss calculations for Q4(2016-17)
B.6. Finalizing the methodology for computation of TTC, ATC and TRM
B.7. Persistent under-generation in NTPC plants
B.8. Status of UFRs healthiness installed in Eastern Region
B.9. Healthiness of SPS existing in Eastern Region
B.10. Status of Islanding Schemes of Eastern Region
B.11. Restoration of PLCC system of important lines
B.12. Status update of previous decisions/follow up actions
B.13. Third Party Protection Audit
B.14. Inspection of UFR relays
B.15. Preparation of crisis management plan for Cyber Security in Power Sector in line with CERT-IN
B.16. Certification through BIS as per IS 18001:2007 to all generating/ transmission units
B.17. Formulation of a Skill Plan for Power Sector based on the assessed skill gap in the sector
B.18. Energy Generation data management from Renewable Energy Sources
B.19. Compilation of data for meeting Renewable Energy targets of 175 GW by 2020 -- Reference from MNRE
B.20. Reporting of Energy generated from renewable resources on daily basis
B.21. Data of Peak Demand – Submission of hourly power cut data
B.22. Recovery Procedures of ER Constituents – ERLDC
B.23. Transfer capability determination by the states -- Agenda by NPC
B.24. Reasons for demand –supply gap and its variation -- Agenda by NPC
B.25. Long outage of important transmission lines
B.26. Update on status of telemetry
B.27. Interruption of real time data due to all control centres in ER
B.28. Installation of PMUs in Eastern Region under URTDSM project
B.29. Status of DR, Stand alone EL and Time Synchronization equipment.
B.30. Status of ERS Towers for Eastern Region constituents
B.31. Non-commissioning of PLCC / OPGW and non-implementation of carrier aided tripping in 220kV and above lines
B.32. Non-commissioning / non-functional status of bus-bar protection at important 220 kV Sub-stations

B.33. Pollution mapping for Eastern Region
B.34. Mock Black start exercises in Eastern Region
B.35. Restricted Governor/Free Governor Mode Operation of generators in ER
B.36. Reactive Power performance of Generators and GT tap position optimization
B.37. Collapse of One no Tower in 400KV D/C(Quad) Patna – Kishanganj TL due to river encroachment.
B.38. Collapse of four ENICL towers in Ganga river of 400kV Punea-Biharshariff line 1& 2 due to heavy flooding on 23rd August ,2016 at 06:51 Hrs

PART B: ITEMS FOR DISCUSSION

(Items to be discussed as listed in "Part A")

Item No. B.1: Commissioning of new transmission elements in Eastern Region

In 118th OCC, it was informed that the network diagram of eastern region needs to be updated on regular basis on account of commissioning of new elements in the CTU as well as STU networks.

OCC advised all the constituents to update the list of newly commissioned power system elements to OCC on monthly basis so that ERLDC/ERPC can update the network diagram on regular basis.

The list of new Transmission Elements commissioned/charged during **October, 2016** as informed by ERLDC is given below:

1. 400/220/33kV, 500MVA ICT-I along with its associated GIS bays at Kishanganj S/s(Bays No-405,406 & 204) were idle charged for the first time at 20:12HRS of 01/10/16 and loaded at 20:12HRS of 03/10/16.
2. 4 (Four) numbers of 220kV GIS bays of 220kV Kishanganj(PG)-Kishanganj(BSPTCL)-I, II, III & IV (Bay No-208,209,210 & 211) at Kishanganj(PG) were charged for the first time at 21:32HRS, 21:43HRS, 21:41HRS and 21:49HRS of 03/10/16 respectively.
3. 400kV, 125MVAr B/R-II along with its associated 400kV GIS bays (430, 431, and 432) at Maithon and GIS Bus extension of 400kV Bus-III and 400kV Bus-IV at Maithon were charged for the first time at 15:15HRS of 04/10/16.
4. LILO of 132kV Baripada-Rairangapur at Bangiriposi was charged for the first time at 15:55HRS of 04/10/16.
5. 220kV Kishanganj(PG)-Kishanganj_New(BSPTCL) ckt- III & IV were charged for the first time at 13:15HRS and 13:29HRS of 05/10/16 respectively.
6. 220/132kV, 160 MVA ICT-I & II at Kishanganj_New(BSPTCL) were charged for the first time at 17:55HRS and 18:07HRS of 05/10/16 respectively.
7. 400kV bay of 400kV New Ranchi-PPSP-II at New Ranchi (bay no-422) along with 50 MVAr L/R (taken as B/R) was charged for the first time at 14:14HRS of 15/10/16.
8. 400kV bay of 400kV New Ranchi-PPSP-I at New Ranchi (bay no-419) along with 50 MVAr L/R (taken as B/R) was charged for the first time at 15:24HRS of 15/10/16.
9. 125MVAr B/R-II at Durgapur was charged for the first time in parallel with the existing 50MVAr B/R-I at 17:06HRS of 21/10/16.
10. 63MVAr L/R of 400kV Chaibasa-Kolaghat at Chaibasa was charged for the first time(alongwith the line) at 17:14HRS of 25/10/16.
11. 220kV New Melli-Jorethang-I & II were idle charged for the first time from their designated GIS Bays No-205 & and 206 respectively at New Melli (which were also charged for the first time), up to 5kM from New Melli at 17:03HRS and 17:12HRS of 28/10/16 repectively.
12. Charging of 160MVA ICT-II at Siliguri S/s through new GIS Bay No-103 from old AIS bay (Bay No-103) was done at 22:01HRS of 28/10/16.
13. Charging of 132kV Siliguri-Melli through new GIS bay No-107 from old AIS bay (Bay No-105) was done at 06:16HRS of 29/10/16 temporary basis.

WBSETCL vide letter dated 02.11.16 informed that following new elements have been commissioned during September/October, 2016:

1. 220/132 kV,200 MVA Tr#1(augmentation of 160 MVA Tr.) at BidhanNagar was charged for first time at 15.30 Hrs of 09.09.16 subsequently loaded at 11.49 Hrs of 10.09.16.
2. 400/220 kV , 315 MVA ICT I & II at New Gokarna 400kV S/s were back charged from 220 kV side at 18.44 Hrs & 19.02 Hrs of 15.09.16 respectively.
3. 132 kV GIS Main Bus I & II of Bajkula 132/33 kV GIS S/s were charged(from Contai S/s) at 16.19 Hrs & 16.20 Hrs of 27.10.16 respectively.
4. 132/33 kV 50 MVA ICT I at Bajkul 132/33 kV GIS S/s was charged at 16.50 Hr(HV side) & 16.55 Hrs(LV side) of 27.10.16.
5. Test synchronization of 500 MW, Unit#4 of Sagardighi TPP was done at 13.32 Hrs of 15.10.16.

Other constituents may update.

Item No. B.2: 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. The latest status as updated in 34th TCC/ERPC is as given below:

SN	Name of Constituent	Name of Project	Date of approval from PSDF	Target Date of Completion	Amount approved (in Rs.)	Amount drawn till date (in Rs.)	Status as updated in 126th OCC
1	WBSETCL	Renovation & up-gradation of protection system of 220 kV & 400 kV Substations in West Bengal	31-12-14		120.67 Cr	11.04 Cr.	95 % Supply Completed
2	WBSETCL	Transmission System lmprovement of WBSETCL					
3	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	10.05.17	162.5 Cr.	4.91 Cr.+20 Cr	Erection work of the already procured equipment is going on. LOA for eight different types of Testing equipment already placed worth about Rs.4 Cr. Placement of LOA for balance equipment is under process.
4	ERPC	Creation & Maintenance of web based protection database and desktop based protection calculation tool for Eastern Regional Grid	17.03.16		20 Cr.	4.94 Cr.	1st milestone-submission of DPR completed 2nd milestone part completed-Operational load flow studies 7th milestone preponed and completed-32 licenses of setting calculation tool software
5	BSPTCL	Renovation and up-gradation of 220/132/33 KV GSS Biharsharif,Bodhgaya, Fatuha, Khagaul Dehri-on-sone & 132/33 Kv GSS Kataiya	11/5/2015	Feb'2017	64.22 crore	1.219 crore	Project is on going
6		Installation of capacitor bank at different 35 nos. of GSS under BSPTCL	5/9/2016		18.88 crore		Approved (triparty agreement among NLDC, Govt. of Bihar & BSPTCL is in under process)
7		Renovation & up-gradation of protection and control system of 12 nos. 132/33 KV GSS under BSPTCL.					Recommendation of appraisal committee is awaited. Estimated cost 54.69 crore.

8	*DVC*	*Renovation and upgradation of control & protection system and replacement of Substation Equipment of 220/132/33 kV Ramgarh Substation*					*Submitted on 30.03.16. Reply/comments of appraisal committee is awaited.*
9		*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*					*Submitted on 27.07.16. Reply/comments of appraisal committee is awaited.*
10	*WBPDCL*	*Implementation of Islanding scheme at Bandel Thermal Power Station*					*Submitted on 22.06.16. In 34th TCC, WBPDCL informed that reply to the queries raised by the PSDF committee has been submitted. WBPDCL added that bid will be opened in December, 2016*
11	*OHPC*	*Renovation and up-gradation of protection and control system of OHPC*					*Re-submitted. Reply/comments of appraisal committee is awaited.*

34th TCC/ERPC accorded post facto approval to the following three schemes of ERPC for submission to PSDF Appraisal Committee:

1) Training for Power System Engineers
2) Training on Integration of Renewable Energy resources
3) *Training on Power market trading at NORD POOL Academy for Power System Engineers of Eastern Regional Constituents*

Other constituents may update.

Item No. B.3: OPERATIONAL LOAD FLOW STUDY FOR OFF-PEAK PERIOD (WINTER LEAN PERIOD),

In 124th OCC, after detailed deliberation, OCC decided that all constituents should provide the relevant data for off-peak load flow study for two instances:

- 13:00hrs on 27th August, 2016 &
- 03:00hrs on 28th August, 2016

OCC advised all the constituents to update the Network Data format with network augmentation from 31st May 2016 to 31st of August 2016 in the given format.

In 126th OCC, PRDC presented the status of the data received for 27th & 28th August, 2016 and the following information was shared by M/s PRDC:

i) Data availability from WB was scanty. WBSETCL representative committed to give the data
ii) ERLDC SCADA data for off peak times considered appeared to be on the higher side.
iii) It was suggested that off peak load of a different day may be considered and load may be apportioned among states based on SCADA data of 27/08/2016 at 13:00 Hrs. or 28/08/2016 at 03:00 Hrs. However, it may not be possible to match SCADA line flows.
iv) After much deliberation members decided that the off peak load flow study will be carried out with load generation scenario of 27/08/2016 at 13:00 hours as per the generation demand scenario data given by ERLDC on 4th. October 2016.

v) *The data for 28/08/2016 at 03:00 Hrs. will not be considered as off peak condition as the regional demand is at this hour is very high*
vi) *It was also decided that a second study on off peak load flow may be carried out in winter for a better estimation of light load scenario*
vii) *PRDC will interact with respective SLDCs to collect remaining data for operational load flow.*

Further, PRDC informed that 27th & 28th August, 2016 the total regional demand figures are almost equals to peak load scenario of previous study and it cannot be treated as off-peak scenario.

OCC felt that another set of data may be collected during lean winter for simulation of off-peak load flow scenario.

Further, OCC advised PRDC to complete the study with the data of 27th & 28th August, 2016.

It is proposed that 28th & 29th December, 2016 may be considered for the lean winter period off-peak load flow study & all constituents are requested to provide the relevant data for off-peak load flow study.

Members may decide. PRDC may update on OLF study.

Item No. B.4: Preparation of Load Generation Balance Report (LGBR) of ER for 2017-18.

As per the IEGC under Clause 5.7.4 of Principal Regulations, first amendment in 2012 under sub-Regulation (a), (b), (c) and (d) states that

a) "The RPC Secretariat shall be primarily responsible for finalization of the Annual Load Generation Balance Report (LGBR) and the annual outage plan for the following financial year by **31st December of each year**. The LGBR shall be prepared by the respective RPC Secretariat for Peak as well as Off-peak scenarios".

b) "Each SLDC shall submit LGBR for its control area, for Peak as well as Off-Peak scenario, by **31st October** for the next financial year, to respective RPC Secretariat".

c) "RPC Secretariat shall then come out with draft LGBR and draft outage plan for the next financial year by **30th November** of each year for the regional grid taking …."

d) "The outage plan shall be finalized in consultation with NLDC and RLDCs. The final LGBR after considering comments/observations of the stakeholders shall be prepared by RPC Secretariat by **31st December of each year**. The……"

So, the planning of maintenance of generating units of various generating companies of the region as well as outage of transmission system on annual basis in respect of Eastern Region for the year 2017-18 is to be finalised by **31st December, 2016**. To facilitate the preparation of LGBR of Eastern Region by ERPC Secretariat within the above schedule period, the following data/ information for the year **2017-18** in respect of the constituents/ generators of Eastern Region is required:

State and Central Sector Generators/ IPPs/CPPs

i) The unit wise and station wise monthly energy generation proposed from existing units during 2017-18 (thermal/hydro/RES).
ii) Annual maintenance programme for each of the generating units (thermal and hydro both).

iii) Generating units under R&M/ long outage indicating date of outage and reasons of outage and expected date of return (thermal and hydro both).
iv) Partial and forced outage figures (in %) of generating units for the last 3 years.
v) Month wise peak demand (MW) – restricted and unrestricted peak demand.
vi) Month wise energy requirement (in MU).
vii) Schedule of commissioning of new generating units during 2017-18 and unit-wise monthly generation programme (in MU).
viii) Allocation of power from new generating units.

CTU / STU / Powerlinks / ENICL/CPTC/PKTCL

Month wise annual planned outage of transmission systems (Transmission lines 220kV and above/ICTs/Reactors/other elements).

It is therefore requested to please send the above information (as applicable) on or before **31.10.2016** for compilation of data and preparation of **LGBR of ER for the year 2017-18.**

Information should be submitted in the form of soft copy through email (mail ID: **rpc.erpc@gov.in / mserpc-power@nic.in**).

In 126th OCC ERPC requested all concerned members to submit the data by first week of November, 2016.

Till date the requisite information has been received from CESC, NHPC (Teesta & Rangit), WBPDCL & Odisha.

Other utilities (BSPHCL/BSPTCL, JUSNL, DVC, WBSEDCL/WBSETCL, Sikkim, NTPC, IPPs) may submit the the data for LGBR.

Item No. B.5: Ratification of projected Demand and generation for POC transmission charges and loss calculations for Q4(2016-17)

The projected Demand and Generation of ER constituents to be considered in the base case for POC transmission charge and loss calculations for Q4(Jan,17-Mar,17) are attached at **Annexure-B.5** for ratification by the constituents.

Members may kindly go through and confirm the data.

Item No. B.6: Finalizing the methodology for computation of TTC, ATC and TRM— Agenda by NRCE

A sub-group of National Reliability Council for Electricity (NRCE) constituted for the purpose of determination of TCC, ATC and TRM and to suggest a clear methodology for the calculation. A meeting of this sub-group was held on 19th September, 2016 and sought the following information from the RPCs.

1. NRCE sub group felt that distribution of nodal MW and MVAR is important for computation of TTC. Advised RPCs to take up the issue with all the states to submit the accurate data at all generation and demand nodes of the power system in the state. Constituent wise peak and off-peak data of generation and demand is attached at **Annexure-B.6**.

Members may update.

2. ICT tap position is important when voltage limit is a constraint for TTC. NRCE felt that on-line tap changer (OLTC) can be utilized to enhance the TTC during voltage limit constraint.

Members may discuss.

Item No. B.7: Persistent under-generation in NTPC plants

It has been observed that NTPC stations(specially FSTPP/KhSTPP) in ER are resorting to persistent under-generation with no generation increase even after issual of messages. At times even when the full DC was scheduled, NTPC has continued under-generation and has hence failed to demonstrate DC even after messages from ERLDC Control room. Also, in several occasions, there was failure in achieving scheduled generation even when schedule of the NTPC stations was increased vide Regulation Up Ancillary services. It may be noted that the above matters had already been brought to the notice of the OCC forum in the 123rd OCC meeting and it was confirmed that NTPC would need to follow the schedule strictly. However, NTPC has continued such under-generation and in case of failure to generate uptoDC(when full DC is scheduled), NTPC is resorting to downward revision of DC stating reasons as wet coal,etc. Instances depicting above violations would be presented by ERLDC for discussions/suggestions and for conclusion regarding the corrective actions. It may be noted that in case of such continued under-generation, ERLDC may be constrained to resort to classifying such cases as incorrect declaration of DC and proceed as per Clauses of 6.4.19 and 6.4.20 of IEGC. ERLDC may also be compelled to file a petition before CERC in this regard.

In 125th OCC, NTPC explained that the under generation is because of wet coal in the monsoon periods.

OCC took serious note of under generation by NTPC stations of Eastern Region and advice NTPC to strictly follow the schedule. After detail discussion it was decided that ERLDC will monitor the performance of NTPC stations for 15 days and even if the generation does not improve, ERLDC may file a petition before CERC.

In 126th OCC, ERLDC presented the SCADA data for NTPC generating stations and explained that the problem of under-generation was continuing even after the advice by 125th OCC.

ERLDC informed that NTPC was consistently declaring high DC, and whenever they were asked to demonstrate DC, they were revising their schedule immediately. Therefore, this could be taken as a failure of DC demonstration.

NTPC explained that there was significant improvement in the schedule compared to last month. They had still some technical problems, which they are trying to address.

OCC took serious note of the situation and advised NTPC to strictly follow the schedule.

OCC advised ERLDC to monitor the performance of NTPC stations till 31st October, 2016 and advised ERLDC to file a petition before CERC if NTPC fails to adhere the schedule.

ERLDC/NTPC may update.

Item No. B.8: Status of UFRs healthiness installed in Eastern Region

UFR Healthiness Certification for the month of October, 2016 has been received from JUSNL, WBSETCL, CESC and DVC only.

Other constituents (BSPTCL & OPTCL) may submit.

Item No. B.9: Healthiness of SPS existing in Eastern Region

GMR, JITPL, Vedanta, CESC & NTPC have submitted the healthiness certificate for the month of October, 2016.

Chuzachen, Powergrid-Odisha & Powergrid ER-II may submit the healthiness certificate for October, 2016.

Respective members may update.

Item No. B.10: Status of Islanding Schemes of Eastern Region

B10.1. Status of commissioned Islanding Schemes 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

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 October, 2016 has been received from CTPS, DVC, BkTPS, Tata Power and CESC.

Members may note.

B10.2. FSTPS Islanding Scheme, NTPC

In 123rd OCC, NTPC informed that cable laying completed and interfacing is pending. Interfacing will be done after completion of the PLCC installation work by PGCIL at JUSNL sub-stations.

In 125th OCC, Powergrid informed that PLCC installation work has been completed and commissioning is under progress.

In 126th OCC Powergrid informed that the PLCC installation work has been completed and commissioning will be done by 1st week of November, 2016.

NTPC informed that after the commissioning of PLCC, they may require another 30-40 days to complete the cable termination and integration work. After the completion of installation work a special meeting may be convened to co-ordinate the complete implementation of the Islanding scheme.

OCC decided that a special meeting may be convened in after the completion of all installation and cable termination work by NTPC so that the Islanding scheme could be commissioned by December, 2016.

NTPC/Powergrid may update.

B10.3. Bandel Islanding Scheme, WBPDCL

In 33rd TCC, WBPDCL informed that DPR has been submitted to NLDC on 22-06-2016 for funding from PSDF.

In 124th OCC, it was informed that PSDF appraisal committee meeting will be held in September, 2016.

Subsequently, PSDF Secretariat vide mail dated 07.10.2016 informed that the Scheme was examined on 28.09.2016 and has sought some clarification from WBPDCL.

In 126th OCC WBPDCL was advised to submit the reply to PSDF Secretariat at the earliest so that the project may be considered in next Appraisal Committee meeting.

WBPDCL informed that they are preparing the reply to the queries and they may require some information from WBSLDC (WBSETCL). OCC advised WBPDCL to prepare the reply in co-ordination with WBSLDC and submit to PSDF Secretariat at the earliest with a copy to ERPC.

WBPDCL may update the latest status.

Item No. B.11: Restoration of PLCC system of important lines

In 119th OCC, JUSNL informed that the following:

a) In 220 KV Chandil –Santaldih line auto-reclosure has been enabled and termination done in PLCC panels at Chandil end but due to non-availability of PLCC panels at Santaldih(WBPDCL) end the A/R and PLCC scheme could not be activated.
b) In 220 KV Ramchandrapur-Joda line auto-reclosure has been enabled and termination done in PLCC panels at Ramchandrapur end but due to non-availability of PLCC panels at Joda (OPTCL) end the A/R and PLCC scheme could not be implemented.

Further, it was informed that JUSNL is ready to share their standby PLCC panels (BPL make) with WBPDCL (for Snataldih end) and OPTCL (for Joda end) to complete the PLCC schemes of both the above lines.

In 34th TCC, WBPDCL informed that PLCC panels will be delivered by November, 2016 and installation of the panels will be completed by December, 2016.

OPTCL informed that purchase order has been placed to BPL and supply is expected by December, 2016.

JUSNL/OPTCL/WBPDCL may update.

Item No. B.12: Concerned members may update the latest status.

B.12.1: Commissioning of 400 kV Ind-Bharath to Jharsuguda D/C (dedicated line)

In 126th OCC, Ind-Bharath informed that the CEA inspection for the line has been completed on 17.10.16 and PLCC work is In progress. They are expected to complete the line in all respect by first week of November, 2016.

OCC advised IBEUL to submit all the clearances (CEA clearance etc.) along with completion of line and communication system so that a special meeting could be convened before starting the commercial power transaction from IBEUL for final consideration of all aspects.

In 34th TCC, it was informed that construction of line has been completed but CEA clearance is still awaited.

IBEUL may update.

B.12.2: Status of construction of 400 kV Sterlite-Jharsuguda D/C sections

In 34th TCC, Vedanta explained the status of construction with a presentation. Updated status along with the target date is given below:

Activities	Nos	Status as on 15-Nov-16	Target completion	Remarks
Tower Foundation	64	60	30-Dec-16	4 DD+30 tower foundation concrete: volume increased from 742 m3 to 1118 m3
Tower Erection	64	42	10-Feb-17	757 MT balance tower material to be erected.(DD+30 is 7)
Stringing /OPGW Cabling & Testing	20.5 Km	One stretch completed	28-Feb-17	Stringing can be started only after harvesting. i.e. Dec-16.
Sub station Bay	2	Equipment Erection, Cable Trench, Earthing Completed	31-Dec-16	CR Panel errection, cabling & termination to be done, Testing to be carried out. CEA inspection to be done post completion
Statutory clearances	-	-	15-Mar-17	CEA inspection of line to be done Report generation to be done.
Line & Bay Charging	-	-	25-Mar-17	ERLDC clearance for line charging after attending CEA report punch points

Vedanta informed that significant progress has been made in last 5 months and the line will be commissioned by March, 2016. Vedanta requested to extend the removal of the LILO till March, 2017 as final commitment.

OPTCL added that since Vedanta has made substantial progress during last 5 months and the dead line for removal of the LILO may be extended till February, 2017.

TCC agreed and advised Vedanta to submit a fresh undertaking in affidavit form to CTU and ERPC stating that the dedicated line will be completed by 28.02.2017 with no further extension. Failing which, CTU/ERLDC is authorized to open the LILO with effect from 01.03.2017.

Vedanta may update.

B.12.3: Status of Bus Splitting schemes in Eastern Region

A. Bus Splitting of Powergrid Sub-stations

As per decision of Standing Committee of ER CTU was entrusted to do Bus splitting at 400 kV Maithon, Durgapur & Biharsariff S/Ss or ER. The latest status on the same are:

- 400 kV Maithon ---Completed
- 400 kV Durgapur--Completed
- 400 kV Biharshariff—Foundation work has been completed but shutdown are yet to be received to complete the work.

In 34th TCC, Powergrid informed that they have applied for bus shutdown of 400kV biharsharff S/s for 28h November, 2016. OCC has already concurred the shutdown but BSPTCL is yet to give the clearance.

BSPTCL allowed the shutdown from 28th November, 2016. ERLDC assured that on real time consideration the same will be concurred without further deliberation in OCC.

TCC advised Powergrid & BSPTCL to take the shutdown in coordination with ERLDC.

Powergrid/BSPTCL may update.

In 33rd TCC/ERPC, TCC advised CTU to carry out a final study post bus-splitting and inform ERLDC and ERPC.

*In 34th TCC, CTU has submitted the report. The report is enclosed at **Annuxure-B.12.3**.*

It was informed that since 400kV Jamshedpur – Durgapur D/c line was terminated at DTPS due to Row problems near Durgapur area, the fault level at Durgapur bus (considering Maithon and Biharsharif substations in split condition) is slightly below 40kA. Therefore, at present Durgapur bus can be operated on single bus mode & the splitting arrangement at Durgapur could be utilized on real time requirement.

Members may give their views (if any).

B.12.4: Bus Splitting of Kahalgaon STPS Stage I&II, NTPC

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

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

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

- 400/132kV Switchyard package - bid opened on 14.03.16. Awarded on 04.05.2016.
- Site levelling – Site levelling package awarded, expected to be completed by November, 2016.
- Transformer package and Shunt reactor– have been awarded.

In 34th TCC, NTPC informed that the bus splitting will be completed by December, 2018.

NTPC may update.

B.12.5: 11KV Auxiliary power supply of 400KV Berhampore Powergrid Substation.

In 34th TCC, WBSEDCL informed that the construction of dedicated line has been delayed due to ROW issues. The same has been resolved now and the construction of dedicated line will be completed by December, 2016.

WBSEDCL added that cable needs to be laid out for highway crossing for which cost estimate will be given to Powergrid within a week.

Powergrid agreed to do the payment after receiving the estimate.

WBSEDCL assured that on receipt of deposit from Powergrid all efforts will be made to resolve the issue on reasonable time.

WBSEDCL/Powergrid may update.

B.12.6: 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 126th 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 Dec, 2016.
b.	LILO of one circuit of Katapalli-Sadeipalli220 kV D/C line at Bolangir S/S	Charged on 04.05.16
2.	**400/220 kV Keonjhar S/S**	
a.	Keonjhar (PG)-Keonjhar (OPTCL) 220 kV D/C line	By 2017.
b.	Keonjhar (PG)-Turumunga(OPTCL) 220kV D/C line	By 2019.
3.	**400/220kV Pandiabil Grid S/s: Expected by June'16**	
a.	Pratapsasan(OPTCL)-Pandiabil (PG) 220 kV D/C line	Dec, 2017.
b.	LILO of one circuit of Atri-Puri (Samangara) 220 kV D/C line at Pandiabil (PG)	December, 2016

OPTCL may update.

B.12.7: 220 kV inter-connecting lines of JUSNL with 2x315 MVA, 400/220 kV sub-stations at Chaibasa, Daltonganj & Dhanbad

In 125th OCC, JUSNL updated the latest status as follows:

Sl. No.	Name of the transmission line	Completion schedule
1.	**Chaibasa 400/220kV S/s**	
a.	Chaibasa (POWERGRID) – Chaibasa (JUSNL) 220kV D/c	Completed.
b.	Chaibasa (POWERGRID) – Ramchandrapur (JUSNL) 220kV D/c	December, 2016
2.	**Daltonganj 400/220/132kV S/s: Expected by Mar'17**	
a.	Daltonganj (POWERGRID) – Latehar 220kV D/c	By 2017.
b.	Daltonganj (POWERGRID) – Garhwa 220kV D/c	Matching with S/s
C	Daltonganj (POWERGRID) – Daltonganj (JUSNL) 132kV D/c	Matching with S/s
D	Daltonganj (POWERGRID) – Chatarpur/Lesliganj 132kV D/c	Matching with S/s
3.	**Dhanbad 400/220 kV S/s: Awarded under TBCB**	
a.	Dhanbad – Dhanbad (Govindpur) (JUSNL) 220kV D/c	Matching with S/s

JUSNL may update.

B.12.8: 220 kV inter-connecting lines of WBSETCL with 400/220 kV, 2x315 MVA Alipurduar & 2x500 MVA Rajarhat sub-stations

In 126th OCC, *WBSETCL updated the latest status as follows:*

Sl. No.	Name of the transmission line	Completion schedule
1.	**2x315MVA, 400/220kV Alipurduar sub-station**	
a.	Alipurduar (POWERGRID) – Alipurduar (WBSETCL) 220kV D/c (***Twin moose***)	**Mar, 2017**
2.	**2x500MVA, 400/220kV Rajarhat West Bengal S/S- Expected by Oct, 2016**	
a.	Rajarhat-N. Town-3 (WBSETCL) 220 kV D/C line	Matching
b.	Rajarhat-N. Town-2 (WBSETCL) 220 kV D/C line	*June, 2018*
c.	Rajarhat- Barasat (WBSETCL) 220 kV D/C line	*June, 2018*

WBSETCL may update.

Item No. B.13: Third Party Protection Audit

1. Status of 1st Third Party Protection Audit:

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

Name of Constituents	Total Observations	Complied	% of Compliance
Powergrid	54	37	68.52
NTPC	16	14	87.50
NHPC	1	1	100.00
DVC	40	26	65.00
WB	68	27	39.71
Odisha	59	38	64.41
JUSNL	34	16	47.06
BSPTCL	16	5	31.25
IPP (GMR, Sterlite and MPL)	5	5	100.00

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.

OCC advised all specially JUSNL and BSPTCL to send the revised DPRs at the earliest after clarifying the queries if any.

In last meeting, OCC advised all the constituents to comply the pending observations at the earliest.

Members may comply.

2. Schedule for 2nd Third Party Protection Audit:

The latest status of 2nd Third Party Protection audit is as follows:

1)	Jeerat (PG)	Completed on 15th July 2015
2)	Subashgram (PG)	Completed on 16th July 2015
3)	Kolaghat TPS (WBPDCL)-	Completed on 7th August 2015
4)	Kharagpur (WBSETCL) 400/220kV -	Completed on 7th August 2015
5)	Bidhannagar (WBSETCL) 400 &220kV	Completed on 8th September, 2015
6)	Durgapur (PG) 400kV S/s	Completed on 10th September, 2015
7)	DSTPS(DVC) 400/220kV	Completed on 9th September, 2015
8)	Mejia (DVC) TPS 400/220kV	Completed on 11th September, 2015
9)	400/220/132kV Mendhasal (OPTCL)	Completed on 2nd November, 2015
10)	400/220kV Talcher STPS (NTPC)	Completed on 3rd November, 2015
11)	765/400kV Angul (PG)	Completed on 4th November, 2015
12)	400kV JITPL	Completed on 5th November, 2015
13)	400kV GMR	Completed on 5th November, 2015
14)	400kV Malda (PG)	Completed on 23rd February, 2016
15)	400kV Farakka (NTPC)	Completed on 24th February, 2016
16)	400kV Behrampur(PG)	Completed on 25th February, 2016
17)	400kV Sagardighi (WBPDCL)	Completed on 25th February, 2016
18)	400kV Bakreswar (WBPDCL)	Completed on 26th February, 2016

The list of observations for the above sub-stations is already available at ERPC website (www.erpc.gov.in). Respective constituents are requested to comply and submit the report to ERPC for regular update.

In 125th OCC, it was decided to carry out the Third Party Protection audit of 765 kV Gaya, 400 kV Bihar Sharif of PGCIL, 400 kV Nabinagar and 220 kV Bihar Sharif of BSPTCL in Sept/Oct, 2016.

Further, it was also decided that the audit team will be comprised of one member each from DVC, West Bengal, Powergrid, ERLDC and ERPC.

Subsequently, *the team has completed the Third Party Protection audit of 765 kV Gaya, 400 kV Bihar Sharif of PGCIL, 400 kV Nabinagar and 220 kV Bihar Sharif of BSPTCL in first week of November, 2016. The audit team may place the report.*

Members may note.

Item No. B.14: Inspection of Under Frequency Relays (UFR)

In 124th OCC, DVC informed that the UFR relays will be delivered by August, 2016 and the UFRs at 220/132/33 KV Ramgarh S/s will be replaced by next month.

In 125th OCC, DVC informed that the UFR relays are in transit and the UFRs at 220/132/33 KV Ramgarh S/s will be replaced by next month.

In 126th OCC, *DVC informed that the UFR relays at 220/132/33 KV Ramgarh S/s will be replaced by November, 2016.*

DVC may update the status.

The proposed UFR audit schedule for second quarter of 2016-17 is placed below:

Sl No	Proposed Date	Substation/feeder inspected by the sub-group
1	Sep/Oct, 2016	132/33 KV Bari Pahari (Bihar Sharif) of BSPTCL
2		132/33 KV Purnea of BSPTCL
3		220/132/33 KV Sampatchak of BSPTCL
4	Nov, 2016	220/132/33 KV Kalyaneswari of DVC
5	NOV, 2016	220/132/33 KV New Bishnupur of WBSETCL
6		132/33 KV Old Bishnupur of WBSETCL
7	Dec , 2016	BRS (Liluah S/Stn.) of CESC

In 125th OCC, it was decided that the third party audit team will carry out the UFR inspection along with third party audit of 132/33 KV Bari Pahari (Bihar Sharif), Nalanda and Rajgir sub-stations of BSPTCL in Sept/Oct, 2016

Subsequently, *the team has completed the UFR inspection of 132/33 KV Bari Pahari (Bihar Sharif), Nalanda and Rajgir sub-stations of BSPTCL in first week of November, 2016. The audit report is given at* ***Annexure= B.14.***

Members may update.

Item No. B.15: 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.

NTPC communicated their activity of the preparation of Crisis Management Plan for countering the cyber attacks vide letter dated 2nd August, 2013.

In 113th OCC, Member Secretary informed that during interaction with consultants of Grid Study Committee, NLDC agreed that they will plan for conducting workshops on crisis management plan for Cyber Security and few workshops will also be held in Eastern Region.

CESC vide letter dated 22.08.15 had furnished their status of the preparation of Crisis Management Plan (CMP) for Cyber attacks in their system.

Members may note and comply.

Item No. B.16: Certification through BIS as per IS 18001:2007 to all generating/ transmission units.

In 84th OCC meeting all constituents were requested to interact with BIS with intimation to ERPC and get certified as per CEA direction.

In 85th OCC NTPC informed that, NTPC-Farakka has been certified with IS 18001. Other constituents including OHPC requested to interact with BIS with intimation to ERPC and get certified as per CEA direction. The matter is getting reviewed by highest authorities with top priority.

In 88th OCC NTPC informed that, all NTPC stations in Eastern Region are certified with IS 18001. NHPC informed that, Teesta is also certified with IS 18001. After that, OHPC and CESC informed that their stations are certified with IS18001.

In 104th OCC, WBPDCL informed that Bandel TPS is certified with IS 18001.

OPTCL vide letter No. TB-SO-MISC-9/2010/1914 dated 20.12.2014 had proposed to go for IS 18001:2007 certification as per direction of CEA.

In 113th OCC, CESC informed that Budge-Budge Generating station (3x250 MW) has renewed their certification of BS 18001:2007.

In 121st OCC, it was informed that Kolaghat Generating station of WBPDCL has also received certification of IS 18001:2007 from BIS on 29.04.2016.

In 124th OCC, WBPDCL informed that Bakreswar Generating station is also received certification of IS 18001:2007 from BIS.

Members may note and update the status.

Item No. B.17: FORMULATION OF A SKILL PLAN FOR POWER SECTOR BASED ON THE ASSESSED SKILL GAP IN THE SECTOR

CEA vide letter dated 04.07.16 intimated that a meeting on the above subject was held in the Ministry of Power, New Delhi on 1st July,2016. The meeting was Chaired by the Additional Secretary Shri B.P.Pandey. Power Sector Skill Council (PSSC) made a presentation on the subject. The meeting was attended by the representatives of BEE, PSUs, CEA, PGCIL, NPTI, PFC etc.

The main emphasis made by the Additional Secretary are as follows:

- The Report has to be submitted by PSSC by 10th of July, 2016 clearly indicating the needs of training and sill gaps in power sector.
- All the data captured, analysis made and other facts in the draft skill plan have to be validated by CEA before finalization of the Report.

In this regard officials from PSSC may visit various formations of CEA and / or circulate the Draft Report for obtaining the relevant inputs and validation of the data gathered by them. Chairperson CEA has been appraised of the same.

Further to this, MoP vide their letter No.7/5/2015-T&R dated 01.07.2016 have sought information in the matter. Based on the letter of MoP a proforma has been prepared. It is requested that the relevant information pertaining to the sector/sub-sector as per the attached proforma (Attached at **Annexure-B.17**) may please be sent to CEA (by mail: ceahrd@gmail.com).

124th *OCC advised all the constituents to send the relevant information as per the proforma.*

Constituents may note and comply.

Item No. B.18: Energy Generation data management from Renewable Energy Sources

RES development Division, CEA has been receiving monthly generation details and installed capacity of Renewable Energy Sources from respective SLDCs and other authorized agencies. Some discrepancies has been found in the data as received by CEA and MNRE.

Constituents are requested to reconcile/confirmed the correct information at the earliest.

In 120th OCC, all the SLDCs were advised to submit the data to CEA as per the format given in **Annexure- B.18** with a copy to ERPC Secretariat.

In 121st OCC, SLDC West Bengal and SLDC Odisha informed that they have submitted the relevant data to CEA.

SLDCs may update.

Item No. B.19: Compilation of data for meeting Renewable Energy targets of 175 GW by 2020 -- Reference from MNRE

CEA vide letter dated 29.03.16 has referred Ministry of Power letter no. 23/2/2005-R &R(Vol-XI), dated 22.03.2016 & MNRE letter dated 02.03.2016 regarding compilation of data for meeting Renewable Energy targets of 175 GW by 2020.

In 120th OCC, Concerned State Utilities /Generating companies are requested to submit data of their respective control areas.

Members may update.

Item No. B.20: Reporting of Energy generated from renewable resources on daily basis--- ERLDC

Government of India has set an ambitious target to achieve 175 GW of renewable generation by year 2022. Renewable energy sources(RES) development division of CEA alongwith MNRE is continuously monitoring the progress in installation of renewable resources and also collecting actual generation data on monthly basis. However the energy injected from the renewable generating plants into the grid also needs to be monitored on daily basis and incorporated in the reports by NLDC, to determine the correct percentage of energy mix for whole country on any particular day. Thus the renewable generators/ concerned SLDC may furnish following data on daily basis:

a) Grid connected RES whose scheduling and metering is done as regional entity :

   Maximum/Time and energy injected(MWh) for the previous day (from the SEM meters on a daily basis till the AMR is commissioned/working)

b) Grid connected RES which is under state purview:

   Maximum/Time and energy injected(MWh) for the previous day. Concerned SLDCs to compile station wise / connection point wise energy injected into the state grid and send it RLDC on a daily basis.

The above data may be sent by mail to erldc.cal@gmail.com positively by 01:00hrs of the day i.ro data for the previous day. This is essential as the power supply report has to be sent by early morning hours for the previous day.

In 126th OCC, ERLDC informed that the data for renewable generation on daily basis is required from the constituents.

SLDC Odisha informed that generation data for renewable energy sources connected at 132 kV is possible but at lower voltage level connected to the distribution network is difficult to get. Moreover, the data on monthly basis is possible instead of daily basis.

WBSEDCL informed they will look into the matter and submit the renewable generation data to ERLDC.

OCC advised all the respective constituents to submit the data along with their comments, if any.

All SLDCs may kindly update.

Item No. B.21: Data of Peak Demand – Submission of hourly power cut data

The peak demand met figure calculated by CEA is a part of the monthly Power Supply Postion Report prepared by CEA, based on the data provided by five Regional Power committee (RPCs), who in turn collect the data from State / UTs and RLDCs. As per the present methodology being adopted for calculation of States /Regional peak demand met, the figure of peak demand met at any time in the month is taken as peak demand met for the month. For all India monthly peak demand met, the sum of five regional peaks met, which may occur at different points of time is taken.

The above methodology has been reviewed and it has been decided with the approval of Chairperson, CEA that Peak demand Met and Peak Demand in the country should be based on hourly all India demand data. The matter was taken up with POSOCO for getting the hourly data of peak demand met for each month in respect of all the regions in the country in the first week of following month and they have assured to furnish the same. To calculate the demand, data of hourly scheduled and unscheduled power-cuts / load shedding is also required, which is not available with POSOCO.

It is, therefore, requested that hourly figures of scheduled/ unscheduled power cuts/load shedding data may be collected from States / UTs and the same may be sent to CEA every month as per above schedule in the enclosed format, in spread sheet, so that hourly figures of peak demand can be calculated and incorporated in Power Supply Position report.

This data for a month may kindly be sent in the first week of each month, along with PSP data, starting from the data for the month of February, 2015. The format for sending the data of hourly scheduled and unscheduled power-cuts / load shedding has already been circulated.

In 110th OCC meeting, OCC advised all the concerned utilities (BSPTCL, JUSNL, OPTCL, WBSETCL & Sikkim) to send the data of hourly scheduled and unscheduled power-cuts / load shedding by mail to mserpc-power@nic.in latest by first week of each month.

For the month of October, 2016 data has been received from DVC, WBSETCL, CESC.

JUSNL OPTCL, BSPTCL, may furnish the data.

Item No. B.22: Recovery Procedures of ER Constituents – ERLDC

As per IEGC clause 5.8 (b) "Detailed plans and procedures for restoration after partial/total blackout of each user's/STU/CTU system within a Region, will be finalized by the concerned user's/STU/CTU in coordination with the RLDC. The procedure will be reviewed, confirmed and/or revised once every subsequent year".

In 117th OCC, ERLDC informed that all STUs have to develop their own restoration plan and procedure of their state in coordination with ERLDC/ERPC.

If such restoration plans are already available, it may be shared with ERLDC.

The restoration procedure received from DVC, JUSNL and WBPDCL.

In 122nd OCC, ERLDC requested DVC & West Bengal to include restoration plan for priority loads mentioning quantum of load and restoration procedure.

In 123rd OCC, *West Bengal, OPTCL and BSPTCL agreed to submit the restoration procedure within 15 days.*

In 124th OCC, ERLDC informed that OPTCL has submitted the restoration procedure.

In 126th OCC, Bihar informed that they are preparing the restoration procedure.

OCC advised BSPTCL to submit the restoration procedure at the earliest.

ERLDC may update.

Item No. B.23: Transfer capability determination by the states -- Agenda by NPC

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.

In 120th OCC, DVC informed that they are providing the monthly TTC/ATC on their website.

WBSETCL informed that they are calculating the TTC/ATC but their website is under construction.

Bihar and OPTCL agreed to implement.

JUSNL informed that they are unable to compute the TTC/ATC for their state.

OCC advised JUSNL to interact with ERLDC to get acquainted with the ATC/TTC calculation.

In 33rd TCC Meeting, respective members updated the status as follows:

- All the states are computing TTC/ATC except Sikkim and JUSNL.
- DVC is calculating and uploading in DVC website.
- BSPTCL is calculating and uploading through a link in BSPHCL website.
- WBSLDC is calculating but they could not upload due to non-readiness of website.
- OPTCL is calculating and uploading in website.

TCC felt that grid operator should have the information on how much power they can export and import and they should restrict to that figures in order to avoid major grid disturbances.

Accordingly, TCC advised all the constituents to place the details in monthly OCC meetings till they upload the information in their respective websites.

TCC advised JUSNL to send their representatives to ERLDC so that they could get acquainted with the ATC/TTC calculation procedure. Representative from JUSNL informed that they are ready to send three officers to ERLDC, the names of officers would be shared in tomorrow's ERPC meeting.

123rd OCC advised all the SLDCs to mention the constraints along with ATC/TCC figures.

124th OCC advised all the SLDCs to mention the constraints along with ATC/TCC figures.

In 126th OCC, OCC *advised all the SLDCs to mention the constraints along with ATC/TCC figures.*

Members may note and update.

Item No. B.24: Reasons for demand –supply gap and its variation -- Agenda by NPC

It was deliberated in the 4th NPC meeting that monthly power supply position prepared & published by CEA based on the data furnished by the states reflected shortages in almost all the states. However, a number of those states intimated adequate availability of power. This meant that the deficit / shortage in such states was actually not the deficit in true sense but demand - supply gap due to reasons other than shortage of power. The other reasons for the demand - supply gap could be inadequate availability of power, transmission constraint, distribution constraint, financial constraint etc. The reason for demand –supply gap needed to be clearly mentioned to reflect true picture of power supply position in different states and also to invite attention of various agencies including policy makers to the specific problem areas in the power sector for suitable solution.

It was agreed by all the RPCs to advise the states in their respective regions to intimate broad break-up of demand –supply gap due to various reasons, or at least, the main reason(s) for demand supply in each month.

In 126th OCC advised all the constituents to comply.

Members may update.

Item No. B.25: Long outage of important transmission elements

a) Non availability of Line Reactor-1 of 400KV Malda-Purnea D/C

In 123rd OCC, Powergrid informed that order has been placed for Reactor-1 and it will be commissioned by September, 2016.

In 125th OCC, Powergrid informed that it will be commissioned by November, 2016.

In 126th OCC, Powergrid informed that it will be commissioned by November, 2016.

Powergrid may update.

b) 400kV Meramundali-Mendhasal S/C

Tower collapsed near Mendhasal at 3 Locs, viz.Locs.180,181 & 182.

In 123rd OCC, OPTCL informed that tower 181 and 182 were restored. Restoration of tower 180 will take time due to water logging and the tower would be restored by September, 2016.

In 124th OCC, OPTCL informed that restoration of tower 180 will take time due to water logging and the tower would be restored by December, 2016.

In 126th OCC, OPTCL informed that the line will be restored by December, 2016.

OPTCL may update.

c) 220kV Gaya-Dehri

Tower collapsed at loc. No275 from Gaya end.

In 122nd OCC, BSPTCL informed that the line will be in service after 4 months.

In 124th &125th OCC, BSPTCL informed that the line will be in service by November 2016.

BSPTCL may update.

d) 400kV Patna-Kishengunj D/C

Tower collapsed at Loc.51.

Powergrid informed that due to water logging problem the work is getting delayed however work is expected to be completed by 15th October, 2016.

In 125th OCC, Powergrid informed that line will be restored by 15th October, 2016.

In 126th OCC, Powergrid informed that line will be restored by March, 2017.

Powergrid may update.

e) 400kV Purnea-Biharshariff D/C(under outage wef 23/08/16)

Three Nos.Tower(mid river) collapsed.

In 126th OCC, ENICL informed that the final assessment is under progress. The same will be submitted to ERPC and ERLDC.

ENICL may update.

f) Main bay of 315MVA ICT at Farakka(Tie element-400kV FSTPP-Malda-I)

The main bay is under s/d for upgradationwef 06/05/16.Powergrid may update stating status of the upgradation.

In 125th OCC, Powergrid informed that Bus-I end is ready and will be charged, Bus-II end is bypassed and will be ready for charge after getting shutdown.

In 126th OCC, Powergrid informed that Bus-I has been charged, but Bus-II could not be completed due to non-availability of line shutdown.

Powergrid/NTPC may update.

g) 50MVAR Bus Reactor-I at Farakka(alongwith main and tie bays)

Under shutdown wef 31/05/16 for dismantling from old bay and re-installation in new bay in the dia of FSTPP GT#3.

In 125th OCC, Powergrid informed that reactor will be charged by end of October, 2016.

In 126th OCC, Powergrid informed that reactor will be charged by November, 2016

Powergrid may update.

h) Tie bay of 125MVAR Bus reactor and 400kV Indravati-Indravati and Indravati(PG):

Under outage wef 18/03/16 due to R-Ph pole bursting of Tie CB. Due to non-availability of the tie bay, the Buses are coupled only via the tie bay of 400kV Rengali-Indravati and 400kVIndravati-Jeypore at Indravati and any outage of the lines would result in decoupling of the Buses.

In 125th OCC, Powergrid informed that main CB has some problem which will be taken care by OHPC/OPTCL.

In 126th OCC, OPTCL informed that a CB is being shifted from Mendhasal for replacement of the subjected CB. The installation work will be completed by November,2016.

Powergrid/OHPC may update.

Item No. B.26: 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.

In 120th OCC, ERLDC informed that every month they were updating the status and posting at ERLDC website.

In 126th OCC, ERLDC presented the updated telemetry status and informed that every month they were posting the updated status at ERLDC website. The updated status is enclosed at **Annexure-B.26**.

OCC advised all the respective constituents to ensure the availability of telemetry data to ERLDC.

Members may update.

Item No. B.27: Interruption of real time data due to all control centres in ER

There was a total failure of real time SCADA data to all control centres from 05:53 Hrs of 08-August-16. As an interim arrangement, real time SCADA data was restored on 10-August-16 at 03:19Hrs. The root cause was yet to be arrived and fixed.

In 124th OCC, Powergrid informed that there was some problem in Patna SLDC due to which one ICCP link failed which caused the interruption of data.

OCC advised Powergrid to provide redundancy for communication equipment system / route diversity of communication link / redundancy at both the control centres. Powergrid was also advised to submit a report on the incident and action taken.

In 125th OCC, Powergrid submitted the report and OCC advised all the constituents to go through the report and give their feedback, if any.

In 126th OCC, it was raised that in case of failure of ICCP link/other communication equipment, the data availability needs to be assured at Back-up control centres.

OCC advised Powergrid to submit in 34th TCC their detail plan for data redundancy in case of failure of any one communication system at either of the control centres (Main & Back-up).

34th TCC felt that in case of failure of ICCP link/other communication equipment, the data availability needs to be assured at Main as well as Back-up control centres.

Powergrid informed that the alternate communication path was not available for SLDCs and ERLDC. Powergrid added that backup equipment is available and alternate communication path can be planned.

TCC advised to convene a special SCADA meeting to discuss the issue and report back.

Members may note.

Item No. B.28: Installation of PMUs in Eastern Region under URTDSM project

LOA for installation of PMUs in Eastern Region under URTDSM project was awarded to M/s Alstom on 15th January 2014. The contract has to be completed in all respect within 24 months from the award. The status of implementation may be informed since PMU data is very much important to real time shift operator for analyzing the security of the grid.

In 124th OCC, it was informed that out of 247 PMUs 46 have been installed.

OCC advised Powergrid to submit a report on latest status of implementation and advised to update the status on every OCC.

*In 126th OCC, Powergrid submitted the latest status which is given at **Annexure- B.28**.*

OCC advised POWERGRID to share the future installation and substation visit schedule with the members.

POWERGRID may update the status.

Item No. B.29: Status of Disturbance Recorder, Stand alone Event Logger and Time Synchronization equipment.

The status of DR/EL and GPS as updated in previous OCCs is enclosed at **Annexure-B.29**.

Constituents are also requested to furnish their list of new DR/EL which are not included in the list.

Members may update.

Item No. B.30: Status of Emergency Restoration System (ERS Towers) for Eastern Region constituents

The latest status of Emergency Restoration System (ERS towers) as well as the future plan of procurement was given at **Annexure- B.30**.

Members may update the latest status.

Item No. B.31: Non-commissioning of PLCC / OPGW and non-implementation of carrier aided tripping in 220kV and above lines.

According to CEA technical standard for construction of electric plants and electric lines -Clause 43(4) (c), transmission line of 220 KV and above should have single-phase auto-reclosing facility for improving the availability of the lines. However, from the tripping details attached June-August, 2016 it is evident that the some of 220kV above Inter & Intra-Regional lines do not having auto-reclose facility either at one end or at both ends. Out of these for some of the lines even PLCC/OPGW is not yet installed and carrier aided protection including Autorecloser facility is not yet implemented. Based on the trippings of June- August, 2016 and PMU analysis a list of such lines has been prepared and as given below:

List of line where auto reclose facility is not available(Information based on PMU data analysis)

S. No	Transmission Lines name	Date of Tripping	Reason of Tripping	Owner Detail		Present Status	
				End-1	End-2	OPGW/PLCC Link available	AR facility functional
1	400 KV ANGUL -TALCHER	02.06.16	B-N FAULT	PGCIL	NTPC		
2	400 KV BIHARSARIFF-VARNASI-I	07.06.16	B-N FAULT	PGCIL	PGCIL		
3	400KV BIHARSARIFF - BANKA-II	12.06.16	Y - N FAULT	PGCIL	PGCIL		
4	220KV SASARAM-SAHUPURI	12.06.16	B - N FAULT	PGCIL	UPTCL		
5	400 KV TALA -BINAGURI -IV	13.06.16	B - N FAULT	Durk Green	PGCIL		
6	400 KV KODERMA-BOKARO-I	14.06.16	B-N FAULT	DVC	DVC		
7	400 KV FARAKKA-KAHALGAON-IV	15.06.16	R-N FAULT	NTPC	NTPC		
8	400 KV MUZAFFARPUR-BIHARSARIFF-II	17.06.16	Y-N FAULT	PGCIL	PGCIL		
9	400 KV MERAMUNDALI-NEWDUBRI - I	20.06.16	B-N FAULT	OPTCL	OPTCL		
10	400KV PATNA-BALIA-II	21.06.16	B-N FAULT	PGCIL	PGCIL		
11	400KV PATNA-KISHANGANJ-II	21.06.16	Y-N FAULT	PGCIL	PGCIL		
12	400KV PATNA-BALIA-I	21.06.16	R-N FAULT	PGCIL	PGCIL		
13	220KV BUDIPADAR-KORBA-II	23.06.16	Y-N FAULT	OPTCL	CSEB		
14	400 KV ARAMBAGH - BIDHANNAGAR	02.07.16	Y-N FAULT	WBSETCL	WBSETCL		

15	400 KV FARAKKA-DURGAPUR-I	06.07.16	Y-N FAULT	NTPC	PGCIL		
16	400 KV NEW RANCHI - CHANDWA - I	13.07.16	B-N FAULT	PGCIL	PGCIL		
17	220 KV TSTPP-RENGALI	17.07.16	EARTH FAULT	NTPC	OPTCL		
18	220KV BUDIPADAR-RAIGARH	21.07.16	EARTH FAULT	OPTCL	PGCIL		
19	400 KV KOLAGHAT-KHARAGPUR	03.08.16	Y-N FAULT	WBPDCL	WBSETCL		
20	220 KV FARAKKA-LALMATIA	03.08.16	B-N FAULT .	NTPC	JUNSL		
21	400 KV PURNEA-MUZAFARPUR-I	03.08.16	R-N FAULT	PGCIL	PGCIL		
22	400 KV GAYA - CHANDWA -II	04.08.16	B-N FAULT .	PGCIL	PGCIL		
23	220 KV MUZAFFARPUR - HAZIPUR - II	10.08.16	B-N FAULT	PGCIL	BSPTCL		
24	220 KV ROURKELA - TARKERA-II	11.08.16	B-N FAULT	PGCIL	OPTCL		
25	220 KV CHANDIL-SANTALDIH	25.08.16	R-N FAULT	JUSNL	WBPDCL		
26	400 KV MPL-RANCHI-II	02.09.16	R-N FAULT	MPL	PGCIL		
27	220 KV BIHARSARIF-TENUGHAT	07.09.16	B-N FAULT	BSPTCL	TVNL		
28	400KV MERAMANDALI-STERLITE-II	10.09.16	Y-N FAULT	OPTCL	SEL		
29	220 KV RAMCHANDRAPUR - CHANDIL	22.09.16	B-N FAULT	JUSNL	JUNSL		
30	400KV SEL - MERAMUNDALI-I	22.09.16	B-N FAULT	SEL	OPTCL		
31	400 KV KOLAGHAT - CHAIBASA	28.09.16	B-N FAULT	WBPDCL	PGCIL		

34th TCC advised all the respective members to update the above list along with the last tripping status in next PCC meeting.

TCC further advised all the constituents to give the latest status of PLCC of other 220kV and above lines under respective control area.

TCC advised to review the status of above in lower forums report back in next TCC.

Respective members may update the status.

Item No. B.32: Non-commissioning / non-functional status of bus-bar protection at important 220 kV Sub-stations

It has been observed that at many 220 kV substations particularly that of STU, bus-bar protection is either not commissioned or non-functional. The non-availability / non-functionality of bus bar protection, results in delayed, multiple and uncoordinated tripping, in the event of a bus fault.This in turn not only results in partial local black out but also jeopardises the security of interconnected national grid as a whole. The matter was also pointed out during the third party protection audit which is being carried out regularly. Constituents are required to meet the audit compliance and commission or made bus –bar protection functional where ever it is not

available. A list of such important 220 kV sub-stations as per the first third party audit is placed in the meeting.

In 34th TCC, members updated the status as follows:

Bus Bar Protection not availble (reccord as per third party protection audit)

Bihar				
Sl No	**Name of Substation**	**Bus Bar protection status**	**Date of audit**	**Present Status**
1	220 kV Bodhgaya	Not available	28-Dec-12	*Single bus and there is no space available for busbar protection*
Jharkhand				
1	220 kV Chandil	Not available	29-Jan-13	*LBB available*
2	220 kV Ramchandrapur	Not available	29-Jan-13	*Functional from October 2013*
3	220 kV Tenughat	Not available	12-Apr-13	
DVC				
1	220 kV Jamsedpur	Not available	10-Apr-13	*Single bus. Bus bar will be commissioned under PSDF.*
Odisha				
1	220 kV Mermandali	Not functional	30-Dec-12	*Commissioned in Mar 2015*
West Bengal				
1	220 kV Arambah	Not available	24-Jan-13	
2	220 kV Jeerat	Not available	20-Dec-12	
3	220 kV Kolaghat	Not available	19-Dec-12	*Commissioned in May 2014*
4	220 kV Howrah	Not available	26-Mar-13	
Powergrid				
1	220 kV Silliguri	Not available	30-Mar-13	*Commissioned in Mar 2016*
2	220 kV Bolangir	Not available	31-Mar-13	*Commissioned in April 2013*

TCC further advised all the constituents to give the latest status of Bus Bar protection of other 220KV S/S under respective control area.

TCC advised to review the status of above in lower forums report back in next TCC.

Members may update.

Item No. B.33: Pollution mapping for Eastern Region

The Pollution Mapping work in ER was started with on-site measurement of ESDD and NSDD.

OCC advised all the respective constituents to coordinate with Powergrid for online filling of measurement data.

The updated status as updated by constituents & as intimated by Powergrid vide mail dated 19.10.16 is as given below:

	Scope (no. of locations)	Installed Locations	Number of locations where the results for 1st set of Measurements submitted	No. of locations where the results for 2nd set of Measurements submitted	Number of locations where the results for 3rd set of Measurements submitted	Number of locations where the results for 4th set of Measurements submitted
JUSNL	67	27	21	19	13	3
BSPTCL	59	52	52	40	4	0
WBSETCL	73	68	43	3	2	0
OPTCL	164	102	102	90	79	0
SIKKIM POWER	12	9	6	6	0	0
POWERGRID ER1	99	99	99	47	0	0
POWERGRID ER2	40	40	40	40	17	0
POWERGRID ODISHA	42	42	42	42	40	0

It is requested to submit the fourth and balance third set measurement result at the earliest.

Further, the schedule for measurement as informed vide letter dated 20.01.2016 & mail dated 21.01.2016 are as follows.

Measurement Schedule		
4th set	*5th set*	*6th set*
21st -30th Sep 2016	*21st -31st Jan 2017*	*21st -31st May 2017*

OCC advised all the constituents to complete the measurements as per the schedule.

Members may update.

Item No. B.34: Mock Black start exercises in Eastern Region – ERLDC

i) <u>The status of black start exercises</u>

The schedule of the proposed black-start exercises for F.Y 2016-17 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, 2016	*Completed on 16th July 2016*	Last Week of January 2017	
2	Maithon (To be tested in islanded mode)	1st week of June 2016	*July 2016*	1st Week of February 2017	
3	Rengali	2nd week of June 2016	*Completed on 23rd Sept, 2016*	Last week of November 2016	
4	U. Indarvati	3rd week of June 2016	*Completed on 16th July 2016*	2nd week of February 2017	

5	Subarnarekha	1st week of October 2016	***Completed on 19.10.16***	1st week of January 2017	
6	Balimela	3rd week of October 2016		1st week of March 2017	
7	Teesta-V	2nd week of Nov 2016		Last week of February 2017	
8	Chuzachen	Last Week of May 2016	***Dec, 2016 (after consent from Sikkim)***	January 2017	
9	Burla	Last Week of June 2016	*28th August 2016*	Last week of February 2017	
10	TLDP-III	1st Week of June 2016	Nov, 2016	2nd Week of January 2017	
11	TLDP-IV	Last Week of June 2016	Nov, 2016	1st Week of February 2017	

WBSETCL vide letter dated 27.09.16 on the issue of exemption from Black Start mode and RGMO operation of Purulia Pump Storage Project (PPSP), communicated the system modification around PPSP and requested for conducting studies regarding the Black start at PPSP with the proposed connectivity with all reactors as per the direction of CERC.

In 34th TCC, WBSETCL informed that black start exercise can be conducted after commissioning of new 400kV PPSP S/s with 80 MVAR reactor.

WBSEDCL informed that they have contacted OEM Toshiba for feasibility of black start and OEM required to conduct a simulation with CEA recommendations.

TCC advised WBSEDCL/WBSETCL to submit the status to CERC.

Members may discuss.

ii) Testing of DG sets meant for Black start

Test run report of DG sets for blackstart has been received only from Odisha hydro units. The test run reports of other machines may be sent to erldc.cal@gmail.com and erldcoutage@gmail.com.

Constituents may kindly ensure compliance.

Item No. B.35: Restricted Governor /Free Governor Mode Operation of generators in ER

The latest status of units of ER under RGMO is available at ERPC website (http://www.erpc.gov.in/) under Operation>Important data.

In 108th OCC, ERLDC informed that the RGMO/FGMO response of the generators needs monitoring on continuous basis.

OCC advised ERLDC to intimate the event of sudden drop in frequency to the generators and requested all generators to provide the RGMO/FGMO response data to ERLDC during the said incidents.

In 115th OCC, ERLDC informed that for effective monitoring of unit wise governor response, ERLDC proposes to create a web-group wherein SCADA data recorded by ERLDC following an event of sudden load-generation imbalance would be posted within 2-3 days of occurrence of the event. The login id and password to access the web-group would be duly intimated by ERLDC to all concerned.

Coordinators from all the concerned generating stations would post the unit wise MW response as recorded at their respective ends, for a period +/- half-an-hour of the instant, within two days of posting by ERLDC. For the purpose of analysis, wherever significant variation would be observed w.r.t. to SCADA data, generator`s data would be adopted for detailed analysis.

In this connection, SLDCs of E. Region are requested to extend cooperation by coordinating with nodal officers of generators under their respective jurisdiction, in data collection and posting in webgroup.

OCC requested all the constituents to provide their respective e-mails which can be added to the web group.

E-mails can be provided by all SLDCs, Hydro generators of having capacity 10 MW & above and Thermal generators of having capacity 200 MW & above.

SLDCs will co-ordinate with their IPPs of 10 MW & above Hydro generation and 200 MW & above Thermal generation.

Thereafter, ERLDC informed that one web group was formed for sharing governor response of various generators in ER. The url of the group is

https://in.groups.yahoo.com/neo/groups/er_gov_respons/info

ERLDC requested to send email ids where invitation will be sent. Yahoo mail ids are preferable.

In 118th OCC, it was informed that WBSETCL, JUSNL, Bihar, NTPC and NHPC are yet to join the group.

OCC advised all the other constituents to join the web group at the earliest by providing their e-mail ids (preferably yahoo ids).

In 125th OCC, ERLDC explained that the frequency response of none of the ER generators is giving full response (i.e. 70-100 %) however, some of the generators (FSTPS, KhSTPS, BkTPP) are giving responses below 37 % which is not at par.

OCC requested all the generators to look into the matter and share their governor response with ERLDC.

*In 126thOCC requested all the generators to look into the matter and share their governor response with ERLDC in the group (**https://in.groups.yahoo.com/neo/groups/er_gov_respons/info**). Members may also send their request for joining the group to **erldcprotection@gmail.com**.*

ERLDC had uploaded the unit wise responses in the group "er_gov_respons@yahoogroups.co.in." i.r.o the following events for monitoring of RGMO response of generator:

(1) 765 kV Lalitpur-Fatehabad and Unit 2 at Lalitpur tripped at 15:39 hrs. Unit#1 was then immediately backed down and was running under house load and at 15:45 hrs Unit 1 also tripped. Lalitpur went under black out. Total generation loss and load loss was approximately 1200 MW and 90 MW respectively.

ERLDC may update.

In 123rd OCC, ERLDC added that this is the best time to put all the generators in RGMO/FGMO mode as the grid frequency is stable and almost close to 50 Hz.

OCC decided that all the generators should put RGMO/FGMO in service from 15th August, 2016.

All generators agreed.

In 124th OCC, DVC informed that all units are in RGMO.

WBPDCL informed that Santaldih U#5 is in RGMO from 16th Aug 2016 and U#6 will be kept in RGMO after overhauling. WBPDCL added that other units are old and not capable to run in RGMO.

In such cases, OCC advised the respective generators to approach CERC for exemption.

In 125th OCC, ERLDC explained that there is not much improvement in the frequency response of ER generators.

WBPDCL clarified that KTPS units cannot be put into FGMO/RGMO as these units are not having Electro Hydraulic Governor (EHG) system.

In 126th OCC, OCC requested WBPDCL to put Santaldih (U#6) and Sagardighi units on FGMO/RGMO.

Members may update.

Item No. B.36: Reactive Power performance of Generators and GT tap position optimization

In 125th OCC, ERLDC informed that the performance of Teesta-III, DSTPS, Mejia-B and APNRL need improvement..

Generating stations have been monitored for certain sample dates in the month of October,16.

Power Plant	Max and Min Voltage observed for Oct 16 (KV)	Date for monitoring (OCt 16)
Farakka STPS	421,407	11,3
Khalgaon STPS	413,401	11,4
Talcher STPS	407,397	11,3
Teesta	413,390	31,4
Bakreshwar TPS	413,401	11,3
Kolaghat TPS	423,396	11,3
Sagardighi TPS	--	--
MPL	420,408	11,28
Mejia-B	--	--
DSTPS	420,411	11,1
Adhunik TPS	421,407	11,4
Sterlite	424,411	11,3
Barh	--	--
JITPL	--	--
GMR	413,401	21,3
HEL	--	
Kodarma	423,404	11,6

ERLDC may present the reactive performance.

a) Schedule for reactive capability tests

The following was status of regarding reactive capability testing:

a. Adhunik TPS(both units) –Yet to be confirmed by Adhunik
b. DSTPS (Unit#2 only pending) – done
c. Koderma TPS Unit#1 -- done on 08.08.2016
d. JITPL(both units) – Procedure given. Not yet done
e. Barh TPS – In June 2016
f. Raghunatpur (both units)
g. GMR (Three units)
h. *Haldia TPS (Unit #4)*

Members may update.

Item No. B.37: Collapse of One no Tower in 400KV D/C(Quad) Patna – Kishanganj TL due to river encroachment.

Due to unprecedented flash flood in Kankai river, one number of tower at location no.51(DD+18) of 400Kv Patna-Kishanganj D/C line near village Simalbari, Distt. Kishanganj, Bihar had collapsed on 26.07.2016 at about 12:00 hrs. The site of collapsed tower is fully submerged with water and very difficult to reach at the affected site.

Further the committee constituted to investigate the cause of collapse of tower and to suggest the remedial measures consisting of expert members of Powergrid and CEA, Delhi they are not in a position to even visit the affected site due to severe flow of water in the Kankai River. The entire area is inundated with water. The flood situation in that area is worsen due to incessant rain in Nepal. The restoration of the said line shall be taken after receding the water at site.
In view of the above the said outage period may be treated as force majeure condition i.e beyond the control of Powergrid and outage shall be excluded for the purpose of availability up-to Feb'17.

In last CCM, Members agreed to the force majeure nature of the event as recommended in OCC. It was decided that the progress of construction could be monitored in subsequent OCC meetings for consideration of outage time.

In 34th TCC, Powergrid informed that in addition to the tower collapse due to flash flood in Kankai river at location 51(DD+18), two number towers at location 128 F/O(DD+25) and 128 G/O(DD+25) had also collapsed due to unprecedented flash flood in Ganga river near Begusarai.

Chairperson TCC opined that any deemed availability of transmission lines due to force majeure put costs to the beneficiaries and such cases must be scrutinized carefully before certification. Member Secretary assured that all force majeure events needing deemed availability certification were discussed in detail in OCC meetings. In future also due care would be taken and progress of construction closely monitored.

Powergrid may place the details.

Item No. B.38: Collapse of four ENICL towers in Ganga river of 400kV Punea-Biharshariff line 1& 2 due to heavy flooding on 23rd August ,2016 at 06:51 Hrs

Due to unprecedented flash flood in Ganga river, One tower at location 47/1 situated in the main stream of the river (at the Ganga river crossing near Begusarai) has apparently uprooted collapsed and washed away. Adjacent three towers (47/2,47/0 and 46/9) are severely damaged. The area is still unapproachable as it is completely submerged into water and flow of the water is very high. The site of collapsed tower is fully submerged with water and very difficult to reach at

the affected area. The entire area is inundated with water. The flood situation in that area is worsen due to incessant rain in Nepal. The restoration of the said line shall be taken immediately after receding the water at site. In view of the above, ENICL requested that the said outage of the line may be treated as force majeure condition i.e. beyond the control of ENICL.

In last CCM, Members agreed to the force majeure nature of the event as recommended in OCC. It was decided that the progress of construction could be monitored in subsequent OCC meetings for consideration of outage time.

In 34th TCC, Chairperson TCC opined that any deemed availability of transmission lines due to force majeure put costs to the beneficiaries and such cases must be scrutinized carefully before certification. Member Secretary assured that all force majeure events needing deemed availability certification were discussed in detail in OCC meetings. In future also due care would be taken and progress of construction closely monitored.

ENICL may place the details.

Item No. B.39: Continuous tripping in 400kV Binaguri-Bongaigaon and 220kV CHPC-Birpara sections.

Repeated tripping of 400kV Binaguri-Bongaigaon sections and 220kV CHPC-Birpara-I & II have been observed in the recent past.

In 48th PCC, Powergrid explained that it is a lightening prone area and repeated faults are being occurred due to insulators failure.

Powergrid informed that they will replace the porcelain insulators with polymer insulators up to Bhutan boarder.

In 34th TCC, Bhutan representative informed that new insulators for Bhutan portion of 220kV CHPC-Birpara line have been purchased and replacement work will be completed within 4 to 5 months.

Powergrid also informed that the insulator replacement for 220kV CHPC-Birpara line will be completed by December 2016.

Powergrid also informed that insulator replacement for critical sections of 400kV Binaguri-Bongaigaon line-I & II will be done by February 2017 and complete replacement will be done by April, 2017.

ERLDC informed that ENCIL has to take appropriate action to minimise the trippings of 400kV Binaguri-Bongaigaon line-III & IV and ENCIL has been informed about the issue.

TCC advised to appraise the issue to ENCIL for taking necessary action to minimise the trippings.

ENICL may place their action plan to reduce the trippings.

PART C:: OPERATIONAL PLANNING

Item no. C.1: Shutdown proposal of transmission lines and generating units for the month of December'16

Members may finalize the Shutdown proposals of the generating stations for the month of December'16 as placed at **Annexure-C.1**.

ERLDC may place the list of line shutdown. Members may confirm.

Item no. C.2: Anticipated power supply position during December'16

The abstract of peak demand (MW) vis-à-vis availability and energy requirement vis-à-vis availability (MU) for the month of December'16 were prepared by ERPC Secretariat on the basis of Provisional LGBR for 2015-16 and feedback of constituents, keeping in view that the units are available for generation and expected load growth etc. is **at Annexure-C.2**.

Members may confirm.

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

(i) Generating units:

Generating Station	UNIT NO	CAP(MW)	REASONS FOR OUTAGE	OUTAGE DATE
KOLAGHAT	5	210	OVER HAULING	23-Oct-16
ADHUNIK	1	270	AIR PRE HEATER PROBLEM	15-Nov-16
MEJIA	2	210	BOILER TUBE LEAKAGE	29-Aug-16
MEJIA	1	210	BOILER TUBE LEAKAGE	21-Oct-16
MEJIA	4	210	DESYNCHRONIZED DUE TO LOW	5-Nov-16
BOKARO B	3	210	DESYNCHRONIZED DUE TO LOW	10-Aug-16
BOKARO B	1	210	BOILER TUBE LEAKAGE	8-Nov-16
RAGHUNATHPUR	2	600	BOILER TUBE LEAKAGE	6-Nov-16
KODERMA	1	500	ECONOMIZER TUBE LEAKAGE	28-Sep-16
BUDGE-BUDGE	1	250	HIGH TURBINE VIBRATION	27-Sep-16
DPL	8	250	BOILER TUBE LEAKAGE	2-Nov-16
KOLAGHAT	1	210	DESYNCHRONIZED DUE TO LOW	7-Nov-16
SAGARDIGHI	3	500	DESYNCHRONIZED DUE TO LOW	8-Oct-16
STERLITE	4	600	AIR PRE HEATER PROBLEM	17-Oct-16
BAKRESWAR	3	210	OVER HAULING	1-Nov-16
TENUGHAT	2	210	LOSS OF EVACUATION PATH	7-Nov-16

(ii) Transmission elements

Name of the Line/Element	Outage	Reason
400 KV MEERAMANDALI- MENDHASAL S/C	23/05/16	TOWER COLLAPSED NEAR TO MENDHASAL,LOC NO 180,181,182.
220 KV GAYA-DEHRI-D/C	27/05/16	TOWER COLLAPSED AT LOC NO 275 FROM GAYA END.
400 KV PATNA-KISHANGANJ D/C	26/07/16	TOWER COLLAPSED AT LOC NO 51
400 KV BIHARSARIFF-PURNEA-I	23.08.16	Three numbers of tower are badly damaged at location 46/9, 47/0 & 47/1 (In the mid of river Ganga).
400 KV BIHARSARIFF-PURNEA-II	23.08.16	
220KV WARIA - BIDHANNAGAR-II	10.09.16	LINE UNDER B/D
315 MVA ICT-I AT MEERAMUNDALI	12.11.16	UNDER B/D DUE TO FAILURE OF B PHASE LA
400KV SASARAM-VARANASI	11.11.16	FOR PLCC COMMISSIONING WORK WITH NR

Members may update.

Item no. C.4: Status of commissioning of generating station and transmission elements

New generating units:

S.No.	Power Plant	Plant Size	Expected date

New transmission elements:

Sl No.	Name of Element	Expected date
1	400kV Rajarhat-Purnea D/C (with LILO of one circuit each at Farakka and Gokarno)	
2	Augmentation of 400kV Farakka-Malda D/C with HTLS conductor	
3	400kV Ind-Bharath-Jharsuguda D/C	
4	400kV Talcher-Bramhapur-Gazuwaka D/C	
5	400kv Talcher-Rourkella(2nd D/C-Quad)	
6	400kV Sterlite-Jharsuguda D/C	
7	765kv Anugul-Srikakulum D/C	
8	400kV Sasaram-Daltonganj D/C &Daltonganj S/Stn	
9	400 kV Ranchi-Raghunathpur D/C	
10	220 kV TLDP-IV – NJP ckt-2	
11	220 kV Bidhansai-Cuttack D/C	
12	220kV Gola- Ranchi	

Members may update.

PART D:: OTHER ISSUES

Item no. D.1: UFR operation during the month of October'16

System frequency touched a maximum of 50.25Hz at 14:02 Hrs of 02/10/16 13:02 Hrs of 08/10/16 and 18:02Hrs of 21/10/16 and a minimum of 49.74Hz at 17:53Hrs of 20/10/16. Accordingly, no report of operation of UFR has been received from any of the constituents.

Members may note.

Item no. D.2: Non-compliance of directions issued by SLDC

Vide clause no 5.5.1.(c)(h) of IEGC, non-compliance of SLDC directions by SEB/Distribution licenses/bulk consumers to curtail overdrawal are to be reported to ERLDC for incorporating the same in weekly report to be prepared and published by ERLDC.

All SLDCs are to inform ERLDC the instances of non–compliance of SLDC directions by SEB/Distribution licenses/bulk consumers to curtail overdrawal, within two days after the day of operation.

No report from any constituent has yet received. Hence, ERLDC would be considering 'Nil' report for all constituents for October'16.

Members may note.

Item no. D.3: Grid incidences during the month of October, 2016

Sl no	Disturbance Place	Date	Time	Generation loss (MW)	Load loss (MW)	Remark	Category
1	Meramundali (OPTCL)	05/10/16	18:10	Nil	85 MW	220kV Meramundali – Bhanjanagar – I was under shutdown. While closing Bus – I breaker of 220kV Meramundali – Bhanjanagar – I after maintenance, Bus – I PT fuse failure occurred. Distance protection relays of all 220kV feeders connected to Bus – I operated due to absence of voltage in all three phases resulting total power failure at Meramundali.	GD1
2	Purnea (BSPTCL & POWERGRID)	08/10/16	3:33	Nil	140	At 03:33 Hrs, 132kV Purnea (PG) - Kishangunj & 132kV Forbisgunj-Kataiya II & III tripped on R-Y-N fault resulting overloading of 132kV Purnea (PG) – Forbisgunj and 132kV Forbisgunj-Kataiya I. To control the overloading, 132kV Forbisgunj-Kataiya I was manually opened. After opening of this line, load at Nepal was catered through 132kV Madhepura-Supaul D/C which got overloaded. To control the overloading at 132kV Madhepura-Supaul D/C, two lines were manually switched off and load at Nepal got interrupted.	GD1
3	Purnea (BSPTCL & POWERGRID)	09/10/16	0:05	Nil	90	At 00:05 Hrs, 132kV Purnea (PG) – Kishangunj, 132kV Purnea (PG) – Forbisgunj & 132kV Forbisgunj-Kataiya III tripped on due to voltage unbalance. Subsequently 132kV Forbisgunj-Kataiya I & II, 132kV Kataiya-Duhabi were opened from Kataiya end to avoid overloading of 132kV Madhepura-Supaul-Kataiya section and load at Nepal got interrupted.	GD1
4	Patratu (JUSNL)	09/10/16	18:25	Nil	350	At 18:25 hrs, 220kV PTPS – Hatia – I & II, 132kV Hatia II – Hatia I – II, 132kV Hatia II – Lohardanga – I & II, 132kV Hatia I – PTPS 9C, 132kV Hatia I – Kanke – PTPS 8C, 132kV Hatia II – Namkum tripped due to R-B –N fault	GD1
5	Begusarai, Biharshariff	21/10/16	12:12	Nil	223	At 12:12 hrs, 220kV Biharshariff - Begusarai D/C tripped on B-N fault causing power failure at Begusarai and Darbhanga. As per PMU data, fault was cleared within 100 ms.	GD1
6	Ramchandrapur	22/10/16	19:16	Nil	250	At 19:16 hrs, bursting of 220kV side R phase CT of 400/220kV, 315 MVA ICT-II at Ramchandrapur resulted tripping of both 400/220kV ICTs at Ramchandrapur from both end. At same time, 220kV STPS – Chandil S/C tripped from Chandil end in O/C & E/F along with B/C at Ramchandrapur end. 220kV Ramchandrapur – Chandil was manually switched off. 220kV Chandil-Ranchi S/C was under shutdown. So, total power failure occurred at Ramchandrapur, Chandil and their surrounding area.	GD1

Members may note.

Item no. D.4: Any other issues.

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Annexure- B.5

DEMAND FORECAST USING PAST 3 YEARS DATA ((Jan 2017 - Mar 2017)

										1	2	3	4		
	2013-14			2014-15			2015-16								
	Jan-14	Feb-14	Mar-14	Jan-15	Feb-15	Mar-15	Jan-16	Feb-16	Mar-16	2013-14 Average	2014-15 Average	2015-16 Average	Projected Demand for (Jan 2017 - Mar 2017) before normalization	Data given by DICs	Comments
Bihar	2,018	2,090	2,115	2,602	2,830	2,874	3,484	3,278	3,419	2,074	2,769	3,394	4,065		
DVC	2,550	2,485	2,441	2,467	2,320	2,393	2,421	2,381	2,473	2,492	2,393	2,425	2,370	2645	As per data given by DVC
Jharkhand	984	972	1,044	1,018	1,016	1,007	1,117	1,102	1,153	1,000	1,014	1,124	1,170		
Odisha	3,200	3,440	3,672	3,364	3,525	3,892	3,739	3,931	4,091	3,437	3,594	3,920	4,133	4150	As per data given by GRIDCO
West Bengal	6,237	6,303	7,294	6,317	6,721	7,332	6,240	6,858	7,443	6,611	6,790	6,847	6,985		
Sikkim	80	80	85	83	83	77	109	109	109	82	81	109	118		
Eastern Region	**14,082**	**14,499**	**15,598**	**15,373**	**15,892**	**16,932**	**17,011**	**17,030**	**18,024**						

Notes

1. Projections are based on the past 3 years' monthly Peak Demand Met data available on the website of CEA
2. The above projections are being done for financial year 2016-2017 (Q4) i.e Jan 2017 to Mar 2017
3. Projections are being done based on the forecast function available in MS Office Excel
4. In case of the re-organized states of Andhra Pradesh and Telangana Maximum Demand is divided in the ratio 53.89% for Telangana and 46.11% for Andhra Pradesh for FY 2012-13 and 2013-14. This is as per letter No.CE/COMML./APPCC/DE-COMML/POC-DATA-15-16/D.No/15 dtd. 09.10.15 as received from APTRANSCO.
4. CEA Reports can be accessed from the following links:

http://www.cea.nic.in/reports/monthly/powersupply/2016/psp_peak-03.pdf
http://www.cea.nic.in/reports/monthly/powersupply/2016/psp_peak-02.pdf
http://www.cea.nic.in/reports/monthly/powersupply/2016/psp_peak-01.pdf
http://www.cea.nic.in/reports/monthly/gm_div_rep/power_supply_position_rep/peak/Peak_2015_03.pdf
http://www.cea.nic.in/reports/monthly/gm_div_rep/power_supply_position_rep/peak/Peak_2015_02.pdf
http://www.cea.nic.in/reports/monthly/gm_div_rep/power_supply_position_rep/peak/Peak_2015_01.pdf
http://www.cea.nic.in/reports/monthly/gm_div_rep/power_supply_position_rep/peak/Peak_2014_03.pdf
http://www.cea.nic.in/reports/monthly/gm_div_rep/power_supply_position_rep/peak/Peak_2014_02.pdf
http://www.cea.nic.in/reports/monthly/gm_div_rep/power_supply_position_rep/peak/Peak_2014_01.pdf

Generation Projection (Jan 2017 - Mar 2017)

				Generation declared Commercial from 1st Apr '16 to 30th Sep'16					Generation declared/expected to be declared Commercial from 1st Oct'16 to 31st Dec'16								
Sl. No.	Entities	Region	Projections based on 3 Years Data	Bus Name	Unit No.	Installed Capacity	Gen. considered	Sub Total	Bus Name	Unit No.	Installed Capacity	Gen. considered	Sub Total	TOTAL	Comments From DICs /Others (if any)	Figure as per Comments/PoC Data	Projected Generation before normalization w.r.t projected All India Peak Demand	To be Considered in the Basecase (After Normalisation with Forecasted All India Peak Demand Met)
			(MW)			(MW)	(MW)	(MW)			(MW)	(MW)	(MW)	(MW)			(MW)	
1	**West Bengal**	ER	4740											4740			4740	0
2	**Odisha**	**ER**	2981											2981	As per GRIDCO	3418	3418	0
3	**Bihar**	**ER**	154											154			154	0
4	**Jharkhand**	**ER**	480											480			480	0
5	**Sikkim**	**ER**	0											0			0	0
6	**Chujachan**	**ER**	91											91			91	0
7	**DVC**	**ER**	3734											3734	As per data given by DVC	3309	3309	0
8	**Durgapur Steel**	**ER**																
9	**Koderma TPP**	**ER**																
10	**MPL**	**ER**	1019											1019			1019	0
11	**Sterlite**	**ER**	690											690			690	0
12	**Teesta**	**ER**	536											536	AS per NHPC	510	536	0
13	**Kahalgaon**	**ER**	2195											2195			2195	0
14	**Farakka**	**ER**	1940											1940			1940	0
15	**Talcher**	**ER**	980											980			980	0
16	**Rangeet**	**ER**	64											64	AS per NHPC	61	64	0
17	**Corporate Power**	ER												0			0	0
18	**Adhunik Power**	ER	345											345			345	0
19	**Barh**	ER	1189											1189			0	0
20	**Kamalanga TPP (GMR)**	ER	733											733			0	0
21	**JITPL**	ER	1085											1085			1085	0
22	**Jorethang**	ER	69											69			69	0
23	**Bhutan**	**ER**	303											303			303	0
24	**Raghunathpur**	**ER**		Raghunathpur TPP	1	600	393	785						785			785	0
				Raghunathpur TPP	2	600	393											
25	**Bokaro TPS Extn.**	**ER**		Bokaro A TPS Extn	1	500	327	327						327			327	0
	TOTAL		**23327**					**1113**						**24439**			**22530**	**0**

Note:

1. Projections are based on monthly maximum injection in the last 3 years from actual metered data.
2. Generation forecast has been done based on the following criteria
(i) If there is an increasing trend then last year average generation has been considered
(ii) Otherwise average of past three year average generation has been considered
3. In case of new generators where past data was not available following has been assumed
(i) 0.8 plf for hydro generators
(ii) 0.7 plf for thermal generators.
(iii) 0.3 plf for gas stations
4. In case of the re-organized states of Andhra Pradesh and Telangana Generation is divided in the ratio 53.89% for Telangana and 46.11% for Andhra Pradesh for FY 2012-13 and 2013-14.
This is as per letter No.CE/COMML./APPCC/DE-COMML/POC-DATA-15-16/D.No/15 dtd. 09.10.15 as received from APTRANSCO.

Bus Number	Bus Name	Pload (MW)	Qload (Mvar)	IPload (MW)	IQload (Mvar)	YPload (MW)	YQload (Mvar)	Distributed Gen (MW)	Distributed Gen (Mvar)
261000	MAHCHND 132.00	59.8497	8.75	0	0	0	0	0	0
261001	PURULIAW 132.00	70.2594	10.272	0	0	0	0	0	0
261002	SANTLDI 132.00	0	2.432	0	0	0	0	0	0
261003	HOWRAH 1 132.00	41.7392	21.36	0	0	0	0	0	0
261005	KOLAGHAT 132.00	50.7414	7.419	0	0	0	0	0	0
261006	BANDEL 1 132.00	0	0	0	0	0	0	0	0
261007	RISHRA 1 132.00	121.0008	17.689	0	0	0	0	0	0
261008	ADSPTGR 132.00	135.3123	19.782	0	0	0	0	0	0
261009	DHRMPUR 132.00	76.765	11.223	0	0	0	0	0	0
261010	KALYANI 132.00	53.3441	7.798	0	0	0	0	0	0
261011	RANGHT 1 132.00	78.0652	11.412	0	0	0	0	0	0
261012	ASOKNGR 132.00	75.4637	11.032	0	0	0	0	0	0
261013	SALTLAKE 132.00	87.1747	12.743	0	0	0	0	0	0
261014	KASBA 1 132.00	97.5821	14.266	0	0	0	0	0	0
261015	SONARPR 132.00	68.9569	10.082	0	0	0	0	0	0
261016	JOKA1_A 132.00	13.0101	1.901	0	0	0	0	0	0
261017	JEERAT1 132.00	100	50	0	0	0	0	0	0
261020	KHARAGPR 132.00	37.7313	5.516	0	0	0	0	0	0
261021	SAITHIA1 132.00	81.9681	11.982	0	0	0	0	0	0
261022	SATGCHA1 132.00	63.7515	9.319	0	0	0	0	0	0
261023	TITAGARH 132.00	118.3981	17.308	0	0	0	0	0	0
261024	KATWA 1 132.00	78.0652	11.412	0	0	0	0	0	0
261025	DBGRM 1 132.00	62.4524	9.13	0	0	0	0	0	0
261026	RGNTGNJ 132.00	81.9681	11.982	0	0	0	0	0	0
261027	DPL1 132.00	0	32.996	0	0	0	0	0	0
261028	LILUAH1 132.00	102.7864	15.026	0	0	0	0	0	0
261029	HINDMTR1 132.00	0	10.42	0	0	0	0	0	0
261030	BRHMPR1 132.00	111.8924	16.357	0	0	0	0	0	0
261031	BOLPUR1 132.00	93.6769	13.695	0	0	0	0	0	0
261032	FALTA 1 132.00	76.765	11.223	0	0	0	0	0	0
261033	HIJLI 132.00	63.7515	9.319	0	0	0	0	0	0
261034	HIJLITRN 132.00	27.91	9.174	0	0	0	0	0	0
261035	RAIGUNJ 132.00	63.7515	9.319	0	0	0	0	0	0
261036	ARAMBAG1 132.00	70.2594	10.272	0	0	0	0	0	0
261037	UKHRA 132.00	65.054	9.51	0	0	0	0	0	0
261038	MALDAW1 132.00	110.5922	16.168	0	0	0	0	0	0
261039	DALKOLA1 132.00	32.5281	4.757	0	0	0	0	0	0
261040	NBU1 132.00	102.7864	15.026	0	0	0	0	0	0
261041	BIRPRAW1 132.00	16.913	2.474	0	0	0	0	0	0
261042	HALDIA1 132.00	44.2358	6.466	0	0	0	0	0	0
261043	MONGURI1 132.00	85.8711	12.555	0	0	0	0	0	0
261044	GOKARN1 132.00	61.1511	8.94	0	0	0	0	0	0
261045	BISNUPUR 132.00	46.8396	6.847	0	0	0	0	0	0
261046	CKROAD 132.00	83.2695	12.174	0	0	0	0	0	0
261047	BANKURA 132.00	48.1398	7.038	0	0	0	0	0	0
261048	EGRA 132.00	88.4749	12.935	0	0	0	0	0	0
261049	LKNTAPUR 132.00	105.3879	15.407	0	0	0	0	0	0
261051	MIDNAPR 132.00	83.2695	12.174	0	0	0	0	0	0
261052	BALICHK1 132.00	46.8396	6.847	0	0	0	0	0	0
261053	PINGLA1 132.00	117.0979	17.119	0	0	0	0	0	0

261054	RAINA1 132.00	78.0652	11.412	0	0	0	0	0	0
261055	TRKSWR1 132.00	49.4412	7.228	0	0	0	0	0	0
261056	ULBRIA1 132.00	93.6769	13.695	0	0	0	0	0	0
261057	BSRHAT1 132.00	80.6657	11.793	0	0	0	0	0	0
261058	BONGA1 132.00	61.1511	8.94	0	0	0	0	0	0
261059	KRSNGR1 132.00	104.0866	15.217	0	0	0	0	0	0
261060	BARASAT1 132.00	147.0221	21.494	0	0	0	0	0	0
261061	MANKAD1 132.00	58.5484	8.559	0	0	0	0	0	0
261062	RAMPUR1 132.00	68.9569	10.082	0	0	0	0	0	0
261063	KHNYAN1 132.00	33.8261	4.945	0	0	0	0	0	0
261064	CHNDTLA1 132.00	48.1398	7.038	0	0	0	0	0	0
261065	BANTALA1 132.00	106.687	15.597	0	0	0	0	0	0
261066	DOMJUR1 132.00	101.4839	14.837	0	0	0	0	0	0
261067	FCI 132.00	2.791	0.917	0	0	0	0	0	0
261068	TAMLUK1 132.00	58.5484	8.559	0	0	0	0	0	0
261069	DHTRIGRM 132.00	40.3351	5.897	0	0	0	0	0	0
261070	FRAKKA1 132.00	37.2666	0	0	0	0	0	0	0
261071	DHULIAN1 132.00	39.0315	5.706	0	0	0	0	0	0
261072	KHJURIA1 132.00	37.2666	0	0	0	0	0	0	0
261073	SAMSI1 132.00	62.4524	9.13	0	0	0	0	0	0
261074	BLURGHT1 132.00	35.1286	5.136	0	0	0	0	0	0
261078	NJP1(W) 132.00	58.5484	8.559	0	0	0	0	0	0
261079	ALIPRDR1 132.00	45.5371	6.658	0	0	0	0	0	0
261080	2ND MILE 132.00	18.606	6.115	0	0	0	0	0	0
261081	AMTALA 132.00	63.7515	9.319	0	0	0	0	0	0
261082	ASANSL1 132.00	88.0526	25.712	0	0	0	0	0	0
261083	NBSNPR1 132.00	33.8261	4.945	0	0	0	0	0	0
261084	NHALDIA1 132.00	66.3565	9.702	0	0	0	0	0	0
261085	JNGIPARA 132.00	20.8182	3.044	0	0	0	0	0	0
261086	BRSINGHA 132.00	59.8497	8.75	0	0	0	0	0	0
261087	BARJORA 132.00	25.5956	7.671	0	0	0	0	0	0
261088	BELMRWB 132.00	19.5169	2.853	0	0	0	0	0	0
261089	N TOWN1 132.00	62.4524	9.13	0	0	0	0	0	0
261090	COCHBHR 132.00	104.0866	15.217	0	0	0	0	0	0
261091	GANGRPR 132.00	48.1398	7.038	0	0	0	0	0	0
261092	BIGHATI 132.00	31.2268	4.565	0	0	0	0	0	0
261093	CHALSA 132.00	24.72	3.614	0	0	0	0	0	0
261094	CONTAI 132.00	76.765	11.223	0	0	0	0	0	0
261097	LEBONG 132.00	26.0214	3.805	0	0	0	0	0	0
261098	LALGOLA 132.00	28.6218	4.184	0	0	0	0	0	0
261100	JHARGRM 132.00	67.6567	9.891	0	0	0	0	0	0
261101	RAGNTHPR 132.00	16.913	2.474	0	0	0	0	0	0
261103	NJP 1 132.00	61.1511	8.94	0	0	0	0	0	0
261107	SALTLAKE_GIS132.00	70.2594	10.272	0	0	0	0	0	0
262011	GOKORNO2 220.00	0	23.51	0	0	0	0	0	0
262020	BANTALA 220.00	67.6567	22.349	0	0	0	0	0	0
264007	PPSP 400.00	0	0	0	0	0	0	0	0
271000	PRKST GI 132.00	94.5057	26.786	0	0	0	0	0	0
271001	PRKLN GI 132.00	26.8775	7.864	0	0	0	0	0	0
271002	BBD BAG 132.00	74.563	21.132	0	0	0	0	0	0
271004	CHAKMIR 132.00	34.6811	9.828	0	0	0	0	0	0
271006	MAJERHAT 132.00	93.6392	25.227	0	0	0	0	0	0
271007	JADVPUR 132.00	78.0333	22.934	0	0	0	0	0	0

271008	SRS 132.00	194.3206	55.075	0	0	0	0	0	0
271009	BOT GDN 132.00	59.8257	16.954	0	0	0	0	0	0
271010	EST CAL 132.00	45.0839	12.777	0	0	0	0	0	0
271012	TRS 132.00	34.6811	9.828	0	0	0	0	0	0
271013	NCGS 132.00	204.8262	58.051	0	0	0	0	0	0
271014	BRS 132.00	75.4294	21.297	0	0	0	0	0	0
271014	BRS 132.00	16.4735	4.668	0	0	0	0	0	0
271015	PRKLN 1 132.00	39.0166	11.14	0	0	0	0	0	0
271016	TRS 1 132.00	127.358	36.816	0	0	0	0	0	0
271016	TRS 1 132.00	43.4424	21.211	0	0	0	0	0	0
271017	EST CAL1 132.00	30.3489	8.601	0	0	0	0	0	0
271019	KASB CES 132.00	147.3966	42.593	0	0	0	0	0	0
271020	RIS_CESC 132.00	20.7874	2.482	0	0	0	0	0	0
272000	EM_CESC 220.00	194.4736	30.624	0	0	0	0	0	0

Odisha

Bus Number	Bus Name	Pload (MW)	Qload (Mvar)	IPload (MW)	IQload (Mvar)	YPload (MW)	YQload (Mvar)	Distributed Gen (MW)	Distributed Gen (Mvar)
251000	JEYNGAR1 132.00	156.9662	8.538	0	0	0	0	0	0
251001	THRUVLI1 132.00	0	3.594	0	0	106.1646	0	0	0
251002	BHNGAR1 132.00	71.3489	3.981	0	0	0	0	0	0
251003	ASKA1 132.00	31.152	6.036	0	0	0	0	0	0
251004	BRHMPUR1 132.00	82.7281	5.393	0	0	0	0	0	0
251005	CHTRSPLT 132.00	49.6364	1.019	0	0	0	0	0	0
251006	CHTRPUR1 132.00	41.363	3.981	0	0	0	0	0	0
251007	CHODWAR1 132.00	169.8633	12.604	0	0	0	0	0	0
251008	CHAIPAL1 132.00	44.4528	3.981	0	0	0	0	0	0
251009	RSP1 132.00	47.748	15.694	0	0	0	0	0	0
251010	TALCHER1 132.00	2.9673	0	0	0	0	0	0	0
251011	ANGUL 132.00	93.3762	4.643	0	0	0	0	0	0
251012	HIRAKUD1 132.00	0	0	0	0	0	0	0	0
251013	BRHMPR-T 132.00	0	0	0	0	0	0	0	0
251014	CHIPLIMA 132.00	29.5655	1.733	0	0	0	0	0	0
251015	JHRSGDA1 132.00	50.6822	3.032	0	0	0	0	0	0
251016	TARKERA1 132.00	130.6078	12.561	0	0	0	0	0	0
251017	JODA1 132.00	153.496	6.498	0	0	0	0	0	0
251018	ROURKELA 132.00	72.4771	7.362	0	0	0	0	0	0
251019	CHANDKA1 132.00	21.2329	5.97	0	0	0	0	0	0
251020	CHNDK(T) 132.00	33	10	0	0	0	0	0	0
251021	DHENKNL1 132.00	42.8102	5.307	0	0	0	0	0	0
251023	TARKESPT 132.00	68.227	22.425	0	0	0	0	0	0
251024	BHADRAK1 132.00	0	9.949	0	0	171.2376	0	0	0
251025	DUBURI 1 132.00	169.8633	15.92	0	0	0	0	0	0
251026	BLANGIR 132.00	116.1483	6.929	0	0	0	0	0	0
251027	BALASOR1 132.00	0	21.889	0	0	53.0833	0	0	0
251028	RAYGADA 132.00	31.1236	0.898	0	0	0	0	0	0
251029	MOHANA 1 132.00	31.1236	1.348	0	0	0	0	0	0
251030	BHBNSWR 132.00	95.5481	9.288	0	0	0	0	0	0
251031	JAJPURD1 132.00	0	8.625	0	0	157.1838	0	0	0
251032	CUTTACK1 132.00	74.4568	7.298	0	0	0	0	0	0
251034	BIDANASI 132.00	74.3141	7.961	0	0	0	0	0	0
251035	NIMAPARA 132.00	74.0891	3.316	0	0	0	0	0	0
251036	PURI 132.00	42.4658	4.643	0	0	0	0	0	0
251037	KURDA(T) 132.00	53.413	17.556	0	0	0	0	0	0
251038	BUDIPATR1 132.00	156.2721	9.095	0	0	0	0	0	0
251039	RJGNGPR 132.00	141.4915	8.662	0	0	0	0	0	0
251040	SMBLPUR 132.00	78.1382	4.765	0	0	0	0	0	0
251041	BROJNAGR 132.00	63.458	20.858	0	0	0	0	0	0
251042	BARGARH 132.00	14.7849	0.867	0	0	0	0	0	0
251043	SANTHLA 132.00	3.78	0.623	0	0	0	0	0	0
251044	KESINGA 132.00	0	4.494	0	0	96.3171	0	0	0
251045	KNDRPRA 132.00	106.1646	5.97	0	0	0	0	0	0
251046	PARADIP 132.00	106.1646	5.97	0	0	0	0	0	0
251047	PLSPONA 132.00	63.3522	3.899	0	0	0	0	0	0
251048	RRNGPUR 132.00	57.0785	1.733	0	0	0	0	0	0
251049	BARIPDA 132.00	44.664	4.271	0	0	0	0	0	0
251050	JALESWR 132.00	28	8	0	0	0	0	0	0
251051	GANJAM 1 132.00	37.0456	1.328	0	0	0	0	0	0
251052	BLUGAON 132.00	96.3171	5.307	0	0	0	0	0	0
251053	KHURDAH 132.00	63.6987	5.97	0	0	0	0	0	0
251054	NRNPUR1 132.00	42.8102	3.594	0	0	0	0	0	0

Odisha

251055	SORO1 132.00	44.4528	3.981	0	0	0	0	0	0
251056	JSINPUR1 132.00	27.794	9.135	0	0	0	0	0	0
251057	RSINPUR1 132.00	106.7244	6.633	0	0	0	0	0	0
251058	NOPATNA1 132.00	30.241	4.267	0	0	0	0	0	0
251059	KHARIAR 132.00	37.2463	2.246	0	0	0	0	0	0
251060	BALSWR(T 132.00	7	2	0	0	0	0	0	0
251062	RGANGPU 132.00	47	14	0	0	0	0	0	0
251063	KATPLI1 132.00	0	8.662	0	0	165.4551	0	0	0
251065	HINDLCO 132.00	25.3443	1.299	0	0	0	0	0	0
251066	NBVLBSSL 132.00	88.9068	3.316	0	0	0	0	0	0
251067	MRMNDL1 132.00	84.9317	8.625	0	0	0	0	0	0
252001	BALIMELA 220.00	9.6921	0.373	0	0	0	0	0	0
252008	JODA2 220.00	29.929	2.848	0	0	0	0	0	0
252010	RENGALI2 220.00	40	2.15	0	0	0	0	0	0
252014	BALASOR2 220.00	40.845	4.25	0	0	0	0	0	0
252017	NAYAGARH 220.00	71.3489	3.834	0	0	0	0	0	0
252018	RENGLPS 220.00	5	2	0	0	0	0	0	0
252019	NRNPUR2 220.00	71.3489	5.274	0	0	0	0	0	0
252020	BARKOT2 220.00	24.368	2.535	0	0	0	0	0	0
252021	CHNDPOS2 220.00	31.618	5.152	0	0	0	0	0	0
252029	JINDAL 220.00	20	4.389	0	0	0	0	0	0
252032	BSSL 220.00	77.8815	9.095	0	0	0	0	0	0

Bihar

Bus Number	Bus Name	Pload (MW)	Qload (Mvar)	IPload (MW)	IQload (Mvar)	YPload (MW)	YQload (Mvar)	Distributed Gen (MW)	Distributed Gen (Mvar)
211000	BODGAYA1 132.00	72.8496	24.465	0	0	0	0	0	0
211001	BHRSHRF 132.00	222.9515	2.777	0	0	0	0	0	0
211002	BARAUNI 132.00	71.1141	8.328	0	0	0	0	0	0
211003	SAMSTPR 132.00	61.4671	18.047	0	0	0	0	0	0
211004	PANDOUL 132.00	136.4232	20.823	0	0	0	0	0	0
211005	MUZZAFARPUR1132.00	104.0184	29.15	0	0	0	0	0	0
211007	CHAPRA 1 132.00	44.9217	12.493	0	0	0	0	0	0
211008	PURNEA 1 132.00	117.8906	58.301	0	0	0	0	0	0
211009	SAHARS 1 132.00	56.7384	15.271	0	0	0	0	0	0
211010	HAZIPUR1 132.00	40.19	11.102	0	0	0	0	0	0
211011	RAFIGNJ 132.00	33.0928	9.717	0	0	0	0	0	0
211012	DUMRAON 132.00	45.3304	13.879	0	0	0	0	0	0
211013	JEHNABD 132.00	42.5512	12.493	0	0	0	0	0	0
211014	JAMALPR 132.00	52.0087	15.271	0	0	0	0	0	0
211015	HATIDAH 132.00	59.1048	16.657	0	0	0	0	0	0
211016	FATUAH 1 132.00	89.0404	14.82	0	0	0	0	0	0
211017	SULTNGJ 132.00	33.0928	9.717	0	0	0	0	0	0
211018	SABOUR 1 132.00	29.1641	5.755	0	0	0	0	0	0
211019	KHAGAUL 132.00	145.7013	77.283	0	0	0	0	0	0
211020	PATNA B 132.00	129.5116	99.946	0	0	0	0	0	0
211021	DEHRI 1 132.00	56.7384	16.657	0	0	0	0	0	0
211022	PATNA 1 132.00	0	0	0	0	0	0	0	0
211023	SONNGAR 132.00	75.6543	35.511	0	0	0	0	0	0
211024	KHLGN_B1 132.00	14.668	6.568	0	0	0	0	0	0
211025	MOTIHRI 132.00	86.8758	22.594	0	0	0	0	0	0
211026	SITAMRI 132.00	89.638	18.561	0	0	0	0	0	0
211027	ARRA(BS) 132.00	56.6609	15.271	0	0	0	0	0	0
211028	RAJGIR 132.00	33.0928	9.717	0	0	0	0	0	0
211030	SIWAN 132.00	40.19	11.102	0	0	0	0	0	0
211031	BETTIA 132.00	70.2988	11.225	0	0	0	0	0	0
211032	RAMNAGAR 132.00	23.6405	6.941	0	0	0	0	0	0
211033	KATIHAR 132.00	40.19	11.102	0	0	0	0	0	0
211034	FORBISGANJ 132.00	50.002	10.773	0	0	0	0	0	0
211035	LAKHISAR 132.00	56.7384	16.657	0	0	0	0	0	0
211036	JAMUI 132.00	35.4623	9.717	0	0	0	0	0	0
211037	BARIPHRI 132.00	134.0956	26.371	0	0	0	0	0	0
211038	GAIGHAT 132.00	96.9294	27.762	0	0	0	0	0	0
211039	KUDRA 132.00	40.562	13.332	0	0	0	0	0	0
211040	KRMNASA 132.00	63.0457	30.051	0	0	0	0	0	0
211042	SIPRA_1 132.00	48.0728	11.508	0	0	0	0	0	0
211045	GPLGNJ1 132.00	98.4193	16.981	0	0	0	0	0	0
211046	DRBHNG1 132.00	82.2632	25.475	0	0	0	0	0	0
211047	SASARAM 132.00	37.8246	11.102	0	0	0	0	0	0
211048	PUSAULI 132.00	4.7277	1.39	0	0	0	0	0	0
211049	MOHANIA 132.00	44.9217	12.493	0	0	0	0	0	0
211050	BARH 132.00	26.0048	6.941	0	0	0	0	0	0
211051	EKANGSR 132.00	7.089	1.39	0	0	0	0	0	0

211052	BIKRMGNJ 132.00	33.0928	9.717	0	0	0	0	0	0
211053	WAZIRGN 132.00	47.4135	1.39	0	0	0	0	0	0
211054	CHANDAUT 132.00	55.1924	18.853	0	0	0	0	0	0
211055	BELAGUN 132.00	11.8208	2.777	0	0	0	0	0	0
211056	TEKARI 132.00	4.7277	1.39	0	0	0	0	0	0
211057	SHETLPR 132.00	9.4533	2.777	0	0	0	0	0	0
211058	KISHNGJ 132.00	98.1717	9.717	0	0	0	0	0	0
211059	BANJARI 132.00	23.6405	6.941	0	0	0	0	0	0
211060	BUXAR 132.00	37.8246	11.102	0	0	0	0	0	0
211061	HULASGN 132.00	4.7277	1.39	0	0	0	0	0	0
211062	SHEKAPR 132.00	30.7356	8.328	0	0	0	0	0	0
211064	VAISHALI 132.00	35.4623	9.717	0	0	0	0	0	0
211065	BANKA 132.00	21.2751	5.552	0	0	0	0	0	0
211073	KATAIYAA 132.00	34.0936	7.347	0	0	0	0	0	0
211074	SUPOUL 132.00	50.002	10.773	0	0	0	0	0	0
212000	BODGAY2 220.00	131.892	27.311	0	0	0	0	0	0
212006	KHAGL2 220.00	150.553	49.484	0	0	0	0	0	0
212010	BEGUSAR 220.00	111.2663	19.435	0	0	0	0	0	0

DVC

Bus Number	Bus Name	Pload (MW)	Qload (Mvar)	IPload (MW)	IQload (Mvar)	YPload (MW)	YQload (Mvar)	Distributed Gen (MW)	Distributed Gen (Mvar)
231000	WARIA 1 132.00	50.025	11.286	0	0	0	0	0	0
231001	PURULIAD 132.00	8.1913	1.847	0	0	0	0	0	0
231003	KOLGHTD 132.00	12.2875	2.775	0	0	0	0	0	0
231004	HOWRAHD 132.00	0	0	0	0	0	0	0	0
231005	BELMURI 132.00	51.2086	11.092	0	0	0	0	0	0
231006	BURDWAN 132.00	93.4702	29.569	0	0	0	0	0	0
231007	PANCHET 132.00	0	0	0	0	0	0	0	0
231008	KALPHRI 132.00	93.4702	22.558	0	0	0	0	0	0
231009	ASP 132.00	61.4452	13.866	0	0	0	0	0	0
232000	WARIA 2 220.00	155.7826	48.231	0	0	0	0	0	0
232002	PARLIAD 220.00	32.9154	3.89	0	0	0	0	0	0
232003	BORJRA2 220.00	153.6182	33.277	0	0	0	0	0	0
232004	BURNPR2 220.00	36.8663	8.32	0	0	0	0	0	0
232006	MEJIA LOAD 220.00	75.9442	16.128	0	0	0	0	0	0
241000	BARHI 1 132.00	50.8115	3.697	0	0	0	0	0	0
241001	BOKARO 1 132.00	0	0	0	0	0	0	0	0
241002	CHNPUR 1 132.00	0	0	0	0	0	0	0	0
241004	MANIQUE 132.00	0	0	0	0	0	0	0	0
241005	JMSDPRD1 132.00	54.6625	32.353	0	0	0	0	0	0
241006	MAITHON 132.00	0	0	0	0	0	0	0	0
241007	PATHRDI 132.00	192.5345	42.522	0	0	0	0	0	0
241009	KLNSWRI 132.00	77.8932	34.201	0	0	0	0	0	0
241010	KUMRDBI 132.00	62.3115	24.96	0	0	0	0	0	0
241011	MOSABNI 132.00	28.6769	6.47	0	0	0	0	0	0
241012	RAMKNLI 132.00	71.6875	17.563	0	0	0	0	0	0
241013	RAMGARH 132.00	186.3893	40.672	0	0	0	0	0	0
241015	PUTKI 132.00	163.8576	36.05	0	0	0	0	0	0
241016	JAM_DV2 132.00	179.8778	43.634	0	0	0	0	0	0
241017	KONAR 132.00	22.5317	4.621	0	0	0	0	0	0
241018	KODARMA 132.00	108.5595	30.504	0	0	0	0	0	0
241019	HAZARIB 132.00	36.8663	7.395	0	0	0	0	0	0
241020	NKARNPU 132.00	55.3019	12.017	0	0	0	0	0	0
241021	NIMAGHT 132.00	30.724	6.47	0	0	0	0	0	0
241022	SINDRI 132.00	32.7711	7.395	0	0	0	0	0	0
241023	GRIDIH 132.00	151.572	33.277	0	0	0	0	0	0
241031	JOJOBE_1 132.00	139.0692	24.678	0	0	0	0	0	0
242007	RAMGAR2 220.00	28.6769	6.47	0	0	0	0	0	0

Jharkhand

Bus Number	Bus Name	Pload (MW)	Qload (Mvar)	IPload (MW)	IQload (Mvar)	YPload (MW)	YQload (Mvar)	Distributed Gen (MW)	Distributed Gen (Mvar)
221000	JAPLA 132.00	14.6456	4.511	0	0	0	0	0	0
221001	CHANDIL1 132.00	114.002	37.471	0	0	0	0	0	0
221002	ADITPUR 132.00	139.1387	41.507	0	0	0	0	0	0
221003	RAJKSWN 132.00	19.0401	5.414	0	0	0	0	0	0
221004	CHNDLJS 132.00	61.5129	18.046	0	0	0	0	0	0
221005	PATRTU 1 132.00	0	0	0	0	0	0	0	0
221006	HATIAOLD 132.00	121.127	39.812	0	0	0	0	0	0
221008	GOELKRA 132.00	19.0401	5.414	0	0	0	0	0	0
221010	KNDPOSI 132.00	38.0817	11.729	0	0	0	0	0	0
221011	GOLMURI 132.00	61.5129	18.046	0	0	0	0	0	0
221012	JADUGRA 132.00	30.7545	9.023	0	0	0	0	0	0
221013	NOAMNDI 132.00	30.7545	9.023	0	0	0	0	0	0
221014	LALMATIA 132.00	38.0817	11.729	0	0	0	0	0	0
221015	DEOGHAR 132.00	20.6729	6.917	0	0	0	0	0	0
221016	NAMKUM 132.00	117.1683	35.191	0	0	0	0	0	0
221017	KAMDARA 132.00	43.9401	12.633	0	0	0	0	0	0
221018	JAMTARA 132.00	30.7545	9.023	0	0	0	0	0	0
221019	GRWARD 132.00	18.1264	5.189	0	0	0	0	0	0
221021	HATIA1 132.00	161.1084	47.823	0	0	0	0	0	0
221024	HEC1 132.00	30.7545	9.023	0	0	0	0	0	0
221027	DUMKA 132.00	51.6825	9.023	0	0	0	0	0	0
221028	SAHBGNJ 132.00	19.0401	5.414	0	0	0	0	0	0
221029	CHAKRDP 132.00	21.9681	6.317	0	0	0	0	0	0
222006	LOHARDG 220.00	32.2217	9.926	0	0	0	0	0	0

UFR Inspection Report of BSPTCL substations on 02.11.16

The ERPC UFR inspection group visited 132kV Bari Phari, Rajgir and Nalanda substations of BSPTCL for UFR Audit on 02.11.2016. The team physically inspected the feeders which are connected with UFRs at the above sub-stations. The report of the inspection is furnished below:

Sl. No.	Name of the substations	Feeder connected with UFR	Voltage rating	Adopted UFR setting	Tested initiated frequency	UFR make
			(Kv)	(Hz)	(Hz)	
1	132/33 kV Bari Pahari	Bari Pahari-I	33	49.2	49.19	AREVA MFVUM 12
2		Bari Pahari-II	33	49.2	49.19	AREVA MFVUM 22
3		Noorsarai	33	49.2	49.19	AREVA MFVUM 12
4		Asthawan	33	49.2	49.19	AREVA MFVUM 12
5		Ramchandrapur	33	48.6	48.59	AREVA MFVUM 12
6	132/33kV Nalanda	Nalanda	33	49.2	49.19	AREVA MFVUM 22
7	132/33kV Rajgir	Silao	33	49.2	49.19	SEL 351A

The above UFR setting were tested with help of Secondary injection Kit owned by BSPTCL. The UFRs are provided with direct trip wiring and tripped at desired frequency. During the inspection, it was found that all the 33kV feeders in 132/33kV Nalanda and 132/33kV Rajgir S/s were connected to UFR and enabled at 49.2 Hz. The audit team disabled the UFRs of all the other feeders except 33kV Nalanda and 33kV Silao as per the UFR feeder list submitted by SLDC, Bihar.

Annexure-B.17

Manpower Engaged in Power Sector (Separately for Central, State and Private sector)

As on 31st March	Regular						Non-Regular				Grand Total (Regular+ Non Regular)
	Managerial and higher executive	Technical/ scientific officers	Technical Supervisory Staff	Technicians & operating Staff	Non-Technical	Total (Regular) {col 2 to 6}	Technical Trainees and apprentices	Work charged staff	Casual/ Temporary/ Out sourced	Total (Non-Regular) {col 8 to 10}	
1	2	3	4	5	6	7	8	9	10	11	
Actual											
2012											
2013											
2014											
2015											
2016											
Projected/ Estimated											
2017											
2018											
2019											
2020											
2021											
2022											
2023											
2024											
2025											
2026											
2027											

Details Regarding No. of Consumers and Connected Load etc.

(A) Utilities

As On 31st March of Financial year end	No. of Consumers	Connected Load (kW)	Consumption (MU)	Energy Available for Supply	T&D losses(%)	Per Capita Electricity Consumption(kWh)
1	2	3	4	5	6	7
2011-12						
2012-13						
2013-14						
2014-15						
2015-16						
2016-17						
2017-18						
2018-19						
2019-20						
2020-21						
2021-22						
2022-23						
2023-24						
2024-25						
2025-26						
2026-27						

(B) Non Utilities

As On 31st March of Financial year end	No. of Consumers	Connected Load (kW)	Consumption (MU)	Energy Available for Supply	T&D losses(%)	Per Capita Electricity Consumption(kWh)
1	2	3	4	5	6	7
2011-12						
2012-13						
2013-14						
2014-15						
2015-16						
2016-17						
2017-18						
2018-19						
2019-20						
2020-21						
2021-22						
2022-23						
2023-24						
2024-25						
2025-26						
2026-27						

(C) Utilities + Non Utilities

As On 31st March of Financial year end	No. of Consumers	Connected Load (kW)	Consumption (MU)	Energy Available for Supply	T&D losses(%)	Per Capita Electricity Consumption(kWh)
1	2	3	4	5	6	7
2011-12						
2012-13						
2013-14						
2014-15						
2015-16						
2016-17						
2017-18						
2018-19						
2019-20						
2020-21						
2021-22						
2022-23						
2023-24						
2024-25						
2025-26						
2026-27						

Details Regarding Installed Capacity, No. of Consumers and Connected Load etc.

(A) Installed Capacity (MW) - Utilities

As On 31st March	Hydro	Thermal				Nuclear	Renewable					Grand Total
		Steam	Gas	Diesel	Total (Thermal)		Wind	Solar	Biomass etc	Mini/Micro Hydel	Total (Renewable)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
2012												
2013												
2014												
2015												
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												
2026												
2027												

(B) Installed Capacity (MW) - Non Utilities

As On 31st March	Hydro	Thermal				Nuclear	Renewable					Grand Total
		Steam	Gas	Diesel	Total (Thermal)		Wind	Solar	Biomass etc	Mini/Micro Hydel	Total (Renewable)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
2012												
2013												
2014												
2015												
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												
2026												
2027												

(C) Installed Capacity (MW) - (Utilities + Non Utilities)

As On 31st March	Hydro	Thermal				Nuclear	Renewable					Grand Total
		Steam	Gas	Diesel	Total (Thermal)		Wind	Solar	Biomass etc	Mini/Micro Hydel	Total (Renewable)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
2012												
2013												
2014												
2015												
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												
2026												
2027												

Annexure-B.18

Installed Capacity (MW) and Generation (MU) from renewable Resources (Injected into the Grid)

1. State/Centre :
2. Month :
3. Year :

Renewable Resources/Organizations	Installed Capacity (MW) as on last date of the month			Generation (MU) during the month : ~~January~~			Cumulative Generation (MU) during the 1st April ~~2015~~ to end of month		
Renewable Energy Resources	Central Sector	State Sector	Private Sector	Central Sector	State Sector	Private Sector	Central Sector	State Sector	Private Sector
1. Wind									
2 a. Solar (1 MW & above)									
2 b. Solar (Less than 1 MW)									
3. Biomass									
4. Bagasse									
5. Small Hydro (1 MW to 25 MW)									
6. Any Other (Please Specify the resources)									
Total									

Annexure- B.26

Generating Station

- Nabinagar NTPC :
  - No telemetry for Bus 11, Unit 2,3 and 4, Sasaram Ckt #1 and its associated Bay status. Voice communication yet to be integrated with Orange exchange.
- Sterlite IPP :
  - No telemetry for 400/220 kV ICT 1 &2 and Vedanta line , No VOIP/Express voice communication. Alternate Data channel yet to be provided.
- Haldia (2 x 300MW) :
  - Bus Voltage, Isolator Status, SOE, LV side data.
- GMR (3 x 350 MW) :
  - Express voice and VOIP integration with ERLDC.
- JITPL (2 x 600MW) :
  - Express voice and VOIP yet to be provided. Alternate Data channel yet to be provided.

Contd…

Generating Station:

- Raghunathpur TPS:
  - Frequent failure of real time data.
- IBEUL (2 x 350 MW) –
  - Unit Side data not available. VOIP/Express Voice. Alternate Channel. Alternate Data channel yet to be provided.
- Farakka NTPC:
  - Unit #5 MW and MVAr data not matching with site data, Unit # 6 LV side not available.
- Sagardighi :
  - Unit 3 LV side (Unit) data not available.
- Patratu and Tenughat :
  - data is highly unstable .
- JSPL(Meeramundali) :
  - Most of the CBs and Isolators status are not available since last 2 years.
- TLDP 3 and 4:
  - No data available at ERLDC.

Sub Station (data not available at ERLDC):

- **NTPC:**
  - Lalmatia (No data since Jan 2016).
- BSPTCL :
  - Sonenagar ,Darbhanga, Valmikinagar and koshi (Connected with Nepal)
- JUSNL :
  - Hatia New 220, Dumka 220.
- OPTCL :
  - Paradeep .
- WBSEDCL :
  - 400 kV Kolaghat – Chaibasa flow not available.
  - Gokarna 400kV (400/220 kV ICT was first charged on 15th Sept'16) , Dharampur 220, Krishnanagar 220, Hura 220, Foundry Park 220.
- DVC:
  - Giridhi 220, Barjora 220,

Sub Station (highly intermittent data):

- POWERGRID :
  - Ranchi, Purnea 400, Baripada, Gaya, Biharshariff, Angul, Muzaffarpur,Lakhisarai.
- WBSETCL:
  - Bantala ,Laxmikantapur ,New Town , Subhasgram.
- BSPHCL :
  - Dumraon, Khagaul ,Darbhanga ,Dehri , sultangaunj , Lakhisarai, Karmanasa, Kahalgaon ,Jamaui ,Banka ,Gopalganj, Kisanganj, Arrah ,Rajgir ,Sipara ,Hajipur (New), Pusauli
- DVC :
  - Parulia , Barhi.

VOIP/Express Voice not available

- GMR
- JITPL
- Sterlite
- IBEUL
- Nabinagar
- Bolangir
- Indravati
- Jeypore
- Kalabadia
- Keonjhar
- Gazuwaka HVDC
- Unit Control of all ISGS and IPP/MPP (except CHEP).

Details of Eastern Region

Annexure- B.26

A. Telemetry not provided

A.1 Generating Stations

Sl. No.	User Name	Name of Generation Stations	Date of first sysnchonisation	Total Generation Capacity (in MW)	Remarks by constituentes / ERLDC 14/10/2016
1	WBSETCL	Haldia (2 x 300)	Jan-15	600	ERLDC is not getting any real time ISOLATOR status ,SOE from HEL except Line, Unit site MW /MVAR. No response.
2		Sagardighi (2 x 300 + 1 x 500)		1100	Unit 3 LV side not available., 400 kV Bus Voltage is erronious. (340kV)
1	IPP	400 KV GMR (3X 350 MW)	Apr-13	1050	As per ERLDC guidelines no express voice / VOIP phones.
2		400 JITPL (600 x 2)	Jun-14	1200	Data are highly instable . No alternate data channel and express voice commuincation integrated with ERLDC and its Exchange
3		IBEUL (2 x 350 MW)	Jul-16	700	No alternate data channel and as per ERLDC guidelines no express voice /VOIP phones provided . LV side data not available.
		Total (Non-telemetered stations)	**5**	**4650**	

A.2 Sub - Stations (765 & 400 kV)

Sl. No.	User Name	Name of sub-Stations	Voltage level	Date of first sysnchonisation	Remarks by constituentes / ERLDC 14/10/2016
1	OPTCL	JSPL (Meramundali -400)	400 kV	Sep'10	Status are not reporting.

A.3 Sub - Stations (220 kV & 132 kV)

Sl. No.	User Name	Name of sub-Stations	Voltage level	Target date as per User	Remarks by constituentes / ERLDC 14/10/2016
1	OPTCL	OPTCL CPP : 220 KV BPSL,CONCAST,BSL,JSL,TSIL,VISSA	220 / 132 kV	Dec-13	CONCAST NO DATA , JSL NO KV/HZ. BSL NO HZ .BPSL NO Bus Kv .
1	WBSETCL	Foundary Park	220		Data not integrated at SLDC .
2		Hura	220		Data not integrated at SLDC.
1	JSEB	Hatia New	220 kV	Sept-16	No Data available . Target Missed
2		Japla	132 KV	Sept-16	No Data available . Target Missed
3		Dumka	220 KV	Sept-16	No Data available . Target Missed

B. Telemetry provided but not working / working intermittently

B.1 Generating Stations

Sl. No.	User Name	Name of Generation Stations	Total Generation Capacity (in MW)	Target date as per User	Remarks by constituentes / ERLDC 14/10/2016
1	WBSETCL	TLDP (III) (4x 33)	132	Time Schedule not submitted	Data not available .
2		TLDP (IV) (2x 40)	80	Time Schedule not submitted	Data not stable
3		Kolaghat	1260	Time Schedule not submitted	Kolaghat Chaibasa (Kharagpur Line 1) line flow and status data not available.
1	JSEB	220 KV Tenughat (2X 210 MW)	420	Time Schedule not submitted	Data highly intermittent due to faulty communication link .
2		220 KV Patratu (4x 50 + 2x100 + 4x110)	840	Time Schedule not submitted	Data highly intermittent due to faulty communication link .
1	NTPC	400 kV Farakka : (3x 200 + 2 x 500 MW + 600) Unit-6 LV side MW/MVAR not available	2100	Time Schedule not submitted	Unit 5 LV side MW/MVAr is erroneous. Unit-6 LV side MW/MVAR not available.
2		BRBCL/Nabinagar TPP (4x250 MW)	1000	Time Schedule not submitted	Communication Link was restored on 15-09-16 but Complete SCADA data yet to be restored.. As per ERLDC guidelines no express voice /VOIP phones provided . Target date 30th Aug 2016.
1	Vedanta	SEL (4 x550 MW)	2200		. As per ERLDC guidelines no express voice /VOIP phones provided .
			5832		

B.2 Sub - Stations

Sl. No.	User Name	Name of sub-Stations	Voltage level	Target date as per User	Remarks by constituentes / ERLDC 14/10/2016 Data not reporting
1	BSPHCL	Dumraon	132 kV	Oct'16	R & M Work Completed,interfacing pending
2		Khagaul	132 kV	March'17	OPGW awarded by PGCIL
3		Dehri	220 KV	Nov'16	Data stopped due to collapse of tower
4		Sonenagar	220 kV	Oct'16	R & M Work Completed,interfacing pending
5		Sultangaunj	132 kV	Aug'16	RTU installed,end to end testing pending
6		Lakhisarai	132 KV	March'17	OPGW awarded by PGCIL
7		Karmanasa	132 KV	March'18	Under rennovation and modernization .
8		Kahalgaon	132 kV	March'17	OPGW awarded by PGCIL
9		Jamaui	132 KV	March'17	OPGW awarded by PGCIL
10		Banka	220 kv	March'17	OPGW awarded by PGCIL
11		Valmikinagar	132 kV	Aug'16	RTU installed,interfacing completedend to end testing in progress.
12		Koshi	132 kV	Aug'16	RTU installed,interfacing completedend to end testing in progress.
13		Gopalganj	220 kV	March'17	OPGW awarded by PGCIL
14		Kisanganj	132 KV	March'17	OPGW awarded by PGCIL
15		Arrah	132 KV	March'17	OPGW awarded by PGCIL
16		Rajgir	132 KV	March'17	OPGW awarded by PGCIL
17		Sipara	220 KV	March'17	OPGW awarded by PGCIL
18		Hajipur (New)	220 KV	March'17	OPGW awarded by PGCIL
19		Darbhanga	220 kV		RTU commissioned and data stopped reporting since 20-08-16
20		Jagdishpur	132 KV		RTU commissioned and data intermittent
21		Pusauli	220 KV	March'17	OPGW awarded by PGCIL
1	GRIDCO	Paradeep	220		Data not Available
2		Bidanasi	220		Most of the Status and Analog, kV data not available
1	JSEB	Jamtara	132 kV	Nov'16	RTU cards for replacement of faulty cards are not availabale.
2		Deoghar	132 kV	Nov'16	RTU cards for replacement of faulty cards are not availabale.
3		Garwah	132 kV	Nov'16	RTU cards for replacement of faulty cards are not availabale.communication link has been broken due to LILO at japla GSS.
4		Goelkera	132 kV	Nov'16	RTU cards for replacement of faulty cards are not availabale.
5		Jaduguda	132 kV	Nov'16	RTU cards for replacement of faulty cards are not availabale.
6		Kendposi	132 kV	Nov'16	RTU cards for replacement of faulty cards are not availabale.

7		Ramchandrapur	220 KV		Highly Intermittent
2	WBSETCL	Asansol	220		Highly Intermittent
3		Haldia NEW	220		Highly Intermittent
4		bantala	220		Highly Intermittent
5		Laxmikantapur	220		Highly Intermittent
6		New Town	220		Highly Intermittent
7		Subhasgram	220		Highly Intermittent
8		EM Bypass(CESC)	220		Bus Voltage and Frequency Not Available
1	POWERGRID	RANCHI	400		Highly Intermittent
2		Purnea 400	400 kV		RTU is getting Hanged frequently
3		Baripada	400 kV		Highly Intermittent
4		Gaya	765 kV		Highly Intermittent
5		Biharshariff	400 KV		Highly Intermittent
6		Angul	765 KV		Highly Intermittent
7		Muzaffarpur	400 KV		RTU is getting Hanged frequently
1	DVC	TISCO	400 KV		Data highly intermittent. In case of any problem data restoration time is too much high.
2		Parulia	220 kV		Data Not available
3		Raghunathpur	400 kV		Data not stable
1	NTPC	Lalmatia	220 kV	First week of September'16	Data stoppped reporting since Jan 2016

A. Station / Sub station

S. N	S/s Name	Orange Analog Phone: Hot line	OrangeVOIP: Hot line	Main ERLDC Kolkata data Link	Back Up ERLDC Delhi Data Link
1	Angul	Not Available	20330057	Available	Not Available
2	Ara	20330539	20330039	Available	Not Available
3	Baharampur	Not Available	20330031	Available	Not Available
4	Banka CS	Not Available	20330044	Available	Not Available
5	BARH NTPC *	Not Available	20330051	Available	Not Available
6	Biharsarif 400kv	Not Available	20330034	Available	Not Available
7	Birpara	Not Available	20330053	Available	Not Available
8	Bolangir	Not Available	Not Available	Available	Not Available
9	Chaibasa CS	Not Available	20330041	Available	Not Available
10	Chandwa	20330559	20330059	Available	Not Available
11	Dalkhola	20330549	20330049	Available	Not Available
12	Daltonganj	Not Available	20330056	Available	Not Available
13	Durgapur	20330528	20330028	Available	Not Available
14	FSTPP *	Not Available	20330054	Available	Not Available
15	Gangtok	Not Available	20330022	Available	Not Available
16	Gaya	Not Available	20330037	Available	Not Available
17	Indravati	Not Available	Not Available	Available	Not Available
18	Jamshedpur CS	20330533	20330033	Available	Not Available
19	Jeypore	Not Available	Not Available	Available	Not Available
20	Jharsugura	Not Available	20330040	Available	Not Available
21	Jorthang Power House	20330141		Available	Not Available
22	Kalabadia	Not Available	Not Available	Available	Not Available
23	Kahalgaon NTPC *	Not Available	20330043	Available	Not Available
24	Keonjhar	Not Available	Not Available	Available	Not Available
25	Kishanganj	Not Available	20330061	Available	Not Available
26	Lakshisarai	Not Available	20330042	Available	Not Available
27	Maithon	Not Available	20330026	Available	Not Available
28	Malda	20330529	20330029	Available	Not Available
29	MTHRB *	Not Available	20330027	Available	Not Available
30	Mujaferpur	Not Available	20330050	Available	Not Available
31	New Malli	20330140	20330021	Available	Not Available
32	Pandiavali	Not Available	20330067	Available	Not Available
33	Patna	Not Available	20330038	Available	Not Available
34	Purnia 220 KV	20330530	20330030	Available	Not Available
35	Purnia 400 KV	Not Available	20330025	Available	Not Available
36	Ranchi 400 KV	Not Available	20330032	Available	Not Available
37	Ranchi 765 KV	Not Available	20330035	Available	Not Available
38	Rangit	Not Available	20330058	Available	Not Available
39	Rangpo	20330139	20330020	Available	Not Available
40	Rengali	Not Available	20330045	Available	Not Available
41	Rourkela	20330536	20330036	Available	Not Available
42	Sasaram	Not Available	20330046	Available	Not Available
43	Siliguri 220	20330523	20330023	Available	Not Available
44	Siliguri 400/220 (Binaguri)	20330524	20330024	Available	Not Available
45	Subashgram	Not Available	20330015	Available	Not Available
46	Teesta NHPC	Not Available	20330062	Available	Not Available
47	TSTPP, Talcher NTPC *	Not Available	20330052	Available	Not Available
48	GMR *	Not Available	Not Available	ICCP LINK	Not Available
49	JITPL*	Not Available	Not Available	Available	Not Available
50	SEL *	Not Available	Not Available	Available	Not Available
51	Ind Bharat *	Not Available	Not Available	Available	Not Available
52	BRBCL/Nabinagar TPP *	Not Available	Not Available	Not Available	Not Available

Note :* Phone at Unit Control room is yet to provided.

B. SLDC /NLDC to ERLDC protection path not provided.

S.N.	Link	Main ERLDC Delhi		Backup ERLDC Delhi	
		Main Channel	Std By Channel (Route Diversity)	Main Channel	Std By Channel (Route Diversity)
1	OPTCL -ERLDC	Yes	Not Available	Not Available	Not Available
2	BSPTCL -ERLDC	Yes	Not Available	Not Available	Not Available
3	JUSNL -ERLDC	Yes	Not Available	Not Available	Not Available
4	WBSETCL -ERLDC	Yes	Not Available	Not Available	Not Available
5	DVC -ERLDC	Yes	Not Available	Not Available	Not Available
6	Sikkim -ERLDC	Yes	Not Available	Not Available	Not Available
7	NLDC -ERLDC	Yes	Not Available	Yes	Not Available

PMU Installation and commissioning status of ER as on 19.10.2016

Annexure- B.28

S.No	Region	State	Sub-Station	Owner/ Utility	S/S type	PMU	TOTAL PANEL QTY	PMU Delivery status	Cable Delivery status	Erection	Cable laying	CT/PT/DI termination	Commissioning	Integration	SAT	Remarks
			83			229	152	26	23	20	20	20	20	11	20	
1	ER-II	West Bengal	Arambagh	WBSETCL	CR	3	1	Yes	No	N/A	N/A	N/A	N/A	N/A	N/A	
2	ER-II	West Bengal	BAKRESHWAR TPS	WBSETCL	CR	4	1	Yes	No	N/A	N/A	N/A	N/A	N/A	N/A	
3	ER-II	West Bengal	Bidhannagar	WBSETCL	CR	3	1	No	No	N/A	N/A	N/A	N/A	N/A	N/A	PMU panel dispatched.
4	ER-II	West Bengal	JEERAT	WBSETCL	CR	2	1	No	No	N/A	N/A	N/A	N/A	N/A	N/A	PMU panel dispatched.
5	ER-II	West Bengal	Kolaghat TPS	WBSETCL	CR	4	1	No	No	N/A	N/A	N/A	N/A	N/A	N/A	**PMU panel couldn't be delivered due to permission issue.**
6	ER-II	West Bengal	KASBA	WBSETCL	CR	3	1	Yes	No	N/A	N/A	N/A	N/A	N/A	N/A	
7	ER-II	DVC	DSTPS	DVC	CR	2	1	Yes	Yes	done	done	done	done	Pending	done	**Communication Link not available.**
8	ER-II	DVC	Kodarma TPS	DVC	CR	3	1	Yes	Yes	done	done	done	done	Pending	done	**Communication panel does not exist.**
9	ER-II	DVC	MEJIA-B	DVC	CR	2	1	Yes	Yes	No	No	No	No	No	No	Work not started yet.
10	ER-II	DVC	Maithon RB TPS	DVC	CR	2	1	Yes	Yes	pending	pending	pending	pending	Pending	pending	**Work started on 04.07.2016. Panel shifted. Team demobilised due to access issue and panel location issue.**
11	ER-II	DVC	Raghunathpur TPS	DVC	CR	3	1	Yes	Yes	done	done	done	done	Pending	done	**Communication link not available.**
12	ER-II	DVC	MEJIA	DVC	CR	5	2	Yes	Yes	No	No	No	No	No	No	Work not started yet.
13	ER-II	DVC	Bokaro	DVC	CR	2	1	Yes	Yes	done	done	done	done	done	done	**PMU integrated on 24.06.2016**
14	ER-II	DVC	CTPS(Chanderpura)	DVC	CR	2	1	Yes	Yes	done	done	done	done	Pending	done	**S/S couldn't be integrated because distance between PMU panel and SDH is more than 100 mtrs. Amendment for FO cable is awaiting.**
15	Odisha	Orissa	Budhipadar	OPTCL	CR	0	0	No	No	N/A	N/A	N/A	N/A	N/A	N/A	BOQ not finalized.
16	Odisha	Orissa	MENDHASAL	OPTCL	CR	2	1	No	No	N/A	N/A	N/A	N/A	N/A	N/A	PMU panel dispatched.
17	Odisha	Orissa	MERAMANDALI	OPTCL	CR	6	2	No	No	N/A	N/A	N/A	N/A	N/A	N/A	PMU panel dispatched.
18	Odisha	Orissa	RENGALI	OPTCL	CR	2	1	No	No	N/A	N/A	N/A	N/A	N/A	N/A	PMU panel dispatched.
19	Odisha	Orissa	U.KOLAB	OPTCL	CR	2	1	No	No	N/A	N/A	N/A	N/A	N/A	N/A	PMU panel dispatched.
20	Odisha	Orissa	BALIMELA(H)	OPTCL	CR	3	1	No	No	N/A	N/A	N/A	N/A	N/A	N/A	PMU panel dispatched.
21	ER-II	West Bengal	Durgapur	Powergrid	CR	5	2	Yes	Yes	done	done	done	done	done	done	**PMU integrated on 30.05.2016.**
22	ER-II	West Bengal	FARRAKA	NTPC	CR	0	0	No	No	N/A	N/A	N/A	N/A	N/A	N/A	BOQ not finalized.
23	Odisha	Orissa	Indrawati	Powergrid	CR	2	1	Yes	Yes	done	done	done	done	Pending	done	**Communication Link not available.**
24	Odisha	Orissa	Indrawati HPS	OPTCL	CR	1	1	No	No	N/A	N/A	N/A	N/A	N/A	N/A	PMU panel dispatched.
25	Odisha	Orissa	JEYPORE	Powergrid	CR	2	1	Yes	Yes	done	done	done	done	Pending	done	**Communication Link not available.**
26	ER-II	West Bengal	MAITHON	Powergrid	CR	7	2	Yes	Yes	done	done	done	done	done	done	**PMU integrated on 21.06.2016.**
27	ER-II	West Bengal	MALDA	Powergrid	CR	2	1	Yes	Yes	done	done	done	done	done	done	**PMU integrated on 24.06.2016**
28	Odisha	Orissa	Rengali	Powergrid	Kiosk	2	1	Yes	Yes	done	done	done	done	done	done	**PMU integrated on 04.05.2016**
29	Odisha	Orissa	ROURKELA	Powergrid	Kiosk	5	2	Yes	Yes	done	done	done	done	done	done	**PMU integrated on 21.04.2016**
30	ER-II	West Bengal	Binaguri	Powergrid	CR	7	2	Yes	Yes	done	done	done	done	done	done	**PMU integrated on 28.07.2016**
31	ER-II	West Bengal	SUBHASHGRAM	Powergrid	Kiosk	2	1	Yes	Yes	done	done	done	done	done	done	**PMU integrated on 22.06.2016**
32	Odisha	Orissa	Baripada	Powergrid	CR	3	1	No	No	N/A	N/A	N/A	N/A	N/A	N/A	
33	Odisha	Orissa	Bolangir	Powergrid	CR+Kiosk	2	3	Yes	Yes	done	done	done	done	Pending	done	**Communication Link not available.**
34	Odisha	Orissa	ANGUL	Powergrid	Kiosk	10	11	No	No	N/A	N/A	N/A	N/A	N/A	N/A	Road Permit not available.
35	Odisha	Orissa	Keonjhar	Powergrid	CR	2	3	Yes	Yes	done	done	done	done	Pending	done	**Comminication link not available.**
36	Odisha	Orissa	Jharsuguda	Powergrid	Kiosk	8	9	Yes	Yes	done	done	done	done	done	done	**PMU integrated on 29.07.2016**

PMU Installation and commissioning status of ER as on 19.10.2016

37	Odisha	Orissa	GMR	GMR	CR	3	4	No	No	N/A	N/A	N/A	N/A	N/A	N/A	Road Permit not available.
38	ER-II	Sikkim	RANGPO	Powergrid	CR	4	1	**Yes**	**Yes**	**done**	**done**	**done**	**done**	**Pending**	**done**	**S/S couldn't be integrated because distance between PMU panel and SDH is more than 100 mtrs. Amendment for FO cable is awaiting.**
39	ER-II	West Bengal	Baharampur	Powergrid	CR	2	3	**Yes**	**Yes**	**done**	**done**	**done**	**done**	**done**	**done**	**PMU integrated on 10.05.2016**
40	ER-II	West Bengal	Birpara	Powergrid	CR	4	1	**Yes**	**Yes**	**done**	**done**	**done**	**done**	**done**	**done**	**PMU integrated on 15.07.2016.**
41	ER-II	DVC	CTPS B	DVC	CR	0	0	No	No	N/A	N/A	N/A	N/A	N/A	N/A	BOQ not finalized.
42	ER-II	DVC	KALYANESWARI	DVC	CR	4	1	No	No	N/A	N/A	N/A	N/A	N/A	N/A	PMU panel dispatched.
43	ER-II	DVC	PARULIA	DVC	CR	5	2	No	No	N/A	N/A	N/A	N/A	N/A	N/A	PMU panel dispatched.
44	ER-II	West Bengal	Bidhannagar 220	WBSETCL		0	0	No	No	N/A	N/A	N/A	N/A	N/A	N/A	BOQ not finalized.
45	ER-II	West Bengal	Purulia PSP	WBSETCL	CR	0	0	No	No	N/A	N/A	N/A	N/A	N/A	N/A	BOQ not finalized.
46	ER-II	Jharkhand	Bokaro TPS	DVC	CR	1	1	No	No	N/A	N/A	N/A	N/A	N/A	N/A	PMU panel dispatched.
47	ER-II	West Bengal	Durgapur TPS	DVC	CR	0	0	No	No	N/A	N/A	N/A	N/A	N/A	N/A	BOQ not finalized.
48	Odisha	Orissa	TTPS(Talcher)	OPTCL	CR	0	0	No	No	N/A	N/A	N/A	N/A	N/A	N/A	BOQ not finalized.
49	Odisha	Orissa	TALCHER	NTPC	CR	0	0	No	No	N/A	N/A	N/A	N/A	N/A	N/A	BOQ not finalized.
50	ER-II	Sikkim	TEESTA	Powergrid	CR	0	0	No	No	N/A	N/A	N/A	N/A	N/A	N/A	BOQ not finalized.
51	Odisha	Orissa	Uttara	Powergrid	CR	2	1	No	No	N/A	N/A	N/A	N/A	N/A	N/A	
52	Odisha	Orissa	Jindal	JITPL	CR	0	0	No	No	N/A	N/A	N/A	N/A	N/A	N/A	BOQ not finalized.
53	Odisha	Orissa	Monnet	Monnet	CR	0	0	No	No	N/A	N/A	N/A	N/A	N/A	N/A	BOQ not finalized.
54	Odisha	Orissa	Lanco	Lanco	CR	0	0	No	No	N/A	N/A	N/A	N/A	N/A	N/A	BOQ not finalized.
55	Odisha	Orissa	Navbharat	Navbharat	CR	0	0	No	No	N/A	N/A	N/A	N/A	N/A	N/A	BOQ not finalized.
56	Odisha	Orissa	Strelite	Strelite	CR	0	0	No	No	N/A	N/A	N/A	N/A	N/A	N/A	BOQ not finalized.
57	Odisha	Orissa	Ind barath	Ind barath	Kiosk	0	0	No	No	N/A	N/A	N/A	N/A	N/A	N/A	BOQ not finalized.
58	ER-II	Sikkim	New Melli	Powergrid	CR	0	0	No	No	N/A	N/A	N/A	N/A	N/A	N/A	BOQ not finalized.
59	ER-II	Sikkim	Mangan	Powergrid	CR	0	0	No	No	N/A	N/A	N/A	N/A	N/A	N/A	BOQ not finalized.
60	ER-II	Sikkim	TT Pool	Powergrid	CR	0	0	No	No	N/A	N/A	N/A	N/A	N/A	N/A	BOQ not finalized.
61	ER-II	West Bengal	Alipurduar	Powergrid	CR	6	7	No	No	N/A	N/A	N/A	N/A	N/A	N/A	
62	ER-II	West Bengal	Rajarhat	Powergrid	CR	2	1	No	No	N/A	N/A	N/A	N/A	N/A	N/A	PMU panel dispatched.
63	ER-I	Jharkhand	JAMSHEDPUR	Powergrid	CR	6	2	No	No	N/A	N/A	N/A	N/A	N/A	N/A	PMU panel dispatched.
64	ER-I	BIHAR	Kahalgaon(KHSTPP)	NTPC	CR	6	2	No	No	N/A	N/A	N/A	N/A	N/A	N/A	PMU panel dispatched.
65	ER-I	BIHAR	Purnea	Powergrid	CR	6	2	No	No	N/A	N/A	N/A	N/A	N/A	N/A	PMU panel dispatched.
66	ER-I	BIHAR	PATNA	Powergrid	Kiosk	6	7	No	No	N/A	N/A	N/A	N/A	N/A	N/A	PMU panel dispatched.
67	ER-I	Jharkhand	RANCHI	Powergrid	Kiosk	12	13	No	No	N/A	N/A	N/A	N/A	N/A	N/A	
68	ER-I	BIHAR	SASARAM(Pusauli)	Powergrid	CR+Kiosk	0	0	No	No	N/A	N/A	N/A	N/A	N/A	N/A	BOQ not finalized.
69	ER-I	BIHAR	BARH	NTPC	CR	4	1	No	No	N/A	N/A	N/A	N/A	N/A	N/A	PMU panel dispatched.
70	ER-I	BIHAR	LakhiSarai	Powergrid	Kiosk	4	5	No	No	N/A	N/A	N/A	N/A	N/A	N/A	PMU panel dispatched.
71	ER-I	BIHAR	BANKA	Powergrid	Kiosk	4	5	No	No	N/A	N/A	N/A	N/A	N/A	N/A	PMU panel dispatched.
72	ER-I	Jharkhand	Chaibasa	Powergrid	Kiosk	4	5	No	No	N/A	N/A	N/A	N/A	N/A	N/A	PMU panel dispatched.
73	ER-I	BIHAR	765kv Gaya	Powergrid	Kiosk	11	12	No	No	N/A	N/A	N/A	N/A	N/A	N/A	PMU panel dispatched.
74	ER-I	Jharkhand	765/400kV Ranchi (N)	Powergrid	Kiosk	8	9	No	No	N/A	N/A	N/A	N/A	N/A	N/A	PMU panel dispatched.
75	ER-I	Bihar	Biharshariff	Powergrid	CR	0	0	No	No	N/A	N/A	N/A	N/A	N/A	N/A	BOQ not finalized.
76	ER-I	Bihar	MUZAFFAPUR	Powergrid	CR	0	0	No	No	N/A	N/A	N/A	N/A	N/A	N/A	BOQ not finalized.
77	ER-I	Jharkhand	Daltonganj	Powergrid	Kiosk	2	3	No	No	N/A	N/A	N/A	N/A	N/A	N/A	PMU panel dispatched.
78	ER-I	Bihar	Kishanganj (karandeghi)	Powergrid	CR	4	1	No	No	N/A	N/A	N/A	N/A	N/A	N/A	PMU panel dispatched.
79	ER-I	Jharkhand	Jharkhand Pool (Chandwa)	Powergrid	Kiosk	4	1	No	No	N/A	N/A	N/A	N/A	N/A	N/A	PMU panel dispatched.
80	ER-I	Jharkhand	Patratu	Jharkhand	CR	0	0	No	No	N/A	N/A	N/A	N/A	N/A	N/A	BOQ not finalized.
81	ER-I	Jharkhand	Tenughat	Jharkhand	CR	0	0	No	No	N/A	N/A	N/A	N/A	N/A	N/A	BOQ not finalized.
82	ER-I	Bihar	Muzaffarpur	Bihar	CR	0	0	No	No	N/A	N/A	N/A	N/A	N/A	N/A	BOQ not finalized.
83	ER-I	Bihar	Barauni PP	Bihar	CR	0	0	No	No	N/A	N/A	N/A	N/A	N/A	N/A	BOQ not finalized.

PMU Installation and commissioning status of ER as on 19.10.2016

ER PMU site activity Summary:

Sl. No.	Region	Utility	As per approved BOQ		Dispatched		Installed		Commissioned		Integrated to ERLDC/ SLDC		Integrated to NTAMC	
			No. of Substations	No. of PMU	S/S	PMU	S/S	PMU	S/S	PMU	S/S	PMU	S/S	PMU
1	ER-I	Powergrid	15	71	11	59	0	0	0	0	0	0	0	0
2	ER-I	NTPC	2	10	2	10	0	0	0	0	0	0	N/A	N/A
3	ER-I	Jharkhand	2	0	0	0	0	0	0	0	0	0	N/A	N/A
4	ER-I	Bihar	2	0	0	0	0	0	0	0	0	0	N/A	N/A
	ER-I	**Total**	**21**	**81**	**13**	**69**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
1	ER-II	Powergrid	14	41	9	35	8	33	8	33	7	29	0	0
2	ER-II	NTPC	1	0	0	0	0	0	0	0	0	0	N/A	N/A
3	ER-II	DVC	13	31	11	31	5	12	5	12	1	2	N/A	N/A
4	ER-II	WBSETCL	8	19	6	19	0	0	0	0	0	0	N/A	N/A
	ER-II	**Total**	**36**	**91**	**26**	**85**	**13**	**45**	**13**	**45**	**8**	**31**	**0**	**0**
1	Odisha	Powergrid	10	38	9	28	7	23	7	23	3	15	0	0
2	Odisha	OPTCL	8	16	6	16	0	0	0	0	0	0	N/A	N/A
3	Odisha	NTPC	1	0	0	0	0	0	0	0	0	0	N/A	N/A
4	Odisha	IPP	7	3	0	0	0	0	0	0	0	0	N/A	N/A
	Odisha	**Total**	**26**	**57**	**15**	**44**	**7**	**23**	**7**	**23**	**3**	**15**	**0**	**0**
	ER	**Total**	**83**	**229**	**54**	**198**	**20**	**68**	**20**	**68**	**11**	**46**	**0**	**0**

Status of PDS system Installation and commissioning at ER as on 19.10.2016

Sl. No.	Site Name	Work Progress
1	ERLDC	Installed, powered up, functioning and integrated with DVC and OPTCL PDS system.
2	Backup-NLDC	POSOCO did not provide space for PDS system installation.
3	SLDC, Maithon	Installed, powered up, functioning and integrated with ERLDC PDS system.
4	SLDC, Bhubaneswar	Installed, powered up, functioning and integrated with ERLDC PDS system.
5	SLDC, Howrah (WBSETCL)	Installed, Powered up and functioning. Communication links for Control centre integration (SLDC Howrah to ERLDC) and for PMU integration are not available.

Annexure – B.29

AVAILABILITY STATUS OF EVENT LOGGER, DISTURBANCE RECORDER & GPS

Sl. NO	Substation	Protection & Control System						Remarks
		Availability			Time Synchronization			
		EL	DR	GPS	Relay	DR	EL	
1	Subhasgram	Yes	Yes	Yes	Yes	Yes	Yes	
2	Maithon	Yes	Yes	Yes	Yes	Yes	Yes	
3	Durgapur	Yes	Yes	Yes	Yes	Yes	Yes	
4	Malda	Yes	Yes	Yes	Yes	Yes	Yes	
5	Dalkhola	Yes	Yes	Yes	Yes	Yes	Yes	
6	Siliguri	Yes	Yes	Yes	Yes	Yes	Yes	
7	Binaguri	Yes	Yes	Yes	Yes	Yes	Yes	
8	Birpara	Yes	Yes	Yes	Yes	Yes	Yes	
9	Gangtok	Yes	Yes	Yes	Yes	Yes	Yes	
10	Baripada	Yes	Yes	Yes	Yes	Yes	Yes	
11	Rengali	Yes	Yes	Yes	Yes	Yes	No	New EL would be implemented in BCU under NTAMC project by March'2015
12	Indravati (PGCIL)	Yes	Yes	Yes	Yes	Yes	No	EL is old one(model-PERM 200), provision for time synchronisation is not available. New EL would be implemented in BCU under NTAMC project by March'2015
13	Jeypore	Yes	Yes	Yes	Yes	Yes	Yes	EL is old and not working satisfactorily. New EL would be implemented in BCU under NTAMC project by March, 2015
14	Talcher	Yes	Yes	Yes	Yes	Yes	Yes	
15	Rourkela	Yes	Yes	Yes	Yes	Yes	Yes	
16	Bolangir	Yes	Yes	Yes	Yes	Yes	Yes	
17	Patna	Yes	Yes	Yes	Yes	Yes	Yes	
18	Ranchi	Yes	Yes	Yes	Yes	Yes	Yes	
19	Muzaffarpur	Yes	Yes	Yes	Yes	Yes	Yes	
20	Jamshedpur	Yes	Yes	Yes	Yes	Yes	Yes	
21	New Purnea	Yes	Yes	Yes	Yes	Yes	Yes	
22	Gaya	Yes	Yes	Yes	Yes	Yes	Yes	
23	Banka	Yes	Yes	Yes	Yes	Yes	Yes	
24	Biharsariif	Yes	Yes	Yes	Yes	Yes	Yes	
25	Barh	Yes	Yes	Yes	Yes	Yes	Yes	
26	Sagardighi	No	Yes	Yes	Yes	Yes	No	EL is under process of restoration with help from OEM, China
27	Kahalgaon	Yes	Yes	Yes	Yes	Yes	Yes	
28	Farakka	Yes	Yes	No	No	No	No	Time synchronization available for Farakka-Kahalgaon line-III & IV. The same will be implemented in rest of the lines by December, 2014.
29	Meramundali	Defunct	Yes	Yes	Yes	Yes	Yes	
30	Tisco	Yes	Yes	Yes	Yes	Yes	Yes	
31	Bidhannagar	No	Yes	Yes	No	No	No	Using DR & EL available in Numerical

								relays. GPS will be put in service by January, 2015.
32	Indravati (OHPC)	Yes	Faulty	No	No	No	No	Time synchronization will be done by Feb, 2015. ICT-I feeders using DR & EL available in Numerical relays. 400 kV ICT-II feeder is being maintained by PGCIL, Mukhiguda.Status may confirm from PGCIL
33	Kharagpur	No	Yes	Yes	No	No	No	Using DR & EL available in Numerical relays.
34	DSTPS	Yes	Yes	Yes	Yes	Yes	Yes	
35	Sterlite	Yes	Yes	Yes	Yes	Yes	Yes	
36	Mejia 'B'	Yes	Yes	Yes	Yes	Yes	Yes	
37	Mendhasal	Defunct	Yes	Yes	Yes	Yes	No	EL will be restored by March, 2015.
38	Arambagh	No	Yes	Yes	No	No	No	Using DR & EL available in Numerical relays
39	Jeerat	No	Yes	No	No	No	No	Using DR & EL available in Numerical relays. Procurement of new GPS is in progress.
40	Bakreswar	Yes	Yes	Yes	Yes	Yes	Yes	
41	GMR	Yes	Yes	Yes	Yes	Yes	Yes	
42	Maithon RB	Yes	Yes	Yes	Yes	Yes	Yes	
43	Raghunathpur	Yes	Yes	Yes	Yes	Yes	Yes	
44	Kolaghat	Yes	Yes	Yes	Yes	Yes	Yes	
45	Teesta V	Yes	Yes	Yes	Yes	Yes	Yes	
46	Koderma	Yes	Yes	Yes	Yes	Yes	Yes	
47	Sasaram	Yes	Yes	Yes	Yes	Yes	Yes	
48	Rangpo	Yes	Yes	Yes	Yes	Yes	Yes	
49	Adhunik	Yes	Yes	Yes	Yes	Yes	Yes	
50	JITPL	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	
51	765kV Angul	Yes	Yes	Yes	Yes	Yes	Yes	
52	Chuzachen	Yes	Yes	Yes	No	Yes	Yes	
53	New Ranchi 765kV	Yes	Yes	Yes	Yes	Yes	Yes	
54	Lakhisarai	Yes	Yes	Yes	Yes	Yes	Yes	
55	Chaibasa							
56	765kV Jharsuguda	Yes	Yes	Yes	Yes	Yes	Yes	All are in working condition. However a dedicated DR for 765KV Lines; make TESLA is not working. M/s Siemens has assured to commission the same by 31.01.15
57	Beharampur	Yes	Yes	Yes	Yes	Yes	Yes	
58	Keonjhar	Yes	Yes	Yes	Yes	Yes	Yes	

Eastern Regional Power Committee

The status of ERS towers in Eastern Region as submitted during ERS meeting held on 10.11.14 taken by Member (Power System), CEA is given below:

1) As per 100th OCC meeting held on 22.08.2014, the status of ERS towers as available in Powergrid is as given below:

Sl. No.	Name of S/S	No. of ERS towers available	ERS towers in use
1	Durgapur, ER-II	1 Set (8 towers)	
2	Rourkela, ER-II	3 towers incomplete shape	
3	ER-I (located at Jamshedpur)	15 towers (10 nos Tension tower and 5 nos suspension tower)	

2) As informed by OPTCL, the present status of ERS towers in OPTCL system is as follows:

- 220 kV ERS towers: 42 nos located at Mancheswar, Chatrapur & Budhipadar
- 400 kV ERS towers: 2 nos located at Mancheswar.
- 12 nos. of new 400 kV ERS towers have been approved by Board of Director for procurement in the current financial year. Purchase order has been placed.
- Another, 16 nos of 400 kV towers accompanied with 6 sets of T&P are required.

3) WBSETCL informed that they have placed order for 2 sets of ERS towers on 31.10.2014 and expected by June, 2015.

4) The 25th ERPC meeting held on 21.09.2014, the board concurred to the proposal of procurement of four sets of ERS and it was also informed that, the proposed four sets of ERS will be kept at Sikkim, Siliguri, Ranchi and Gaya and will be used by all constituents of ER during emergencies.

   Powergrid informed that four sets of ERS for Eastern Region will be procured.

5) Bihar informed that they have 10 sets of 220 kV ERS towers and 2 sets are under process of procurements.

6) DVC informed that they are in process of procuring two (2) sets of 400 kV ERS towers.

Annexure- C.1

Maintenance Schedule of Thermal Generating Units of ER for December-2016

System	Station	Unit	Size (MW)	period		No. of Days	Reason
				From	To		
DVC	MTPS	6	210	02.12.16	11.01.17	41	COH
WBPDCL	KTPS	5	210	20.12.16	09.01.17	21	Boiler Overhauling
	Bandel TPS	4	60	01.12.16	31.03.17	122	RLA + BTG Overhauling
	Santaldih TPS	5	250	01.12.16	07.12.16	7	Boiler License
	Sagarighi TPS	2	300	10.12.16	17.12.16	8	Boiler License
CESC	BUDGE-BUDGE	1	250	22.12.16	28.12.16	7	Annual Overhauling
		2	250	29.12.16	12.01.17	15	Annual Overhauling
	SOUTHERN	1	67.5	03.12.16	06.12.16	4	Hydraulic Test
		2	67.5	07.12.16	21.12.16	15	Annual Overhauling
HEL	HALDIA	1	300	01.12.16	15.12.16	15	ual Overhauling / Boiler Overhauling
DPL	DPPS	7	300	01.12.16	31.12.16	31	Boiler Overhauling

Annexure-C.2

Anticipated Power Supply Position for the month of
Dec-16

SL.NO		PARTICULARS	PEAK DEMAND MW	ENERGY MU
1		**BIHAR**		
	i)	NET MAX DEMAND	3800	2290
	ii)	NET POWER AVAILABILITY- Own Source (including bilateral)	446	352
		- Central Sector	2245	1553
	iii)	SURPLUS(+)/DEFICIT(-)	-1109	-385
2		**JHARKHAND**		
	i)	NET MAX DEMAND	1250	800
	ii)	NET POWER AVAILABILITY- Own Source (including bilateral)	443	361
		- Central Sector	488	299
	iii)	SURPLUS(+)/DEFICIT(-)	-319	-140
3		**DVC**		
	i)	NET MAX DEMAND (OWN)	2831	1755
	ii)	NET POWER AVAILABILITY- Own Source	4658	2560
		- Central Sector	451	300
		Long term Bi-lateral (Export)	1300	967
	iii)	SURPLUS(+)/DEFICIT(-)	978	138
4		**ORISSA**		
	i)	NET MAX DEMAND	4200	2455
	ii)	NET POWER AVAILABILITY- Own Source	3196	1758
		- Central Sector	1040	679
	iii)	SURPLUS(+)/DEFICIT(-)	36	-18
5		**WEST BENGAL**		
5.1		**WBSEDCL**		
	i)	NET MAX DEMAND (OWN)	5072	2691
	ii)	CESC's DRAWAL	0	0
	iii)	TOTAL WBSEDCL's DEMAND	5072	2691
	iv)	NET POWER AVAILABILITY- Own Source	3619	2245
		- Import from DPL	-11	-29
		- Central Sector	1545	896
	v)	SURPLUS(+)/DEFICIT(-)	81	421
	vi)	EXPORT (TO B'DESH & SIKKIM)	10	7
5.2		**DPL**		
	i)	NET MAX DEMAND	290	208
	ii)	NET POWER AVAILABILITY	279	179
	iii)	SURPLUS(+)/DEFICIT(-)	-11	-29
5.3		**CESC**		
	i)	NET MAX DEMAND	1480	660
	ii)	NET POWER AVAILABILITY - OWN SOURCE	570	415
		FROM HEL	546	193
		FROM CPL/PCBL	0	0
		Import Requirement	364	52
	iii)	TOTAL AVAILABILITY	1480	660
	iv)	SURPLUS(+)/DEFICIT(-)	0	0
6		**WEST BENGAL (WBSEDCL+DPL+CESC)** **(excluding DVC's supply to WBSEDCL's command area)**		
	i)	NET MAX DEMAND	6842	3559
	ii)	NET POWER AVAILABILITY- Own Source	4468	2839
		- Central Sector+Others	2455	1089
	iii)	SURPLUS(+)/DEFICIT(-)	81	369
7		**SIKKIM**		
	i)	NET MAX DEMAND	90	38
	ii)	NET POWER AVAILABILITY- Own Source	3	2
		- Central Sector+Others	117	63
	iii)	SURPLUS(+)/DEFICIT(-)	29	27
8		**EASTERN REGION** **At 1.03 AS DIVERSITY FACTOR**		
	i)	**NET MAX DEMAND**	18459	10897
		Long term Bi-lateral by DVC	1300	967
		EXPORT BY WBSEDCL	10	7
	ii)	**NET TOTAL POWER AVAILABILITY OF ER (INCLUDING C/S ALLOCATION)**	20009	11855
	iii)	**PEAK SURPLUS(+)/DEFICIT(-) OF ER (ii)-(i)**	240	-16