

North Eastern Regional Power Committee

MINUTES OF THE 131st OPERATION COORDINATION

SUB-COMMITTEE MEETING OF NERPC

Date : 12/04/2017 (Wednesday)
Time : 10:00 hrs
Venue : “Hotel RajMahal”, Guwahati.

The List of Participants in the 131st OCC Meeting is attached at **Annexure – I**

Shri P.K. Mishra, Member Secretary, NERPC welcomed all the participants to the 131st OCC meeting. He noted the presence of participants from all the utilities except Mizoram, Nagaland and NHPC. However, he expressed satisfaction about the maximum participants from all the utilities and requested to continue the same in future so that the matter can be resolved during the meeting. He informed the forum that Shri D.K. Srivastava, Director, NPC has agreed to participate in the meeting, and requested all the members to kindly get their doubts regarding PSDF clarified.

Thereafter, Member Secretary requested Shri B. Lyngkhoi, Director/SE(C&O) to take up the agenda items for discussion.

A. CONFIRMATION OF MINUTES

CONFIRMATION OF MINUTES OF 130th MEETING OF OPERATION SUB-COMMITTEE OF NERPC.

The minutes of 130th meeting of Operation Sub-committee held on 17th March, 2017 at Guwahati were circulated vide letter No. NERPC/SE (O)/OCC/2016/4556-4591 dated 29th March, 2017.

AEGCL vide mail dated. 03.04.17 has sought modification on the minutes of Sl.17 of Agenda Item C.1:

In the 130th OCC meeting, AEGCL raise the issue of commissioning of 2x160 MVA, 220/132 kV transformers at Balipara S/S and the representative of PGCIL informed that one no 160 MVA Transformer will be commissioned by 1st week of May'17 and other one as per LoA date.

GM, NERLDC vide mail has sought modification in Item B.1:

“After the presentation of NERLDC on Grid performance during February, 2017, GM/NERLDC enquired about the back-up plan of Tripura i.r.o. avoiding overdrawal from the grid in case of outage of Monarchak / Palatana units. Tripura intimated that there is no such plan in place. Forum opined that Tripura should plan in advance for avoiding overdrawal from the grid in cases of contingencies resulting in less availability”.

Sr. Manager, TSECL informed that in case of no-generation from Palatana, the 400kV system at Palatana is still available. So power will be purchased from the market in case of non-availability of generation within 2-3 hours from Intra-day market.

The Sub-committee confirmed the minutes of 130th OCCM of NERPC with the above modifications as no further comments/observations were received from the constituents.

ITEMS FOR DISCUSSION

B.1. ACTION TAKEN:

1. IMPLEMENTATION OF PROJECTS FUNDED FROM PSDF:

The status as informed in 131st OCC:

State	Protection System	ADMS	CAPACITOR INSTALLATION
Arunachal Pradesh	Approval from the Govt. is awaited. Requested NERPC to take up with Govt. of AP	DPR already submitted to CEA & NLDC	Study is in progress and the same will be submitted to NERPC for approval
Nagaland	LOAs already completed and works is likely to be completed by 30.09.2017	DPR already submitted to CEA & NLDC	DPR already submitted to CEA & NLDC
Mizoram	By Mar'17 all LOAs would be issued.	DPR already submitted to CEA & NLDC	DPR already submitted to CEA & NLDC
Manipur	By June'17 all LOAs would be issued.	DPR will be submitted soon to CEA & NLDC	DPR preparation stage
Tripura	By June'17 all LOAs would be issued.	DPR will be submitted soon to CEA & NLDC	-

Assam	By June'17 all LOAs would be issued.	DPR will be submitted soon to CEA & NLDC	-
Meghalaya	MePTCL – All LOAs will be completed by April, 2017. MePGCI – by April, 2017	DPR to be prepared. SE, SLDC requested the survey firm to discuss with them for further action.	DPR to be prepared.

Deliberation of the sub-Committee:

Director, NPC through a presentation highlighted the following:- (i) scheme for operationalization of PSDF (ii) Eligible schemes for funding from PSDF (iii) Progress status of different projects funded from PSDF in NER (Detailed presentation **Annexure-II**). He further stated that progress of Arunachal Pradesh, Manipur, Mizoram and Tripura are less than satisfactory, and requested DoP Ar. Pradesh to take immediate action at the earliest so that the purpose of R&M is implemented in letter and spirit.

He also requested all the utilities to furnish information about status of implementation of their schemes in the format enclosed at **Annexure-III** by first week of every month on regular basis to Member Convener, PSDF Project Monitoring Group (AGM, NLDC, POSOCO) with a copy to NPC Division."

AGM, AEGCL enquired about 132kV Depota-Sonabil and 132kV Depota - Ghorabari upgradation to HTLS be funded from PSDF. DGM, NEEPCO similarly requested that bus up-gradation at Khandong HEP to HTLS zebra be funded from PSDF.

Director, NPC once again reiterated that such up-gradation schemes to relieve congestions may be funded from PSDF. He further requested NERPC to constitute a working group to carry out studies in the areas of congestion reduction/voltage control/VAR management so that states can identify present and future network congestions voltage problems etc. Theses study report would be helpful to states to propose schemes for funding from PSDF.

Further, on enquiry of DGM (AM), NERTS regarding possibility of funding from PSDF for Installation of Transmission Line Surge Arrestor (TLISA) in 132kV Lines of constituents to arrest frequent Tripping on account of lightening, the Director, NPC intimated the possibility of funding.

The Sub-Committee noted as above.

Action: All state utilities/NERPC.

2. Long Outage of Important Grid Elements:

Name of the Element	Name of Utility	Status
63MVAR Reactor at Byrnihat	MePTCL	SE, MePTCL informed that internal approval for DPR has been obtained. Director, NPC informed that since it is an old reactor, PSDF funding for replacement may be easily obtained. He requested MePTCL to send the proposal for replacement with upgradation to 80MVAR immediately to NLDC/NPC.
400KV 80MVAR Bus Reactor At Palatana	OTPC	04 Nos bushing to be replaced. Work would be completed by OTPC itself. Tentative completion 31.10.2017.

The Sub-Committee noted as above.

Action: MePTCL, OTPC.

B.2. OPERATIONAL PERFORMANCE AND GRID DISCIPLINE DURING MARCH, 2017

As per the data made available by NERLDC, the grid performance parameters for March, 2017 are given below:

NER PERFORMANCE DURING MARCH, 2017

States	Energy Met (MU)		w.r.t. Feb,17 % inc (+) /dec (-)	Energy Reqr. (MU)		w.r.t. Feb,17 % inc (+) /dec (-)	% inc (+) /dec (-) of energy reqr vs met. In Mar,17
	Mar-17	Feb-17		Mar-17	Feb-17		
Ar. Pradesh	61.79	57.25	7.93	62.66	58.08	7.89	-1.39
Assam	654.02	610.78	7.08	681.44	624.98	9.03	-4.02
Manipur	65.84	59.30	11.03	66.85	60.18	11.08	-1.51
Meghalaya	207.24	158.66	30.62	207.24	158.66	30.62	0.00
Mizoram	44.46	41.73	6.54	45.37	42.38	7.06	-2.01
Nagaland	56.33	48.07	17.18	57.29	48.86	17.25	-1.68
Tripura	87.91	95.01	-7.47	90.12	95.57	-5.70	-2.45
Region	1177.60	1070.79	9.97	1210.97	1088.71	11.23	-2.76

States	Demand Met (MW)		w.r.t. Feb,17 % inc (+) /dec (-)	Demand in (MW)		w.r.t. Feb,17 % inc (+) /dec (-)	% inc (+) /dec (-) of Demand vs met. In Mar,17
	Mar-17	Feb-17		Mar-17	Feb-17		
Ar. Pradesh	138	135	2.22	139	139	0.00	-0.72
Assam	1391	1396	-0.36	1392	1398	-0.43	-0.07
Manipur	158	162	-2.47	160	163	-1.84	-1.25
Meghalaya	298	300	-0.67	298	300	-0.67	0.00
Mizoram	94	93	1.08	96	95	1.05	-2.08
Nagaland	122	147	-17.01	123	148	-16.89	-0.81
Tripura	228	223	2.24	228	223	2.24	0.00
Region	2200	2234	-1.52	2236	2243	-0.31	-1.61

REGIONAL GENERATION & INTER-REGIONAL EXCHANGE IN MU

AVERAGE FREQUENCY (Hz)

Month---->	Mar-17	Feb-17
Total Generation in NER (Gross)	1215.95	1050.32
Total Central Sector Generation (Gross)	943.25	819.96
Total State Sector Generation (Gross)	272.70	230.36
Inter-Regional Energy Exchange		
(a) NER-ER	159.36	137.16
(b) ER-NER	35.73	12.38
(c)NER-NR	0.00	0.00
(d)NR-NER	174.78	276.78
© Net Import	51.15	152.00

Month---->	Mar-17	Feb-17
	% of Time	% of Time
Below 49.9 Hz	8.95	5.39
Between 49.9 to 50.05 Hz	73.55	73.84
Above 50.05 Hz	17.50	20.78
Average	49.99	50.00
Maximum	50.34	50.34
Minimum	49.66	49.76

The Sub-committee noted as above.

ITEMS FOR DISCUSSION

C.1 Status of Generating Units, Transmission Lines in NER:

During 131st OCC meeting, the status as informed by NTPC, NEEPCO, POWERGRID, DoP Ar. Pradesh and DOP, Nagaland is as follows:

SN	Items	Status as given in 131 st OCC Meeting	Status as given in 130 th OCC Meeting
a. New Projects			

1	Trial operation and CoD of Unit -II of Bongaigoan TPS of NTPC	CoD by 30.04.2017.	Unit synchronized on 13.02.2017. CoD by 31.03.2017.
2	400/220kV, 2x315 MVA ICT of NTPC at Bongaigaon	1st 315 MVA ICT - DoCO 24.03.2017. 2nd 315 MVA ICT - Manufacturing stage	1st 315 MVA ICT - To be charged within 31.03.17 2nd 315 MVA ICT - Not yet received at site
3	Trial operation and CoD 36MW STG of Monarchak GBPP of NEEPCO	COD 31.03.2017.	Subject to gas availability
4	Kameng HEP of NEEPCO two units (2 x 150 MW) Next two units (2x150 MW)	Delay in dam construction. First unit by early 2018.	Delay in dam construction. First unit by early 2018.
5	Pare HEP of NEEPCO (2 x 55 MW)	Delay in dam construction. First unit by early 2018.	Delay in dam construction. First unit by early 2018.
6	400 kV D/C Silchar - Melriat line of PGCIL	June, 2017.	June, 2017.
7	220kV Rangia - Salakati of AEGCL	December 2017 (30 km line idle charge from Salakati end)	December 2017
8	132kV Monarchak – Surjamaninagar D/C of TSECL	September, 2017	July, 2017
9	132kV Pasighat – Aalong of Ar. Pradesh	Charged on 08.04.17. CoD yet to be done. POWERGRID may charge for testing purpose.	March, 2017.
10	132kV Doyang– Wokha	April, 2017	March, 2017
11	220 kV, 20 MVAR Line Reactor & bay at AGBPP on 220 kV New Mariani – AGBPP line	Charged on 21.03.2017	March, 2017
12	132kV Surjamaninagar Bay at OTPC	34 months from date of NIT	Work to be executed by POWERGRID. Timeline to be given by PGCIL.
13	400kV D/C Balipara – Kameng	July 2017.	May 2017.
14	RHEP 80 MVAR Bus Reactor	T.S. completed except for GIS bay.	T.S. preparation stage.

15	SLDCs (Ar. Pradesh, Manipur, Mizoram, Nagaland)	Manipur – Completed, handover by Apr'17, Mizoram- Apr'17, Nagaland-Building ready and handed over, AP- SAT going on.	Manipur – Completed, handover by Mar'17, Mizoram-Mar'17, Nagaland-Building ready and handed over, AP-Building handover issues sorted out.
16	400/220 kV 315 MVA ICT-II at Bongaigaon	Manufacturing stage	Manufacturing stage
17	220/132 kV, 2x160 MVA ICTs at Balipara	ICT -I - May'17 ICT-II By 31 st August 2017(LOA date).	ICT -I - May'17 ICT-II By 31 st August 2017(LOA date).
18	220/132 kV, 1x160 MVA ICT with GIS Bay at Kopili	By 31 st August 2017(LOA date).	By 31 st August 2017(LOA date).
19	400/132 kV, 1x315 MVA ICT-III at Silchar	December, 2017(LOA date).	December, 2017(LOA date).
20	Replacement of 2x315 MVA ICTs with 2x500 MVA ICTs at Misa (PG)	December, 2017(LOA date).	December, 2017(LOA date).
21	400 kV Silchar – Misa D/C	M/s Sterlite Grid 4 Limited	Under TBCB
22	1x125 MVAR Bus Reactor at 400 kV at Balipara	December, 2017(LOA date).	December, 2017(LOA date).
23	1x125 MVAR Bus Reactor at 400 kV Bongaigaon	December, 2017(LOA date).	December, 2017(LOA date).
24	Bays at Hailakandi & 132V Silchar-Hailakandi	June, 2017.	June, 2017.
25	Tuirial HEP of NEEPCO	Unit #I - Oct'2017 Unit #II - Dec'2017	Unit #I - Oct'2017 Unit #II - Dec'2017
26	New Umtru HEP of MePGCL (2x20MW)	Unit #I- synchronization April'2017	-

b. Elements under breakdown/ upgradation

27	63MVAR Reactor at Byrnihat of Me.PTCL	As recorded in item B.1.(2)	As recorded in item B.1.(2)
28	Up-gradation of 132 kV Lumshnong-Panchgram line	DPR submitted for board approval.	DPR preparation stage
29	Switchable line Reactors at 400kV Balipara & Bongaigaon	Bongaigaon-May'17	Procurement works underway. Both to be completed by 31.03.17

30	PLCC Panels at Loktak end of Loktak – Ningthoukhong 132 kV feeder and Loktak - Rengpang 132 kV feeder	May'2018	Work(s) have been included in tender for additional line of 132kV Loktak-Ningthoukhong
31	LILO of 132kV Ranganadi – Nirjuli at Pare of NEEPCO by PGCIL	Work given to KEC. Completion by May'2018	Jan'17
32	LILO of 132kV Ranganadi – Itanagar (Chimpu) at Pare of Ar. Pradesh	Bay 1 at RHEP for Pare: May'17 Bay 2 at RHEP for Itanagar: Mar'18	Bay at Pare under construction Bay 1: completed Bay 2: March 2017
33	400KV 80MVAR Bus Reactor at OTC Palatana	As recorded in item B.1.(2)	As recorded in item B.1.(2)

The Sub-committee noted as above.

C.2 Furnishing of UFR Report and status of Implementation:

As per recommendation of enquiry Committee, the status of installation of UFR in NER was already circulated earlier. It is gathered that, 18.5 MW quantum is yet to be implemented in Arunachal Pradesh & Manipur.

The 123rd OCC forum decided that monthly report is not being furnished. As per clauses of relevant regulations, and Order of Hon'ble CERC in matter of Petition no. 113/MP/2014, NERLDC and NERPC are mandated to submit status of UFR operation and non-operation to CERC. SLDCs were thus requested to submit UFR operation details (feeder-wise quantum of load relief to be indicated) on monthly basis, and even if no UFR operated in particular month, it should be indicated as NIL.

The 127th OCC forum requested all the SLDCs/state utilities to certify healthiness of the relays while submitting the UFR operation report monthly.

The latest status as informed by NERLDC in 131st OCC:

Arunachal Pradesh	Furnished for March'17
Assam	Furnished for March'17
Manipur	Furnished for March'17
Meghalaya	Furnished for March'17
Mizoram	Furnished for March'17

Nagaland	Furnished for March'17
Tripura	Furnished for Feb'17

NERPC informed the forum that a team will be formed before next OCC for inspection at 1st Stage. 1st stage will cover Arunachal Pradesh, Assam and Meghalaya. Team to discuss possibilities for mapping of feeders identified for UFR with SCADA.

The Sub-committee noted as above.

D. NEW ITEMS

D.1 Generation Planning (ongoing and planned outages)

NEEPCO/NHPC may kindly intimate the availability for hydro stations:

Generating Station	Units running	MW	MU	Reservoir
Khandong	2		24.67	719.8
Kopili-II	1			
Kopili	4		151.88	603.5
Ranganadi	3		Subject to inflow	
Doyang	3		8.5	311.90
Loktak	3		57	767.46
AGBPP	-	-	-	-
AGTPP	-	-	-	-

Hydro planning

The outage of other generating stations may be approved considering the present level water level in reservoirs.

Deliberation of the sub-Committee:

The Committee discussed and approved the proposed shutdown by Generating Stations and the same has already been uploaded in the website of NERPC.

D.2 Outage Planning Transmission elements

It was agreed in the 99th OCC meeting that shutdown will be availed only after approval is given by the OCC forum. It was also agreed that deferment/revision of outages elements other than already approved in OCC will be henceforth put/displayed in the website of NERPC (under Operational Activities/OCC Approved shutdown) as per CERC regulations/ CEA guidelines etc for ensuring smooth & secure grid operation.

Furnishing request of shut down of the element, which was approved by NERPC, by Indenting Agency (ISTS licensees/STUs/Generating Companies) to NERLDC: Planned shutdown approved by NERPC shall be considered for implementation by NERLDC on D-3 basis. If an outage is to be availed on say 10th of the month, the shutdown availing agency would reconfirm to NERLDC on 7th of the month by 10:00 Hr. This practice is necessary to ensure optimal capacity utilization and the time required for associated system study/coordination by/amongst RLDC/NLDC.

In 124th OCCM, SE(C&O) strongly opined that constituents should inform to NERPC/NERLDC in case shutdown is not avail as approved in the OCC meeting and should mention clearly the reason for not availing the shutdown. The full list of shutdown would be placed in the next OCC by NERLDC so that proper record can be made in future for generating units as well as transmission lines. All constituents endorsed the view of SE(C&O).

In 130th OCCM, Member Secretary opined strongly about non commitments of earlier decision by the constituents and stated that all proposed plan shutdowns and agenda for the next OCC meeting should be sent to NERPC Secretariat latest by 5th day of next month. He directed SE(C&O) that the decision should be strictly adhere to and no shutdowns or agenda will be entertained after that stipulated date.

S.E.(C&O) requested all the utilities to submit shutdown proposals within 5th of the month, and NERLDC to circulate the final compiled shutdown list for comments in advance of the OCCM.

The sub-Committee discussed and approved the proposals received from the constituents regarding transmission elements and generating units for April, 2017 - May, 2017 and the same has already been uploaded in website of NERPC.

D.3 Estimated Transmission Availability Certificate (TAC) for the month of December & January, 2017:

NETC and POWERGRID have submitted the outage data for the month of December & January, 2017. So the attributability of outage of the said elements may please be finalized.

The forum once again advised NETC & POWERGRID to submit data in a time bound manner as decided previously.

The Sub-Committee noted as above.

D.4 Furnishing of Technical and Commercial data for computation of PoC Charges and Losses for Q2 of 2017-18 (July 2017 – September 2017):

In the 3rd Validation Committee meeting for PoC application period Oct'15-Dec'15, held on 30th September 2015, at NLDC conference Hall, CERC had proposed a methodology for ratification of projected data at RPC form.

During last validation committee meeting for Q1 of 2017-18 (April-June'17) held on 21st February'17, Hon'ble CERC has noted no participation from constituents of NER except Assam and Meghalaya. It is requested to all constituents to make it convenient to attend validation committee meetings either by video conference or by physical presence.

CERC has also pointed out that there is a huge difference between projected and actual demand data. Comparison of Projected Vs Actual data for Q3 of 2016-17 (Oct-Dec'16) is shown in enclosed Annexure D.4.

TSECL has not furnished YTC data for Q1 of 2017-18 (April-June'17). It is requested to MePTCL, AEGCL and TSECL to furnish YTC data while submitting node wise data for PoC calculation.

In 130th OCCM, NERLDC requested TSECL to submit YTC data for Q1 of 2017-18 (April-June'17) at the earliest. NERLDC also requested all the states to give reason for the huge difference between projected and actual demand data for Q3 of 2016-17 (Oct-Dec'16) as pointed out by Hon'ble CERC. The forum also requested all the members to attend Validation Committee meeting either through VC or in person.

Deliberation in the meeting

After detailed deliberation it was decided that NERPC would write to the heads of concerned transmission utilities and apprise the members of the PoC procedure, so that necessary data are submitted within the time frame.

NERLDC requested all the utilities to submit data for Q2 of 2017-18 (Jul- Sep'17). NERLDC also requested AEGCL, MePTCL and TSECL to submit YTC data for Q2 of 2017-18 (Jul- Sep'17). NERLDC informed that SLDC, Nagaland has already submitted the data.

The Sub-Committee noted as above.

Action: NERPC, All utilities.

D.5 Assessment of Total Transfer Capability (TTC), Transmission Reliability Margin (TRM) and Available Transfer Capability (ATC) by SLDC on respective Inter-State Transmission Corridor

Updated PSSE Base Cases have been **mailed to all the SLDCs on 29.03.17**. All SLDCs are requested to assess the Total Transfer Capability (TTC), Transmission Reliability Margin (TRM) and Available Transfer Capability (ATC) for the month of April'17 using these cases, and submit the study cases and results to NERLDC by **17th April, 2017**.

NERLDC has assessed the state control area wise, state subsystem wise and group of control-area wise TTCs for NER Grid, on behalf of SLDCs of NER. The study results conducted by NERLDC **mailed to all SLDCs on 05.04.17**. SLDCs are requested to check the TTC of their control areas as computed by NERLDC and **give comments, if any by 17th April**.

If no comments received from any SLDCs of NER, TTC, ATC & TRM figures of State control area and group of control areas as assessed by NERLDC will be considered as final and may be uploaded on website.

As per discussions in 122nd OCC meeting of NERPC, all SLDCs of NER may host the assessed TTC / ATC / TRM figures on their website for information dissemination.

Deliberation in the meeting

NERLDC presented the study results. The results are attached in- **Annexure D.5**.

Members requested all the SLDCs to calculate TTC/ATC as per procedure and get any problems resolved by mutual discussion with NERLDC. The forum also requested SLDC Manipur to present their TTC/ATC study in next OCC meeting.

The Sub-Committee noted as above.

Action: All SLDCs.

D.6. Renovation and Modernization of Umiam Stage-III HEP (2 x 30 Mw)

In line with the policy for taking up Renovation & Modernization (R & M) of old hydroelectric power plants initiated by the Ministry of Power, Government of India, MEECL has decided to take up R & M of Umiam Stage-III HEP (2 x 30 Mw) commissioned in 1979, considering the aggravated condition of the power plant.

In 126th OCCM, S.E., MePGCL informed that Umiam Stage-III has already completed its useful life having been in service for 37 years since commissioning. He requested that R&M cost be funded from PSDF.

S.E.(C&O),NERPC informed that R&M of power plants are not specifically funded from PSDF under PSDF regulations. However they may be funded under extraordinary Cl.4.1.(e). He requested MePGCL to submit the proposal at the earliest so that the matter may be followed up with NLDC/CERC.

In 130th OCCM SE, SLDC, Meghalaya informed that DPR has been sent to NLDC/CEA. He requested NERPC to kindly inform the status at the earliest.

Deliberation in the meeting

Director, NPC clarified that R&M of generating stations are not eligible for funding from PSDF as per prevailing eligibility criteria. Since eligibility of schemes is decided by Cabinet Approval, amendments to the criteria are a long drawn process.

The Sub-committee noted as above.

D.7 Reporting of commissioned transmission elements for TARANG App.

TARANG (Transmission App for Real Time Monitoring and Growth) Mobile App & Web Portal has been developed by REC Transmission Projects Company Ltd (RECPTL) for progress monitoring of transmission systems on Pan-India basis, which was launched by Hon'ble Minister of State for Power on 17th August 2016. The app can be downloaded on smartphones or be accessed through its website (www.tarang.website). As part of the responsibility charter, POSOCO has been assigned the responsibility to update the systems under operation in the 'Completed Transmission Systems' section of the app.

In order to provide this information to the Ministry of Power, it is requested to provide the details of commissioning of transmission elements in respective state for each month by the 3rd day of the next month to NERLDC.

In 126th OCCM, Sr. Engineer, NERLDC emphasized the need for furnishing this data for TARANG app devised by Ministry of Power, Govt. of India for information to the public. It was also mentioned that during recent visit to Guwahati on 11.11.2016, the same was emphasized by Joint Secretary (Power). NERLDC requested all utilities to submit the data to: **nerldcso2@posoco.in** by 3rd of every month for the previous month.

In 127th OCCM, Sr. Engineer, NERLDC informed that whatever elements have been commissioned in previous month need to be mailed to NERLDC by 3rd of every month. DGM, SLDC, AEGCL requested that respective transmission utilities may be approached for the required data. DGM(MO),NERLDC clarified that the details of any EHV commissioned elements within a State are supposed to be available with SLDCs, so there should not arise any difficulty in this regard.

It was agreed that SLDCs would furnish the data.

In 128th OCCM, NERLDC informed that even if no elements have been commissioned in the preceding month then a NIL report is to be submitted to NERLDC. NERLDC also informed that the updated Power Map and Grid Maps of all the states of NER will be circulated and all utilities are requested to give comments on the same.

In 129th OCC NERLDC informed that currently only MSPCL is mailing the report on commissioned elements. It was requested to all the SLDCs to submit the report by mail periodically.

In 130th OCCM, NERLDC informed that only MSPCL is mailing the report on commissioned elements. AEGCL requested that the details be perused from Progress Report, which is being mailed regularly. NERLDC informed that the progress report is being submitted by 20th of every month but the information about newly commissioned elements are to be passed on to NLDC by 5th of every month. MePTCL informed that the latest status of commissioned elements would be mailed within one week. Forum requested all SLDCs to submit the information of newly commissioned elements in the previous month by 3rd of every month to NLDC & copy to NERPC & NERLDC.

Deliberation in the meeting

NERLDC informed that new substations have been commissioned by AEGCL but details have not been submitted. Forum requested AEGCL to submit the details as early as possible.

The Sub-committee noted as above.

Action: All SLDCs.

D.8. Installation of DAS to monitor FRC for generators:

In continuation to discussions in 125th OCC meeting on this matter, and letter from ED-NLDC dtd. 10th October'16, it is requested that all generators may take urgent action to ensure Primary response as per stipulation [As per Sec.1(4) of Part-II of

CEA's Grid Connectivity standards, 0-10% droop for hydro generator governors ; 3-6% droop for Thermal generator governors].

Also, as per Section 11.2.(i) of CEA's Technical Standards for Construction, all generating stations must store important analog data in 1 seconds interval.

NEEPCO has informed that AGTPP and Ranganadi HEP have properly working DAS, that are capable of storing Machine side data like Voltage, frequency, Active power generation, Reactive power generation, Line currents, etc. Also, it was confirmed in last OCC that DAS at AGBPP is installed but not time-synchronized.

All generating stations may confirm that their governors are properly tuned for giving primary response as per regulations.

Also, NEEPCO may intimate the status of installation of DAS for their remaining generating stations.

In 126th OCCM, Sr. Manager, NEEPCO informed that all their plants have DAS installed. AGM(SO-I),NERLDC clarified that in case of oscillations/ disturbance response of generators(in ms) cannot be captured by SCADA due to low resolution of data.

NERLDC requested NEEPCO to ensure that all their installed DAS are time synchronized and data during events is not lost. Also, the resolution of data of DAS to be checked by NEEPCO and ensured that at least 1 sec resolution data is available.

In 127th OCCM, Sr. Engineer, NERLDC once again reiterated that DAS is required for analyzing response of governors and their absence severely impairs calculation of FRC. Sr. Manager, NEEPCO informed that installation of DAS in case of old generating units of Kopili, Khandong and Doyang involves huge financial involvement. He assured that management would be apprised of the requirement and any decision taken in this regard would be informed to the forum.

In 128th OCCM, NERLDC informed that on 23.12.2016, at 0127 hrs, all 400 kV lines from Kishenpur substation (Northern Region) except 400 kV Moga -Kishenpur II tripped which led to complete Valley (Kashmir) system collapse. Total Load Loss in J&K was about 1200 MW and Generation loss was of about 250 MW. All the generators primary response characteristics are required. In this respect NERLDC requested all generating utilities to provide time stamped MW, MVAR, Voltage and frequency data from 01:20Hrs to 01:30 Hrs of 23.12.2016. NERLDC also informed that the format was mailed to all the generators on 26th Dec'16.

In 129th OCCM, NERLDC informed that data from BgTPP, Loktak HEP, Khandong, Kopili, AGBPP, AGTPP and Doyang has not yet been received after repeated request. Manager, NHPC, Loktak informed that DAS is not installed at Loktak, so providing the data is difficult. He requested NERLDC to intimate the minimum time resolution required, upon which exercise would be done to furnish the data. NERLDC informed that format for submission for data already mailed to all the generating stations and requested all generators to furnish data at least in 1 sec interval.

AGM, NERLDC informed that following two incidences occurred in National grid for which FRC calculations are to be done. Without proper data it is very difficult to calculate/ascertain exact contributions of Generators and States towards frequency correction. He requested all for submission of data as requested.

1. On 21.02.17, at 1559 hrs, 900 MW generation loss due to tripping of Klaisindh Units - 1,2
2. On 05-Feb-17, at 12:24hrs 765kV Mainpuri-Bara ckt tripped along with both running units at Bara TPS (UP). Generation loss of 1100MW occurred.

In 130th OCCM, NERLDC informed that no data has been received till date. The forum requested all the concerned generating utilities to submit the data forthwith. NERLDC requested all generators to furnish data within 6 hours in case of an LFO event so that the matter can be properly analyzed within 24 Hrs.

Deliberation in the meeting

NERLDC informed that no data has been received for the above mentioned events. The forum noted the status of installation of DAS in generating station as under:

Name of Generating Station	Whether DAS installed
Palatana GBPP	Yes
BgTPP	Yes
AGTCCPP Extension	Yes
Ranganadi HEP	Yes
AGTCCPP	No
AGBPP	No
Khandong HEP	No
Kopili HEP	No
Doyang HEP	No
Loktak HEP	No

NERLDC also informed that on 03.04.2017, there was generation loss of 1300 MW in SR with frequency dip of 0.6 Hz. NERLDC requested ISGS to submit the data of the event at the earliest.

The Sub-committee noted as above.

Action: NTPC, NEEPCO, OTPC & NHPC.

D.9. Status of reactors under outage in NER Grid

400 kV Nodes in NER Grid are experiencing high voltage during Off-Peak hours. As per information available with NERLDC, the following reactors are under outage:

63 Mvar Line Reactor of 400 kV Balipara - Bongaigaon III line at Bongaigaon is under out since 12.11.16.

400 kV, 50 Mvar Bus Reactor at Misa is under outage since 03.12.16.

400 kV, 63 Mvar Bus Reactor at Byrnihat is under outage since 09.12.14

400 kV, 80 Mvar Bus Reactor at Palatana is under outage since 15.03.16

200 kV, 2x12.5 Mvar Bus Reactor at Samaguri is under long outage.

132 kV, 2x2 Mvar Bus Reactor at Dharmanagar is under long outage.

It is requested to inform the status of restoration of the above reactors at the earliest.

Apart from the above reactors, it is also requested to provide commissioning status of the following reactors:

20 Mvar Line Reactor of 220 kV AGBPP - New Mariani (PG) line at AGBPP

Conversion of line Reactors of 400 kV Balipara - Bongaigaon I & II lines at Balipara and Bongaigaon to Bus reactors (4 Nos.)

400 kV, 1x125 Mvar Bus Reactor at Balipara

400 kV, 1x125 Mvar Bus Reactor at Bongaigaon.

400 kV, 1x80 Mvar Bus Reactor at Ranganadi.

220 kV, 1x31.5 Mvar Bus Reactor at Mokokchung (PG).

In view the Critical voltage profile of NER Grid in Off-Peak hours, it is suggested no shutdown of Reactors in NER Grid shall be availed unless in case of Emergency.

Deliberation in the meeting

The status of different reactors under outage as informed in 131st OCC is as follows:

Sl. No.	Name of element	Status on 131st OCC Meeting
1.	63 Mvar Line Reactor of 400 kV Balipara - Bongaigaon III line at Bongaigaon	Within 30.05.17

2.	63MVAR bus reactor at Byrnihat	Pls refer to Item B.1.(2)
3.	80 Mvar Bus Reactor at Palatana	Within 31.10.2017 would be charged.
4.	2x12.5 Mvar Bus Reactor at Samaguri	Exact status to be informed by next OCC meeting
5.	2x2 Mvar Bus Reactor at Dharmanagar	De-commissioned
6.	20 Mvar Line Reactor of 220 kV AGBPP	Charged on 21.03.2017
7.	400 kV, 1x125 Mvar Bus Reactor at Balipara	Pls refer to Item C.1.(22)
8.	400 kV, 1x125 Mvar Bus Reactor at Bongaigaon	Pls refer to Item C.1.(23)
9.	400 kV, 1x80 Mvar Bus Reactor at Ranganadi.	Pls refer to Item C.1.(14)
10.	220 kV, 1x31.5 Mvar Bus Reactor at Mokokchung (PG).	December'17
11.	Conversion of line Reactors of 400 kV Balipara - Bongaigoan I & II lines at Bongaigaon to Bus reactors	Pls refer to Item C.1.(29)

The Sub-committee noted as above.

Action: AEGCL/TSECL/NERTS/MeECL/OTPC.

D.10. SPS for transfer of 160 MW to Bangladesh through Tripura-Bangladesh link:

POWERGRID vide. C/CTU-Plg/NE/02/Bangladesh dated. 07.02.2017 has informed that in the 12th India-Bangladesh JWG & JSC meeting decision was taken to enhance power transfer through 400kV SMNagar-South Comilla link (charged at 132 kV). In this regard a SPS needs to be in place to increase reliability in power supply. Following SPS action has been suggested by POWERGRID:

Sl. No.	Contingency	SPS Action
1	Outage of one ICT out of 400/132kV 2x125MVA ICTs at Palatana	Limit transfer to 100MW on Cross-Border link, followed by shifting of 60MW load from Indian grid to Bangladesh grid.

2	Outage of 132 kV Palatana-SMNagar line	Tripping of Cross border link followed by shifting of entire 160MW load from India to Bangladesh grid.
3	Outage of one circuit of S.M. Nagar-South Comilla line	Limit transfer to 130MW on Cross-Border link, followed by shifting of 30MW load from Indian grid to Bangladesh grid.

In 129th OCCM, AGM(SO-I),NERLDC informed that as per the suggested scheme of SPS, its implementation involves load reduction in Bangladesh system. In order for effective resolution, he suggested that a meeting be convened with Bangladesh Power Department officials, NERPC, NERLDC, CTU and TSECL. The forum requested NERPC to write to CTU for taking up the matter with MoP.

Deliberation in the meeting

S.E.(C&O),NERPC informed that the meeting would be convened within first week of May'2017 and TSECL would be informed one week in advance.

The Sub-committee noted as above.

Action: NERPC.

D.11. Delay in restoration of Manipur system after partial collapse:

On 03/02/2017 at 10.05 hrs Manipur system collapsed partially affecting around 50 MW of load in surrounding areas of Imphal (MA). Ningthoukhong, Jiribam (MA) loads were not affected. As reported by SLDC, Imphal, the reason for the disturbance was bursting of one 33kV Cable & Bus PT at Imphal S/S of Manipur. This fault resulted in tripping of following lines-

- 1) 132 kV Dimapur – Imphal(PG) from Dimapur end
- 2) 132 kV Loktak – Imphal(PG)from Loktak end
- 3) 132 kV Silchar – Imphal(PG) I & II from Silchar end
- 4) 132 kV Dimapur – Imphal from Dimapur end

Despite of best efforts the system restoration took considerable time and only at 1144 Hrs power could be extended to Imphal (MA) from Imphal (PG).

Concerned authorities are requested to please elaborate the reasons for delay as well as unwarranted trippings of above lines due to internal faults in Manipur system.

In 129th OCCM, MSPCL representative informed that on 03.02.2017 faulty cable feeder was charged multiple times from Imphal (PG) end without communicating with SLDC, Manipur.

DGM (AM), NERTS informed that a detailed investigation would be carried and forum would be apprised. MSPCL informed that due to non-availability of persons at Imphal (PG) restoration was delayed. The forum expressed concerned about the incident and requested NERTS to avoid the same in future.

In 130th OCCM, DGM(AM),NERTS informed that investigation is still underway. The forum expressed concerned on NERTS for the delay in investigation. EE, SLDC, Ar. Pradesh opined that the delay in restoration in most of the cases is due to mis-coordination. Administrative problems like these should be sorted out bilaterally. However, in this regard for delay in addressing the issue on NERTS part, is not appreciated. Members unanimously approved his opinion.

Deliberation in the meeting

DGM(AM),NERTS informed that delay in restoration was primarily due to mis-coordination between RLDC/SLDC. After detailed deliberation forum decided that committee of concerned personnel (RLDC/SLDC-Imphal /Imphal (PG) involved in operation on that particular day would file a report for future corrective measures.

The Sub-committee noted as above.

Action: NERTS/MSPCL/NERLDC.

D.12. FOLD Working Group on Hydro:

NERLDC informed that during 18th FOLD (Forum of Load Despatcher) held on 21st November'17 at New Delhi formation of Working Group on Hydro for studying various aspects of Hydro Stations was discussed. Letter from CEO, POSOCO (Letter No. POSOCO/NLDC/AASO/2017/1325 dated 16th Feb'17) regarding circulation of a Questionnaire was presented and discussed. Questionnaire was circulated among the constituents.

In 129th OCCM, NERLDC requested NEEPCO, NHPC, AEGCL, MePTCL, Mizoram, Nagaland and TSECL to submit the Questionnaire by 28th Feb'17.

Deliberation in the meeting

NERLDC informed the following status in 131st OCC meeting:

AEGCL	Submitted
NEEPCO Stations	Submitted
NHPC	Submitted
MePTCL	Submitted
Mizoram	Pending
Nagaland	Pending
Tripura	Submitted

NERLDC informed that details of stations with capacity less than 10 MW are also to be indicated in the questionnaire. NERLDC informed the forum that Working Group on Hydro for studying various aspects of Hydro Stations was formed and a meeting is going to be held on 18th Apr'17 regarding finalization of Hydro Report. Letter from FOLD Secretary (Letter No. POSOCO/NLDC/FOLD/20177 dated 11th April'17) regarding the same was circulated during the meeting (**Annexure-D.12**). NERLDC requested SLDCs of NER, NEEPCO and NHPC to attend the meeting on 18th April'17.

Action: Mizoram & Nagaland

D.13. Windy Weather Preparedness:

All states of North Eastern Region usually experience heavy windy weather from mid of March and this prevails till last of April. As a result of this weather condition, chances of load crashes in the state system as well as tripping of critical grid elements that can lead to Grid Disturbances are high. Last year, in March there were 24 Grid Disturbances and 3 load crashes reported while in April, number of Grid disturbances increased to 45 and load crashes to 15 Nos.

As a part of this preparedness, NERLDC has given an activity list that is to be followed to all states of NER.

During windy season, most of the tripping of lines are due to lack of proper vegetation clearance especially due to bamboos coming to the vicinity of line as observed in previous years. So it is very much necessary to clear all vegetation to avoid unwanted tripping at the earliest.

As per CERC Order in Petition number 9/SM/2014 dated 14.06.16, in the matter of Investigation of tower collapse and load crash in Northern Region on 30.5.2014,

Hon'ble CERC has directed PGCIL to install Anemometer in its all sub-stations to record wind speed.

It is requested POWERGRID to furnish status of installation of Anemometers.

In 130th OCCM, the forum approved the activity list and recommended that it is to be strictly followed by all the utilities. AEGCL informed that Point 5 in Activity list is important to Assam grid, particularly w.r.t. Kathalguri. NERLDC informed the forum that huge margin was observed between actual absorption of MVAR and capability limits in case of AGBPP units & BgTPP unit where high voltage problem persists. Sr. Manager, NEEPCO informed that AVR takes care of reactive compensation automatically. Further with commissioning of 20 MVAR reactor at Kathalguri the situation would improve to a large extent.

The forum requested to all generators to absorb reactive power to maintain voltage profile.

Member Secretary, NERPC explained the importance of installation of anemometer in POWERGRID substations and requested POWERGRID to furnish status of installation of anemometers in the next OCC meeting.

Deliberation in the meeting

DGM(AM),NERTS agreed to revert back in the next OCC meeting on the matter.

NERLDC informed the forum that Ministry of Power had reviewed Power supply Position and preparedness for Summer, 2017 on 31st Mar'17. Press release of the meeting is available at <http://pib.nic.in/newsite/PrintRelease.aspx?relid=160307> NERLDC also informed that IMD had forecasted for less rain this year.

The Sub-committee noted as above

Action: All SLDCs, All CSGS.

D.14. Calculation of Voltage Deviation Index at State Level:

NERLDC is calculating Voltage Deviation Index, Frequency Deviation Index and System Reliability Index on a daily, weekly and monthly basis at ISTS level and these are reported to all constituents for taking proper actions at their end. These VDI, FDI & SRI figures are submitted to CERC on yearly basis.

There is a need of calculation of VDI in state level by all SLDCs to limit the voltage parameter within IEGC band. Over voltage issue is predominant in 400 kV levels but low voltage issue also to be taken care in state level.

It is requested to all states to identify the critical stations where VDI to be calculated and SLDCs may instruct generators to respond as per voltage scenarios.

In 130th OCCM, NERLDC informed the forum that practice of calculation of VDI figures will help states to identify the nodes where capacitor banks/reactors are to be put in place. Members appreciated the NERLDC proposal and requested all SLDCs to adopt the suggestions. Forum requested NERLDC to circulate an example calculation of VDI among all SLDCs.

Deliberation in the meeting

Forum requested AEGCL to calculate VDI of important 132kV nodes in addition to 400/220kV nodes. NERLDC requested all the SLDCs to present a report on calculated VDI in next OCC meeting. NERLDC also informed the forum that Daily, Weekly and Monthly Frequency Deviation Report, Voltage Deviation Report and System Reliability report is being mailed to all utilities for taking corrective actions. The same is also uploaded in NERLDC website.

The Sub-committee noted as above

Action: All SLDCs.

D.15. Reliability of Auxiliary Supply to substations:

Reliable auxiliary power supply is of absolute necessity for smooth operation of control and protection system. Recent CERC order against Petition No. 133/MP/2014 stresses on reliability as well as commercial aspects of auxiliary supply to substations. Healthiness of DG sets is critical during restoration after a partial/total black out. As per clause no 5.8(b) of IEGC, Diesel Generator set for black start operation would be tested on weekly basis and test results are to be sent to RLDC on quarterly basis.

It is requested to all constituents to furnish DG set test results to NERLDC on quarterly basis and list of source of supply to auxiliary requirement to sub-stations.

The 130th OCC forum requested all generating utilities to kindly submit DG test results to NERLDC on periodical basis. NERLDC requested all members to furnish details about auxiliary supplies available in all substations connected to Grid along with relevant SLDs. Forum requested NERLDC to circulate format for data submission to all constituents. AEGCL also requested that SLDs (particularly auxiliary supply) of HVDC and other stations of POWERGRID in NER be provided to SLDCs. NERTS concurred.

Deliberation in the meeting

NERLDC informed the forum that format for Auxiliary Supply details have already been mailed to all the utilities on 24th March'17.

NERLDC informed the following status in 131st OCC meeting:

Name of utility	DG healthiness report	Auxiliary supply details
NEEPCO	No	Yes
NERTS	No	No
NTPC	No	No
NHPC	No	No
OTPC	No	No
Arunachal Pradesh	No	No
AEGCL	No	No
MSPCL	No	No
MePTCL	No	No
Mizoram	No	No
Nagaland	No	No
TSECL	No	No

The Sub-committee noted as above

Action: All Utilities.

D.16. Comparison of Load Forecast done by SLDCs Vs Load forecast in SCADA Application:

It has observed that the deviation is high for day-ahead load forecast done by state utilities from actual demand met. This gap may be due to non-consideration of weather data during preparation of load forecast.

Weather Report (Warning, Forecast etc) from IMD, Guwahati), Forecasted Weather Data (Hourly Temperature, Relative Humidity & Rainfall) & 15 minutes Load Forecast based on SLDC data & SCADA Load Forecasting Tools are being sent by NERLDC to all the constituents on daily basis for accurate load forecasting.

It is requested to all SLDCs to consider weather data also for preparation of day-ahead load forecast.

In 130th OCCM, NERLDC requested SLDCs of NER to start using EMS applications for load forecast. AGM (SO-I), NERLDC informed forum that non-consideration of weather data may be the reason resulting in huge error in forecasted demand. So he

requested all SLDCs to start considering weather data in day ahead forecast for better results. SLDC Tripura informed that the weather data is unreliable and is majorly responsible for the wrong forecasts. NERLDC informed that day-ahead demand forecast along with weather data is being mailed to all states on a daily basis. EE,SLDC, Meghalaya stated that in addition to weather data, all the RTUs should report and binary inputs like CB, isolator status are required for load forecast using SCADA tools. AEGCL once again informed that due to non-reporting of many RTUs in Assam grid, EMS cannot be used by them. The forum requested all SLDCs of NER to start using load forecasting tools of EMS application consider weather data also for load forecast.

Deliberation in the meeting

Sr. Engineer, NERLDC through a presentation once again highlighted the non-convergence of actuals with forecast. However it was informed that Assam and Manipur are showing less deviation. After detailed deliberation the forum decided that the corrective actions viz. non-reporting of RTUs, erratic weather data etc. would be reviewed thoroughly in appropriate forum. It was also decided to drop the agenda item in the meantime and report on actuals vs forecast to be made a component of the monthly grid performance by NERLDC.

The Sub-committee noted as above

Action: NERLDC, all SLDCs.

D.17. SPS for 400/132 kV 125 MVA ICT-2 at Palatana:

Proposed SPS to avoid over loading of Palatana ICT if one of our ICT trips then the other ICT would get overloaded if load more than 130MW(including 10% emergency load cater by ICT).

In 130th OCCM, Manager (O&M), OTPC reiterated the need for the SPS for safe operation of ICTs. The forum decided that the scheme be devised in concurrence with the "SPS for transfer of 160 MW to Bangladesh through Tripura-Bangladesh link"

OTPC informed that currently around 160 MW is going through both ICTs during peak hours (around 80 MW each), so tripping of one ICT will lead to tripping of other ICT. TSECL informed forum that tripping of both ICTs at Palatana will lead to over loading of several 132 kV lines in Tripura system and this will ultimately lead to collapse of entire Tripura system along with Bangladesh load.

Forum informed that a Special Meeting will be called within 15 days for further discussion on this matter.

Deliberation in the meeting

S.E.(C&O),NERPC informed the forum that a meeting in this regard would be shortly convened by NERPC.

The Sub-committee noted as above

Action: NERPC.

**D.18 Real-Time Energy Assessment System for effective Grid Management-
Software by CDAC**

CDAC has submitted a proposal for Real-Time Energy Assessment System for effective Grid Management. The Proposed system has majorly three components namely, real-time data acquisition system, real-time energy assessment system and short term load forecasting. This would be very useful for the SLDCs for forecasting the load and to plan the scheduling accordingly. This would also be useful for the users to have online information of the schedule and UI charges, this would help them to schedule and reduce their penalty and thereby contributing to the Grid stability. The project would approximately cost around 2 crores which would also require user contribution. The detailed proposal has been circulated earlier.

Members agreed to study the proposal in detail and revert back.

During 124th OCC meeting, Member Secretary, NERPC informed that the cost of the software will be borne by CDAC. The cost of hardware needs to be shared by the user. (Constituents' share of cost is 20% of total cost of Rs. 2 Crores i.e. Rs. 40 lakhs approx.)

All constituent appreciated the initiative taken by NERPC/NERLDC and unanimously agreed in principle to avail the above software and requested CDAC to go ahead with their project. However, the financial approval has to be accorded by their managements. They requested NERPC to take up the matter in the next RPC meeting.

The 17th TCC/NERPC approved the proposal as proposed by the OCC Sub-committee. In 130th OCCM, SE (C&O) requested all the constituents to make the payment at the earliest as agreed and decided in the 17th NERPC meeting in respect to C-DAC for hardware part of "Real time energy assessment project" being implemented by them for the benefit of NER States. Constituents agreed to make payment as early as possible.

Regarding finalization of technical specifications of the software, members decided that M/S. C-DAC should arrange for presentation in next OCC meeting detailing their proposed scheme so that any deficiencies or clarifications can be addressed to them before preparing the software.

Deliberation in the meeting

M/s CDAC through a presentation (attached in **Annexure-D.18**) highlighted the main components of *Real-Time Energy Assessment System* :

- Real Time Data Acquisition'
- Real Time Energy Assessment
- Short Term Load Forecasting

CDAC representative stated that their scheme would cover maximum 120 SEMs for real time data display and energy accounting. He further stated that the schedule vs actual display as well as calculation of deviation would be carried out. Deviation charges would be computed based on CERC stipulated formula.

Members appreciated the proposal of M/s CDAC, however some concerns were raised as follows:-

DM, SLDC, AEGCL opined that usage of GPRS for data acquisition, inspite of having OPGW would not be logical and would unnecessarily increase costs.

DGM(MO),NERLDC stated that total numbers of SEMs in NER would be around 400, however for the scheme to be implemented by CDAC, only main meters at periphery could be considered and total number would be less than 120. He stated that in such a case, a picture of schedule vs actual of all NER States as well as ISGS would be available in the SLDCs as well as RLDC which would be very helpful.

CDAC representative informed that the Real Time Energy Assessment System (RTEAS) would not be in conflict with AMR or any other scheme. Regarding usage of OPGW network he responded that the suggestion would be studied and agreed to revert back.

S.E.(C&O),NERPC stated that currently only Assam and Meghalaya have OA consumers, so scheme if implemented has to be for all inlet/periphery points as highlighted by DGM(MO), NERLDC.

On an enquiry, it was clarified that SEMs would not support instantaneous data and hence all display/computation would be based on 15 minute time block data.

AGM (SO-I), NERLDC mentioned that the main purpose of the above scheme is to address congestion and by doing so the overdrawal/underdrawal as well as deviation payment can be monitored. Members agreed to the proposal and also agreed to pay the C-DAC amount to NERPC Secretariat soon.

After detailed deliberation, the forum requested M/s CDAC to note the issues raised by NER constituents and in the meantime requested them to go ahead with the implementation of the scheme at the earliest. It was agreed that CDAC would visit NERLDC/NERPC at the earliest to freeze the SEMs for the project to go ahead further.

The Sub-committee noted as above

Action: CDAC.

D.19 Disturbance in Tripura system on 20.03.17 at 13.56 hrs :

Tripura System along with AGTPP, Palatana & Bangladesh systems was connected with rest of NER Grid through 400 kV Silchar-Palatana D/C lines, 132 kV AGTPP-Kumarghat line, 132 kV Kumarghat-PK bari and 132 kV Silchar-PK Bari D/C lines. At 13:54 Hrs on 20.03.17, 400 kV Silchar - Palatana D/C lines, 132 kV AGTPP-Kumarghat line, 132 kV Gamaitilla-Ambassa line & 132 kV Agartala-Dhalabil line tripped. Tripura System [except P K Bari, Ambassa & Kamalpur areas] along with AGTPP, Palatana & Bangladesh systems separated from rest of NER Grid and subsequently collapsed due to load generation mismatch. System progressively restored at 14.54 Hrs. AGTPP units synchronized at 15.41 hrs. Load loss: 146 MW
Generation loss: 782 MW.

Issues - Delay in synchronization of AGTPP units

Reason for tripping of 400 kV Silchar – Palatana Ckt-I

Tripping of 132 kV AGTPP – Kumarghat line at AGTPP end on O/C

Related issue - Status of improvement of protection systems at Agartala, Rokhia & Udaipur sub-stations of Tripura in line with deliberations in earlier OCC/PCC meetings.

Deliberation in the meeting

After detailed deliberation the matter was referred to the next PCC meeting.

The Sub-committee noted as above

Action: NERPC

D.20 Co-operation towards testing of Reporting & WBES software's:

The matters were discussed in 130th OCC meeting and co-operation of all the utilities were requested by NERLDC for testing of the above software's. Unfortunately co-operation from some of the utilities are not being received resulting in problem in testing of the software's. The status of response for respective software's is as follows:

Name of Utilities	Reporting Software	WBES Software
Ar. Pradesh	*	Not Testing
Assam	Sending	Testing but intermittently
Meghalaya	Not Sending	Not Testing
Manipur	*	Not Testing
Mizoram	*	Not Testing
Nagaland	*	Not Testing
Tripura	Sending	Testing but intermittently
AGBPP	Last Sent on 22/03/2017	Not Testing
AGTCCPP	Last Sent on 01/04/2017	Testing but intermittently
BGTPP	Not Sending	Testing but intermittently
Loktak	Not Sending	Testing but intermittently
OTPC	Sending	Testing but intermittently
Doyang	Not Sending	Testing but intermittently
Kopili	Sending	Not Testing
Khandong and Koipili II	Sending	Not Testing
Ranganadi	Sending	Not Testing
CPCC	Not Sending	---

*Manually prepared by RLDC based upon OCC/SCADA data.

Deliberation in the meeting

AEGCL informed that WBES is very slow and many a time requisition is not being updated. DGM, NEEPCO informed that the internet connectivity of Kopili, Khandong is very poor so site personnel are facing problems in updating data in WBES. Forum requested NERLDC to address the issues and develop a LITE version if possible. NERLDC stated that the software is under testing and the problems being highlighted by the utilities are being taken care of. After satisfactory performance of the software, alongwith associated infrastructures, the same will be implemented for regular usage. They again requested for full co-operation of all utilities during testing.

The Sub-committee noted as above

Action: NERLDC.

D.21 132kV Along (AP) - Pasighat (AP) Commissioning Status:

NERTS POWERGRID has applied for Charging Clearance of 132 kV Pasighat(AP)-Roing (POWERGRID) & 132 kV Roing (POWERGRID)-Tezu (POWERGRID) transmission lines along with associated substations/bays/equipments vide letter NESH/AM/501/284 dated 22.03.17.

In order to give charging clearance for 132 kV Pasighat (AP)-Roing (POWERGRID) & 132 kV Roing (POWERGRID)-Tezu(POWERGRID) transmission lines, charging status of 132 kV Along(AP) - Pasighat(AP) line is required. The same has been mailed and informed to SLDC Arunachal Pradesh vide mail dated 22.03.17. But no intimation regarding the status of charging of 132 kV Along (AP)-Pasighat (AP) line by SLDC Arunachal Pradesh has been furnished to NERLDC.

Deliberation in the meeting

EE, SLDC, Ar. Pradesh informed that 132kV Along-Pasighat has been successfully charged. In case of testing of POWERGRID lines are required line may be charged without power flow, in which case advance intimation/request may be made to SLDC, Ar. Pradesh.

The Sub-committee noted as above

D.22 Status of Optical fibre works in NER

Optical fibre works in NER are going very slow, for example optical fibre works at Balipara-Ranganadi link, Ranganadi-Lekhi link, Ranganadi-Ziro link, Silchar Palatana link etc This delay results in inter alia, non-availability real time data from Ranganadi, Nirjuli Ziro and Palatana at NERLDC.

Availability of real time data at control centres is critical in real time grid operation as well as post disturbance analysis. Many grid disturbances are not being able to analyze properly as a result of non-reporting of RTUs due to delay in completion of optical fibre works.

Deliberation in the meeting

Sr. Manager, NEEPCO informed that Ranganadi RTU would be commissioned by Dec'17. He also voiced concern that multiple times though RTU had been commissioned but data could not be made available to NERLDC due to link failure.

S.E.(C&O),NERPC informed that the matter of link failure has been under intense discussion in previous Sub-Committee meetings, also review of different OPGW

projects are being followed up in NeTEST meetings. The forum referred the matter to the next NeTEST meeting.

The Sub-committee noted as above

Action: NERPC

D.23 Installation of 80MVAR, 1x400KV GIS Bus Reactor/ Bay Addition at RHEP

As discussed in several OCC meetings there is requirement of bus reactor to be installed at RHEP switchyard to control over voltage in the NER system. Against agenda no. C.10. of 109th OCC meeting after detail deliberations, Member Secretary suggested NEEPCO to work out the tentative estimate for above cost and intimate in next PCC meeting so that the matter can be taken up for funding from PSDF since the matter is for the benefit of the region.

Accordingly, vide letter no. NO: NEEPCO/ED(O&M)/RHEP-09/2015-16/2646 dtd. 13/01/2016 NERPC was intimated a cost estimate of Rs. 3698.965 Lakh for procurement & installation of Bus Reactor at 400KV Ranganadi Switchyard.

In the MOM of 17th TCC meeting held on 04/10/2016 circulated on 26/10/2016 through e-mail it was observed that under item no. B.12 the proposal for installation 80MVAR Bus Reactor at RHEP SY has been approved in the 6th SCM and recommended in the TCC and RPC forum.

For open tendering process for procurement and installation of the Bus Reactor, the modalities of funding from PSDF as intimated in the 109th OCC meeting may please be discussed.

Deliberation in the meeting

Director, NPC informed that reactor installation for improvement of voltage profile of the grid may be funded from PSDF. However in this case approval has been obtained differently. DGM (AM), NERTS opined that since SCM approval has been accorded, no separate CERC approval is required and NEEPCO may directly file tariff petition. The forum requested NERPC to clarify from CEA/NLDC about funding from PSDF or execution by CTU.

The Sub-committee noted as above

Action: NERPC.

D.24 Maintenance of 220 KV Kathalguri- Deomali radial feeder and healthiness of Protection System

220 KV Kathalguri- Deomali radial feeder belongs to DOP, A.P. and feeding power from 220 KV Switchyard of AGBP through its 220 KV bay maintained by DOP, A.P.

Most of the time, 220 KV line Circuit breaker is found to be non-operational for remote closing, spring charging mechanism and trip and closing circuit. Breaker needs to be maintained properly for its smooth operation / function.

Periodic testing and calibration of the protective relays need to be carried out.

Deliberation in the meeting

After detailed deliberation it was decided that a team comprising of officials from NERTS/NEEPCO/DoP Ar. Pradesh would visit Kathalguri at the earliest to check the healthiness of the relays/protection system.

The Sub-committee noted as above

Action: NERPC/NERTS/NEEPCO/DoP Ar. Pradesh.

D.25 Implementation of Automatic Meter Data Reading (AMR) system at various locations of NER

In the 15th TCC & 15th NERPC Meeting held at Guwahati on 20th & 21st August 2015, approval was given for installation of Automated Meter Data Reading (AMR) system at various locations in North Eastern Region.

The estimated cost of the project was Rs 1, 71, 24,319/= to which all the constituents agreed in the 6th Metering Sub Committee Meeting held at Guwahati on 17.06.15.

The above estimation was carried out based on a similar work order placed on M/S TCS by Eastern Region —II in the year 2012. Also the estimation was for 260 SEMs installed in 92 locations.

Now CTU/POWERGRID has to execute the project for 350 SEMs installed in approx. 92 locations and the lowest budgetary offer received for the same is Rs 43821500.00.

The revised estimated cost of Rs 4, 38, 21,500/= (Rupees four crore thirty eight lakhs twenty one thousand five hundred only) is therefore put up in the 131st OCC Meeting for fresh consideration, of the constituents and develop a recovery mechanism for the same.

Deliberation in the meeting

NERTS stated that any cost revision has to be approved by TCC/RPC.

Regarding the point raised by NERTS on recovery mechanism, DGM (MO), NERLDC requested NERTS to furnish recovery mechanism of the cost of SEMs being followed by them. NERTS representative stated that same would be furnished in the next meeting. DGM(MO) stated that accordingly consent of forum for reviewed cost estimate as well as recovery mechanism could be decided in the next OCC/Metering meeting. He further stated that the project has already been delayed inordinately and there has to be a conclusive decision whether to go ahead with the project.

Forum agreed to take a decision in the next meeting.

The Sub-committee noted as above

Action: NERPC

D.26 Certification of availability of 132kV D/C S.M. Nagar-New Comilla (India portion) from March'16 to February, 2017

The 132KV D/C Surajmani Nagar- New Comilla(Indo-Bangla) transmission line along with 2 No. 132KV Bays at Surajmani Nagar(TSECL) end were declared under commercial operation w.e.f. 01.03.2016. The subject transmission asset is outside the purview of PoC billing mechanism & bill shall be raised to the purchaser/ beneficiary on bilaterally agreed terms.

POWERGRID has informed that Availability for the aforesaid asset (Indian portion only) certified by NERPC is required for facilitating submission of bill-to concerned beneficiary.

Deliberation in the meeting

Sr. Manager, TSECL stated that the transmission charges are recovered from Bangladesh for 132kV S.M. Nagar-New Comilla line and do not come under PoC mechanism. He asked for a clarification from POWERGRID whether both injection and withdrawal charges bills would be raised on Bangladesh or not. TSECL representative wanted to ensure whether billing to Bangladesh for the line segment would cause any double billing to Tripura. From the discussion, it emerged that billing for 132 KV SM Nagar-New Comilla would be through some agreed mechanism between POWERGRID and Bangladesh and should not impact TSECL. However, TSECL representative wanted that the matter should be clarified by POWERGRID.

SE(C&O) requested POWERGRID to clarify the issue regarding billing to Bangladesh in next CCM of NERPC.

The Sub-committee noted as above

Action: NERTS, POWERGRID

D.27 Sale of Power by NTPC-BgTPP for delivery date 01.04.2017 without consent of SLDC:

NTPC has transacted energy pertaining to Manipur State's share for date of delivery 01.04.2017 through open bidding for time block 77-88(19:00 to 22:00 hrs) and 91(22:30 to 22:45 hrs), whereas SLDC or MSPDCL did not issue any NOC for the same. In the day ahead requisition submitted by SLDC to NERLDC there was full requisition of 0.42MU (from time block 1 to 96) from NTPC-BgTPP; whereas, in the day ahead drawal schedule Revision No.0 given by NERLDC the said requisition was not implemented. Detailed communication(s) are attached in **Annexure D.28**.

It is interrogative why NTPC have involved into energy sale while beneficiary have submitted requisition.

Deliberation in the meeting

Manager, SLDC, Manipur informed that the matter has been discussed bilaterally with NTPC, with problem mainly being mis-coordination/miscommunication. She requested that the agenda item be dropped.

The Sub-committee noted as above

D.28 Shifting of bays for 132kV Shimui-Melriat(PG) D/C at Shimui:

It is informed by P&E dept., Mizoram that at Shimui (Substation of P&E dept., Mizoram) due to congestion of many incoming ckts, final termination of 132 KV Shimui – Melriat (PG) D/C T/L in to the Pre assigned bays are not possible. P&E dept., requested Powergrid to terminate the ckts into a temporary bays (2 nos.) of state. Further, the same would again be shifted to new location of bays as newly allotted for Powergrid as per **Annexure D.29**.

Deliberation in the meeting

The matter could not be discussed due to absence of representative from DoP Mizoram.

The Sub-committee noted as above

D.29 Difficulties in URS requisition from NTPC ER:

At many instances, Delay in scheduling and not implementing the Partial or URS requisition of power from NTPC ER even after punching through WBES software.

Deliberation in the meeting

NERLDC informed that the issue has been taken up with ERLDC for early resolution of the problem.

The Sub-committee noted as above

D.30 Difficulties in WBES software:

Problems like too much slow, system hang on several times in a day while handling WBES software.

Deliberation in the meeting

Pls refer to discussion in item **D.20**.

The Sub-committee noted as above

D.31 Advance planning for likely deficit rainfall in monsoon:

In view of IMD prediction of likely deficit rainfall during monsoon this year, AGM/NERLDC requested all the state utilities to plan in advance regarding purchase of power for meeting their requirements.

The states agreed for the same.

Date & Venue of next OCC meeting

It is proposed to hold the 132nd OCC meeting of NERPC on second week of May, 2017. However, the exact date and venue will be intimated in due course.

The meeting ended with thanks to the Chair.

Annexure-I**List of Participants in the 131st OCC Meetings held on 12.04.2017**

SN	Name & Designation	Organization	Contact No.
1.	Sh. N. Perme, EE, SLDC	Ar. Pradesh	09436288643
2.	Sh. Prabal Borah , DGM, SLDC	Assam	09864064679
3.	Sh. Amitabh Choudhary, DGM	Assam	09864102332
4.	Ms. Jharna Devi, Asst. Manager	Assam	08822798944
5.	Sh. B.C. Borah, AGM, SLDC	Assam	09435119248
6.	Sh. Pranab Saha, DM, SLDC	Assam	09435561717
7.	Sh. Dipesh Ch. Das, AGM,LD(Com)	Assam	09954110254
8.	Sh. Lohit Krishna Borah, AGM, SLDC	Assam	09435188931
9.	Sh. Jyotirmay Das, AGM	Assam	
10.	Ms. Indrani Borah, Jr. Manager	Assam	07896482483
11.	Sh. Dipayan Chandra, Dy. Manager	Assam	09706078551
12.	Ms. Toushita Jigdung, Dy. Manager	Assam	09707134351
13.	Sh. G.K. Bhuyan, AGM	Assam	
14.	Sh. P.P. Saikia, Dy. Manager	Assam	09954287481
15.	Sh. A.N. Dev Choudhary, AGM(TRC)	Assam	09854120791
16.	Sh. J. Rabha, AM(TRC)	Assam	08402981282
17.	Ms. Khoisnam Steela, Manager, SLDC	Manipur	
18.	Ms. Jayela Wahengbam, AM, SLDC,	Manipur	
19.	Sh. B. Wankhar, EE (MO)	Meghalaya	09436105914
20.	Sh. H.F. Shangpliang, SE(Gen)	Meghalaya	9863315562
21.	Sh. T. Gidon, EE, SLDC	Meghalaya	09774479956
22.	Sh. B. Nihla, EE, SD MePTCL	Meghalaya	09436314163
	No Representatives	Mizoram	
	No Representatives	Nagaland	
23.	Sh. Debabrata Pal, Sr. Manager (Comml.)	Tripura	09436500244
24.	Sh. Joypal Roy, Sr. Manager (E/M)	NEEPCO	09435577726
25.	Sh. B.K.Chakraborty , DGM(E)	NEEPCO	09436309730
26.	Sh. N.R. Paul, AGM	NERLDC	09436302723
27.	Momai Dey, Sr. Engineer	NERLDC	09436302716

28.	Sh. R. Sutradhar, DGM (MO)	NERLDC	09436302714
29.	Sh. Ankit Jain, Sr. Engineer (SO-I)	NERLDC	09436335381
30.	Sh. P. Kanungo, DGM (AM)	PGCIL	09436302823
31.	Sh. L. Mahendra, Principal Tech. Officer	C-DAC	09986160790
32.	Sh. N.K. Gupta, Manager	OTPC	09774233426-
33.	Sh. R.V. Patnaik, AGM(OS)	NTPC	09438233243
34.	Sh. D.K. Srivastava, Director (NPC)	CEA	09560763305
35.	Sh. P.K. Mishra, MS	NERPC	-
36.	Sh. B. Lyngkhai, Director/S.E (C&O)	NERPC	09436163419
37.	Sh. S. Mukherjee, AEE	NERPC	08794277306
38.	Sh. A. Agrawal, AEE	NERPC	07424064484
39.	Sh. S. Ranjan, AE	NERPC	08794276168

MONITORING OF SCHEMES FUNDED FROM POWER SYSTEM DEVELOPMENT FUND(PSDF)

National Power Committee (NPC)
Central Electricity Authority
New Delhi

Categories of Projects

The following categories of projects are eligible for funding from PSDF:

- ❖ Creating necessary transmission systems of strategic importance based on operational feedback by Load Despatch Centres for relieving congestion in Inter-State Transmission Systems (ISTS) and intra-state system which are incidental to the ISTS.
- ❖ Installation of shunt capacitors, series compensators and other reactive energy generators including reactive energy absorption, dynamic reactive support etc. for improvement of voltage profile in the Grid.
- ❖ Installation of standard and special protection schemes, pilot and demonstrative projects, projects for setting right the discrepancies identified in the protection audits on regional basis, any communication / monitoring scheme including installation of Phasor Measurement Units (PMUs) etc.
- ❖ Renovation and Modernization (R&M) of transmission and distribution systems for relieving congestion.
- ❖ Any other scheme/project in furtherance of the above objectives, such as, conducting technical studies and capacity buildings etc.
- ❖ Projects proposed by distribution utilities in the above areas which are incidental to interstate transmission system and have a bearing on grid safety and security, provided these are not covered under any other scheme of the Government of India, such as RAPDRP/RGGVY/NEF, etc.
- ❖ Private sector projects would not be eligible for assistance from the Fund.
- ❖ Any scheme sanctioned by the Central Government in the interest of development of power system which requires support from PSDF as part of the scheme shall be eligible for assistance from PSDF.

Funding Pattern

States of North Eastern Region eligible for grant up to 100%

Number of Schemes Sanctioned Grant from PSDF

Sl. No.	Region	No. of Schemes	Grant Sanctioned (Amount in Rs. Crores)
1	Northern	14	1332.92
2	Western	9	246.62
3	Southern	13	596.83
4	Eastern	9	1103.14
5	North Eastern	9	604.17
6	All India Schemes (PGCIL,REC)	3	3384.27
Total		57	7267.95

North Eastern Region

State	No. of Schemes
Arunachal Pradesh	1
Assam	2
Manipur	1
Meghalaya	2
Mizoram	1
Nagaland	1
Tripura	1
TOTAL	09

Total Grant Sanctioned= Rs.604.17 Cr.

Approved Schemes of Arunachal Pradesh

Sl. No.	Name of Scheme	Estimated Cost	Estimated Cost Accepted	Grant Approved (Date)	Grant Released	%age of Gr Released
1	Rectification of deficiencies and renovation of the grid substations of Arunachal Pradesh	33.45	18.21	18.21 (05.09.2016)	0	0%
Total (One Scheme)		33.45	18.21	18.21		

Approved Schemes of Assam

Sl. No.	Name of Scheme	Estimated Cost	Estimated Cost Accepted	Grant Approved (Date)	Grant Released	%age of Grant Released
1	Renovation and Upgradation of protection & control systems of Sub Stations in the state of Assam in order to rectify protection related deficiencies	382.48	299.37	299.37 (11.05.2015)	38.51	12.87%
2	Installation of Bay control Unit (BCU) in the state of Assam	57.13	53.52	53.52 (28.10.2015)	5.35	10.00%
Total (Two Schemes)		439.61	352.89	352.89	43.86	

Approved Scheme of Manipur

Sl. No.	Name of Scheme	Estimated Cost	Estimated Cost Accepted	Grant Approved (Date)	Grant Released	%age of Grant Released
1.	Renovation and Upgradation of the Grid Substations in MSPCL	33.50	33.50	33.50 (05.09.2016)	0	0%
Total (One Scheme)		33.50	33.50	33.50		

Approved Schemes of Meghalaya

Sl. No.	Name of Scheme	Estimated Cost	Estimated Cost Accepted	Grant Approved (Date)	Grant Released	%age of Grant Released
1	Renovation and Upgradation of Protection and Control Systems in the state of Meghalaya to rectify Protection related deficiencies.	102.80	69.19	69.19 (04.08.2015)	7.95	11.49%
2.	Renovation and Upgradation of Protection System of substations in Meghalaya GENCO (MePGCL)	41.93	32.53	32.53 (15.01.2016)	3.25	10.00%
Total (Two Schemes)		144.73	101.62	101.62	11.20	

Approved Schemes of Mizoram

Sl. No.	Name of Scheme	Estimated Cost	Estimated Cost Accepted	Grant Approved (Date)	Grant Released	%age of Grant Released
1	Renovation and Upgradation of protection and control systems of 132kV substations in the state of Mizoram in order to rectify protection related deficiencies.	31.38	26.84	26.84 (28.10.2015)	2.68	10.00 %
Total (One Scheme)		31.38	26.84	26.84	2.68	10.00%

Approved Scheme of Nagaland

Sl. No.	Name of Scheme	Estimated Cost	Estimated Cost Accepted	Grant Approved (Date)	Grant Released	%age of Grant Released
1	Renovation and Upgradation of protection system of substations	39.96	39.96	39.96 (11.05.2015)	10.96	27.43%
Total (One Scheme)		39.96	39.96	39.96	10.96	

Approved Scheme of Tripura

Sl. No.	Name of Scheme	Estimated Cost	Estimated Cost Accepted	Grant Approved (Date)	Grant Released	%age of Grant Released
1	Renovation and Upgradation of Protection System in the substations in the state of Tripura.	79.95	31.05	31.05 (05.01.2016)	3.10	10%
Total (One Scheme)		79.95	31.05	31.05	3.10	

Procedure for disbursement of grant release of funds under PSDF

- As per the guidelines of PSDF, the disbursement of the funds shall be carried out in phased manner, in four instalments as per the details given below:
 - i. **First Stage: 10%** of the total grant sanctioned (Out of **30%**) shall be released after sanction of grant and signing of Tripartite/Bipartite Agreement.
 - ii. **Second Stage: 20%** of the total grant sanctioned (Out of **30%**) shall be released in accordance with the award of contracts in max. no. of five tranches.
 - iii. **Third Stage/ Intermediate Stage: 60%** of the grant after utilization of the grant disbursed in first installment and consumption of self-contribution of the entity, in maximum five tranches.
 - iv. **Fourth Stage: Balance 10%** of the grant shall be released on completion of the scheme

The entities may furnish information on the status of implementation of the schemes (physical as well as financial progress) in the prescribed format by first week of every month **on regular basis** to Member Convener, PSDF Project Monitoring Group (AGM, NLDC, POSOCO) **with a copy to NPC Division.**

North Eastern Region – Schemes Under Examination / Approval

Agency	Name of the scheme	Estimated cost (Rs crore)	Remarks
NERPC	Study programme on the Integration of Renewables Energy Resources (RES) into the Grid	6.5	Recommended by Appraisal committee
PCL- Manipur	33kV system Integration with SLDC system in Manipur	16.86	31 st Meeting of TESG held on 30.03.17. Recommended
Nagaland	Installation of Automatic Reactive power solution at 66/11kV & 33/11Kv substation in Nagaland	27.47	DPRs under examination
PCL- Manipur	Installation of reactive power solution at 132 kV substation in Mizoram	16.88	
PGCL Meghalaya	Renovation, Modernisation & upgradation for Umiam Stage-III HEPP in Meghalaya	348.11	

Thank You

