



AGENDA NOTES FOR 17th TCC AND 17th NORTH EASTERN REGIONAL POWER COMMITTEE MEETING

1. MEETING SCHEDULE

SN	Meeting	Date	Time	Venue
1	TCC	03/10/2016	14:00 Hrs	"The Classic Grande," Imphal
2	NERPC	04/10/2016	14:00 Hrs	"The Classic Grande," Imphal

2. CONFIRMATION OF THE MINUTES OF 16TH TCC MEETING & 16TH NERPC MEETING

The minutes of the 16th TCC and 16th North Eastern Regional Power Committee (NER Power Committee) meetings held on 29th & 30th January, 2016 at Guwahati were circulated vide letter no. NERPC/OP/Committee/2016/9854-9929 dated 22.02.2016.

No comments or observations were received from any constituents, the TCC and NER Power Committee may confirm the minutes of above meetings.

3. ARRANGEMENT OF AGENDA OF 16th TCC MEETING & 16th NERPC MEETING

SN	Description	Category
1	ITEMS FOR DISCUSSION	A
2	ITEMS FOR APPROVAL	B
3	ITEMS FOR INFORMATION	C



CATEGORY – A: ITEMS FOR DISCUSSION

ITEM NO. A.1 : SETTING-UP/UP-GRADATION OF SLDCs IN NER - NERPC

Setting up of SLDCs in NER was agreed in 14th TCC/NERPC Meeting. Accordingly, works have been taken up by POWERGRID and the present status (as per 4th NETeST meeting) is as below:

SN	Utility	Present Status	Target Completion
UPGRADATION OF SLDCs			
1	Assam	Completed: SCADA & EMS Balance: DG Set & RTUs	31.12.2016
2	Tripura	Completed: SCADA & EMS	NA
3	Meghalaya	Completed: SCADA & EMS	NA
4	NERLDC	WIP: SCADA, EMS & DG Set	31.12.2016
NEW SLDCs			
5	Manipur	Completed: Main SLDC, SCADA & EMS Balance: DG Set	31.12.2016
6	Nagaland	WIP: Building Construction to be completed by November 2016	28.02.2017
7	Mizoram	Work In Progress	31.12.2016
8	Ar. Pradesh	WIP: EMS & SCADA	28.02.2017

GPRS connectivity (under SLDC up gradation project cost) for RTU-SLDC: SCADA: Further as suggested by Different utilities, POWERGRID may explore connectivity of different RTU locations of different states through GPRS connectivity. Tentative Cost Estimate as intimated by POWERGRID is Rs 1.0 Crore (Approx). Put up for approval.

Members may like to discuss & approve.

TCC Deliberation :

NERPC Deliberation :

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ITEM NO. A.2 : STATUS OF IMPLEMENTATION OF R&M WORKS SANCTIONED UNDER PSDF: - NERPC

The status of progress of R&M works under PSDF is being monitored every month by NERPC and the Sub-committee requested all constituents to complete the proactive actions like taking Board's approval, floating of NITs, selection of bidders etc., as directed by the Hon'ble CERC.

NERPC Secretariat was in constant touch with all the NER States for expediting the process, however, the progress is very slow.

The status as on date is as below:

Amount in Rs. Crores

SN	Constituent	Amount Sanctioned	Action Taken		Pending	
			NIT	LOA	NIT	LOA
1	Nagaland	39.96	39.96	39.96	0.00	0.00
2	Assam	352.89	273.69	250.56	79.20	102.33
3	MePTCL	69.19	32.00	32.00	37.19	37.19
4	MePGCL	37.52	3.64	3.64	33.88	33.88
5	Tripura:	31.05	31.05	0.00	0.00	31.05
6	Mizoram	26.84	14.27	0.00	12.57	26.84
7	Ar. Pradesh	18.21	0.00	0.00	18.21	18.21
8	Manipur	33.50	0.00	0.00	33.50	33.50

The monthly OCC Sub-committee requested all the constituents to complete the works at the earliest. Further, the sub-committee directed that the status of progress of work be intimated to NERPC Secretariat every month so that the same can be submitted to Hon'ble CERC & CEA.

Members may like to discuss.

TCC Deliberation :

NERPC Deliberation :

ITEM NO. A.3 : STUDY TOUR FOR NER CONSTITUENTS - NERPC

During 16th NERPC meeting; it was decided that NERPC may initiate process for organizing study tour programme "on integration of renewal energy resources" in European Countries for Officers from NER Constituents to be funded from PSDF.



To comply with the decision of NERPC; NERPC Secretariat took up the matter with NLDC & NIT has already been published through NERTS, POWERGRID portal for funding from PSDF after getting approval from Hon'ble Chief Minister, Govt. of Manipur & Chairman, NERPC.

Members may like to discuss for expediting the above study tour.

TCC Deliberation :

NERPC Deliberation :

ITEM NO. A.4 : NON - PARTICIPATION OF TRIPURA & NHPC IN PCC & NETeST MEETINGS OF NERPC - NERPC

It has been observed that Tripura and NHPC are not participating in PCC & NETeST meetings regularly despite earlier decision of NERPC for participation. As a result many important issues often could not be discussed and resolved in stipulated time frame for the benefit of NER grid.

Issue may be discussed for regular participation and also to nominate the Nodal Officers and give standing instructions for attending the meetings.

TCC Deliberation :

NERPC Deliberation :

ITEM NO. A.5 : GRANT OF LONG TERM ACCESS (LTA) OF 225 MW TO SUZLON POWER INFRASTRUCTURE LTD. (SPIL) FOR WIND FARMS (3X300 MW) IN KAYATHAR DISTRICT OF TAMIL NADU IN SOUTHERN REGION - TSECL

A communication was received from PGCIL for providing consent to allow Long Term Access (LTA) to Suzlon Power Infrastructure Ltd (SPIL) for supply of wind power to NER constituents. It is understood that NER constituents do not have any allocation of power from this plant and also not signed any PPA. But the SPIL has applied for grant of advance LTA.

Booking of advance LTA without allocation of power and signing of PPA may create congestion in the transmission corridor in future. Therefore, matter needs discussion before issuance of any consent by NER constituents.

TCC Deliberation :

NERPC Deliberation :

ITEM NO. A.6 : COMMISSIONING OF 2ND ICT (125 MVA) AT PALLATANA - TSECL

To ensure reliable and uninterrupted power supply to Tripura during the ensuing Puja days 7th Oct' 2016 to 11th Oct' 2016 and availability of power at state grid to



meet the peak demand of about 300 MW besides meeting the cross border commitment of 100 MW to Bangladesh, commissioning of 2nd ICT at Pallatana was taken up by OTPC and needs early commissioning. OTPC may appraise the latest status on the progress of commissioning work.

TCC Deliberation :

NERPC Deliberation :

ITEM NO. A.7 : NON-AVAILABILITY OF CS DATA DUE TO FREQUENT OUTAGE OF SCADA SYSTEM - TSECL

Tripura is facing difficulties in maintaining regular system operation (particularly during system failure, tripping and synchronization, monitoring of ICT etc) due to non-availability of Central Sector Data from the NER SCADA System. It is understood that frequent failure of SCADA equipments and communication links is causing such non-reporting of CS Data at SLDC, Agartala. NERLDC/PGCIL may elaborate the issue.

TCC Deliberation :

NERPC Deliberation :

ITEM NO. A.8 : NER COMMON DATA CENTRE (DC) AND DISASTER RECOVERY (DR) CENTRE - TSECL

As per R-APDRP Scheme the cost of DC & DR beyond the sanctioned amount of GOI and other associated costs to run & operate both the DC & DR is to be shared by all the NER States on the basis of No. of Towns approved under the R-APDRP Schemes. It is noticed that there is inordinate delay in receiving the share from various beneficiary states against the claim raised by APDCL & TSECL. This is causing difficulties in managing the regular O & M operation. Matter be discussed for expediting the release of money by all the NER states.

TCC Deliberation :

NERPC Deliberation :

ITEM NO. A.9 : CONVERSION OF 10MVA & 16MVA 132/33KV TRANSFORMERS AS REGIONAL SPARE - NERPC

On up-gradation of 132/33kV Nirjuli (PG) Sub Station with 2X50MVA 132/33kV ICT, one of 16MVA 132/33kV ICT (Siemens) & one no. of 10MVA 132/33kV ICT (Andre Yule) has been taken out of service and the same will not be utilised as spare for against POWERGRID asset. However, during discussions held in 122-124th OCC meetings and 29TH CCM the NER constituents opined and agreed to covert the 16MVA & 10MVA ICT as Regional Spare for the constituents.



Further, during 125th OCCM the modalities for utilising the transformers by constituents are finalized as below:

- The Transformers will be spared in case of major power crisis on account of Breakdown.
- Dismantling, Packing, Commissioning including one way transportation to be done by users.
- ALL RISK INSURANCE for transit (one way) and breakdown during service to be taken up by users to meet repairing cost, in case of damage during transit or service.
- Installation of Fire Protection System Prior to putting the transformer in service.
- Drying out and re-commissioning of Transformers to be done as per the standard practice followed by POWERGRID
- During service annual preventive maintenance of the transformer to be carried out as per the standard procedure followed by POWERGRID.
- Time frame for returning the transformer may also be obtained from users

Members may like to discuss and approve.

TCC Deliberation :

NERPC Deliberation :

ITEM NO. A.10	:	IMPLEMENTATION OF AUTOMATIC DEMAND MANAGEMENT SCHEME (ADMS) - NERPC
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CERC in its order dated 31.12.15 (Petition No. 5/SM/2014) directed to submit PERT charts & action plans for Implementation of Automatic Demand Management Scheme (ADMS) by SLDCs of NER and to implement ADMS by 30.06.16. Hon'ble CERC also directed RLDCs to submit the report of status of implementation of Automatic Demand Management Scheme (ADMS) by SLDCs of NER by 31.08.16.

Accordingly, constituent States of NER were requested to furnish monthly report of status of implementation of Automatic Demand Management Scheme (ADMS).

However, States of NER were facing problems in implementation of ADMS. Therefore, NERPC had arranged workshops on ADMS so that NER States can understand the implementation process. This issue was discussed in several OCC meetings and during 121st OCC meeting, the forum suggested as below:



- Identifying minimum two substations from each state to enabled ADMS functionalities on pilot basis.
- Surveying those substations which are identified for ADMS function to understand the actual status of those stations.
- Preparing the Bill of materials (BOM) and get the cost estimate.

The OCC forum requested NERPC to communicate to Hon'ble CERC regarding problems faced by NER states to implement ADMS and requested for extension of time and funding from PSDF. The same has been communicated to Hon'ble CERC.

In order to comply the Hon'ble CERC's Order, the OCC of NERPC agreed to implement the ADMS in atleast one sub-station of each state in NER on pilot basis (preferably in State Capitals) initially and accordingly the estimates were prepared and the cost is given as below:

Sr. No	State	Estimated Cost (Crore)	Scope of work
1	Arunachal Pradesh	4.5	Supply, installation and commissioning of RTU System in 1 no. of 132/33kV Substation & 2 no. of 33kV Substations including ADMS Software and hardware with Fibre Optic communication link & accessories between 33kV and 132kV S/Stns - (Chimpu).
2	Nagaland	5.0	Supply, installation and commissioning of RTU System in 1 no. of 132/33kV Substation & 2 no. of 33kV Substations including ADMS Software and hardware with Fibre Optic communication link & accessories between 33kV and 132kV S/Stns- (Nagarjan).
3	Mizoram	5.1	Supply, installation and commissioning of RTU System in 1 no. of 132/33kV Substation & 2 no. of 33kV Substations including ADMS Software and hardware with Fibre Optic communication link & accessories between 33kV and 132kV S/Stns - (Luangmual)
4	Manipur	4.5	Supply, installation and commissioning of RTU System in 1 no.of 132/33kV Substation & 2 no. of 33kV Substations including ADMS Software and hardware with Fibre Optic communication link & accessories between 33kV and 132kV S/Stns - (Kongba) .



5	Tripura	5.0	Supply, installation and commissioning of RTU System in 1 no. of 132/33kV Substation & 2 no. of 33kV Substations including ADMS Software and hardware with Fibre Optic communication link & accessories between 33kV and 132kV S/Stns – (S.M. Nagar).
6	Assam	4.3	Supply, installation and commissioning of RTU System in 1 no. of 132/33kV Substation including ADMS Software and hardware with Fibre Optic communication link & accessories between 33kV and 132kV S/Stns – (Kahilipara).
7	Meghalaya	1.9	Supply and Commissioning of ADMS Software with necessary hardware in SLDC – (NEHU).

Members may like to discuss and approve.

TCC Deliberation :

NERPC Deliberation :

ITEM NO. A.11 : DEDICATED VOICE COMMUNICATION - POWERGRID

During 113rd OCC meeting, NERLDC informed that under existing VOIP communication system (executed by ORANGGE Ltd) NERLDC requested to provide two nos. of voice links in all 132kV station and four no of voice communication channel at important station like BNC HVDC, all 400kV stations such as Bongaigaon, Balipara, Misa, Silchar (currently no voice communication), BYRNIHAR, AZARA, Palatana and all CGS (NTPC-BTPS, Ranga, Kopili, Khandong, Kathalguri, Doyang, RC Nagar) stations.

POWERGRID proposed that dedicated voice connectivity given to all POWERGRID stations by now (land line, mobile, one no. ULDC phone analog connected to VOIP Exchange on analog mode) wherever POWERTEL is available. Further Voice communication link providing is not covered by VOIP exchange project. However with FO Expansion project equipment in place, further linking will be possible and the Cost will be booked to ULDC up gradation.

Regarding additional cost for bandwidth proposed by POWERGRID and since matter involves financial approval; members requested to take up the matter in next TCC/NERPC meeting.

Members may like to discuss and approve.

TCC Deliberation :

NERPC Deliberation :



ITEM NO. A.12 : FIBER OPTIC COMMUNICATION SCHEME(ADDITIONAL) UNDER CENTRAL SECTOR FOR NORTH EASTERN REGION - POWERGRID

Fiber Optic connectivity from following sub-stations is required to be established for data and voice communication to NERLDC for efficient grid management.

SN	Name of Station	Voltage level	OPGW Required for	Length in Kms.
1	Hailakandi	132	Silcher-Halakandi Link	17
2	Roing	132	Roing _-Passighat Link	103
3	Teju	132	Teju-Roing Link	73
4	Tuirial HPS	132	Tuirial-Kolasib Link	70
5	Kameng NEEPCO	132	Kameng-Balipara Link	75
6	Byrnihat Me ECL (400kV)	132	Byrnihat -Bongaigaon Link	200
Total				538

POWERGRID has worked out the 538 Kms OPGW based Communication Scheme for these stations which are presently not connected through OPGW. The estimated cost of the scheme is ₹14 Crs. proposed for implementation on cost plus basis. Tariff for the investment made is to be shared by all constituents as per CERC notification. The scheme shall become part of existing Commercial Agreement signed for ULDC Project.

Members may like to discuss and approve.

TCC Deliberation :

NERPC Deliberation :

ITEM NO. A.13 : FIBER OPTIC COMMUNICATION REQUIREMENT FOR REDUNDANCY AND REPLACEMENT OF ULDC OPGW LINKS UNDER CENTRAL SECTOR AFTER USEFUL LIFE - POWERGRID

OPGW network (962 Kms) implemented under ULDC project by POWERGRID has completed more than 13 years after commissioning. This will achieve its useful life of 15 years in 2018. There is a need to take up replacement of the same so that the replacement is in place by the time 15 years period is complete and data communication is not hampered. Also, around 1158 Kms OPGW is also required to be established on various lines of Central Sector to provide redundancy in the



system. It is proposed to constitute a Committee comprising members from various constituents to study the requirement in detail and come out with their recommendations for implementation of the OPGW requirement.

Members may like to discuss and approve.

TCC Deliberation :

NERPC Deliberation :

ITEM NO. A.14 : PHASE -I, URTDSM PROJECT - POWERGRID

During deliberation of 21st UCC meeting POWERGRID proposed connectivity from POWERTEL as Stop Gap Arrangement for 2.5 Years to have connectivity of

PMU-to--PDC,

PDC-to-PDC and

PDC-to-Super PDC

The financial implication for the POWERTEL connectivity will be approximately 2 Crores per year which is to be booked against URTDSM Project Cost.

The constituents of NER agreed in-principle and recommended for approval of TCC & NERPC

TCC Deliberation :

NERPC Deliberation :

ITEM NO. A.15 : CONNECTIVITY FOR SLDC-NERLDC IN RESPECT OF ICCPS & VC-FROM POWERTEL - POWERGRID

During 3rd NETeST meeting POWERGRID proposed that for connectivity from ICCPs & VC (to optimize use of VC for SLDC-NERPC meetings) from POWERTEL as a stop gap arrangement for 2 years at a cost of 1.66 Crores per year (excluding Manipur).

Since there is no common Central sector head in SLDC project head (as executed by POWERGRID for SLDC project) matter will be looked into by POWERGRID during cost booking. The detailed cost break up is again given below:

S N	Location	Bandwidth	VLAN-1 ICCP	VLAN-2 ICCP	VLAN-3 ICCP	Total
1	Main-NERLDC	10Mbps	693621	693621	693621	2080863
2	B/U-NERLDC	10Mbps	693621	693621	693621	2080863

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3	Assam SLDC	10Mbps	693621	693621	693621	2080863
4	Tripura S5LDC	10Mbps	693621	693621	693621	2080863
5	Meghalaya SLDC	10Mbps	693621	693621	693621	2080863
6	Arunachal SLDC	10Mbps	693621	693621	693621	2080863
7	Mizoram SLDC	10Mbps	693621	693621	693621	2080863
8	Nagaland SLDC	10Mbps	693621	693621	693621	2080863
TOTAL ANNUAL CHARGES						16646904

All constituents agreed in principle and requested POWERGRID to provide cost justification from POWERTEL to the constituent so that they can take up the matter with their higher managements. POWERGRID communicated cost justification (over email Dtd.22.08.16) as the rates being as per standard rates of TRAI"

Members may like to discuss and approve.

TCC Deliberation :

NERPC Deliberation :

ITEM NO. A.16 : REDUNDANCY OF EQUIPMENT & FIBRE OPTICS FOR NER FO EXPANSION-ULDC FO NETWORK - POWERGRID

During the 4th NETeST meeting, POWERGRID proposed that Equipment Level Protections at critical nodes / links is necessary to remove data congestion & redundancy considering PMU, SCADA, VOICE network/projects. For achieving the scheme apart from 3pair of fibers as earlier meant for ULDC purpose, another 2pairs (1st pair-STM4 ring, 2nd pair -protection, 3rd pair-spare, 4th pair-STM16 ring) will be required from case to case basis as per FO network diagram and revised for ULDC purpose as given in **Annexure - A.16**.

Members may like to discuss and approve.

TCC Deliberation :

NERPC Deliberation :

ITEM NO. A.17 : TRADER MEMBERSHIP - NERPC

At present there are two power trading companies operating in NE Region i.e. M/s PTC and NVVN and are permanent members of NERPC as approved in 9th NERPC meeting. CEA vide letter dated 23.08.2016 have intimated that M/S JSW Trading Power Trading Co. Ltd will be the trader for NER for FY 2016-2017.



Members may like to discuss and approve.

TCC Deliberation :

NERPC Deliberation :

ITEM NO. A.18 : OVER DRAWAL & UNDER REQUISITION - NERPC

During 125th OCCM, NERLDC gave a presentation highlighted the following w.r.t. Grid operation:

- Frequent O/D beyond allowable 12% of schedule, by the constituent states inspite of repeated deviation violation message and zero crossing violation message.
- Huge amount of outstanding DSM payable by the constituent states.
- Both under-requisitioning and overdrawal at the same time.
- Non-requisitioning of URS power and simultaneous O/D from the grid.

During meeting, members suggested that commissioning of AMR should be expedited and hoped that it would solve the problem to a large extent. Issues like gas supply, RTU non-reporting etc. are to be resolved as early as possible

Members may like to discuss.

TCC Deliberation :

NERPC Deliberation :

ITEM NO. A.19 : SIGNING OF PPA FOR KAMENG HEP (KaHEP) - NEEPCO

Kameng HEP (600 MW) is scheduled to be commissioned during the middle part of 2017. Allocation of power from KaHEP has been made by the Ministry of Power, Govt. of India vide letter No. 11/1/2002-DO (NHPC) dated 14.07.2009. Apart from the Northern and Western region, allocation to NE states is detailed below for appraisal of the house.

Allocation to Northern & Western region	50%	300 MW
Free to Home State and unallocated share (12+15=27%):	27%	162 MW
Balance Power to be shared among NE States:	23%	138 MW
Total	100%	600 MW

Details of NE States:

Name of Beneficiary	% Allocation	MW Allocation (out of 138 MW)
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Assam	47.27	65.00
Manipur	9.86	14.00
Meghalaya	11.23	15.00
Nagaland	6.62	9.00
Tripura	11.03	15.00
Arunachal Pradesh	7.65	11.00
Mizoram	6.34	9.00
Total	100.00	138.00

Draft PPAs alongwith salient features of the project including estimated cost, first year tariff, levelized tariff etc. were sent to all the beneficiaries of the project of NE region, except Assam and Arunachal Pradesh, who have already signed the PPA, vide letter dated 11-03-2016. The urgency of the matter was also discussed in the 29th CC meeting held on 22/06/2016 at Kohima. Reminders on the matter were also sent to all the beneficiaries of NE region on 08-09-2016. However, no response has yet been received from any of the beneficiaries.

Therefore, all NER beneficiaries of the project are requested to kindly expedite the execution of the PPAs in order to freeze the commercial aspects within October 2016 to facilitate further subsequent action by NEEPCO.

Members may like to discuss.

TCC Deliberation :

NERPC Deliberation :

ITEM NO. A.20 : SIGNING OF POWER PURCHASE AGREEMENT (PPA) IN RESPECT OF TAWANG - I & II HE PROJECT (1400MW) IN AR. PRADESH - NHPC

Drafts PPA have been sent to Assam, Manipur, Tripura, & Mizoram on 24.09.2014 for early signing of PPA in respect of Tawang-I & II H.E. Projects, in Arunachal Pradesh.

As per the deliberation of 16th TCC & 16th NERPC Meeting the status was as below:

Assam:

Accepted draft PPA and it may be signed at a mutually agreeable date.

Manipur:

MD, MSPCL informed that he would intimate about the issue to MSPDCL.

Mizoram:

EnC, Mizoram informed that action has been initiated for signing of PPA with



concerned authority.

Tripura:

Yet to be decided as to whether they would enter into an agreement for purchase of power from Tawang HEP.

The status may be furnished by all concerned

TCC Deliberation :

NERPC Deliberation :

ITEM NO. A.21 : OUTSTANDING DUES OF POWERGRID AGAINST NER CONSTITUENTS - POWERGRID

The total outstanding dues of POWERGRID's NER beneficiaries as on 06.09.16 is as under-

SN	CONSTITUENTS	Outstanding against Non PoC bills	Outstanding against PoC bills	Outstanding more than 60 days	Total outstanding
1	Arunachal Pradesh	-0.45	3.75	0.00	3.30
2	AEGCL(Assam)	0.58	222.64	146.25	223.22
3	MSPDCL (Manipur)	-0.17	7.42	0.00	7.25
4	MeECL (Meghalaya)	-0.22	40.34	25.79	40.12
5	Mizoram	-0.05	12.01	4.86	11.96
6	Nagaland	-0.24	2.43	0.00	2.19
7	TSECL (Tripura)	0.02	3.90	0.00	3.92
TOTAL		-0.54	292.48	176.90	291.94

The total outstanding as on 06/09/2016 is Rs. 291.94 Crore. Out of total outstanding, it may be seen that outstanding against AEGCL & MeECL are on much higher side amounting to Rs 223.22 Crores & Rs. 40.12 Crores respectively. The outstanding amounts are almost 05 months receivable. AEGCL & MeECL are requested to liquidate the outstanding.

Constituents are requested to clear the outstanding dues immediately.

TCC Deliberation :

NERPC Deliberation :

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ITEM NO. A.22 : STATUS OF LETTER OF CREDIT - POWERGRID

Status of Letter of Credit as on 06.09.16 is as under:

SN	DIC Name	LC		Validity
		Required	Available	
1	Arunachal Pradesh	2.45	0.00	NA
2	AEGCL(Assam)	29.11	19.95	31.05.17
3	MSPDCL (Manipur)	2.37	2.13	15.09.16
4	MeECL (Meghalaya)	6.05	0.00	NA
5	Mizoram	2.70	2.70	04.05.17
6	Nagaland	2.84	2.84	21.03.17
7	TSECL (Tripura)	2.72	1.83	14.02.17

Constituents are requested to clear the outstanding dues immediately.

TCC Deliberation :

NERPC Deliberation :

ITEM NO. A.23 : DEVIATION CHARGES OUTSTANDING - NERLDC

Status of major Deviation charges outstanding as on 15.09.2016 are Assam (Rs. 42.70 Crores), Ar. Pradesh (Rs. 5.49 Crores), and Tripura (Rs. 3.07 Crores).

Assam, Ar. Pradesh and Mizoram have outstanding of more than 13 weeks (90 days).

CERC in order dated 02.09.2015 in Petition No: 142/MP/2012 with I.A. 7/2013 has stipulated denial of Open Access in case of default in payment of UI/deviation charges, transmission charges, reactive energy charges, congestion charges and RLDC fees and charges for more than 90 days.

Constituents are requested to clear the outstanding dues immediately.

TCC Deliberation :

NERPC Deliberation :

ITEM NO. A.24 : NON PAYMENT OF NERLDC FEES AND CHARGES BILLS - NERLDC

NERLDC is raising the bills on monthly basis on the 1st working day of every month in Terms of the CERC (fees and charges of RLDC and other related matters) Regulation, 2015.

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The status of latest outstanding is as below:

Assam : Rs 119.60 lacs and
Mizoram : Rs. 16.54 lacs

Assam and Mizoram are requested to clear the outstanding dues immediately.

TCC Deliberation :

NERPC Deliberation :

ITEM NO. A.25 : PAYMENT OF OUTSTANDING AGAINST AMC OF OLD SCADA/EMS, OVERHEAD CHARGES & FERV(FOREIGN EXCHANGE VARIATION RATE) - NERLDC

The status is as below:

Amount is in Rs.

SN	Items	Assam	Meghalaya	Tripura
1	Main SCADA AMC	0.00	0.00	1247.00
2	Overhead Charges	495191.00	0.00	0.00
3	FERV bill	117007.00	0.00	108173.00
	Total Amount	612198.00	0.00	109420

Note: OH Charges for Assam is due to less payment for Qtr nos 1-6 (Rs.359003) & Qtr no 15 (Rs.136188)

Constituents are requested to clear the outstanding dues immediately.

TCC Deliberation :

NERPC Deliberation :

ITEM NO. A.26 : OUTSTANDING DUES OF NHPC AGAINST MeECL FOR MORE THAN 60 DAYS - NHPC

During 29th CC Meeting, Meghalaya has assured that the outstanding dues will be paid within August, 2016. However, the same has not been paid instead of repeated reminders. The outstanding due of MeECL, Meghalaya is Rs. 30.57 Crs (Including surcharge of Rs. 8.97 Crs up to 31.08.2016).

Meghalaya may kindly clear the outstanding dues at the earliest.

TCC Deliberation :

NERPC Deliberation :

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ITEM NO. A.27 : OPENING / MAINTAINING OF LETTER OF CREDIT (LC) - NHPC

During 16th TCC and 16th NERPC Meeting Manipur agreed to look into the matter of opening LC amounting to ₹ 4.87 Crs in place of existing L.C. of ₹ 3.05 Crs in view of enhancement of share allocation including the unallocated quota of power from Loktak Power Station

Manipur may kindly enhance LC at the earliest.

TCC Deliberation :

NERPC Deliberation :

ITEM NO. A.28 : OUTSTANDING DUES OF NTPC AGAINST NER CONSTITUENTS - NTPC

Outstanding of more than 60 days as on 15.09.2016 is Rs 76.18 Crore. Tripura is not paying the energy bill for the energy supplied since April 2016.

Sl. No	Beneficiaries	Total Outstanding in Cr.	Outstanding more than 60 days
1	Assam, APDCL	187.09	37.61
2	MeECL, Meghalaya	44.09	23.75
3	TSECL, Tripura	22.72	14.82
Total		278.23	76.18

Constituents may kindly clear the outstanding dues at the earliest.

TCC Deliberation :

NERPC Deliberation :

ITEM NO. A.29 : OPENING / MAINTAINING OF LETTER OF CREDIT (LC) - NTPC

SN	Beneficiaries	LC Required As per PPA (Cr.)	Remarks
1	MeECL, Meghalaya	9.36	Not yet opened
2	Arunachal Pradesh	5.36	Not yet opened

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3	MSPDCL, Manipur	5.86	Not yet opened
4	TSECL, Tripura	5.95	Not agreeing to open.

Constituents may kindly enhance LC at the earliest.

TCC Deliberation :

NERPC Deliberation :

ITEM NO. A.30	: OUTSTANDING DUES OF NTPC AGAINST NER CONSTITUENTS - OTPC
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The current total outstanding dues of OTPC against the NER beneficiary states (as on 19-09-2016) are as under:

(Amount in Rs Crores)

Sl. No.	Beneficiary	Outstanding Dues (>60 Days)	Total Outstanding
1	Arunachal Pradesh	0	3.24
2	Assam	0	66.1
3	Manipur	0	11.65
4	Meghalaya	16.75	39.71
5	Mizoram	0	6.21
6	Nagaland	0	0
7	Tripura	86.68	145.35
	Total	103.43	272.26

The total outstanding dues as on 19-09-2016 are Rs 272.26 Crores out of which outstanding beyond 60 days is Rs 103.43 Crores. Constituents are requested to clear at least the outstanding dues over 60 days, at the earliest.

Constituents may kindly clear the outstanding dues at the earliest.

TCC Deliberation :

NERPC Deliberation :

ITEM NO. A.31	: STATUS OF PAYMENT SECURITY MECHANISM OF THE BENEFICIARIES REQUIRED AGAINST MONTHLY ENERGY BILLING AS PER POWER PURCHASE AGREEMENT AND CERC REGULATIONS- OTPC
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SN.	Beneficiary	Letter of Credit (LC) required as per PPA (Rs Crore)	LC amount status (Rs Crore)	Valid Upto	Remarks
1	Ar. Pradesh	11.62	11.62	31-Mar-2016	LC to be renewed with bank
2	Assam	40	40	27-Apr-2017	LC is in place
3	Manipur	16.519	3.7	15-Sept-2016	LC to be renewed with bank
4	Meghalaya	29.78	-	-	Meghalaya has never provided the LC even after continuous persuasion
5	Mizoram	7.5	5.81	7-May-2015	Yet to be renewed
6	Nagaland	14.26	14.26	20-Mar-2017	LC is in place
7	Tripura	46.53	18	19-Mar-2017	LC is in place

Beneficiaries are requested to enhance and renew the LC amount as per the PPA at the earliest.

TCC Deliberation :

NERPC Deliberation :

ITEM NO. A.32 : T-CONNECTION AT BHALUKPONG SUB-STATION - NERPC

The T-connection at Bhalukpong remains pending since long.

Arunachal may inform Action Plan.

TCC Deliberation :

NERPC Deliberation :



ITEM NO. A.33 : FREQUENT TRIPPING OF 33 KV SYSTEM OF DOP, ARUNACHAL PRADESH AT NIRJULI AND ZIRO SUB-STATIONS - NERPC

The frequent tripping of 33kV system of DoP, Ar. Pradesh is a matter of concern. The issue was discussed since 9th TCC meetings. The present status of tripping of 33kV Feeders at Nirjuli and Ziro Sub Station is as below:

(a) No. of Trippings of 33kV Feeders at Ziro Sub-station

SN	Feeder	Jan'10 - Dec'15		Jan'16 - Aug'16	
		Total	per Month	Total	per Month
1	Kurung- Kamey	1288	17.88	184	18
2	Old Ziro Feeder	747	10.38	32	6
3	Kimin Feeder	2257	31.35	183	27
Grand Total =		4292	59.61	399	49.88

(b) No. of Trippings of 33kV Feeders at Nirjuli Sub-station

SN	Feeder	Jan'10 - Jul'15		Jan'16 - Aug'16	
		Total	per Month	Total	per Month
1	AP - 1	360	5	16	3
2	AP - 2	748	10.38	6	1
3	AP - 4	325	4.51	45	9
Grand Total =		1433	19.89	138	17.24

Necessary action is required to be taken on priority to reduce the no. of faults in 33kV downstream feeders to avoid frequent failure of transformers at Nirjuli and Ziro Sub Stations.

Corrective measures taken by Arunachal to reduce Tripping / failure of Transformers may please be intimated.

TCC Deliberation :

NERPC Deliberation :

ITEM NO. A.34 : COMPLETION OF ATS OF PALLATANA GAS POWER PLANT (GPP) IN AP - POWERGRID

ATS of Palatana GPP in Arunachal Pradesh as scheduled by PGCIL for commissioning is as follows:



SN	Transmission System	Schedule Commissioning
1	132KV D/C Pasighat-Roing line including associated line bays at Pasighat and 132/33KV Roing Sub Station	December, 2016
2	132KV D/C Roing-Tezu line including 132/33KV Tezu Sub Station	December, 2016
3	132KV D/C Tezu-Namsai line including 132/33KV Namsai Sub Station	March, 2016

Urgently Arunachal Pradesh is required to complete 132KV Along-Pasighat line as well 33KV downstream system at Roing, Tezu & Namsai to match with the above schedule. The issue was deliberated in various OCC meetings. Ar. Pradesh may update the progress and tentative completion of 132kV Along – Pasighat line.

TCC Deliberation :

NERPC Deliberation :

CATEGORY – B: ITEMS FOR APPROVAL

ITEM NO. B.1	:	REAL TIME ENERGY ASSESMENT SYSTEM FOR EFFECTIVE GRID MANAGEMENT SOFTWARE BY C-DAC - NERPC
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To forecast the load & to plan the scheduling properly, CDAC has submitted a proposal for Real-Time Energy Assessment System for effective Grid Management. The Proposed system has three major 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 DSM 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.



CDAC has 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.). PI refer **Annexure- B.1**

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.

Put up for approval

TCC Deliberation :

NERPC Deliberation :

ITEM NO. B.2 :	VLAN FOR RTU CONNECTIVITY OF CS STATIONS - POWERGRID
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During deliberation of 3rd NETeST Meeting POWERGRID proposed a 4mbps VLAN as stop gap arrangement for 2.5 Years to bring 2nd Channel in service for reporting of station data to NERLDC for Salakati, Bongaigaon, Balipara, Misa, Nirjuli, Mariani, Dimapur, Imphal, Aizwal, Kumarghat, Silchar, Badarpur, Khliehriat, Jiribam, BNC and Shillong (NERLDC/NTAMC] with additional cost of Rs. apx 54.65 Lac per year under ULDC scheme. NETeST members agreed in principle and requested to put up the same in TCC & NERPC for approval.

Put up for approval

TCC Deliberation :

NERPC Deliberation :

ITEM NO. B.3 :	ENHANCEMENT OF BOARD FUND CONTRIBUTION - NERPC
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The present Annual Board Fund contributed towards NERPC by constituents are given below:

State Utilities: Rs. 50,000/annum each

Central Utilities: Rs. 2, 00,000/annum each

The above rate of contribution was approved by NERPC in the year 2009-10. But due to cost escalation, it would be very difficult for NERPC Secretariat to meet the expenditures incurred towards various Sub-Committee meetings of NERPC.

In view of the above it is proposed to enhance the contribution to Board Fund of NERPC as given below from FY 2016-2017 onwards:





State Utilities: Rs. 1, 00,000/annum each
 Central Utilities: Rs. 4, 00,000/annum each

Put up for approval

TCC Deliberation :
NERPC Deliberation :

ITEM NO. B.4 : SHIFTING OF VULNERABLE LOCATION 118 (DB+0) OF \pm 800KV HVDC BISWANATH CHARIALI-AGRA TRANSMISSION LINE & LOC.495 (DC+0) OF 400KV D/C BALIPARA-BONGAIGAON(QUAD) TRANSMISSION LINE ON PILE ON ACCOUNT OF UNPREDICTED CHANGE IN RIVER COURSE - POWERGRID

The following tower locations of the transmission lines mentioned alongside have become vulnerable in view of unprecedented flood & resultant change in river course.

SN	Transmission line	Tower Location	River	Photographs
1	400KV D/C Balipara - Bongaigaon (Quad)	495 (DC+0) (Hanapara, Nalbari)	Pagladia	
2	\pm 800KV HVDC BNC - Agra	118 (DB+0) (Khanamukh, Sonitpur)	Maansiri	

It may be mentioned that during construction of the above lines, these rivers were at a safe distance from the locations. However, gradual change in course of the above rivers near the locations have been noticed during the last two Monsoons & particularly during the recent flood in the northern Bank of the River Brahmaputra, these rivers have dangerously eroded the bank on which the tower locations are situated- leaving them in highly endangered condition.



As an immediate action, anti-erosion / bank protection measure have been taken up by POWERGRID for protection of these locations during the current season. However, as long term measure & considering criticality of the above lines for the entire Grid, requirement of shifting these locations on Pile is unavoidably felt.

POWERGRID therefore proposes to proceed with immediate action for shifting the above locations on Pile so that the same can be completed before onset of the next Monsoon (2017). Booking of the expenditure (estimated at 5.5 Crore) is proposed under PoC Mechanism.

The issue was discussed during 125th OCCM and the members agreed to the proposal of POWERGRID.

Put up for approval

TCC Deliberation :

NERPC Deliberation :

ITEM NO. B.5	: SHIFTING OF ANCHOR TOWER OF 400KV D/C BYRNIHAT-BONGAIGAON (PORTION) OF NETC LINE AT LOCATION NO. 1026 FROM OPEN CAST FOUNDATION TO PILE FOUNDATION AT BRAHMAPUTRA RIVER CROSSING IN RIGHT BANK NEAR JOGIGHOPA, GOALPARA, ASSAM - NETC.
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400 kV D/C transmission system from Palatana to Silchar and from Silchar to Bongaigaon was envisaged for evacuation of power from OTPC, Palatana. In the state of Assam the line is crossing Brahmaputra River near at Jogighopa, Goalpara, Assam. The pile foundation location No. 41/O (final location No. 1025) was 32 m away from the bank edge and anchor tower location no 40B/O(final location no 1026) was 137 mtrs away from river bank edge during 2010.

In this area there is continuous erosion of bank and the distance between bank and tower (1026) is reducing continuously. Flow of water enters towards Loc.1026 and now river bank is around 40 mtrs from the location which was 137 mtrs during 2010. During this year this location was under river water.

Moreover, for unloading of Over Dimensional Cargos a channel has been prepared in between Loc. 1025 and Loc.1026 and as on date water has reached about 10 mtrs from Loc.1026 which was around 14 mtrs during the month of May 2016. This ramp is very close to two legs of tower and erosion of land mass is going on continuously.



Any further shifting of bank line or formation of any whirl pool in this area may cause problem to the stability of tower No. 1026. Inland Waterways Authority of India has also suggested shifting the tower to a safer location.

Under the above circumstances, it is proposed to shift tower at Loc.1026 on a suitable pile foundation for problem free performance and safety of the line. This location has suddenly become very critical and NETC want to complete the shifting work by April 2017. Booking of the expenditure (estimated at 17.3 Crore including cost of pile foundation, de-erection and erection.) is proposed under PoC Mechanism.

The issue was discussed during 125th OCCM and the members agreed to the proposal of NETC.

Put up for approval

TCC Deliberation :

NERPC Deliberation :

ITEM NO. B.6 : CERTIFICATION OF MEGHALAYA STATE TRANSMISSION LINES AS ISTS - NERPC
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Based on initial studies by MeECL the following lines have been found to cater loads of other states in addition to Meghalaya, so they may be declared as ISTS line:

1. 220kV D/C Misa - Killing
2. 132 kV S/C Agia - Nagalbibra
3. LILO of 400kV D/C Pallatana - Bongaigoan at 400/220kV Killing S/S

The matter was discussed in one of the sub-group meetings and it was suggested that NLDC/NERLDC may conduct studies by WebNet software and inform the members of load flow patterns.



During 125th OCCM, NERLDC presented the details of the study results as follows:

- 400kV Silchar - Byrnihat => 12.9971 %
- 400kV Bongaigaon - Byrnihat => 10.1268%
- 220 kV Misa - Byrnihat I => 26.1397%
- 220 kV Misa - Byrnihat II => 26.1397%

The OCC members thanked NERLDC/NLDC for conducting the study and Meghalaya may approach SERC/CERC after TCC/RPC approval.

Put up for approval

TCC Deliberation :

NERPC Deliberation :

CATEGORY – C: ITEMS FOR INFORMATION

ITEM NO. C.1 : COMMISSIONING SCHEDULE OF ONGOING PROJECTS IN NER - NERPC

The Sub-committee also reviewed the status of commissioning of various ongoing projects in NER during OCC Meetings. The status as on last 125th OCC Meeting is as below:

GENERATION

SN	AGENCY	PROJECT	COMMISSIONING SCHEDULE
1	NHPC	Lower Subansiri	12th Plan
2	NEEPCO	Kameng HEP	Unit I & II: March 2017
3	NEEPCO	Tuirial HEP	12th Plan
4	NEEPCO	Pare HEP	30.06.2017
5	NEEPCO	Trial operation and CoD 36MW STG of Monarchak GBPP	31.12.2016 (subject to gas availability).
6	NTPC	Bongaigaon TPS	Unit II: 31.03.2017
7	NEEPCO	Tawang HEP	13 th Plan

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TRANSMISSION

SN	AGENCY	PROJECT	COMMISSIONING SCHEDULE
1	NTPC	400/220kV, 2x315 MVA ICT at Bongaigaon	31.10.2016
2	POWERGRID	400 kV D/C Silchar - Melriat line of PGCIL	31.03.2017
3	AEGCL	220kV Rangia - Salakati Line	31.12.2016
4	TSECL	132kV Monarchak - Surjamaninagar D/C Line	31.12.2016
5	OTPC	400/132 kV, 2nd 125 MVA ICT at Pallatana	08.10.2016
6	DoP, AP	132kV Pasighat - Aalong Line	31.12.2016
7	DoP, Nagaland	132kV Doyang- Wokha Line	31.12.2016
8	POWERGRID	220 kV, 20 MVAR Bus Reactor & bay at AGBPP	30.09.2016
9	OTPC	132kV Surjamaninagar Bay at Pallatana	31.12.2016
10	POWERGRID	400kV D/C Balipara - Kameng Line	31.12.2016
11	NEEPCO	RHEP 80 MVAR Bus Reactor	Referred to next SCM of CEA.
12	POWERGRID	400/220 kV 315 MVA ICT-II at Bongaigaon	31.08.2017
13	POWERGRID	220/132 kV, 2x160 MVA ICTs at Balipara	31.08.2017
14	POWERGRID	220/132 kV, 1x160 MVA ICT with GIS Bay at Kopili	31.08.2017
15	POWERGRID	400/132 kV, 1x315 MVA ICT-III at Silchar	31.12.2017



16	POWERGRID	Replacement of 2x315 MVA ICTs with 2x500 MVA ICTs at Misa (PG)	31.12.2017
17	Under TBCB	400 kV Silchar – Misa D/C	-
18	POWERGRID	1 x 125 MVAR Bus Reactor at 400 kV Bongaigoan	31.12.2017
19	POWERGRID	1 x 125 MVAR Bus Reactor at 400 kV Balipara	31.12.2017
20	POWERGRID	Bays at Hailakandi along with 132kV Silchar- Hailakandi D/C TL	28.02.2017
21	POWERGRID	LILO of 132kV Ranganadi – Nirjuli at Pare of NEEPCO by PGCIL	31.12.2016
22	DoP, AP	LILO of 132kV Ranganadi – Itanagar (Chimpu) at Pare of Ar. Pradesh	Bay 1: 31.12.2016 Bay 2: 31.03.2017

This is for Kind information

ITEM NO. C.2	:	ISSUES RELATED TO MULTIPLE TRIPPING AND PROTECTION SYSTEM; CO-ORDINATION IN STATE SYSTEMS OF NER - NERLDC
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The no. of Grid Disturbance during January 2016 to August 2016 is as below:

SN	Category	No. of Disturbance	Remarks
1	GD-I	219	
2	GD-II	4	
3	GD-III	0	
4	GD-IV	0	
5	GD-V	1	

This is for Kind information



ITEM NO. C.3	:	GRID DISTURBANCE OF CATEGORY-V ON 16TH APRIL'16 AND CATEGORY-IV ON 09TH JULY'16
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There were 2 major grid disturbances in NER Grid in 2016.

The disturbance of Category-V on 16th April'16 was primarily caused by fault due to lightning strike on 400 kV Bongaigaon – BgTPP (NTPC) I line, which could not be cleared by 400 kV Bongaigaon (PG) end of the line, resulting in tripping of several 400 kV lines at Bongaigaon (PG) from remote ends at 400 kV Binaguri, since as per R-X diagram the fault was lying in the 4th quadrant outside the reach of Distance relay.

The empowered committee for analysis of this disturbance noted that there was no differential protection installed on 400 kV Bongaigaon – BgTPP lines although they were short lines of around 3 kms each. Also, the time setting of Zone-II relays at New-Siliguri end of 400 kV Bongaigaon – NewSiliguri Q/C lines were not as per recommendations of V.Ramakrishna Task Force report. Although there are 400 MW of UFR installed in NER Grid, the UFR operation was not sufficient as observed from PMU plots, even though frequency was below 49.2 Hz for several seconds.

The Disturbance of Category-IV on 09th July'16 was primarily due to multi-phase fault on account of simultaneous lightning strike at tower locations 466 & 467 on 400 kV Silchar – Azara and 400 kV Silchar – Byrnihat lines, and delay in backing down of generation from Palatana CCGT as per SPS-3.

The empowered committee suggested the following:

- Relay settings of all elements in NER Grid to be made as per recommendations of V. Ramakrishna Task Force report.
- All substations with List of long lines followed by short lines to be identified and relay settings implementation accordingly.
- Line differential protection to be installed in all short lines.
- UFR reports to be submitted by all constituents in case of any event, and periodic inspection of installed UFRs to be carried out for checking healthiness
- Constituents to ensure healthiness of communication equipment to ensure that real-time voice or data communication is available to NERLDC
- All requisite details like UFR operation reports, Relay indications, DR outputs, EL outputs, Generator DAS outputs, etc. to be furnished by constituents to enable proper analysis

Members may like to discuss.

TCC Deliberation :

NERPC Deliberation :



ITEM NO. C.4	:	PERFORMANCE OF PMUS IN NER INSTALLED UNDER "SYNCHROPHASOR PILOT PROJECT OF NER"- NERLDC
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As approved in the 11th NERPC meeting held at Kolkota, the Pilot project on Phasor Measurement Unit (PMU) in NER for installation of 6 Nos of PMUs was implemented with PMUs installed at Sarusajai (Assam), NEHU (Meghalaya), Agartala (Tripura) and in 3 substations of POWERGRID namely Imphal, Balipara and Bongaigaon. The PMUs are in service for almost three years and the data available are valuable in all aspect of system operation such as analysis of oscillation, protection malfunction, disturbance analysis etc.

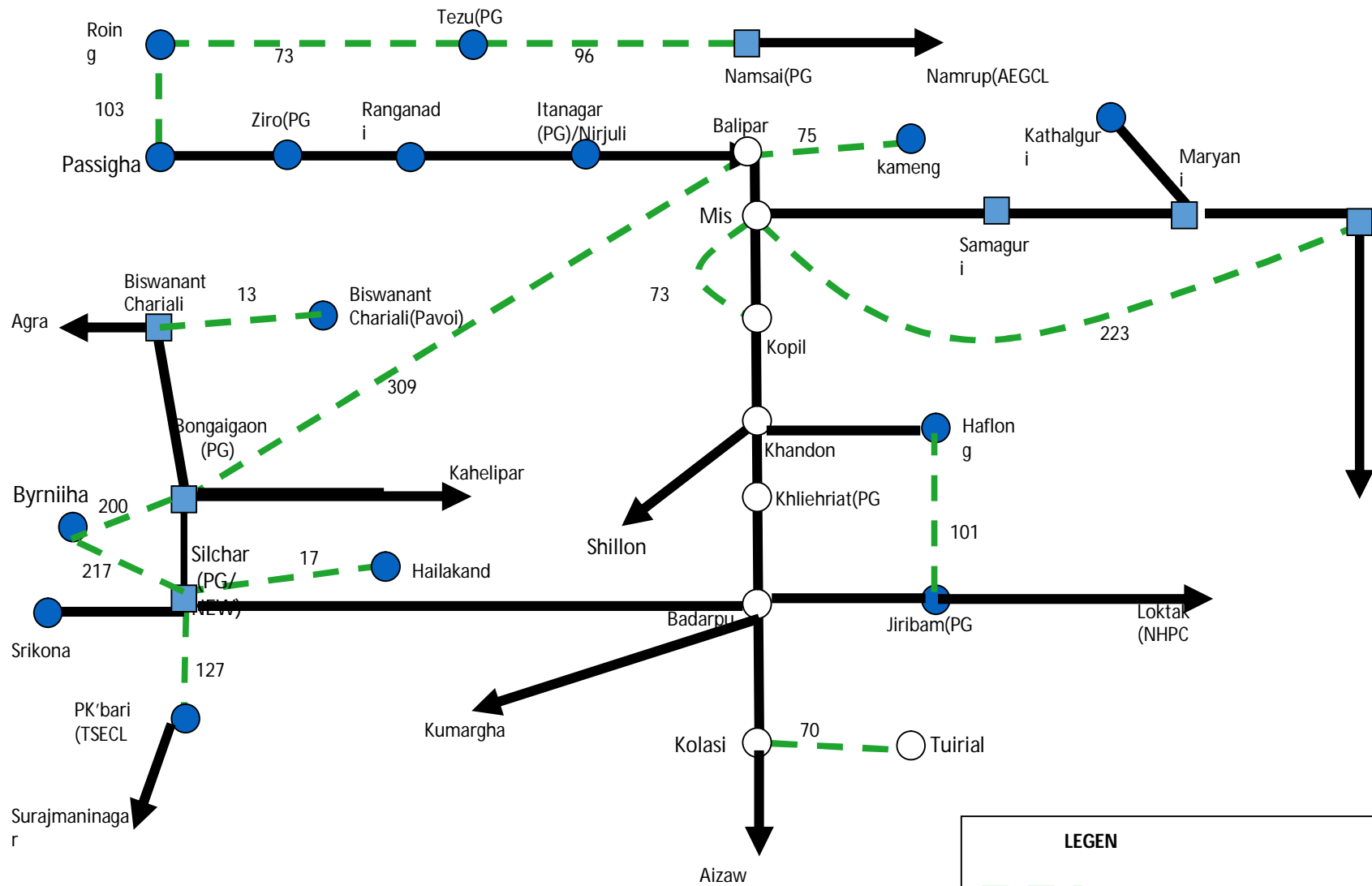
This is for Kind information

ANY OTHER ITEMS:

Additional issues, if any, may please be discussed.

DATE & VENUE OF THE NEXT MEETING

The next meeting of 18th TCC & 18th NERPC is proposed to be held in January/February, 2017. The exact date, venue & host will be intimated later.



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Proposed Network in Kms = 1696

PART III – FINANCIAL DETAILS
Table – 1: Yearly break-up (Expenditure in Rs. Lakhs)

Head	1 st year		2 nd year		Total Rs. In lakhs
	C-DAC-KP Bangalore	NERPC	C-DAC-KP Bangalore	NERPC	
Capital	0.00	25.00	0.00	17.00	42.00
Consumable Stores	2.00	0.00	3.00	0.00	5.00
Manpower	63.81	0.00	73.56	0.00	137.37
Travel	14.00	1.00	14.00	1.00	30.00
Contingency	5.00	0.00	10.00	0.00	15.00
training	8.00	0.00	12.00	0.00	20.00
Grand Total	92.81	26.00	112.56	18.00	249.37

Table III: Capital Equipments

Sl no	Details	Nos.
1	Data concentrator with GSM/GPRS modem includes SBC, GSM/GPRS Modem, Battery, Serial cable/micro USB cable, Box enclosure	120 *
2	Computer Systems (Workstation/Server) Intel® Xeon® with 1 processors having 4 cores and above. 1 TB SATA (500GB x2), 96GB DDR3 RAM OR above Internal DVD player (writer) Dual Power supply, RAID Storage controller, 1Gb Ethernet Adapter 1xRJ45 Ports and with other standard features. 17 “ LED monitor, standard keyboard, mouse, Linux OS. OR Equivalent configuration.	7 (one each at SLDC) 2 at NERPC
3	Protocol stack, ARTMG Protocol Converter, COPS library	1 Lot with 8 user license

* It is assumed that there are only 120 meters in the field. If there is any upward change then there will be cost implication towards the same.