

North Eastern Regional Power Committee

**MINUTES OF THE 124th OPERATION COORDINATION**

**SUB-COMMITTEE MEETING OF NERPC**

**Date** : 08/08/2016 (Tuesday)  
**Time** : 10:00 hrs  
**Venue** : "Hotel Pala Resort", Cherrapunjee.

The List of Participants in the 124<sup>th</sup> OCC Meeting is attached at **Annexure - I**

Shri P.K. Mishra, Member Secretary, NERPC welcomed all the participants to the 124<sup>th</sup> OCC meeting. He noted the presence of participants from all the utilities except NHPC. The absence of NHPC representative for 4<sup>th</sup> successive meeting was viewed very seriously by him and decided to communicate to highest management of NHPC for resolution.

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

**A. CONFIRMATION OF MINUTES**

**CONFIRMATION OF MINUTES OF 123<sup>rd</sup> MEETING OF OPERATION SUB-COMMITTEE OF NERPC.**

The minutes of 123<sup>rd</sup> meeting of Operation Sub-committee held on 12 July, 2016 at Guwahati were circulated vide letter No. NERPC/SE (O)/OCC/2016/4556-4591 dated 26th July, 2016.

NERLDC requested Operation sub-committee to amend deliberation of the sub-committee of the 123<sup>rd</sup> OCC in **Item Nos. D.22 & D.23** and to incorporate as below:

**Item No. D.22**

**Recorded:**

Manager, NERLDC informed that states have to give 15 min block-wise data by 23:00 Hrs for next day. At present Mizoram & Meghalaya are furnishing 15 min forecasting data. He also intimated that the new SCADA has a package for load forecasting which may be explored.

**Amendment to be recorded:**

Manager, NERLDC informed that states have to give 15 min blockwise data by 11:00 Hrs for next day. At present Mizoram & Meghalaya are furnishing 15 min forecasting data. He also intimated that the new SCADA has a package for load forecasting which may be explored.

**Item No. D.23**

NERLDC informed that in some cases due to non-availability of data, periodicity and latency of SCADA data, FRC computation could not be done accurately. NERLDC requested generating stations to install DAS as per Clause 4.6.3 of IEGC to enable computation of FRC.

*The Sub-committee confirmed the minutes of 123<sup>rd</sup> OCCM of NERPC with amendments as above as no comments/observations were received from the other constituents.*

**ITEMS FOR DISCUSSION**

**B.1. OPERATIONAL PERFORMANCE AND GRID DISCIPLINE DURING JUNE, 2016**

As per the data made available by NERLDC, the grid performance parameters for July, 2016 are given below

States	Energy Met (MU)		w.r.t. June,16 % inc (+) /dec (-)	Energy Reqr. (MU)		w.r.t. June,16 % inc (+) /dec (-)	% inc (+) /dec (-) of energy reqr vs met. In July, 16
	July-16	June-16		July-16	June-16		
Ar. Pradesh	55.79	54.91	1.60	56.95	56.51	0.78	-2.08
Assam	778.51	822.74	-5.38	814.66	853.96	-4.60	-4.64
Manipur	57.93	57.02	1.60	62.99	58.53	7.62	-8.73
Meghalaya	148.91	141.78	5.03	148.91	141.78	5.03	0.00
Mizoram	40.10	37.75	6.23	41.30	38.58	7.05	-2.99
Nagaland	64.08	58.23	10.05	65.36	59.36	10.11	-2.00
Tripura	114.81 (excluding Bangladesh)	171.46 (including Bangladesh)	-33.04	115.95 (excluding Bangladesh)	173.16 (including Bangladesh)	-33.04	-0.99
<b>Region</b>	<b>1260.13</b>	<b>1172.43</b>	<b>7.48</b>	<b>1306.12</b>	<b>1208.73</b>	<b>8.06</b>	<b>-3.65</b>

States	Demand Met (MW)		w.r.t. June,16 % inc (+) /dec (-)	Demand in (MW)		w.r.t. June,16 % inc (+) /dec (-)	% inc (+) /dec (-) of Demand vs met. In July, 16
	July-16	June-16		July-16	June-16		
Ar. Pradesh	135	130	3.85	136	131	3.82	-0.74
Assam	1547	1458	6.10	1591	1511	5.29	-2.84
Manipur	141	151	-6.62	141	152	-7.24	0.00
Meghalaya	293	312	-6.09	292	311	-6.11	0.34
Mizoram	79	80	-1.25	80	81	-1.23	-1.27
Nagaland	119	119	0.00	120	119	0.84	-0.84
Tripura	258.00 (excluding Bangladesh)	273 (including Bangladesh)	-5.49	259.00 (excluding Bangladesh)	274.71 (including Bangladesh)	-5.72	-0.39
<b>Region</b>	<b>2391</b>	<b>2475</b>	<b>-3.39</b>	<b>2474</b>	<b>2479</b>	<b>-0.20</b>	<b>-3.47</b>

**REGIONAL GENERATION & INTER-REGIONAL EXCHANGE IN MU**

Month---->	July-16	June-16
Total Generation in NER (Gross)	1671.34	1482.58
Total Central Sector Generation (Gross)	1292.75	1147.12
Total State Sector Generation (Gross)	378.58	335.46
<b>Inter-Regional Energy Exchange</b>		
(a) NER-ER	182.10	83.71
(b) ER-NER	79.53	124.81
(c)NER-NR	336.32	132.10
(d)NR-NER	0.00	1.82
© Net Import	-438.89	-89.18

**AVERAGE FREQUENCY (Hz)**

Month---->	July-16	June-16
	% of Time	% of Time
Below 49.9 Hz	3.87	7.63
Between 49.9 to 50.05 Hz	71.78	74.09
Above 50.05 Hz	24.30	18.28
Average	50.01	49.99
Maximum	50.35	50.37
Minimum	49.69	49.65

**ITEMS FOR DISCUSSION**

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

During 124<sup>th</sup> 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 124 <sup>th</sup> OCC Meeting	Status as given in 123 <sup>rd</sup> OCC Meeting
<b>a. New Projects</b>			
1	Trial operation and CoD of Unit -II of Bongaigoan TPS of NTPC	Synchronization by November, 2016 & CoD by 31.03.2017	Completion of construction activities expected by 31.08.2016. Synchronization by end of November. Trial run and CoD expected by 31.03.2017
2	400/220kV, 2x315 MVA ICT of NTPC at Bongaigaon	October, 2016	Commissioning within 31.08.2016. May be done early if NERTS can provide similar bushing.
3	Trial operation and CoD 36MW STG of Monarchak GBPP of NEEPCO	November, 2016 (subject to gas availability)	November, 2016 (subject to gas availability)
4	Kameng HEP of NEEPCO two units (2 x 150 MW) Next two units (2x150 MW)	First two units March 2017.	First two units March 2017.
5	Pare HEP of NEEPCO (2 x 55 MW)	June, 2017	June, 2017
6	400 kV D/C Silchar - Melriat line of PGCIL	March, 2017.	Tender Evaluation process is going on.
7	220kV Rangia - Salakati of AEGCL	December, 2016	December, 2016
8	132kV Monarchak - Surjamaninagar D/C of TSECL	December, 2016	October, 2016
9	400/132 kV, 2nd 125 MVA ICT at Pallatana	September 2016.	ICT has reached site, but civil structures not yet complete. Expected commissioning by end of August, 2016.
10	132kV Pasighat - Aalong of Ar. Pradesh	December, 2016.	December, 2016
11	132kV Doyang- Wokha	October, 2016.	Nagaland- Line

			construction with bay at Wokha end completed. NEEPCO- Breaker installation done at DHEP bay. Testing to be done by 10.08.2016. DoP, Nagaland also requested POWERGRID to do inspection / testing works.
12	220 kV, 20 MVAR Bus Reactor & bay at AGBPP	31.08.2016	To be commissioned within 15.08.2016
13	132kV Surjamaninagar Bay at OTPC	December, 2016. LOA completed.	Tendering stage.
14	400kV D/C Balipara – Kameng of Ar. Pradesh	December 2016.	Delayed to December 2016 to match with Kameng HEP commissioning.
15*	RHEP 80 MVAR Bus Reactor	Referred to next SCM of CEA.	Referred to next SCM of CEA.
16	SLDCs (Ar. Pradesh, Manipur, Mizoram, Nagaland)	Manipur - Aug'16, Mizoram-Sep'16, Nagaland-handover of building by Dec'16, AP- Work started.	MAN- Aug'16, MIZ-Sep'16, NAG-handover of building by Dec'16, AP- Work started.
17	400/220 kV 315 MVA ICT-II at Bongaigaon	Work was awarded already to ALSTOM	ALSTOM awarded work. Aug'17
18	220/132 kV, 2x160 MVA ICTs at Balipara	By 31 <sup>st</sup> August 2017.	By 31 <sup>st</sup> August 2017.
19	220/132 kV, 1x160 MVA ICT with GIS Bay at Kopili	By 31 <sup>st</sup> August 2017.	By 31 <sup>st</sup> August 2017.
20	400/132 kV, 1x315 MVA ICT-III at Silchar	December, 2017.	-
21	Replacement of 2x315 MVA ICTs with 2x500 MVA ICTs at Misa (PG)	December, 2017.	-
22	400 kV Silchar – Misa D/C	Under TBCB	-
23	1x125 MVAR Bus Reactor at 400 kV at Balipara	December, 2017.	-
24	1x125 MVAR Bus Reactor	December, 2017.	-

	at 400 kV Bongaigaon		
25	Bays at Hailakandi	Completion to match with balance portion of 132kV D/C Silchar-Hailakandi line.	-
<b>b. Elements under breakdown/ upgradation</b>			
26	63MVAR Reactor at Byrnihat of Me.PTCL	Forum suggested to MePTCL that it should be sent directly to OEM for repair.	Forum suggested to MePTCL that winding is to be bought and reactor be repaired at site by selected vendor.
27	Up-gradation of 132 kV Lumshnong-Panchgram line	Reports given to be analyzed by MeECL.	Line survey work deferred due to bad weather.
28	Switchable line Reactors at 400kV Balipara & Bongaigaon	Balipara - Sept'16 Bongaigaon - Dec'16.	Balipara - Sept'16 Bongaigaon - Dec'16.
29	PLCC Panels at Loktak end of Loktak – Ningthoukhong 132 kV feeder and Loktak - Rengpang 132 kV feeder	August 2016	August 2016
30	LILO of 132kV Ranganadi – Nirjuli at Pare of NEEPCO by PGCIL	September 2016 subject to shifting of LT Line as per D.32.	August 2016
31	LILO of 132kV Ranganadi – Itanagar (Chimpu) at Pare of Ar. Pradesh	Bay at Pare under construction March 2017	March 2017

*\*Manager, NERLDC informed that item S.N. 15 has to be reviewed as per current scenario before putting to SCM. Members requested NERLDC to carry out study at the earliest.*

***The Sub-committee noted as above.***

**C.2 CT Ratio of Transmission Lines & Enhancement of Loadability of lines in NER:**

The latest status as informed in 124<sup>th</sup> OCC meeting is as follows:

Sl.No.	Name of the line	CT Ratio at either end (current)		CT Ratio at either end (required)		No. Of CTs required		Current Status
		Stn A	Stn B	Stn A	Stn B	Stn A	Stn B	
1	132KV D/C RC Nagar-Agartala-I**	600/1	400/1	800/1	800/1	3 by PGCIL	4 by PGCIL	Mar'2017
2	132KV D/C RC Nagar-Agartala-II**	600/1	400/1	800/1	800/1	3 by PGCIL	4 by PGCIL	Mar'2017
3	132 KV S/C Jiribam-Aizwal	400/1	400/1	600/1	600/1	3 by PGCIL	4 by PGCIL	Mar'2017
4	132 KV S/C Jiribam-Haflong	400/1	400/1	600/1	600/1	3 by PGCIL	4 by PGCIL	Mar'2017
5	132KV S/C Khandong - Umrangso-Haflong	300/1	400/1	600/1	600/1	3 at Khandong by NEEPCO, 3 at Umrangso by AEGCL	3 at Umrangso by AEGCL, 3 at Haflong by PGCIL	PGCIL - Mar'2017 AEGCL- Mar'2017 NEEPCO- Mar'2017
6	132 KV S/C Loktak - Imphal-II	400/1	600/1	600/1	600/1	3 by NHPC	0	NHPC- to be informed
7	132 KV D/C Doyang - Dimapur	300/1	600/1	300/1	600/1	3 by PGCIL & 6 by NEEPCO	0	PGCIL - March, 2017 NEEPCO- to be informed

Further POWERGRID has proposed that all lines where CT ratio up-gradation is to be done, double jumpering is to be ensured.

The forum agreed to the proposal of double-jumpering and recommended double jumpering of bay and line for the above elements before the CT upgradation work is completed, so that full capacity of CTs can be utilized for loading the lines. Forum also agreed to include 132kV Doyang-Dimapur I & II for CT Ratio upgradation.

***The Sub-Committee noted as above.***

### **C.3 Finalization of Operating Procedures of State Grid of NER:**

As per clause no 5.1.g of IEGC, detailed operating procedures for each state grid shall be developed and maintained by the respective SLDC.

#### **Deliberation of the sub-Committee:**

Status as intimated during 124<sup>th</sup> OCC forum of NERPC is as follow:-

SI No	Description	Status of approval from OCC forum of NERPC
1	Operating Procedure of Ar. Pradesh 2015	<b>Draft Submitted</b>
2	Operating Procedure of Assam 2015	Submitted
3	Operating Procedure of Manipur 2015	Submitted
4	Operating Procedure of Meghalaya 2015	Submitted
5	Operating Procedure of Mizoram 2015	Submitted
6	Operating Procedure of Nagaland 2015	Submitted
7	Operating Procedure of Tripura 2015	<b>By 16.08.2016 (TSECL to send draft to NERPC)</b>

*The Sub-committee noted as above.*

**Action: TSECL.**

#### **C.4 Monthly MU requirement & availability of each state of NER as per format:**

The following figures of state wise MU requirement and availability were taken from draft LGBR 2016-17 of NERPC. State wise MU requirement and availability for these months are to be checked. Constituents may kindly verify if the above data are correct.

##### **Requirement:**

Name of State	Apr16	May16	Jun16	Jul16	Aug16	Sep16
Ar. Pradesh	67	71	68	73	73	73
Assam	775	791	816	872	872	847
Manipur	82	77	76	80	80	80
Meghalaya	170	175	165	175	175	170
Mizoram	42	42	42	45	45	45
Nagaland	65	68	72	77	77	72
Tripura	112	122	122	122	128	122
<b>NER</b>	<b>1313</b>	<b>1346</b>	<b>1361</b>	<b>1424</b>	<b>1450</b>	<b>1409</b>

Name of State	Oct16	Nov16	Dec16	Jan17	Feb17	Mar17
Ar. Pradesh	73	68	68	68	59	74
Assam	816	714	714	714	648	740
Manipur	85	88	95	92	88	90
Meghalaya	185	195	210	220	185	190
Mizoram	46	46	48	48	42	42
Nagaland	74	68	71	69	68	68
Tripura	133	112	122	128	102	128
<b>NER</b>	<b>1412</b>	<b>1291</b>	<b>1328</b>	<b>1339</b>	<b>1192</b>	<b>1332</b>

##### **Availability:**

Name of State	Apr16	May16	Jun16	Jul16	Aug16	Sep16
Ar. Pradesh	46	58	82	92	79	74
Assam	483	544	649	737	703	682
Manipur	58	69	85	108	102	99
Meghalaya	100	149	191	250	258	258
Mizoram	38	44	54	63	59	57
Nagaland	42	51	66	83	79	77

Tripura	185	204	204	222	213	208
<b>NER</b>	<b>950</b>	<b>1119</b>	<b>1330</b>	<b>1557</b>	<b>1493</b>	<b>1455</b>

Name of State	Oct16	Nov16	Dec16	Jan17	Feb17	Mar17
Ar. Pradesh	67	52	54	51	45	55
Assam	648	567	580	567	502	564
Manipur	95	81	76	71	61	69
Meghalaya	209	150	138	125	115	123
Mizoram	54	48	44	43	39	45
Nagaland	71	55	54	50	45	50
Tripura	225	211	224	222	190	217
<b>NER</b>	<b>1370</b>	<b>1163</b>	<b>1171</b>	<b>1130</b>	<b>997</b>	<b>1121</b>

In 121st OCC meeting, NERLDC stated that quantum of power against Bangladesh drawal should be reflected in the table either in Tripura drawal figure or separately. Members agreed to that.

In 123rd OCC meeting, as per suggestion by Member Secretary, NERPC it was decided that a comparison of actual vs figures projected in LGBR 2016-17 is to be prepared from now on.

The comparison of the projected figures as per LGBR (2016-17) and actual figures are given below:

**Requirement:**

Name of State	June 16(actual)	June 16(LGBR)	July 16(actual)	July 16(LGBR)
Ar. Pradesh	57	68	57	73
Assam	854	816	815	872
Manipur	59	76	63	80
Meghalaya	142	165	149	175
Mizoram	39	42	41	45
Nagaland	59	72	65	77
Tripura	118	122	116	122
<b>NER</b>	<b>1327</b>	<b>1361</b>	<b>1306</b>	<b>1424</b>

**Availability:**

Name of State	June 16(actual)	June 16(LGBR)	July 16(actual)	July 16(LGBR)
Ar. Pradesh	55	82	56	92
Assam	823	649	779	737
Manipur	57	85	58	108
Meghalaya	142	191	149	250
Mizoram	38	54	40	63
Nagaland	58	66	64	83
Tripura	116	204	115	222
<b>NER</b>	<b>1288</b>	<b>1330</b>	<b>1260</b>	<b>1557</b>

*The Sub-committee noted as above.*

**C.5 Monthly MW requirement & availability of each state of NER:**

The following figures were taken from LGBR 2016-17 of NERPC. These figures are to be reviewed.

**A. Peak Demand in MW**

Name of State	Apr16	May16	Jun16	Jul16	Aug16	Sep16
Ar. Pradesh	142	142	137	137	142	147
Assam	1451	1472	1498	1508	1560	1539
Manipur	168	168	168	163	168	163
Meghalaya	320	320	320	320	320	320
Mizoram	90	90	95	90	90	90
Nagaland	125	125	125	140	140	140
Tripura	270	291	296	296	301	291
<b>NER</b>	<b>2651</b>	<b>2693</b>	<b>2724</b>	<b>2739</b>	<b>2801</b>	<b>2775</b>

Name of State	Oct16	Nov16	Dec16	Jan17	Feb17	Mar17
Ar. Pradesh	143	132	132	137	137	147
Assam	1513	1508	1518	1456	1352	1466
Manipur	163	179	184	179	179	173
Meghalaya	370	380	390	390	370	340
Mizoram	95	95	101	101	90	95
Nagaland	140	135	135	135	125	125
Tripura	321	275	260	250	250	281
<b>NER</b>	<b>2790</b>	<b>2749</b>	<b>2760</b>	<b>2688</b>	<b>2558</b>	<b>2707</b>

**B. Peak Availability in MW**

Name of State	Apr16	May16	Jun16	Jul16	Aug16	Sep16
Ar. Pradesh	127	144	195	165	140	138
Assam	1012	1134	1305	1249	1170	1222
Manipur	131	173	184	196	179	181
Meghalaya	257	304	373	433	455	482
Mizoram	83	100	123	117	108	111
Nagaland	109	129	145	142	134	137
Tripura	324	355	369	365	350	357
<b>NER</b>	<b>2043</b>	<b>2340</b>	<b>2695</b>	<b>2675</b>	<b>2534</b>	<b>2627</b>

Name of State	Oct16	Nov16	Dec16	Jan17	Feb17	Mar17
Ar. Pradesh	154	140	129	128	127	179
Assam	1251	1202	1169	1152	1108	1278
Manipur	188	175	147	151	142	188
Meghalaya	442	360	340	312	346	386
Mizoram	117	109	99	98	101	120
Nagaland	142	129	124	122	120	141
Tripura	386	369	373	370	355	392
<b>NER</b>	<b>2681</b>	<b>2484</b>	<b>2381</b>	<b>2331</b>	<b>2298</b>	<b>2682</b>

**C. Off Peak Demand in MW (08:00 Hrs)**

Name of State	Apr16	May16	Jun16	Jul16	Aug16	Sep16
Ar. Pradesh	78	78	75	75	78	81
Assam	943	898	944	950	952	939
Manipur	109	109	109	106	109	106
Meghalaya	223	230	230	230	230	230

Mizoram	59	59	62	59	59	59
Nagaland	75	75	75	84	84	84
Tripura	184	198	201	201	205	198
<b>NER</b>	<b>1670</b>	<b>1639</b>	<b>1689</b>	<b>1698</b>	<b>1706</b>	<b>1689</b>

Name of State	Oct16	Nov16	Dec16	Jan17	Feb17	Mar17
Ar. Pradesh	79	73	73	75	75	81
Assam	983	935	956	932	852	909
Manipur	106	116	120	116	116	112
Meghalaya	230	235	240	240	230	230
Mizoram	62	62	66	66	59	62
Nagaland	84	81	81	81	75	75
Tripura	218	187	177	170	170	191
<b>NER</b>	<b>1760</b>	<b>1687</b>	<b>1708</b>	<b>1677</b>	<b>1581</b>	<b>1661</b>

**D. Off Peak Availability in MW (08:00 Hrs)**

Name of State	Apr16	May16	Jun16	Jul16	Aug16	Sep16
Ar. Pradesh	40	50	99	122	102	100
Assam	734	824	1014	1126	1048	1068
Manipur	65	87	119	168	152	148
Meghalaya	198	230	305	416	428	445
Mizoram	50	61	88	102	93	93
Nagaland	72	84	105	123	115	116
Tripura	362	303	326	345	331	335
<b>NER</b>	<b>1420</b>	<b>1640</b>	<b>2054</b>	<b>2402</b>	<b>2269</b>	<b>2304</b>

Name of State	Oct16	Nov16	Dec16	Jan17	Feb17	Mar17
Ar. Pradesh	81	56	59	57	72	69
Assam	982	927	956	935	927	985
Manipur	132	115	92	84	94	102
Meghalaya	377	295	290	261	303	318
Mizoram	86	75	72	69	78	82
Nagaland	103	89	92	89	93	95
Tripura	343	317	335	329	322	339
<b>NER</b>	<b>2104</b>	<b>1875</b>	<b>1896</b>	<b>1824</b>	<b>1888</b>	<b>1989</b>

A comparison of demand for the month of June and July 2016 is given below:

Name of State	June 16(actual)	June 16(LGBR)	July 16(actual)	July 16(LGBR)
Ar. Pradesh	131	137	136	137
Assam	1511	1498	1591	1508
Manipur	152	168	141	163
Meghalaya	311	320	292	320
Mizoram	81	95	80	90
Nagaland	119	125	120	140
Tripura	275	296	259	296
<b>NER</b>	<b>2369</b>	<b>2724</b>	<b>2474</b>	<b>2739</b>

*The Sub-Committee noted as above.*

**C.6 Furnishing Reactive Power Absorption Data for last one year:**

As per Para no. 9.9.1 of Recommendations of Enquiry Committee on Grid Disturbance, the regulatory provisions regarding absorption of reactive power by generating units needs to be implemented.

It is requested that you may please furnish instances when Reactive Power support was provided by Generators for last one year.

The latest Capability Curve of each generator in Soft Copy may also be provided.

In 123<sup>rd</sup> OCCM, NERLDC informed the following status of furnishing of reactive power absorption data:

AGBPP, AGTPP, Kopili, Khandong	Furnished on Daily basis
BgTPP	Furnished on Monthly basis
Palatana	Provided
Ranganadi	Not furnished/Intermittent
Doyang	Not furnished/Intermittent
Loktak	Not furnished

**Deliberation of the sub-Committee:**

AGM (SO-I), NERLDC requested all generating utilities to send the requisite information to nerldc@yahoo.co.in.

NEEPCO informed that data for Khandong HEP, Kopili HEP, AGBPP are being generated daily; however they would be resent again to NERLDC. NTPC agreed to submit the data within the stipulated time periodically.

The status of submission as reported in 124<sup>th</sup> OCC is as follows:

AGBPP, AGTPP, Kopili, Khandong	Furnished on Daily basis
BgTPP	Furnished on Monthly basis
Palatana	Furnished but only for 5 <sup>th</sup> , 10 <sup>th</sup> & 15 <sup>th</sup> of every month
Ranganadi	Not furnished/intermittent
Doyang	Furnished but intermittent
Loktak	Not furnished

NEEPCO representative assured that site personnel will be informed about submitting the necessary data and it will be furnished. NEEPCO was requested to use

[nerldc@yahoo.co.in](mailto:nerldc@yahoo.co.in) for sending all reactive power absorption data of generators. It was decided by the forum that NERPC will review the same on weekly basis.

***The Sub-Committee noted as above.***

***Action: NEEPCO & NHPC.***

### **C.7 Implementation of Automatic Demand Management Scheme (ADMS)**

Hon'ble CERC directed vide order in Petition No. 113/MP/2014 on 31.12.15 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 directed RLDCs to submit the report of status of implementation of Automatic Demand Management Scheme (ADMS) by SLDCs of NER by 31.08.16.

SLDCs of NER are requested to furnish monthly report of status of implementation of Automatic Demand Management Scheme (ADMS) by SLDCs of NER.

In 121<sup>st</sup> OCC meeting, S.E.(O), NERPC informed that the minutes of the ADMS workshop was issued on 07.04.2016. He suggested that the following works are to be carried out by constituents at the earliest as decided in the ADMS workshop.

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

Further, he suggested that software development regarding integration of ADMS with existing SCADA system at SLDC level may be included in SLDC Upgradation Project of POWERGRID. Members agreed to the proposal and confirmed the minutes of the workshop.

In 122<sup>nd</sup> OCCM, it was decided that SLDCs would inform the status as soon as possible after due consultation with DISCOMs and vendors. It was also decided that NERPC would write to CMDs of all the utilities in the states i.e. TRANSCO and DISCOMs for conducting internal meetings in this regard periodically.

MS, NERPC stated that as per discussions with CERC in matter of implementation of ADMS in NER, CERC representative suggested that ADMS be installed in at least one substation of each state on pilot basis and thereafter bulky implementation. The forum agreed to implement ADMS in one substation of each state, preferably in state

capitals. It was also agreed, that implementation on pilot basis may be taken up in Assam/Meghalaya system to begin with. The funding may be obtained from PSDF.

**Deliberation of the sub-Committee:**

SE (O), informed that as per report furnished by M/s SCOPE to 4 NER States with a copy to NERPC after initial survey for implementation of ADMS as decided in earlier meeting is as below:

Ar. Pradesh – Rs. 2.1 Crores (excluding OPGW link & associates)

Mizoram – Rs. 2.3 Crores (excluding OPGW link & associates)

Nagaland – Rs. 2.13 Crores (excluding OPGW link & associates)

Meghalaya – Rs. 1.5 Crores (no hardware only software part)

The committee requested Assam, Manipur and Tripura to identify one Substation each for the above project.

DGM, AEGCL intimated that Assam have also taken step on their own by calling one firm to discuss about the implementation of the scheme in their system. After detailed discussion the party was requested to submit a detailed scheme along with the cost involvement to fulfill the project. The details still they are awaiting.

NERLDC vide its letter no NERLDC/SOII/5394-401 dtd 16.02.16 requested SLDCs of NER to furnish status report of implementation of ADMS by 15.08.16.

NERLDC informed the forum that the report of status of implementation of Automatic Demand Management Scheme (ADMS) by SLDCs of NER will be submitted to Hon'ble to CERC within 31.08.2016.

If no information received from SLDCs of NER, then status will be indicated as "Not furnished by SLDC".

The committee noted the difficulty faced in implementation by the deadline of 31<sup>st</sup> August 2016 and requested NERPC to take up the matter with CERC for getting extension till the work is completed.

***The Sub-Committee noted as above.***

***Action: All state utilities, SLDCs, NERTS, NERLDC/NERPC.***

**C.8 Rectification of phase notations in NER grid:**

It has been found that PMUs are showing different phasors w.r.t different nodes of same grid. It is suspected that there are change in phase notations in NER grid & connectivity.

During 1st NETeST meeting, the forum advised that mixing of Phases (change in phase reference w.r.t. one utility is sometimes different from another) as reflected by PMU data in regional grid is to be corrected. Forum requested that the same may be taken up OCC forum of NERPC.

During 121st OCCM, AGM, AEGCL suggested that physical connections may have to be changed at Azara. DGM (AM), POWERGRID suggested that a joint visit by POWERGRID/AEGCL to Azara would be fruitful. The forum agreed.

In 122nd OCCM, DGM, AEGCL informed that the work would be completed within one week.

**Deliberation of the sub-Committee:**

DGM(AM), NERTS suggested that rather than physically changing the phase notation at Azara end, the matching phases of Silchar and Azara be noted for future analysis. After detailed deliberation the forum agreed to the proposal and decided to drop the agenda item.

***The Sub-Committee noted as above.***

***Action: the agenda item may be dropped.***

**C.9 Transformer Tap optimization**

System study was conducted by NERLDC considering load, generation and network pattern of May, 2016 during Peak & Off Peak periods. Suggested taps position of important transformers in NER for maintaining bus voltages within permissible limit as well as to minimize system losses NERLDC have been circulated earlier.

In 119th OCCM, SE, SLDC, MeECL informed that voltage profile at 400kV Byrnihat S/S would be supplied by MeECL periodically.

In 120th OCCM, DGM(SO-I), NERLDC informed that MeECL is sending the voltage profile regularly and requested to continue. The bus voltage profile of 400kV, 220kV & 132kV buses w.r.t. tap positions as recommended with the help of offline system study are required for assessment of effectiveness of tap change and its impact in voltage profile improvement. SE, SLDC, MeECL stated that to change tap positions regularly approval from competent authority is required and agreed to revert back to the forum.

In 122nd OCCM, SE, SLDC, Meghalaya informed the forum that request has been received and he would revert back to the forum after due discussion with MePTCL.

DGM(AM), NERTS informed that since tap changing would be done offline, there should be no danger in the operation, and necessary checks like ratio test and continuity checks may be done after tap changing to check healthiness before putting into service. NERLDC informed that similar tap changing has been done in Northern region and the NR grid had been benefitted. Hence, similar exercise should be done for NER to aid in mitigating high voltage conditions. It was agreed that in case SLDC, Meghalaya does not manage to convince MePTCL to perform tap changing at Byrnihat, NERPC may write to MePTCL on behalf of the forum.

**Deliberation of the sub-Committee:**

The forum requested NERPC to take up the matter with management of Meghalaya since the work is pending for long time.

***The Sub-Committee noted as above.***

***Action: MeECL, & NERPC.***

**C.10 Issues related to mismatched figures of installed capacity of NER.**

The figures of installed capacity of NER by CEA (As on 31.01.16) is not matching with figures of installed capacity of NER prepared by NERLDC based on data provided by SLDCs of NER. Ministry of Power (MOP) had requested NERLDC to resolve this issue.

The installed capacity of NER prepared by CEA and by NERLDC have been circulated earlier.

During 121st OCCM, Member Secretary, NERPC requested utilities to write to CEA for derating/retiring of units at their generating stations. TSECL informed that three units of Baramura GBPP were not in commercial use. DGM(MO), NERLDC informed that NERLDC is raising NERLDC Fees & Charges for AGTPP-Extn based on name-plate rating of 51 MW, however IC is 46 for all purposes. The forum requested NEEPCO to kindly clarify the same.

During 123rd OCCM, Sr. Manager, NEEPCO informed the forum that though PG test has been successfully completed, detailed calculation has not yet been done. The IC/MCR would be intimated after report is finalized. Regarding the mismatch in case of State sector generating stations it was decided that all SLDCs should refer to CEA report (follow below link) and inform the discrepancies accordingly before next OCCM.

[http://cea.nic.in/reports/monthly/generation/2016/May/actual/opm\\_16.pdf](http://cea.nic.in/reports/monthly/generation/2016/May/actual/opm_16.pdf)

It was decided that NERPC would take up with CEA to give the station wise break-up of installed capacity, as indicated on CEA website.

NERLDC requested all states / ISGS to ensure that in case their units are retired / Derated, the respective utility may take up with CEA so that installed capacity on CEA website is reflected correctly.

**Deliberation of the sub-Committee:**

After deliberation in the EPS meeting preceding the 124<sup>th</sup> OCC meeting, it was decided that states would intimate CEA & NERPC about retired units and plants at the earliest.

***The Sub-Committee noted as above.***

***Action: All state generating utilities.***

**C.11 Furnishing of Ramp-Up, Ramp-Down, Technical Minimum of Units :**

A meeting of the Sub-Committee on 'Review of 12th Plan and Generation Planning' headed by Member (Planning), CEA was held on 7th March, 2016. During the meeting, CEA projected maximum ramping requirement of 30000-36000 MW/hour for about 60 hours (out of 8760 hours) during 2021-22 in view of increase in solar generation.

It is requested to furnish the unit-wise Ramp-Up, Ramp-Down, Technical minimum of Generating Units.etc based on data provided by manufacturer as per the attached format.

Format for submission of these data mailed to all ISGS of NER & SLDCs of NER on 9th March, 2016. OTPC has already submitted the details. The format was already circulated earlier.

**Deliberation of the sub-Committee:**

AGM (SO-I), NERLDC informed that the above information is required for modelling of all India base case for study of effect of RE integration in the system as per projected quantum of power RE sources. The forum once again requested that the above data may please be submitted for all the generating stations of NER, for both Central Sector as well as State Sector.

The status as informed in 124<sup>th</sup> OCC is as follows:

Generator	Status
AGBPP, AGTPP	Furnished (as part of Ancillary services)
OTPC	Furnished
Kopili, Khandong	Furnished
BgTPP	Furnished (as part of Ancillary services)
Ranganadi	Furnished
Doyang	Not Furnished
Loktak	Not furnished
AEGCL	Only for LTPS & NTPS furnished.
Meghalaya	Furnished
Tripura	Furnished
Mizoram	Not Furnished
Nagaland	Not Furnished

It was decided by the forum that NERPC & NERLDC will review the submission of the above data on weekly basis.

***The Sub-Committee noted as above.***

***Action: NEEPCO, NHPC, Assam, DoP Nagaland & DoP Mizoram.***

### **C.12 High Voltage in Palatana :**

During the month of January'16 -50 % of the time, February'16 -96% of the time & March'16 -61 % of the time the voltage of Palatana 400 kV bus was more than 420 kV. The Palatana Bus reactor was charged for the first time at 14:49 Hrs on 14.03.16. The bus reactor tripped at 16:11 hrs on 15.03.16. Bus Reactor at Palatana is under outage since 16:11 hrs of 15.03.16.

OTPC is requested to inform the status of Bus Reactor at Palatana.

In 121st OCCM, OTPC informed that repeated communication to M/s BHEL has been written by them but till date there was no response from BHEL. However, exact status would be informed after detailed analysis by M/s BHEL. The expected date of revival is 15.06.2016.

In 122nd OCCM, DGM, OTPC informed that the matter would be pursued with M/s BHEL if there is no response by 15.06.2016.

DGM (SO-I), NERLDC intimated the forum that the voltage at Palatana remains very high (even beyond IEGC band at some times of the day) during most of the day. The reactor at Palatana has been under outage since long time. The reactor was again charged for 1st time on 14:49 hrs on 14/03/16 for a brief interval, and has been under outage since. Delay in bring the reactor is causing unnecessary deterioration of voltage profile at Palatana and nearby areas. The reactor needs to be brought into service at the earliest.

**Deliberation of the sub-Committee:**

DGM OTPC informed that the matter will be pursued with MD OTPC so that the reactor is brought into service. To inform the status within a week. The forum decided that the matter be monitored under Item.C.1.(b) 'Elements under breakdown'.

***The Sub-Committee noted as above.***

***Action: OTPC.***

**C.13 Pre monsoon activity of transmission elements:**

It was observed that number of tripping of transmission elements in NER increased during monsoon period of last year. For minimization of tripping transmission elements in NER, it is requested to complete all activities (like trimming of trees, vegetation issues etc) of transmission elements before monsoon.

During 122nd OCCM, S.E.(O) once again highlighted the importance of vegetation clearance. He informed that there has been an alarming rise in number of transient trippings during this pre-monsoon period. All the utilities agreed to undertake activities in this regard and submit report to the forum.

**Deliberation of the sub-Committee:**

After detailed deliberation all the utilities agreed to submit report to NERPC at the earliest.

***The Sub-Committee noted as above.***

***Action: All utilities.***

**C.14 Procurement of ERS for NER from PSDF funding:**

PSDF Secretariat (NLDC, New Delhi) vide. NLDC-PSDF/NPC-CEA/2016-17/60 dtd. 21st April 2016 has intimated that submission and approval of the schemes is governed in accordance with the guidelines for disbursement of funds from PSDF

approved by MoP on 18.9.2014. Guidelines are available on <http://psdfindia.in/>. The schemes have to be submitted as per formats prescribed in guidelines.

In 121st OCCM, POWERGRID agreed to submit the formats/DPR on behalf of NER constituents as soon as possible.

In 122nd OCCM, DGM(AM), NERTS requested NERPC to write to ED,NERTS in this regard, so that DPR may be prepared in earnest. SE(O) informed that letter has already been sent to ED, NERTS for necessary action.

In 123rd OCCM, DGM(AM), NERTS informed that proposal for management approval for procurement of ERS has been sent to POWERGRID Corporate BDD Group.

**Deliberation of the sub-Committee:**

DGM(AM),NERTS stated that detailed clarification is required with regard to the following:

1. Status of funding from PSDF
2. Ownership of Asset and location of storage.
3. Signing authority for consultancy agreement.

S.E(O),NERPC requested NERTS to carry out the works on behalf of the NER constituents at the earliest and the issue of ownership of asset will be discussed in due course of time. Further, he requested NERTS that all the queries can be sorted out by NERPC & NERTS so that procurement shall not be delayed.

**Action: POWERGRID/ NERPC.**

**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		19.58	717.50
Kopili-II	2			
Kopili	4		176.52	609.48
Ranganadi			Subject to inflow	
Doyang	3		33	323.9
Loktak	3		250	769.22
AGBPP	-	-	-	-
AGTPP	-	-	-	-

### ***Hydro planning***

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

***The Committee discussed and approved the proposed shutdown by Generating Stations and the same is given in Annexure – D.2 (along with trans-element).***

### **D.2 Outage Planning Transmission elements**

It was agreed in the 99<sup>th</sup> 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 10<sup>th</sup> of the month, the shutdown availing agency would reconfirm to NERLDC on 7<sup>th</sup> 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.

DoP, Ar. Pradesh has raised an agenda regarding the unilateral shutdown taken by NERTS of 132kV RHEP-Ziro line from 04.08.2016 to 08.08.2016. The shutdown supposedly was for shifting of conductors from vulnerable tower no. 12 of the said line to an erected ERS. The letter written by EE, SLDC, Ar. Pradesh and POWERGRID communication is attached at **Annexure-D.2 (I)**.

### **Deliberation in the meeting**

EE, SLDC Ar. Pradesh informed that DoP Ar. Pradesh was bypassed and NERTS directly approached DC office and intimated regarding shut down of 132KV Ranganadi Ziro. This is against decided convention of taking shut down and hierarchy as decided in OCC forum of NERPC. The forum took strong note of the actions of NERTS and requested all constituents to avert from such type of impasse. POWERGRID explained with photograph about the criticality of the tower at Location No. 12 and informed that the people dwelling below were panic for which POWERGRID approached DC in the context of Law and Order Situation. In fact, there was no intension to by-pass Power Department for the Shut Down. After deliberation Ar. Pradesh Ar. Pradesh and

the forum approved approved daytime shutdown of 132kV RHEP-Ziro for 11.08.2016 to 13.08.16 and 16.08.16 as consented by Ar. Pradesh.

EE, SLDC, Ar. Pradesh requested Assam to allow drawal of additional 2 MW from Jonai during the above shutdown from existing 3 MW (i.e. 3 + 2 = 5 MW). Assam agreed.

SE(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(O).

***The sub-Committee discussed and approved the proposals received from the constituents regarding transmission elements and generating units for August, 2016 - September, 2016 and the same has already been uploaded in website of NERPC.***

**D.3 Estimated Transmission Availability Certificate (TAC) for the month of April & May, 2016:**

NETC and POWERGRID have submitted the outage data for the month of April & May, 2016. So the attributability of outage of the said elements may please be finalized.

In 123rd OCCM, the attributability of April/May 2016 could not be finalized due to non-submission of outage data within stipulated time. The forum once again advised NETC&POWERGRID to submit data in a time bound manner as decided previously.

**Deliberation in the meeting**

The attributability of April/May 2016 could not be finalized due to non-submission of outage data within stipulated time. The forum once again advised NETC & POWERGRID to submit data in a time bound manner as decided previously.

**Action: NETC/NERTS.**

**D.4 Furnishing of Technical and Commercial data for computation of PoC Charges and Losses for Q3 of 2016-17 (October 2016 – December 2016):**

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.

In line with the decision in the Validation Committee meeting, Demand and Generation projections w.r.t North Eastern Region constituents as given by Implementing Agency is attached in Annexure D.4 for ratification of members.

**Deliberation in the meeting**

During 124<sup>th</sup> OCCM, members deliberated and reviewed the generation and demand data for **Q3 (2016-17)** as furnished by NLDC and the same is attached at **Annexure - D.4.**

Figures were discussed and modified as follows:

- a) TGBP (Monarchak, NEEPCO) => Due to unavailability of gas figure kept at 0MW
- b) BgTPP(NTPC) => 161 MW.
- c) Meghalaya => Generation figure is to be 259 MW and demand figure 327 MW.
- d) Assam => Demand of Assam to be changed to 1365 MW and generation figure to 270 MW.
- e) Manipur => Demand to be kept as 172 MW
- f) Ar. Pradesh => Demand to be taken as 132 MW
- g) Mizoram => Generation figure is to be 8 MW and demand figure 87 MW.
- h) Nagaland => Generation figure is to be 16 MW and demand figure 141 MW.
- i) Tripura => Generation figure is to be 86 MW and demand figure 290 MW (including 68 MW of Bangladesh).

***The Sub-Committee noted as above.***

**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**

In 123<sup>rd</sup> OCCM, S.E(O), NERPC once again requested all the constituents (except Manipur, Nagaland & Meghalaya) to submit the laptops with dongles as early as possible. It was emphasized that TTC/ATC calculation cannot be done by the SLDCs unless these laptops are returned to the designated officials. It was decided that by next OCC meeting, Laptop with PSSE Dongle to be returned by all constituents to NERPC for reallocation to appropriate personnel. NERPC may also write a reminder letter to all constituents to return Laptop with PSSE dongle by next OCCM.

NERLDC had done TTC calculations of State control areas, State subsystems, and Group of Control areas of NER, on behalf of SLDCs of NER for the month of July'2016.

The forum advised the SLDCs to submit any comment to NERLDC by 20<sup>th</sup> July 2016, and to host the TTC/ATC figures in their respective websites.

**Deliberation in the meeting**

S.E.(O),NERPC informed that DoP, Ar. Pradesh & Mizoram have returned laptop+2dongles during the 124<sup>th</sup> OCC meeting. Only AEGCL are yet to return the laptops. DGM (LD&C), Assam informed that the laptops & dongle will be handed over in the next OCC meeting.

***The Sub-Committee noted as above.***

***Action: AEGCL.***

#### **D.6 Grid Disturbance (GD-V) in NER on 16.04.16 at 1203 Hrs:**

A major disturbance of category GD-V occurred in NER Grid on 16.04.16 at 1203 Hrs. In this connection it was decided in 121st OCC Meeting of NERPC that a Committee is to be formed to analyze the disturbance thoroughly, identify the root causes and suggest corrective measures. It was also proposed in 42nd PCC Meeting of NERPC to constitute an Enquiry Committee for analysis of the above disturbance with independent members.

In 123rd OCCM, it was decided that the Committee to analyze GD-V on 16.04.2016 would be headed by S.E.(O),NERPC and all other members would be co-opted by him as per requirement.

The forum agreed that for cases of GD-IV and GD-V in NER, the events are to be analyzed without any delay to prevent loss of valuable information that may prevent identification of root cause. It was decided that the committee to be headed by SE(O), NERPC would be formed at the earliest with Terms of Reference, so that cases of GD-V in NER on 16.04.16, and GD-IV in NER on 09.07.2016, be brought to conclusion by 31st July 2016.

#### **Deliberation in the meeting**

S.E.(O),NERPC informed that the meeting for System Studies and GD-IV & V would be convened in August, 2016.

Manager, NERLDC requested the forum to nominate one person from each utility as nodal officer for Grid Disturbance Analysis and collection of data regarding Grid Disturbance.

The forum agreed to the proposal and the nominations are as follows:

Sl. No.	Name of Utility	Name of Person	Contact Number
1	DoP, Arunachal Pradesh	Shri D. Kamduk	09436671717
2	AEGCL	Shri Navojit Patir	09707380294
3	MSPCL	Ms Ritu Laishram	09612882984
4	MePTCL	Shri Carlos W. Chen	09863093311
5	P&ED, Mizoram	Shri Zoramdina	08415901755
6	DoP, Nagaland	Shri R. Iralu	09436832020
7	TSECL	Shri Mrinal Pal	09436137022
8	NEEPCO	Shri Joypal Roy	09435577726
9	NTPC	Shri Prem Krishan	09435720405
10	OTPC	Shri S.R. Das	09612400784
11	NHPC	Shri Sajid Akter	09436678603
12	NERTS	Shri H. Talukdar	09436335237
13	NERLDC	Shri Jerin Jacob	09402120113
14		Shri Ankit Jain	09436335381

***The Sub-committee noted as above.***

**Action: NERPC**

**D.7 Updated Operating Procedures of NER July 2016:**

Draft Operating Procedures of NER, updated to July 2016 has been sent to regional entities of NER, the same is also available in NERLDC website. Power utilities of NER are requested to furnish their comments and suggestions for this document by 30th June'16 as the same has to be finalized by 10th July'16. The document is password protected; password is available with SOII department of NERLDC.

In 123rd OCCM, NERLDC asked all constituents to forward any comments, latest by 18th July, so that Operating Procedure can be finalized by 20th July 2016.

**Deliberation in the meeting**

AGM (SO-I) NERLDC informed that the procedure is finalized and the agenda item may be dropped.

***The Sub-committee noted as above.***

**D.8 Information of Events of Load crash on account of inclement weather conditions:**

As per directives of DPE & MoP, Govt. of India, NERLDC have to prepare reports indicating events in the Grid that occurred on account of inclement weather conditions, particularly events involving load crash. For preparation of these reports, the following inputs are required from affected states:

- a. Date and Time-frame of such incidence
- ii. Affected areas
- b. Reason for load crash
- iv. Tripping of LT feeders (33 kV / 11 kV level). SLDCs may indicate affected areas if detailed information is not available.
- c. Quantum of load crash and generation loss
- v. Details of Restoration
- d. Any corrective measures (presently taken / suggested for future)

A sample format which is being used by NERLDC for event reporting has been circulated earlier.

As and when such events occur, SLDCs are requested to inform about the event to NERLDC immediately after the incident and prepare a report as per the above format and send the same to NERLDC at [rtdnerldc@gmail.com](mailto:rtdnerldc@gmail.com) and [nerldc@yahoo.co.in](mailto:nerldc@yahoo.co.in). It is pertinent to mention here that AEGCL, MePTCL & TSECL are sending the Load crash reports to NERLDC on regular basis.

In 123<sup>rd</sup> OCCM, AEGCL informed that RHEP generation suddenly comes and it is altering the schedule to a great extent. This is resulting in underdrawal at high frequency resulting in penalty for states. The forum suggested that these instances of sudden generation due to inclement weather should also be included in NERLDC report.

NERLDC informed that load crash report for May, 2016 has been submitted by Assam, Manipur, Mizoram, Meghalaya and Tripura. The forum requested other states to kindly submit the report to NERLDC as and when events of load crash were observed by them.

NERLDC also requested all SLDCs to include the restoration time of these events, so as to enable NERLDC to compute the amount of energy un-served on account of these incidences.

**Deliberation in the meeting**

AGM (SO-I), NERLDC informed that except DoP Ar. Pradesh and DoP Nagaland Load Crash Report of other States are being submitted periodically. He further requested that all constituents should send data in the event of load crash along with

restoration time. (Start time when the load crash happened and end time when it was restored); if there is no load crash a nil load crash report to be sent by 15<sup>th</sup> of every month.

***The Sub-committee noted as above.***

***Action: DoP Ar. Pradesh, DoP Nagaland, NERLDC.***

#### **D.9 Installation of spare Transformers in NER:**

Recently 132/33 kV, 10 MVA and 16 MVA Transformers at Nirjuli (PG) have been replaced by 2 nos. 50 MVA Transformers. After replacement of the above mentioned transformers, the 10 MVA & 16 MVA Transformers are now Spare Transformers and can be used at other substations. Further in future 220/132 kV, 2x50 MVA Transformers at Balipara (PG) will also be replaced by 2x160 MVA Transformers. Members may please deliberate about optimal utilization of these spare Transformers in NER.

In 123<sup>rd</sup> OCCM, Sr. Manager NEEPCO informed that NEEPCO is facing capitalization issues for Balipara equipments and decision regarding the handover would be intimated in due course.

Sr. Manager, TSECL requested for the 132/33 kV, 10MVA transformer that has been de-commissioned at Nirjuli. Similarly SE, DoP Mizoram requested for the 16MVA transformer.

DGM(AM),NERTS clarified that first SCM would have to agree for declaring said assets as regional spare to enable POWERGRID to put up to CERC. Members agreed that SCM needs to be conducted urgently and requested NERPC to take necessary action at the earliest. In the meantime TSECL has approached CEA.

Considering TSECL request; CEA vide letter: 89/5/2016/PSPA-2 dated 02.08.16 has given its "in-principle" approval for declaring the 10 MVA, 132/33kV transformer which was de-commissioned at Nirjuli S/Sn as regional spare. It has also given its "in-principle" approval for use of the spare transformer by TSECL for its Gournagar S/S.

Since classification of asset as regional spare is under the ambit of SCM of CEA and Concurrence of CEA in this regard is required. However the use of the transformer by a particular constituent is in purview of RPC and accordingly members may discuss.

#### **Deliberation in the meeting**

On suggestion by SE, DoP Nagaland and DGM, AEGCL, the forum decided that modalities regarding use of assets, transportation, duration of use etc. may be worked

out by a committee constituted by OCC & will be discussed in next OCC. DGM(AM),NERTS informed that CEA & RPC approval is required before approaching CERC. After deliberation it was decided that the Transformers will be spared to any constituents after modalities are worked out.

***The Sub-committee noted as above.***

***Action: NERTS/NERPC.***

**D.10 Reasons For Demand - Supply Gap And Its Variation:**

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

After deliberation it was decided in the meeting that all the RPCs would advise the states in their respective regions to intimate broad break-up of demand-supply gap due to various reasons, or at least, the main reason(s) for demand-supply gap in each month.

In 122nd OCCM, DGM(SO-I), NERLDC was of the view that constituents may indicate the load-shedding quantum in their systems under different heads appropriately like inadequate availability of power, transmission constraint, distribution constraint, financial constraint, etc. The forum agreed.

In 123rd OCCM, Manager, NERLDC while presenting the monthly Grid Performance for June-2016 highlighted the glaring contradictions as follows:

- 1) Shortfall figure given by states and corresponding under-drawal from grid.
- 2) Systematic less requisition from ISGS and over-drawal from grid.
- 3) Differences between SEM based data and drawal data as provided by states which is reflected in Daily Report of NERLDC.

AEGCL representative stated that they had been facing problems in load management due to error in SCADA which is thus resulting in overdrawal in reality. The forum felt that this is mainly due to non-reporting of RTUs in AEGCL system and is specific to Assam only. Assam was advised to take care of the issue of under-requisition from ISGS coupled with sustained over-drawal which is a violation of Regulatory stipulations.

Regarding mismatch between SEM data and operational data, DGM(MO),NERLDC suggested that analysis of one week's data can be done to identify the nodes from which wrong readings are provided daily. States were advised to take care while submitting previous day data to NERLDC and as far as possible, source of energy data should be SEM. The forum also suggested the state utilities to provide break-up for shortfall figure so that particular cause may be ascertained.

***Deliberation in the meeting***

Manager, NERLDC presented a report on the discrepancies pertaining to Assam system and highlighted that the main difference is in 220kV Salakati-BTPS D/C. DGM, SLDC, AEGCL informed that operational data source would be verified and he would revert back to the forum. The forum requested NERLDC to further conduct analysis on points of difference for other control areas.

***The Sub-committee noted as above.***

***Action: AEGCL/NERLDC.***

**D.11 Reactive Power Planning:**

In the 4th meeting of NPC, it had been agreed that states should adopt a proactive approach in the matter of reactive power planning, and that the provisions regarding reactive power planning similar to those mandated in the IEGC for the CTU should be included in the respective State Grid codes.

It was informed in the meeting that Sub-Committee of PSDF had forwarded few schemes of capacitor installation by states to respective RPC for approval of RPCs. It was of the view that RPC might be able to justify the requirement of capacitor installation of state.

After detailed deliberation, it was agreed that the proposal of capacitor installation planning by states/entities would be referred to RPCs and to PSDF Sub-Committee routed through RPCs and the proposal would be vetted by the respective RPC.

In 122nd OCCM, after detailed deliberation it was decided that the SLDCs with due consultation of DISCOMs would revert back to the forum with the requirements.

In 123rd OCCM, EE, Mizoram informed that DPR is being prepared and proposal would be sent after finalization. S.E.(O),NERPC requested other states to kindly estimate requirement and communicate the same.

NERTS also asked states to plan their capacitor requirement taking into account future EHV lines, so that the installation of capacitors does not go waste.

**Deliberation in the meeting**

S.E.(O),NERPC requested all states to undertake the study for capacitor requirement taking into account future EHV lines and prepare the DPR so that the same can be endorsed in the next TCC/NERPC meetings.

***The Sub-committee noted as above.***

***Action: All utilities, SLDCs.***

**D.12 Scheme for Storage and Management of Protection System Data Base:**

Ramakrishan Task Force Report on Power System Analysis under Contingencies had recommended for creation of data base for relay settings

**Quote:**

There is also a need for creating and maintaining data base of relay settings. Data regarding settings of relays in their network should be compiled by the CTU and STUs and furnished to the RLDC and SLDC respectively and a copy should also be submitted to RPC for maintaining the data base.

**Unquote:**

RPC had prepared scheme for above purpose for funding from PSDF. The scheme had been approved by MoP. SRPC submitted the scheme for similar purpose. Other RPCs were also requested to initiate the preparation of above scheme to implement the recommendations of the Ramakrishna Task Force. It was informed that the Ramakrishna task Force report had been accepted by MoP.

NPC advised RPCs to take necessary action for creating and maintaining database of relay setting. RPCs agreed to initiate preparation of the scheme for implementation recommendation of Ramakrishna Task Force.

In 123rd OCCM, S.E.(O),NERPC informed that exercise has already been initiated in this regard and the item may be reviewed periodically in PCC meeting of NERPC.

**Deliberation in the meeting**

S.E.(O),NERPC suggested that the firm will be asked to give presentation in the next OCC meeting for protection system database.

***The Sub-committee noted as above.***

***Action: NERPC.***

**D.13 Status of RE generation in NER:**

NLDC is compiling details of renewable power plants in India. NERLDC has mailed all the power utilities regarding furnishing of details of RE Generation in NER. All the power utilities are requested to furnish the details of RE Generators currently under operation and also provide information regarding RE Generators expected to be commissioned in future.

In 123rd OCC the format was circulated by NERLDC for submission of information by SLDCs of NER by 31st July 2016.

**Deliberation in the meeting**

AGM(SO-I),NERLDC informed that any R.E generation viz. solar, wind projects which are planned or already running are to be provided by state utilities. He also requested MeECL to provide details about 20MW solar project planned at Leshka.

***The Sub-committee noted as above.***

***Action: All state utilities, MeECL.***

**D.14 Furnishing of UFR Report and status of Implementation:**

As per recommendation of enquiry Committee, the status of installation of UFR in NER has been circulated earlier. It is gathered that, 17 MW quantum is yet to be implemented in 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 indicated as NIL.

**Deliberation in the meeting**

MSPCL informed that UFR has been commissioned to shed extra 17MW and details would be provided by 31.08.2016. S.E.(O),NERPC informed that DoP Ar. Pradesh has already achieved the stipulated load relief. He further requested all utilities to kindly submit UFR operation report for the preceding month within the first week.

AGM (SO-I), NERLDC requested all utilities to provide UFR operation data for GD-V on 16th April'16 and GD-IV on 9th July'16 as per format by 20th August'16.

***The Sub-committee noted as above.***

***Action: All utilities.***

#### **D.15 Updation of SPS Document of NER Grid:**

NERLDC is preparing SPS Document of NER Grid. The draft SPS Document has been circulated earlier.

All the concerned utilities are requested to give comments on the document and provide the updated Logic Diagram of SPS by 31st July'16.

The 123rd OCC meeting, OTPC representative informed that on 09.07.2016(GD-IV) SPS-3 did not mal-operate rather it was due improper scheme design. He requested that the matter be discussed in System-Study sub-group. Sr. Engineer, NERLDC did not agree with view of OTPC and informed that as per design of SPS-3, generation at Palatana units to be reduced to 200 MW immediately (within seconds), and requested constituents to review the whole "System Protection & islanding" schemes designed for NER system due to subsequent addition of new Tr. Lines & generation in NER Grid. The matter of redesigning of SPS would be reviewed in next System Study meeting of NER.

The matter of redesigning of SPS would be reviewed in next System Study meeting of NER.

OTPC vide mail dtd. 04.08.16 has written:

"OTPC is repeatedly requesting forum at various platforms(since 117th OCC and 41st PCC meetings held on 7th January 2016) to review this scheme as it was framed considering only ONE Unit of OTPC in operation that time, now both Units of OTPC are in service. OTPC station faced serious on black out leading catastrophic failure of machines twice i.e. on 11th April 2016 and on 9th July 2016 due to SPS-III operation. SPS-III was implemented in January 2016.

In 41st PCC meeting, it was assured that the SPS-III will be reviewed in Systems Study Meeting. But, System Study Meeting is yet not called."

#### **Deliberation in the meeting**

S.E.(O),NERPC informed that the system Study Sub-Group meeting would be convened on August, 2016 and requested all the members to send designated representatives for the same.

***The Sub-committee noted as above.***

***Action: NERPC.***

**D.16 Furnishing of Black Start Time for Power Plants:**

All the power utilities having black start facilities are requested to furnish the time required for Black Start of their Power Plants. These data are required by operators for restoration of Grid after disturbance, scheduling of Power plants etc.

The Power Utilities are also requested to provide the time required to start their generators after Grid power is extended upto their bus.

The 123rd OCC forum requested NERLDC to kindly consult already available data in the form of Ancillary Service etc. and revert back. It was decided that Hydro and Gas stations to give their black start timings, and time required to start their generators after Grid power is extended upto their bus to NERLDC.

AGBPP, AGTPP and BgTPP are furnishing Warm start & Cold start timings as part of Ancillary services data.

**Deliberation in the meeting**

DGM,OTPC suggested that the terminology Black Start time is vague and needs to be further categorized into the following:

1. For plants having black start facility
  - Time required to provide power to the grid with grid power made available
  - Time required to provide power to the grid without grid power made available
2. For plants without black start facility and in general for all power plants time required to provide power to the grid with grid power made available.

AGM(SO-I), NERLDC requested OTPC to kindly revert back with the black start timings depending upon the duration in which grid power is made available to Palatana. He also requested NEEPCO (DHEP, RHEP & KHEP) and all state generating utilities to provide the data. The forum also decided the matter to be followed up in a tabular manner in the upcoming meetings.

***The Sub-committee noted as above.***

***Action: NEEPCO, All state utilities.***

#### **D.17 Load Forecast Error:**

At present day-ahead hourly load forecast data on daily basis is being prepared by NERLDC based on the data sent by SLDCs. It has been observed that there is a huge difference between the forecasted load and the actual demand met.

A comparison between the forecasted load and the actual demand met of all the states of NER was circulated earlier.

In 123<sup>rd</sup> OCC meeting, Sr. Engineer, NERLDC appraised the communication regarding proper load forecasting received from ED, NLDC. It was informed that states have to give 15 min block-wise data by 11:00 Hrs for next day, which would be used by RLDC to develop the 1<sup>st</sup> line of forecast. The methodology being followed by states for load forecasting was to be discussed and made uniform, so as to prevent wide variations between forecast and actual figures.

Manager, NERLDC informed that states have to give 15 min block-wise data by 11:00 Hrs for next day. At present Mizoram & Meghalaya are furnishing 15 min forecasting data. He also intimated that the new SCADA has a package for load forecasting which may be explored. The load forecast error is attached at **Annexure-D.17**.

#### **Deliberation in the meeting**

After detailed discussion DGM, SLDC, AEGCL informed about the difficulty in forecasting due to unpredictable weather. The forum suggested NERLDC to help constituent in forecasting by suggesting better methods.

AGM (SO-I), NERLDC requested all SLDCs to provide the procedure by which load forecast is currently being done by the SLDCs.

***The Sub-committee noted as above.***

***Action: NERLDC, All SLDCs.***

#### **D.18 Primary Response of generating units:**

Primary Response through governor action is expected to be provided by generating units as per section 5.2 (f) to 5.2 (i) of the Indian Electricity Grid Code (IEGC).

NLDC/RLDCs have been evaluating frequency response of all the regional entities due to large contingency in the system leading to load or generation loss. The Median value of FRC of North Eastern Region was of the order of 50 MW/Hz. From the response observed on 9<sup>th</sup> June'16 for load throw off of 4000 MW, it is apparent that there are scopes for improving of primary response through governor action.

The communication from ED, NLDC is attached at Annexure-D.23. The letter was already forwarded to all the concerned utilities by GM, NERLDC.

All the concerned generating utilities are requested to inform the status of implementation of Primary Response at each Generating Units.

As per, CERC approved Procedure for Assessment of Frequency Response Characteristic (FRC) of Control Areas in Indian Power System, all RLDCs are to submit FRC calculation to CERC if loss of load/generation greater than 1000 MW and frequency change of 0.05 Hz occurs in the Grid. Sometimes it has been observed that whatever correction in frequency is required, the same is done within 10secs. Since SCADA data is available after 10secs, these type of incidents are not captured properly. In other words, accurate value of FRC could not be derived from SCADA data due to its inherent design.

Accordingly, all the generating stations are requested to furnish data from DAS (Data Acquisition system) whenever such type of event occurs. If generating stations have not implemented DAS, it is requested to do so at the earliest.

In 123<sup>rd</sup> OCC meeting, it was decided all generators should intimate the response by their units in the case of 4000 MW load throw-off on 9<sup>th</sup> June, 2016 at 14:27 Hrs.

As per information furnish by the ISGSs and States only Umiam stage III and IV which have requested for exemption all are having FMGO/RMGO in position. This may please be confirmed by NEEPCO, NTPC and Meghalaya. In case the FGMO/RGMO function is not active the same may put into service immediately and a confirmation may kindly be furnished to NERLDC by 16-08-16.

#### **Deliberation in the meeting**

It was discussed that NERLDC will provide format to all generation company. All generating company will provide the required data as mentioned in the format provided. AGM (SO-I), NERLDC requested all the generating utilities to provide data from DAS of the units as proper calculation of FRC with SCADA data, whose update time is 10 secs, is not commensurate with the actual participation of the units.

***The Sub-committee noted as above.***

***Action: NERLDC.***

#### **D.19 Dynamic Data of generating units:**

As deliberated in 11<sup>th</sup> System Study Meeting of NERPC, all the generating Units were requested to furnish dynamic data as per the formats circulated in previous meetings.

Some of dynamic simulation data from IGSS are available with NERLDC as of now.

NLDC has prepared the Dynamic Model of All India Grid using legacy data. In order to tune the case for North-Eastern Region for performing Stability studies, it is necessary that all generating utilities to furnish the modelling information available with them. If these data are not readily available with them, generating utilities of NER are requested to collect these data from manufacture and send these data to NERLDC.

In 123rd OCC meeting, NERLDC informed the forum that NLDC had prepared Dynamic cases for study, based on legacy data, which may be insufficient for accurate representation of NER Grid generators. The forum advised the generating stations to submit the data whichever is available, and to contact manufacturer regarding data that is not available with them.

***Deliberation in the meeting***

S.E.(O),NERPC requested all the generating utilities to collect the data and present it in the System-Study subgroup meeting at the earliest. It was decided to drop the agenda item in the meantime. The agenda may be reviewed on quarterly basis.

***The Sub-committee noted as above.***

***Action: All generating stations.***

**D.20 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.

***Deliberation in the 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 Sub-committee noted as above.***

***Action: All SLDCs, NERPC.***

#### **D.21 Certification of Meghalaya state T/L as ISTS line:**

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 in 123<sup>rd</sup> OCC.

During 123<sup>rd</sup> OCCM, Engineer, NERLDC informed that the study results would be communicated to MeECL/NERPC within 15 day.

#### **Deliberation in the meeting**

Engineer, NERLDC informed that data for 220kV Misa-Killing is required by NLDC for further analysis and requested MeECL to provide at the earliest.

***The Sub-committee noted as above.***

***Action: MeECL/NERLDC.***

#### **AGENDA ITEMS FROM NERLDC:**

#### **D.22 Substation Black out at Balipara, Ranganadi and Part of Arunachal Pradesh:**

Khupi area, Ziro area, Lekhi area & Capital area of Arunachal Pradesh and Pavo, Gohpur & Depota area of Assam were connected with rest of NER Grid through 400 kV Balipara - Bongaigaon I, II & IV lines, 400 kV Balipara -Misa I & II and +/- 800 kV Biswanath Charali- Agra pole I (Bus Coupler CB of Gohpur, 132 kV Rangia - Sipajhar line & 132 kV Rangia - Rowta line kept open for system requirement and 400 kV Balipara - Bongaigaon III kept open to contain over voltage since 05:55 Hrs on 21.07.16 ).

At 10:16 Hrs on 21.07.16, 400 kV Balipara - Bongaigaon I, II & IV lines, 400 kV Balipara - Biswanath Charali I, II, III & IV lines, 400 kV Balipara - Misa I & II lines and 400 kV Ranganadi - Biswanath Charali I & II lines tripped. Tripping of all lines resulted in black out Balipara (PG) substation. Relay indications of the above lines as collected by operators are mentioned below:

SN	Elements Tripped	Node	Relay Indication
1	400 kV Balipara - Bongaigaon I	Balipara	DP, ZV, R-E, Over Voltage
		Bongaigaon	DP, ZII, R-E, 370.1 Kms.
2	400 kV Balipara - Bongaigaon II	Balipara	DP, Z V, R-E, Over Voltage
		Bongaigaon	DP, ZII, R-E, 348.1 Kms.
3	400 kV Balipara - Bongaigaon IV	Balipara	DP, ZIV, R-E, 19.31 Kms.
		Bongaigaon	DP, ZII, R-E, 332 Kms.
4	400 kV Balipara - Biswanath Charali I	Balipara	No tripping
		Biswanath Charali	DP, ZII, R-E, 60 Kms.
5	400 kV Balipara - Biswanath Charali II	Balipara	No tripping
		Biswanath Charali	DP, ZII, R-E, 60 Kms.
6	400 kV Balipara - Biswanath Charali III	Balipara	No tripping
		Biswanath Charali	DP, ZII, R-E, 57 Kms.
7	400 kV Balipara - Biswanath Charali 1V	Balipara	No tripping
		Biswanath Charali	DP, ZII, R-E, 57 Kms.
8	400 kV Misa - Balipara I	Misa	DP, ZII, R-E, 120 Kms.
		Balipara	DP, ZIV, R-E
9	400 kV Misa - Balipara II	Misa	DP, ZII, R-E, 120.5 Kms.
		Balipara	DP, ZIV, R-E
10	400 kV Ranganadi - Biswanath Charali 1	Ranganadi	DP, ZII, R-E, 220 Kms.
		Biswanath Charali	No tripping
11	400 kV Ranganadi- Biswanath Charali 1I	Ranganadi	DP, ZII, R-E, 219 Kms.
		Biswanath Charali	No tripping

Due to tripping of these elements Ziro area, Lekhi area & Capital area of Arunachal Pradesh and Pavoi, Gohpur area of Assam were separated from rest of NER Grid and subsequently collapsed due to load generation mismatch in this area. Power supply to Khupi(AP) and Depota(Assam) also got affected.

Ranganadi Generation Loss was around 330 MW and Load loss was around 114 MW (Arunachal Pradesh- 65 MW & Assam- 49 MW). This event is categorized under GD-II as per CEA Grid standards.

As intimated by POWERGRID, fault was likely in the 400 kV Bus at Balipara and was not cleared by Bus bar protection. This is a near miss major grid disturbance of NER. Detailed report regarding this event is awaited.

**Deliberation in the meeting**

The item was referred to next PCC meeting.

***The Sub-committee noted as above.***

**D.23 Substation Black out at Kumarghat:**

At 14:57 Hrs on 31.07.16, 132 kV Badarpur – Kumarghat line, 132 kV AGTPP - Kumarghat line, 132 kV Aizwal - Kumarghat line and 132 kV P K Bari - Kumarghat line tripped. Tripping of all lines at Kumarghat resulted in black out of Kumarghat (PG) substation. Relay indications of the above lines as collected by operators are mentioned below:

SI No	Element Tripped	Node	Relay Indication
1	132 kV Badarpur - Kumarghat	Badarpur	DP, ZII, B-E, 121.6 Kms.
		Kumarghat	No tripping
2	132 kV AGTPP - Kumarghat	AGTPP	DP, ZII, B-E, 96.83 Kms.
		Kumarghat	DP, ZIV, B-E
3	132 kV Aizwal - Kumarghat	Aizawl	DP, ZII, B-E, 120 Kms.
		Kumarghat	DP, ZIV, B-E
4	132 kV P K Bari - Kumarghat	PK Bari	Already in open condition
		Kumarghat	DP, ZIV, B-E

As intimated by POWERGRID, 20 MVAR B-Phase LA associated with Bus reactor burst led to the bus fault. Detailed report regarding this event is awaited.

**Deliberation in the meeting**

The item was referred to next PCC meeting.

***The Sub-committee noted as above.***

**D.24 Prolonged outage of 132 kV Dimapur (PG) – Dimapur (NG) line and Misa Kopili III:**

132 kV Dimapur (PG) – Dimapur (NG) II line is not in service since 18th April 2016. Jumper position of 132 kV Dimapur (PG) – Dimapur (NG) II line has been changed at LILO tower to Kohima station as intimated by POWERGRID & DoP, Nagaland, to feed Capital area of Nagaland. As a result, 132 kV Dimapur (PG) – Dimapur(NG) I line is heavily loaded during peak hours and also not satisfying N-1 criteria. In addition to the above Misa-Kopili III is also out since 27-5-16 after availing emergency shutdown by NEEPCO thereby restricting evacuation system of KOPILI HEP.

**Deliberation in the meeting**

DGM(AM),NERTS informed that the outage of 132kV Dimapur-Dimapur is due to GIS switchgear unavailability for Dim-Kohima (refer to Agenda Item **D.35**). The GIS switchgear has now been repaired and may be put into service at a mutually agreeable date. Regarding outage of 132kV Misa-Kopili-III Sr. Manager, NEEPCO informed that Pole CB at Kopili end has become defective and new breaker would be commissioned within 15.09.2016. S.E.(O),NERPC opined that the prolonged outages of T/L is alarming and needs to be monitored monthly. He requested NERLDC to provide no. of S/D not availed, no. of S/D not returned in a tabular summary as well as detailed breakup from now on in every OCC meeting. NERLDC agreed.

***The Sub-committee noted as above.***

***Action: PGCIL, NEEPCO, NERLDC.***

**D.25 Furnishing of Event Logger Output:**

To identify the root cause of an event occurred in the Grid, relay indications, DR Outputs and Event Logger Outputs from all nodes associated are required. As of now, NERLDC and NERPC are not receiving Event Logger Outputs except from few POWERGRID stations. It is requested to all constituents to submit Event Logger Output along relay indication and DR Output within 24 Hrs after an event as mentioned in clause 5.2(R) of IEGC.

***For necessary action of members.***

**D.26 Quarterly Operational Feedback by SLDC & NERPC:**

NERLDC is furnishing Operational Feedback to CEA and CTU on a quarterly basis as per Clause No. 5.5.2 (a & b) of IEGC.

**NERPC and all SLDCs are also requested to submit operational feedback as per clause No. 3.4.b (iv & v) of IEGC for system improvement to CEA and CTU.**

**The Sub-committee noted as above.**

**D.27 Schedule of Protection Audit by M/s Tractabel in NER Substations:**

Ministry of Power, Government of India vide order dated 16-07-2014 has directed POWERGRID to appoint a consultant to conduct an audit to analysis of status of completion for the Recommendations issued by the Enquiry Committee. POWERGRID through international competitive bidding gave the LOA to M/s Tractabel Engineering S. A. Romania. M/s Tractabel Engineering S. A. Romania carried out audit (Task- I) in North Eastern Region during the week from 14.09.15 to 18.09.15.

M/s Tractabel Engineering S. A. Romania will carry out audit (Task- II) in North Eastern Region during the month of Sep'16 as per the following Schedule:

Sl. No.	Voltage (kV)	Name of Substation	Owner	Dates
1	400/220	Misa	POWERGRID	6th, 7th and 8th September '16
2	400/132	Ranganadi	NEEPCO	13th, 14th and 15th September '16

**Deliberation in the meeting**

Engineer, NERLDC requested that the names of nodal officers of NEEPCO & NERTS be communicated to NLDC/NERLDC/M/s Tractabel. Sr. Manager, NEEPCO informed that Shri Tanya Tazi, Sr. Manager (O/M), RHEP would be the nodal officer for NEEPCO. CM, NERTS informed that the nodal officer for POWERGRID would be informed at the earliest. NERLDC also requested that all pending data including downloaded relay settings etc. be submitted at the earliest.

**For necessary action of members.**

**Action: PGCIL.**

**D.28 Multiple occurrence of Oscillations at Doyang HEP:**

Several cases of Low Frequency oscillations have been observed in NER Grid, starting from 14th July 2016.

The cases of oscillation are depicted below:

14.07.16 from 13:16 Hrs to 13:20 Hrs

15.07.16 from 20:00:30 Hrs to 20:03:00 hrs

16.07.16 from 18:30 Hrs to 18:33 hrs.

17.07.16 from 07:06 Hrs, 07:26 Hrs, 08:06 Hrs, 10:23 Hrs

18.07.16 from 15:56 Hrs to 15:58 Hrs

19.07.16 from 14:55 Hrs to 14:57 Hrs

25.07.16 from (a) 18:00:40 hrs to 18:03:40 hrs, and (b) 18:19:14 hrs to 18:21:42 hrs

8)31.07.16 from 11:16 Hrs to 11:17 Hrs

In all these case of oscillations, the origination seems to be from Doyang HEP, and oscillation lasted for about 2 minutes duration in majority of the cases.

Besides oscillation at Doyang HEP (Intra-plant), the oscillation was also experienced at Loktak HEP, Khandong HEP, RHEP, Palatana (Inter-Plant). It has been observed through controlled increase of generation of DHEP that the oscillation started when ex-bus generation became more than 68 MW. Hence considering the security of the grid, NERLDC requested DHEP to maintain their ex-bus generation at that level only till the problem is resolved .GM, NERLDC vide his letter No. NERLDC/User\_Ne/16-17/4193-96 dtd. 20/07/16 has requested to ED (O&M), NEEPCO to check the various sub-system of Doyang and resolve this issue at the earliest. NEEPCO accepted the proposal .The matter of such recurring oscillation is very serious, and may lead to widespread trippings/ disturbance if not controlled properly.

### **Deliberation in the meeting**

Engineer, NERLDC through a presentation highlighted the grid conditions prevailing before and after the sustained oscillations and stressed the importance of the event. AGM(SO-I), NERLDC informed that upon observation it has been found that the problem occurs whenever Doyang ex-bus generation becomes more than 68 MW. NERLDC requested that the declared DC of Doyang be reduced to 68 MW for safe operation of grid till the exact cause of problem is found and rectified. He also requested Doyang to provide the data again for analysis as previous data provided inconclusive. Doyang informed that all necessary data will be provided by 16<sup>th</sup> August, 2016. NERLDC also requested Loktak, Leshka, Khandong and Kopili to furnish the machine data at the earliest since oscillations were also observed in these generating units.

***The Sub-committee noted as above.***

***Action: NEEPCO.***

**D.29 Schedule of generator more than DC :**

It has been observed on many occasions that schedule of generators, from where STOA sales are taking place, becomes more than DC due to various reasons like Unit tripping, downward revisions of DC due to less gas supply, reduced inflow etc whereas the STOA sales, of regulated quantum or merchant share, continue to remain at same levels. Since ideally schedule of generators cannot be more than DC, generators are requested to take care of this aspect while entering into transaction of power so that schedule becoming more than DC cannot happen in future.

**Deliberation in the meeting**

Manager, NERLDC explained during the meeting that this problem arises when due to tripping of units or restriction in fuel supply there is downward revision of DC. In that case allotment to all constituent is curtailed except STOA sales, of regulated quantum or merchant share, continue to remain at same levels. So, all generators should keep track of amount of STOA sales, of regulated quantum or merchant share which cannot be reduced during downward revision of DC. All generation stations are advised to keep some buffer for this.

***The Sub-committee noted as above.***

***Action: All Generating station.***

**D.30 Cooperation in grid operation:**

Grid operation is a team work where all stake holder has to work as a closely knitted entity and appreciate any issue from the team perspective and not to be narcissistic like in the case on 03-08-16 evening peak when POWERGRID wanted ESD of 132 KV Agartala-RC-Nagar Ckt I but couldn't be given immediately even though the situation was alarming and human life could be endangered as SLDC Tripura was not cooperating by way of load shedding to reduce the line flow. Though the shutdown was requested around 06:15 PM, the same could be availed only at 11:30 PM. It is another matter that no unwanted incident has happened but the whole Power System fraternity of NER could be blamed and taken to task if some fatal accident had occurred.

**Deliberation in the meeting**

AGM (SO), NERLDC highlighted about the incidence occurred on 03.08.2016 and mentioned that inspite of critical situation endangering human life, SLDC, TSECL was not co-operating but was insisting on their load management.

After detailed discussion it was decided that in case of urgency where human life or equipment safety is in danger immediate action may be taken by all SLDCs as suggested by NERLDC without any delay.

***The Sub-committee noted as above.***

***Action: All SLDCs.***

**AGENDA ITEMS FROM NERTS:**

**D.31 Diversion of one No. LT Line at Village SOPU to enable LILO connection of Ranganadi-Lekhi line at Pare HEP:**

The 132 kV Ranganadi – Lekhi line is to be made LILO at Pareh HEP. Erection of the tower No. AP-7 of the LILO portion at SOPU Village, has been affected due to presence of one LT Line of DoP, Arunachal Pradesh near the location. The LT line needs to be diverted away from the location by using 3-4 new poles. DoP, Arunachal Pradesh may expedite diversion of the said LT line to enable erection of the tower at Loc Ap-7 and stringing from the Loc 45 of Nirjuli-Lekhi line to AP-7.

***Deliberation in the meeting***

EE, SLDC Ar. Pradesh informed that the task of diversion of LT line will be completed within next 2-3 days.

***The Sub-committee noted as above.***

***Action: DoP Ar. Pradesh.***

**AGENDA ITEMS FROM TSECL:**

**D.32 Change of setting of CT ratio for RCNagar-Agartala-I&II at RC Nagar end:**

Both the lines tripped number of times due to improper relay setting. On 03.08.2016 132 kV AGTPP-Agartala line-II tripped on two occasions at 1305 & 1341 Hrs due to overloading after tripping of 132 kV AGTPP-Agartala line-I. The matter has been raised several times from TSECL to enhance the setting & to replace the CT from 300/1 to 400/1 at R C Nagar end to avoid such un-necessary tripping.

The matter is very serious and required rectification to avoid such events of tripping.

AGM(SO-I),NERLDC has clarified that the CT ratings of AGTPP end are 600-300/1 and present setting is kept at 300/1 whereas CT ratios of Agartala end are 400/1 for both the lines. The present settings at AGTPP is restricting power flow capacity of above lines.

It is therefore requested to change the CT ratio settings to higher ratio at AGTPP end urgently, which will be beneficial for both Tripura & AGTPP and system as a whole.

**Deliberation in the meeting**

Sr. Manager, NEEPCO informed that tap-changing work would be completed after availing shutdown on 12.08.16 & 17.08.16.

***The Sub-committee noted as above.***

***Action: NEEPCO.***

**AGENDA ITEMS FROM OTPC:**

**D.33 Implementation of new SPS for OTPC ICTs:**

Once ICT-2 is in service in parallel to ICT-1: This is required for overload protection of one ICT in case of tripping another ICT.

**Deliberation in the meeting**

The forum referred the matter to System Studies Sub-group.

***Action: NERPC.***

**D.34 Consent for URS Scheduling:**

At present URS of any ISGS is being scheduled to other beneficiaries after taking consent of the concerned ISGS. This is creating delay in scheduling process. A standing consent from the ISGS station can help in this respect.

As per deliberation in 117<sup>th</sup> OCC forum regarding CERC order dated 05.10.2015 against Petition No. 310/MP/2014, for scheduling Un-requisitioned Power of Sasan Ultra Mega Power Project and direction to Load Despatch Centres to schedule Un-requisitioned Power was discussed.

As per the order consent of the original beneficiary and the new beneficiary shall be submitted by the ISGS intending to avail revision of schedule to the concerned RLDC by mail.

After detailed deliberation, it was agreed that all beneficiary going for under-requisition would give month wise standing consent to the respective ISGS (AGBPP, AGTPP & OTPC) with a copy to NERLDC for rescheduling the URS power to the other beneficiaries for reducing the time taken for implementing the schedule.

The forum also requested NEEPCO that it may please operate NEEPCO control room 24x7.

**Deliberation in the meeting**

DGM, OTPC reiterated that since breakup of URS power is not available, therefore, getting consent from the under-requisitioning state each every time is a tedious job. Since the matter has already been deliberated in earlier meeting and it has been decided that standing consent (month-wise) if available; then, repeatedly consent is not required. He requested NERLDC not to ask such consent in real-time. DGM, OTPC also requested other states to provide standing consent in line of MSPCL.

NERLDC stated that as per the communication of MOP, SLDCs should give consent on case to case basis with specific time period & quantum (MW) etc., and with this consent Generators should apply to RLDC for NOC. After getting the NOC from RLDC generator can proceed for sale of the URS. Scheduling of sold power will be done as per laid down procedure.

After detailed deliberation, the forum decided that as agreed in earlier meeting, the same should be adhered to.

***The Sub-committee noted as above.***

***Action: All SLDCs, NERLDC.***

**AGENDA ITEMS FROM NERPC:**

**D.35 Rectification of GIS switchgear for 132kV Dimapur(PG)-Kohima(NG):**

The circuit-breaker of 132kV Dimapur-Kohima had become defective on 16.04.16. DoP Nagaland had been using CB of Dimapur-Dimapur as temporary arrangement. NERTS is requested to rectify the same so that inconvenience is not faced especially during contingencies.

**Deliberation in the meeting**

Please refer to discussion in **D.24**.

***The Sub-committee noted as above.***

**D.36 Availability of URS power details in NERLDC website:**

OTPC vide. OTPC/COMML/T-8/2016-17/180 dtd.27.07.2016 has informed that at present it is not known that which beneficiary state has un-requisitioned power as no details about it are available anywhere on the system. Only the consolidated URS

available is known to the generator and names of the states un-requisitioning power is sometimes intimated by NERLDC. It is urgently required that the daily state-wise details of URS power be made available by NERLDC at its website.

**Deliberation in the meeting**

The forum requested NERLDC to provide the breakup in its website. NERLDC stated that they will explore the possibility to show the details in present scheduling software.

***The Sub-committee noted as above.***

***Action: NERLDC.***

**Date & Venue of next OCC meeting**

It is proposed to hold the 125<sup>th</sup> OCC meeting of NERPC on second week of September, 2016. 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 124<sup>th</sup> OCC Meetings held on 08.08.2016**

SN	Name & Designation	Organization	Contact No.
1.	Sh. N. Perme, EE, SLDC	Ar. Pradesh	09436288643
2.	Sh. M. K. Adhikary, CGM, SLDC	Assam	-
3.	Sh. K. Talukdar, GM, APDCL	Assam	09864049287
4.	Sh. K. Goswami, DGM (Com)	Assam	09864020019
5.	Sh. B.C. Borah, AGM,SLDC	Assam	09435119248
6.	Sh. J. K. Baishya, DGM, SLDC	Assam	09435041494
7.	Sh. Karuna Sarma, DGM, AEGCL	Assam	09435013532
8.	Sh. H. Shanti Kumar Singh, GM, MSPCL	Manipur	-
9.	Sh. J. Hynniewta, SE MePTCL	Meghalaya	-
10.	Sh. T. Gidon, EE, SLDC	Meghalaya	09774479956
11.	Sh. C. W. Chen, AE(SLDC)	Meghalaya	-
12.	Sh. Lalbiaksanga, SE	Mizoram	09436140932
13.	Sh. Lalduhawma, EE	Mizoram	09436144113
14.	Sh. Bijoy Singh, AE	Mizoram	09436365776
15.	Sh. Shikato Sema, SE DoP	Nagaland	09436003338
16.	Sh. A. Jakhalu, EE(Trans)	Nagaland	09436002696
17.	Sh. A. G. Chaudhuri, DGM(C &T)	Tripura	09436139311
18.	Sh. Debabrata Pal, Sr. Manager (Comml.)	Tripura	09436500244
19.	Sh. P. Kanungo, DGM (AM)	PGCIL	09436302823
20.	Sh. H. Talukdar, Chief Manager, AM	PGCIL	09436335237
21.	Sh. N. R. Paul, AGM SO-I)	NERLDC	09436302723
22.	Sh. Bishwajit Medhi, Manager (SO-I)	NERLDC	09436335376
23.	Ms. Momai Dey, Engineer (SO-II)	NERLDC	09436302716
24.	Sh. Ranajit Pal, JE (MO)	NERLDC	09402167479
25.	Sh. Joypal Roy. Sr. Mgr. (E/M)	NEEPCO	09435577726
26.	Sh. D. Baishya, Sr. Mgr. (E/M)	NEEPCO	09435339966
27.	Sh. S. Patton, Sr. Mgr. (E/M)	NEEPCO	094436434913
28.	Sh.J. Bhattacharyya, AGM(EMD)	NTPC	09435720036

29.	Sh. R.V. Patnaik, AGM (OS)	NTPC	09438233243
	<b>No Representative</b>	<b>NHPC</b>	-
30.	Sh. Thakor Prasad Pandey, DGM(O&M)	OTPC	09402144712
31.	Sh. P.K. Mishra, MS	NERPC	-
32.	Sh. B. Lyngkhoi, Director/S.E (O)	NERPC	09436163419
33.	Sh. S. Mukherjee, AEE	NERPC	08794277306
34.	Sh. S. Imam, AEE	NERPC	07421806242
35.	Sh. S. Ranjan, AE	NERPC	08794276168







GOVERNMENT OF ARUNACHAL PRADESH  
**STATE LOAD DESPATCH CENTRE**

OFFICE OF THE EXECUTIVE ENGINEER (E) : : SLDC & TRANSMISSION DIVISION-II,  
'P'-SECTOR, RAJBHAWAN POWER HOUSE COMPLEX,  
DEPARTMENT OF POWER, ITANAGAR – 791 111 (A.P).

☎: 0360-2292151/2292160

Fax No: 0360-2214358

E-mail : [sldcitanagar@gmail.com](mailto:sldcitanagar@gmail.com)

No. SLDC&TD-II/2016-17/W-25/423-27

Dated, Itanagar the 2nd August' 2016.

To,

The Member Secretary  
North East Regional Power Committee  
Dong Parmaw, Lapalang  
Shillong – 793006 (Meghalaya).

**Sub : Unilateral decision of shut down of 132KV Ranganadi – Ziro Transmission line by POWERGRID.**

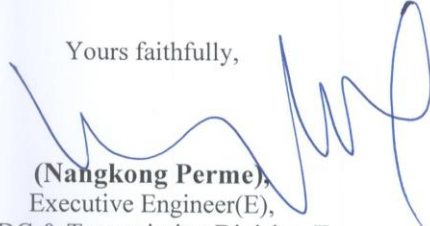
Sir,

The POWERGRID has taken a decision to take shutdown of Ranganadi – Ziro 132 KV transmission line from 4<sup>th</sup> August 2016 to 8<sup>th</sup> August 2016 between 8 AM to 5 PM reportedly for Shifting of conductors from vulnerable tower no. 12 of the said transmission line to an erected Emergency Restoration System (ERS). It appears that the decision of POWERGRID is unilateral and without consultation with the beneficiary State, your secretariat, NERLDC or the OCC forum. The decision to take shut down of the transmission line has been communicated to the Deputy Commissioner, Lower Subansiri district, Ziro by the POWERGRID with endorsement to the Deputy Commissioners of various other districts drawing power through the said transmission line.

While appreciating the urgency of the proposed job, the shutdown cannot be termed as emergency one in any case. Such shutdown should be planned and discussed in the OCC first before going to public notification. A copy of the letter notifying the Deputy Commissioners is enclosed herewith for your necessary reference. In this regard I am to inform you that this unilateral decision of the POWERGRID has created panic among the public of the affected district bringing DOP AP and SLDC to avoidable embarrassment.

Therefore the SLDC, Arunachal Pradesh, Itanagar, is viewing this decision of POWERGRID very seriously and decides to place its protest by not giving consent for the shutdown until the issue is discussed in the forthcoming OCC meeting to be held at Cherapunji. With this you are also requested to include this subject as an agenda item of Arunachal Pradesh in the said OCC meeting.

Yours faithfully,


  
**(Nangkong Perme),**  
Executive Engineer(E),  
SLDC & Transmission Division-II,  
Department of Power,  
Itanagar – 791 111.

No. SLDC&TD-II/2016-17/W-

Dated, Itanagar the \_\_\_\_\_ August' 2016.

**Copy to:-**

1. The Chief Engineer (P) TP & MZ / CEZ / WEZ for information please.
2. North East Regional Load Despatch Centre, Dongteith, Lower Nongrah, Lapalang, Shillong – 793006, Meghalaya for information & necessary action.
3. Office copy.

  
**(Nangkong Perme),**  
Executive Engineer(E),  
SLDC & Transmission Division-II,  
Department of Power,  
Itanagar – 791 111.

POWERGRID CORPORATION OF INDIA LIMITED  
132/33kV Ziro Sub-Station, Ziro  
Arunachal Pradesh -791120



Ref: NEZR/VULNERABLE LOC/ RZTL/ 545

Dated: 01/08/16

To,  
The Deputy Commissioner,  
Lower Subansiri District, Ziro (A.P)

Sub: - Shutdown of 132kv Ranganadi-Ziro Transmission Line.

Sir,

Kindly refer to our earlier letter vide ref. no. NEZR/VULNERABLE LOC/ RZTL/530 Dtd 18.07.2016(copy enclosed) in which we have informed regarding emergency shifting of vulnerable tower location no. 12 of 132 kv Ranganadi - Ziro transmission line. In this connection, it is to inform that as part of immediate arrangement to avert disruption of electricity supply, we are by-passing the vulnerable tower no. 12 by use of emergency restoration system( ERS). The erection portion of the ERS has already been completed and the only work that is left to be done is shifting of conductors from affected tower to ERS. For these activities, we need to take shutdown of 132 kv Ranganadi- Ziro transmission line which delivers electricity to all the districts including yours. The shutdown schedule that we have planned for the transmission Line in question is as follows.

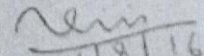
Sl. No.	Name of The transmission Line	Date	Time		Remarks
			From	To	
1.	132kv Ranganadi- Ziro transmission line	04.08.2016	8:00 AM	5:00 PM	Attempt will be to restore line at the end of every working day after 5 PM however in case any work left unfinished, line may not able to charge and line will be shut down continue for next day.
2.	Do	05.08.2016	Do	Do	
3.	Do	06.08.2016	Do	Do	
4.	Do	07.08.2016	Do	Do	
5.	Do	08.08.2016	Do	Do	

Hence, you are requested to kindly co-operate and bear with us for the inconvenience caused during the dates and times as scheduled above.

It is worthwhile to mention that we might extend the shutdown period depending upon the bad weather condition that might hinder our shifting activities.

Thanking you sir,

Yours faithfully,

  
11/8/16  
(Nani Kojin)

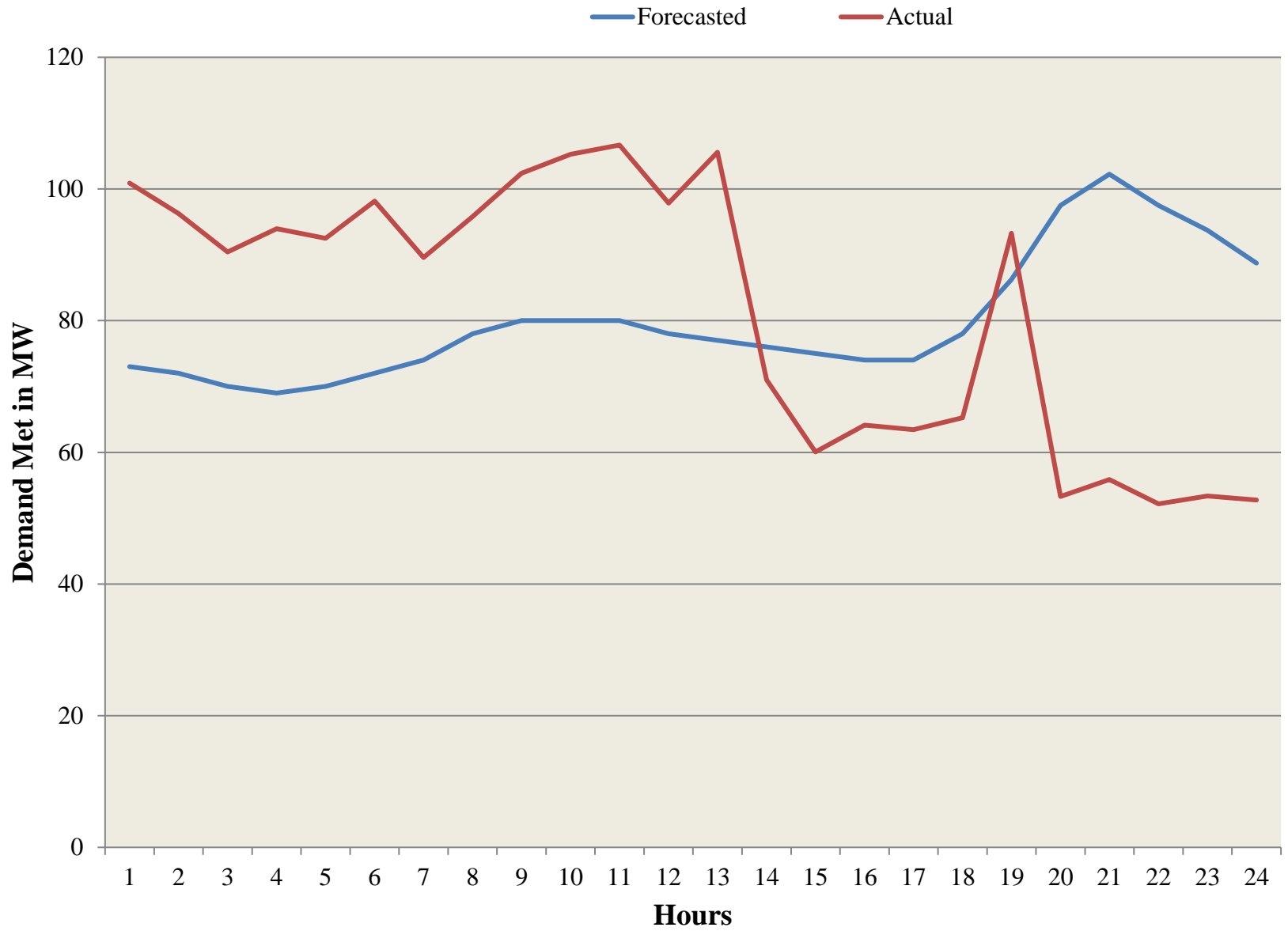
Chief Manager, Ziro (A.P.)

Copy To:

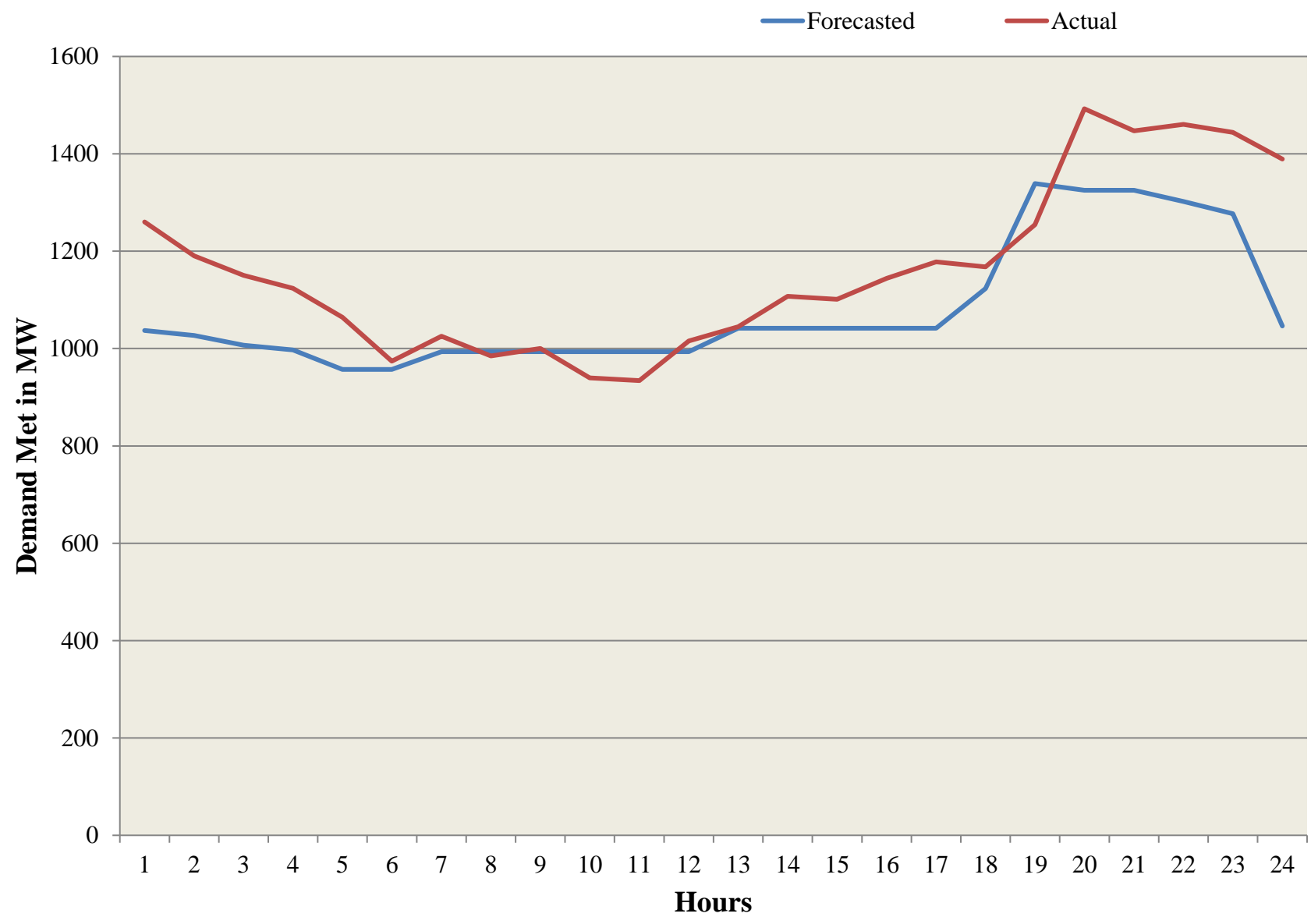
1. The Deputy Commissioner, Upper Subansiri, Kra Daadi, Kurung Kumey, West Siang and Papumpare districts (A.P.) for information and cooperation please.

Sl.No	Entity	Figures given by DICs	Figures ratified in 124th OCC meeting of NERPC	Remarks
<b>Generation:</b>				
		(in MW)	(in MW)	
1	AGTPP, NEEPCO	78	78	
2	AGTPP, Extn	46	46	
3	Doyang, NEEPCO	54	54	
4	Kopili, NEEPCO	192	192	
5	Khandong, NEEPCO	57	57	
6	Ranganadi, NEEPCO	401	401	
7	AGBPP, NEEPCO	220	220	
8	TGBP	65	0	Due to unavailability of gas
9	Loktak, NHPC	105	105	
10	Palatana GBPP	529	529	
11	Bongaigaon, NTPC	161	161	
12	Arunachal Pradesh	0	0	
13	Assam	270	270	
14	Manipur	0	0	
15	Meghalaya	294	259	As per MePTCL
16	Nagaland	16	16	
17	Tripura	86	86	
18	Mizoram	8	8	
<b>Demand:</b>				
		(in MW)	(in MW)	
1	Arunachal Pradesh	132	132	
2	Assam	1365	1365	
3	Manipur	172	172	
4	Meghalaya	327	327	
5	Mizoram	87	87	
6	Nagaland	141	141	
7	Tripura	290	290	Includinng Bangladesh 68 MW

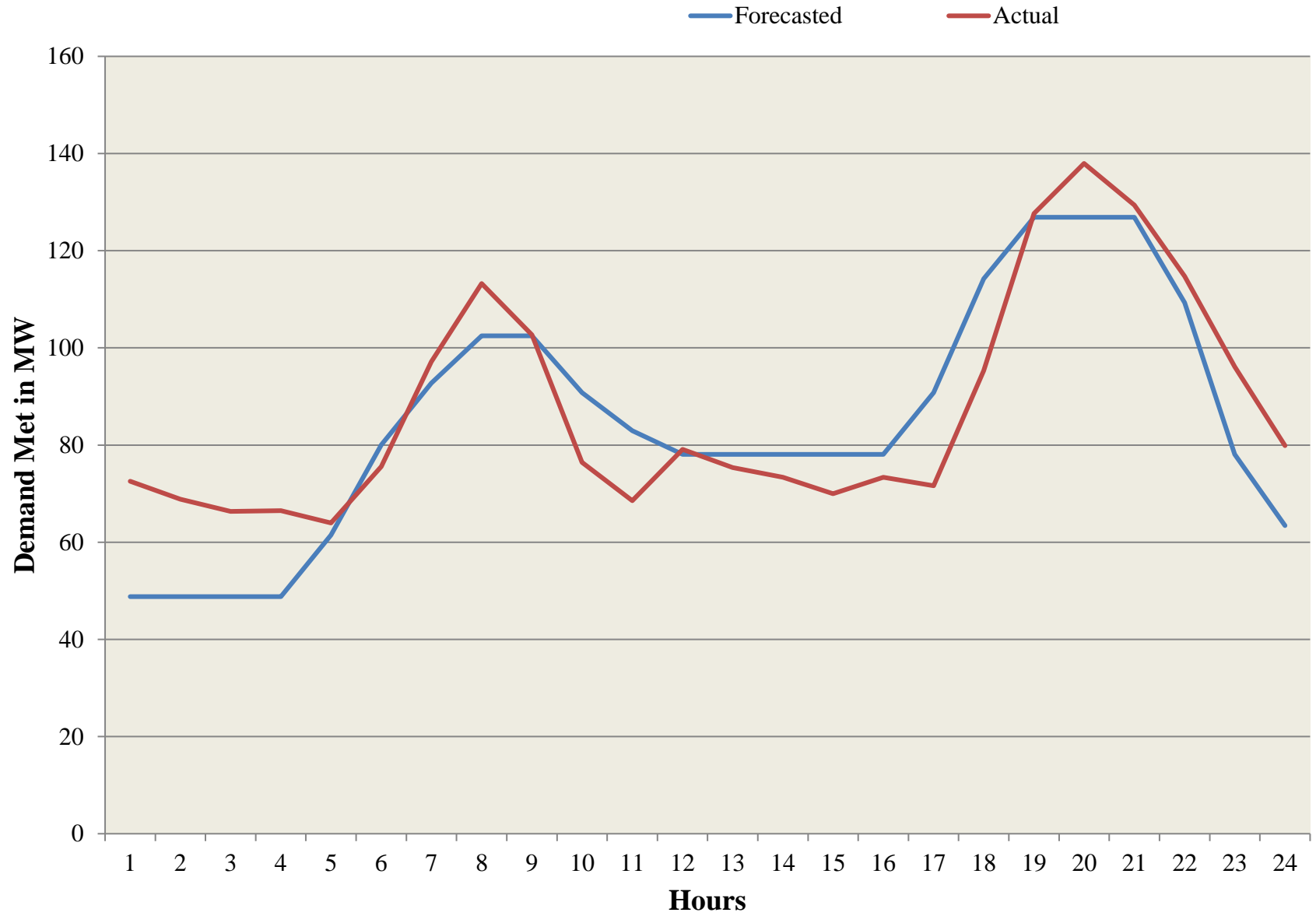
**Comparison Between Forecasted & Actual Demand Met of Arunachal Pradesh for 06-Aug-16**



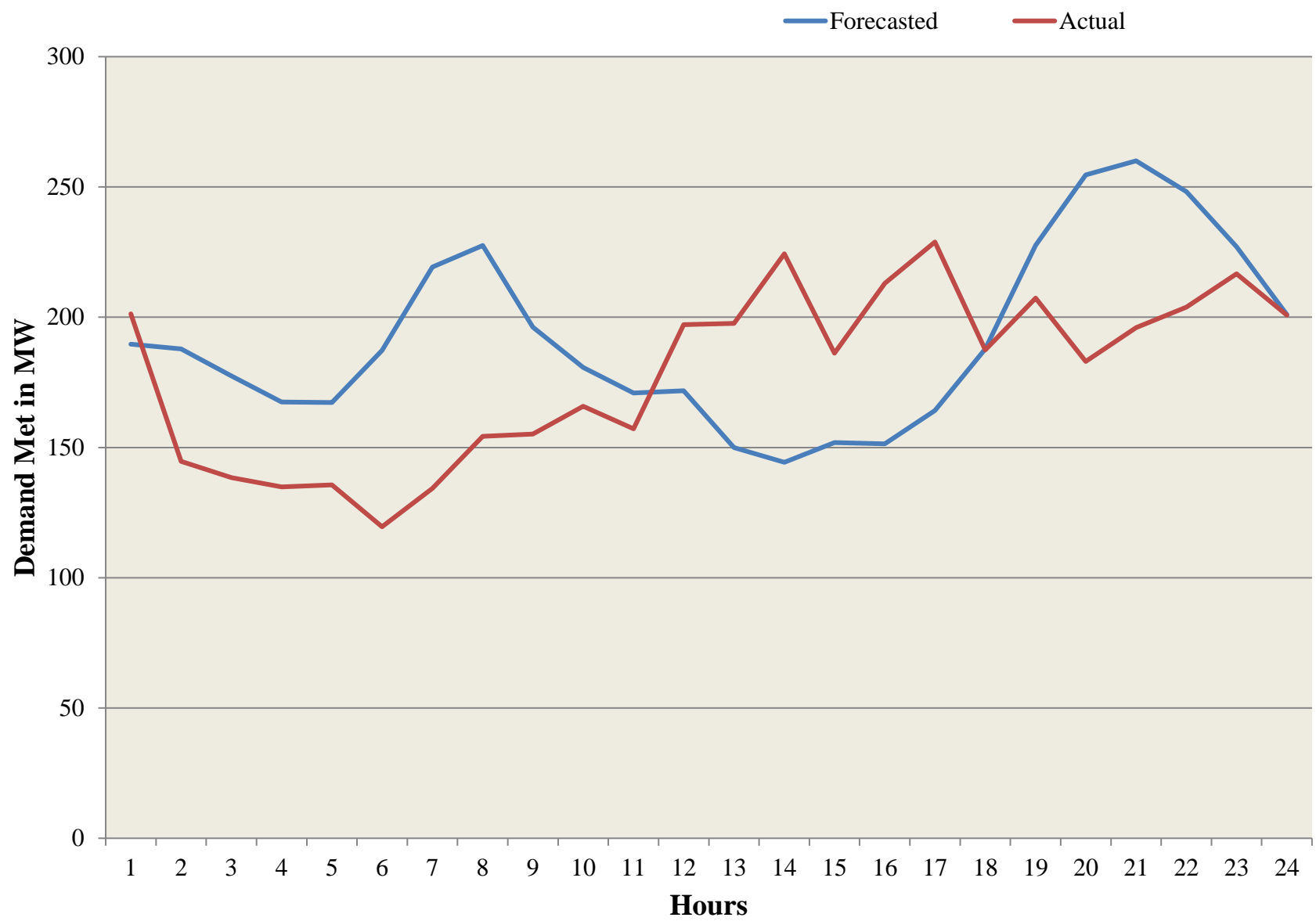
### Comparison Between Forecasted & Actaul Demand Met of Assam for 06-Aug-16



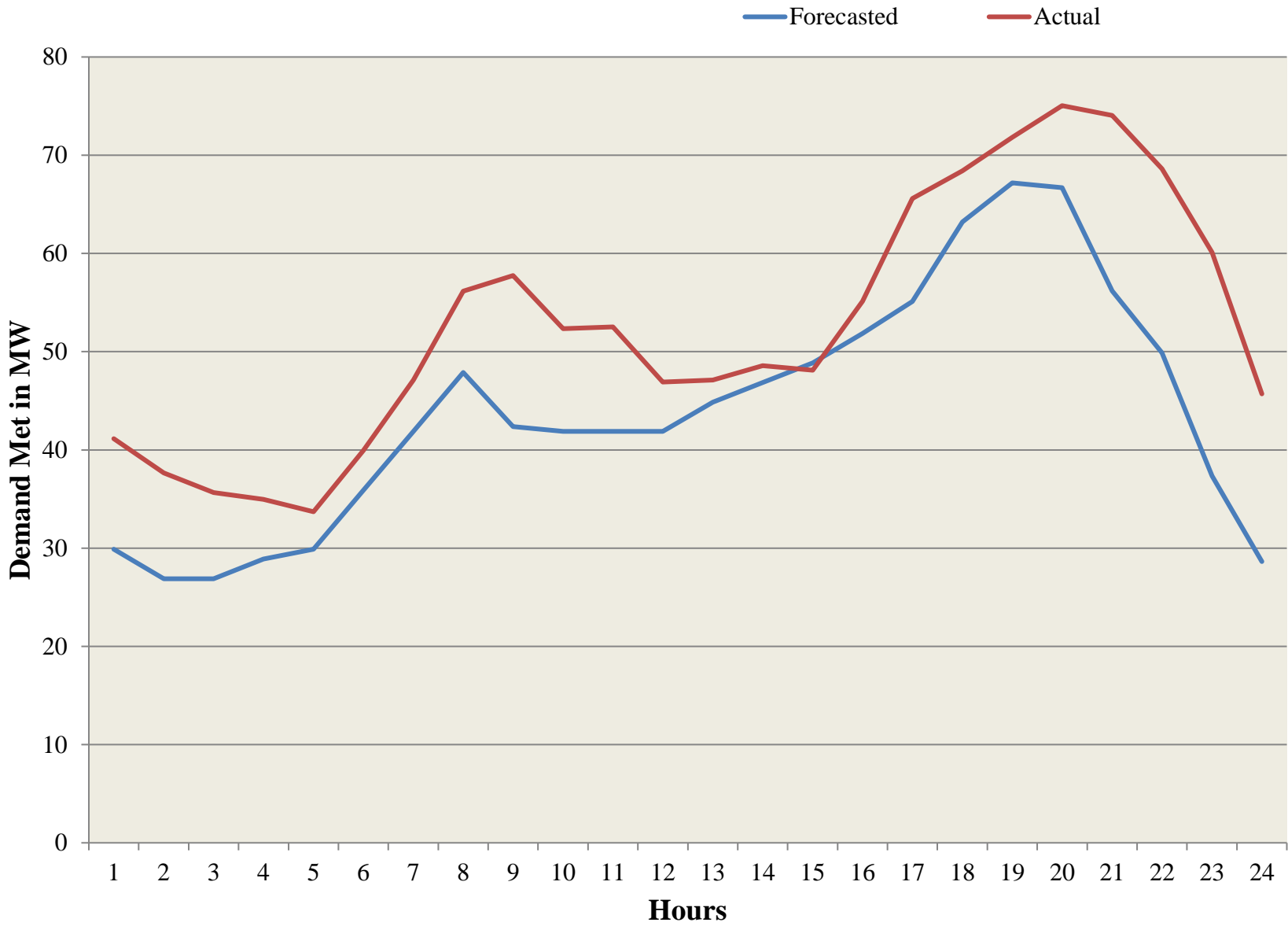
# Comparison Between Forecasted & Actual Demand Met of Manipur for 06-Aug-16



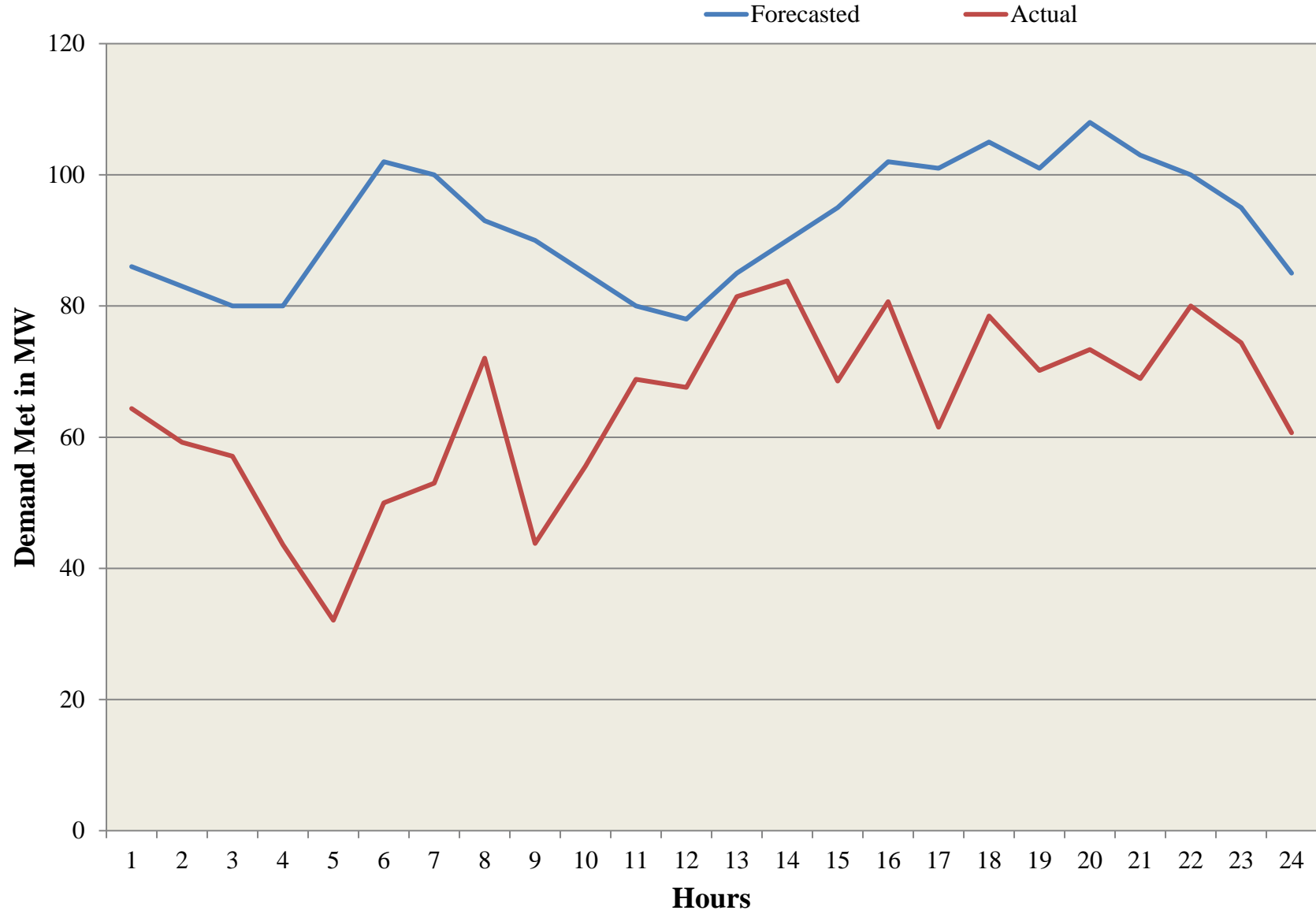
### Comparison Between Forecasted & Actual Demand Met of Meghalaya for 06-Aug-16



# Comparison Between Forecasted & Actual Demand Met of Mizoram for 06-Aug-16



# Comparison Between Forecasted & Actaul Demand Met of Nagaland for 06-Aug-16



**Comparison Between Forecasted & Actual Demand Met of Tripura (with Bangladesh) for 06-Aug-16**

