

# North Eastern Regional Power Committee

## Agenda

### For

### 122nd OCC Sub-Committee Meeting

Time of meeting : 10:00 Hrs.

Date of meeting : 9<sup>th</sup> June, 2016 (Thursday)

Venue : "Hotel Nandan", Guwahati.

#### **A. CONFIRMATION OF MINUTES**

#### **CONFIRMATION OF MINUTES OF 121<sup>st</sup> MEETING OF OPERATION SUB-COMMITTEE OF NERPC.**

The minutes of 121<sup>st</sup> meeting of Operation Sub-committee held on 5<sup>th</sup> May, 2016 at Guwahati were circulated vide letter No. NERPC/SE (O)/OCC/2016/4556-4591 dated 13<sup>th</sup> May, 2016.

TSECL vide letter No.AGM/COMM/NERPC/1119-24 dated 28.05.2016 requested Operation sub-committee to amend deliberation of the sub-committee of the **Item Nos. D.25 of 121<sup>st</sup> OCC** meeting and to incorporate views of TSECL:

#### **Item No D.25**

**"Scheduling of generation from BgTPP-NTPC station":**

#### **Recorded:**

It was further clarified that based on discussion in OCC meetings of NERPC, technical minimum of gas based stations in NER was decided as 65% (70% for AGBPP) and had been implemented in daily scheduling. All beneficiaries are deemed to have requisition of 65% of DC even if their actual requisition is less than that. This has been made effective for NTPC BgTPP as well and scheduling is being done accordingly.

#### **Amendment to be Recorded:**

TSECL wanted to record that they have not agreed the above proposal and wanted to record in the minutes.

*The Sub-committee may discuss and confirm the minutes of 121st OCCM of NERPC as no other comments/observations were received from the constituents.*

#### **ITEMS FOR DISCUSSION**

#### **B. OPERATIONAL PERFORMANCE AND GRID DISCIPLINE DURING MAY, 2016**

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

#### **NER PERFORMANCE DURING MAY, 2016**

Agenda for 122<sup>nd</sup> OCC Meeting to be held on 9<sup>th</sup> June, 2016

States	Energy Met (MU)		w.r.t. Apr,16 % inc (+) /dec (-)	Energy Reqr. (MU)		w.r.t. Apr,16 % inc (+) /dec (-)	% inc (+) /dec (-) of energy reqr vs met. In May, 16
	May-16	Apr-16		May-16	Apr-16		
Ar. Pradesh	52.0	53.17	-2.20	54.0	54.38	-0.70	-3.85
Assam	689.9	578.78	19.20	733.3	634.10	15.64	-6.29
Manipur	55.3	50.76	8.94	58.3	53.97	8.02	-5.42
Meghalaya	130.1	119.57	8.81	130.1	119.57	8.81	0.00
Mizoram	37.6	39.97	-5.93	39.0	41.29	-5.55	-3.72
Nagaland	54.4	51.21	6.23	55.9	52.86	5.75	-2.76
Tripura	150.15 (including Bangladesh)	142.32	5.50	156.06 (including Bangladesh)	145.37	7.35	-3.94
<b>Region</b>	<b>1019</b>	<b>1035.77</b>	<b>-1.62</b>	<b>1071</b>	<b>1101.55</b>	<b>-2.77</b>	<b>-5.10</b>

States	Demand Met (MW)		w.r.t. Mar,16 % inc (+) /dec (-)	Demand in (MW)		w.r.t. Mar,16 % inc (+) /dec (-)	% inc (+) /dec (-) of Demand vs met. In April, 16
	Apr-16	Mar-16		Apr -16	Mar-16		
Ar. Pradesh	119.0	139	-14.39	118.7	141	-15.82	0.25
Assam	1423.0	1356	4.94	1496.7	1446	3.51	-5.18
Manipur	144.3	146	-1.16	144.6	146	-0.96	-0.21
Meghalaya	282.2	295	-4.34	281.5	295	-4.58	0.25
Mizoram	88.0	82	7.32	88.0	83	6.02	0.00
Nagaland	105.0	110	-4.55	106.9	110	-2.82	-1.81
Tripura	249 (Excluding Bangladesh)	264	-5.68	252.2 (Excluding Bangladesh)	272	-7.28	-1.29
<b>Region</b>	<b>2401</b>	<b>2358</b>	<b>1.82</b>	<b>2487</b>	<b>2479</b>	<b>0.32</b>	<b>-3.58</b>

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

Month---->	May-16	Apr-16
Total Generation in NER (Gross)	1284.80	1626.52
Total Central Sector Generation (Gross)	1011.21	1380.45
Total State Sector Generation (Gross)	273.59	246.07
<b>Inter-Regional Energy Exchange</b>		
(a) NER-ER	8.22	327.38
(b) ER-NER	257.38	402.07
(c) NER-NR	313.28	11.70
(d) NR-NER	0.00	301.20
© Net Import	-64.12	364.2

**AVERAGE FREQUENCY (Hz)**

Month---->	May-16	Apr-16
	% of Time	% of Time
Below 49.9 Hz	6.11	12.74
Between 49.9 to 50.05 Hz	68.64	69.92
Above 50.05 Hz	25.25	17.34
Average	50.00	49.98
Maximum	50.44	50.32
Minimum	49.56	49.64

**C. OLD ITEMS**

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

During 122<sup>nd</sup> OCC meeting, the statuses as informed by different beneficiaries are as follows:

SN	Items	Status as given in 122 <sup>nd</sup> OCC Meeting	Status as given in 121 <sup>st</sup> OCC Meeting
<b>a. New Projects</b>			
1	Trial operation and CoD of Unit -I of Bongaigoan TPS of NTPC		CoD on 00:00 Hrs of 02.04.2016.
2	400/220kV, 2x315 MVA ICT of NTPC at Bongaigaon		Testing is going on. ICT-1 will be commissioned within 30 <sup>th</sup> June, 2016. System study required to assess loading.
3	Trial operation and CoD of Monarchak GBPP of NEEPCO		November, 2016 (subject to gas availability)
4	Kameng HEP of NEEPCO two units (2 x 150 MW) Next two units (2x150 MW)		The project is under review of Internal Committee of NEEPCO. Date(s) would be as per Committee Report.
5	Pare HEP of NEEPCO (2 x 55 MW)		June, 2017
6	400 kV D/C Silchar - Melriat line of PGCIL		Existing Contract has been terminated. Retendering in process.
7	220kV Rangia - Salakati of AEGCL		June, 2016
8	132kV Monarchak – Surjamaninagar D/C of TSECL		October, 2016
9	400/132 kV, 2nd 125 MVA ICT at Pallatana		June, 2016
10	132kV Pasighat – Aalong of Ar. Pradesh		December, 2016

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11	132kV Doyang- Wokha		<b>No representative</b>
12	220 kV Line Reactor Bay at AGBPP		May,2016
13	220 kV, 20 MVAR Bus Reactor at AGBPP		May,2016
14	132kV Surjamaninagar Bay at OTPC		July, 2016
15	400kV D/C Balipara – Kameng of Ar. Pradesh		June,2016
16	RHEP 80 MVAR Bus Reactor		Referred to next SCM of CEA.
17	Balipara 315 MVA 400/220 kV ICT		May,2016
18	SLDCs (Ar. Pradesh, Manipur, Mizoram, Nagaland)		Sept/Oct, 2016 (Building hand over by respective state by June16). For Manipur-July16 & for Meghalaya-June,16
<b>b. Elements under breakdown/ upgradation</b>			
19	63MVAR Reactor at Byrnihat of Me.PTCL		June 2016
20	Up-gradation of 132 kV Lumshnong-Panchgram line		Line Survey Work(s) going on.
21	Switchable line Reactors at 400kV Balipara & Bongaigoan		Balipara- July 2016 Bongaigoan- September, 2016
22	PLCC Panels at Loktak end of Loktak – Ningthoukhong 132 kV feeder and Loktak - Rengpang 132 kV feeder		July 2016
23	LILO of 132kV Ranganadi – Nirjuli at Pare of NEEPCO		May 2016
24	LILO of 132kV Ranganadi – Itanagar (Chimpu) at Pare of NEEPCO		LILO of T/L completed at Pare. However 132 kV Bay at RHEP not done.

**Concerned constituents may kindly intimate the status.**

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

The latest status as informed in the 121<sup>st</sup> OCC is given in **Annexure - C.2.**

As indicated by DGM, NERTS, requisitions for the new CTs have been given. It would take at least six months for their delivery/installation. AGM, SLDC, AEGCL proposed that 132 kV Khandong-Umrangso may be included to the list keeping in view the forecasted load on that feeder.

***Constituents, NERPC/NERLDC may kindly intimate the status and members may deliberate.***

**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.

Latest status of approval of these documents from 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>By 31.05.2016</b>
2	Operating Procedure of Assam 2015	Submitted
3	Operating Procedure of Manipur 2015	<b>By 15.05.2016</b>
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 31.05.2016</b>

***NERLDC/NERPC may kindly update the status.***

**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 121<sup>st</sup> 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.

*Members may please discuss.*

**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	405	405	405	405	400	405
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	415	425	430	430	425	420
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	223	223	223	220	223
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	228	234	237	237	234	231
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>

In 121<sup>st</sup> OCC meeting, AGM, SLDC, AEGCL opined that 100 MW power supply to Bangladesh should be included in the LGBR of 2016-17. Bangladesh should be treated as internal customer of Tripura for this purpose. The forum agreed.

***NERPC may kindly intimate the status.***

**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.

During 121<sup>st</sup> OCCM, NTPC informed that the data would be submitted by 21<sup>st</sup> to 30<sup>th</sup> of the month. NEEPCO plants (other than AGTCCPP) were requested to submit the necessary data.

***NEEPCO, NHPC & NTPC may kindly intimate the status.***

**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.

***All concerned utilities, POWERGRID, NERLDC/NERPC may kindly intimate the status.***

### **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 1<sup>st</sup> 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.

In 120<sup>th</sup> OCCM,DGM(AM), POWERGRID informed that work at Surjamaninagar has been completed. The forum requested AEGCL to kindly expedite the work at Azara.

During 121<sup>st</sup> 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.

***NERTS, AEGCL & NERLDC may kindly intimate the status.***

### **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 are attached at **Annexure – C.9**.

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

In 120<sup>th</sup> 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 121<sup>st</sup> OCC meeting, NERLDC was requested to write to MeECL regarding changing of tap positions as per voltage profile.

***NERLDC may please deliberate.***

#### **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 is attached in **Annexure – C.10.**

During 121<sup>st</sup> OCCM, Member Secretary, NERPC requested utilities to write to CEA for derating/decommissioning of units at their generating stations. TSECL informed that three units of Baramura GBPP was de-commissioned. 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.

***NERLDC/NEEPCO/Utilities may please intimate the status.***

#### **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 ISGSof NER & SLDCs of NER on 9<sup>th</sup> March, 2016. OTPC has already submitted the details.

The format is attached as **Annexure-C.11.**

In 121<sup>st</sup> OCCM, During the discussion, on the query of DGM (Commercial) OTPC, NERLDC confirmed that the scheduling has been done on the basis of requisition made by the beneficiaries until the technical minimum.

DGM (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.

***NERLDC/NERPC may please intimate the status.***

**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 121<sup>st</sup> 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.

***Members may please discuss.***

**C.13 Updated List of Important Grid Elements of NER May 2016 (Draft):**

Draft List of Important Grid Elements of North Eastern Region as on May 2016, was distributed during 121<sup>st</sup> OCC Meeting of NERPC held at Guwahati on 05<sup>th</sup> May'16 for views/comments. Views/comments were received from some power utilities of NER and the same are incorporated wherever applicable. The final version of compiled document on List of Important Grid Elements of North Eastern Region –May 2016, is available in “pdf” format in NERLDC website ([www.nerldc.org](http://www.nerldc.org)) with password protection. Password is available with SO-II Department, NERLDC.

***This is for information & necessary action please.***

**C.14 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.

In 121<sup>st</sup> OCCM, S.E.(O) requested all utilities to expedite vegetation clearance activities. Members agreed.

***All concerned utilities may please intimate the status.***

**C.15 Procurement of ERS for NER from PSDF funding:**

PSDF Secretariat (NLDC, New Delhi) vide. NLDC-PSDF/NPC-CEA/2016-17/60 dtd. 21<sup>st</sup> 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 121<sup>st</sup> OCCM, POWERGRID agreed to submit the formats/DPR on behalf of NER constituents as soon as possible.

***NERTS may please intimate the status.***

**C.16 Submission of data regarding large scale integration of Renewable Energy:**

MoP vide. 23/2/2005-R&R(Vol-XI) dated 22.03.2016 has forwarded communication of MNRE letter No. 11/7/2013-EFM dated 02.03.2016 wherein it was mentioned regarding compilation of data to meet renewable energy targets of 175 GW by 2020.

The following data are required for the said purpose:

- a) Data on the technical capacities of power plants such as minimum load, rate of change of generation, start-up time and down time, minimum standstill time, State-wise and region-wise.
- b) Thermal balancing potential of RE rich states today and upto 2020(region-wise also).
- c) Theoretical hydro balancing potential of states today and upto 2020(region-wise also).
- d) Pumped hydro projects capabilities today and upto 2020(region-wise also).
- e)Forecasting and scheduling regulations by States.

In 121<sup>st</sup> OCCM, all the utilities agreed to submit the above.

***NERPC may please intimate the status.***

**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				
Kopili				
Kopili-II				
Ranganadi			Subject to inflow	
Doyang				
Loktak				
AGBPP	-	-	-	-
AGTPP	-	-	-	-

***Hydro planning***

Since Kopili units were supposed to resume generation, the outage of other generating stations may be approved considering its availability.

***The Committee may discuss and approve the proposed shutdown by Generating Stations as given in Annexure – D.2 below.***

## **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.

***The sub-Committee may kindly discuss and approve the transmission line outages proposed by Constituents for June, 2016 - July, 2016 as enclosed at Annexure- D.2.***

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

NETC and POWERGRID have submitted the outage data for the month of April, 2016. The same has been circulated to all constituents by e-mail dated 03<sup>rd</sup> June 2016. So the attributability of outage of the said elements may please be finalized.

***Members may please discuss.***

## **AGENDA ITEMS FROM NERLDC:**

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

As per provisions of the CERC (Sharing of Inter State Transmission Charges and Losses) Regulations, 2010 as amended from time to time, the following data are required for Computation of PoC Charges & Losses for 3<sup>rd</sup> Quarter of 2016-17 (October 2016 – December 2016):

- Yearly Transmission Charges (YTC) – As per Format I
- Technical details of new transmission elements & generating units which are expected to commence commercial operation during July 2016 - September 2016 (As per Format-II)
- Details of Long term and Medium term contracts (As per Format IIIA)
- Nodewise Forecast maximum withdrawal and injection data (As per Format IIIB)
- Maximum Injection and Withdrawal data for corresponding quarter of last 3 years (As per Format IIIC)

Letter in this regard from NLDC, POSOCO and Approved Formats for furnishing the relevant data (Format I, Format II, Format III) have been emailed to all DICs of NER on 05<sup>th</sup> April 2016. Formats for data submission are also available on website of NLDC at the following link: [http://posoco.in/transmission\\_pricing/formats](http://posoco.in/transmission_pricing/formats).

The requisite data/information may please be forwarded to NLDC at [implementingagency@posoco.in](mailto:implementingagency@posoco.in) with a copy to NERLDC at [nerldc@yahoo.co.in](mailto:nerldc@yahoo.co.in) latest by **31<sup>st</sup> July 2016**.

AEGCL, MePTCL and TSECL are requested to indicate the YTC data for October 2016 – December 2016 period of their transmission lines approved by CERC for inclusion in PoC Computations. The YTC data must be submitted as per Format-I only (Approved Format).

*Members may please discuss.*

**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**

SLDCs of NER were requested to assess the above on monthly basis, 5 months in advance (eg: TTC/TRM/ATC for the month of July to be calculated by 26<sup>th</sup> of March), for further assessment of TTC, ATC and TRM of NER-ER corridor, group of control areas, individual control areas within the region and state-control-area to state-control-area if required. SLDCs were also requested to send study results for Peak (Export & Import) & Off Peak (Export & Import) along with assumptions in details and the 6 nos ".sav" case files (Base Case for Peak & Off Peak, Off Peak & Peak Export & Off Peak & Peak Import) to NERLDC by 10<sup>th</sup> of the month for the fifth month. In this regard all India ".sav" case files have been sent to SLDCs with a request to use this ".sav" case files while computing TTC, ATC & TRM for their state control area. The study results conducted by NERLDC is attached in **Annexure-D.5**. The study results for assessment of TTC, TRM and ATC have not been received from any SLDC of NER. Updated Base Cases have been already mailed to all the SLDCs on 03.06.16. All SLDCs are once again requested to assess the TTC, TRM and ATC and made available the study results to NERLDC for the month of October'16 by 10<sup>th</sup> June, 2016. States are further requested to check the TTC of their control areas as computed by NERLDC and provide comments, if any, by 15<sup>th</sup> June'16.

*NERLDC may kindly deliberate on this issue.*

**D.6 Multiple tripping's in 400 kV Bongaigaon – Balipara corridor:**

On 28.05.2016 at 9:00 hrs 400 KV Bongaigaon-Balipara -IV tripped at the time of opening of 400 KV Bongaigaon-Binaguri -III at 09:00 hrs. Subsequently at 9:03 hrs 400 KV Bongaigaon-Balipara-I & II also tripped from Bongaigaon end. As a result direct connectivity between Bongaigaon & Balipara was lost putting the grid in very vulnerable condition. Timely action by Shift personnel of NERLDC could save the situation. Similar incident also happened on 29-04-16. NERTS is requested to please carryout thorough check for finding out the exact reasons and also to take immediate corrective actions for ensuring security of the grid and minimize avoidable loss to the region.

*Members may please deliberate.*

**D.7 Detailed operating procedure for Reserve Shut Down(RSD) and Backing down upto technical minimum:**

The 4th Amendment of IEGC notified on 6th April, 2016 requires NLDC to formulate a procedure for taking units under Reserve Shut Down (RSD) and identifying units to be Backed down upto technical minimum schedule. Accordingly NLDC has prepared a draft procedure and sent to all RPCs for discussion. All constituents are requested to please go through the procedure and comment, if any, may be sent NLDC so that same can be considered and final procedure can be sent to CERC.

***Members may please deliberate.***

**D.8 Sale of Un-Requisitioned Surplus (URS) Power in line with provisions of revised Tariff Policy-reg:**

MOP(GOI) has issued two communications in respect of URS power pursuant to the provisions in revised tariff policy. The relevant excerpts are as follows,

**Quote**

1st Letter of 9th May, 2016:

*In order to implement the above provisions of the policy, certain changes in the existing scheduling and despatch procedure under Indian Electricity Grid Code (IEGC) shall be required, which is being framed by CERC. However to start with, the State Discoms can identify the Generating Stations (which are covered under section 62 of the Electricity Act'03) for un-requisitioned power and communicate accordingly to respective Generating Stations, specifying the quantum of power and duration of non-requisition, at least 24 hrs in advance of the start of scheduling from 00.00 hrs of the day for which power is not required.*

*Further, State Discoms shall also give consent to the respective Generating Stations/ Companies for sale of such URS power in the market through Power Exchange. If such power is offered by the Generating Company(ies) and is sold in the market, then the sharing of gains shall be applicable, as per the provisions of Tariff policy.*

2nd Letter of 19th May, 2016:

*It is requested that the State Government / State Discoms may like to give their consent to the respective generating stations / companies for sale of such URS power in the market through Power Exchange. If such power is offered by the Generating Company(ies) and is sold in the market, then the sharing of gains shall be applicable, as per the provisions of tariff policy.*

**Unquote**

***For information and necessary actions by members please.***

**D.9 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 42<sup>nd</sup> PCC Meeting of NERPC to constitute an Enquiry Committee for analysis of the above disturbance with independent members.

***Members may please deliberate.***

**D.10 Monthly Progress Report of Ongoing Projects:**

In 115<sup>th</sup> OCC Meeting of NERPC held on 24<sup>th</sup> November, 2015, it was decided that furnishing of monthly progress report by utilities of NER would be reviewed on a quarterly basis. In 118<sup>th</sup> OCC Meeting of NERPC, the same was again discussed. In this connection it is observed that only NTPC and NEEPCO have submitted the same for the month of April 2016, other entities have either not submitted or is not up-to-date and is requested to furnish the latest progress.

***This is for information please.***

**D.11 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 30<sup>th</sup> June'16 as the same has to be finalized by 10<sup>th</sup> July'16. The document is password protected; password is available with SOII department of NERLDC.

***For information & necessary action by members please.***

**D.12 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 is attached in **Annexure-D.12.**

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 [rtsdnerldc@gmail.com](mailto:rtsdnerldc@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.

***For deliberation & necessary action by members please.***



**D.13 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 utilisation of these spare Transformers in NER.

*For deliberation please.*

**D.14 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 for 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 has since carried out audit (Task- I) in North Eastern Region during the period from 14.09.15 to 18.09.15. and now propose to carry out audit (Task- II) in North Eastern Region during the month of July'16 as per the following Schedule:

Sl. No.	Voltage (kV)	Name of Substation	Owner	Dates
1	400/220	Bongaigaon & Salakati	POWERGRID	20th, 21st, 22nd June '16
2	400/220	Balipara	POWERGRID	27th, 28th, 29th June'16
3	400/220	Brynihat	MePTCL	4th, 5th, 6th July'16
4	220	Sarusajai	AEGCL	11th, 12th, 13th July'16

*This is for information please.*

**AGENDA ITEMS FROM NERPC:**

**D.15 Transfer Capability determination by the States:**

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

It was decided in the 4<sup>th</sup> meeting of NPC that to begin with, power system study for assessment of operational limits/power transfer capability for each state will be done by the concerned RLDC in association with concerned SLDC. Monthly TTC/ATC will be uploaded by the SLDCs at their respective websites and also communicated to concerned RLDC & NLDC subsequently.

CEA stated that states might be benefited from the transparency in ATC/TTC declaration. There were provisions for such transparency in various Regulations of CERC. For implementing open access in accordance with spirit of Electricity Act, the intimation required to be shared transparently.

**NPC requested RPCs for regular interaction with states for carrying out power system study in their network and RPCs agreed to further follow up with States in this regard.**

*Members may please discuss.*

#### **D.16 Reasons For Demand - Supply Gap And Its Variation:**

It was deliberated in the 4<sup>th</sup> 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.**

*Members may please discuss.*

#### **D.17 Reactive Power Planning:**

In the 4<sup>th</sup> 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.**

*Members may please discuss.*

**D.18 Ensuring proper functioning of Under Frequency Relays (UFRs) & df/dt Relays:**

It was decided in the 4<sup>th</sup> meeting of NPC, that at least 20% of the under frequency relays installed in the respective regions should be physically inspected by respective RPCs in each year besides self-certification by the STUs.

**After deliberation it was agreed that each RPC would ensure proper functioning of UFR and df/dt relays as per the agreed procedure of the region. It was also agreed that RPCs would sent their comments/suggestion on preparation of procedure for certification of healthiness of UFR and df/dt relays.**

*Members may please discuss.*

**D.19 Review of Automatic Under-Frequency Relay based on Load-Shedding Scheme:**

In the 4<sup>th</sup> Meeting, NPC had decided to maintain status quo in respect of AUFLS. It was also agreed by the RPCs to initiate the process of mapping of feeders covered under AUFLS scheme like SRPC with a view to ensuring proper implementation of the scheme and also have a real time assessment of load-relief likely to be available under the scheme if it operated.

NPC requested RPCs to take necessary action for mapping of feeders.

*Members may please discuss.*

**D.20 Power System Stabilizers (PSS) Tuning:**

The Enquiry Committee constituted by GOI to enquire into grid disturbances of July 2012 had recommended proper tuning of electronic devices and PSS of Generators.

Accordingly, NRPC submitted their recommended procedure to NPC for comments/ adoption by other RPCs so as to bring uniformity across all the regions.

In the 4<sup>th</sup> Meeting of NPC, it was agreed that other RPCs would examine the proposal of NRPC and would revert back in the next NPC meeting.

SRPC informed that the PSS methodology in line with NRPC has been agreed and implemented in SR.

ERPC informed that they had implemented the scheme in CESC Budge Budge under the supervision of IIT, Mumbai.

**NPC requested RPCs to complete the above work at the earliest.**

*Members may please discuss.*

**D.21 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**

ERPC 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.**

*Members may please discuss.*

**D.21 Review of CEA(Technical Standards for Construction of Electrical Plants and Lines) Regulations, 2010:**

The stated regulation is to be reviewed every five years. Members may please discuss for modification in Chapter IV, Part-A and Chapter-V, Part-A.

*Members may like to discuss.*

**Any other item:**

**Date and Venue of next OCC**

It is proposed to hold the 123<sup>rd</sup> OCC meeting of NERPC on second week of July, 2016. The date & exact venue will be intimated in due course.

\*\*\*\*\*

Name of the line	Operating voltage (KV)	Tower Type	Length (KM)	Type of Conductor	CT Ratio at either end (max)		CT Ratio at either end (adopted)		Maximum Loading Capacity	Present Loading Capacity)	Remarks
					Stn A	Stn B	Stn A	Stn B			
132KV D/C RC Nagar-Agartala-I**	132	Double Circuit	8.384	ACSR PANTHER	600/1	400/1	300/1	400/1	70	55	Upgradation of conductors of these lines to HTLS conductors has been approved in 5th SCM of NER on 08.08.15. It is proposed to increase the CT ratios at both ends of this D/C to 800/1 each. (Total of 12 CTs will need to be replaced by POWERGRID)
132KV D/C RC Nagar-Agartala-II**	132	Double Circuit	8.384	ACSR PANTHER	600/1	400/1	300/1	400/1	70	55	
132KV S/C Badarpur-Kolasib	132	Single Circuit	107.226	AAAC PANTHER	600/1	600/1	600/1	600/1	75	75	No replacement of CTs required
132KV S/C Kolasib-Aizwal	132	Single Circuit	66.098	AAAC PANTHER	600/1	600/1	600/1	600/1	75	75	No replacement of CTs required
132 KV S/C Badarpur - Khliehriat	132	Single Circuit	76.646	AAAC PANTHER	600/1	600/1	600/1	600/1	75	75	No replacement of CTs required
132 KV S/C Jiribam- Aizwal	132	Single Circuit	172.315	ACSR PANTHER	400/1	400/1	400/1	400/1	70	70	CT ratios need upgradation with 600/1 CTs at both ends of the line, in order to confirm to Dynamic Line ratings as per guidelines of NRCE (Total of 6 no. CTs will need to be replaced by POWERGRID)
132 KV S/C Jiribam-Haflong	132	Single Circuit	100.630	ACSR PANTHER	400/1	400/1	400/1	400/1	70	70	CT ratios need upgradation with 600/1 CTs at both ends of the line, in order to confirm to Dynamic Line ratings as per guidelines of NRCE (Total of 6 no. CTs will need to be replaced by POWERGRID)
132KV S/C Khandong -Umrangso-Haflong	132	Single Circuit	63.166	ACSR PANTHER	300/1	400/1	300/1	400/1	55	55	CT ratios need upgradation with 600/1 CTs at Khandong and Umrangshu ends of 132 kV Khandong - Umrangshu lines and Umrangshu & Haflong ends of 132 kV Umrangshu - Haflong lines, in order to confirm to Dynamic Line ratings as per guidelines of NRCE (Total of 12 no. CTs will need to be replaced; 3 CTs at Khandong by NEEPCO; 3 CTs at Umrangshu end of 132 kV Umrangshu - Khandong by AEGCL; 3 CTs at Umrangshu end of 132 kV Umrangshu - Haflong line by AEGCL; 3 CTs a Haflong end of 132 kV Umrangshu - Haflong line by POWERGRID)
132kV S/C Kumarghat-R.C.Nagar	132	Single Circuit	104.020	ACSR PANTHER	600/1	600/1	600/1	600/1	75	75	No replacement of CTs required
132 KV S/C Loktak - Imphal-II	132	Single Circuit	35.040	ACSR PANTHER	400/1	600/1	400/1	600/1	75	75	CT ratios need upgradation with 600/1 CTs at Loktak end of the line, in order to confirm to Dynamic Line ratings as per guidelines of NRCE (Total of 3 no. CTs will need to be replaced by NHPC)
132KV S/C Nirjuli-Ranganadi	132	Single Circuit	22.29	ACSR PANTHER	600/1	500/1	600/1	500/1	75	75	No replacement of CTs required
132kv Palatana-Surajmani Nagar	132	Double Circuit	35.00	Twin ACSR Moose	600/1	600/1	600/1	600/1	120	120	No replacement of CTs required

**Transformer Tap Optimisation Study**

Senario : February 2016

09-Feb-16

Sl. No.	Substation	Voltage Ratio (kV)	Transformer No.	Capacity in MVA	Controlled Bus	Tap Step (%)	Total Tap Positions	Nominal Tap	Present Tap	Voltage Profile				Optimised Tap Changer Position
										Off-Peak			Peak	
										Nominal Taps	Present Tap setting	After Optimisaton	After Optimisaton	
1	Balipara	400/220	1	315	400kV	1.25	17	9	9	422	417	413	407	NO+1 (10)
		220/132	2	50	132kV	1.25	17	9	9	140	140	136	133	NO+2 (11)
		220/132	3	50	132kV	1.25	17	9	9					NO+2 (11)
2	Bongaigaon	400/220	1	315	400kV	1.25	17	9	12	419	419	416	412	NO+3 (12)
3	Salakati	220/132	1	50	132 kV	1.25	17	13	13	142	138	137	133	NO (13)
		220/132	2	50	132 kV	1.25	17	13	16					NO+3 (16)
4	Misa	400/220	1	315	400kV	1.25	17	9	5	423	417	410	404	NO-4 (5)
		400/220	2	315	400kV	1.25	17	9	5					NO-4 (5)
5	RHEP	400/132	1	360	400 kV	2.5	17	9	9	424	419	414	409	NO+2 (11)
		400/132	2	360	400 kV	2.5	17	9	9					NO+2 (11)
6	Azara	400/220	1	315	400kV	1.25	17	9	8	421	419	416	410	NO-1 (8)
		400/220	2	315	400kV	1.25	17	9	8					NO-1 (8)
7	Biswanath Chariali (PG)	400/132	1	200	400 kV	1.25	17	9	8	425	420	415	410	NO-1 (8)
		400/132	2	200	400 kV	1.25	17	9	8					NO-1 (8)
8	Silchar	400/132	1	200	400 kV	1.25	17	9	9	419	421	417	409	NO (9)
		400/132	2	200	400 kV	1.25	17	9	9					NO (9)
9	Byrnihat	400/220	1	315	400 kV	1.25	17	9	9	426	428	426	420	NO+2 (11)
		400/220	2	315	400 kV	1.25	17	9	9					NO+2 (11)
10	Palatana	220/132	5083/1	160	132 kV	1.25	17	9	9	140	141	141	141	NO-1 (8)
		220/133	5083/1	160	132 kV	1.25	17	9	9					NO-1 (8)
		400/132	1	125	132 kV	1.25	17	9	9	140	141	137	134	NO+2 (11)

Note : a) NO indicates Nominal Tap position, b) NO-1 when HV bus is controlled bus, indicates transferring MVAR from HV bus to LV bus to reduce voltage of the HV bus and increase voltage of LV bus





















PROPOSED SHUTDOWN OF ELEMENTS FOR 12th OCCM-BAR CHART

SN	Name of Element	Jan-16												Jan-17												Time				
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12					
1. TRANSMISSION LINES																														
1	132 kV S/C Balipara - Khapti TL (AEGCL TL)																											08:00 to 15:00	S/D of mentioned AEGCL TL required for stringing related construction work of 400kV Kamang Balipara TL. AEGCL consent required.	
2	132KV S/C Badarpur-Kolashil TL																												08:00 to 15:00	Tree cutting & Conductor re- tensioning at loc no 343 to 344. (S/D requested from Badarpur TL group)
3	132KV S/C Badarpur-Khilehrat TL																												08:00 to 15:00	Tree cutting between tower no 43-44, 100-103,106-107,104-111
4	132KV D/C Silchar-Hailakandi TL # 1																												08:00 to 15:00	Tree cutting between tower no 03 to 08, 17 to 20 & Jumper mit & Bolts checking
5	132KV D/C Silchar-Hailakandi TL # 2																												08:00 to 15:00	Tree cutting between tower no 03 to 08, 17 to 20 & Jumper mit & Bolts checking
6	132 kV S/C Salakani -Gelephu feeder																												08:00 to 16:00	Insulator replacement work
7	132KV S/C Badarpur-Khilehrat TL																												08:00 to 16:00	Annual Maintenance of Bay equipments
8	132KV S/C Azani - Jibham TL																												08:00 to 16:00	Rectification of tower No. 30 damaged by landslide.
9	132 kV S/C Khandong- Khilehrat ckt II																												08:00 to 16:00	For replacement of insulators at Loc.No. 31 & 32, AMP of Bay equipment at Kapti & Khandong
10	132 kV S/C Khandong- Khilehrat ckt I																												08:00 to 16:00	AMP of Bay equipment at Kapti & Khandong PH
11	132 kV S/C Badarpur- Khilehrat																												08:00 to 16:00	For replacement of insulators at Loc. no. 154 & 155
12	132 KV D/C Palatana-Sitamarangar -II																												08:00 to 16:00	For repairing of conductor in between location to 92 to 93
13	132 KV D/C B Chariali - Favot - I																												08:00 to 16:00	Jumper tightening along the line for total 38 locations
14	132 KV D/C B Chariali - Favot - II																												08:00 to 16:00	Jumper tightening along the line for total 38 locations
15	132KV D/C Silchar-Imphal # 1																												08:00 to 16:00	OPGW stringing work at Loc. 208-209 & 212 -219
16	132KV S/C, Badarpur- Kumarghat TL																												08:00 to 16:00	Tree cutting (loc no 144 to 172) & Disc changing at loc. 144 & 145 R Phase Badarpur side
17	120 kV D/C Salakani-Birpara # 2 TL																												08:00 to 16:00	Conductor replacement at Gantry
18	220kV Misa - Samangri #1 TL																												08:00 to 15:00	Annual Maintenance of bay equipments of 220KV Misa #1 Bay at Samangri AEGCL S/s.
19	220kV Misa - Samangri #2 TL																												08:00 to 15:00	Annual Maintenance of bay equipments of 220KV Misa #2 Bay at Samangri AEGCL S/s.
20	400kV D/C Palatana - Silchar TL #1																												08:00 to 15:00	Jumper to be tightened at tower no 500, 549,577,578,579,580,581,582, 584,585,588,590,592,598 ( badarpur TL section work ) Attending jumper mismatch hole at Loc. 275,269,270 & jumper tightening at locations 248,260,261,262,267,273,292,304,309. ( Kumarghat TL section work)
21	400kV D/C Palatana - Silchar TL #2																												08:00 to 15:00	Jumper to be tightened at tower no 500, 549,577,578,579,580,581,582, 584,585,588,590,592,598 ( badarpur TL section work ) Attending jumper mismatch hole at Loc. 275,269,270 & jumper tightening at locations 248,260,261,262,267,273,292,304,309. ( Kumarghat TL section work)
22	400 KV, D/C Silchar - P. K. Bari TL # 1																												08:00 to 16:00	Jumper Tightening planned at locations with acute ROW constraints under security coverage
23	400 KV, D/C Silchar - P. K. Bari TL # 2																												08:00 to 16:00	Jumper Tightening planned at locations with acute ROW constraints under security coverage
24	400 kV S/C Bongaigaon -Azara feeder																												08:00 to 16:00	Jumper Tightening planned at locations with acute ROW constraints under security coverage
25	400 kV S/C Bongaigaon-Bymihat feeder																												08:00 to 15:00	Jumper Tightening planned at locations with acute ROW constraints under security coverage
400 kV BNC HVDC																														
1	400 KV, 80 MVAR Bus Reactor-1																												08:00 to 16:00	Replacement of 400 KV OIP Bushings with RIP Bushing ( continuous S/D)
2	400/132/75 KV, 200 MVA ICT-1																												08:00 to 16:00	For attending of leakage problem in OLTIC continuous S/D
132 KV STRI/TLSS																														
1	50 MVA ICT-I																												08:00 to 16:00	Installation of CTs with higher CT Ratio subsequent to upgradation of ICT
2	50 MVA ICT-II																												08:00 to 16:00	Installation of CTs with higher CT Ratio subsequent to upgradation of ICT
400KV BALIPARA SS																														
1	132KV TRANSFER BUS COUPLER Bay																												08:00 to 16:00	AMP of Bay equipments
1	400KV 315MVA ICT-1 & 50 MVAR Bus Reactor - I Tie																												08:00 to 16:00	DCRM, Tandha Grading Cap, Annual Maintenance
2	400 kV Kameng # 1 - MAIN BAY																												08:00 to 16:00	CT Tandha, DCRM, Tuning, Annual Maintenance
3	400 kV Kameng # 1 & Kameng # 2 - THE BAY																												08:00 to 16:00	CT Tandha, Tuning, Annual Maintenance
4	400 kV Kameng # 2 - MAIN BAY																												08:00 to 16:00	CT Tandha, DCRM, Tuning, Annual Maintenance
5	400 kV Misa # 1 & Rangnadi # 1 - THE BAY																												08:00 to 16:00	Tandha Grading Cap, Annual Maintenance
6	400 kV Bongaigaon # 2 & B Chariali # IV - THE BAY																												08:00 to 16:00	DCRM, Tuning, Annual Maintenance
7	400 kV Bongaigaon # 3 - MAIN BAY																												08:00 to 16:00	CT Tandha, Tuning, Annual Maintenance
8	220 kV Side of 400/220KV 315MVA ICT# 1																												08:00 to 16:00	DCRM, Tuning of CB ( 1.5 Volt of ICT shall remain charged via TBC)
9	132 KV Side of 220/132KV ICT# 1																												08:00 to 16:00	DCRM of CB ( ICT shall remain charged via TBC)
10	220 KV Bus Coupler Bay																												08:00 to 16:00	Tuning of CB, DCRM ( Line shall remain charged via TBC)
11	220KV Sonabil Main Bay																												08:00 to 16:00	Tuning of CB, DCRM ( Line shall remain charged via TBC)
12	400KV Bongaigaon # 3 Line Reactor																												08:00 to 16:00	Tuning of CB, DCRM ( Line shall remain charged via TBC)
13	400 kV Bongaigaon # IV - MAIN BAY																												08:00 to 16:00	Tan delta and capacitance of Bushing, Annual Maintenance
400KV BONGAIGAON SS																														
1	400 kV 63 MVAR Balipara # 4 Line reactor																												10:00 to 12:00	Annual Maintenance
2	400 kV Balipara # 1 Main Bay																												08:00 to 16:00	Bay Equipment, Annual Maintenance
3	400 kV 50 MVAR Bus Reactor # 2																												10:00 to 13:00	Reactor B.U. Insulation Testing, Defective CSD relays to be dismantled
400KV Misa Substation																														
1	50 MVAR Bus reactor																												08:00 to 16:00	Casket replacement work ( Continuous S/D)
2	400/220KV ICT#2 HV side MAIN 1 Bay																												08:00 to 15:00	Annual maintenance of Bay equipments, ICT shall remain charged Via Main Bus-2
ASSAM																														
1	100MVA Transformer-I (220KV EHV)																												09:00 to 16:00	To carry out 1. Insulation & Dielectric Test 2. Excitation current at Low voltage. 3. Sweep Frequency Response Analysis (SFRA) test and other related test of transformer etc.
2	100MVA Transformer-II (220KV EHV)																												09:00 to 16:00	
3	100MVA Transformer-III (220KV EHV)																												09:00 to 16:00	
4	132kV Silchar-Dallavchera line																												09:00 to 17:00	Line Maintenance works
5	132kV Paschgram-LMSG line																												09:00 to 17:00	Line Maintenance works
6	132kV Silchar-Dallavchera line																												09:00 to 17:00	For replacement/shifting of Dallavchera feeder bay at Hailakandi Sub-station.
7	132/230KV, 25MVA Transformer I & II																												10:00 to 15:00	Maintenance & checking of Transformers
8	132KV Paschgram-Srikona line bay																												10:00 to 15:00	Maintenance works of bay etc.
9	132KV Main Bus (Mariani Sub-station)																												08:00 to 16:00	For dismantling old circuit breaker & erection, testing & commissioning of new (CGL) SF6 circuit breaker of 132KV Disconnector feeder under ADR scheme.
10	220kV lines Samangri-Mariani II																												08:00 to 16:00	Corridor cleaning, Jumper checking
11	132KV lines L.TPS Mariani S/C																												08:00 to 16:00	Corridor cleaning, Jumper checking
12	132KV lines Jorhat-Mariani D/C																												08:00 to 16:00	Corridor cleaning, Jumper checking
13	Jorhat-Gargaon-I																												08:00 to 16:00	Corridor cleaning, Jumper checking
NEEPCO																														
1	AGBPP-Kathalguri, CTG#2																												00:00 hrs of 25.06.16 to 31.07.16	To carry out Control System updation works





**Interconnection of State Subsystems of NER Grid**

Sl.No	State	Subsystem	Subsystem Tie-Lines/Tie-Transformers	Generating Plants in the subsystem	Lines Kept Open in the Subsystem	Purpose for opening of lines
1	Arunachal Pradesh	Ziro	132 kV Ranganadi - Ziro S/C	-	-	-
2		Capital	132 kV Ranganadi - Lekhi S/C	-	-	-
			132 kV Gohpur - Nirjuli S/C		-	-
3		Khupi	132 kV Balipara - Bhalukpong S/C	-	-	-
4	Deomali	220 kV AGBPP - Deomali S/C	-	-	-	
5		Dhaligaon	132 kV Dhaligaon - BTPS I			
			132 kV Dhaligaon - BTPS II			
			132 kV Rangia - Nalbari S/C		132 kV Rangia - Nalbari S/C	System Requirement (To control high loading)
			132 kV Rangia - Barnagar S/C		132 kV Rangia - Barnagar S/C	System Requirement (To control high loading)
6	Capital & Agia & Boko		220 kV Samaguri - Sarusajai S/C	Langpi HEP (2 x 50 MW), CTPS (Not operational)	-	-
			220 kV Samaguri - Jawaharnagar S/C		-	-
			400 kV Bongaigaon - Azara S/C		-	-
			400 kV Silchar - Azara S/C		-	-
			220 kV BTPS - Agia I		-	-
			220 kV BTPS - Agia II		-	-
			132 kV Umtru - Sarusajai I		132 kV Umtru - Sarusajai I	System Requirement (To control high loading)
			132 kV Umtru - Sarusajai II		132 kV Umtru - Sarusajai II	System Requirement (To control high loading)
			132 kV Umtru - Kahilipara I		132 kV Umtru - Kahilipara I	System Requirement (To control high loading)
			132 kV Umtru - Kahilipara I		132 kV Umtru - Kahilipara II	System Requirement (To control high loading)

		132 kV Mendipathar - Agia S/C		-	-
		132 kV Nalbari - Rangia S/C		132 kV Nalbari - Rangia S/C	System Requirement (To control high loading)
		132 kV Barnagar - Rangia S/C		132 kV Barnagar - Rangia S/C	System Requirement (To control high loading)
		132 kV Rowta - Rangia S/C		132 kV Rowta - Rangia S/C	System Requirement (To control high loading)
		132 kV Sipajhar - Rangia S/C		132 kV Sipajhar - Rangia S/C	System Requirement (To control high loading)
		132 kV Motonga - Rangia S/C		-	-
7	Samaguri	220 kV Sarusajai - Samaguri S/C	-	-	-
		220 kV Jawaharnagar - Samaguri S/C		-	-
		220 kV Mariani (AS) - Samaguri I		-	-
		220 kV Mariani (AS) - Samaguri II		220 kV Mariani (AS) - Samaguri II	Under Long outage
		220 kV Sonabil - Samaguri I		-	-
		220 kV Sonabil - Samaguri II		220 kV Sonabil - Samaguri II	Not yet commissioned
		220 kV Misa - Samaguri I		-	-
		220 kV Misa - Samaguri II		-	-
8	Upper Assam	220 kV Samaguri - Mariani (AS) I	Namrup TPS (119 MW) , Lakwa TPS (157 MW)	-	-
		220 kV Mariani (AS) - Samaguri II		220 kV Mariani (AS) - Samaguri II	Under Long outage
		220 kV Misa - Mariani (AS) S/C		-	-
		220 kV AGBPP - Mariani (AS) S/C		-	-
		220 kV AGBPP - Tinsukia I		-	-
		220 kV AGBPP - Tinsukia II		-	-
		132 kV Dimapur (PG) - Bokajan S/C		-	-
		132 kV Mariani (AS) - Mokokchung		132 kV Mariani (AS) - Mokokchung	Under Long outage
		66 kV Dimapur - Bokajan S/C		66 kV Dimapur - Bokajan S/C	System Requirement (To control high loading)

9	Pavoi, Sonabil, Gohpur & Depota	132 kV BiswanathChariali (PG) - Pavoi I	-	-	-
		132 kV BiswanathChariali (PG) - Pavoi II		-	-
		132 kV Balipara - Ghoramari S/C		-	-
		220 kV Sonabil - Samaguri I		-	-
		220 kV Sonabil - Samaguri II		220 kV Sonabil - Samaguri II	Not yet commissioned
		220 kV Sonabil - Balipara I		-	-
		220 kV Sonabil - Balipara II		220 kV Sonabil - Balipara II	Not yet commissioned
		132 kV Balipara - Sonabil		132 kV Balipara - Sonabil	Not yet commissioned
		132 kV Rangia - Rowta S/C		132 kV Rangia - Rowta S/C	System Requirement (To control high loading)
		132 kV Rangia - Sipajhar S/C		132 kV Rangia - Sipajhar S/C	System Requirement (To control high loading)
		132 kV Nirjuli - Gohpur S/C		-	-
		10		South Assam	132 kV Jiribam - Pailapool S/C
132 kV Silchar - Srikona I	-		-		
132 kV Silchar - Srikona II	-		-		
132 kV Badarpur - Panchgram S/C	-		-		
132 kV Silchar - Panchgram S/C	-		-		
132 kV Silchar - Dullavcherra S/C	-		-		
132 kV Dharmanagar - Dullavcherra S/C	132 kV Dharmanagar - Dullavcherra S/C		For SPS purpose		
132 kV Lumshnong - Panchgram S/C	132 kV Lumshnong - Panchgram S/C		For SPS purpose		
11	Haflong and Umrangshoo	132 kV Khandong - Umrangshoo S/C	-	-	-
		132 kV Haflong - Haflong (AS) S/C		-	-
		132/33 kV, 50 MVA Transformer I at Imphal (PG)		-	-
		132/33 kV, 50 MVA Transformer II at Imphal (PG)		-	-

12	Manipur	Capital & Karong	132 kV Imphal (PG) - Yurembam I	-	-	-	
			132 kV Imphal (PG) - Yurembam II	-	-	-	
			132 kV Kongba - Kakching S/C		132 kV Kongba - Yaingangpokpi S/C	System Requirement (To control high loading)	
			132 kV Kohima - Karong S/C		132 kV Kohima - Karong S/C	System Requirement (To control high loading)	
13		Ningthoukong	132 kV Loktak - Ningthoukong S/C		-	-	-
			132 kV Imphal (PG) - Ningthoukong S/C	-	-	-	-
			132 kV Kakching - Kongba S/C		132 kV Yaingangpokpi - Kongba S/C	System Requirement (To control high loading)	
14		Jiribam	132 kV Jiribam(PG) - Jiribam (Manipur) S/C	-	-	-	-
15		Rengpang	132 kV Loktak - Rengpang S/C		-	-	-
			132 kV Jiribam - Rengpang S/C	-	132 kV Jiribam - Rengpang S/C	Under Long outage	
16		Meghalaya	Khliehriat	132 kV Khliehriat (PG) - Khliehriat I		-	-
				132 kV Khliehriat (PG) - Khliehriat II		-	-
	132 kV Panchgram - Lumshnong S/C			Myndtu Leshka HPP (3x42 MW) , Adhunik (1 x 25 MW), MPL (1 x 42 + 1 x 8 MW)	132 kV Panchgram - Lumshnong S/C	-	
	132 kV Mawlai - Umiam S/C				132 kV Mawngap - Mawlai S/C	-	
	132 kV Mawlai - Umiam I S/C				132 kV Umiam - NEHU S/C	-	
17	Byrnihat		400 kV Silchar - Byrnihat S/C		-	-	-
			400 kV Bongaigaon - Byrnihat S/C		-	-	-
			220 kV Misa - Byrnihat I		-	-	-
			220 kV Misa - Byrnihat II		-	-	-
			132 kV Mawlai - Umiam S/C		132 kV Mawlai - Mawngap S/C	System Requirement (To control high loading)	
			132 kV Mawlai - Umiam I S/C	Umtru (4 x 2.8 MW), Umiam1 (4 x 9 MW), Umiam2 (2 x 10 MW), Umiam3 (2 x 30 MW), Umiam4 (2 x 30 MW)	132 kV Mawlai - Umiam St I S/C	System Requirement (To control high loading)	
			132 kV Sarusajai - Umtru I		132 kV Sarusajai - Umtru I	System Requirement (To control high loading)	
		132 kV Sarusajai - Umtru II		132 kV Sarusajai - Umtru II	System Requirement (To control high loading)		

			132 kV Kahilipara - Umtru I		132 kV Kahilipara - Umtru I	System Requirement (To control high loading)
			132 kV Kahilipara - Umtru II		132 kV Kahilipara - Umtru II	System Requirement (To control high loading)
			132 kV Nanglabibra - Nongstoin S/C		132 kV Nanglabibra - Nongstoin S/C	System Requirement (To control high loading)
18		Nanglabibra	132 kV Agia - Mendipathar S/C	-	-	-
			132 kV Nongstoin - Nanglabibra S/C		132 kV Nongstoin - Nanglabibra S/C	System Requirement (To control high loading)
19	Mizoram	Zuangtui	132 kV Aizawl - Zuangtui S/C	-	-	-
20		Luangmual	132 kV Aizawl - Luangmual S/C	-	-	-
21		Kolasib	132 kV Badarpur - Kolasib S/C	Serlui B (3x4 MW), Bairabi (Non operational)	-	-
			132 kV Aizawl - Kolasib S/C		-	-
22	Dimapur	132 kV Dimapur (PG) - Dimapur (NA) I	-	-	-	
		132 kV Dimapur (PG) - Dimapur (NA) II	-	-	-	
23	Capital	132 kV Dimapur (PG) - Kohima S/C	Likimro HPP (3 x 8 MW)	-	-	
		132 kV Karong - Kohima S/C		132 kV Karong - Kohima S/C	System Requirement (To control high loading)	
		66 kV Mokokchung - Tuengsang S/C		66 kV Tuengsang - Mokokchung	System Requirement (To control high loading)	
24	Mokokchung	132 kV Mokokchung (PG) - Mokokchung (NA) I	-	-	-	
		132 kV Mokokchung (PG) - Mokokchung (NA) II		-	-	
		132 kV Doyang - Mokokchung (NA)		-	-	
		132 kV Mariani (AS) - Mokokchung (NA)		132 kV Mariani (AS) - Mokokchung (Nagaland)	Under Long outage	
		66 kV Tuengsang - Mokokchung S/C		-	-	
25	Udaipur	132 kV Monarchak - Udaipur S/C	Gumti (3 x 4 MW)	-	-	
		132 kV Palatana - Udaipur S/C		-	-	
		66 kV Belonia - Bagafa S/C		66 kV Belonia - Bagafa S/C	System Requirement (To control high loading)	
		66 kV Badarghat - Gokulnagar S/C		66 kV Badarghat - Gokulnagar S/C	System Requirement (To control high loading)	

26	Tripura	Capital and other areas	66 kV Amarpur - Gumti S/C	66 kV Amarpur - Gumti S/C	System Requirement (To control high loading)
			132 kV Palatana - Surjamaninagar I	-	-
			132 kV Palatana - Surjamaninagar II	-	-
			132 kV Silchar - P.K.Bari I	-	-
			132 kV Silchar - P.K.Bari II	-	-
			132 kV AGTPP - Agartala I	-	-
			132 kV AGTPP - Agartala II	-	-
			132 kV Kumarghat - P.K.Bari S/C	-	-
			132 kV Dullavcherra - Dharmanagar S/C	132 kV Dullavcherra - Dharmanagar S/C	For SPS purpose
			132 kV Udaipur- Monarchak S/C	-	-
			66 kV Bagafa - Belonia S/C	66 kV Bagafa - Belonia S/C	System Requirement (To control high loading)
			66 kV Gokulnagar - Badarghat S/C	66 kV Gokulnagar - Badarghat S/C	System Requirement (To control high loading)
			66 kV Gumti - Amarpur S/C	66 kV Gumti - Amarpur S/C	System Requirement (To control high loading)

## StateWise Transfer Capability

26-May-16

Study Scenario : June 2016

### Import Capability

Sl.No	State	OFFPEAK Case		PEAK Case			
		Contingency & Limits	Total Transfer Capability	State Load & Generation	Contingency & Limits	Total Transfer Capability	State Load & Generation
1	Arunachal Pradesh	N-1 of 132/33 kV, 1x20 MVA Transformer at Naharlagun; High loading of all other 132/33 kV Transformers within Arunachal Pradesh	160	Load: 160 MW, Generation: NIL	N-1 of 132/33 kV, 1x20 MVA Transformer at Naharlagun; High loading of all other 132/33 kV Transformers within Arunachal Pradesh	160	Load: 160 MW, Generation: NIL
2	Assam	N-1 of 220/132 kV, 3x100 MVA transformers at Sarusajai ; High loading of other 2x100 MVA, 220/132 kV ICTs at Sarusajai	1583	Load: 1770 MW, Generation: 187 MW	N-1 of 220/132 kV, 3x100 MVA transformers at Sarusajai ; High loading of other 2x100 MVA, 220/132 kV ICTs at Sarusajai	1585	Load: 1775 MW, Generation: 190 MW
3	Manipur	N-1 of 132 kV Imphal (PG) - Imphal D/C lines; High loading of other circuit of 132 kV Imphal - Imphal D/C	235	Load: 235 MW, Generation: NIL(Loktak Gen = 35 MW)	N-1 of 132 kV Imphal (PG) - Imphal D/C lines; High loading of other circuit of 132 kV Imphal - Imphal D/C	264	Load: 264 MW, Generation: NIL (Loktak Gen=70 MW)
4	Meghalaya	N-1 of 132 kV Byrnihat-Epip II D/C; High loading of other circuit of 132 kV Byrnihat - EPIP II D/C	286	Load: 371 MW, Generation: 85 MW	N-1 of 132 kV Byrnihat-Epip II D/C; High loading of other circuit of 132 kV Byrnihat - EPIP II D/C	281	Load: 448 MW, Generation: 167 MW
5	Mizoram	N-1 of 132/33kV, 12.5 MVA transformer at Luangmual/Zimabawk/Serchip/Lunglei/Kolasib ; High loading of other 132/33 kV Transformers within Mizoram	115	Load: 117 MW, Generation: 2 MW	N-1 of 132/33kV, 12.5 MVA transformer at Luangmual/Zimabawk/Serchip/Lunglei/Kolasib ; High loading of other 132/33 kV Transformers within Mizoram	115	Load: 117 MW, Generation: 2 MW
6	Nagaland	N-1 of 132/66 kV, 100 MVA ICT at Dimapur (Nagaland); High loading of 132/33 kV Transformers at Mokokchung and Kohima areas of Nagaland	90	Load: 100 MW, Generation: 10 MW	N-1 of 132/66 kV, 100 MVA ICT at Dimapur (Nagaland); High loading of 132/33 kV Transformers at Mokokchung and Kohima areas of Nagaland	90	Load: 108 MW, Generation: 18 MW
7	Tripura (including Bangladesh Load)	N-1 of 132 kV Palatana - Surjamaninagar S/C; High loading of 132 kV Palatana - Udaipur S/C	277	Load: 357 MW (297+60), Generation: 80 MW	N-1 of 132 kV Palatana - Surjamaninagar S/C; High loading of 132 kV Palatana - Udaipur S/C	271	Load: 354 MW (299+55), Generation: 83 MW

### Remarks:

- 1) Tripura generation mentioned above is NOT inclusive of generation from Monarchak & Tripura load is inclusive of Bangladesh load
- 2) In Manipur system, 132 kV Kakching - Kongba line is kept open
- 3) In Meghalaya system, 132 kV NEHU - Umiam, 132 kV Mawlai - Mawngap, 132 kV Mawlai - Umiam1 are kept open
- 4) In Tripura system, 132 kV P.K.Bari - Kumarghat, 132 kV P.K.Bari - Dharmanagar, 132 kV Budhjanganagar - Jirania S/C, 132 kV Agartala - Dhalabil S/C are kept open

**State Subsystems Transfer Capability**

**26-May-16**

*Study Scenario : June 2016*

**Import Capability**

Sl.No	State	Subsystem	N-0			N-1		
			Limits	Total Transfer Capability	Subsystem Load & Generation	Contingency & Limits	Total Transfer Capability	Subsystem Load & Generation
1	Arunachal Pradesh	Ziro	132/33 kV Transformers at Ziro, Daporizo, Along	65	Load: 65 MW	N-1 of 132/33 kV, 15 MVA Transformers at Ziro / Along; High loading of other 132/33 kV Transformers at Ziro, Daporizo, Along	50	Load: 50 MW
2		Capital	132/33 kV Transformers at Naharlagun, Nirjuli	50	Load: 50 MW	N-1 of 132/33 kV, 20 MVA Transformer at Naharlagun; High loading of other 132/33 kV Transformers at Naharlagun & Nirjuli	32	Load: 32 MW
3		Khupi	132/33 kV Transformers at Khupi, Bhalukpong	46	Load: 46 MW	132/33 kV, 30 MVA Transformer at Bhalukpong; High loading of 132/33 kV Transformers at Khupi	18	Load: 18 MW
4		Deomali	132/33, 2x16 MVA Transformers at Deomali	30	Load: 30 MW	N-1 of 132/33 kV, 16 MVA Transformer at Deomali; High loading of other 132/33 kV Transformer at Deomali	15	Load: 15 MW
5	Assam	Dhaligaon	132/33 kV Transformer at BTPS & 132 kV BTPS - Dhaligaon D/C	173	Load: 173 MW	N-1 of 132 kV BTPS - Dhaligaon D/C; High loading of other circuit of 132 kV BTPS - Dhaligaon S/C	93	Load: 93 MW
6		Capital	220/132 kV, 3x100 MVA Transformers at Sarusajai & 220/33 kV, 2x50 MVA Transformers at Jawaharnagar GIS	483	Load: 483 MW, Generation: NIL	N-1 of 220/132 kV, 3x100 MVA Transformers at Sarusajai; High loading of other 220/132 kV Transformers at Sarusajai and 220/33 kV Transformers at Jawaharnagar	363	Load: 363 MW, Generation: NIL
7		Samaguri	220/132 kV, 2x50 +1x100 MVA Transformers at Samaguri	165	Load: 165 MW	N-1 of 220/132 kV, 1x100 MVA Transformer at Samaguri; High loading of other 220/132 kV Transformers at Samaguri	90	Load: 90 MW
8		Upper Assam	220/132 kV, 2x100 MVA Transformers at Mariani (AS) and several 132/33 kV & 66/33 kV Transformers	477	Load: 667 MW, Generation: 190 MW	N-1 of 220/132 kV, 2x100 MVA Transformers at Mariani (AS); High loading of other 220/132 kV Transformer at Mariani (AS)	300	Load: 487 MW, Generation: 190 MW



### State Subsystems Transfer Capability

26-May-16

Study Scenario : June 2016

#### Import Capability

Sl.No	State	Subsystem	N-0			N-1		
			Limits	Total Transfer Capability	Subsystem Load & Generation	Contingency & Limits	Total Transfer Capability	Subsystem Load & Generation
9	Assam	Pavoi, Gohpur & Depota (Excluding Gohpur bus load fed from Nirjuli)	132 kV BiswanathChariali (PG) - Pavoi D/C	214	Load: 214 MW	N-1 of 132 kV BiswanathChariali (PG) - Pavoi D/C; High loading of other circuit of 132 kV BiswanathChariali (PG) - Pavoi D/C	104	Load: 104 MW
10		South Assam	132/33 kV Transformers at Dullavcherra, Panchgram, PanchgramOld, Srikona, Pailapool	182	Load: 182 MW; Generation : Nil	N-1 of 132/33 kV, 2x25 MVA Transformers at Panchgram / Srikona; High loading of other 132/33 kV Transformers at Panchgram, Srikona, Dullavcherra, PanchgramOld, Pailapool	170	Load: 171 MW
11		Haflong and Umrangshoo area	132/33 kV Transformers at Haflong, Umrangshoo	32	Load: 32 MW	N-1 of 132/33 kV, 16 MVA Transformer at Umrangshoo; High loading of 132/33 kV Transformers at Haflong	18	Load: 18 MW
12	Manipur	Capital	132/33 kV Transformers at Imphal (PG), Yurembam, Karong, Yaingangpokpi, Kongba	249	Load: 249 MW	N-1 of 2x50 MVA 132/33 kV Transformers at Imphal (PG); High loading of 132/33 kV Transformers at Imphal(PG), Yurembam, Karong, Yaingangpokpi, Kongba	205	Load: 205 MW
13		Ningthoukong	High loading of 132 kV Loktak - Ningthoukong S/C	80	Load: 80 MW	N-1 of 132/33 kV Transformer at Kakching / Churachandpur / Ningthoukong	72	Load: 72 MW
14		Jiribam	132/33 kV Transformers at Jiribam, Rengpang	17	Load: 17 MW	N-1 of 132/33 kV, 12.5 MVA Transformer at Rengpang; High loading of 132/33 kV Transformers at Jiribam	6	Load: 6 MW

### State Subsystems Transfer Capability

26-May-16

Study Scenario : June 2016

#### Import Capability

Sl.No	State	Subsystem	N-0			N-1		
			Limits	Total Transfer Capability	Subsystem Load & Generation	Contingency & Limits	Total Transfer Capability	Subsystem Load & Generation
15	Meghalaya	Khliehriat	132 kV Khliehriat - Mustem S/C	129	Load: 200 MW ; Generation: 71 MW	N-1 of 132 kV Khliehriat - Khliehriat I; High loading of 132 kV Khliehriat - Khliehriat II (Note: 132 kV Panchgram - Lumshnong considered in service)	98	Load: 169 MW, Generation: 71 MW
16		Byrnihat	132 kV Byrnihat - EPIP-II D/C	159	Load: 264 MW, Generation: 95 MW	N-1 of 132 kV Byrnihat - EPIP-II D/C ; High loading of other circuit of 132 kV Byrnihat - EPIP-II D/C	80	Load: 179 MW, Generation: 95 MW
17		Nangalbibra	132/33 kV Transformers at Mendipather, Nangalbibra & 132 kV Agia - Mendipather	80	Load: 80 MW	N-1 of 132/33 kV, 20 MVA Transformer at Mendipather; High loading of 132/33 kV Transformers at Nangalbibra	55	Load: 55 MW
18	Mizoram	Zimabawk	132 kV Aizawl - Zimbawk S/C	80	Load: 80 MW	N-1 of 132/33kV, 12.5 MVA transformer at Luangmual/Zimabawk/Serchip/Lunglei ; High loading of 132 kV Aizawl - Zimabawk S/C	70	Load: 70 MW
19		Luangmual	132/33 kV, 3x12.5 MVA Transformers at Luangmual	35	Load: 35 MW	N-1 of 132/33 kV, 3x12.5 MVA Transformers at Luangmual; High loading of other 132/33 kV Transformers at Luangmual	24	Load: 24 MW
20		Kolasib	132/33 kV, 12.5 MVA Transformer at Kolasib	16	Load: 20 MW, Generation: 4 MW	N-1 of 132/33 kV 12.5 MVA Transformer at Kolasib ; High loading of other 132/33 kV Transformer at Kolasib	6	Load: 10 MW, Generation: 4 MW

### State Subsystems Transfer Capability

26-May-16

Study Scenario : June 2016

#### Import Capability

Sl.No	State	Subsystem	N-0			N-1		
			Limits	Total Transfer Capability	Subsystem Load & Generation	Contingency & Limits	Total Transfer Capability	Subsystem Load & Generation
21	Nagaland	Dimapur	132/66 kV, 100 MVA Transformer at Dimapur (Nagaland)	95	Load: 95 MW	N-1 of 132/33 kV, 20 MVA Transformers at Dimapur / Chumukedima ; High loading of other 132/33 kV Transformers in Dimapur area	77	Load: 77 MW
22		Capital	132/33 kV Transformers at Kohima, Meluri and 66/33 kV Transformer at Khipire	38	Load: 57 MW, Generation: 18 MW	N-1 of 132/33 kV 12.5 MVA Transformer at Meluri; High loading of 132/33 kV Transformers at Meluri and 66/33 kV Transformers at Khipire	27	Load: 46 MW, Generation: 18 MW
23		Mokokchung	132/66 kV, 2x25 MVA Transformers at Mokokchung (Nagaland)	48	Load: 48 MW	N-1 of 132/66 kV, 2x25 MVA Transformers at Mokokchung (Nagaland); High loading of other 132/33 kV Transformer at Mokokchung (Nagaland)	24	Load: 24 MW
24	Tripura	Udaipur	132/66 kV Transformers at Udaipur	31	Load: 33 MW, Generation: 2 MW	N-1 of 132/66 kV, 15 MVA Transformer at Udaipur; High loading of other 132/66 kV Transformer at Udaipur	17	Load: 19 MW, Generation: 2 MW
25		Capital & Other areas (including Bangladesh)	400/132 kV Palatana ICT-I	287	Load: 367 MW, Generation: 80 MW	N-1 of 132 kV Palatana - Surjamaninagar S/C; High loading of 132 kV Palatana - Udaipur S/C	242	Load: 322 MW, Generation: 80 MW

#### Remarks:

- 1) In Manipur system, 132 kV Kongba - Kakching line is kept open. The Kohima - Karong line is normally open. Hence, it is considered open in study cases.
- 2) In Meghalaya system, 132 kV NEHU - Umiam, 132 kV Mawlai - Mawngap, 132 kV Mawlai - Umiam I are kept open
- 3) In Tripura system, 132 kV P.K.Bari - Kumarghat, 132 kV P.K.Bari - Dharmanagar, 132 kV Budhjangnagar - Jirania S/C, 132 kV Agartala - Dhalabil S/C are kept open

**Group of Control Areas Transfer Capability**

26-May-16

*Study Scenario : June 2016*

Sl.No	Group of Control Area	N-0		Load-Generation	N-1		Load-Generation	N-1-1		Load-Generation
		Limits	Total Transfer Capability		Contingency & Limits	Total Transfer Capability		Contingency & Limits	Total Transfer Capability	
1	BNC Area (Pavoi, Gohpur, Depota areas; excluding Gohpur bus load fed from Nirjuli)	132 kV BiswanathChariali (PG) - Pavoi D/C	214	<i>Load: 214 MW</i>	N-1 of 132 kV BiswanathChariali (PG) - Pavoi D/C ; High loading of other circuit of 132 kV BiswanathChariali - Pavoi D/C	104	<i>Load: 104 MW</i>	N-1-1 of 132 kV BiswanathChariali (PG) - Pavoi D/C; High loading of 220/132 kV, 2x50 MVA ICTs at Balipara	74	<i>Load: 74 MW</i>
2	Southern Part of Assam (Import)	400/132 kV, 1x125 MVA ICT at Palatana	517	<i>Load: 768 MW, Generation: Palatana: 500, Loktak: 71, Monarchak: NIL (Unit unavailable due to non- availability of gas), AGTPP: 110, Tripura:83, Mizoram: 2</i>	N-1 of 400/132 kV, 2x200 MVA ICTs at Silchar, High loading of 400/132 kV Silchar & Palatana ICTs	304	<i>Load: 569 MW, Generation: Palatana: 500, Loktak: 71, Monarchak: NIL (Unit unavailable due to non- availability of gas), AGTPP: 110, Tripura:83, Mizoram:2</i>	N-1-1 of 400/132 kV, 2x200 MVA ICT at Silchar (PG); High loading of other ICT at Silchar	261	<i>Load: 509 MW, Generation: Palatana: 500, Loktak: 71, Monarchak: NIL (Unit unavailable due to non- availability of gas), AGTPP: 110, Tripura:83, Mizoram:2</i>
3	Southern Part of Assam (Export)	No limits	-	-	N-1 of 400 kV Silchar - Byrnihat S/C ; High loading of 132 kV Badarpur - Khliehriat	780	<i>Load: 200 MW, Generation: Palatana: 700, Loktak: 105, Monarchak:NIL, AGTPP: 130, Tripura: 83</i>	N-1-1 of 400 kV Silchar - Byrnihat and 400 kV Silchar - Azara S/C ; High loading of 132 kV Badarpur - Khliehriat	174	<i>Load: 449 MW, Generation; Palatana: 350, Loktak: 70, Monarchak: NIL, AGTPP: 130, Tripura: 83</i>

**Remarks:**

- 1) In Study of Import Capability of Southern Part of NER, axis has been considered from 400/132 kV Silchar ICT, 400/132 kV Palatana ICT, 132 kV Khliehriat - Badarpur S/C, 132 kV Haflong - Jiribam S/C, 132 kV Dimapur - Imphal S/C, ; thus NOT including generation from Palatana
- 2) In Study of Export Capability of Southern Part of NER, axis has been considered from 400 kV Silchar - Byrnihat S/C, 400 kV Silchar - Azara S/C, 132 kV Khliehriat - Badarpur S/C, 132 kV Haflong - Jiribam S/C, 132 kV Dimapur - Imphal S/C, ; thus including generation from Palatana
- 3) In study of Bangladesh load with Tripura, load of Bangladesh has been taken constant at 100 MW

**Load Crash Report****Incident No.:****1) Date and Time of the Incident:** DD.MM.YYYY w.e.f HHMM Hrs**2) Antecedent Conditions:**

i) Frequency : Pre incident : \_\_\_\_\_ Hz

ii) Demand Met / Generation

S.No	State/Area/Corridor	Demand Met (MW)
1		
2		

**3) Incident Summary:**

(Brief description of the event indicating area affected and reasons for load crash)

**i) Lines Outage and Restoration Details (132 kV & above)**

Sl. No	Element	Tripping type	Date and Time of Tripping		Date and Time of Restoration	
1						
2						

**ii) Details of tripping of LT feeders****iii) Approximate Load Loss in MW:****iv) Approximate Generation Loss in MW:****v) Area affected:****vi) Reason for Load Crash: Storm/ Heavy rainfall / Earthquake etc.****vii) Restoration Details :****4) Corrective action:****5) Current Status:**