North Eastern Regional Power Committee

Agenda

For

120nd OCC Sub-Committee Meeting

Time of meeting : 10:00 Hrs.

Date of meeting : 7th April, 2016 (Thursday)

Venue : "Hotel Nandan", Guwahati.

A. CONFIRMATION OF MINUTES

CONFIRMATION OF MINUTES OF 119th MEETING OF OPERATION SUB-COMMITTEE OF NERPC.

The minutes of 119th meeting of Operation Sub-committee held on 15th March, 2016 at Guwahati were circulated vide letter No. NERPC/SE (O)/OCC/2016/4556-4591 dated 28th March, 2016.

The Sub-committee may confirm the minutes of 119th OCCM of NERPC as no comments/observations were received from the constituents.

ITEMS FOR DISCUSSION

B. OPERATIONAL PERFORMANCE AND GRID DISCIPLINE DURING MARCH, 2016

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

NER PERFORMANCE DURING MARCH, 2016

	Energy Met (MU)		w.r.t. Feb,16 % inc (+) /dec (-)	Energy Reqr. (MU)		w.r.t. Feb,16 % inc (+) /dec (-)	% inc (+) /dec (-) of energy reqr vs met. In Mar, 16
States	**Mar-16**	**Feb-16**		**Mar-16**	**Feb-16**		
Ar. Pradesh	61.47	57.72	6.50	62.19	58.65	6.04	-1.17
Assam	667.81	617.90	8.08	693.58	636.10	9.04	-3.86
Manipur	69.44	68.36	1.58	70.51	69.39	1.61	-1.54
Meghalaya	142.73	155.56	-8.25	142.73	155.56	-8.25	0.00
Mizoram	41.05	41.08	-0.07	41.85	41.80	0.12	-1.95
Nagaland	60.67	59.67	1.68	61.81	60.66	1.90	-1.88
Tripura	120.45	86.75	38.85	123.41	88.36	39.67	-2.46
Region	**1163.62**	**1087.03**	**7.05**	**1196.08**	**1110.51**	**7.71**	**-2.79**

	Demand Met (MW)		w.r.t. Feb,16 % inc (+) /dec (-)	Demand in (MW)		w.r.t. Feb,16 % inc (+) /dec (-)	% inc (+) /dec (-) of Demand vs met. In Mar, 16
States	**Mar-16**	**Feb-16**		**Mar -16**	**Feb-16**		
Ar. Pradesh	113	135	-16.30	115	139	-17.27	-1.77
Assam	1316	1327	-0.83	1343	1333	0.75	-2.05
Manipur	155	158	-1.90	155	158	-1.90	0.00
Meghalaya	315	322	-2.17	315	322	-2.17	0.00
Mizoram	84	99	-15.15	86	101	-14.85	-2.38
Nagaland	114	118	-3.39	114	119	-4.20	0.00
Tripura	248	228	8.77	251	227	10.57	-1.21
Region	**2367**	**2328**	**1.68**	**2442**	**2401**	**1.71**	**-3.17**

REGIONAL GENERATION & INTER-REGIONAL EXCHANGE IN MU

Month---->	**Mar-16**	**Feb-16**
Total Generation in NER (Gross)	1019.18	891.75
Total Central Sector Generation (Gross)	783.60	664.07
Total State Sector Generation (Gross)	235.58	227.68
Inter-Regional Energy Exchange		
(a) NER-ER	152.77	13.57
(b) ER-NER	283.69	262.78
(c)NER-NR	101.91	0.00
(d)NR-NER	53.84	0.94
© Net Import	82.85	250.15

AVERAGE FREQUENCY (Hz)

Month---->	**Mar-16**	**Feb-16**
	% of Time	% of Time
Below 49.9 Hz	8.69	5.62
Between 49.9 to 50.05 Hz	70.02	70.49
Above 50.05 Hz	21.29	23.89
Average	50.00	50.01
Maximum	50.35	50.39
Minimum	49.68	49.71

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

During 119th OCC meeting, the status as informed by different beneficiaries are as follows:

SN	Items	Status as given in 120nd OCC Meeting	Status as given in 119th OCC Meeting
a. New Projects			
1	Trial operation and CoD of Unit -I of Bongaigoan TPS of NTPC		**No representative**
2	400/220kV, 2x315 MVA ICT of NTPC at Bongaigaon		**No representative**
3	Trial operation and CoD		Insufficiency of gas

	of Monarchak GBPP of NEEPCO		affecting trial operation and subsequent COD. NERPC will take up the issue with ONGC for gas.
4	Kameng HEP of NEEPCO two units (2 x 150 MW) Next two units (2x150 MW)		November, 2016 March, 2017
5	Pare HEP of NEEPCO (2 x 55 MW)		March, 2017
6	400 kV D/C Silchar - Melriat line of PGCIL		September, 2016
7	220kV Rangia - Salakati of AEGCL		June, 2016
8	132kV Monarchak – Surjamaninagar D/C of TSECL		July 2016
9	400/132 kV, 2nd 125 MVA ICT at Pallatana		June, 2016
10	132kV Pasighat – Aalong of Ar. Pradesh		March 2016 Commissioning by September 2016
11	132kV Doyang– Wokha		July 2016
12	220 kV Line Reactor Bay at AGBPP		-
13	220 kV, 20 MVAR Bus Reactor at AGBPP		April, 2016
14	132kV Surjamaninagar Bay at OTPC		July, 2016
15	400kV D/C Balipara – Kameng of Ar. Pradesh		March 2016
16	RHEP 80 MVAR Bus Reactor		Referred to next SCM of CEA.
b. Elements under breakdown/ upgradation			
17	63MVAR Reactor at Byrnihat of Me.PTCL		Order placed, Commissioning by June 2016
18	Up-gradation of 132 kV Lumshnong-Panchgram line		Tendering in process
19	Switchable line Reactors at 400kV Balipara &		April 2016(at Balipara end)

	Bongaigoan		BNC end equipments under procurement
20	PLCC Panels at Loktak end of Loktak – Ningthoukhong 132 kV feeder and Loktak - Rengpang 132 kV feeder		April 2016
21	LILO of 132kV Ranganadi – Nirjuli at Pare of NEEPCO		May 2016
22	LILO of 132kV Ranganadi – Itanagar (Chimpu) at Pare of NEEPCO		**No representative**

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 119th OCC is given in **Annexure - C.2.**
As indicated by DGM, NERTS, procurement of 21 nos. CTs for all lines up-gradation of CT ratios of NERTS, including 132 kV Doyang – Dimapur D/C, will take at least 6 months time.

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:-

Sl No	Description	Status of approval from OCC forum of NERPC
1	Operating Procedure of Ar. Pradesh 2015	Not submitted
2	Operating Procedure of Assam 2015	**Submitted**
3	Operating Procedure of Manipur 2015	**By 31.03.2016**
4	Operating Procedure of Meghalaya 2015	**Submitted**
5	Operating Procedure of Mizoram 2015	**By 31.03.2016**
6	Operating Procedure of Nagaland 2015	**Submitted**
7	Operating Procedure of Tripura 2015	**By 31.03.2016**

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 2015-16 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	Jan16	Feb16	Mar16	Apr16	May16	Jun16
Ar. Pradesh	67	57	70			
Assam	680	650	700			
Manipur	80	70	75			
Meghalaya	215	185	190			
Mizoram	47	40	45			
Nagaland	65	65	70			
Tripura	125	100	125			
NER	**1279**	**1167**	**1275**			

Availability:

Name of State	Jan16	Feb16	Mar16	Apr16	May16	Jun16
Ar. Pradesh	48	40	50			
Assam	590	550	600			
Manipur	70	60	65			
Meghalaya	180	145	140			
Mizoram	42	40	45			
Nagaland	55	50	50			
Tripura	200	150	170			
NER	**1185**	**1035**	**1120**			

The Sub-Committee noted as above.

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

The following figures were taken from LGBR 2015-16 of NERPC. These figures are to be reviewed.

A. Peak Demand in MW

Name of State	Jan16	Feb16	Mar16	Apr16	May16	Jun16
Ar. Pradesh	133	130	135	117	117	115
Assam	1400	1260	1410	1487	1487	1495
Manipur	165	148	155	154	155	160
Meghalaya	375	350	400	279	268	248
Mizoram	90	85	90	88	88	83
Nagaland	125	120	130	175	182	195
Tripura	250	240	275	240	246	250
NER	**2538**	**2333**	**2595**	**2540**	**2543**	**2546**

B. Peak Availability in MW

Name of State	Jan16	Feb16	Mar16	Apr16	May16	Jun16

Ar. Pradesh	118	110	130			
Assam	1195	1150	1170			
Manipur	145	128	140			
Meghalaya	325	280	250			
Mizoram	85	85	80			
Nagaland	95	90	95			
Tripura	403/230	403/230	403/230			
NER	**2375**	**2243**	**2268**			

**Tripura indicates 400/230 if Pallatana available/if not available*

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

Name of State	Jan16	Feb16	Mar16	Apr16	May16	Jun16
Ar. Pradesh	73	70	80	92	92	90
Assam	1030	1020	1050	1091	1091	1194
Manipur	95	90	95	76	76	120
Meghalaya	230	220	220	193	186	185
Mizoram	60	55	55	66	66	52
Nagaland	85	75	80	116	122	139
Tripura	190	170	180	149	157	156
NER	**1638**	**1700**	**1760**	**1783**	1790	**1936**

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

Name of State	Jan16	Feb16	Mar16	Apr16	May16	Jun16
Ar. Pradesh	65	60	70			
Assam	850	900	950			
Manipur	90	80	85			
Meghalaya	275	245	230			
Mizoram	60	60	55			
Nagaland	70	60	65			
Tripura	240	240	240			
NER	**1650**	**1645**	**1695**			

In 119th OCCM, SE(O), NERPC informed that draft LGBR has already been prepared but since central sector generation data has not yet been ratified by CEA, the LGBR of 2016-17 cannot be finalized.

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

In view of outage of Kopili units, proper planning is essential for utilization of available water of other reservoir based stations so that adequate generation can be maintained upto April/May, 2016.

Since water level at Loktak HEP is in comfort position, the plant will be utilized in the peak hours during complete shutdown of Kopili HEP.

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

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

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

D.3 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 119th OCCM, NEEPCO informed the forum that data is being submitted for AGTPP regularly and every effort is being made to submit for the other stations. NERLDC informed the forum that the data received from OTPC is intermittent and NHPC data of Mar'16 onwards has not been sent. Forum advised the concerned CSGSs' to kindly conform. NERLDC requested the concerned utilities to furnish monthly data by 10th of next month which has been agreed by the utilities.

NEEPCO and NHPC may kindly intimate the status.

D.4 Furnishing of Technical & Commercial Data for Computation of PoC Charges & Losses for 3rd Quarter of 2015-16 (Oct'15- Dec'15):

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 **1st Quarter of 2016-17 (April'16- May'16)**

1. Technical details of new transmission elements and generating units which are expected to commence commercial operation during **April'16- May'16**
2. Yearly Transmission Charges
3. Nodal Generation information and forecast withdrawl data

During 118th OCCM, members deliberated and reviewed the data as furnished by NERLDC and the same is attached at **Annexure – D.4.**
Figures to be discussed and modifications as follows:

a) Ranganadi => Restrict to 401 MW (Installed – Auxiliary Consumption)
b) Palatana => Due to uncertainty in gas supply, figure kept at 478 MW.
c) AGTPP => To be taken as 78 MW and 44 MW for AGTPP Extension.
d) Meghalaya => Generation is very high (271 MW given). Meghalaya to give their final generation figures.
f) Assam => Demand of Assam to be changed to 1250 MW. (As per comments from AEGCL representative)

g) Kopili => Generation to be kept as 90 MW
h) Tripura => Demand to be taken as 230 MW
i) Loktak => Generation to be taken as 103 MW (As per comments from NHPC representative).

Senior Engineer (SO-II) informed the forum that some lines owned by AEGCL, MePTCL and TSECL have been approved by CERC for inclusion in calculation of PoC Charges and Losses. Accordingly, YTC (Yearly Transmission Charges) information from AEGCL, MePTCL and TSECL are required by the Implementing Agency (NLDC) for inclusion in PoC Charges and Losses calculation for Q4 of 2015-16 and Q1 of 2016-17.

He requested AEGCL, MePTCL and TSECL to furnish the requisite information at the earliest to NLDC with a copy to NERLDC. AEGCL and MePTCL agreed.

NERLDC also expressed the need to include generation figures of Monarchak GT-1 in generation figures of Tripura. Due to presence of no representative from Tripura and in absence of confirmation regarding adequate gas supply to Palatana and Monarchak, the matter was kept for further discussion.

In 119th OCCM, AGM,SLDC, AEGCL opined that in view of tentative power supply to Bangladesh by TSECL, 100MW is to be added to Tripura demand, making the revised figure as 330MW. Members unanimously agreed.

Members may please inform about proceedings of Validation Committee.

D.5 Estimated Transmission Availability Certificate (TAC) for the month of February, 2016.

NETC and POWERGRID, NERTS have submitted TAC data of February, 2016 in the first/second week of March, 2016. This will enable issuance of verification by NERLDC and certification by NERPC on monthly basis within stipulated time frame. Both NETC and NERTS are advised to follow the agreed time schedule in future to avoid accumulation of reports and corresponding delay.

Members may please discuss.

D.6 Modification of existing 132kV S/C Nirjuli –Ranganadi Transmission Line on account of Railway Track Construction:

The newly constructed Harmuti-Naharlagun Railway Track infringes with the 132KV Nirjuli-Ranganadi line between existing location 02 to loc.14 & crosses the track at 3 (three) locations. In order to do away with this infringement & at the behest of the District Administration, POWERGRID has carried out detailed survey for re-alignment of the complete line section from loc.134 to loc.23. The proposed line section shall now pass through Emchinallah-Lekhi village in Papumpare District.

Further, the contract for diversion of the line section from loc.134 to loc.23 has also been awarded by POWERGRID & erection work is expected for commencement very shortly. Subsequent to completion of the re-aligned section of the line(which is expected by April'2016), the existing line section passing through Doimukh area in Papumpare District shall be required to be disconnected & dismantled. It may be mentioned that the 132KV Nirjuli-Ranganadi line has been looped in & looped out at 132KV Lekhi Substation of DoP, AP at tower loc.11. Therefore, with disconnection of the existing line section from loc.134 to loc.23 as a result of its re-alignment, connection of Lekhi Substation (DoP, AP) with Ranganadi & Nirjuli through the LILO portion shall be no longer available.

It is learnt that action has been taken by DoP, AP simultaneously for modification of the LILO line so as to ensure connectivity with 132KV Nirjuli-Ranganadi line after re-alignment is carried out by POWERGRID. Therefore, DoP, AP may look into for completion of this modification of LILO portion of the line matching with re-alignment of the line from loc.134 to loc.23(under execution by POWERGRID) in case it is felt necessary to maintain the existing configuration of LILO of line at Lekhi S/s(DoP, AP)

During 117th OCCM DGM (AM), NERTS informed the forum that erection works related to Ar. Pradesh i.e. LILO point for connectivity to Lekhi should match that of POWERGRID.

EE, SLDC, Ar. Pradesh informed the forum that Railways have not yet transferred the funds to DoP, Ar. Pradesh. He assured to take up the matter with their concerned authority to match the construction.

DGM(AM), NERTS informed the forum that erection works related to Ar. Pradesh i.e. LILO point for connectivity to Lekhi should match that of POWERGRID.

EE, SLDC, Ar. Pradesh informed the forum that Railways have not yet transferred the funds to DoP, Ar. Pradesh. He requested that the matter may be referred to next TCC/RPC meeting keeping in mind the sensitivity of the issue.

The Sub-committee instructed that DoP, Ar. Pradesh should carry out the above work in line with PPOWERGRID so that the power supply to Nirjuli does not hamper.

NERTS, Ar. Pradesh may kindly deliberate on this issue.

D.7 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 are 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 26th of March), for further assessment of TTC, ATC and TRM of NER–ER corridor, group of control areas, individual control areas with the region and state-control-area to state-control-area by NERLDC, if required.

SLDCs are also requested to send study results for Peak (Export & Import) & Off Peak (Export & Import) along with assumptions in details and 6 nos ".sav" case files (Base Case for Peak & Off Peak, Off Peak & Peak Export & Off Peak & Peak Import) to NERLDC by 10th of the month for the fifth month. All India ".sav" case files have been sent to SLDCs. SLDCs are requested 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-II.**

The study results for assessment of Total Transfer Capability (TTC), Transmission Reliability Margin (TRM) and Available Transfer Capability (ATC) have not been received from any SLDC of NER.

Updated Base Cases have been already mailed to all the SLDCs on 04.04.16. All SLDCs are requested to assess the Total Transfer Capability (TTC), Transmission Reliability Margin (TRM) and Available Transfer Capability (ATC) and submit the cases to NERLDC for the month of July'16 by 10thApril, 2016.

NERLDC may kindly deliberate on this issue.

D.8 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 117th OCCM, AGM SLDC, Assam suggested that since ADMS involves connectivity to 33kV substations, a separate meeting with the DISCOMS is required. The forum agreed and requested NERPC to kindly convene the meeting at a suitable date.
NERLDC requested SLDCs of NER to submit the report of status of implementation of Automatic Demand Management Scheme (ADMS) by SLDCs of NER by 15.08.16.

During 118th OCCM, SE(O) informed that during the recent workshop on RTUs, some of the firms have intimated that they can help the NER constituents related to implementation of Automatic Demand Management Scheme (ADMS) by giving some presentation on the issue.

The Sub-committee requested NERPC to conduct a workshop/seminar on ADMS by calling some of the reputed firms viz. ABB, ALSTOM, WIZIMAX, SCHENIDER etc. and also to request all the DISCOMs (dealing with R-APRDP), SLDCs for the benefit of the constituents.

The SLDCs of NER agreed to submit the report of status of implementation of ADMS to NERLDC by 15.08.2016.

In 117th OCCM after the brief presentation by C-DAC, SE(O) suggested that C-DAC may help with the software implementation of ADMS at SLDC level. He also informed the forum that workshop on ADMS would be organized very soon.

The workshop on ADMS is being organized on 07.04.2016.

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

D.9 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.

In 118th OCCM, DGM, NERTS informed that the problem is at Agartala end and the same will be rectified soon.

NERLDC informed that due to mismatch in phase notations, angles reported by PMUs are erroneous and Agartala PMU was reporting wrong at the time of the OCC meeting. Also, due to mismatch in phase markings in some places like 400 kV Azara, DR prints received from two ends of the 400 kV lines from Azara showed mismatch in phases. AEGCL was requested to take up correction in phase notations at the earliest.

During 119th OCCM, DGM(AM), NERTS informed that work at 79 Tilla would be completed within 16.03.2016.

NERTS, AEGCL & NERLDC may kindly intimate the status.

D.10 Transformer Tap optimization

System study was conducted by NERLDC considering load, generation and network pattern of February, 2015 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 – D.14.**

During 118th OCCM, NERLDC circulated the results of tap-optimisation study for discussion. NERLDC also circulated the scatter plots at 400/220 kV Bongaigaon (PG), 400/220 kV Balipara (PG), 400/220 kV Misa (PG), 400/132 kV Ranganadi (NEEPCO), 400/132 kV Silchar (PG) and 400/132 kV Palatana (OTPC) to depict the pattern of voltages for the months of October 2015 – January 2016, to aid in tap optimization. It was iterated that due to non-availability of correct data in SCADA system from 400/220 kV Azara, 400/220 kV Byrnihat, 132 kV Biswanath Chariali (PG), scatter plots could not be developed for these substations. NERLDC requested to ensure proper data from all 400 kV substations, considering their importance.

After detailed deliberation, the Sub-committee suggested that transformer tap position can be tested at Byrnihat sub-station first and the outcome can be monitored by NERLDC if the voltage will improve.

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

NERLDC may kindly intimate the status.

D.11 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 – D.17**.

During 120th OCCM,DGM, NERLDC requested all the utilities to check the figures available with CEA as well as with NERLDC and to send the correct figures as early as possible. S.E(O) informed the forum that the disparities would be intimated to CEA,

after getting the correct figures from respective utilities, for rectification at their end. Member Secretary requested all to furnish the details by 25th March, 2016 positively.

NERLDC may please intimate the status.

D.12 Submission of data according to Standards of Performance of ISTS Regulations 2012, CERC

As per Standards of Performance of ISTS Regulations 2012, CERC, the following data are required on monthly basis for computation of Dependability Index, Security Index and Reliability Index:

1. Nc – Number of correct operations during the month
2. Nu - Number of unwanted operations during the month
3. Nf - Number of failures to operate at internal power system faults during the month
4. Ni - Number of incorrect operations during the month

In addition of above data, data of five or more tripping of a transmission element in a month are also required. These data are to be sent to CERC on monthly basis.

POWERGRID and NETC are requested to furnish these data on monthly basis by 10th of every month for the previous month.

During 119th OCCM, NERLDC informed that they are not getting the data. NERTS and NETC agreed to submit the data henceforth regularly.

NERLDC may please intimate the status.

D.13 Issues related to New Scheduling software

As already intimated earlier that NERLDC is in the process of procurement of New Web based scheduling software. The trial version of the same is going to be in operation shortly. The following issues are required to be clear to the users.

i) Technical minimum limit of generators

ii) Partial requisition by beneficiaries from NER and ER stations

iii) **Selling of regulated power by generators etc.**

During 119th OCCM, Sr. Engineer, NERLDC informed the forum that one of the distinct advantages of the new scheduling software would be that technical minimum can now be fixed w.r.t. generators only. Erstwhile the procedure was to fix the technical minimum w.r.t. beneficiaries to prevent under-requisitioning below technical minimum. In the new scheduling software any beneficiary can give zero requisition if no other beneficiary is under-requisitioning. Members appreciated the proposal and agreed to revert back with their views.

Members may please discuss.

D.14 Methodology of Settlement of Accounts for the period of Grid Disturbance:

The 'Methodology for Settlement of Accounts for the Period of Grid Disturbance for Bilateral Short Term and Collective Transactions' prepared by Working group-NPC is attached in **Annexure D.14.**

Members may please deliberate.

D.15 Events related to extreme weather :

Weather Forecast from IMD mailed by NERLDC to all SLDCs of NER on daily basis. It is requested to kindly plan scheduling of each state based on the weather forecast from IMD.

This is for information that 2 incidences have been reported in the month of March'16.

On 16thMarch 2016, starting from 1230 Hrs, Assam experienced a load crash of around 200 MW. Due to heavy wind flow mainly in Lower Assam and Central Assam area several LT feeders tripped.

On 28thMarch 2016, starting from mid night, NER states of Assam and Meghalaya experienced a load crash due to heavy storm& heavy rain fall. As a result, Load crash of around 300 MW in Assam and 50 MW in Meghalaya occurred.

SLDCs of NERare also requested to send information of events related to extreme weather immediately after the incident to NERLDC.

Members may please discuss.

D.16 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 9th March, 2016. OTPC has already submitted the details.

The format is attached as **Annexure-I.**

NEEPCO, NHPC, NTPC, APGCL, MePGCL, TSECL, DoP, Nagaland & P&E, Mizoram are requested to submit details.

D.17 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 timethe 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 Palatanais under outage since 16:11 hrs of 15.03.16.
OTPC is requested to inform the status of Bus Reactor at Palatana.

Members may please discuss.

D.18 Operationalisation of Ancillary Service :

Ancillary service operation is slated to start from 11.04.2016. NEEPCO, NHPC, NTPC are requested to submit necessary data at the earliest.

NERLDC may please deliberate.

Any other item:

Date and Venue of next OCC

It is proposed to hold the 121st OCC meeting of NERPC on second week of May, 2016. The date & exact venue will be intimated in due course.

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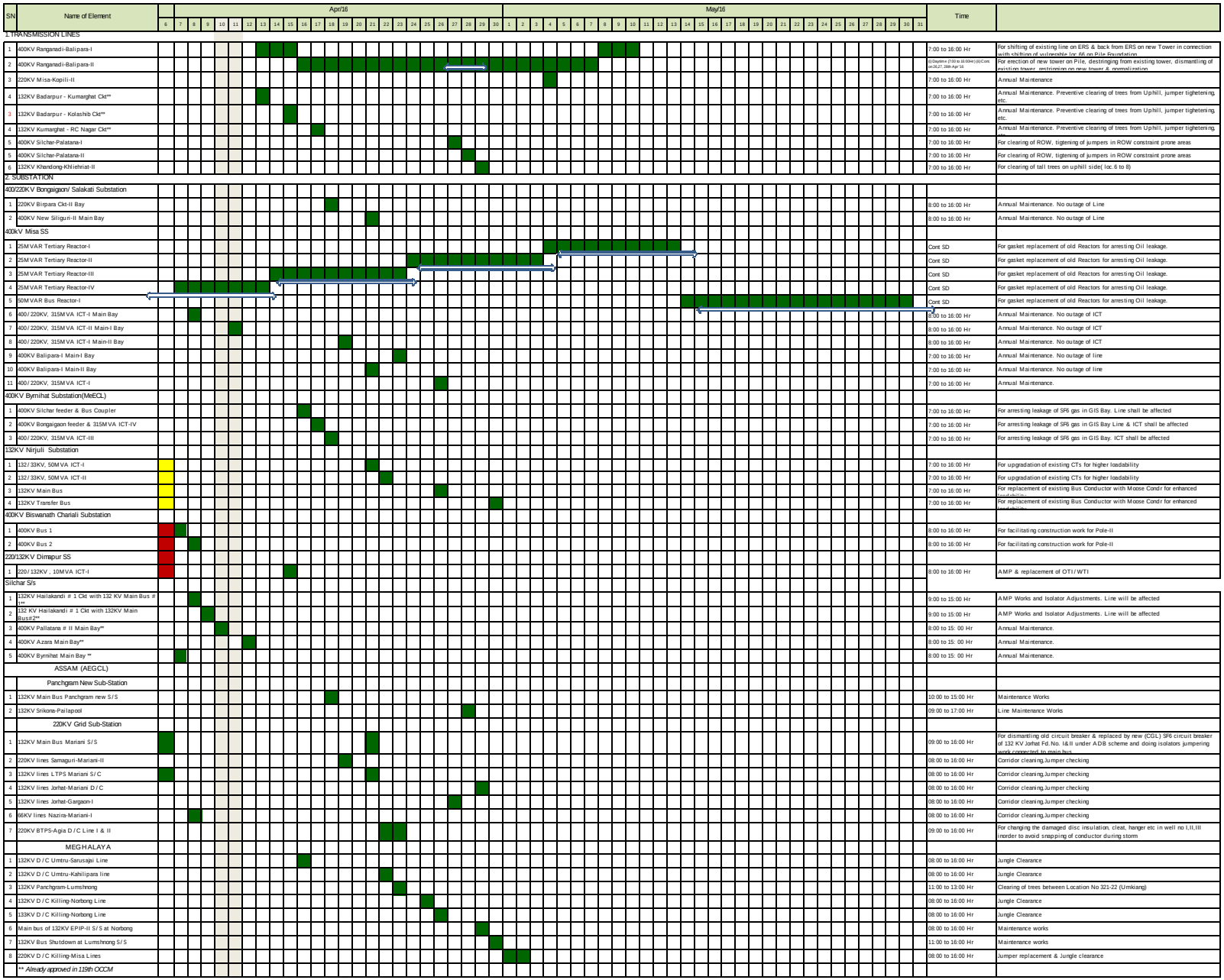
PROPOSED SHUTDOWN OF ELEMENTS FOR 120th OCCM- BAR CHART



SN	Name of Element	Time	
1	TRANSMISSION LINES		
1	400KV Ranganadi-Balipara-I	7:00 to 16:00 Hr	For shifting of existing line on ERS & back from ERS on new Tower in connection with shifting of vulnerable loc 66 on Pile Foundation
2	400KV Ranganadi-Balipara-II	(i) Daytime (7:00 to 16:00Hr) (ii) Cont on 26,27,28th Apr'16	For erection of new tower on Pile, destringing from existing tower, dismantling of existing tower, restringing on new tower & normalization
3	220KV Misa-Kopili-II	7:00 to 16:00 Hr	Annual Maintenance
4	132KV Badarpur - Kumarghat Ckt**	7:00 to 16:00 Hr	Annual Maintenance. Preventive clearing of trees from Uphill, jumper tightening etc.
5	132KV Badarpur - Kolasib Ckt**	7:00 to 16:00 Hr	Annual Maintenance. Preventive clearing of trees from Uphill, jumper tightening etc.
4	132KV Kumarghat - RC Nagar Ckt**	7:00 to 16:00 Hr	Annual Maintenance. Preventive clearing of trees from Uphill, jumper tightening etc.
5	400KV Silchar-Palatana-I	7:00 to 16:00 Hr	For clearing of ROW, tigtening of jumpers in ROW constraint prone areas
5	400KV Silchar-Palatana-II	7:00 to 16:00 Hr	For clearing of ROW, tigtening of jumpers in ROW constraint prone areas
6	132KV Khandong-Khliehriat-II	7:00 to 16:00 Hr	For clearing of tall trees on uphill side(loc 6 to 8)
2	SUBSTATION		
	400/220KV Bongaigaon/ Salakati Substation		
1	220KV Birpara Ckt-II Bay	8:00 to 16:00 Hr	Annual Maintenance. No outage of Line
2	400KV New Siliguri-II Main Bay	8:00 to 16:00 Hr	Annual Maintenance. No outage of Line
	400kV Misa SS		
1	25MVAR Tertiary Reactor-I	Cont SD	For gasket replacement of old Reactors for arresting Oil leakage.
2	25MVAR Tertiary Reactor-II	Cont SD	For gasket replacement of old Reactors for arresting Oil leakage.
3	25MVAR Tertiary Reactor-III	Cont SD	For gasket replacement of old Reactors for arresting Oil leakage.
4	25MVAR Tertiary Reactor-IV	Cont SD	For gasket replacement of old Reactors for arresting Oil leakage.
5	50MVAR Bus Reactor-I	Cont SD	For gasket replacement of old Reactors for arresting Oil leakage.
6	400/220KV, 315MVA ICT-I Main Bay	8:00 to 16:00 Hr	Annual Maintenance. No outage of ICT
7	400/220KV, 315MVA ICT-II Main-I Bay	8:00 to 16:00 Hr	Annual Maintenance. No outage of ICT
8	400/220KV, 315MVA ICT-I Main-II Bay	8:00 to 16:00 Hr	Annual Maintenance. No outage of ICT
9	400KV Balipara-I Main-I Bay	7:00 to 16:00 Hr	Annual Maintenance. No outage of line
10	400KV Balipara-I Main-II Bay	7:00 to 16:00 Hr	Annual Maintenance. No outage of line
11	400/220KV, 315MVA ICT-I	7:00 to 16:00 Hr	Annual Maintenance.
	400KV Byrnihat Substation(MeECL)		
1	400KV Silchar feeder & Bus Coupler	7:00 to 16:00 Hr	For arresting leakage of SF6 gas in GIS Bay. Line shall be affected
2	400KV Bongaigaon feeder & 315MVA ICT-IV	7:00 to 16:00 Hr	For arresting leakage of SF6 gas in GIS Bay Line & ICT shall be affected
3	400/220KV, 315MVA ICT-III	7:00 to 16:00 Hr	For arresting leakage of SF6 gas in GIS Bay. ICT shall be affected
	132KV Nirjuli Substation		
1	132/33KV, 50MVA ICT-I	7:00 to 16:00 Hr	For upgradation of existing CTs for higher loadability
2	132/33KV, 50MVA ICT-II	7:00 to 16:00 Hr	For upgradation of existing CTs for higher loadability
3	132KV Main Bus	7:00 to 16:00 Hr	For replacement of existing Bus Conductor with Moose Condr for enhanced
4	132KV Transfer Bus	7:00 to 16:00 Hr	For replacement of existing Bus Conductor with Moose Condr for enhanced
	400KV Biswanath Chariali Substation		
1	400KV Bus 1	8:00 to 16:00 Hr	For facilitating construction work for Pole-II
2	400KV Bus 2	8:00 to 16:00 Hr	For facilitating construction work for Pole-II
	220/132KV Dimapur SS		
1	220/132KV , 10MVA ICT-I	8:00 to 16:00 Hr	AMP & replacement of OTI/WTI
	Silchar S/s		
1	132KV Hailakandi # 1 Ckt with 132 KV Main Bus # 1**	9:00 to 15:00 Hr	AMP Works and Isolator Adjustments. Line will be affected
2	132 KV Hailakandi # 1 Ckt with 132KV Main Bus#2**	9:00 to 15:00 Hr	AMP Works and Isolator Adjustments. Line will be affected
3	400KV Pallatana # II Main Bay**	8:00 to 15: 00 Hr	Annual Maintenance.
4	400KV Azara Main Bay**	8:00 to 15: 00 Hr	Annual Maintenance.
5	400KV Byrnihat Main Bay **	8:00 to 15: 00 Hr	Annual Maintenance.
	ASSAM (AEGCL)		
	Panchgram New Sub-Station		
1	132KV Main Bus Panchgram new S/S	10:00 to 15:00 Hr	Maintenance Works
2	132KV Srikona-Pailapool	09:00 to 17:00 Hr	Line Maintenance Works
	220KV Grid Sub-Station		
1	132KV Main Bus Mariani S/S	09:00 to 16:00 Hr	For dismantling old circuit breaker & replaced by new (CGL) SF6 circuit breaker of 132 KV Jorhat Fd.No. I&II under ADB scheme and doing isolators jumpering work connected to main bus
2	220KV lines Samaguri-Mariani-II	08:00 to 16:00 Hr	Corridor cleaning,Jumper checking
3	132KV lines LTPS Mariani S/C	08:00 to 16:00 Hr	Corridor cleaning,Jumper checking
4	132KV lines Jorhat-Mariani D/C	08:00 to 16:00 Hr	Corridor cleaning,Jumper checking
5	132KV lines Jorhat-Gargaon-I	08:00 to 16:00 Hr	Corridor cleaning,Jumper checking
6	66KV lines Nazira-Mariani-I	08:00 to 16:00 Hr	Corridor cleaning,Jumper checking
7	220KV BTPS-Agia D/C Line I & II	09:00 to 16:00 Hr	For changing the damaged disc insulation, cleat, hanger etc in well no I,II,III inorder to avoid snapping of conductor during storm
	MEGHALAYA		
1	132KV D/C Umtru-Sarusajai Line	08:00 to 16:00 Hr	Jungle Clearance
2	132KV D/C Umtru-Kahlipara line	08:00 to 16:00 Hr	Jungle Clearance
3	132KV Panchgram-Lumshnong	11:00 to 13:00 Hr	Clearing of trees between Location No 321-22 (Umkiang)
4	132KV D/C Killing-Norbong Line	08:00 to 16:00 Hr	Jungle Clearance
5	133KV D/C Killing-Norbong Line	08:00 to 16:00 Hr	Jungle Clearance
6	Main bus of 132KV EPIP-II S/S at Norbong	08:00 to 16:00 Hr	Maintenance works
7	132KV Bus Shutdown at Lumshnong S/S	11:00 to 16:00 Hr	Maintenance works
8	220KV D/C Killing-Misa Lines	08:00 to 16:00 Hr	Jumper replacement & Jungle clearance
	*** Already approved in 119th OCCM*		

Methodology for Settlement of Accounts for the Period of Grid Disturbance for Bilateral Short Term and Collective Transactions

Working Group-NPC

New Delhi,
March, 2016

Contents

Methodology for Settlement of Accounts for the Period of Grid Disturbance for Bilateral Short Term and Collective Transactions

1. Introduction:

Central Electricity Regulatory Commission (Indian Electricity Grid Code) (Second Amendment) Regulations, 2014, 6.5.17 stipulates as follows:

'……

For Bilateral short term and collective transactions, the methodology of settlement of accounts for the period of Grid Disturbance shall be formulated by National Power Committee(NPC) and same shall be put up to the Commission for approval. The methodology shall cover all possible scenarios with illustrative examples to cover the instances where the Grid disturbance is either partial or it affects only one region.'

This issue was deliberated in the 4th Meeting of NPC, wherein it was decided that a Working Group be constituted to examine & discuss possible options for treatment of bilateral short term and collective transactions in case of grid disturbances and submit its recommendations within two months for consideration of NPC in its next meeting.

Accordingly, a Working Group comprising representatives from CEA, Secretariat of RPCs/NPC and NLDC was constituted to finalize Methodology of settlement of accounts for bilateral short term and collective transactions for the period of Grid Disturbance.

The Working Group met on 16th February 2016 at NRPC, New Delhi to finalise the modalities.

2. Objective

As per "Central *Electricity Regulatory Commission (Indian Electricity Grid Code) (Second Amendment) Regulations, 2014: Regulation 6.5.17*

"In case of any grid disturbance, scheduled generation of all the ISGSs supplying power under long term / medium term/short term shall be deemed to have been revised to be equal to their actual generation and the scheduled drawals of the beneficiaries/buyers shall be deemed to have been revised accordingly for all the time blocks affected by the grid disturbance. Certification of grid disturbance and its duration shall be done by the RLDC.

The declaration of disturbance shall be done by the concerned RLDC at the earliest. A notice to this effect shall be posted at its website by the RLDC of the region in which the

disturbance occurred. Issue of the notice at RLDC web site shall be considered as declaration of the disturbance by RLDC. All regional entities shall take note of the disturbance and take appropriate action their end.

……."

It could be inferred that for the period of grid disturbance, ISGS (a central generating station or other generating station, in which two or more states have shares) is not liable for any deviation from the dispatch schedule and the commercial settlement is based on actual injection at the applicable energy charges of the ISGS. But the beneficiaries are liable for the deviations on account of the revised schedule of ISGS for the period of grid disturbance also.

It was observed that the methodology as in the case of ISGSssupplying power under long term / medium term/short term could not be adopted for ISGSs / IPPs/Sellers supplying power under collective transactions, since one to one correlation between buyers and sellers could not be established for collective transactions. For such cases, a methodology without revising collective transaction schedules of beneficiaries / buyers needed to be evolved.

3. Definitions

As per Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2010 and (Deviation Settlement Mechanism and related matters) Regulations, 2014.

- "Beneficiary" means a person who has a share in an ISGS;
- "Bilateral Transaction"meansa transaction for exchange of energy (MWh) between a specified buyer and a specifiedseller, directly or through a trading licensee ordiscovered at Power Exchange throughanonymous bidding, from a specified point ofinjection to a specified point of drawal for afixed or varying quantum of power (MW) for any time period during a month;
- "Buyer" means a person, including beneficiary, purchasing electricity through a transaction scheduled in accordance with the regulations applicable for short-term open access, medium-term open access and long-term access;
- "Collective Transaction" means a set of transactions discovered in power exchange through anonymous, simultaneous competitive bidding by buyers and sellers;
- "Control Area" means -an electrical system bounded by interconnections (tie lines), metering and telemetry which controls its generation and/or load to maintain its interchange schedule with other control areas whenever required to do so and contributes to frequency regulation of the synchronously operating system;
- "Despatch Schedule" means the ex-power plant net MW and MWh output of a generating station, scheduled to be exported to the Grid from time to time;

- "Drawal Schedule" means the summation of the station-wise ex-power plant drawal schedules from all ISGS and drawal from/injection to regional grid consequent to other long term access, mediumterm and short term open access transactions;
- "Independent Power Producer (IPP)" means -a generating company not owned/ controlled by the Central/State Government;
- "Inter-State Generating Station (ISGS)" means -a Central generating station or other generating station, in which two or more states have Shares;
- "Long –term Access (LToA)" means- the right to use the inter-State transmission system for a period exceeding 12 years but not exceeding 25 years;
- "Medium-term Open Access (MToA)" means -the right to use the inter- State transmission system for a period exceeding 3 months but notexceeding 3 years;
- "Power Exchange (PX)" means the power exchange which has been granted registration in accordance with CERC(Power Market Regulations), 2010 as amended from time to time;
- "Protection Coordination Sub-Committee" means a sub-committee of RPC with members from all the regional entities which decides on the protection aspects of the Regional Grid;
- "Regional Entity" means - such persons who are in the RLDC control area and whose metering and energy accounting is done at the regional level;
- "Regional Load Despatch Centre (RLDC) " means -the Centre established under sub-section (1) of Section 27 of the Act;
- **"**Seller" means a person, including a generating station, supplying electricity through a transaction scheduled in accordance with the regulations applicable for short-term open access, medium-term open access and long-term access;
- "Share" meanspercentage share of a beneficiary in an ISGS either notified by Government of India or agreed through contracts and implemented through long term access;
- "State Load Despatch Centre (SLDC)" means - the Centre established under subsection (1) of Section 31 of the Act;
- "State Transmission Utility (STU)" means- the Board or the government Company specified as such by the State Government under sub-section (1) of Section 39 of the Act.
- "Short-term Open Access (SToA)" -means open access for a period up to one (1) month at one time;

The Central Electricity Regulatory Commission in its Statement of Objects and Reasons in the matter of(Indian Electricity Grid Code) Regulations, 2010, it is clarified that the classification of the grid disturbances shall as per CEA (Grid Standards) Regulations.

It was observed that definition of "GridDisturbance" needed to be inserted in the CERC (DeviationSettlement Mechanism and related matters) Regulation for the purpose of settlement of accounts for the period of grid disturbance. The proposed definition is as follows:

"**Grid Disturbance**"- means -tripping of one or more power system elements of the grid like a generator, transmission line, transformer, shunt reactor, series capacitor and Static VAR Compensator, resulting in total failure of supply at a sub-station or loss of integrity of the grid, at the level of transmission system at 220 kV and above (132 kV and above in the case of North-Eastern Region);

4. Scope

The procedure shall be applicable to regional entity affected by grid disturbance. RLDC shall certify the duration (indicating start date/ time block and end date/ time block) of grid disturbance and provide list of ISGS/IPPs/Sellers affected by the grid disturbance to RPC.

"*Provided thatin case of state embedded ISGS/IPPs/Sellers,* supplying power to interstate/ inter regional buyersunder LToA/MTOA/SToA/PX affected by grid disturbance *shall be certified by SLDC & RLDC jointly or the Protection Sub Committee of RPC for revision of schedules of such generators for the period of grid disturbance.*"

It was observed that there are enormous number of sellers/IPPs embedded in many states and it won't be feasible for RLDC to accommodate them for contributing to grid disturbances so ISGS/ IPPs/Sellers embedded in STU system are not covered under this methodology since the deviation settlement of ISGS / embedded generators are being carried out by concerned SLDCs, as per the guidelines in vogue in the state. However, if the state embedded ISGS/ IPPs/Sellers to be considered under this methodology, SLDC & RLDC jointly or the Protection Sub Committee of RPC shall certify the affected state embedded ISGS/IPPs/Sellers by the grid disturbance. The concerned SLDC shall communicate the revised schedule of such ISGS/IPPS/Sellers to RLDC who in turn forward the same to respective RPC for computation of revised schedule of concerned regional entity for preparation of accounts accordingly.

In case of ISGS/ IPPs/Sellers embedded in STU System, under the control area of SLDC,supplying power to interstate/ inter regional buyersunder LToA/MTOA/SToA/PX, role of RLDC shall be limited to incorporate the schedules furnished by SLDCs.

5. Methodology

5.1 Pricing of Power during grid Disturbance:It was observed that in case of grid disturbance, there could be multiple frequenciesin the affected region/area resulting in different price vectors in different regions during the grid disturbances. Further, some of the entity may be forced to overdraw because of disturbances while some may not be able to draw power from grid. It is, therefore, proposed that to tackle different price vectorsrate is required to be notified by Hon'ble CERC (could be based on

averagepurchase cost of power) forthe purpose of deviation settlementof the affected regional entities by grid disturbance. Further, the deviation settlements of all generators affected during the particular grid disturbance is proposed to be delinked from frequency during the period of grid disturbances.

5.2 Revision of Schedule:

5.2.1 Priority in revision of schedules of LToA/MToA/SToA shall be as per the procedure approved by Hon'ble CERC for curtailment of power in real time congestion/curtailment.

5.2.2 Despatch Schedule of all the ISGSs/IPPs/Sellers (under the control area of RLDC) affected by grid disturbance shall be revised to be equal to their actual injection for the duration as certified by RLDC.

5.2.3 The excess injection by IPPS/Sellers above the dispatch schedule shall be settled at the rate applicable for the period of grid disturbance as notified by Hon'ble CERC.

5.2.4 PX schedules of beneficiaries/buyers shall not be revised since one to one correlation between buyers and sellers could not be established for collective transactions. The LToA/MToA/SToA schedules of beneficiaries /buyers shall be revised according to the revised schedules of ISGS/IPPs/Sellers.

5.2.5 In case of revision in PX schedules of ISGS/ IPPs/Sellers to match schedule with actual injection, then PX schedule of the ISGS/ IPPs/Sellers shall be revised without revising PX schedules of the beneficiaries/buyers. The excess payment received by the ISGS/ IPPs/Sellers shall be reimbursed to DSM Pool account by the ISGS/IPPs/Sellers. The concerned power exchange who facilitated the transaction would certify the excess (i.e the difference between PX schedule and actual injection) payment made to the generator which needs to be reimbursed. In case of multiple bids by the ISGS in one or more exchanges, the highest bids would be paid back.

5.3 Accounting:

5.3.1 Based on the revised LToA/MToA/SToA schedules of the ISGS / IPPS/Sellers, schedules of beneficiaries/buyers shall be computed. The deviation shall be settled as per the rate notified by CERC applicable for grid disturbance for the beneficiaries/ buyers in the affected area and for the beneficiaries/buyers in other region (not

affected by grid disturbance) at prevailing rates based on frequency without applying additional charges/capping.

5.3.2 Based on the data/inputs received from RLDCs, revisions of schedules for the period of grid disturbance shall be carried out by the Secretariat of RPCs under the provision of postfacto revision of schedules. Incase of more than one region's schedules revision is involved, Secretariat of RPCs jointly shall finalize the interregional schedules of ISGS/IPPs/sellers/beneficiaries /buyers and prepare accounts accordingly.

6. Algorithm

I. RLDC shall furnish the listof ISGS / IPPs/Sellers and the control area affected by the grid disturbance to the respective RPC.

II. If ISGS injection with LToA transaction is more than dispatch Schedule during the period of grid disturbance, the LToA transaction shall be increased by RLDC in proportion to the quantum of excess injection.

III. If ISGS injection less than dispatch Schedule during the period of grid disturbance, the transactions other than collective transaction shall be revised by RLDC by reducing in proportion to the under injection as per the priority of access.

IV. For IPPs/Sellers, if the actual injection is more than dispatch Schedule, the excess generation shall be settled at the rates notified by Hon'ble CERC applicable for the period of grid disturbance.

V. For ISGS / IPPS/Sellers with collective transaction schedules, if the actual injection is less than dispatch schedule but more than PX schedule, then other schedules shall be reduced proportionality as per the priority of access. Starting with SToA then MToA then LToA, till the revised schedules equal to the actual injection.

VI. For ISGS / IPPS / Sellers with collective transaction schedules, if the actual injection is less than PX schedule, PX schedules shall be revised equal to the actual injection. If the schedules are from multiple Exchanges, the schedule transaction from the exchange where bid rates were higher would be considered for reimbursement first.

VII. The deviation by ISGS/IPPS/Sellers from PX schedule (difference in dispatch and revised PX schedule) shall be informed to the respective PX. PX intern communicate to

RPCs the amount to be recovered from the ISGS / IPPs/Sellers based on the market clearing price for the bid area.

VIII. Based on the revised LToA/MToA/SToA schedules of ISGS/ IPPS/Sellers, revised schedule of beneficiaries /buyers shall be computed without altering PX schedule.

IX. The ISGS/ IPPS/Sellers injected less than PX schedules shall reimburse the excess amount received from PX to the DSM Pool.

X. Deviation from revised schedule by the beneficiaries/ buyers with in the affected area would be settled at the rate applicable for grid disturbance period as notified by Hon'ble CERC without applying additional charges or capping.

XI. Deviation of the beneficiaries/ buyers (with respect to the computed revised schedules) outside the affected area shall be settled at deviation settlement rate (frequency based rate) without applying additional charges or capping.

7. Illustrative Examples

7.1 ISGS – with LToA/MToA/SToA schedules – Over Injection

	Despatch Schedule	Break Up	Actual Injection	Revised Schedule	Revised Break Up	Remarks
ISGS	1000 MW	LToA - 500 MW	1100 MW	1100 MW	**LToA - 600 MW**	In line with IEGC Regulation 6.5.17
		MToA - 300 MW			MToA - 300 MW	
		SToA - 200 MW			SToA - 200 MW	

7.2 ISGS – with MToA/SToA schedules– Over Injection

	Despatch Schedule	Break Up	Actual Injection	Revised Schedule	Revised Break Up	Remarks
ISGS	1000 MW	LToA - 0 MW	1100 MW	1100 MW	**LToA - 100 MW**	In line with IEGC Regulation 6.5.17 (Excess injection to be booked to beneficiaries with share)
		MToA -800 MW			MToA -800 MW	
		SToA - 200 MW			SToA - 200 MW	

Note: The excess injection shall not be booked to the beneficiary under power regulation

7.3 ISGS – with MToA/SToA schedules and without LToA– over Injection

	Despatch Schedule	Break Up	Actual Injection	Revised Schedule	Revised Break Up	Remarks
ISGS	1000 MW	LToA - No Buyer	1100 MW	1100 MW	**At Ancillary Rate - 100 MW**	(Excess injection to be booked to Pool At Ancillary Rates)
		MToA -800 MW			MToA -800 MW	
		SToA - 200 MW			SToA - 200 MW	

7.4 ISGS – with LToA/MToA/SToA schedules - under Injection

	Despatch Schedule	Break Up	Actual Injection	Revised Schedule	Revised Break Up	Remarks
ISGS	1000 MW	LToA - 500 MW	900 MW	900 MW	LToA - 500 MW	In line with IEGC Regulation 6.5.17
		MToA - 300 MW			MToA -300 MW	
		SToA - 200 MW			**SToA - 100 MW**	

7.5 ISGS -with LToA/MToA/SToA/PX schedules - Over Injection

	Despatch Schedule	Break Up	Actual Injection	Revised Schedule	Revised Break Up
ISGS	1000 MW	350 MW-LToA	1100 MW	1100 MW	**450 MW-LToA**
		300 MW-MToA			300 MW-MToA
		200 MW-SToA			200 MW-SToA
		100 MW-PX1			100 MW-PX1
		50 MW-PX2			50 MW-PX2

7.6 IPP/Seller -with LToA/MToA/SToA/PX schedules - Over Injection

	Despatch Schedule	Break Up	Actual Injection	Revised Schedule	Revised Break Up	Remarks
IPP/seller	1000 MW	350 MW-LToA	1100 MW	1100 MW	350 MW-LToA	**100 MW Excess injection shall be settled at Hon'ble CERC Rate notified for GD**
		300 MW-MToA			300 MW-MToA	
		200 MW-SToA			200 MW-SToA	
		100 MW-PX1			100 MW-PX1	
		50 MW-PX2			50 MW-PX2	

7.7 ISGS/IPP/Seller -with LToA/MToA/SToA/PX schedules -under Injection (Case-I)

	Despatch Schedule	Break Up	Actual Injection	Revised Schedule	Revised Break Up
ISGS/IPP/ Seller	1000 MW	350 MW-LToA	900 MW	900 MW	350 MW-LToA
		300 MW-MToA			300 MW-MToA
		200 MW-SToA			**100 MW-SToA**
		100 MW-PX1			100 MW-PX1
		50 MW-PX2			50 MW-PX2

7.8 ISGS/IPP/Seller-with LToA/MToA/SToA/PX schedules – under injection (Case-II)

	Despatch Schedule	Break Up	Actual Injection	Revised Schedule	Revised Break Up
ISGS/IPP/ Seller	1000 MW	350 MW-LToA	700 MW	700 MW	350 MW-LToA
		300 MW-MToA			**200 MW-MToA**
		200 MW-SToA			**000 MW-SToA**
		100 MW-PX1			100 MW-PX1
		50 MW-PX2			50 MW-PX2

7.9 ISGS/IPP/Seller - with LToA/MToA/SToA/PX schedules– under injection (Case-III)

	Despatch Schedule	Break Up	Actual Injection	Revised Schedule	Revised Break Up

ISGS/IPP/ Seller	1000 MW	350 MW-LToA	400 MW	400 MW	**250 MW-LToA**
		300 MW-MToA			**000 MW-MToA**
		200 MW-SToA			**000 MW-SToA**
		100 MW-PX1			100 MW-PX1
		50 MW-PX2			50 MW-PX2

7.10 ISGS/IPP/Seller -with LToA/MToA/SToA/PX schedules- under injection (Case-IV)

	Despatch Schedule	Break Up	Actual Injection	Revised Schedule	Revised Break Up
ISGS/IPP/ Seller	1000 MW	350 MW-LToA	75 MW	75 MW	**000 MW-LToA**
		300 MW-MToA			**000 MW-MToA**
		200 MW-SToA			**000 MW-SToA**
		100 MW-PX1			**25 MW-PX1**
		50 MW-PX2			50 MW-PX2

- **Assuming that Market Clearing Price (MCP) of bid rates of PX1 was higher than PX2.**
- **An amount equal to (100-25)*MCP OF PX1 to be reimbursed by ISGS/IPP to DSM Pool Account.**

7.11 ISGS/IPP/Seller- with LToA/MToA/SToA/PX schedules- under injection (Case-V)

	Despatch Schedule	Break Up	Actual Injection	Revised Schedule	Revised Break Up
ISGS/IPP/ Seller	1000 MW	350 MW-LToA	10 MW	10 MW	**000 MW-LToA**
		300 MW-MToA			**000 MW-MToA**
		200 MW-SToA			**000 MW-SToA**
		100 MW-PX1			**00 MW-PX1**
		50 MW-PX2			**10 MW-PX2**

- **Assuming that Market clearing price of bid rates of PX1 was higher than PX2.**
- **An amount equal to (100-0)*MCP OF PX1 to be reimbursed by ISGS/IPP to DSM Pool Account.**
- **An amount equal to (50-10)*MCP OF PX2 to be reimbursed by ISGS/IPP to DSM Pool Account.**

7.12 ISGS/IPP/seller -with LToA/MToA/SToA/PX schedules – Drawn from Grid (Case-VI)

	Despatch Schedule	Break Up	Actual Injection	Revised Schedule	Revised Break Up
ISGS/IPP/ Seller	1000 MW	350 MW-LToA	-10 MW	-10 MW	**000 MW-LToA**
		300 MW-MToA			**000 MW-MToA**
		200 MW-SToA			**000 MW-SToA**
		100 MW-PX1			**00 MW-PX1**
		50 MW-PX2			**00 MW-PX2**

- **ISGS/IPP to Pay to DSM pool account as per the rate decided by Hon'ble CERC for 10 MW drawal from Grid.**
- **An amount equal to PX schedules to be reimbursed by ISGS/IPP to DSM Pool Account**

7.13 Beneficiaries/ buyers (outside grid disturbance affected area) Case-I.

	Scheduled Drawal	Actual Drawal	Revised Schedule	Deviation	Remarks
Beneficiary /Buyer	1000 MW	900 MW	800 MW	**+100**	**+100 (Payable at DSM Rate without Additional Charges)**

7.14 Beneficiaries/buyers (outside grid disturbance affected area) Case-II

	Scheduled Drawal	Actual Drawal	Revised Schedule	Deviation	Remarks
Beneficiary /Buyer	800 MW	900 MW	1000 MW	**-100**	**-100 (Receivable at DSM Rate without capping)**

7.15 Beneficiaries / buyers (inside grid disturbance affected area) Case-I.

	Scheduled Drawal	Actual Drawal	Revised Schedule	Deviation	Remarks
Beneficiary /Buyer	1000 MW	900 MW	800 MW	**+100**	**+100 (Payable at Hon'ble CERC notified Rate for GD)**

7.16 Beneficiaries/buyers (inside grid disturbance affected area) Case-II

	Scheduled Drawal	Actual Drawal	Revised Schedule	Deviation	Remarks
Beneficiary /Buyer	800 MW	900 MW	1000 MW	**-100**	**-100 (Receivable at at Hon'ble CERC notified Rate for GD)**

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List of Units belonging to NEEPCO

Sl No	Station	*Unit No*	Source	Installed Capacity in MW	Ramp Up Rate/ Min		Ramp Down Rate/ Min		Technical Minimum		Dead-Band/ Forbidden Zone if any	Remarks
					Unit-wise	Station-wise	Unit-wise	Station-wise	Unit-wise	Station-wise		
1	Ranganadi	1	Hydro	135								
2	Ranganadi	2	Hydro	135								
3	Ranganadi	3	Hydro	135								
4	Kopili	1	Hydro	50								
5	Kopili	2	Hydro	50								
6	Kopili	3	Hydro	50								
7	Kopili	4	Hydro	50								
8	Khandong	1	Hydro	25								
9	Khandong	2	Hydro	25								
10	Kopili St II	1	Hydro	25								
11	Doyang	1	Hydro	25								
12	Doyang	2	Hydro	25								
13	Doyang	3	Hydro	25								
14	AGBPP	1	Gas	33.5								
15	AGBPP	2	Gas	33.5								
16	AGBPP	3	Gas	33.5								
17	AGBPP	4	Gas	33.5								
18	AGBPP	5	Gas	33.5								
19	AGBPP	6	Gas	33.5								
20	AGBPP	7	Steam	30								
21	AGBPP	8	Steam	30								
22	AGBPP	9	Steam	30								
23	AGTPP	1	Gas	21								
24	AGTPP	2	Gas	21								
25	AGTPP	3	Gas	21								
26	AGTPP	4	Gas	21								
27	AGTPP	5	Steam	25.5								
28	AGTPP	6	Steam	25.5								
29	Monarchak	1	Gas	65.42								
30	Monarchak	2	Steam	35.58								

List of Units belonging to NHPC

Sl No	Station	*Unit No*	Source	Installed Capacity in MW	Ramp Up Rate/ Min		Ramp Down Rate/ Min		Technical Minimum		Dead-Band/ Forbidden Zone if any	Remarks
					Unit-wise	Station-wise	Unit-wise	Station-wise	Unit-wise	Station-wise		
1	Loktak	1	Hydro	35								
2	Loktak	2	Hydro	35								
3	Loktak	3	Hydro	35								

List of Units belonging to OTPC

Sl No	Station	*Unit No*	Source	Installed Capacity in MW	Ramp Up Rate/ Min		Ramp Down Rate/ Min		Technical Minimum		Dead-Band/ Forbidden Zone if any	Remarks
					Unit-wise	Station-wise	Unit-wise	Station-wise	Unit-wise	Station-wise		
1	Palatana	GT-I	Gas	232.39								
2	Palatana	ST-I	Steam	130.91								
3	Palatana	GT-II	Gas	232.39								
4	Palatana	ST-II	Steam	130.91								

List of Units belonging to NTPC

Sl No	Station	*Unit No*	Source	Installed Capacity in MW	Ramp Up Rate/ Min		Ramp Down Rate/ Min		Technical Minimum				Dead-Band/ Forbidden Zone if any	Remarks
									Unit-wise		Station-wise			
					Unit-wise	Station-wise	Unit-wise	Station-wise	With Oil Firing	Without Oil Firing	With Oil Firing	Without Oil Firing		
1	BgTPP	1	Coal	250										
2	BgTPP	2	Coal	250										
4	BgTPP	3	Coal	250										

List of Units belonging to APGCL

Sl No	Station	*Unit No*	Source	Installed Capacity in MW	Ramp Up Rate/ Min		Ramp Down Rate/ Min		Technical Minimum		Dead-Band/ Forbidden Zone if any	Remarks
					Unit-wise	Station-wise	Unit-wise	Station-wise	Unit-wise	Station-wise		
1	Langpi	1	Hydro	50								
2	Langpi	2	Hydro	50								
3	LTPS	1	Gas	15								
4	LTPS	2	Gas	15								
5	LTPS	3	Gas	15								
6	LTPS	4	Gas	15								
7	LTPS	5	Gas	30								
8	LTPS	6	Gas	30								
9	LTPS	7	Gas	30								
10	LTPS	8	Steam	37.2								
11	NTPS	1	Gas	23								
12	NTPS	2	Gas	23								
13	NTPS	3	Gas	23								
14	NTPS	4	Gas	12.5								
15	NTPS	5	Gas	30								
16	NTPS	6	Gas	22								

List of Units belonging to MePGCL

Sl No	Station	*Unit No*	Source	Installed Capacity in MW	Ramp Up Rate/ Min		Ramp Down Rate/ Min		Technical Minimum		Dead-Band/ Forbidden Zone if any	Remarks
					Unit-wise	Station-wise	Unit-wise	Station-wise	Unit-wise	Station-wise		
1	Umiam St I	1	Hydro	9								
2	Umiam St I	2	Hydro	9								
3	Umiam St I	3	Hydro	9								
4	Umiam St I	4	Hydro	9								
5	Umiam St II	1	Hydro	10								
6	Umiam St II	2	Hydro	10								
7	Umiam St III	1	Hydro	30								
8	Umiam St III	2	Hydro	30								
9	Umiam St IV	1	Hydro	30								
10	Umiam St IV	2	Hydro	30								
11	Umtru	1	Hydro	2.8								
12	Umtru	2	Hydro	2.8								
13	Umtru	3	Hydro	2.8								
14	Umtru	4	Hydro	2.8								
15	Myndtu Leshka	1	Hydro	42								
16	Myndtu Leshka	2	Hydro	42								
17	Myndtu Leshka	3	Hydro	42								
18	Sonapani	1	Hydro	1.5								
19	MPL	1	Coal	8								
20	MPL	2	Coal	43								
21	Adhunik	1	Coal	25								
22	Shyam Century	1	Coal	13.8								
23	Maithan Alloys Ltd	1	Coal	15								

List of Units belonging to TSECL

Sl No	Station	*Unit No*	Source	Installed Capacity in MW	Ramp Up Rate/ Min		Ramp Down Rate/ Min		Technical Minimum		Dead-Band/ Forbidden Zone if any	Remarks
					Unit-wise	Station-wise	Unit-wise	Station-wise	Unit-wise	Station-wise		
1	Gumti	1	Hydro	5								
2	Gumti	2	Hydro	5								
3	Gumti	3	Hydro	5								
4	Baramura	1	Gas	5								
5	Baramura	2	Gas	5								
6	Baramura	3	Gas	6.5								
7	Baramura	4	Gas	21								
8	Baramura	5	Gas	21								
9	Rokhia	1	Gas	8								
10	Rokhia	2	Gas	8								
11	Rokhia	3	Gas	8								
12	Rokhia	4	Gas	8								
13	Rokhia	5	Gas	8								
14	Rokhia	6	Gas	8								
15	Rokhia	7	Gas	21								
16	Rokhia	8	Gas	21								
17	Rokhia	9	Gas	21								

List of Units belonging to Electricity Department, Nagaland

Sl No	Station	*Unit No*	Source	Installed Capacity in MW	Ramp Up Rate/ Min		Ramp Down Rate/ Min		Technical Minimum		Dead-Band/ Forbidden Zone if any	Remarks
					Unit-wise	Station-wise	Unit-wise	Station-wise	Unit-wise	Station-wise		
1	Likimro	1	Hydro	8								
2	Likimro	2	Hydro	8								
3	Likimro	3	Hydro	8								

List of Units belonging to Power & Electricity Department, Mizoram

Sl No	Station	*Unit No*	Source	Installed Capacity in MW	Ramp Up Rate/ Min		Ramp Down Rate/ Min		Technical Minimum		Dead-Band/ Forbidden Zone if any	Remarks
					Unit-wise	Station-wise	Unit-wise	Station-wise	Unit-wise	Station-wise		
1	Serlui B	1	Hydro	4								
2	Serlui B	2	Hydro	4								
3	Serlui B	3	Hydro	4								
4	Bairabi	1	HSD	5.7								
5	Bairabi	2	HSD	5.7								
6	Bairabi	3	HSD	5.7								
7	Bairabi	4	HSD	5.7								