North Eastern Regional Power Committee

Agenda For

148th OCC Sub-Committee Meeting

Time of meeting : 10:00 Hrs.

Date of meeting : 14th September, 2018 (Friday)

Venue : "Hotel Nandan", Guwahati.

A. CONFIRMATION OF MINUTES

CONFIRMATION OF MINUTES OF 147th MEETING OF OPERATION SUB-COMMITTEE OF NERPC.

The minutes of 146th meeting of Operation Sub-committee held on 10th August, 2018 at Guwahati were circulated vide letter No. NERPC/SE (O)/OCC/2016/4556-4591 dated 21st August, 2018.

The Sub-committee may confirm the minutes of 147th OCCM of NERPC as no comments/observations were received from the constituents.

ITEMS FOR DISCUSSION

B.1. ACTION TAKEN:

1. IMPLEMENTATION OF PROJECTS FUNDED FROM PSDF:

The status as informed in 147th OCC:

State	R&U scheme	ADMS	Capacitor Installation	SAMAST**
Arunachal Pradesh	Tender by Sep'18	Revised DPR submitted	-	DPR submitted for Techno-Economic Appraisal.
Nagaland	Pack-A: completed Pack-B: Aug'18 Pack-C: Aug'18 Pack-D: Completed.	Revised DPR yet to be submitted	To re-submit proposal to NERPC for Study.	DPR submitted for Techno-Economic Appraisal
Mizoram	LOAs completed. First tranche of funds requisitioned.	Revised DPR submitted	Appraisal Committee is yet to approve	DPR submitted for Techno-Economic Appraisal
Manipur	LOAs issued.	Revised DPR submitted	Submitted to NERPC for Study before sending to NPC/NLDC.	DPR submitted for Techno-Economic Appraisal

Tripura	Fund Released ▪ 17.2 Cr. Tentative Completion by 31.12.2018	Revised DPR submitted	To submit proposal to NERPC for Study.	DPR submitted for Techno-Economic Appraisal
Assam	Substation auxiliary and diagnostics tools - Tendering in process. LOA by Aug'18.	Revised DPR submitted	-	DPR submitted for Techno-Economic Appraisal
Meghalaya	MePTCL- All LOAs awarded. Earthing Package Tendering in Progress. Balance items by Sep'18 MePGCL –UC submitted.	Revised DPR submitted. Query referred to DISCOM	-	DPR submitted for Techno-Economic Appraisal

The status of implementation of the above schemes (physical as well as financial progress) may please be reviewed and the entities are requested to expedite implementation of the schemes. The entities may also be advised to furnish status as per format by first week of every month on regular basis to Member Convener, PSDF Project Monitoring Group (AGM, NLDC, POSOCO) with a copy to NPC & NERPC. The LOAs of R&M Scheme are to be furnished to NERLDC/NERPC regularly.

States may please intimate the latest status.

2. <u>Long Outage of Important Grid Elements:</u>

Name of the Element	Name of Utility	Status as informed in 147th OCC	Latest status
63MVAR Reactor at Byrnihat to replace with 80MVAR Reactor	MePTCL	7th SCM MoM not confirmed. To be taken up again.	
Repairing of R-ph bushing of 63MVAR L/R at Balipara for 400kV Balipara-Bongaigaon -II (*out since 17.02.18)*	NERTS	By Nov'18	
Outage of 420kV 80MVAR L/R for 400kV Bongaigaon-NSLG-I at Bongaigaon - (out since *04.07.18*)	NERTS	By 15.10.2018	
132kV Dimapur - Imphal (*out since 25.07.18*)	NERTS	Expected restoration by Oct'18	
63 MVAR B/R-4 at 400kV Biswanath-Chariali(*out since 27.04.18*)	NERTS	Internal failure. By 15.10.18	

Utilities may please intimate the latest status.

3. Furnishing of various data for reliable grid operation:

<table>
<tr><td>Data regarding</td><td>Status as of 147th OCC</td><td>Latest status</td></tr>
<tr><td>DAS output for FRC calculation</td><td>Event Date: 30.07.18; Kopili, Palatana and Pare submitted the data.
NERLDC once again requested all generators to provide DAS data at the earliest for FRC calculation.</td><td></td></tr>
<tr><td>Operating Procedures</td><td><table><tr><th>Items</th><th>Data submitted by</th></tr><tr><td>OP of States</td><td>Submitted only by AEGCL, MePTCL and TSECL</td></tr><tr><td>OP of Transmission System</td><td>Not submitted by any constituents</td></tr><tr><td>OP of Generating Stations</td><td>Not submitted by any generators</td></tr><tr><td>OP of GIS</td><td>Not submitted by any constituents</td></tr></table></td><td></td></tr>
<tr><td>Data related to Power Map.</td><td><table><tr><th>Items</th><th>Data submitted by</th></tr><tr><td>Communication (PLCC/OPGW/ GPRSVSAT/ Satellite</td><td>NERTS, Meghalaya, Assam & Mizoram provided the data.</td></tr></table></td><td></td></tr>
<tr><td>Patrolling report(s) for T/L**.</td><td>Patrolling report and vegetation clearance self-certification to be immediately submitted for 132kV Balipara-Khupi, 132kV Dimapur-Kohima & 132kV Aizawl - Kumarghat</td><td></td></tr>
<tr><td>Submission of Capability Curve</td><td>All generating utilities yet to submit</td><td></td></tr>
</table>

NERLDC may please inform the status.

4. Monitoring of Corrective actions as decided in PCC forum:

Name of the Element	Action to be taken	Name of Utility	Status as of 147th OCC	Latest status
132 kV Dimapur - Doyang 1 & 2 Lines	Installation of Numerical Relay at Doyang	NEEPCO	By Dec'18	

AGTCCPP LFO	AVR Replacement	NEEPCO	By Oct'18	
132kVPK Bari-Kumarghat	Installation of Line differential relay	NERTS	By Dec'18	
132kV AGTCCPP-Agartala D/C.	Line differential relay to be installed	NERTS	By Dec'18	
132kV PKBari	Installation of Numerical Relay under R&M (*high priority).* TSECL to divert NR to AGTCCPP.	TSECL	By 10.09.18	
132kV Rokhia-79Tilla D/C	DPR to be installed	TSECL	By 10.09.18	
400kV Silchar-Byrnihat and 400kV Silchar-Azara	Earthing through chemical treatment in the lightning prone areas with high tower footing resistance	NERTS	By Aug'18.	
Repeated tripping of Doyang Machines	DPR to be installed for lines and units. CTs to be replaced.	NEEPCO	DPR lines-Dec'18, Units-Jun'19. CT replaced by Jun'19	

Concerned utilities may please inform the status.

5. DIFFERENCE IN ACTUALS VS LGBR:

Energy Requirement:

Name of State	Apr18 (actual)	Apr18 (LGBR)	May18 (actual)	May18 (LGBR)	Jun 18 (actual)	Jun18 (LGBR)	Jul 18 (actual)	Jul18 (LGBR)
Ar. Pradesh	69.80	68.35	71.77	70.26	70.76	65.89	72.49	66.28
Assam	680.19	612.74	738.04	778.29	913.96	864.22	998.64	952.10
Manipur	64.99	64.76	68.18	67.46	67.74	64.86	72.38	65.08
Meghalaya	131.74	149.00	138.92	143.00	143.28	142.00	169.75	155.00
Mizoram	53.94	45.67	40.70	47.82	43.66	42.44	46.53	45.43
Nagaland	69.72	66.35	72.75	74.90	78.16	76.55	82.22	80.84
Tripura	155.05	99.18	101.52	98.38	121.77	123.16	144.97	123.51

Energy Availability:

Name of State	Apr18 (actual)	Apr18 (LGBR)	May18 (actual)	May18 (LGBR)	Jun18 (actual)	Jun18 (LGBR)	Jul18 (actual)	Jul18 (LGBR)
Ar. Pradesh	50.27	58.89	70.09	70.50	74.78	83.78	77.75	99.88
Assam	650.76	720.23	738.28	810.91	898.04	892.17	975.84	992.22
Manipur	70.23	76.30	95.07	86.53	101.66	102.23	111.82	129.88
Meghalaya	140.32	149.76	191.42	204.20	236.66	254.18	293.16	312.29
Mizoram	64.83	62.69	71.74	72.60	79.19	82.67	85.38	97.31
Nagaland	55.39	56.26	67.15	66.14	78.35	83.84	79.00	99.30
Tripura	276.86	267.05	252.31	281.99	255.49	242.47	294.08	308.19

Demand:

Name of State	Apr18 (actual)	Apr18 (LGBR)	May18 (actual)	May18 (LGBR)	Jun18 (actual)	Jun18 (LGBR)	Jul18 (actual)	Jul18 (LGBR)
AP	130.38	141	128.33	145	138.12	131.00	130.38	136.00
Assam	1532.51	1447.42	1625.51	1665.49	1782.35	1761.14	1862.54	1761.36
Manipur	192.89	170.68	179.01	169.41	179.48	163.70	174.16	162.83
Meghalaya	307.28	320.10	370.59	334.40	325.51	298.94	333.95	308.22
Mizoram	98.37	94.60	95.98	94.60	102.57	85.16	100.77	92.62
Nagaland	155.71	128.56	147.06	140.94	129.40	152.90	132.89	153.75
Tripura	304.80	299.20	275.65	282.80	280.66	307.24	298.12	322.71

B.2. OPERATIONAL PERFORMANCE AND GRID DISCIPLINE DURING AUGUST, 2018

As per the data made available by NERLDC, the grid performance parameters for August, 2018 are given below:

NER PERFORMANCE DURING AUGUST, 2018

	Energy Met (MU)		w.r.t. Jul,18 % inc (+) /dec (-)	Energy Reqr. (MU)		w.r.t. Jul,18 % inc (+) /dec (-)	% inc (+) /dec (-) of energy reqr vs met. In Aug,18
States	**Aug-18**	**Jul-18**		**Aug-18**	**Jul-18**		
Ar. Pradesh	70.18	69.00	1.71	71.07	70.01	1.51	-1.25
Assam	1023.54	990.99	3.28	1059.85	1027.43	3.16	-3.43
Manipur	70.25	72.02	-2.46	71.13	73.09	-2.68	-1.24
Meghalaya	166.90	172.38	-3.18	166.90	172.38	-3.18	0.00
Mizoram	49.56	51.15	-3.11	50.20	51.98	-3.42	-1.27
Nagaland	73.96	71.17	3.92	82.30	79.51	3.51	-10.13
Tripura	144.63	146.94	-1.57	146.10	148.89	-1.87	-1.01
Region	**1599.02**	**1573.65**	**1.61**	**1647.55**	**1623.30**	**1.49**	**-2.95**

	Demand Met (MW)		w.r.t. Jul,18 % inc (+) /dec (-)	Demand in (MW)		w.r.t. Jul,18 % inc (+) /dec (-)	% inc (+) /dec (-) of Demand vs met. In Aug,18
States	**Aug-18**	**Jul-18**		**Aug-18**	**Jul-18**		
Ar. Pradesh	133	128	3.91	138	138	0.00	-3.62
Assam	1795	1776	1.07	1834	1863	-1.56	-2.13
Manipur	175	171	2.34	177	174	1.72	-1.13
Meghalaya	326	332	-1.81	325	334	-2.69	0.31
Mizoram	97	98	-1.02	99	101	-1.98	-2.02
Nagaland	133	126	5.56	134	133	0.75	-0.75
Tripura	287	288	-0.35	292	298	-2.01	-1.71
Region	**2795**	**2798**	-0.11	**2967**	**2899**	2.35	-5.80

REGIONAL GENERATION & INTER-REGIONAL EXCHANGE IN MU

Month---->	**Jul-18**	**Jul-18**
Total Generation in NER (Gross)	1767.095	1853.459
Total Central Sector Generation (Gross)	1358.337	1402.548
Total State Sector Generation (Gross)	408.758	450.911
Inter-Regional Energy Exchange		
(a) NER-ER	**8.58**	**3.24**
(b) ER-NER	**525.11**	**372.10**
(c)NER-NR	**505.16**	**468.53**
(d)NR-NER	**0.00**	**0.00**
© Net Import	-11.37	-99.67

AVERAGE FREQUENCY (Hz)

Month---->	**Jul-18**	**Jul-18**
	% of Time	% of Time
Below 49.9 Hz	8.92	10.25
Between 49.9 to 50.05 Hz	80.43	76.03
Above 50.05 Hz	10.64	13.01
Average	49.98	49.98
Maximum	50.22	50.24
Minimum	49.62	49.62

C. OLD ITEMS

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

During 147th OCC meeting, the status as informed by different beneficiaries is as follows:

SN	Items	Status as given in 147th OCC Meeting		Status as given in 148th OCC Meeting	
		Timeline for completion	**Furnishing of detail parameters**	**Timeline for completion**	**Furnishing of detail parameters**
1	400/220kV, 315 MVA ICT-1 of NTPC at Bongaigaon	By Oct-Nov'18	To be submitted to NERLDC.		
2	Kameng HEP of NEEPCO two units (2 x 150 MW) Next two units (2x150 MW)	Dec'18	Already submitted.		
3	400 kV D/C Silchar - Melriat line of PGCIL	Work held up due to not allowing POWERGRID to carryout diversion of State Line by P&E Mizoram.	To be submitted to NERLDC.		

4	132kV Monarchak – Surjamaninagar D/C of TSECL	By Dec'18	To be submitted to NERLDC		
5	SLDCs (Ar. Pradesh, Manipur, Mizoram, Nagaland)	Nagaland-DoCO to be finalized Ar. Pradesh, Manipur - CoD Mizoram-ToC date to be confirmed. Except DG set (WIP), all other works are completed. DG set - by Aug'18	Not applicable.		
6	400/220 kV 315 MVA ICT-II at Bongaigaon	Modification required in GIS Hall. Oct'2018	To be submitted to NERLDC.		
7	220/132 kV, 160MVA ICT-II at Balipara	ICT#II - despatch by Dec'18	To be submitted to NERLDC.		
8	220/132 kV, 1x160 MVA ICT with GIS Bay at Kopili	Dec'18	To be submitted to NERLDC.		
9	Replacement of 2x315 MVA ICTs with 2x500 MVA ICTs at Misa (PG)	ICT-I : Nov'18 ICT-II : Dec'18	To be submitted to NERLDC.		
10	400 kV Silchar – Misa D/C	2019**	To be submitted to NERLDC.		
11	33kV bay at 220kV Mariani(AS) S/Sn	Security Paid. Agreement made. Meter to be installed by ASEB.	Not applicable.		
12	33kV bay for 132kV Badarpur(PG) S/Sn	Revised estimate by APDCL within Aug'18	Not applicable.		
13	Dedicated 33kV feeder at	RoW issues to be bilaterally			

	Khliehriat Substation from Lumshnong.	resolved.	Not applicable.		
14	Construction of 132 kV Imphal (PG) - Yurembam III lines with high capacity conductor by MSPCL	RoW problem#. Tentative Completion: Sep'18	To be submitted to NERLDC.		
15	LILO of 132kV Aizawl-Jiribam at Tipaimukh by MSPCL	By Dec'18. Voice communication to be put in place ASAP.	Already submitted.		
16	MW Vacation OPGW project	All nodes are reporting. Srikona-Silchar-Badarpur-Kolasib-Aizwal completed. DOCO 01.04.18. Rectification by Sept18.	Not applicable.		
17	VOIP Exchange Project under NER FO exp/Add coom OPGW	All SLDC & NERLDC is now connected over VOIP Exchange. Completed in 31.03.2018	Not applicable.		
18	NER FO Expansion/Add req of OPGW	Present Status: Out of the list as per 18th RPC: WIP: Silchar-Melriat, SMN-Palla, SM-79T, 79Tila-rc Nagar, Badarpur-Jiribam, Completed OPGW: Khandong-Haflong, Doyang-Dimapur, Doyang-Mokokchung (St) Mokokchung-Mariani,	Not applicable.		

		Mariani-PG-Kathalguri. Equip: Supplied/ Comm pending			
19	URTDSM project	Supply & Installation completed:13/14 location 18nos. PMUs in 4 locations integrated	Not applicable		
b. Elements under breakdown/upgradation					
20	Up-gradation of 132 kV Lumshnong-Panchgram line	Revised DPR submitted to Techno-Economic Sub-group PSDF	Not applicable.		
21	Switchable line Reactors at 400kV Balipara & Bongaigoan Ckt # 1 & 2	Bongaigaon-Aug'18 Balipara - Aug'18	Not applicable		
22	PLCC Panels at Loktak end of Loktak – Ningthoukhong 132 kV feeder and Loktak - Rengpang 132 kV feeder	Oct'2018	Not applicable.		
23	Re-conductoring of 132kV Umiam Stg#I - Umiam Stg-III	DPR prepared and submitted for approval	Not applicable.		
24	Upgradation of ULDC FO node	Target completion : June 2018	Not applicable.	Target completion : June 2018	Not applicable.
25	Upgradation of 132kV Silchar-Imphal to 400kV	By Sep'18. But may be delayed. MSPCL to confirm LILO at 400kV Thoubal.	To be submitted to NERLDC		
26	Integration of existing bays	Dec'18	Not applicable		

	with C264 RTU at RHEP by NEEPCO				
27	Replacement of CTs and installation of Bus Bar Protection at 220kV Misa	Under NERSS-VII. By Dec'18	Not applicable		

Concerned constituents may kindly intimate the status.

ITEMS REG. SUBMISSION OF DATA/COMPLIANCE

C.1 Geospatial Energy Portal for NITI Aayog:

Latest status - MeECL, P&ED Mizoram, APDCL have submitted. Remaining utilities yet to submit.

Members may please discuss.

C.2. Registration of all existing and upcoming electricity generating units cf the country of capacity 0.5 MW and above under National Level Data Registry System

In 147th OCCM, APGCL and MePGCLDirector(O&P), NERPC requested remaining utilities to nominate nodal officer and also intimated that current database as available with CEA would be circulated to all generating utilities for verification.

Members may please discuss.

C.3 Flexibility in generation and scheduling of thermal power station to reduce the cost of power to consumer:

The final scheme has been issued vide OM. dated 30.08.18. The same is attached at **Annexure-C.3.**

Members may please discuss.

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	-	-	-	-

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

The Committee may discuss and approve the proposed shutdown by Generating Stations as given in Annexure – D.2 which is available in NERPC website.

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 September,2018-October,2018 which is available in the website of NERPC.

D.3 Estimated Transmission Availability Certificate (TAC) for the month of May, 2018 - July, 2018:

NETC and POWERGRID have submitted the outage data for the month of May, 2018 - July,2018. So the attributability of outage of the said elements may please be finalized.

Members may please discuss.

D.4 Assessment of Total Transfer Capability (TTC), Transmission Reliability Margin (TRM) and Available Transfer Capability (ATC) by SLDC on respective Inter-State Transmission Corridor

Updated PSS/E Base Cases have been **mailed to all the SLDCs on 04.09.18**. All SLDCs are requested to assess the Total Transfer Capability (TTC), Transmission Reliability Margin (TRM) and Available Transfer Capability (ATC) for the month of September'18 using these cases, and submit the study cases and results to NERLDC by **20.09.18**.

NERLDC has assessed the state control area wise, state subsystem wise and group of control-area wise TTCs for NER Grid. The study results will be presented during the meeting. SLDCs are requested to check the TTC of their control areas as computed by NERLDC and **give comments, if any, by 20.09.18.**

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

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

Members may discuss.

D.5. <u>SPS mock testing & existing SPS scheme related:</u>

As per previous discussion it was decided that:

- Separate asset would be created for SPS at Palatana and Silchar.
- OTPC would complete procurement on behalf of all beneficiaries. NERTS to provide technical support.
- A committee comprising of members from OTPC, PGCIL, POSOCO & NERPC to look into the matter viz. BCU replacement, Changing of SPS 3 Channel to other circuit, checking of SPS-3 logics in SCADA etc. and submit report for taking further decision of implementing SPS 3 Scheme with existing asset. The committee visit date would be tentatively on 01.09.2018.

The Committee visit and inspection/testing was successfully completed on 01.09.2018. The recommendations of the committee are as follows:

- SPS-3 may be turned on at Silchar end only and kept on monitoring. The period for monitoring may be decided by the forum.
- SPS-2 will work with breaker opening contacts at Palatana.
- DT send(on separate channel) to Silchar for 86LO operation at Byrnihat/Azara for 400kV Byrnihar-Silchar and 400kV Azara-Byrnihat respectively to be implemented. These would be used as part of SPS-3 logic at Silchar.

Members may please discuss.

D.6. <u>Update on Real Time Energy Assessment for Effective Grid Management:</u>

NERPC may please update the members of the present status.

D.7. Recording of operational instructions over VOIP in RLDC:

Status as updated in 146th OCCM: LOA has been placed and supply would be done by Aug'18.

NERTS may please intimate the latest status.

D.8. Ensuring proper functioning of Under Frequency Relays(UFR) & df/dt Relays:

In 7th NPC meeting held on 08.09.17 it was agreed that mock test is good enough to test the healthiness of the UFR & df/dt relays. The frequency of site inspection was proposed to be upto six months. RPC may carry out periodic inspection, in line with provisions of IEGC and furnish inspection reports to NPC.

Discussions as per previous meetings:-

- Procedure for testing finalized
- First phase of UFR inspection and testing would be carried out by August'18 for Mawphlang, Khliehriat and Nongstoin.

NERPC may please intimate the latest status.

D.9 Non-availability of SOE records of Biswanath Chariali, Ranganadi, Dimapur & Bongaigaon:

In 147th OCCM NERTS informed the following:-

- HVDC Biswanath Chariali: Under ABB scope. Would be resolved by 15.08.2018.
- Dimapur: Fire incident. By Nov'18.
- Bongaigaon: Within 7 days database updation required.

For RHEP RTU integration works complete by Dec'18.

NERTS/NERLDC may please intimate the status.

D.10 Crossing of 400 kV D/C Silchar-Melriat and 132 kV D/C Bawktlang - Sihmui Line

POWERGRID is constructing 400 kV D/C Silchar —Melriat Line as part of Pallatana Transmission System. During check survey, it has been observed that this line has to cross the 132 kV D/C Bawktlang-Sihmui line already constructed by P&E Department, Govt. of Mizoram. As per the proposed route alignment, the Loc No. 244 of the 400 kV line has to be erected at 10m distance from the Loc No. 86 of the 132 kV Line, which is not possible. Also there is no suitable place to relocate the Loc 244.

In 147th OCCM DGM (AM), NERTS informed that the draft agreement is lying with SE (Trans), P&ED Mizoram. He requested that signing of the same be expedited. Director (O&P), NERPC requested Mizoram to expedite the matter to facilitate POWERGRID to complete the job soon and also informed NERTS to co-ordinate with Sh. Benjamin Tlumtea Sr.EE (SLDC), Mizoram for early resolve of the issue.

NERTS/P&ED Mizoram may please intimate the status.

D.11 Surplus in NER and backing down of hydro ISGS:

As per discussion in previous meeting the following were decided:-

- Beneficiaries to sell surplus in the DAM and Contingency market as far as possible.
- If beneficiaries unable to sell surplus in the market, consent may be given to generators to sell in the market.
- Ranganadi to have proper forecasting technique and declare DC realistically (revision not before 6hrs) for scheduling/entitlement and R0.
- All generating stations to comply with generation reduction instruction given by NERLDC upto 55% technical minimum.

NERLDC may please update the forum.

D.12. Review of Automatic Under Frequency Load Shedding (AUFLS) relay settings in Indian Power System

In 146th OCCM NERLDC informed that the points have been suggested by NLDC for the entire Indian grid. Director/SE(O&P) stated that the stages of the operation should be as per revised scheme agreed in the last NPC meeting i.e. 49.4 Hz, 49.2 Hz, 49.0 Hz, 48.8 Hz. It was decided that the state-wise quantum would be prepared and presented in the next OCCM for ratification.

The statewise quantum(s) are given below:

Present UFR scheme	Total(MW)	Stg-I-49.2Hz 100 MW (all figs in MW)	Stg-II - 49.0Hz 100 MW (all figs in MW)	Stg-III- 48.8Hz 100 MW (all figs in MW)	Stg-IV - 48.6Hz 100 MW (all figs in MW)
AP	20	5	5	5	5
Assam	220	55	55	55	55
Manipur	20	5	5	5	5
Meghalaya	60	15	15	15	15
Mizoram	20	5	5	5	5
Nagaland	20	5	5	5	5
Tripura	40	10	10	10	10
Total	400	100	100	100	100

Proposed UFR scheme	Total(MW)	Stg-I-49.4hz 100 MW (all figs in MW)	Stg-II - 49.2Hz 100 MW (all figs in MW)	Stg-III- 49.0Hz 100 MW (all figs in MW)	Stg-IV-48.8Hz 100 MW (all figs in MW)
AP	34	10	10	10	10
Assam	374	90	90	90	90
Manipur	34	10	10	10	10
Meghalaya	102	25	25	25	25
Mizoram	34	5	5	5	5

Nagaland	34	10	10	10	10
Tripura	68	20	20	20	20
Total	680	170	170	170	170

- As per calculation the load shed for Ar. Pradesh, Manipur and Nagaland are 8.5MW rounded off to 10MW.
- For Mizoram since the demand met is less than 100MW no additional shedding is proposed.

Members may please discuss.

D.13. Repeated trippings due to vegetation:

In the deliberations of the Sub-group it has been observed that a number of lines are tripping due to vegetation overgrowth i.e. transient tripping almost continuously throughout the year.

Month	**Name of line/ No. of trippings**		
	132kV Balipara-Khupi	132kV Dimapur-Kohima	132kV Aizawl-Kumarghat
Jan'18	2	1	1
Feb'18	1	1	2
Mar'18	3	4	1
Apr'18	4	1	2
May'18	0	0	4
June'18	4	6	3
July'18	6	4	4

For this patrolling reports and self-certification of vegetation clearance is to be submitted by the concerned utilities.

Also the following lines have been observed to have tripped frequently on transient faults due to vegetation in the months of May-Jul'18:

- 400kV Balipara- Biswanath Chariali -II
- 400kV Silchar - Azara
- 400kV Balipara - Bongaigaon-III

NERTS may please certify the vegetation clearance for the above critical corridors.

Till date no patrolling report or vegetation clearance certificate has been received.

Members may please discuss.

D.14. VSAT for power system communications in NER:

As per decision in previous meetings NERTS is supposed to prepare the DPR for VSAT communication i.r.o. Roing, Tezu and Namsai at the earliest

NERTS may please intimate the status.

D.15. Connectivity of 132kV Samaguri from 132kV Balipara:

It is proposed to charge 132kv Balipara- Sonabil line through 220kv Sonabil Samaguri line and further it will be connected to Khaloigaon line at 220kv samaguri Substation as per attached diagram. This arrangment is proposed to mitigate the power problem partially at Samaguri Substation.

In 147th OCCM forum accorded approval and requested AEGCL to submit SEM details as well as update protection settings at Balipara with intimation to NERPC/NERLDC.

AEGCL/NERLDC may please intimate the latest status.

D.16. Status of tests related to +/- 800 kV HVDC Agra - Alipurduar - Biswanath Chariali link:

POWERGRID is requested to intimate the status of the following tests related to +/- 800 kV HVDC Agra - Alipurduar - Biswanath Chariali link:

a. Emergency Power Control (EPC)
b. Power Oscillation Damping (POD)
c. Frequency controller.

In 147th OCCM NERTS informed that the tests would be carried out by M/s ABB tentatively by Sep-Oct'18.

NERTS may please intimate the latest status.

D.17. Optimal Utilization of Water for Loktak HEP, NHPC

It has been observed that Loktak HEP, NHPC is having a reservoir facility which can store water with an FRL of 768.5 meters and MDDL of 766.2 meters. NERLDC is of the view that since it is an reservoir based hydel power station, optimal utilization of water has to be done since during the last few years North East Region is having less amount of rainfall.
In 147th OCCM NHPC representative stated that optimal utilization of water is being done and detailed plan has already been discussed in 146th OCCM. NHPC also informed that an official information will be given regarding FRL issues.

NERLDC/NHPC may please intimate the latest status.

D.18 Huge underdrawal by Assam due to lack of partial requisition on 08.08.18

On 8th Aug'18 there was huge underdrawal by Assam from 00 hrs to 0815 hrs to the tune of 300 MW due to lack of partial requisition from SLDC Assam inspite of RLDCs request for partial requisition. Assam has to absorbed huge financial loss . This is not an isolated incident with Assam and it is happening with all the constituents. So smart decision making and corrective action by Grid Managers is very much essential.

In 147th OCCM NERLDC highlighted the mismanagement which resulted in huge under-drawal by Assam. DGM, SLDC, AEGCL informed that the matter is under investigation and the detailed cause would be intimated to the forum

SLDC Assam may please present the report.

AGENDA ITEMS FROM NERPC:

D.19. Procurement of spare Transformer and Reactors for States:

In 147th OCCM it was decided that some critical spare Transformers & Reactor may be procured for constituent states by NERPC obtaining fund from PSDF as repairing / new procurement has lead time not less than 18 months.
Director(O&P) requested all the state utilities to draw up a list of critical assets.

Members may please discuss.

D.20. Issues pertaining to Automatic Generation Control(AGC):

Primary, secondary and tertiary generation reserves are required for frequency control andensuring reliable operation of the grid, particularly under high Renewable Energy (RE) penetration. Primary control has been existing in the Indian Electricity Grid Code (IEGC) but its enforcement has been an issue that has been brought several times before the CERC.
Secondary control had been absent in the system so far while tertiary frequency control was introduced only in April 2016 through the Reserves Regulation Ancillary Services or RRAS Regulations of CERC. The following issues become important when one looks the entire spectrum of frequency control.

1. Ensuring accurate load forecasting and Renewable Energy (RE) forecasting.

This is the first step towards reliability as generating units need to get committed based on these forecasts. Starting from DISCOM level, the forecasts need to be aggregated for the state at SLDCs level, at RLDCs for the regional level and at NLDC for the AU India level

2. Proper scheduling by each state including indication of reserves

After the above forecast of load and RE generation, the scheduling of conventional generation resources by the states assumes importance. Here, apart from scheduling, the states also need to indicate the amount of hot spinning reserves it is holding. The reserves could be held either within the state or at the 15G5 where the state has a share but it should be replenished whenever there is a contingency such as a generating unit tripping within the state. The share of the states in the ISGS is also a form of tertiary reserves as the state reschedules the generation from these ISGS to re-balance the supply-demand within a time frame of 4 time blocks.
Unless such a mechanism is in place, the secondary control would not work as all the reserves would get depleted quickly. This would be evident from the figure below which shows the Declared Capability (DC) of 15G5, DC on bar and the schedules for Dec 2017.

3. Gate Closure: IEGC provides for schedule revisions within 4 time blocks and presently such rescheduling requests keep pouring in continuously in one or the other stations by one of the stakeholders (beneficiary or the generating stations). The generating stations are also changing the Declared Capability as and when required. All this is leading to a situation where the accurate assessment of available reserves by the real time shift operator is just becoming an impossible task. This has particularly been observed in the RRAS despatch where as compared to the UP or DOWN instruction given by NLDC and much lower quantum gets actually implemented. Thus, parallel windows open all the time for rescheduling is leading to this situation.

Internationally, this situation is addressed by the implementation of a "Gate Closure" mechanism where all scheduling changes by stakeholders are barred say about 60minutes to 30 minutes ahead of the actual time of despatch. It is in this window that the real time shift operator evaluates the system conditions and despatches the firm reserves available at his disposal for balancing the system. Such a "Gate Closure" mechanism is urgently needed in India and the RPC Forum may deliberate the mechanism for implementation of gate closure.

4. Evaluate Area Control Error (ACE) of each control area.

Bias maybe taken as equal to Frequency Response Characteristics (FRC) of the state in past ten events. For ACE, high quality measurement of line flows and frequency at 10 seconds or better periodicity at LDCs is a must. Further seamless transfer of schedule data from off-line systems to SCADA must be ensured. RLDCs are already bringing forth the non-availability of real time data in the RPC forums and this needs to be addressed promptly. ACE, though being used for AGC, is still to find a mention/recognition in the Grid Code and feedback may be given to CERC in this regard.

5. The SLDCs must also monitor the primary response from the generating units within the state and report to the respective SERCs as directed by CERC vide its order dated 31st July 2017 in petition no 84/MP/2015. The primary droop characteristics of all stations also need to be monitored,

6. For AGC high quality measurements are needed for inter-regional tie lines and power plants under AGC. As stated above, periodic monitoring of the data quality needs to be done at the RPC forums and chronic problems of non-availability of data addressed promptly so that real time operation is smooth.

7. Fibre optic communication from Regional Entity power plant to nearest CTU node and there on to RLDCs/NLDC is a must and could be closely monitored through the RPC forums. This is required irrespective of whether we have a regulated system of secondary reserves procurement or a market based one.

Members may please discuss.

AGENDA ITEMS FROM NEEPCO:

D.21. Maintenance of POWERGRID bays at Khandong SY:

The Khandong 132KV bays PCC is doing by NEEPCO except two Power grid bays i.e. Kopili-2 and Khleriat-2. The jungle cleaning AMC will be discontinued. So, Power grid is requested to PCC their both bays also else vegetation growth will be there.

NEEPCO may please discuss.

AGENDA ITEMS FROM NERLDC:

D.22. Verification of Transmission availability certificate

In the 141st PCC meeting, DGM (MO), NERLDC stated that outages would be made attributed to respective transmission licensees due to absence of documentary evidence during verification stage. NERPC secretariat would take due care accordingly. After detailed deliberation it was decided that NERTS/NETC would provide the relevant documents during verification process itself and no plea would be honored after that.

It is observed that few outages were missing in the outage report submitted by Transmission Licensees in the last few months. No. of outages missing in the outage report is listed below:

Utility	Apr'18	May'18	Jun'18	Jul'18
POWERGRID	21	15	24	12
NETC	0	1	0	0

Details are attached as **Annexure-D.22.**

Transmission utilities are requested to include outages of all the elements owned by them in the monthly outage report.

It is also requested to submit element-wise cumulative tripping details attributable to the licensees for the current financial year (2018-19) on monthly basis along with the outage report as decided in the 143rd OCC meeting.

NERLDC may please deliberate.

D.23. Activation of SPS-3 at Palatana

Committee for inspection and testing of SPS-3 at Silchar (PG) visited Silchar (PG) on 1st Sep'18 and committee recommended to activate SPS-3 at Silchar (PG) for monitoring purpose. SPS-3 at Silchar (PG) was activated w.e.f 13:19 Hrs on 5th Sep'18 vide code 3373.
It is requested to activate the SPS-3 at Palatana.

NERLDC may please deliberate.

D.24. WBES implementation in NER:

Web Based Energy Scheduling process has been implemented wef 1st September'18 in North Eastern Region. With this, scheduling process is automated. This is also helping NERLDC to prepare near error free scheduling.
NERLDC would like to thank all SLDCs and ISGS for the support & co-operation in implementing the WBES process smoothly in NER without any major problems.

This is for kind information to all members/constituents.

D.25. Requirement of high speed Internet facility with reliability at ISGS Stations.

WBES has been implemented in NER wef 1st September 2018 and Web based Reporting System will also be implemented shortly in NER. With the implementation above software, the availability of high speed Internet facility is again an issue with most of the constituents, ISGS/ SLDCs mainly NEEPCO/ OTPC/ NHPC Stations as intimated by the constituents during the WBES implementation Training Programme held at NERLDC, Shillong on 29th August'18. All SLDCs and ISGS stations are requested to plan for having reliable and high-speed internet facilities.

NERLDC may please deliberate.

D.26. DIMAPUR_PG Voice communication and telemetry out since Feb'18.

All-important lines / Transformer data of DIMAP_PG station are wrong. In view of this problem, NAGALAND real-time drawal/ deviation data is not showing correct figures thereby mis-leading the Shift Engineers. POWERGRID is requested to restore all lines and Transformer data along-with CB status at the earliest.

NERLDC may please deliberate.

D.27. Synchronisation problem & abnormal operational delay at Nirjuli Sub-station:

As reported, NIRJULI S/S is remotely controlled station. On 11.07.18, 1030 hrs NERLDC had requested NIRJULI S/S (through RTAMC) to synchronise power but they could not do the synchronisation.

Also, on 12.07.18 at 1425 hrs NERLDC requested NIRJULI S/S to open GOHPUR line as per system requirement but they failed to do this within 30 mins and power failed in ITANAGAR.

POWERGRID is requested to provide the S/S lists where synchronization facility is available along with remote controlled Stations.

NERLDC may please deliberate.

D.28. Automation of Reporting System

NERLDC is preparing various daily reports by manually entering data in Microsoft Excel sheet. As NERLDC is in the process of migrating to a Web based software shortly for preparation of various reports using this software so that Generators/ States can upload their files directly into the web based software instead of sending them via email.
In view of the above, it is therefore requested to adhere to the following format for the respective ISGS/ SLDCs:

1. State Files Names—

a. ASSAM-DD-MM-YYYY
b. MEGHALAYA-DD-MM-YYYY (Please start your data table from Row 1 instead of row 2)
c. Tripura-DD-MM-YYYY (Please keep the sheet name as "Sheet1")

2. Generation File Names-

a. Ranganadi-DD-MM-YYYY (Please DO NOT put any text in water level cell)
b. AGTCCPP-DD-MM-YYYY
c. DHEP-DD-MM-YYYY
d. LOKTAK-DD-MM-YYYY (In O and P Columns please insert the hourly data and energy MU of 132 kV Loktak-Rengpang and 132 kV Loktak- Ningthoukong lines respectively)
e. Palatana-DD-MM-YYYY
f. AGBPP-DD-MM-YYYY
g. Khandong_Kopili2-DD-MM-YYYY (Please start the table from column A instead of column B)
h. Kopili-DD-MM-YYYY

Also it is requested to send all data files for a day, by 01:00 Hrs of the next day at the same time when data is given telephonically.

This is for kind information and for further implementation by all constituents.

D.29. Telemetry Availability Status at NERLDC from Constituents as on 07-09-2018 at 16:30hrs.

Sl No.	Name of the Constituents	Total Analog	Total Digital	Total Data Points	Analog Reporting	Digital Reporting	Total Reporting	Total Percentage of data Availability
1	Arunachal Pradesh	104	149	253	6	4	10	3.95%
2	Assam	1217	1731	2948	534	578	1112	37.72%
3	Manipur	180	255	435	97	161	258	59.31%
4	Meghalaya	409	388	797	262	125	387	48.55%
5	Mizoram	71	50	121	9	9	18	14.87%
6	Nagaland	237	270	507	0	0	0	0%
7	Tripura	524	715	1239	148	169	317	25.58%
8	PGCIL	628	1082	1710	412	733	1145	66.95%
9	NEEPCO	202	286	488	143	190	333	68.23%
10	NTPC	31	49	80	23	49	72	90%
11	OTPC	44	90	134	41	81	122	91.04%
12	NHPC	18	29	47	17	27	44	93.61%

Note: Assam and Meghalaya may kindly give reason for Total Measurand reduction.

NERLDC may please deliberate.

METERING RELATED ITEMS

D.30. Procurement of additional 70 Laptops:

NERTS intimated the following in 147th. OCC meeting:
As informed in 146th OCCM, NOA Placed on 06.07.2018. As per the Contract Delivery Schedule 06(Six) Months i.e. by January-2019.
Fresh Offer for license for MS Office from different parties is expected by 16.08.2018. As intimated earlier procurement of MS Office is targeted by Jan'19.

NERTS may furnish the status.

D.301. Installation of new L&T SEMs in NER:

Khandong (05 SEMs): Installation in halt.
After discussion in 147th. OCC meeting, NEEPCO representative agreed for installation of SEM at Khandong without availing shutdown.

Mizoram(State): 2 SEMs...Not Completed
Two SEMs are to be installed. One at LONGMOL end and the other at ZUAGTUI end. POWERGRID team approached the P&E officials who informed that they need approval from their higher officials for installation of SEMs. The installation is pending due to delay on part of M/s P&E Deptt. Mizoram. Matter may be discussed.

In 147th. OCC meeting, EE-SLDC Mizoram agreed to look into and obtain internal approval at the earliest.

It was agreed that before any new installation of Meter, NERTS would intimate the programme to NERLDC and NERLDC would take up the matter with respective utility. After getting clearance from NERLDC, NERTS would proceed for installation.
Loktak: Check Meters installation status may be updated.

NTPC-BgTPP: Check Meters installation status may be updated.

Silchar: Replacement of faulty Meter no. NP-8569-A (connected in 132 kV PK'Bari ckt-1, faulty since 29/08/18)

Status may be discussed.

D.32. Procurement of DCD:

NERTS intimated the following in 147th. OCC meeting:
For amendment of the LOA (for additional supply of DCD) , PO required to be amended with GST implication. GST declaration is required from M/s L&T for issuance of GST amended PO. M/s L&T on 08.08.2018 have intimated that the matter has been taken by M/s L&T with their finance. On confirmation of submission of GST declaration, amendment can be issued for supply of DCD.

Status may be discussed.

D.33. Time drift in SEMs.

In 147th. OCC meeting, NERLDC highlighted the need of regular time correction of SEMs and intimated that such time drift was causing unwanted financial loss to the utilities on account of inaction on their part.
The procedure for time correction steps was explained as below:
1. Press "P" in DCD
2. Enter password "XMISSION"
3. Press "A" or "R" for time advance/retard

After this, SEM should be kept powered ON for 90 minutes.
NTPC reported vide e-mail dated 30/08/18 that time drift correction at BgTPP end could not be done due to DCD issue. Since all 3 main meters have drifted by more than 5 minutes new L&T make meters may be installed.

Status may be discussed.

D.34 Replacement of SEMs.

2 SEMs at Palatana are reported faulty and the same need to be replaced.

Following was agreed in 147th. OCC meeting:
The SEM meters has already been diverted to POWERGRID, Kumarghat S/S. The SEM will be sent to OTPC Pallatana within this week.
OTPC requested for deputing POWERGRID personnel for installation which was agreed to.

Status may be discussed.

D.35 Utilization of Laptop for Metering

Fourteen no. of Laptops were distributed for exclusive use in Metering activities in June'17. It is observed that there is no response from Samaguri and 79 Tilla regarding utilisation of the Laptops. For Samaguri & 79 Tilla SEM data are still being downloaded and sent to NERLDC by Powergrid personnel. In 146th. OCC meeting, TSECL representative stated that there were some issues with Laptop at 79 Tilla and matter could not be resolved by local Powergrid personnel. TSECL was advised to bring the Laptop to Shillong / OCC meeting in case problem cannot be resolved locally. Status may be discussed.

In 147th. OCC meeting, TSECL representative intimated that there was some issue with the Laptop and it would be handed over to NERTS at the earliest for rectification.

Status may be discussed.

Any other item:

Date and Venue of next OCC

It is proposed to hold the 149th OCC meeting of NERPC on second week of October, 2018. The date & exact venue will be intimated in due course.

*****

Additional Agenda from Tripura

It is seen while approving the s/d of 132 KV S M Nagar – Palatana & any ckt of 400 KV Palatana – Silchar or 400/132 KV ICT at Palatana the restriction on drawal/demand of Tripura state is splitting in 1) Tripura state demand, 2) Bangladesh drawal & restrictions of Bangladesh are being imposed through NLDC.
In this entire practice of calculating demand restriction, the internal breakdown/ shutdowns or planned load curtailment of Tripura system are not being considered in recent time particularly on 9th Sept'2018 at the time of 400 KV one ckt. s/d at Palatana i/c one ICT, results state faced extra commercial loss. In this case, Bangladesh restriction to 100 MW was not necessary as planned internal load curtailment of Tripura system was around 50 to 60 MW for pre-puja maintenance activities.

So, while allowing such s/d in future it is required to consider Tripura demand including Bangladesh as a single unit, so that state can manage its impact with internal activities like internal load curtailment for planned maintenance works. Forum may take this accordingly.

Annexure-C.3

No. 23/21/2018-R&R
Government of India
Ministry of Power
***

Shram Shakti Bhawan, Rafi Marg,
New Delhi, 30th August, 2018

To
1. Chairperson, Central Electricity Authority, New Delhi.
2. Secretary, CERC, New Delhi.
3. Pr. Secretary/Secretary (Energy/Power), State Governments.
4. Secretary, All SERCs/JERCs.
5. Chairman/CMDs for all PSUs under administrative control of Ministry of Power.
6. DG, Association of Power Producers, New Delhi.

Subject: Scheme on 'Flexibility in Generation and Scheduling of Thermal Power Stations to reduce the cost of power to the consumer' – regarding.

Sir,

I am directed to enclosed herewith a copy of the Scheme on 'Flexibility in Generation and Scheduling of Thermal Power Stations to reduce the cost of power to the consumer' for information and necessary action.

2. This issues with the approval of MoS(IC) for Power and NRE.

Yours faithfully,

Sandeep 30/8/18

(Sandeep Naik)
Director
Tel: 2371 5250

Encl: As above

Copy for information to:
i) All Joint Secretaries/Economic Adviser, Ministry of Power.
ii) PS to MoS(IC) for Power and NRE, PPS to Secretary (Power), PPS to AS(R&R), PS to CE(R&R), PS to Dir(R&R).
iii) Incharge, NIC, Ministry of Power with the request to upload on the website of Ministry of Power under 'Current Notices'.

Flexibility in Generation and Scheduling of Thermal Power Stations to reduce the cost of power to the consumer

A. Background

The Government of India has taken various policy initiatives in order to reduce the cost of generation. In the year 2016, Government had allowed "*flexibility in utilization of domestic coal by States*". Earlier, each power plant owned by a company signed Fuel Supply Agreements (FSA) for supply of coal from a specified coal mine. The policy for flexible utilization of coal allowed a company to use coal within its basket in the most optimal manner such that unnecessary coal transportation is avoided and the benefits of lower costs of power generation could be passed on to the beneficiary states.

Thereafter, on 05.04.2018, Government had issued scheme for "Flexibility in Generation and Scheduling of Thermal Power Stations to reduce emission" wherein flexibility has been given to generating company to supply Renewable power against schedule received for thermal power. The Scheme envisages sharing of benefits, if any arising out of the scheme, between the generators and beneficiaries in 50:50 ratio.

In a similar manner, in order to reduce the overall cost of generation of a generating company, flexibility needs to be given to generating company to supply power from any of its generating station against schedule received for its stations and gains realized in the process could be shared with beneficiaries.

B. Need for Allowing Flexibility in Generation for cost optimization

(i) Optimization in scheduling of generation to reduce overall cost of power at national level

The objective of One Nation, One Grid, One Frequency has been achieved and on most of days there is One Price in the electricity Exchange. The Electricity Grid has evolved from local grid to State level grid and then to Regional Grid and finally National

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synchronous electricity Grid. The Indian Electricity Grid is also connected to other countries (Bhutan, Nepal and Bangladesh) to gain international character. Accordingly, with the constraint free robust transmission grid in place, time has come to move ahead from regional level scheduling to National level optimization in scheduling of generation.

At present the Discoms/ States tie-up for supply of power from various power stations/ generating companies. States generally requisition power from a station on day ahead basis considering its merit order among all the stations from which it has power tie-up. However, on a national level, it is seen that many stations having low Energy Charge Rate (ECR) are not fully scheduled whereas the costlier stations are scheduled at the same time. The needy beneficiaries are not able to schedule power from stations having lower ECR as they do not have power allocation/ Power Purchase Agreement (PPA) in these stations. They have no other option but to schedule the costlier power available in their basket. Therefore, cheaper power of a station in a region remains unutilized whereas at the same time costlier power of a station in another region is dispatched which results in increased average cost of power for the country.

In order to maximize utilization of cheaper power, flexibility needs to be given to the generating company to supply the power requisitioned by beneficiaries / States through Merit Order operation of its stations on national level, that is, cheaper station of the generating company shall be dispatched up to its maximum capability before scheduling costlier stations till the total power requisitioned by all its beneficiaries is met.

(ii) Optimum utilization of the railway infrastructure for transportation of coal to power station

Generally, the cheaper power is available at the pit head power stations or power stations located nearer to the mines. In both cases, the coal transportation coat is less resulting in the cheaper power. The turnaround of railway rakes is faster and reliability of coal supply to such power stations is also better. As per CEA, normative requirement of coal stock in the pithead power stations or the stations located nearer to the mines are less thus requiring less inventory cost. Government has already decided that coal

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transportation for the plants located within 20 km from the mines has to be done by closed conveyor belt (except the existing plants which has MGR) and plants located between 20 to 40 km from mines through MGR.

Thus, if national level optimization in scheduling of generation is done, there would be more generation from pit head stations resulting in less requirement of coal movement to far off power plants. Railways infrastructure which is constrained at the moment particularly for up country movement and at other locations, can be better utilized.

C. Benefits Envisaged

a) Optimal utilization of the available resources by running the generating stations supplying power at lesser tariff and reducing the overall average cost of generation.

b) Optimum utilization of the railway network due to optimum utilization of pit head stations and reduced generation from more expensive generating stations requiring transportation of coal over long distances.

c) Flexibility will enable higher loading of cheaper generating stations and at the same time reducing the loading of costlier stations resulting in improvement of overall operational efficiency as against the present efficiency level.

d) The energy accounting and billing shall remain the same as per extant regulations. The surplus generated shall be shared with the beneficiaries, thus the average cost of power to the beneficiaries shall reduce.

D. **Proposed Mechanism for allowing Flexibility in Generation for cost optimization**

a) Station-wise allocation to different beneficiaries as per the present system shall continue.

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b) Individual power station shall declare its Availability to Regional Load Despatch Centre (RLDC) as per existing practice. A replica to be maintained at the National Load Dispatch Centre (NLDC) for Inter-regional Scheduling (or National level scheduling).

c) RLDC/NLDC shall seek total requisition from all the beneficiaries against their total entitlement from different Stations of a Generating Company as per present system.

d) Based on the requisition received from the beneficiaries, RLDC/NLDC shall issue the Initial Schedule (**R-0)** for Generating Stations as is being done presently as per extant regulations. This Schedule or implemented Schedule, if revised subsequently shall be used for raising bills by the generating company.

e) Based on the total power requisitioned by various beneficiaries of the generating company, RLDC/NLDC shall schedule the stations of the generating company, subject to transmission constraints, as per Merit Order of the generating company such that the station of that generating company having least ECR shall be first utilized fully (i.e. up to its Declared Capacity) followed by the next station with next higher ECR which shall be dispatched to the maximum and so on till the entire schedule of all beneficiaries is met by the generating company.

f) RLDC/NLDC shall complete such Merit Order operation based Generation Bucket Filling (**GBF**) scheduling subject to any constraint arising due to transmission / other Grid security.

g) Thereafter, RLDC/NLDC shall issue the actual dispatch schedule (**GBF-0**) for the generating stations. It is possible that the schedule of some Stations may be lowered to technical minimum level and few others may be put in Reserve Shut Down. In case the last generating station's schedule is less than the technical minimum level, the schedule of last but one generating station in the merit order may be reduced to an extent so that the last station gets scheduled to the technical minimum.

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h) Stations of a Generating Company shall be required to generate as per such finalized **GBF-0** Schedule, or its subsequent revisions.

i) The generating stations and beneficiaries will be free to revise their availability and requisition respectively in real time as per present practice. The revision made by the generating stations or the beneficiary shall be reflected in the revision of GBF, for which suitable provision for gate closure may be provided by the Appropriate Commission.

j) The surplus realized, if any, from supply of power from station having lower ECR in place of costlier thermal power not scheduled and billed due to national merit order operation of its stations by a generating company shall be shared with the beneficiaries in the ratio of 50 (beneficiaries) : 50 (generating company) on monthly basis with quarterly reconciliation. This ratio may be reviewed based on experience gained. The share of surplus which is to be passed on to the beneficiaries , if any, during the month shall be shared in proportion to the total drawl by the beneficiaries from the generating company. Accordingly, the monthly billing will be done by the generating company after taking into account of it and passed on to the beneficiaries. The Appropriate Commission shall ensure through a suitable mechanism that the share of surplus which is to be passed on to the beneficiaries has been appropriately passed on to the beneficiaries.

k) **Deviation Settlement Mechanism (DSM):** Stations shall be subjected to charges for deviations from Actual Dispatch schedule (**GBF-0, or its subsequent revision)** under DSM Regulations as per existing practice.

l) **Part-Load Compensation:** The Part-load compensation shall be billed based on the Actual Dispatch schedule (**GBF-0 or subsequent revisions).**

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m) **Incentive:** As incentive is payable by the beneficiaries of a station as per the energy scheduled by them, incentive would continue to be based on the **R-0** or **subsequent revisions** Schedule and as per extant Regulations.

E. Implementation of the Scheme

a) Changes, if any, required in the Regulations for the implementation of the above scheme shall be made by the Appropriate Electricity Regulatory Commission, including regulatory provisions for maintaining adequate spinning reserve and payment mechanism thereof.

b) National Merit Order Despatch shall bring out benefits as envisaged above, however there may be Operational and Commercial issues that may arise during implementation of scheme at national level for all Generating Companies i.e. Central, State and Private Generating Companies. This scheme shall be applicable to the Generating Companies having multiple Generating assets, whose tariff is being determined under Section 62 of the Electricity Act 2003.

c) Central Electricity Authority shall monitor the implementation of this scheme and resolve and review any issues arising during its implementation, in consultation with CERC. The status of implementation of the scheme and issues arising shall be sent by CEA to Ministry of Power on quarterly basis.

d) The scheme, if required, may be modified by Ministry of Power based on the operational feedback by the stakeholders and CEA.

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30/8/18

Annexure-D.6

CDAC SCHEME IN NER

SL NO	LOCATION	TOTAL SIM TO BE PURCHASED	TO BE PURCHASED IN FUTURE
1	ARUNACHAL PRADESH	7	4
2	ASSAM	35	15
3	MANIPUR	10	7
4	MEGHALAYA	6	0
5	MIZORAM	6	1
6	NAGALAND	7	2
7	TRIPURA	8	6
	TOTAL	79	35

SL NO	FEEDER NAME	STATUS	METER TO BE REPLACED/INSTALLED BY PGCIL
1	SRIKONA END OF 132kV SILCHAR FDR -1	REPLACE	1
2	SRIKONA END OF 132kV SILCHAR FDR -2	REPLACE	1
3	DEOMALI END OF 220 KV KATHALGURI FEEDER	REPLACE	1
4	PK'BARI -1 END OF 132 KV SILCHAR-1	REPLACE	1
5	PK'BARI -1 END OF 132 KV SILCHAR-2	REPLACE	1
6	PAVOI END OF 132 KV BNC-1	REPLACE	1
7	MOKOK(S) END OF DOYANG	REPLACE	1
8	MOKOK(S) END OF MOKOK-MOKOK-1	REPLACE	1
9	MOKOK(S) END OF MOKOK-MOKOK-2	REPLACE	1
10	KHUPI END OF 132 KV BALIPARA	INSTALL	1
11	LEKHI END OF 132 KV PARE	INSTALL	1
12	KHUPI END OF 132 KV KAMENG	INSTALL	1
13	ZUANGTUI END OF MELRIAT	INSTALL	1
14	LUANGMOL END OF AIZAWL	INSTALL	1

Apr-18

Annexure-D.22

POWERGRID

SL-No	Name Of The Line	Outage date	Outage Time	End Date	End Date
1	220 kV BTPS - Salakati 1	5-Apr-18	14:24:00	5-Apr-18	14:45:00
2	220 kV BTPS - Salakati 2	5-Apr-18	14:24:00	5-Apr-18	14:45:00
3	132 kV Khandong - Khliehriat 1	7-Apr-18	14:46:00	7-Apr-18	14:53:00
4	132 kV Khandong - Khliehriat 1	7-Apr-18	15:24:00	7-Apr-18	15:28:00
5	132 kV Khandong - Khliehriat 1	9-Apr-18	11:38:00	9-Apr-18	11:45:00
6	132 kV Khandong - Khliehriat 1	9-Apr-18	11:59:00	9-Apr-18	12:35:00
7	220 kV Kopili - Misa 3	10-Apr-18	3:45:00	10-Apr-18	4:03:00
8	220 kV Kopili - Misa 3	10-Apr-18	2:15:00	10-Apr-18	2:27:00
9	132 kV Lekhi - Ranganadi	14-Apr-18	1:51:00	14-Apr-18	2:24:00
10	132 kV Gohpur - Nirjuli	14-Apr-18	1:55:00	14-Apr-18	8:30:00
11	132 kV Melriat - Zungtui	16-Apr-18	10:05:00	16-Apr-18	10:30:00
12	132 kV Khandong - Khliehriat 2	17-Apr-18	12:25:00	17-Apr-18	12:33:00
13	132 kV Khandong - Khliehriat 1	17-Apr-18	13:44:00	17-Apr-18	13:50:00
14	132 kV Badarpur - Kolasib	19-Apr-18	2:01:00	19-Apr-18	2:16:00
15	132 kV Badarpur - Kolasib	19-Apr-18	3:16:00	19-Apr-18	3:22:00
16	132 kV Badarpur - Kolasib	19-Apr-18	19:36:00	19-Apr-18	19:44:00
17	132 kV Khliehriat (MePTCL) - Khliehriat (PG) 2	20-Apr-18	12:10:00	20-Apr-18	12:59:00
18	132 kV Badarpur - Kolasib	21-Apr-18	1:16:00	21-Apr-18	2:10:00
19	132 kV Lekhi - Ranganadi	25-Apr-18	17:30:00	25-Apr-18	17:42:00
20	132 kV Lekhi - Ranganadi	25-Apr-18	18:36:00	25-Apr-18	18:55:00
21	132 kV Badarpur - Kolasib	29-Apr-18	1:33:00	29-Apr-18	2:11:00
22	132 kV Badarpur - Kumarghat	29-Apr-18	8:50:00	29-Apr-18	8:55:00
23	132 kV Palatana - Surajmaninagar	30-Apr-18	12:20:00	30-Apr-18	12:55:00

May'18

POWERGRID

Event ID	Name of tripping element (End A - End B)	Date & Time of Event	Date & Time of Restoration
1	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line	02-05-2018 14:24:00	02-05-2018 18:43:00
2	132 kV Melriat - Zuangtui Line	5/9/2018 13:25	5/9/2018 13:42
3	132 kV Agartala - AGTCCPP 2 Line	09-05-2018 17:02:00	09-05-2018 17:39:00
4	132 kV Ranganadi - Pare Line	11-05-2018 11:09:00	11-05-2018 11:26:00
5	132 kV Ranganadi - Pare Line	11-05-2018 13:04:00	11-05-2018 13:26:00
6	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line	15-05-2018 16:24:00	15-05-2018 16:40:00
7	132 kV Pasighat - Roing Line	16-05-2018 13:17:00	17-05-2018 13:54:00
8	132 kV Khandong - Khliehriat 1 Line	21-05-2018 15:31:00	21-05-2018 15:59:00
9	132 kV Khandong - Kopili 1 Line	21-05-2018 15:31:00	21-05-2018 15:49:00
10	400/220 kV, 315 MVA ICT I at Misa	21-05-2018 15:31:00	21-05-2018 16:08:00
11	400/220 kV, 315 MVA ICT II at Misa	21-05-2018 15:31:00	21-05-2018 18:10:00
12	400/220 kV, 315 MVA ICT I at Misa	21-05-2018 16:34:00	21-05-2018 17:18:00
13	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line	24-05-2018 13:48:00	24-05-2018 18:39:00
14	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line	26-05-2018 12:26:00	26-05-2018 12:38:00
15	132 kV Badarpur - Kolasib Line	26-05-2018 17:24:00	26-05-2018 17:35:00

NETC

Event ID	Name of tripping element (End A - End B)	Date & Time of Event	Date & Time of Restoration
1	400 kV Palatana - Silchar 2 Line	12-05-2018 17:45:00	12-05-2018 18:33:00

Jun-18

POWERGRID

SL-No	Name Of The Line	Outage date	End Date
1	132 kV Imphal (Manipur) - Imphal (PG) 2 Line	03-06-2018 10:31:00	03-06-2018 10:53:00
2	132 kV Imphal (Manipur) - Imphal (PG) 1 Line	03-06-2018 10:31:00	03-06-2018 10:51:00
3	132 kV Biswanath Chariali - Pavoi 1 Line	04-06-2018 09:26:00	04-06-2018 09:55:00
4	132 kV Aizawl - Tipaimukh Line	06-06-2018 01:42:00	06/06/2018 02:30:00
5	132 kV Jiribam - Loktak 2 Line	06-06-2018 02:20:00	06-06-2018 03:14:00
6	132 kV Imphal (MSPCL) - Imphal (PG) 2 Line	06-06-2018 10:54:00	06-06-2018 11:47:00
7	132 kV Dimapur (PG) - Kohima 1 Line	09-06-2018 13:46:00	09-06-2018 13:51:00
8	132 kV Imphal (MSPCL) - Imphal (PG) 1 Line	14-06-2018 03:32:00	14-06-2018 04:13:00
9	132 kV Dimapur (PG) - Kohima Line	16-06-2018 11:25:00	16-06-2018 11:40:00
10	132 kV Palatana - Surajmaninagar 1 Line	18-06-2018 01:40:00	18-06-2018 02:50:00
11	132 kV P.K.Bari - Silchar 1 Line	18-06-2018 01:40:00	6/18/2018 2:34
12	132 kV P.K.Bari - Silchar 2 Line	18-06-2018 01:40:00	6/18/2018 2:18
13	220 kV Kopili - Misa 3 Line	18-06-2018 01:44:00	18-06-2018 06:20:00
14	132 kV Imphal (MSPCL) - Imphal (PG) 2 Line	18-06-2018 10:29:00	18-06-2018 10:42:00
15	132 kV Lekhi - Pare Line	22-06-2018 06:50:00	22-06-2018 19:10:00

Jun-18

POWERGRID

SL-No	Name Of The Line	Outage date	End Date
16	132 kV Dimapur (PG) - Kohima Line	23-06-2018 12:45:00	23-06-2018 13:06:00
17	132 kV Dimapur (PG) - Kohima Line	24-06-2018 12:10:00	24-06-2018 12:21:00
18	132 kV Dimapur (PG) - Kohima Line	24-06-2018 12:49:00	24-06-2018 12:58:00
19	400/132/33kV, ICT II at Silchar	25-06-2018 14:58:00	6/25/2018 15:15
20	132 kV Lekhi - Nirjuli 1 Line	25-06-2018 16:25:00	25-06-2018 18:40:00
21	132 kV Dimapur (PG) - Kohima 1 Line	26-06-2018 08:33:00	26-06-2018 08:50:00
22	132 kV Imphal (MSPCL) - Imphal (PG) 1 Line	26-06-2018 11:30:00	26-06-2018 11:53:00
23	132 kV Imphal (MSPCL) - Imphal (PG) 2 Line	29-06-2018 01:50:00	29-06-2018 02:18:00
24	132 kV Ranganadi - Ziro 1 Line	29-06-2018 18:40:00	29-06-2018 18:48:00

Jul-18

POWERGRID

SL-No	Name Of The Line	Outage date	End Date
1	132 kV Dimapur (PG) - Kohima Line	01-07-2018 12:54:00	01-07-2018 13:10:00
2	132 kV Dimapur (PG) - Kohima Line	05-07-2018 10:00:00	05-07-2018 15:10:00
3	132 kV Ranganadi - Pare 1 Line	07-07-2018 13:32:00	07-07-2018 13:54:00
4	132 kV Dimapur (PG) - Kohima Line	11-07-2018 11:26:00	11-07-2018 11:38:00
5	132 kV Imphal (MSPCL) - Imphal (PG) 1 Line	11-07-2018 10:55:00	11-07-2018 11:09:00
6	132 kV Imphal (MSPCL) - Imphal (PG) 2 Line	11-07-2018 10:55:00	11-07-2018 11:11:00
7	132 kV Lekhi - Pare Line	11-07-2018 14:25:00	11-07-2018 14:35:00
8	132 kV Lekhi - Pare Line	12-07-2018 14:07:00	12-07-2018 14:50:00
9	132 kV Dimapur - Doyang 2 Line	15-07-2018 04:35:00	15-07-2018 07:05:00
10	132 kV Lekhi - Pare Line	21-07-2018 00:53:00	21-07-2018 02:23:00
11	132 kV Dimapur - Kohima Line	31-07-2018 16:20:00	03-08-2018 14:56:00
12	132kV Aizawl - Melriat	7/20/2018 9:23	7/20/2018 11:28