MADHYA PRADESH POWER TRANSMISSION COMPANY LIMITED
STATE LOAD DESPATCH CENTRE, NAYAGAON, RAMPUR, JABALPUR
Telephone: (0761) 2970089 Fax: (0761) 2664343/2970119 e-mail sldcmpjbp@gmail.com
Corporate office: Madhya Pradesh Power Transmission Co. Ltd., Block No.2, Shakti Bhawan, Rampur, Jabalpur 482008, CIN-U40109MP2001SGC014880, Email-mdtransco.nic.co.in

ISO 9001:2015

No.07-05/SG-9B-II/1416 Jabalpur, dated:27.10.2023

To

As per distribution list

Sub: Minutes of 86th meeting of Operation and Coordination Committee of MP.

…

The Minutes of 86th meeting of the Operation and Coordination Committee of MP scheduled on 06th September 2023 at Conference Hall, SLDC, MPPTCL, Jabalpur has been uploaded on the website of SLDC 'www.sldcmpindia.com' and can be downloaded.

V. K. Agrawal
Superintending Engineer (Opn)
& Member Secretary, MP-OCC,
SLDC, MPPTCL, Jabalpur.

Distribution List

Distribution List

1. The Chief Engineer (Works), MP Power Transmission Co. Limited, Shakti Bhawan, Jabalpur, email- ceehtmi@yahoo.com.
2. The Chief Engineer (T&C), MP Power Transmission Co. Limited, Jabalpur. Fax No- 0761-2665593, 2702710 Email-, ce.tnc@mptransco.nic.in , se2.tc@mptransco.nic.in
3. The Chief Engineer (Transmission-East Zone), MP Power Transmission Co. Limited, Shakti Bhawan, Jabalpur. Email- sk.gaikwad@mptransco.nic.in.
4. The Chief Engineer (Transmission-West Zone), MP Power Transmission Co. Limited, Indore.
5. The Chief Engineer (Transmission-Central Zone), MP Power Transmission Co. Limited, Bijlee Nagar, Govindpura, Bhopal, email- setncbpl@gmail.com.
6. The Chief Engineer (Plg & Des), MP Power Transmission Co. Limited, Jabalpur, Fax No- 0761-2660908 Email- ceps321@yahoo.com, ce.pnd@mptransco.nic.in
7. The Chief Engineer (Procurement.), MP Power Transmission Co. Limited, Jabalpur, .Fax No- 0761-2660908 Email – substation_vi@yahoo.com
8. The Chief Engineer(EHT:Const.), MP Power Transmission Co. Limited, Jabalpur. Fax-0761-2661618, E-mail- ce.ehtc@mptransco.nic.in.
9. The Chief Engineer(EHT:Maint&insp.), MP Power Transmission Co. Limited, Jabalpur. Fax-0761-2665593, E-mail- ce.mni@mptransco.nic.in.
10. The Executive Director (O & M:Gen), MP Power Generating Company Limited, Jabalpur. Fax No- 0761-2664749, Email- gcc.mppgcl@gmail.com, Email- edomg_mpeb@rediffmail.com
11. The Chief Engineer (O&M:Hydel), MP Power Generating Co. Ltd, Jabalpur, Fax No-0761-2664749.
12. The General Manager(PM), MPPMCL, Jabalpur Email – gm_pm@mptradeco.com controlroom.tradeco@gmail.com
13. The Superintending Engineer (GCC), MPPGCL, Jabalpur Email – segcc.mppgcl@gmail.com gcc.mppgcl@gmail.com.
14. The General Manger (DCC-EZ), DISCOM Control Centre, MP Poorva Kshetra Vidyut Vitaran Co.Limited, Jabalpur, Fax No-0761-2668503, Email – cmdez_ld@yahoo.co.in.
15. The Dy. General Manager (DCC –CZ), DISCOM Control Centre, MP Madhya Kshetra Vidyut Vitaran Co. Limited, Bhopal, Fax No-0755-2580611,Email- plm.mpcz@gmail.com.
16. The Executive Engineer (DCC-WZ), DISCOM Control Centre, MP Paschim Kshetra Vidyut Vitaran Co. Limited, Near Polo Ground, Jail Road, Indore, Fax No- 0731-2421554, Email- dccindore@gmail.com.
17. The Executive Engineer, Sub Load Despatch Centre, MPPTCL, Indore, Fax No- 0731-2874515, Email – eesubldcind@yahoo.com.
18. The Executive Engineer, Sub Load Despatch Centre, MPPTCL, Bhopal, Fax No- 0755-2885220, Email – aldc_bpl@yahoo.co.in
19. The General Manger(RO), MPPMCL, In front of Bhojpur Club, E-4, Arera Colony,Bhopal, Fax No-0755-2423046, Email-Rajeev_keskar@rediffmail.com
20. The Chief Engineer (PM&C), Narmada Hydroelectric Development Corpn. Ltd, NHDC Parisar, Shamla Hills, Bhopal – 462013., Fax No- 0755-4030130,Email – om.co.nhdc@gmail.com
21. The Chief Electrical Distribution Engineer, West Central Railway (WCR), General Manager's Office, Electrical Department, Jabalpur-482001 (MP), Fax: 0761-2627629, Email- cede@wcr.gov.in, dyceetrdwcr@gmail.com, M-9752415312, Mr.Satyendra Kumar (Dy.CE), Mob.9752415301 (CEDE, WCR).
22. The General Manager, Indira Sagar Power Station, NHDC Office complex, PO : Narmada Nagar, Distt : Khandwa (MP) – 450 119, Fax No- 07323-284080, Email – nhdc-isp@rediffmail.com
23. The General Manager, Omkareshwar Power Station, Prashsnik Bhawan, Urja Vihar, Sidhwarkut, Distt : Khandwa (MP) – 450 554, FaxNo-07280-271703, Email- omkareshwar.nhdc@gmail.com.
24. The Director (Projects), BLA Power Limited, At : Niwari, PO: Khorsipan, Tah : Gadarwara, Distt ; Narsinghpur 487 551, Fax No. 07791-243667 / 243669, Email – manish@bla.co.in , electricalop@bla.co.in
25. The Sr. Vice President, Jaiprakash Power Ventures Ltd., Village Sirchopi Subpost Office-Agasod, Post Office-Bina- 470113 Distt- Sagar, Fax No. 07580-277200, Email – jbtppbina400kvswitchyard@gmail.com jptpp.switchyard@jalindia.co.in,
26. The Senior Manager Operation Satpura Transco Pvt. Ltd., Satpura Colony, Betul Road, Old Itarsi, Distt. Hoshangabad, Email – sachin.ashish@apraava.com , manoj.kumar@apraava.com.
27. M/s Ujaas Energy Ltd. 701, NRK Business park, Vijay Nagar Sqaure, Indore – 452010, Email id :-solar@ujaas.com
28. M/s Suzlon Global Services Ltd., 1090, Scheme no. 114, Park-2, Ring Road, Universal Hospital Row, Email- deepesh.sankwa@suzlon.com, Indore – 452010, Badree.hirve@suzlon.com.
29. Chief General Manager, Power Grid Bhind-Guna Transmission Limited ((PBGTL), Plot no. 54, Sama savli Road,Vadodra-390024 (Gujarat)
30. M.P. Power Transmission Package –II Limited, (Adani Transmission Ltd.), Shantigaram Near Vaisnav Devi, Circle, SG Highway, Khodiyar, Ahemdabad-382421(Gujarat). AmitKumar.Dixena@adani.com , Abhishek.Kukreja@adani.com

MINUTES FOR 86th MEETING OF OPERATION & COORDINATION COMMITTEE OF MP HELD ON 06th SEPTEMBER 2023 AT 11:00 AM AT CONFERENCE HALL, SLDC, MPPTCL, NAYAGAON, JABALPUR.

The 85th meeting of Operation & Coordination Committee of MP was held on 06th SEPTEMBER 2023 at 11:00 AM at conference hall, SLDC, MPPTCL, Nayagaon, Jabalpur. The list of participants is enclosed as **Annexure -1.0.**

Shri Pradeep Sachan, Chief Engineer SLDC & Chairman OCCM welcomed all the participants and requested all for introduction.

Member Secretary OCCM welcomed Shri K.K.Parbhakar and congratulated him for joining SLDC as an Advisor.

Member Secretary OCCM also informed the committee that M.P. Power Transmission Package –II Limited, (Adani Transmission Ltd.) and Power Grid Bhind-Guna Transmission Limited ((PBGTL) has been inducted as the member of MP OCCM and welcomed the executives from M.P. Power Transmission Package –II Limited, (Adani Transmission Ltd.) and Power Grid Bhind-Guna Transmission Limited ((PBGTL). Thereafter he requested all the participants for formal introduction.

Thereafter, the agenda was discussed.

ITEM NO. 1 : CONFIRMATION OF MINUTES : Minutes of 85th meeting of Operation & Coordination Committee of MP were forwarded to the committee members vide No. 07-05/SG-9B-II/787 Jabalpur dated 14.06.2023 respectively. No comments have been received, hence committee confirms the minutes.

ITEM NO.2: REVIEW OF SYSTEM OPERATION DURING THE MONTHS APRIL 2023 TO JULY 2023.

2.1. Frequency Particulars: The committee was apprised about the details of frequency particulars for the month of **APRIL 2023 TO JULY 2023** are enclosed at **Annexure-2.1**. The brief detail of frequency profile is given here under:-

Month	Average frequency	Minimum Integrated frequency over an hour	Maximum integrated frequency over an hour	Instantaneous Minimum Frequency	Instantaneous Maximum Frequency
APRIL 2023	50 Hz	49.67 Hz	50.26 Hz	49.49 Hz	50.33 Hz
MAY 2023	50 Hz	49.64 Hz	50.37 Hz	49.43 Hz	50.40 Hz
JUNE 2023	50.01 Hz	49.6 Hz	50.37 Hz	49.51 Hz	50.41 Hz
JULY 2023	50.01 Hz	49.7 Hz	50.35Hz	49.58 Hz	50.42 Hz

2.2 Operational Matters

2.2.1 Operational Discipline: The committee was apprised about the Frequency profile for the months **APRIL 2023 TO JULY 2023** is as given below for discussion by the committee:

%age of time when frequency was	Apr-23	May-23	Jun-23	Jul-23
Above 50.30 Hz	0.04	0.08	0.10	0.11

Between 50.05 Hz and 50.30 Hz	21.68	21.72	25.31	17.25
Between 50.00 Hz and 50.05 Hz	26.50	27.24	29.17	35.01
Between 49.9 Hz and 50.00 Hz	41.25	41.10	38.71	42.25
Between 49.5 Hz and 49.9 Hz	10.53	9.85	6.71	5.38
Between 49.2 Hz and 49.5 Hz	0.00	0.00	0.00	0.00
Below 49.2 Hz	0.00	0.00	0.00	0.00

2.2.2 Voltage Profile: The committee was apprised about the maximum and minimum voltage as recorded at important 400 KV s/s in MP Grid from **APRIL 2023 TO JULY 2023** is enclosed as **Annexure – 2.2.2.**

2.2.3 STATUS OF CAPACITOR BANKS IN SUB-TRANSMISSION SYSTEM: The committee was apprised about the updated information of the status of capacitor banks in sub-transmission system as on 31th JULY 2023 as submitted by DISCOMs is detailed below:

DISCOM	Capacitor bank installed in good condition (No)				Capacitor Banks healthy but not in service due to control ckt problem			Capacitor bank installed but defective & are repairable (No)			Requirement of repair against each unit (No)	Requirement against non-repairable capacitor banks		Capacitor banks already covered under ADB T-V		Balance capacitor banks to be covered in other schemes	
	600 KVAR	1200 KVAR	1500 KVAR	1800 KVAR	600 KVAR	1200 KVAR	1500 KVAR	600 KVAR	1200 KVAR	1500 KVAR	No of 100 KVAR Units required	600 KVAR	1200 KVAR	600 KVAR	1200 KVAR	600 KVAR	1500 KVAR
EZ	373	122	142	-	8	6	13	30	5	2	75	0	0	0	0	-	589 nos. 1500KVAR Capacitor banks are proposed in RDSS scheme out of which 57 nos. are installed
CZ	0	498	1103	211	-	-	-	0	0	0	0	0	0	0	0	0	538
WZ	533	515	801	-	0	0	0	52	61	59	1010	10	21	0	0	-	0

2.2.4 Status of Shunt Capacitor Banks installed at various EHV Transmission Substation: The committee was apprised about the updated information of the status of installed capacitor banks (in MVAR) in EHV transmission system as on **30.06.2023** as submitted by MPPTCL is given below: -

Voltage	Capacitor bank	Capacity Added	TOTAL	Capacitor Bank

Class	installed as on 31.12.2022 (MVAR)	after Last OCC Meeting (MVAR)	CAPACITY AS ON 31.03.2023 (MVAR)	Installed but defective & are not repairable (No & MVAR)
220 KV	0.00	0.00	0.00	**All in Service**
132 KV	1139.00	0.00	1139.00	
33/36 KV	7632.50	36.00	7668.50	
TOTAL	**8771.50**	**36.00**	**8807.50**	

2.2.5 U/F and df/dt Relay Operation

(i) **U/F and df/dt Relay Operation:** During **APRIL 2023 TO JULY 2023:-** The committee was informed that frequency did not touch 49.40 Hz. There was no df/dt operation during the same period. MPPTCL informed that under Frequency Plan for all the stages have been implemented and in operation.

(ii) Defective u/f, df/dt Relays: The committee was apprised that MPPTCL has informed that all the df/dt and U/F relays are in operation, where the U/F relays are not available, the numerical relays programmed for under frequency operation. All U/F stages are in good/ healthy & working condition.

2.3 POWER CUTS / LOAD RESTRICTIONS/DIFFERENTIAL LOAD SHEDDING BY DISCOMS & GROUP ALLOCATION TO 33 KV FEEDERS: -

(i) The committee was apprised that details of DISCOM wise Power supply given to various domestic categories during the period **APRIL 2023 TO JULY 2023** is enclosed at **Annexure 2.3(i).**

(ii) **Group Allocation to Newly Commissioned existing EHV substations:-** The committee was apprised about the region wise list of 33 KV feeders emanating from various newly commissioned/existing EHV substations for which groups have not been allocated as provided by T&C. The DISCOM wise details of pending group allocation to 33 KV feeders as provided by DISCOMS is given below:-

SN	DISCOM	Region	No of 33 KV feeders for which groups to be allocated
01	EAST	Jabalpur	16
02		Sagar	11
		Seoni	06
03		Satna	42
04		**Total**	**82**
05	WEST	Indore	04
06		Khandwa	22
07		Mandsaur/Ujjain	10
08		**Total**	**36**
09	CENTRAL	Bhopal	25
10		Gwalior	00
		Guna	05
11		**Total**	**30**
TOTAL		**Grand Total**	**141**

DISCOMs were requested to furnish the details as per list enclosed at **Annexure-2.3(ii)** in the meeting**.**

In view of the above it was requested that the order copy for which group have been allocated may please be submitted to T&C, MPPTCL under intimation to SLDC.

ITEM NO. 3 : OPERATIONAL PLANNNING:

3.1 Generating Units under planned outage and proposed maintenance program: The committee was apprised about the latest status for annual maintenance /outages of thermal generating units of MPPGCL as provided by ED(O&M:Gen) for FY-2023 – 2024 is enclosed as **Annexure-3.1.**

3.2 Proposed shutdown program of Transmission lines / Transformers: The committee was apprised about the proposed shutdown of transmission elements for the period 01.06.2023 to 31.08.2023 as submitted by T&C, MPPTCL is enclosed as **Annexure-3.2.**

3.3 Long Outages of transmission elements and protections: The committee was apprised about the status submitted by MPPGCL /MPPTCL are given below:-

Sr. No	Line/Transformer/ etc under long Outage	Outage date	Reason	Response from Utility
1	220 KV ATPS – Railway Traction Ckt - 1	15.05.2019	B-Phase LA Burst	MPPGCL in 79th OCCM intimated that the line is ready for charging from ATPS end. Railway replied that the line cannot be charged from railway end as it was suspected that high voltage impulse is generated in charging the line which is the cause of frequent failure of power transformers. Railway reply letter is attached as **annexure 3.3** RAILWAY may submit the latest status
2	50Mvar line reactor of 400 KV Indore – ISP Ckt-II at 400 KV Indore end	02.02.2022	Y-PH BUCHOLZ, IT GOT BURST AND CAUGHT FIRE.	To be replaced by another reactor. T&C / P&D may submit the latest status
3	3X40MVA, 220/132KV, MITSUBISHI X'mer at 220 KV S/s Itarsi	28.04.2023	Differential and Buchholz trip indication.	X'mer is being replaced by 160MVA X'mer by Aug-2023.
4	50MVA, 132/33KV BBL X'mer at 132 KV S/s Damoh	26.05.2023	Buchholz trip indication	X'mer is being replaced by 50MVA X'mer by Aug-2023.

	40MVA, 132/33KV BHEL X'mer 220 KV S/s Ratlam	28.06.2023	Buchholz trip indication	X'mer is being replaced by 50MVA X'mer by Sep-2023.
	40MVA, 132/33KV BHEL X'MER AT 132KV S/S BARMAN	13.03.2023	Differential and Buchholz trip indication. Key gases found increased.	Replaced by another 40MVA X'mer on 16.05.2023
	63MVA, 132/33KV BBL X'MER AT 220 KV S/S INDORE-SZ	05.04.2023	Differential indication.	Replaced by another 40MVA X'mer on 12.05.2023

Any transmission element/ EHV element under outage, which has not been intimated/included under aforesaid outage list, should be invariably intimated to SLDC. All entities are requested to ensure the same. The utility may submit the latest status.

ITEM NO. 4 : OPERATIONAL STATISTICS FROM APRIL 2023 TO JULY 2023 :

The details of actual generation, Schedule from Central Sector, demand etc. are given in the following Annexures:

Annex. 4.1 Unit wise actual Generation of MPPGCL thermal Units and station wise Generation of MPPGCL & NHDC Hydel Units.

Annex. 4.2 Power Supply Position(Energy Balance Sheet).

Annex. 4.3 Hourly Average of Availability and Demand.

Annex. 4.4 Hourly average schedule Vs Drawal of DISCOMs.

ITEM NO. 5: SYSTEM DISTURBANCE IN MP

5.1 REPORTING OF FLASH REPORT, DR AND EL FOR 400KV, INTERSTATE TRANSMISSION ELEMENTS & DETAILED TRIPPING REPORT:- The committee was apprised that as per the provisions of Regulation 5.2 (r) of CERC (Indian Electricity Grid Code) Regulations 2010 and Regulation of 5(9) of CERC (Indian Electricity Grid Code) (First Amendment) Regulations, 2012 all the Regional Entities of the Region shall furnish the tripping details including DR & EL output to RLDC with in 24 hrs of the event for analysis and identify the real-time measures required in future to ensure secured grid operation. The flash report is also required to be furnished to SLDC within an hour of tripping. Sometimes It is observed that FLASH REPORT are being made available but not DR & EL of tripping of transmission grid element by the State Grid Entities.

It has been intimated by WRLDC that in case of tripping of Inter State & inter Regional lines of voltage class 220 KV & above level, a tripping report along with the DR/EL files shall be submitted to WRLDC within 24Hrs. Also the DR/EL shall be submitted to WRLDC tripping portal, details of which were previously circulated. The incidences / tripping's which occurred during the month of APRIL-2023 to JULY-2023 for which the details have not been submitted are:-

S NO	Event at s/s	Date	Flash report	DR/EL	REMARK

1	220kV Malanpur-Auraiya S/C	01-05-2023	submitted	submitted	A/R not attempted. MPPTCL may kindly look into the issue
2	220 kV Bhanpura-Ranpur	26-05-2023	submitted	submitted	Line A/R successfully and tripped due to recurrence of fault in reclaim time.
3	220kV Malanpur-Auraiya S/C	05-07-2023	submitted	submitted	A/R not attempted for single phase fault, MPPTCL/NTPC may kindly look into the issue
4	220kV Mehgaon-Auraiya S/C	06-07-2023	submitted	submitted	A/R not attempted for single phase fault, MPPTCL/NTPC may kindly look into the issue

ITEM NO. 6.0 : IMPORTANT OPERATIONAL ISSUES:-

6.1 STATUS OF COMPLETION OF ONGOING SCHEMES FOR COMMISSIONING OF REACTORS / TRANSMISSION ELEMENTS:- The present status regarding schedule and commissioning of reactors / transmission elements is as below:-

S.No.	400 KV S/s	Size MVAR	Implementing Agency	Expected Date of Commissioning as intimated in last OCC
1.	Line reactor on 400 KV S/s Satna (PG) – Sagar Ckt at 400 KV S/s Sagar end.	50 MVAr Line Reactor	MPPTCL	P&D informed that the reactor is in the tendering stage, it will be completed by Dec-22, after that it will require 12 months for commissioning work. T&C and P&D MPPTCL please submit the latest status
2.	400KV S/s Sagar	125 MVAr Bus Reactor	MPPTCL	Some shifting work is required after that Reactor will be ready for commissioning. It is also to intimate that a revised/recent EI approval shall be provided prior to its charging as the element was not in service for more than 6 months. T&C and P&D MPPTCL please submit the latest status
3	400 KV S/S KIRNAPUR	125 MVAr Bus Reactor	MPPTCL	T&C and P&D MPPTCL please submit the status for commissioning of Reactor.

6.2 GUIDELINES FOR RESOURCE ADEQUACY PLANNING FRAMEWORK FOR INDIA :- The committee was apprised about that in exercise of the powers conferred under the Rule 16 of Electricity (Amendment) Rules, 2022, the Ministry of Power, Government of India, in consultation with Central Electricity Authority (CEA) hereby issues the guidelines for Resource Adequacy for the Indian electricity sector.

For the past few years, India has been the fastest growing large economy in the World; and the growth will continue. Currently, it is the fifth largest economy in the World; and it is poised to become the third largest economy by 2030. This will only be possible if there is sufficient electricity to power this growth. It is essential that generation capacity is added at a pace matching the growth in demand- and in fact slightly ahead of the demand; so that the shortage of electricity does not slow down growth.

These guidelines shall be followed by all institutions and stakeholders. The complete Guidelines for Resource Adequacy Planning Framework for India is enclosed as **Annexure-6.2**. It is also pertinent to say that Resource Adequacy Planning Framework had been included in IEGC 2023 as an integral part. All the stake holders are requested to provide comments if any.

The matter was discussed in the meeting and all the stakeholders were requested to review the guidelines as it will be implemented from 1st October 2023.

6.3 PROTECTION AUDIT :- The committee was apprised that in 132nd PCM held on 18/04/2018, it was decided that the protection audit of all critical S/S of 220 kV and all 400 kV level S/S newly commissioned S/S's immediately shall be carried out on specified interval of time (**i.e. within one year of commissioning**) and S/S's where protection audit has been carried out **5 years** back.

In view of the above protection audit of 09 no. substations/generating station (as detailed below) has been carried ot in the month of July 2023. The list of substations wise observations is Enclosed as **Annexure – 6.3.** All the concerned entities are requested to provide the status for rectification/compliance of the audit observations in the meeting.

T&C is requested to provide dates of last Third Party Protection audit conducted at 400KV Substations of MPPTCL.

Representative from T&C MPPTCL informed the committee that the information will be provided to SLDC at the earliest.

6.4 HON'BLE CERC (INDIAN ELECTRICITY GRID CODE) REGULATIONS, 2023 PROTECTION CODE:- The committee was apprised about that Hon'ble CERC vide notification dated 03.08.2023 have notified the date of effective of the (Indian Electricity Grid Code) Regulations, 2023, as 01.10.2023. A new chapter on "Protection Code" has been included and all the users of the system are require to adhere with the clauses of the regulation. The important provisions are as follows.

Protection Protocol:-

(1) All users connected to the integrated grid shall provide and maintain effective protection system having reliability, selectivity, speed and sensitivity to isolate faulty section and protect element(s) as per the CEA Technical Standards for Construction, the CEA Technical Standards for Connectivity, the CEA (Grid Standards) Regulations, 2010, the CEA Technical Standards for Communication and any other applicable CEA Standards specified from time to time.

(2) RPC shall develop the protection protocol and revise the same, after review from time to time, in consultation with the stakeholders in the concerned region.

(3) Violation of the protection protocol of the region shall be brought to the notice of concerned RPC by the concerned RLDC or SLDC, as the case may be.

Protection Settings:-

(1) RPCs shall undertake review of the protection settings, assess the requirement of revisions in protection settings and revise protection settings in consultation with the stakeholders of the respective region, from time to time and at least once in a year. The necessary studies in this regard shall be carried out by the respective RPCs. The data including base case (peak and off-peak cases) files for carrying out studies shall be provided by RLDC and CTU to the RPCs.

(2) All users connected to the grid shall “furnish the protection settings implemented for each element to respective RPC in a format as prescribed by the concerned RPC”, “obtain approval of the concerned RPC for (i) any revision in settings, and (ii) implementation of new protection system, “ensure correct and appropriate settings of protection as specified by the concerned RPC” and “ensure proper coordinated protection settings”. RPCs shall:

(3) “maintain a centralized database and update the same on periodic basis in respect of their respective region containing details of relay settings for grid elements connected to 220 kV and above (132 kV and above in NER). RLDCs shall also maintain such database”, “carry out detailed system studies, once a year, for protection settings and advice modifications / changes, if any, to CTU and to all users and STUs of their respective regions. The data required to carry out such studies shall be provided by RLDCs and CTU” and “provide the database access to CTU and NLDC and to all users, RLDC, SLDCs, and STUs of the respective regions. The database shall have different access rights for different users”.

(4) The changes in the network and protection settings of grid elements connected to 220kV and above (132 kV and above in NER) shall be informed to RPCs by CTU and STUs, as the case may be.

Protection Audit Plan:-

(1) All users shall conduct internal audit of their protection systems annually.

(2) All users shall also conduct third party protection audit of each sub-station at 220 kV and above (132 kV and above in NER) once in five years or earlier as advised by the respective RPC.

(3) After analysis of any event, each RPC shall identify a list of substations / and generating stations where third-party protection audit is required to be carried out and accordingly advise the respective users to complete third party audit within three months.

(4) The third-party protection audit report shall contain information sought in the format enclosed as **Annexure 5.1**. in 153rd PCM Agenda of WRPC. The protection audit reports, along with action plan for rectification of deficiencies detected, if any, shall be submitted to the respective RPC and RLDC or SLDC, as the case may be, within a month of submission of third-party audit report. The necessary compliance to such protection audit report shall be followed up regularly in the respective RPC.

(5) Annual audit plan for the next financial year shall be submitted by the users to their respective RPC by 31st October. The users shall adhere to the annual audit plan and report compliance of the same to their respective RPC.

(6) Users shall submit the protection performance indices of previous month to their respective RPC and RLDC on monthly basis for 220 kV and above

System Protection Scheme (SPS)

(1) For the operational SPS, RLDC or NLDC, as the case may be, in consultation with the concerned RPC(s) shall perform regular load flow and dynamic studies and mock testing for reviewing SPS parameters & functions, at least once in a year. RLDC or NLDC shall share the report of such studies and mock testing including any short comings to respective RPC(s). The data for such studies shall be provided by CTU to the concerned RPC, RLDC and NLDC.

(2) The users and SLDCs shall report about the operation of SPS immediately and detailed report shall be submitted within three days of operation to the concerned RPC and RLDC in the format specified by the respective RPCs.

(3) The performance of SPS shall be assessed as per the protection performance indices specified in these Regulations. In case, the SPS fails to operate, the concerned User shall take corrective actions and submit a detailed report on the corrective actions taken to the concerned RPC within a fortnight.

Recording Instruments:- DR/EL synchronization and standard format for recording analogue and digital signals guidelines to be issued by RPC.

Power System Stabilizers (PSSs), AVRs of generating units and reactive power controllers shall be properly tuned by the generating station as per the plan and the procedure prepared by the concerned RPC. In case the tuning is not complied with as per the plan and procedure, the concerned RLDC shall issue notice to the defaulting generating station to complete the tuning within a specified time, failing which the concerned RLDC may approach the Commission under Section 29 of the Act.

The matter was discussed in the meeting.

6.5 REPORT ON AUTOMATIC UNDER FREQUENCY LOAD SHEDDING (AUFLS) AND DF/DT SCHEME:-

WRPC in 153rd PCM intimated that MS NPC informed that as per 10th NPC meeting, a subcommittee was formed to review the AUFLS and df/dt scheme. In 12th meeting of NPC, MS WRPC submitted the report on AUFLS and df/dt to the Committee.

The report of the committee was accepted by the NPC and it was agreed to implement the recommendation of the sub-committee with following observations:

a. The first stage will be set at 49.4 Hz.

b. Total 25% relief will be planned in 4 stages-49.4 Hz, 49.2 Hz, 49.0 Hz & 48.8 Hz.

c. Pumping load will be tripped before first stage (> 49.4 Hz). Battery energy system in charging mode will go in discharging mode (> 49.4 Hz), no storage will be in storage/charging mode at frequency < 49.4 Hz.

The entities may take note of the recommendations of the report and such preparation shall be made by the concerned entities.

Representative from T&C, MPPTCL ensure that the AUFLS is implemented as per the above recommendation.

6.6 LOAD DROPPING SCHEME AT 400 KV SUBSTATIONS TO HANDLE EMERGENCY CONDITION:- The Load Dropping Schemes implemented is utmost important from grid security point of view and further in the ensuing rabi season for reliable/secure operation of the grid it is expected that major elements / areas in MP Grid needs to be operated nearly to full load condition and in radial mode, hence load drop scheme plays an important role by avoiding overloading and tripping of elements in N-1 condition and overload condition. Therefore, its healthiness and availability shall be ensured on regular interval of time.

Further discussed in 80th OCCM of MP, T&C is requested to provide the details (setting for operation of load drop scheme, feeders included, quantum of load relief to be obtained etc) of load drop scheme installed and to test the load trimming schemes installed on yearly basis and provide a report to SLDC by the month of September every year in the format as below with an e.g.

S.NO	SUBSTATION	ELEMENT ON WHICH LOAD DROP INSTALLED	CRITERIA/SETTING AT WHICH LOAD DROP WILL OPERATE	ELEMENTS/FEEDERS TO PROVIDE LOAD RELIEF	QUANTUM OF LOAD RELIEF TO BE OBTAINED	TESTED (YES/NO)	LOAD RELIEF OBTAINED DURING TESTING	REMARK
1	SATNA PGCIL	315 MVA ICT - 1, 2 & 3	110% OF CURRENT LOADING ON ANY OF THE ICT WITH 2.5SEC. DELAY	132 KV SATNA - PAWAI CKT	120MW			
				133 KV SATNA - NAGOD CKT				
				134 KV SATNA - MAJHGAWAN CKT				
2								
3								

In view of the above T&C, MPPTCL is also requested to review the existing load drop scheme and shall revise the load drop scheme if required according to the changes/augmentation the network under intimation to SLDC.

The matter was discussed and T&C, MPPTCL ensured that testing of Load Drop Scheme will be done prior to ensuing rabi season, thereafter the report shall be submitted to SLDC.

6.7 MULTIPLE TRIPPING OF 132 KV KIRNAPUR – DONGARGARH CKT:- Multiple trippings have occurred on 132 KV Kirnapur – Dongargarh Ckt which is a interstate line. It was intimated that

the loading of the line is restricted to 240Amp/55MW to avoid overloading of 400/132KV, 100MVA ICT -1 &2 at Kirnapur. Details of tripping is as follows:-

S.No.	Element Name	Date / Time of tripping	Date / Time of Charging
1	132 KV Kirnapur – Dongergarh Ckt	09.08.2023/18:33Hrs	09.08.2023/19:30Hrs
2		10.08.2023/16:31Hrs	10.08.2023/17:23Hrs
3		11.08.2023/07:03Hrs	11.08.2023/07:52Hrs
4		11.08.2023/08:57Hrs	11.08.2023/10:18Hrs
5		11.08.2023/10:57Hrs	11.08.2023/17:17Hrs
6		12.08.2023/00:46Hrs	12.08.2023/01:31Hrs
7		12.08.2023/02:26Hrs	13.08.2023/14:26Hrs
8		13.08.2023/14:28Hrs	14.08.2023/22:52Hrs

T&C, MPPTCL informed the committee that the existing load restriction shall be continued till the commissioning of 3rd ICT at Kirnapur.

6.8 SYSTEM CONSTRAINTS OBSERVED AS PER STUDY FOR UPCOMING RABI SEASON:-

A simulation study has been conducted by MP SLDC for meeting the demand of 18500MW (MP periphery)/ 18100MW (Discom periphery) during the ensuing Rabi Season considering the new elements to be commissioned by December-2023.

For Meeting the demand of about 18500MW, the total internal generation has been considered as 6645.9MW . The ATC/TTC calculated by MP SLDC is about 12255.7/11885MW respectively with 370MW TRM and the most credible contingency noticed is at 400/220KV ICT – 1&2 at 400 KV Julwania. The simulation study has been conducted after considering the new/future elements to be commissioned by Dec-2023 as received from STU.

The constraints observed is as detailed below:-

i. 220 KV Shujalpur – Shujalpur (PG) Ckt – 1 & 2:- As per study the load on these 220 KV circuits is 201 MW each under normal condition and under N-1 contingency it is about 399MW. The conductors of 220 KV Shujalpur – Shujalpur (PG) Ckt – 1 & 2 have been replaced by HTLS conductors to enhance its current carrying capacity. However the up-gradation of the bays at both end is still pending which is restricting the capacity of these circuits to about 800Amps. T&C-MPPTCl, EHT-MPPTCL is requested to provide the status for up gradation of bays at both end.

Representative from EHT informed the committee that the work of bay augmentation shall be completed prior to ensuing rabi season.

ii. 220 KV Khandwa – Nepanagar Ckt and 220 KV Chhegaon – Npeanagar Ckt:-

As per study the load on these 220 KV circuits is 210 MW each under normal condition and under N-1 contingency it is about 299MW. Nepanagar & Bhuranpur is fed through these 2 no. 220 KV Circuits and 2 no. 132 KV circuits only and the load is increasing in the area. In case of contingency of any one of the 220 KV circuit the complete area will be interrupted. P&D-MPPTCL is requested to provide network strengthening plan for the area. Further T&C-MPPTCL is requested to provide the details load drop scheme implemented/to be implemented on 220 KV Khandwa – Nepanagar Ckt and 220 KV Chhegaon – Npeanagar Ckt to avoid any overload/cascade tripping in the area.

iii. 220 KV Betul (PG) – Betul (MP) Ckt – 1 & 2:- As per study the load on these 220 KV circuits is 123 MW each under normal condition and under N-1 contingency it is about 243MW. T&C is requested to ensure healthiness of the load drop implemented/to be implemented.

iv. 220/132KV, 160MVA and 200MVA X'mer at 220 KV S/s Rewa:- The loading of 220/132KV, 200 MVA X'mer is about 178MW & loading of 220/132KV, 160 MVA X'mer is about 140MW in normal condition. Under N-1 contingency loading is about 200MW. T&C-MPPTCL is requested to ensure the healthiness of the load drop scheme implemented and P&D-MPPTCL is requested to provide network strengthening plan for the area

v. Single Bus System At Rewa Mp And Loading Issue:- 220kv Rewa MP is the s/s which is connected with different kind of entities like MPPGCL, PGCIL and other nodes of MPPTCL. This s/s is having only one main bus system on 220kv voltage level. Further, in month of September-22, 220KV REWA MP-REWA RUMS CKT 1 and 2 having HTLS conductors has been charged. After this connection, fault level has been increased at Rewa and it is exporting power to all other nodes .

In this situation the importance of 220kv Rewa MP s/s is very prominent looking to the reliability of network of that area. At this point if any planned or emergency s/d comes on bus then s/s left with no other option instead to keep the entire 220kv network out of service.

As Rewa is the vital source of supply to that area now, hence possibility of construction of 220kv Main Bus no 2 may be explored, it will definitely improve the reliability of power of this area.

vi. 160MVA, 220/132KV X'mer-1&2 at 220 KV S/s Nepanagar:- During the 2022-2023 peak demand period the load of the X'mers were 135MW each. Under N-1 contingency the x'mer will get overloaded and creat interruption in Nepanagar area. P&D may please update the plan for addition of capacity/X'mer at 220KV S/s Nepanagar.

P&D /T&C may please intimate any plan for new bus.

The matter was discussed in the meeting.

6.9 Tripping of 400 KV SATPURA – ASHTA TRANSMISSION LINE :- "400 KV DCDS Sarni to Ashta Transmission line, circuit II tripped on **30th April 2023 at 17:05 Hrs**. due to heavy rain, Lightning, and thunderstorm.

Upon receiving the tripping information, our ground patrolling team from Shahpur hub reached the tower location nearing the identified fault zone, as observed in Zone 1 Protection Relay. However, no physical deformities were found along the transmission line. Based on our feedback, the transmission line was successfully recharged at 23:37 Hrs. on 30th April 2023.

The following observations was found during this tripping:

1. **Sarni end (Satpura Thermal Power Plant) observations:** While reviewing the relay tripping indications, it was observed that the Auto Recloser at the **Sarni end** did not operate**,** despite the fault being identified as a Single Phase to Earth (B-N) fault. Additionally, the Auto Recloser Block did not appear on the relay. It appears that there may be a problem with the Auto Recloser relay at the **Sarni end**.

2. **Ashta end (400 KV GSS Substation) observations:** According to the relay indications received from Ashta end, it was indicated as **"Broken Conductor" fault.** However, no broken conductor was found during the patrolling of the transmission line, which has been energized since 30th April 2023.

3. The Disturbance Recorder / Event Log & Tripping Report at both ends need to be analysed.

4. It is also observed that few towers of 220 KV Transmission line near to our Transmission line at Sarni got collapsed during this event. "

The matter was discussed in the meeting and it was intimated that as the fault current during the tripping was about 14Kamp, the line could not be test charged without complete patrolling of the circuit and confirmation of its healthiness by the site/patrolling party.

ITEM NO. 7: BLACK-START MOCK DRILL OF HYDEL POWER STATIONS:

7.1 BLACK START MOCK DRILL OF HYDEL STATIONS OF MP:- During 2023-2024 Black Start Mock Drill proposed to be conducted at various Hydel power station of MP is detailed as mentioned below:-

S.NO.	NAME OF HPS	PROPOSED/TENTATIVE DATE OF MOCK DRILL
1.	PENCH HPS	Mock drill proposed by Maharashtra on 06.09.2023
2.	BARGI HPS	Conducted in May 2023
3.	BIRSINGHPUR HPS	Conducted in Dec 2022
4.	MADIKHEDA HPS	Conducted 22.08.2023
5.	TONS HPS	MPPGCL shall intimate the date
6.	ISP HPS	Cannot be conducted due to failure / non-availability of Line Reactor of 400 KV ISP – Indore Ckt – 2 at Indore end.
7.	OSP HPS	NHDC proposed the Month of October for the Mock Drill.
8.	RAJGHAT HPS	Proposed for Sep-2023/ MPPGCL shall intimate the date

ITEM NO. 8 : AVAILABILITY BASED TARIFF (ABT) RELATED ISSUES:

8.1 Non availability of Interface meter data due problem in AMR facility and JMR data:

1. SLDC representative informed in previous OCCM that data of around 25 Nos. ABT meters installed at the interface points of Xmers / Feeders are not being downloaded through AMR system of SLDC due to problem in SIM card, no network or meter defective. The list of these interface points is shown in Annexure-I. These meters are included in AMC contract. CE(T&C) office is requested to issue instructions to field officers for resolving the issues so that meter data is downloaded remotely at SLDC. CE(T&C) office representative informed that instructions shall be issued to field offices for resolving problem in SIM card, no network or meter defective in coordination with M/s Secure Meters Ltd.for data downloading remotely.

2. SLDC representative informed that Around 07 Nos. ABT meters are installed at the interface points of newly commissioned substation / Xmers as shown in Annexure-II are not include in AMC list. The list of meters is already sent to CE(T&C) office vide email dated 31.08.2023. CE(T&C) office is requested to include the list of newly installed meters in the existing AMC contract (Order No. 04-04/ TC-AMR/ SII/ Addl. Order/1799/310 dated 04/05/2022 so as to ensure complete data availability of meters. CE(T&C) office representative informed that they are including the list of newly installed meters in the exisiting AMC contract.

3. SLDC representative informed that JMR data of newly commissioned substation / Xmers of MP Power Transmission Package -II Limited is not being received at SLDC and requested MPPTP-IIL to furnish the JMR data every month for checking / verification of meter data as per format enclosed herewith in Annexure-III. MPPTP-IIL representative informed that they will send JMR data to SLDC on monthly basis.

8.2 Non receipt of ABT meter data of Railway TSS through AMR System & JMR:

SLDC representative stated that Railway has informed in the previous OCCMs that the proposal of AMC contract to M/s Secure Meters Ltd. is under process and they also ensured for timely receipt of meter data / JMR data at SLDC on weekly / Monthly basis for issuance of accounts. However, inspite of repeated requests from SLDC, the complete meter data of Railways is not received by SLDC. He requested Railways once again to provide following assistance to SLDC for timely issuance of accounts on weekly / Monthly basis-

1. Issue instructions to concerned officials for providing the weekly / monthly JMR data of TSS end meters to SLDC.
2. In case of missing meter data and JMR data, Nodal officer shall send weekly / monthly meter data through email within two days on request of SLDC.
3. 21 Nos. ABT meters installed at TSS end for the month of August-2023 are not communicating with SLDC AMR system. Also, manually downloaded meter data of these TSS is not received by SLDC despite repeated requests from SLDC.
4. Provide AMC for AMR system of meters installed at TSS and GSS end for successful downloading of meter data.

Railway representative informed that their management has given approval for tendering process of AMC contract and within 2 or 3 month order will be placed by Railways.

8.3 Non-receipt of ABT meter data of Solar Generating station:

SLDC representative informed that meter data of some pooling stations qualified for RE DSM. The list of missing data of meters has already been emailed on monthly basis but, SLDC is not receiving the meter data timely. The list of meters whose data is not received at SLDC is as under:

Sr. no.	Feeder Name	Location	Meter No
1	VIVAAN SOLAR -1 MAKDON	132KV S/S MAKDON	MPC55922
2	VIVAAN SOLAR -2 MAKDON	132KV S/S MAKDON	XC529587
3	33KV VIVAAN SOLAR -1 TARANA	132KV S/S MAKDON	XD501478

The issue could not be discussed as no representative from DCC, Indore has attended the meeting.

8.4 Time drift in ABT meter installed at the pooling stations of Wind and Solar Generating Stations and Sliding Window problem:

SLDC representative stated that ABT meters installed at the following Pooling Stations of Wind and Solar Power Project has time drift and thus not recording the correct data. SLDC has requested to QCA / Generators with copy to concerned licensee vide letter no 07-05/REG-201/147 dated 25/01/2021 and letter no 07-05/REG -201/2215 dated 30.11.2021 for time synchronization of the ABT meters with GPS so that correct DSM account of these Wind and Solar Projects is issued by SLDC.

Sr. no.	FEEDER	SUBSTATION	ZONE (Discom)	Meter No.	TIME DRIFT IN MINUTES
1	UJAAS I SUSNER	132KV S/s Susner	WZONE	XB571653	417.00
2	33KV MARUTSHAKTI CHANDWASA	33KV CHANDWASA	WZONE	XC502303	330.00
3	UJAAS-1 BERCHHA	132KV S/s BERCHA	WZONE	XB571652	168.00
4	UJAAS -II ICHHAWAR 33 KV	132KV S/S ICHHAWAR	CZONE	MPC59975	137.00
5	GLOBUS STEEL & POWER	132KV S/s SITAMOU	WZONE	XC562469	118.00
6	UJAAS-1 RAJGARH (BIORA)	220KV S/S RAJGARH BIAORA	CZONE	MPP28513	93.00
7	UJAAS 2 SITAMAU	132KV SITAMAU	WZONE	XD501479	22.00
8	33KV TODAY CLEAN ENERGY FDR-II	220KV S/S BAROD	WZONE	XD511507	21:00

Further, ABT meters installed at the following Wind and Solar Generating Stations are recording the 15 minutes block wise data on sliding window principal thus blockwise data do not match with midnight data. SLDC has requested to Generators with copy to concerned licensee vide letter no. 2353 dated 31/08/2019, letter no. 2771, dated 16/10/2019, letter no. 809 & 810 dated 03/06/2020 and letter no 07-05/REG -201/2215 dated 30.11.2021 for immediate replacement of these ABT meters.

Sr.No.	FEEDER NAME	SUBSTATION	ABT METER No	ZONE	QCA NAME
1	33KV SUZLON- IV RATLAM	132KV S/S JAORA	XE479859	WZONE	RECONNECT ENERGY SOLUTION PVT LTD
2	33KV SUZLON- V RATLAM	132KV S/S JAORA	XE479860	WZONE	RECONNECT ENERGY SOLUTION PVT LTD

3	33KV SUZLON-IV AGAR	132KV S/S AGAR	XE479864	WZONE	RECONNECT ENERGY SOLUTION PVT LTD
4	33KV SUZLON-V (SUSNER-III)	132KV S/S SUSNER	XE479867	WZONE	RECONNECT ENERGY SOLUTION PVT LTD
5	33KV GI POWER PVT. LTD.	220KV S/s MAKDON	X1071843	WZONE	KREATE TECHNOLOGY PVT LTD
6	SUZLON DEV 1 NAGDA HILL	220 KV DEWAS	XE479868	WZONE	RECONNECT ENERGY SOLUTION PVT LTD
7	SIMCON FEEDER -2	220KV GANJBASODA	Y0327309	CZONE	KREATE TECHNOLOGIES LLP
8	M/S SUZLON INFRA. MAHURIYA 1	132KV S/S SUSNER	XE479866	WZONE	RECONNECT ENERGY SOLUTION PVT LTD

SLDC representative requested the Licensee to take-up the issue with concerned officials for time synchronization and replacement of ABT meters. He further requested to provide monthly status of those meters in which correction of time drift and replacement/ reconfiguration of meters based on sliding window principle were done.

DCC Bhopal has informed that concerned nodal officer / SE(O&M) / Commercial Section have been intimated for taking necessary action for time synchronization and replacement of meters. No representative from DCC Indore has attended the meeting.

8.5 Verification of captive status of Generating Plants and their Users:

SLDC representive informed that Hon'ble M.P. Electricity Regulatory Commission vide order dated 24.03.2023 has authorized Chief Engineer (SLDC), MPPTCL, Jabalpur as the "Designated Authority" under Regulation 5.1 of the Madhya Pradesh Electricity Regulatory Commission (Verification of Captive Generating Plants and Captive Users) Regulations 2023 for determination of the captive status of Captive Generating Plants and Captive Users. The Hon'ble Commission vide aforesaid order has also directed that Designated Authority shall intimate the fullfillment of condition in regard to the captive staus to the Captive Generating Plant / Captive Users and the Distribution Licensee by the 15th July 2023. Hon'ble MPERC has issued the procedure for verification of Captive Status of Generating Plants and Users which is applicable for FY-2023-24.

SLDC vide letter no. 462 dated 13.04.2023, 587 dated 08.05.2023, 805 dated 20.06.2023 and 927 dated 12.07.2023 has requested the commercial sections of Discoms to provide the informations in respect of Captive Generating Plants and Captive Users under area of their jurisdiction for verification of captive status of Generator and Users so that information could be submitted timely to Hon'ble Commission. The required information of CPP has been received only from West Discoms but not received from Central & East Discom.

DCC's Central & East Discom representative stated that they will take up the matter with their commercial sections for timely submission of information to SLDC. DCC Indore has not attended the meeting.

ITEM NO. 9: SCADA and E&T RELATED ISSUES

9.1 Integration of Interface Energy meters into RTUs for providing real time data to SLDC SCADA/EMS system:- As per WRPC decision, The Interface Energy meters installed at interface points are to be integrated into SCADA/EMS system installed at SLDC Jabalpur. By implementing this, all the interface points of STU with ISTS, real time data of interface meters can also be integrated in SCADA for better management of drawl

of State from the Regional Grid. Further WRPC is constantly monitoring the progress regarding installation of Interface Energy meters at interface points with SCADA/EMS system. The list of interface point where integration is to be done is provided earlier and again enclosed herewith **as annexure-I**. However integration of energy meters of Interface point with RTUs for real time display of energy meter reading at SLDC SCADA/EMS system has been done at following locations

(1) 132 KV Rajghat-Lalitpur

(2) 400 KV Birsinghpur-Damoh(PG)1

(3) 400 KV Birsinghpur-Damoh(PG)2

(4) 400 KV Birsinghpur-KSTPS-1

(5) 400 KV Birsinghpur-KSTPS-2

(6) 400 KV Sagar-Bina PG

(7) 400 KV Sagar-Satna PG

(8) 400 KV Katni-Damoh PG

The matter regarding integration of energy meter with RTU at MPPGCL and MPPTCL S/s was also discussed in the meeting dtd. 23.12.21 and various OCCM at SLDC and list of interface point have already been shared to official of MPPGCL and MPPTCL.

During the meeting, it was decided that the integration work of Interface meters with RTUs at all the interface point /Drawl point shall be carried out at the earliest. MPPGCL official are assured that integration of Energy meter at STPS at the interface point of 400 KV Feeder Itarsi(PG), Seoni (PG), and Koradi (MH) and providing real time telemetry data at SCADA system installed at SLDC shall be carried out after procurement of energy meter.

9.2 Replacement of RTUs in Thermal Power Stations:-

The matter was taken up by SLDC in various OCCM meetings as well as in separate SCADA and communication meetings held with power station officers and status as per the last OCC Meeting is summarized hereunder.

(i) STPS: - it was informed by MPPGCL they are exploring the possibility of integrating the telemetry of thermal Power Stations through existing SCADA system at Power stations at STPS PH-IV.

(ii) SGTPS: - Procurement of New RTU is in process and is under budgetary offer stage. It is requested to kindly provide present status and time line regarding procurement of RTU.

(iii) ATPS:- Procurement of RTU is in process and shall be completed at the earliest. It is requested to kindly provide present status and time line regarding procurement of RTU.

In view of the above, MPPGCL official have assured that the procurement of RTU of ATPS and STPS at the earliest and also initiate integrating the telemetry of thermal Power Stations through existing SCADA system at STPS PH-IV and provide telemetry data at SLDC Jabalpur.

9.3 ARRANGENEMENT OF TELEMETRY OF IMPORTANT 220KV SUB STATIONS & 132KV S/S HAVING INJECTION FROM RENEWABLES/CAPTIVE POWER PLANTS OR HAVING INTERDISCOM FEEDERS /TRACTION FEEDERS.

The telemetry of Birsingpur HPS was commissioned, however the telemetry of Birsingpur HPS is currently not available due to RTU shifting work and some issue in 48 V DC Charger. MPPGCL informed that the 48 V DC Chargers is being replaced with a new Charger. New charger has been procured and connection needs to be done.
MPPGCL official have assured that the telemetry of Birsinghpur HPS shall be restored after procurement of RTU at Birsinghpur TPS and existing RTU shall be shifted to Birsinghpur HPS and assured to restore the same at the earliest .

The telemetry of Zinna HPS is not available at SLDC SCADA System due to due to some issue in PLCC Channel. MPPTCL/MPPGCL officials have assured to explore the possibilities to resolve the issue.

9.4 UPGRADATION OF EXISTING RTUS & DISCREPANCY IN TELEMETRERED VALUES RECEIVED FROM DIFFERENT EHV S/S & POWER STATIONS

The present status of telemetry discrepancy including upgradation requirement is enclosed herewith as **Annexure-II**. The list of major telemetry discrepancies is as given below:-

(a) MPPGCL Generating Substations :-

1. SGTPS :-

1.Sr. No.	Description	Unit	Pending since
1	XFMR 220 /33, STN XFMR	CB	15 month

(b) Transmission/ other Generating Substations :-

Sl No.	Name of Substation	Name of feeders/transformers
01	400 KV KATNI S/s	Bus 2 Voltage and Frequency is not available at SLDC SCADA System
02	220 KV SATNA S/s	Katni Feeder MVAR and CB not available

MPPTCL official have informed that they will arrange for rectification of above telemetry issue at the earliest. However MPPGCL officials informed that they will rectify the issue within one month.

9.5 Extension of RGMO/FGMO signal to SLDC/WRLDC:-

The extension of RGMO/FGMO signal of following generating units is still pending: -

S.No.	Name of Generating Station	Unit.No.	MPPGCL response in last OCC

1	SGTPS	1,2,3,4	MPPGCL informed in last six OCC meetings that it is under tendering process & telemetry integration of RGMO/FGMO signal shall be completed within 3-4 months. However, no progress in the matter has been observed even after lapse of one and half year period.
2.	Singha Ji Phase 2	3, 4	MPPGCL informed in last 6 OCCM that matter has been taken up with L&T to initiate the work at the earliest & the integration work will be done when the units will be taken on operation. MPPGCL is requested to update the progress in this matter.
3	Bargi Unit	2	RGMO status is not available due to wiring related issue in panel.

MPPGCL Official have assured that 1 to 4 UNIT of SGTPS are old and there is no provision of extension of RGMO/FGMO signal until replacement of old instrument and upgradation of all old instrument shall be done within three month and after that extension of RGMO/FGMO signal shall be extended and extension of RGMO/FGMO signal of unit 3 and 4 shall be done at the earliest and also ensure that extension of RGMO/FGMO Singha Ji Phase 2 unit and Bargi unit shall be done at the earliest.

9.6 LONG OUTAGE OF RTUS, PROBLEM IN DATA AND VOICE CHANNELS & INTERMITTENT TELEMETRY:-

As per CERC communication regulation 2017, availability of telemetry is required to be ensured more than 99.9%. However following RTUs are either out since very long time or are intermittent:-

S.No.	Name of RTU	Remarks	Telemetry Availability %
1	Birsingpur HPS	Out since more than 2 months	0 %
2	132 KV Ingoria	Intermittent	60%
3	132 KV Bijawar	Intermittent	36 %
4	132 KV Khanooj	Intermittent	55%
5	220 KV Pitampur Sec -III	Intermittent	58%
6	132 KV Zinna	Intermittent	0%
7	132 KV Bara malhera	Intermittent	32%
8	132 KV Amarpatan	Intermittent	71%
9	132 KV Bamore	Intermittent	79%
10	132 KV Sailana	Intermittent	48 %
11	132 KV Raghogarh	Intermittent	21%
12	132 KV Momenbarodia	Intermittent	72%
13	220 KV Sidhi	Intermittent	63 %
14	132 KV Rewa	Intermittent	39 %
15	132 Niwari	Intermittent	73 %

As per WRLDC directives poor telemetry availability (below 95%) is to be treated as violation of grid code as per Clause 4.6.2 of IEGC and WRLDC instructed SLDC to comply the same and to initiate necessary action as per grid code to ensure round the clock availability of telemetry. All grid users are therefore requested to take necessary action to ensure uninterrupted round the clock telemetry availability.

MPPGCL and MPPTCL have assured that reliability of telemetry shall be assured by shifting telemetry data link from PLCC to FOTE/Optical Fibre.

9.7 Non Availability Voice communication Between SLDC to Bansagar –IV (Zinna) Hydel Power Stations:-

It is to inform that as per CERC communication regulation 2017, availability of communication channel is required to be ensured more than 99.9%. However, despite constant pursuance, the PLCC voice communication between SLDC to Bansagar-IV (zinna) has not been established so far. The matter has been also discussed with communication division Satna and it has been informed that due to multiple breakage in coaxial cable and faulty LMU unit, PLCC link is currently not in working condition. However it is pending for more than two years.

MPPGCL has assured that they will explore the possibilities to restore the issue at the earliest.

9.8 Rectification/Confirmation of readiness of OPGW Links

S.No.	OPGW LINK	Action	Remark
1.	220 KV Satna-Katni	Replacement of OPGW cable between 220 KV Satna-Katni	OK
2.	400 KV Bhopal -Bina	Shifting of traffic from Old link to newly constructed Link by MPPTCL	Confirmation and readiness pending.
3.	400 KV Pithampur-Indore	Repairing of 22 faulty fibers out of 24 Fibers	No confirmation from field has been received and Repairing is pending

MPPTCL officials have assured that they will restore the link at the earliest and share the necessary confirmation.

9.9 Telemetry of railway TSS Sub Stations: -

The Reliability of telemetry of existing 73 Nos Railway Traction Sub Stations need to be improved by railway for monitoring of drawl by each TSS and also monitoring of demand of railway in MP. However telemetry availability of Railway TSS is need to be improved.

Railways are requested to ensure reliable telemetry of existing Railway TSS. Further it is to mention that redundant link shall be established as IP scheme has already been provided by this office so that both at a time and through one channel it should report to SLDC Jabalpur and from another channel it should report to Back- up SLDC Bhopal rather to explore the possibility of automatic switching of link at SLDC Jabalpur from both dedicated link.

Railway officials informed that they will initiate lay redundant link to enhance reliability of telemetry

9.10 Information regarding PMU's for the second phase of URTDSM Project: -

SLDC has provided the list of PMUs proposed to be installed under the URTDSM Phase-II project to be implemented by PGCIL and PGCIL vide email dtd. 21.07.23 has requested to provide the requirements of PMUs by 04.08.23 so that upgradation of PDC/Control Centre and analytics shall be done & requested to verify the list of PMUs and provide the information regarding PMUs requirement for upcoming substations in next 3 years through UO Note dtd. 02.08.23. Further SLDC have sent the remainder UO note dated 23.08.2023 regarding the same information. However the desired details have not yet been provided to this office.

MPPTCL officials have assured that they be provide the desired information/details at the earliest

9.11 Details regarding WR-UNMS

Power grid vide email dated 30.08.2023, informed that PGCIL is implementing the WR-UNMS project as approved in the 15th NCT meeting and desired the details of existing communication equipment as per the format sent through mail dtd 31.08.23 by this office. Therefore, it is requested to kindly share the details of existing communication equipment

MPPTCL officials have assured that they be provide the desired details at the earliest

ITEM NO 10 : DATE AND VENUE OF NEXT OCC MEETING : In 86th OCC, the roster for the upcoming OCCM was discussed & finalized in the meeting which is as detailed below. The venue of the same shall be decided in the meeting. It is also proposed that the OCC members shall host the alternate OCC meeting.

MEETING ROSTER	
HOST	**MEETING NO.**
BLA	87TH
MP Power Transmission Package-II Limited	89TH
OSP	90TH
RAILWAY	91ST
JP Bina	92ND
WEST DISCOM	93rd
ISP	94th

Representative from BLA confirmed to host the 87th OCCM of MP.

****

FREQUENCY PARTICULARS

S. No.	Particulars	Apr-23		May-23		Jun-23		Jul-23	
1	**INTEGRATED OVER AN-HOUR**								
1.1	Maximum Frequency	50.26 Hz	Between 14.00 hrs & 14.15 Hrs on 30.04.23	50.37 Hz	Between 01.15 hrs & 01.30 Hrs on 18.05.23	50.34 Hz	Between 07.45 hrs & 08.00 Hrs on 14.06.23	50.35 Hz	Between 13.00 hrs & 13.15 Hrs on 30.07.23
1.2	Minimum Frequency	49.67 Hz	Between 13.45 hrs & 14.00 Hrs on 28.04.23	49.64 Hz	Between 12.30 hrs & 12.45 Hrs on 28.05.23	49.6 Hz	Between 22.30 hrs & 22.45 Hrs on 14.05.23	49.7 Hz	Between 19.15 hrs & 19.30 Hrs on 02.07.23
1.3	Average Frequency	50 Hz		50 Hz		50.01 Hz		50.01 Hz	
2	**INSTANTANEOUS FREQUENCY**								
2.1	Maximum Frequency	50.33 Hz	AT 18.03:00 HRS ON 16.04.23	50.4 Hz	AT 18.03:00 HRS ON 16.05.23	50.41 Hz	AT 18.00.21 HRS ON 14.06.23	50.42 Hz	AT 13.01.57 HRS ON 30.07.23
2.2	Minimum Frequency	49.49 Hz	AT 22:09:00 HRS ON 15.04.23	49.43 Hz	AT 11:52:09 HRS ON 15.05.23	49.51 Hz	AT 22:33:50 HRS ON 14.06.23	49.58 Hz	AT 19:43:40 HRS ON 03.07.23

3 Percentage of time when frequency was :-

	%age of time when frequency was	Apr-23	May-23	Jun-23	Jul-23
3.1	Above 50.30 Hz	0.04	0.08	0.10	0.11
3.2	Between 50.05 Hz and 50.30 Hz	21.68	21.72	25.31	17.25
3.3	Between 50.00 Hz and 50.05 Hz	26.50	27.24	29.17	35.01
3.4	Between 49.9 Hz and 50.00 Hz	41.25	41.10	38.71	42.25
3.5	Between 49.5 Hz and 49.9 Hz	10.53	9.85	6.71	5.38
3.6	Between 49.2 Hz and 49.5 Hz	0.00	0.00	0.00	0.00
3.7	Below 49.2 Hz	0.00	0.00	0.00	0.00

Discoms wise Average Supply Hours

PARTICULARS	East Zone				Central Zone			
	Apr-23	May-23	Jun-23	Jul-23	Apr-23	May-23	Jun-23	Jul-23
Commissinary HQ	23:50	23:55	23:56	23:57	23:53	23:55	23:53	23:46
District HQ	23:49	23:48	23:48	23:47	23:50	23:47	23:50	23:48
Tehsil HQ	23:38	23:32	23:33	23:38	23:49	23:43	23:45	23:39
Rural -Mixed	23:16	23:12	23:10	23:18	23:32	23:15	23:21	23:13
Rural -DLF	23:13	23:12	23:09	23:17	23:26	23:21	23:26	23:16
Rural -Irrigation	9:43	9:44	9:40	9:45	9:46	9:43	9:24	9:45
PARTICULARS	**West Zone**				**MP**			
	Apr-23	May-23	Jun-23	Jul-23	Apr-23	May-23	Jun-23	Jul-23
Commissinary HQ	23:55	23:51	23:55	23:55	23:52	23:54	23:54	23:52
District HQ	23:48	23:45	23:51	23:53	23:49	23:47	23:49	23:41
Tehsil HQ	23:37	23:39	23:44	23:48	23:41	23:37	23:40	23:41
Rural -3Phase	23:06	23:10	23:19	23:25	23:21	23:13	23:15	23:17
Rural -1Phase	23:21	23:21	23:31	23:39	23:20	23:18	23:21	23:23
Total Rural	9:30	9:29	9:35	9:47	9:40	9:40	9:40	9:46

ANNEXURE-2.2.2

Apr-23

Sr No	Name of Sub Station	MAXIMUM			MINIMUM		
		KV	TIME	DATE	KV	TIME	DATE
1	Indore	421	4.00	27 Apr 23	401	16.00	10 Apr 23
2	Bhopal	426	13.10	30 Apr 23	413	3.15	17 Apr 23
3	Nagda	422	4.00	27 Apr 23	403	16.00	10 Apr 23
4	Satpura	433	13.00	30 Apr 23	413	16.00	10 Apr 23
5	SGTPS Birsinghpur	422	18.00	20 Apr 23	405	24.00	10 Apr 23
6	Bina	418	13.10	30 Apr 23	398	22.10	6 Apr 23
7	Pithampur	423	13.00	30 Apr 23	405	16.00	10 Apr 23
8	Ashta	424	13.00	30 Apr 23	404	16.00	10 Apr 23
9	Julwania	424	18.00	28 Apr 23	404	15.00	11 Apr 23
10	Kirnapur	429	9.00	30 Apr 23	411	23.00	10 Apr 23
11	Badnawar	428	4.00	27 Apr 23	409	16.00	10 Apr 23

May-23

Sr No	Name of Sub Station	MAXIMUM			MINIMUM		
		KV	TIME	DATE	KV	TIME	DATE
1	Indore	423	5.00	26 May 23	400	15.00	12 May 23
2	Bhopal	428	4.20	26 May 23	416	4.35	6 May 23
3	Nagda	423	5.00	26 May 23	404	15.00	20 May 23
4	Satpura	430	19.00	21 May 23	412	16.00	13 May 23
5	SGTPS Birsinghpur	418	13.00	1 May 23	402	24.00	13 May 23
6	Bina	420	4.30	26 May 23	393	23.45	13 May 23
7	Pithampur	422	5.00	26 May 23	405	15.00	29 May 23
8	Ashta	425	5.00	26 May 23	404	15.00	29 May 23
9	Julwania	426	1.00	29 May 23	404	12.00	25 May 23
10	Kirnapur	431	8.00	26 May 23	412	15.00	27 May 23
11	Badnawar	429	5.00	26 May 23	408	15.00	29 May 23

Jun-23

Sr No	Name of Sub Station	MAXIMUM			MINIMUM		
		KV	TIME	DATE	KV	TIME	DATE
1	Indore	421	4.00	30 Jun 23	401	12.00	3 Jun 23
2	Bhopal	423	18.00	25 Jun 23	401	11.25	3 Jun 23
3	Nagda	422	4.00	30 Jun 23	401	12.00	3 Jun 23
4	Satpura	430	17.00	25 Jun 23	411	15.00	3 Jun 23
5	SGTPS Birsinghpur	423	9.00	14 Jun 23	405	3.00	2 Jun 23
6	Bina	418	13.20	29 Jun 23	398	22.30	2 Jun 23
7	Pithampur	421	4.00	26 Jun 23	404	15.00	3 Jun 23
8	Ashta	423	4.00	30 Jun 23	403	15.00	3 Jun 23
9	Julwania	425	4.00	30 Jun 23	404	16.00	2 Jun 23
10	Kirnapur	433	13.00	25 Jun 23	414	15.00	2 Jun 23
11	Badnawar	433	13.00	25 Jun 23	414	15.00	2 Jun 23

Jul-23

Name of Sub Station	MAXIMUM			MINIMUM		
	KV	TIME	DATE	KV	TIME	DATE
Indore	421	4.00	29 Jul 23	406	10.00	21 Jul 23
Bhopal	429	4.25	28 Jul 23	403	19.10	7 Jul 23
Nagda	421	4.00	1 Jul 23	407	10.00	4 Jul 23
Satpura	429	1.00	1 Jul 23	410	13.00	25 Jul 23
SGTPS Birsinghpur	419	12.00	2 Jul 23	406	20.00	3 Jul 23
Bina	419	17.30	28 Jul 23	399	20.45	2 Jul 23
Pithampur	422	5.00	19 Jul 23	409	20.00	3 Jul 23
Ashta	423	4.00	29 Jul 23	407	20.00	3 Jul 23
Julwania	424	5.00	29 Jul 23	412	10.00	4 Jul 23
Kirnapur	431	13.00	8 Jul 23	415	10.00	4 Jul 23
Badnawar	428	4.00	1 Jul 23	414	20.00	3 Jul 23

Point 10: Details of 33KV feeder which are not allocated with any Group No. as on 30.06.23

Sl.No.	T&C Circle	EHV Sub-Station	Name of 33KV Feeder not allocated with any Group number for U/F & Load Shadding	Feeder DOC
1	SATNA	SATNA 220	33KV BHILAI J P	29-09-09
2	SATNA	KOTAR 220	33KV SUKWAH	15-11-10
3	SATNA	KOTAR 220	33KV KOTAR-II	16-02-18
4	SATNA	MAHAIR 220	33KV BHARAULI	02-04-11
5	SATNA	MAHAIR 220	33KV UDAYPUR	20-08-13
6	SATNA	AMARPATAN 132	33KV NADAN -2	20-08-09
7	SATNA	AMARPATAN 132	33KV JAL NIGAM	10-03-22
8	SATNA	MAJHGAWAN 132	33KV BARONDHA	07-07-10
9	SATNA	MAJHGAWAN 132	33KV KOTHI	07-07-10
10	SATNA	MAJHGAWAN 132	33KV EAST DICOM	13-03-18
11	SATNA	NAGOD 132	33KV RAHIKWARA	13-02-12
12	SATNA	NAGOD 132	33KV BASUDHA	23-07-15
13	SATNA	NAGOD 132	33KV JASO-II	13-07-21
14	SATNA	NAGOD 132	33KV DEVENDRA NAGAR	BAY CHARGED
15	SATNA	SATNA -II 132	33KV TRANSPORT NAGAR	03-01-19
16	SATNA	SATNA -II 132	33KV ANIKET MATEHNA	17-09-19
17	SATNA	SATNA -II 132	33KV NAVEEN UDHYOGIK BABUPUR	03-02-22
18	SATNA	SATNA -II 132	33KV TIKURIYA TOLA	07-01-19
19	SATNA	SATNA -II 132	33KV BHATANVARA	22-07-22
20	SATNA	SATNA -II 132	33KV MAHADEVA	22-07-22
21	SATNA	SATNA -II 132	33KV SMART CITY	03-09-21
22	SATNA	SATNA -II 132	33KV PURANA POWER HOUSE	22-12-19
23	SATNA	SATNA -II 132	33KV MEDICAL COLLEGE	08-12-18
24	SATNA	UNCHEHRA 132	33KV UNCHEHRA	18-07-20
25	SATNA	UNCHEHRA 132	33KV JEETNAGAR	18-07-20
26	SATNA	UNCHEHRA 132	33KV EAST DISCOM	BAY CHARGED
27	SATNA	RAMPUR BAGHELAN 132	33KV MATEHNA	31-01-19
28	SATNA	PANNA 132	33KV NEW EAST DISCOM	21-11-13
29	SATNA	PAWAI 132	33KV NEW JAY KAYCEM	BAY CHARGED
30	SATNA	REWA 220	33KV GOVIND GARH	11-10-22
31	SATNA	REWA II 132	33KV JAL NIGAM	13-09-22
32	SATNA	MAUGANJ 132	33KV MAUGANJ JAIL	06-12-18
33	SATNA	KATRA 132	33KV GARH	17-08-15
34	SATNA	KATRA 132	33KV PANGADHI	17-08-15
35	SATNA	REWA 132	33KV VTL NEW	08-06-20
36	SATNA	SIRMOUR 220	33KV DEWAS	20-06-16
37	SATNA	SIRMOUR 220	33KV PATEHRA	20-06-16
38	SATNA	SIRMOUR 220	33KV UMARI	19-10-15
39	SATNA	RAMPUR NAIKIN 132	33KV RAMNAGAR (EEWRD SATNA)	09-04-22
40	SATNA	RAMPUR NAIKIN 132	33KV KOTHIYA	28-08-15
41	SATNA	RAMPUR NAIKIN 132	33KV DHANHA	03-04-19
42	SATNA	DONGARITAL 132	33KV APMDCL	24-01-22
43	SEONI	CHHINDWARA 132	33KV DIST HOSPITAL	04-06-18
44	SEONI	SAORI 132	33KV SAORI	11-12-18
45	SEONI	SAORI 132	33KV LAWAGHOGRI	13-11-18
46	SEONI	SAORI 132	33KV MUJAWAR	11-12-18
47	SEONI	SAORI 132	33KV BHUTAI	30-01-19
48	SEONI	SEONI 220	33KV KALARBANKI II	04-10-23
49	SAGAR	RAHLI 132	33KV RAHLI	03-06-19
50	SAGAR	RAHLI 132	33KV CHIRARI	02-04-19
51	SAGAR	RAHLI 132	33KV PATNA BUJURG	30-07-19
52	SAGAR	RAHLI 132	33KV GUDA	27-06-20
53	SAGAR	DEORI 132	33KV KOPRA	20-07-20
54	SAGAR	DEORI 132	33KV DEORI	20-07-20
55	SAGAR	DAMOH 220	33KV JALNIGAM ADHROTA	07-02-22
56	SAGAR	BANDA 132	33KV DALPATPUR-2	28-07-21
57	SAGAR	BANDA 132	33KV JALNIGAM	12-10-22
58	SAGAR	BATIYAGARH 132	33KV BAXWAHA	09-09-15
59	SAGAR	BADAMALEHRA 132	33KV JALNIGAM (BAANSUJARA)	15-09-22
60	GUNA	MYANA 132	33KV SENDHUA	19-06-21
61	GUNA	CHACHODA 132	33KV CHACHODA	10-11-20

Sl.No.	T&C Circle	EHV Sub-Station	Name of 33KV Feeder not allocated with any Group number for U/F & Load Shadding	Feeder DOC
62	GUNA	CHACHODA 132	33KV RAMDI	10-11-20
63	GUNA	CHACHODA 132	33KV SANAI	19-06-21
64	GUNA	CHACHODA 132	33KV PANCHI	03-02-22
65	KHANDWA	KHANDWA 132	33KV WEST DISCOM	30-11-14
66	KHANDWA	BADGAON 132	33KV AKVN	17-03-21
67	KHANDWA	MOONDI 132	33KV SHIWARIYA TOWN-I	15-10-20
68	KHANDWA	CHHEGOAN MAKHAN 132	33KV MALWA-I	24-02-22
69	KHANDWA	CHHEGAON 400	33KV NVDA -I	12-03-2021
70	KHANDWA	CHHEGAON 400	33KV MICRO IRRIGATION	03-02-22
71	KHANDWA	SANAWAD 132	33KV KHARGONE TRANS. LTD.	15-05-19
72	KHANDWA	SANAWAD 132	33KV BANGARDA	29-01-13
73	KHANDWA	ANDAD 132	33KV MOHAMDPUR	12-09-19
74	KHANDWA	ANDAD 132	33KV GYARASPURA	12-09-19
75	KHANDWA	ANDAD	33KV REHGAON	16-03-21
76	KHANDWA	KASRAWAD 132	33KV BALAKWADA LIFT IRRI.	27-03-21
77	KHANDWA	SHAHPURA 132	33KV WARLA	22-12-21
78	KHANDWA	SHAHPURA 132	33KV BALWADI	10-04-19
79	KHANDWA	SHAHPURA 132	33KV JAMTI	15-10-19
80	KHANDWA	SENDHWA 220	33KV GAWADI	29-05-20
81	KHANDWA	SENDHWA 220	33KV CHACHRIYA	16-08-21
82	KHANDWA	PATI 132	33KV SILAWAD	14-01-21
83	KHANDWA	PATI 132	33KV BOKRATA	04-08-21
84	KHANDWA	BARWANI 132	33KV GHUGSI BIJASAN	20-04-23
85	KHANDWA	JULWANIYA 400	33KV NVDA PH5&7	17-02-23
86	KHANDWA	TALAKPURA 132	33KV LEHKU (PH-6)	15-06-23
87	BHOPAL 400	ADAMPUR 220	33KV KOKTA-I	24-06-21
88	BHOPAL 400	ADAMPUR 220	33KV KOKTA -II	23-06-21
89	BHOPAL 400	MANDIDEEP 132	33KV INTER CONNECTOR-IV	BAY CHARGED
90	BHOPAL 400	MANDIDEEP 132	33KV DAHOD	23-12-19
91	BHOPAL 400	MANDIDEEP 220	33KV INTERCONECTOR 1	30-12-10
92	BHOPAL 400	MANDIDEEP 220	33KV INTERCONECTOR 2	16-02-20
93	BHOPAL 400	MANDIDEEP 220	33KV MAHAPET -1	17-03-19
94	BHOPAL 400	MANDIDEEP 220	33KV MAHAPET -2	26-09-19
95	BHOPAL 400	MANDIDEEP 220	33KV INTERCONECTOR 3	03-03-12
96	BHOPAL 400	MANDIDEEP 220	33KV PARLE	26-02-20
97	BHOPAL 400	TAMOT 132	33KV AKVN NO. I.	05-10-16
98	BHOPAL 400	TAMOT 132	33KV AKVN NO. II.	05-10-16
99	BHOPAL 400	TAMOT 132	33KV OBEDULLAH GANJ	02-02-17
100	BHOPAL 400	TAMOT 132	33KV PLASTIC PARK NO-1	04-04-18
101	BHOPAL 400	TAMOT 132	33KV PLASTIC PARK NO-2	04-04-18
102	BHOPAL 400	BAGRODA 132	33KV AKVN NO. I.	02-07-16
103	BHOPAL 400	BAGRODA 132	33KV AKVN NO. II.	02-07-16
104	BHOPAL 400	BAGRODA 132	33KV DURGA STEEL	22-02-19
105	BHOPAL 400	BAGRODA 132	33KV SOLANKI ENERGY	11-04-18
106	BHOPAL 400	KANNOD 132	33KV M.S.K.	27-07-08
107	BHOPAL 400	TENDUKHEDA 132	33KV SPARE BAY	30-07-20
108	BHOPAL 400	SILWANI 132	33KV SPARE BAY	28-03-2019
109	BHOPAL 400	EINTKHEDI 132	33KV TEXTTILE PARK - I	26-03-23
110	BHOPAL 400	EINTKHEDI 132	33KV TEXTTILE PARK - II	26-03-23
111	JABALPUR	JABALPUR (GORABAZAR) 220	33KV IIIT DUMNA FEEDER	27-04-23
112	JABALPUR	JABALPUR (GORABAZAR) 220	33KV GORABAZAR NO-2	27-04-23
113	JABALPUR	JABALPUR (GORABAZAR) 220	33KV BARELA FEEDER	27-04-23
114	JABALPUR	JABALPUR (GORABAZAR) 220	33KV KOSAMGHAT FEEDER	27-04-23
115	JABALPUR	JABALPUR (GORABAZAR) 220	33KV SUKHLALPUR FEEDER	19-04-23
116	JABALPUR	BARHI 132	33KV KUWA	20-01-18
117	JABALPUR	BARHI 132	33KV BARHI	20-01-18
118	JABALPUR	BARHI 132	33KV GERTALAI	20-03-18
119	JABALPUR	BARHI 132	33KV PIPARIYA	20-03-18
120	JABALPUR	DHEEMARKHEDA 132	33KV DASRAMAN	06-09-22
121	JABALPUR	DHEEMARKHEDA 132	33KV KHIRHNI	24-04-23
122	JABALPUR	DHEEMARKHEDA 132	33KV DHEEMERKHEDA	06-06-23
123	JABALPUR	DHEEMARKHEDA 132	33KV JHINNA PIPARIYA	06-06-23
124	JABALPUR	GORAKHPUR 132	33KV GORAKHPUR	21-12-20
125	JABALPUR	GORAKHPUR 132	33KV KARANJIYA	21-12-20

Sl.No.	T&C Circle	EHV Sub-Station	Name of 33KV Feeder not allocated with any Group number for U/F & Load Shadding	Feeder DOC
126	JABALPUR	GORAKHPUR 132	33KV DAMEHARI	20-12-22
127	Bhopal	Amla 132	33KV AIR FORCE	18-05-23
128	Mandsaur	Sailana 220	33KV Dhamedi feeder	29-04-20
129	Mandsaur	Sailana 220	33KV Khedawada feeder	29-04-20
130	Mandsaur	Shivgarh 132	33KV Bhadankala	19-08-20
131	Mandsaur	Shivgarh 132	33KV New Raoti	07-09-20
132	Mandsaur	Shivgarh 132	33KV Palsodi	18-10-20
133	Mandsaur	Daloda 220	33KV Jawasia	17-10-20
134	Mandsaur	Daloda 220	33KV Khilchipura2	13-01-21
135	Indore	Rau 132	33 KV MPIDC-I	16-10-22
136	Indore	Rau 132	33 KV MPIDC-II	16-10-22
137	Indore	Rau 132	33 KV PANTHAR	29-09-13
138	Indore	Rau 132	33 KV HARI PATHAK	29-09-13
139	Ujjain	Nalkheda 220	33KV M/s MKPMU (WRD)	06-01-23
140	Ujjain	Susner 132	33KV M/s MKPMU (WRD)	01-12-22
141	Ujjain	Chapda 220	33KV NVDA	26-04-23

POINT 5: PROPOSED SHUTDOWN OF TRANSMISSION ELEMENTS FOR THE PERIOD : 01.09.2023 To 31.10.2023

Sr- No	KV	LINE / TRANSFORMER / REACTOR / BAY WITH NAME OF SUB-STATION	From		To		Basis (Daily/ Continue)	Reason
			Date	Time	Date	Time		
A- 400 KV TRANSFORMERS								
1	400	315MVA EMCO TRANSFORMER AT 400KV S/S BINA	01-Sep-23	08:00	01-Sep-23	17:00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
2	400	315MVA BHEL TRANSFORMER AT 400KV S/S BINA	04-Sep-23	08:00	04-Sep-23	17:00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
3	400	315MVA CGL TRANSFORMER AT 400KV S/S BINA	06-Sep-23	08:00	06-Sep-23	17:00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
4	400	315MVA TRANSFORMER-I AT 400KV S/S SAGAR	16-Oct-23	9.00	16-Oct-23	18.00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
5	400	315MVA TRANSFORMER-I AT 400KV S/S SAGAR	17-Oct-23	9.00	17-Oct-23	18.00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
6	400	315 MVA EMCO TRANSFORMER AT 400KV S/S JULWANIA	26-Oct-23	09:00	26-Oct-23	17:00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
7	400	315MVA CGL TRANSFORME-I AT 400KV S/S ASHTA	18-Sep-23	09:00	18-Sep-23	18.00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
8	400	315MVA CGL TRANSFORME-II AT 400KV S/S ASHTA	20-Sep-23	09:00	20-Sep-23	18.00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
9	400	315MVA CGL TRANSFORME-I AT 400KV S/S ASHTA	25-Sep-23	09:00	25-Sep-23	18.00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
10	400	315MVA BHEL TRANSFORMER AT AT 400KV S/S KATNI	09-Oct-23	09:00	10-Oct-23	17:00	Continue	FOR POST MANSOON MAINTENANCE & TESTING WORK.
11	400	315MVA TELK TRANSFORMER AT 400KV KATNI S/S	12-Oct-23	09:00	13-Oct-23	17:00	Continue	FOR POST MANSOON MAINTENANCE & TESTING WORK.
12	400	315 MVA X-MER ICT- I AT 400KV S/S INDORE	04-Sep-23	09:00	05-Sep-23	17:00	Continue	FOR POST MANSOON MAINTENANCE & TESTING WORK.
13	400	315 MVA X-MER ICT- II AT 400KV S/S INDORE	11-Sep-23	09:00	12-Sep-23	17:00	Continue	FOR POST MANSOON MAINTENANCE & TESTING WORK.
14	400	315 MVA X-MER ICT- IV AT 400KV S/S INDORE	13-Sep-23	09:00	14-Sep-23	17:00	Continue	FOR POST MANSOON MAINTENANCE & TESTING WORK.
15	400	315 MVA TRANSFORMER-I AT 400KV S/S UJJAIN	15-Sep-23	09:00	15-Sep-23	18:00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
16	400	315 MVA TRANSFORMER-II AT 400KV S/S UJJAIN	18-Sep-23	09:00	18-Sep-23	18:00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
17	400	315 MVA TRANSFORMER-I AT 400KV S/S UJJAIN	17-Oct-23	09:00	17-Oct-23	18:00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
18	400	315 MVA TRANSFORMER-II AT 400KV S/S UJJAIN	18-Oct-23	09:00	18-Oct-23	18:00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
19	400	315MVA TRANSFORMER-III AT 400KV S/S NAGDA	22-Sep-23	09:00	22-Sep-23	18:00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
20	400	315MVA TRANSFORMER-IV AT 400KV S/S NAGDA	26-Sep-23	09:00	26-Sep-23	18:00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
21	400	315MVA TRANSFORMER-I AT 400KV S/S NAGDA	04-Oct-23	09:00	04-Oct-23	18:00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
B- 400 KV REACTORS								
1	400	50MVAR BHOPAL LINE REACTOR-I AT BINA 400KV S/S	08-Sep-23	08:00	08-Sep-23	17:00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
2	400	50MVAR BHOPAL LINE REACTOR-II AT BINA 400KV S/S	11-Sep-23	08:00	11-Sep-23	17:00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
3	400	50MVAR BUS REACTOR AT BINA 400KV S/S	14-Sep-23	08:00	14-Sep-23	17:00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
4	400	80MVAR LINE REACTOR GUNA-1ST AT BINA 400KV S/S	12-Sep-23	08:00	12-Sep-23	17:00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
5	400	80MVAR LINE REACTOR GUNA-2ND AT BINA 400KV S/S	13-Sep-23	08:00	13-Sep-23	17:00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
6	400	125MVAR REATOR AT 400KV S/S SAGAR	18-Oct-23	09:00	18-Oct-23	18.00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.

Sr- No	KV	LINE / TRANSFORMER / REACTOR / BAY WITH NAME OF SUB-STATION	From		To		Basis (Daily/ Continue)	Reason
			Date	Time	Date	Time		
7	400	50MVAR BHEL LINE REACTOR NO-1 AT ASHTA 400KV S/S	27-Sep-23	09:00	27-Sep-23	18.00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
8	400	50MVAR BHEL LINE REACTOR NO-2 AT ASHTA 400KV S/S	29-Sep-23	09:00	29-Sep-23	18.00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
9	400	50MVAR CGL BUS REACTOR AT ASHTA 400KV S/S	30-Sep-23	09:00	30-Sep-23	18.00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
10	400	125MVAR BHEL REACTOR AT KATNI 400KV S/S	16-Oct-23	09:00	16-Oct-23	17:00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
11	400	400KV, 125 MVAR REACTOR AT 400KV S/S UJJAIN	14-Sep-23	09:00	14-Sep-23	18:00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
12	400	400KV, 125 MVAR REACTOR AT 400KV S/S UJJAIN	16-Oct-23	09:00	16-Oct-23	18:00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
C- 400 KV FEEDER & BAYS								
1	400	400KV BHOPAL FEEDER-I AT BINA 400KV S/S	03-Oct-23	08:00	03-Oct-23	17:00	Daily	FOR BAY EQUIPMENT MAINTENANCE AND TESTING WORK
2	400	400KV BHOPAL FEEDER-II AT BINA 400KV S/S	04-Oct-23	08:00	04-Oct-23	17:00	Daily	FOR BAY EQUIPMENT MAINTENANCE AND TESTING WORK
3	400	400KV GUNA FEEDER-I AT BINA 400KV S/S	06-Oct-23	08:00	06-Oct-23	17:00	Daily	FOR BAY EQUIPMENT MAINTENANCE AND TESTING WORK
4	400	400KV GUNA FEEDER-II AT BINA 400KV S/S	07-Oct-23	08:00	07-Oct-23	17:00	Daily	FOR BAY EQUIPMENT MAINTENANCE AND TESTING WORK
5	400	400KV BPSCL (JP POWER) FEEDER AT BINA 400KV S/S	09-Oct-23	08:00	09-Oct-23	17:00	Daily	FOR BAY EQUIPMENT MAINTENANCE AND TESTING WORK
6	400	400KV MPPTCL SAGAR- PGCIL SATNA	06-Sep-23	09:00	06-Sep-23	18:00	Daily	FOR BAY EQUIPMENT MAINTENANCE AND TESTING WORK
7	400	400KV MPPTCL SAGAR- PGCIL BINA	08-Sep-23	09:00	08-Sep-23	18:00	Daily	FOR BAY EQUIPMENT MAINTENANCE AND TESTING WORK
8	400	400KV ASHTA SATPURA CKT-1 AT ASHTA 400KV S/S	27-Sep-23	09:00	27-Sep-23	18:00	Daily	FOR BAY EQUIPMENT MAINTENANCE AND TESTING WORK
9	400	400KV ASHTA SATPURA CKT-2 AT ASHTA 400KV S/S	29-Sep-23	09:00	29-Sep-23	18:00	Daily	FOR BAY EQUIPMENT MAINTENANCE AND TESTING WORK
10	400	400KV BINA - II FEEDER AT BHOPAL 400KV S/S	11-Sep-23	09:00	20-Sep-23	18:00	Countinue	FOR 400KV C&R PANNEL REPLACEMENT WORK
11	400	400KV ITARSI - I FEEDER AT BHOPAL 400KV S/S	25-Sep-23	09:00	27-Sep-23	18:00	Countinue	FOR ATTENDING BMK RUSTING ISSUE AT 400 KV S/S PGCIL ITARSI END.
12	400	400KV ASHTA UJJAIN -1 AT ASHTA 400KV S/S	04-Oct-23	09:00	04-Oct-23	18:00	Daily	FOR BAY EQUIPMENT MAINTENANCE AND TESTING WORK
13	400	400KV ASHTA UJJAIN -2 AT ASHTA 400KV S/S	06-Oct-23	09:00	06-Oct-23	18:00	Daily	FOR BAY EQUIPMENT MAINTENANCE AND TESTING WORK
14	400	400KV BUS COUPLER AT ASHTA 400KV S/S	09-Oct-23	09:00	09-Oct-23	18:00	Daily	FOR BAY EQUIPMENT MAINTENANCE AND TESTING WORK
15	400	400KV BINA - II FEEDER AT BHOPAL 400KV S/S	03-Oct-23	09:00	13-Oct-23	18:00	Countinue	FOR 400KV C&R PANNEL REPLACEMENT WORK
16	400	400KV ITARSI - II FEEDER AT BHOPAL 400KV S/S	20-Oct-23	09:00	31-Oct-23	18:00	Countinue	FOR 400KV C&R PANNEL REPLACEMENT WORK
17	400	400KV ISP-I AT 400KV S/S INDORE	19-Sep-23	09:00	19-Sep-23	18:00	Daily	FOR BAY EQUIPMENT MAINTENANCE AND TESTING WORK
18	400	400KV ISP-II AT 400KV S/S INDORE	20-Sep-23	09:00	20-Sep-23	18:00	Daily	FOR BAY EQUIPMENT MAINTENANCE AND TESTING WORK
19	400	400KV NAGDA AT 400KV S/S INDORE	22-Sep-23	09:00	22-Sep-23	18:00	Daily	FOR BAY EQUIPMENT MAINTENANCE AND TESTING WORK
20	400	400KV TBC AT 400KV S/S INDORE	03-Oct-23	09:00	03-Oct-23	18:00	Dialy	FOR BAY EQUIPMENT MAINTENANCE AND TESTING WORK
21	400	400 KV BUS COUPLER AT 400KV S/S INDORE	04-Oct-23	09:00	04-Oct-23	18:00	Dialy	FOR BAY EQUIPMENT MAINTENANCE AND TESTING WORK
22	400	400KV MAIN BUS -IST AT 400KV S/S UJJAIN	01-Sep-23	09:00	01-Sep-23	18:00	Daily	FOR BAY EQUIPMENT MAINTENANCE AND TESTING WORK
23	400	400KV MAIN BUS -IIND AT 400KV S/S UJJAIN	04-Sep-23	09:00	04-Sep-23	18:00	Daily	FOR BAY EQUIPMENT MAINTENANCE AND TESTING WORK
24	400	400KV UJJAIN -NAGDA CKT-IST AT 400KV S/S UJJAIN	05-Sep-23	09:00	05-Sep-23	18:00	Daily	FOR BAY EQUIPMENT MAINTENANCE AND TESTING WORK
25	400	400KV UJJAIN -NAGDA CKT-IIND AT 400KV S/S UJJAIN	06-Sep-23	09:00	06-Sep-23	18:00	Daily	FOR BAY EQUIPMENT MAINTENANCE AND TESTING WORK
26	400	400KV UJJAIN -(INDORE)PGCIL CKT-IST AT 400KV S/S UJJAIN	08-Sep-23	09:00	08-Sep-23	18:00	Daily	FOR BAY EQUIPMENT MAINTENANCE AND TESTING WORK

Sr- No	KV	LINE / TRANSFORMER / REACTOR / BAY WITH NAME OF SUB-STATION	From		To		Basis (Daily/ Continue)	Reason
			Date	Time	Date	Time		
27	400	400KV UJJAIN -(INDORE)PGCIL CKT-IIND AT 400KV S/S UJJAIN	11-Sep-23	09:00	11-Sep-23	18:00	Daily	FOR BAY EQUIPMENT MAINTENANCE AND TESTING WORK
28	400	400KV UJJAIN -ASHTA CKT-IST AT 400KV S/S UJJAIN	12-Sep-23	09:00	12-Sep-23	18:00	Daily	FOR BAY EQUIPMENT MAINTENANCE AND TESTING WORK
29	400	400KV UJJAIN -ASHTA CKT-IIND AT 400KV S/S UJJAIN	13-Sep-23	09:00	13-Sep-23	18:00	Daily	FOR BAY EQUIPMENT MAINTENANCE AND TESTING WORK
30	400	400KV BUS TIE AT 400KV S/S UJJAIN	19-Sep-23	09:00	19-Sep-23	18:00	Daily	FOR BAY EQUIPMENT MAINTENANCE AND TESTING WORK
31	400	400KV MAIN BUS -IST AT 400KV S/S UJJAIN	03-Oct-23	09:00	03-Oct-23	18:00	Daily	FOR BAY EQUIPMENT MAINTENANCE AND TESTING WORK
32	400	400KV MAIN BUS -IIND AT 400KV S/S UJJAIN	04-Oct-23	09:00	04-Oct-23	18:00	Daily	FOR BAY EQUIPMENT MAINTENANCE AND TESTING WORK
33	400	400KV UJJAIN -NAGDA CKT-IST AT 400KV S/S UJJAIN	05-Oct-23	09:00	05-Oct-23	18:00	Daily	FOR BAY EQUIPMENT MAINTENANCE AND TESTING WORK
34	400	400KV UJJAIN -NAGDA CKT-IIND AT 400KV S/S UJJAIN	06-Oct-23	09:00	06-Oct-23	18:00	Daily	FOR BAY EQUIPMENT MAINTENANCE AND TESTING WORK
35	400	400KV UJJAIN -(INDORE)PGCIL CKT-IST AT 400KV S/S UJJAIN	09-Oct-23	09:00	09-Oct-23	18:00	Daily	FOR BAY EQUIPMENT MAINTENANCE AND TESTING WORK
36	400	400KV UJJAIN -(INDORE)PGCIL CKT-IIND AT 400KV S/S UJJAIN	10-Oct-23	09:00	10-Oct-23	18:00	Daily	FOR BAY EQUIPMENT MAINTENANCE AND TESTING WORK
37	400	400KV UJJAIN -ASHTA CKT-IST AT 400KV S/S UJJAIN	11-Oct-23	09:00	11-Oct-23	18:00	Daily	FOR BAY EQUIPMENT MAINTENANCE AND TESTING WORK
38	400	400KV UJJAIN -ASHTA CKT-IIND AT 400KV S/S UJJAIN	12-Oct-23	09:00	12-Oct-23	18:00	Daily	FOR BAY EQUIPMENT MAINTENANCE AND TESTING WORK
39	400	400KV BUS TIE AT 400KV S/S UJJAIN	13-Oct-23	09:00	13-Oct-23	18:00	Daily	FOR BAY EQUIPMENT MAINTENANCE AND TESTING WORK
40	400	400KV BADNAWAR CKT-I AT 400KV S/S NAGDA	15-Sep-23	09:00	15-Sep-23	18:00	Daily	FOR BAY EQUIPMENT MAINTENANCE AND TESTING WORK
41	400	400KV ISP AT 400KV S/S NAGDA	26-Sep-23	09:00	26-Sep-23	18:00	Daily	FOR BAY EQUIPMENT MAINTENANCE AND TESTING WORK
42	400	400KV INDORE AT 400KV S/S NAGDA	29-Sep-23	09:00	29-Sep-23	18:00	Daily	FOR BAY EQUIPMENT MAINTENANCE AND TESTING WORK
43	400	400KV BADNAWAR CKT-II AT 400KV S/S NAGDA	04-Oct-23	09:00	04-Oct-23	18:00	Daily	FOR BAY EQUIPMENT MAINTENANCE AND TESTING WORK
D- 220 KV TRANSFORMERS								
1	220	220KV PANDHURNA 160MVA X-MER -I CGL	10-Oct-23	09:00	10-Oct-23	17:00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK
2	220	220KV PANDHURNA 160MVA X-MER -II BBL	11-Oct-23	09:00	11-Oct-23	17:00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
3	220	200 MVA AT 220KV DAMOH	09-Oct-23	9.00	09-Oct-23	18.00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
4	220	160 MVA BHEL AT 220KV DAMOH	10-Oct-23	9.00	10-Oct-23	18.00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
5	220	160 MVA AREVA AT 220KV DAMOH	11-Oct-23	9.00	11-Oct-23	18.00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
6	220	160 MVA BHEL AT 400KV SAGAR	03-Oct-23	9.00	03-Oct-23	18.00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
7	220	160 MVA AREVA AT 400KV SAGAR	04-Oct-23	9.00	04-Oct-23	18.00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
8	220	160 MVA BBL AT 400KV SAGAR	05-Oct-23	9.00	05-Oct-23	18.00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
9	220	160MVA X-MER (NGEF) (AT BARWAHA 220KV SUBSTATION)	04-Sep-23	09:00	04-Sep-23	17:00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
10	220	160MVA X-MER (BHEL) (AT NIMRANI 220KV SUBSTATION)	05-Sep-23	09:00	05-Sep-23	17:00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
11	220	160MVA X-MER (CGL) (AT NIMRANI 220KV SUBSTATION)	08-Oct-23	09:00	08-Oct-23	17:00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
12	220	160MVA X-MER (BHEL) (AT NIMRANI 220KV SUBSTATION)	09-Oct-23	09:00	09-Oct-23	17:00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.

Sr- No	KV	LINE / TRANSFORMER / REACTOR / BAY WITH NAME OF SUB-STATION	From		To		Basis (Daily/ Continue)	Reason
			Date	Time	Date	Time		
13	220	160MVA X-MER-I (BHEL) (AT JULWANIYA 400KV SUBSTATION)	11-Oct-23	09:00	11-Oct-23	17:00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
14	220	160MVA X-MER-II (BHEL) (AT JULWANIYA 400KV SUBSTATION)	17-Oct-23	09:00	17-Oct-23	17:00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
15	220	160MVA X-MER-II (BBL) (AT JULWANIYA 220KV SUBSTATION)	27-Oct-23	09:00	27-Oct-23	17:00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
16	220	100MVA X-MER - (CGL) (ASHTA 400)	11-Sep-23	09:00	11-Sep-23	18.00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
17	220	50MVA X-MER - (BBL) (ASHTA 400)	13-Sep-23	09:00	13-Sep-23	18.00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
18	220	160MVA X-MER - I (AREVA) (ASHTA 400)	15-Sep-23	09:00	15-Sep-23	18.00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
19	220	160MVA X-MER - II (BBL) (ASHTA 400)	18-Sep-23	09:00	18-Sep-23	18.00	Daily	FOR POST MANSOON MAINTENANCE & TESTING WORK.
20	220	160MVA AREVA TRANSFORMER AT 220KV S/S NAGDA	03-Oct-23	09:00	03-Oct-23	18:00	Daily	POST MANSOON MAINTENANCE WORK
21	220	50MVA BBL TRANSFORMER AT 220KV S/S NAGDA	10-Oct-23	09:00	10-Oct-23	18:00	Daily	POST MANSOON MAINTENANCE WORK
22	220	160MVA CGL TRANSFORMER AT 220KV S/S NAGDA	18-Oct-23	09:00	18-Oct-23	18:00	Daily	POST MANSOON MAINTENANCE WORK

Unitwise / Stationwise Genration in MU

A. Thermal

Ann 4.1

Stn. Name	UNIT No.	Capacity MW	Apr-23	May-23	June-23	July-23
AMARKA	**5**	210	**150.57**	**150.09**	**130.47**	**155.21**
	PH III	**210**	**150.57**	**150.09**	**130.47**	**155.21**
	TOT	**210**	**150.57**	**150.09**	**130.47**	**155.21**
SATPURA	6	200	0.00	0.00	0.00	0.00
	7	210	0.00	0.00	0.00	0.00
	PH II	**410**	**0.00**	**0.00**	**0.00**	**0.00**
	8	210	0.00	0.00	0.00	0.00
	9	210	0.00	0.00	0.00	0.00
	PH III	**420**	**0.00**	**0.00**	**0.00**	**0.00**
	10	**250**	**173.75**	**178.59**	**172.21**	**179.34**
	11	**250**	**174.59**	**179.05**	**156.00**	**123.64**
	PH IV	**500**	**348.34**	**357.64**	**328.21**	**302.99**
	TOT	**1330**	**348.34**	**357.64**	**328.21**	**302.99**
SANJAY GANDHI	1	210	114.23	118.12	95.53	114.35
	2	210	106.79	127.48	122.25	106.05
	PH I	**420**	**221.02**	**245.60**	**217.78**	**220.41**
	3	210	88.46	39.50	125.68	119.78
	4	210	128.13	34.72	129.50	126.77
	PH II	**420**	**216.60**	**74.23**	**255.18**	**246.55**
	5	**500**	**316.51**	**361.40**	**304.72**	**364.18**
	PH III	**500**	316.51	361.40	304.72	364.18
	TOT	**1340**	**754.13**	**681.23**	**777.68**	**831.14**
SSTPS	**1**	**600**	**286.80**	**300.69**	**323.88**	**290.55**
	2	**600**	**278.73**	**254.83**	**127.16**	**24.42**
	PH1	**1200**	**565.53**	**555.52**	**451.04**	**314.97**
	3	**660**	**339.48**	**407.90**	**283.49**	**392.82**
	4	**660**	**220.17**	**248.47**	**284.74**	**278.88**
	PH II	**1320**	**559.65**	**656.37**	**568.23**	**671.70**
	TOT	**2520**	**1125.18**	**1211.89**	**1019.27**	**986.67**
MPPGCL THERMAL		**5400**	**2378.21**	**2400.84**	**2255.64**	**2276.00**

B. Hydel

Station Name	Capacity MW	Apr-23	May-23	June-23	July-23
GANDHISAGAR	**115.0**	30.21	25.88	1.48	15.71
R.P.SAGAR	**172.0**	1.97	1.90	0.48	45.02
J.SAGAR	**99.0**	0.12	1.21	2.25	32.89
CHAMBAL	**386.0**	**32.30**	**28.98**	**4.21**	**93.62**
M.P.CHAMBAL	**193.0**	**16.15**	**14.49**	**2.10**	**46.81**
PENCH	**160.0**	5.39	3.38	6.09	21.89
M.P.PENCH	**107.0**	**3.60**	**2.25**	**4.06**	**14.59**
BARGI	**90.0**	15.76	25.31	30.64	61.21
TONS	**315.0**	51.87	53.40	45.23	24.20
BIRSINGHPUR	**20.0**	0.00	0.05	2.10	12.38
B.SGR(DEOLONDH)	**60.0**	0.00	0.00	12.40	42.01
B.SGR(SILPARA)	**30.0**	6.41	8.53	7.02	4.55
RAJGHAT	**45.0**	0.00	3.17	0.43	16.47
M.P.RAJGHAT	**22.5**	**0.00**	**1.89**	**0.25**	**9.83**
B.SGR(JINHA)	**20.0**	6.18	7.42	6.54	7.28
MADIKHEDA	**60.0**	0.00	0.00	1.56	5.71
TOTAL HYDEL	**1186.0**	**117.90**	**130.25**	**116.22**	**289.31**
MPPGCL Hydel	**915.0**	**115.82**	**127.14**	**113.50**	**211.40**
MPSEB HYDEL Share	**917.5**	**99.96**	**113.35**	**111.92**	**228.56**

C. NHDC (Ex-Bus)

Station Name	Capacity MW	Apr-23	May-23	June-23	July-23
Indira Sagar Hydel Project	1000	29.65	76.15	193.86	380.53
Omkareshwar Hydel Project	520	20.63	34.86	101.71	230.44

ENERGY BALANCE SHEET
Year : 2023 -24

All figures in Million Unit

S No.	Source	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Total
		30	31	30	31	0	0	0	0	0	0	0	0	122
A.	**M.P. Availability**													
1	Thermal	2212.70	2239.04	2094.62	2122.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2486.87	**8668.85**
2	Hydel	100.04	112.53	111.09	226.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	172.58	**550.20**
3	Total	2312.74	2351.58	2205.70	2349.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2659.45	**9219.05**
B.	**Exchange with other States / Systems**													
1	Indira Sagar	28.14	73.93	190.00	376.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	75.67	**668.41**
2	Omkareshwar	20.63	34.86	101.71	230.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.30	**387.64**
3	MPPMCL Schedule from Central Sector of WR	2402.35	2364.92	2160.52	2182.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2337.58	**9110.33**
4	MPPMCL Schedule from Central Sector ER	31.71	36.72	38.74	40.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	32.12	**148.01**
5	Total MPPMCL Schedule from Central Sector (WR+ER)	2434.05	2401.65	2199.26	2223.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2369.71	**9258.34**
6	Deviation Energy of (WR+ER)	-96.66	-108.97	-101.87	-98.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-106.40	**-405.65**
7	NET NR ISGS POWER SCH to MP	20.09	26.57	82.31	50.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	251.10	**179.66**
8	RUMS SOLAR REWA (Scheduled Energy)	348.62	366.75	326.43	314.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	110.54	**1356.48**
9	Schedule REMC (Wind) IWISL (Kuchh Gujrat)+ASIPL Wind	31.98	43.63	36.27	36.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.40	**148.42**
10	Azure Solar Power Rajsthan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
11	Schedule From Sugen	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
12	LANCO Amk	110.73	143.06	159.40	182.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	138.85	**595.57**
13	SASAN	770.90	874.30	984.41	992.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	862.26	**3621.67**
14	ESSAR (STOA against LTA)	27.00	20.79	22.31	22.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.87	**92.22**
15	J P Nigri	326.19	333.41	332.92	335.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	187.07	**1327.55**
16	MB Power	215.40	226.33	244.42	263.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	223.71	**949.79**
17	JHABUA Power	99.67	102.65	91.73	105.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	107.81	**399.65**
18	Other Open Access Schedule other than MPPMCL Incl. Seci	-172.90	-199.42	-177.11	-149.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-207.26	**-698.63**
21	Schedule from Sardar Sarovar	42.58	31.66	38.61	231.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	114.03	**344.01**
22	SCH to Railway from RGPPL_ebid	261.29	270.63	262.64	276.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	268.20	**1071.53**
23	Schedule from SEZ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
24	Schedule from Rihand+Matatila	0.83	3.91	5.86	9.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.88	**20.13**
25	MTOA / STOA FROM RAJASTHAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	43.15	**0.00**
28	Additional Power Purchase	60.69	54.82	55.74	68.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	105.28	240.22
29	Energy Exchange	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	Banking of Energy	-58.25	-146.23	-376.80	-588.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-266.16	**-1170.04**
31	Sale of Power	-367.38	-365.55	-375.85	-514.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-429.52	**-1623.19**
32	**Total MP Schedule (Including Railway)**	**4151.49**	**4188.98**	**3912.56**	**3860.35**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**3900.90**	**16113.38**
33	**Total MP Drawal (Including Railway)**	**4054.83**	**4080.01**	**3810.69**	**3762.21**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**3794.51**	**15707.73**
34	Wheeled Energy of Tawa HEG	4.77	1.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.58	**6.20**
35	Wheeled Energy of Wind Farm	85.99	99.80	20.75	86.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	62.01	**292.96**
36	Wheeled Energy of Solar Plant	101.66	108.30	89.15	74.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	102.21	**373.70**
37	Wheeled Energy of Bio-Mass + Baggase	9.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.03	**9.93**
38	Wheeled Energy of Ascent Hydro +SAS Hydel Hatta	17.24	19.02	17.76	20.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.94	**74.76**
39	Export to MSEB (Nepa-Dhami) Wheeling	-14.86	-9.96	-8.74	-6.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-14.76	**-39.81**
40	Deviation Energy of MPPGCL Thermal	-11.18	-15.37	-14.64	-24.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-7.07	**-65.91**
41	Energy Purchased by MP from Wind Farm	356.26	406.89	585.52	329.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	238.13	**1677.67**
42	Energy Purchased by MP from Solar Plant	149.23	159.96	125.77	101.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	135.22	**535.98**
43	Firm / Infirm Energy of HEG Mandideep+Hindalco+HEG Tawa +Trimula Ind. purchase by MP +Wheeled enrgy of CPP / IPP	113.73	155.88	135.06	119.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	146.19	**524.56**
44	Purchased from ASN Biomass Katni + RDM Care Ind. Biogas Pariyat + Pragya Energy Pvt. Ltd. Biogas Richhai+ Arya Energy Kotma + Orient Green Power Limited, Gadarawara Bio-Mass+Shaliwahna (CHH+Umariya) + JBP MSW	11.78	10.43	11.17	8.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.84	**42.37**
45	Deviation Energy of ISP	1.51	2.21	3.86	4.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.36	**11.78**
46	Schedule Energy of BLA Power against LTOA	4.37	9.48	8.81	7.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.89	**30.43**
47	Schedule Energy of JP BINA Power against LTOA	139.30	157.18	151.87	162.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	138.54	**610.37**
48	Import from bargi Left Bank Canal Power House + ISP NVDA	0.35	1.07	0.29	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.68	**1.96**
49	Chambal Complex Excess / less Overshare by MP	13.20	10.76	-0.71	-31.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.23	**-8.52**
50	Rajghat Hydel Power Station Excess / Less Overshare by MP	-0.01	0.00	0.15	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.47	**0.26**
51	**State Supply (Ex-Power stn. Bus)**	**7399.60**	**7657.47**	**7434.18**	**7570.27**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**7465.47**	**30061.53**
52	AVERAGE DAILY (Ex-Bus)	246.65	247.02	247.81	244.20	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	246.41
53	MINIMUM DAILY (MP Periphery)	177.96	176.09	201.00	204.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	176.09
54	MAXIMUM DAILY (MP Periphery)	269.45	271.75	265.12	264.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	271.75
55	**State Supply (Ex-Power st. Bus):- YEAR : 2022-23**	**8025.87**	**8195.39**	**6988.10**	**6581.99**	**6575.53**	**6709.20**	**6435.08**	**8859.00**	**9811.42**	**9679.33**	**8608.65**	**7465.47**	**29791.35**
56	Year ((23-24)-(22-23))*100/Year (22-23)	**-7.80**	**-6.56**	**6.38**	**15.01**	**-100.00**	**-100.00**	**-100.00**	**-100.00**	**-100.00**	**-100.00**	**-100.00**	**0.00**	**0.91**
57	Unshedule L/S : Year-2023-24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	28.50	**0.00**
58	Frequency Correction	3.85	4.21	3.01	3.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.36	**14.34**
59	**Restricted Requirement : Year-2023-24**	**7403.46**	**7661.68**	**7437.19**	**7573.55**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**7497.32**	**30075.87**
60	Shedule L/S : Year-2023-24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
61	**Un-Restricted Requirement : Year-2023-24**	**7403.46**	**7661.68**	**7437.19**	**7573.55**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**7497.32**	**30075.87**

ENERGY BALANCE SHEET : Demand & Sypply Hours

Year : 2023 -24

S.NO.		Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Yr 20-21
C.	**MORNING PEAK (MAX)**													
1	DEMAND MET	11711	11429	11260	11815	0	0	0	0	0	0	0	0	11815
2	LOAD RELIEF	0	0	0	0	0	0	0	0	0	0	0	0	0
3	LOAD SHEDDING	0	0	0	0	0	0	0	0	0	0	0	0	0
D.	**EVENING PEAK (MAX)**													
1	DEMAND MET	11782	11518	11393	11728	0	0	0	0	0	0	0	0	11782
2	LOAD RELIEF	0	0	0	0	0	0	0	0	0	0	0	0	0
3	LOAD SHEDDING	0	0	0	0	0	0	0	0	0	0	0	0	0
F.	**REGISTERED MAXIMUM**	11974	12103	11631	11815	0	0	0	0	0	0	0	0	12103
G.	**COMPUTED MAXIMUM DEMAND**	12028	12103	11631	11815	0	0	0	0	0	0	0	0	12103
H.	**UNRESTRICTED MAXIMUM DEMAND**	12028	12103	11718	11815	0	0	0	0	0	0	0	0	12103
I.	**Average Power Supply per day to**													
1.	Div. Head Quarters	23:52	23:54	23:54	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	17:49
2.	District Head Quarters	23:49	23:47	23:49	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	17:45
3.	Tahsil Head Quarters	23:41	23:37	23:40	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	17:39
4.	Rural -Mixed	23:21	23:13	23:15	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	17:21
5.	Rural -DLF	23:20	23:18	23:21	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	17:24
6.	Rural -Irrigation	9:40	9:40	9:40	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	7:13
J	LOAD FACTOR %	59.09	59.99	64.19	62.41	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.00	61.42

FREQUENCY ANALYSIS YEAR 2022-23

S.N	PARTICULARS	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Yr 20-21
A. INTGRATED FREQUENCY														
1	MAXIMUM	50.26	50.37	50.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.37
2	MINIMUM	49.67	49.64	49.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B. INSTANTANEOUS FREQUENCY														
1	MAXIMUM	50.33	50.40	50.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.41
2	MINIMUM	49.49	49.43	49.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C. AVG FREQUENCY		50.00	50.00	50.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	37.50
D. % TIME WHEN FREQUENCY WAS														
1	Above 50.30 Hz	0.04	0.08	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
2	Between 50.05 TO 51.30 Hz	21.68	21.72	25.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.74
3	Between 50.00 TO 50.05 Hz	26.50	27.24	29.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Between 49.90 TO 50.00 Hz	41.25	41.10	38.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	Between 49.50 TO 49.90 Hz	10.53	9.85	6.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.74
6	Between 49.20 TO 49.50 Hz	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	BELOW 49.2 Hz	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hourly Average Own Generation, Schedule Drawal , Actual Drawal & Demand

Month :- April 2023

FIGURES IN MW

Hrs.	FREQ.	Own Generation								Schedule from																			Tot Avl.	Act. Drl	Deviation	Export to MS	DEMAND MET	Load Shedding			REST. DEMAND	UNREST. DEMAND
		THER. Incl Aux	THER. Excl Aux	HYD.	ISP	OSP	Total IPPs Injection	Total CPPs Injection	Total	CSS	Net NR to MP	Suge n	Lanco	Sasan	Essar	JP Nigri	RUMS (SOLAR) REWA TO MPPMCL	MB Power	Jhabua Power	SSP	SCH to Railway	SEZ	Banking	Sale	Pur	STOA	Rihand+Matatila-Rajghat	MTOA / STOA FROM RAJASTHAN	Total					SCH	UN SCH	TOTAL		
1:00	50.00	3427	3206	134	40	9	388	798	4575	3481	36	0	148	1024	47	441	0	332	159	61	351	0	-78	-531	91	-133	1	0	5431	10006	5329	-102	-19	9886	0	0	0	9888	9888
2:00	50.02	3418	3198	109	12	0	358	819	4496	3379	50	0	148	1037	47	441	0	313	159	61	352	0	-78	-649	91	-138	1	0	5213	9709	4997	-215	-18	9476	0	0	0	9477	9477
3:00	50.01	3369	3151	109	4	0	355	788	4406	3273	44	0	148	1040	43	441	0	303	154	61	352	0	-78	-696	99	-147	1	0	5037	9443	5026	-11	-17	9414	0	0	0	9417	9417
4:00	50.00	3361	3144	110	12	0	363	767	4395	3269	29	0	148	1044	43	440	0	294	153	61	364	0	-78	-649	100	-149	1	0	5070	9466	4992	-78	-18	9370	0	0	0	9372	9372
5:00	49.99	3369	3151	113	4	9	372	740	4389	3307	37	0	148	1046	45	441	0	294	139	61	346	0	-78	-712	91	-147	1	0	5019	9408	4946	-73	-18	9317	0	0	0	9322	9322
6:00	49.98	3455	3232	174	60	89	383	669	4606	3411	37	0	148	1038	47	442	1	307	154	67	360	0	-78	-474	91	-129	1	0	5424	10030	5409	-15	-20	9995	0	0	0	10004	10004
7:00	50.05	3497	3272	288	184	115	404	701	4966	3519	48	0	148	1025	47	442	15	335	159	67	370	0	-78	-219	110	-156	1	0	5833	10799	5765	-68	-22	10709	0	0	0	10709	10709
8:00	50.05	3391	3172	215	57	50	368	821	4683	3364	21	0	148	1024	44	442	149	310	148	66	358	0	-78	-245	145	-233	1	0	5664	10347	5907	243	-23	10567	0	0	0	10568	10568
9:00	50.03	3290	3076	199	56	41	326	1025	4724	3090	14	0	147	1025	36	435	316	260	118	65	357	0	-78	-312	96	-311	1	0	5260	9984	5805	544	-21	10507	0	0	0	10510	10510
10:00	50.01	3163	2956	125	8	13	306	1282	4690	3022	13	0	147	1022	24	431	460	214	112	60	360	0	-78	-619	88	-413	1	0	4845	9536	5450	605	-22	10119	0	0	0	10123	10123
11:00	50.01	3033	2835	117	16	4	288	1372	4633	2955	12	0	147	1016	17	428	534	195	80	55	341	0	-78	-728	49	-492	1	0	4531	9164	5444	913	-21	10056	0	0	0	10060	10060
12:00	49.98	3080	2879	151	24	0	295	1395	4744	2918	16	0	147	1024	12	428	550	201	69	51	338	0	-78	-608	37	-514	1	0	4593	9336	5424	832	-21	10147	0	0	0	10156	10156
13:00	49.98	3018	2821	150	12	0	289	1382	4654	2934	27	0	148	1038	12	428	549	203	85	49	345	0	-78	-503	27	-509	1	0	4756	9410	5618	863	-22	10251	0	0	0	10260	10260
14:00	49.98	3006	2810	140	8	6	294	1316	4575	2863	25	0	148	1036	12	428	514	205	68	50	338	0	-78	-523	30	-482	1	0	4635	9209	5453	818	-22	10006	0	0	0	10016	10016
15:00	49.96	3139	2936	142	28	7	334	1215	4662	2946	50	0	148	1049	25	428	400	261	116	53	344	0	-100	-701	67	-384	1	0	4703	9365	5534	830	-23	10172	0	0	0	10186	10186
16:00	49.97	3288	3076	142	21	13	367	1064	4683	3083	20	0	148	1044	31	429	235	273	130	53	335	0	-100	-667	79	-306	1	0	4787	9470	5356	569	-22	10017	0	0	0	10028	10028
17:00	49.98	3292	3079	152	36	4	364	826	4461	3145	18	0	148	1036	39	434	51	298	133	53	356	0	-100	-717	94	-213	1	0	4775	9237	5073	298	-22	9513	0	0	0	9520	9520
18:00	49.99	3242	3032	149	32	9	352	598	4171	3142	17	0	147	1032	43	436	2	298	134	59	352	0	-78	-457	100	-151	1	0	5077	9247	5196	120	-21	9346	0	0	0	9351	9351
19:00	50.01	3383	3166	232	93	78	404	551	4524	3470	44	0	148	1034	47	443	0	335	150	63	357	0	-78	-284	100	-122	1	0	5706	10230	5615	-91	-20	10118	0	0	0	10123	10123
20:00	50.02	3404	3185	243	84	82	408	578	4580	3542	31	0	148	1016	48	437	0	348	155	65	353	0	-78	-394	99	-122	1	0	5648	10229	5530	-118	-20	10090	0	0	0	10092	10092
21:00	50.00	3404	3185	167	32	41	392	664	4480	3401	23	0	148	1013	48	437	0	317	150	65	361	0	-78	-571	89	-123	1	0	5282	9762	5117	-164	-22	9575	0	0	0	9580	9580
22:00	50.01	3429	3209	143	31	30	392	732	4537	3424	19	0	148	1018	48	438	0	329	155	65	351	0	-78	-515	89	-125	1	0	5367	9904	5262	-105	-21	9778	0	0	0	9782	9782
23:00	49.99	3447	3225	171	73	45	398	798	4710	3513	21	0	148	1018	48	438	0	336	155	64	348	0	-78	-391	89	-125	1	0	5583	10293	5550	-33	-20	10241	0	0	0	10248	10248
24:00	50.01	3423	3202	167	65	33	396	804	4666	3466	23	0	148	1019	48	438	0	323	155	62	346	0	-75	-417	89	-133	1	0	5493	10160	5374	-120	-19	10021	0	0	0	10024	10024
Avg.	50.00	3305	3092	160	41	28	358	904	4584	3246	28	0	148	1030	37	436	157	287	133	60	351	0	-81	-524	85	-240	1	0	5156	9739	5382	227	-21	9945	0	0	0	9951	9951
00 TO 06 HRS.	50.00	3400	3180	125	22	18	370	764	4478	3353	39	0	148	1038	45	441	0	307	153	62	354	0	-78	-618	93	-140	1	0	5199	9677	5117	-82	-18	9576	0	0	0	9580	9580
06 TO 12 HRS.	50.02	3242	3032	183	58	37	331	1099	4740	3145	21	0	148	1023	30	434	337	253	114	61	354	0	-78	-455	88	-353	1	0	5121	9861	5633	511	-22	10351	0	0	0	10354	10354
12 TO 18 HRS.	49.98	3164	2959	146	23	7	333	1067	4534	3019	26	0	148	1039	27	430	292	256	111	53	345	0	-89	-595	66	-341	1	0	4789	9323	5372	583	-22	9884	0	0	0	9894	9894
06TO 18 HRS.	50.00	3203	2995	164	40	22	332	1083	4637	3082	23	0	148	1031	28	432	315	254	113	57	349	0	-84	-525	77	-347	1	0	4955	9592	5502	547	-22	10117	0	0	0	10124	10124
18 TO 24 HRS.	50.01	3415	3195	187	63	52	398	688	4583	3469	27	0	148	1020	48	438	0	331	153	64	353	0	-78	-429	93	-125	1	0	5513	10096	5408	-105	-20	9971	0	0	0	9975	9975

Hourly Average Own Generation, Schedule Drawal , Actual Drawal & Demand
Month :- May 2023

FIGURES IN MW

Hrs.	FREQ.	Own Generation									Schedule from																					Tot Avl.	Act. Drl	Deviation	Export to MS	DEMAND MET	Load Shedding			REST. DEMAND	UNREST. DEMAND
		THER. Incl Aux	THER. Excl Aux	HYD.	ISP	OSP	Total IPPs Injection	Total CPPs Injection	Total	CSS	Net NR to MP	Suge n	Lanco	Sasan	Essar	JP Nigri	RUMS (SOLAR) REWA TO MPPMCL	MB Power	Jhabua Power	SSP	SCH to Railway	SEZ	Banking	Sale	Pur	STOA	Rihand+Matatila-Raighat	MTOA / STOA FROM RAJASTHAN	Total						SCH	UN SCH	TOTAL		
1:00	50.03	3302	3094	170	126	44	471	808	4713	3360	89	0	186	1122	40	431	0	338	150	43	364	0	-202	-297	85	-147	4	0	5565	10278	5341	-224	-13	10041	0	0	0	10042	10042
2:00	50.02	3290	3083	147	107	31	465	787	4621	3323	105	0	186	1127	36	429	0	320	149	23	359	0	-202	-423	79	-164	4	0	5351	9971	5173	-178	-12	9781	0	0	0	9782	9782
3:00	50.01	3303	3095	125	95	29	467	780	4591	3282	78	0	186	1132	32	434	0	320	148	19	350	0	-208	-409	76	-170	3	0	5273	9865	5217	-57	-12	9797	0	0	0	9800	9800
4:00	50.01	3305	3097	138	98	17	459	756	4565	3276	48	0	189	1143	31	435	0	314	143	19	363	0	-208	-437	76	-176	3	0	5220	9785	5088	-132	-12	9641	0	0	0	9644	9644
5:00	49.99	3300	3093	137	57	34	454	707	4481	3237	73	0	189	1166	30	433	0	302	148	31	349	0	-208	-453	76	-173	3	0	5203	9684	5086	-117	-12	9555	0	0	0	9561	9561
6:00	50.00	3322	3114	186	134	50	460	667	4611	3260	45	0	189	1156	30	434	12	326	141	38	361	0	-111	-368	85	-155	3	0	5445	10056	5325	-120	-14	9922	0	0	0	9929	9929
7:00	50.03	3322	3114	204	100	67	454	765	4704	3184	41	0	189	1166	23	434	33	320	141	43	367	0	-111	-221	85	-197	3	0	5499	10203	5436	-63	-15	10125	0	0	0	10127	10127
8:00	50.05	3157	2958	188	64	63	372	924	4569	2931	21	0	186	1164	19	434	207	263	136	29	349	0	-111	-241	82	-287	3	0	5186	9755	5406	220	-15	9960	0	0	0	9961	9961
9:00	50.03	3021	2829	166	54	40	339	1153	4581	2733	21	0	181	1167	18	430	351	196	90	20	362	0	-111	-289	74	-373	3	0	4873	9453	5447	574	-14	10013	0	0	0	10015	10015
10:00	50.00	2926	2740	132	77	25	345	1364	4682	2757	22	0	181	1163	15	430	475	205	91	20	354	0	-208	-543	65	-442	3	0	4588	9270	5281	693	-14	9948	0	0	0	9955	9955
11:00	50.02	2933	2747	152	69	25	354	1482	4828	2732	9	0	179	1139	11	430	536	202	88	19	346	0	-215	-668	44	-494	3	0	4362	9190	5168	806	-14	9983	0	0	0	9985	9985
12:00	49.97	3053	2860	167	73	27	365	1509	5001	2734	8	0	179	1130	11	430	534	226	114	20	333	0	-215	-770	44	-505	3	0	4276	9277	5151	874	-14	10138	0	0	0	10149	10149
13:00	49.96	3057	2864	153	50	23	361	1461	4912	2706	7	0	181	1121	11	430	529	228	104	19	342	0	-215	-619	41	-504	3	0	4384	9296	5363	979	-13	10262	0	0	0	10278	10278
14:00	49.97	3086	2891	146	42	37	372	1429	4918	2726	7	0	184	1129	12	430	481	226	98	19	334	0	-215	-681	44	-483	3	0	4314	9231	5237	923	-13	10142	0	0	0	10153	10153
15:00	49.96	3132	2934	168	107	29	407	1324	4969	2920	4	0	184	1133	20	424	359	271	119	18	342	0	-218	-810	59	-398	3	0	4430	9399	5288	858	-12	10245	0	0	0	10261	10261
16:00	49.99	3244	3040	157	77	25	431	1168	4898	3066	5	0	186	1125	23	431	208	283	136	18	334	0	-218	-729	65	-330	3	0	4607	9506	5236	629	-13	10121	0	0	0	10130	10130
17:00	50.00	3278	3072	152	95	25	447	971	4762	3103	8	0	187	1125	25	436	51	308	140	24	354	0	-218	-709	70	-258	3	0	4651	9413	4866	214	-13	9614	0	0	0	9620	9620
18:00	50.01	3209	3007	149	68	40	434	763	4461	3123	8	0	187	1126	27	430	2	290	135	43	354	0	-218	-678	73	-200	3	0	4706	9166	4759	54	-14	9206	0	0	0	9210	9210
19:00	50.06	3310	3102	191	87	84	465	666	4594	3166	7	0	185	1126	38	431	0	326	145	108	357	0	-218	-428	82	-167	3	0	5162	9756	5151	-11	-14	9731	0	0	0	9731	9731
20:00	50.00	3414	3200	261	221	100	494	636	4912	3395	41	0	189	1127	43	439	0	358	160	108	363	0	-224	-552	91	-139	3	0	5403	10315	5321	-82	-15	10219	0	0	0	10223	10223
21:00	49.98	3410	3196	236	161	86	496	644	4819	3343	12	0	189	1118	43	438	0	344	162	121	364	0	-221	-651	97	-145	3	0	5216	10034	5135	-81	-15	9939	0	0	0	9950	9950
22:00	50.01	3403	3191	212	153	84	507	655	4801	3390	26	0	187	1117	43	438	0	356	157	112	364	0	-221	-527	91	-147	3	0	5390	10191	5369	-21	-14	10155	0	0	0	10158	10158
23:00	49.98	3393	3181	241	260	70	509	694	4954	3493	75	0	187	1118	46	438	0	356	151	89	360	0	-215	-356	91	-159	3	0	5678	10632	5684	6	-14	10624	0	0	0	10636	10636
24:00	50.03	3375	3163	196	236	61	510	767	4932	3475	73	0	189	1119	45	440	0	356	149	60	358	0	-215	-331	82	-159	3	0	5646	10578	5483	-163	-13	10401	0	0	0	10402	10402
Avg.	50.00	3231	3028	174	109	46	435	953	4745	3113	35	0	185	1136	28	433	157	293	133	44	353	0	-197	-508	73	-265	3	0	5018	9763	5250	233	-13	9982	0	0	0	9988	9988
00 TO 06 HRS.	50.01	3304	3096	151	103	34	463	751	4597	3290	73	0	187	1141	33	433	2	320	147	29	358	0	-190	-398	80	-164	3	0	5343	9940	5205	-138	-12	9790	0	0	0	9793	9793
06 TO 12 HRS.	50.02	3069	2874	168	73	41	371	1199	4727	2845	20	0	182	1155	16	431	356	235	110	25	352	0	-162	-455	66	-383	3	0	4797	9525	5315	517	-14	10028	0	0	0	10032	10032
12 TO 18 HRS.	49.98	3168	2968	154	73	30	409	1186	4820	2941	7	0	185	1127	20	430	272	268	122	23	343	0	-217	-704	59	-362	3	0	4515	9335	5125	609	-13	9932	0	0	0	9942	9942
06TO 18 HRS.	50.00	3118	2921	161	73	35	390	1193	4774	2893	13	0	184	1141	18	431	314	251	116	24	347	0	-189	-580	62	-373	3	0	4656	9430	5220	563	-14	9980	0	0	0	9987	9987
18 TO 24 HRS.	50.01	3384	3172	223	186	81	497	677	4835	3377	39	0	188	1121	43	437	0	349	154	100	361	0	-219	-474	89	-153	3	0	5416	10251	5357	-59	-14	10178	0	0	0	10183	10183

Hourly Average Own Generation, Schedule Drawal , Actual Drawal & Demand

Month :- June 2023

FIGURES IN MW

Hrs.	FREQ.	Own Generation								Schedule from																			Tot Avl.	Act. Drl	Deviation	Export to MS	DEMAND MET	Load Shedding			REST. DEMAND	UNREST. DEMAND
		THER. Incl Aux	THER. Excl Aux	HYD.	ISP	OSP	Total IPPs Injection	Total CPPs Injection	Total	CSS	Net NR to MP	Suge n	Lanco	Sasan	Essar	JP Nigri	RUMS (SOLAR) REWA TO MPPMCL	MB Power	Jhabua Power	SSP	SCH to Railway	SEZ	Banking	Sale	Pur	STOA	Rihand+Matatila-Rajghat	MTOA / STOA FROM RAJASTHAN	Total					SCH	UN SCH	TOTAL		
1:00	50.01	3281	3067	156	390	214	450	986	5263	3255	201	0	220	1311	44	447	0	376	150	94	362	0	-607	-639	91	-152	8	0	5159	10422	5043	-116	-12	10294	0	0	0	10296	10296
2:00	50.01	3281	3067	150	289	145	451	994	5096	3176	216	0	220	1313	43	447	0	357	134	35	367	0	-607	-493	91	-152	8	0	5155	10251	4974	-181	-12	10058	0	0	0	10060	10060
3:00	50.01	3266	3053	131	248	117	445	987	4982	3156	172	0	220	1317	38	447	0	357	134	29	367	0	-630	-332	78	-176	8	0	5184	10165	5115	-69	-12	10085	0	0	0	10089	10089
4:00	50.02	3263	3051	124	184	89	439	953	4841	3094	126	0	220	1317	37	447	0	351	128	28	373	0	-633	-238	78	-172	8	0	5165	10005	5084	-81	-11	9913	0	0	0	9915	9915
5:00	50.00	3248	3036	121	170	89	436	912	4763	3084	108	0	220	1318	37	447	0	351	128	34	365	0	-633	-223	78	-172	8	0	5151	9914	5088	-63	-11	9840	0	0	0	9843	9843
6:00	49.99	3237	3026	151	206	106	418	888	4795	3029	139	0	220	1327	37	447	12	351	139	30	371	0	-300	-287	78	-173	8	0	5427	10222	5293	-134	-12	10076	0	0	0	10083	10083
7:00	50.01	3223	3013	172	264	126	396	1002	4973	2950	92	0	220	1331	25	447	26	351	138	29	370	0	-300	-258	78	-195	8	0	5312	10285	5295	-17	-13	10255	0	0	0	10258	10258
8:00	50.09	3062	2862	171	148	95	358	1337	4970	2785	73	0	217	1332	18	447	180	300	117	26	356	0	-300	-264	75	-263	8	0	5106	10076	5126	20	-13	10084	0	0	0	10084	10084
9:00	50.06	2839	2653	136	99	65	326	1550	4829	2659	56	0	208	1331	17	447	311	250	84	26	364	0	-300	-335	75	-334	8	0	4864	9693	5141	277	-12	9958	0	0	0	9959	9959
10:00	50.01	2784	2600	136	160	65	318	1612	4892	2599	57	0	195	1343	14	447	425	219	42	26	356	0	-500	-531	60	-394	8	0	4366	9258	5009	643	-12	9890	0	0	0	9892	9892
11:00	50.02	2803	2619	127	178	80	319	1607	4931	2522	42	0	198	1337	13	447	490	212	47	26	332	0	-500	-598	51	-425	8	0	4202	9133	4942	740	-12	9861	0	0	0	9863	9863
12:00	50.00	2855	2668	137	194	108	339	1569	5016	2485	36	0	204	1330	13	447	498	273	82	25	333	0	-500	-598	51	-436	8	0	4249	9265	4995	746	-12	10000	0	0	0	10005	10005
13:00	50.01	2930	2738	149	174	121	349	1480	5011	2508	67	0	204	1329	15	447	486	279	94	25	345	0	-500	-599	51	-432	8	0	4326	9337	5171	845	-12	10170	0	0	0	10179	10179
14:00	49.99	2961	2767	136	131	108	356	1441	4940	2507	46	0	200	1335	21	447	430	275	91	25	342	0	-500	-546	72	-385	8	0	4369	9309	5220	851	-12	10148	0	0	0	10157	10157
15:00	49.98	3043	2844	146	162	113	392	1354	5011	2779	53	0	208	1334	31	447	322	307	112	25	347	0	-500	-667	75	-340	8	0	4540	9551	5247	707	-11	10247	0	0	0	10256	10256
16:00	50.00	3136	2931	129	224	119	418	1236	5058	2895	78	0	213	1325	33	447	188	338	128	26	331	0	-500	-682	78	-295	8	0	4612	9670	5157	545	-12	10203	0	0	0	10209	10209
17:00	50.01	3150	2944	123	184	121	415	1089	4876	2979	84	0	217	1310	32	447	49	357	145	27	348	0	-500	-638	78	-240	8	0	4703	9579	4897	194	-12	9762	0	0	0	9765	9765
18:00	50.03	3117	2913	146	232	102	389	901	4684	2866	45	0	217	1309	31	449	4	338	129	30	351	0	-500	-524	81	-196	8	0	4638	9322	4805	167	-11	9477	0	0	0	9479	9479
19:00	50.02	3194	2986	177	278	171	442	807	4861	2956	64	0	221	1309	36	449	0	357	140	73	371	0	-500	-374	85	-162	8	0	5032	9892	4980	-52	-13	9828	0	0	0	9831	9831
20:00	50.00	3296	3081	232	426	206	479	812	5235	3303	241	0	221	1321	42	449	0	382	157	125	362	0	-653	-639	91	-154	8	0	5255	10490	5172	-83	-14	10394	0	0	0	10401	10401
21:00	49.99	3293	3079	229	476	216	483	805	5289	3286	181	0	221	1322	42	449	0	382	158	149	368	0	-650	-846	91	-153	8	0	5007	10296	4867	-140	-14	10142	0	0	0	10149	10149
22:00	50.04	3303	3088	211	546	245	485	872	5445	3342	132	0	221	1331	42	449	0	376	157	141	351	0	-650	-925	91	-153	8	0	4913	10358	4804	-109	-13	10236	0	0	0	10237	10237
23:00	50.00	3305	3089	209	633	277	481	905	5595	3352	167	0	221	1327	42	449	0	376	160	160	348	0	-650	-819	91	-156	8	0	5073	10669	5011	-62	-13	10593	0	0	0	10603	10603
24:00	50.04	3297	3082	182	545	286	479	962	5537	3306	165	0	221	1315	42	449	0	376	157	138	352	0	-650	-779	91	-157	8	0	5032	10568	4882	-149	-13	10406	0	0	0	10409	10409
Avg.	50.01	3132	2927	158	273	141	411	1128	5037	2953	110	0	214	1324	31	447	143	329	123	56	355	0	-523	-535	78	-244	8	0	4868	9906	5055	187	-12	10080	0	0	0	10084	10084
00 TO 06 HRS.	50.01	3263	3050	139	248	127	440	953	4957	3132	160	0	220	1317	39	447	2	357	135	42	368	0	-568	-369	82	-166	8	0	5207	10163	5099	-107	-12	10044	0	0	0	10048	10048
06 TO 12 HRS.	50.03	2928	2736	147	174	90	343	1446	4935	2667	59	0	207	1334	17	447	322	267	85	26	352	0	-400	-431	65	-341	8	0	4683	9619	5085	402	-12	10008	0	0	0	10010	10010
12 TO 18 HRS.	50.00	3056	2856	138	185	114	386	1250	4930	2756	62	0	210	1324	27	447	247	316	116	26	344	0	-500	-610	73	-315	8	0	4531	9461	5083	552	-12	10001	0	0	0	10007	10007
06TO 18 HRS.	50.02	2992	2796	142	179	102	365	1348	4933	2711	61	0	208	1329	22	447	284	292	101	26	348	0	-450	-520	69	-328	8	0	4607	9540	5084	477	-12	10005	0	0	0	10009	10009
18 TO 24 HRS.	50.02	3281	3067	207	484	233	475	861	5327	3257	158	0	221	1321	41	449	0	375	155	131	359	0	-626	-730	90	-156	8	0	5052	10379	4953	-99	-13	10267	0	0	0	10272	10272

Hourly Average Own Generation, Schedule Drawal , Actual Drawal & Demand
Month :- July 2023

FIGURES IN MW

		Own Generation									Schedule from																						Load Shedding				
Hrs.	FREQ.	THER. Incl Aux	THER. Excl Aux	HYD.	ISP	OSP	Total IPPs Injectio n	Total CPPs Injectio n	Total	CSS	Net NR to MP	Suge n	Lanco	Sasan	Essa r	JP Nigri	RUMS (SOLA R) REWA TO MPPM CL	MB Power	Jhabu a Power	SSP	SCH to Railw ay	SEZ	Banking	Sale	Pur	STOA	Rihan d+Ma tatila-Raigh at	MTOA / STOA FROM RAJAS THAN	Total	Tot Avl.	Act. Drl	Devia tion	Expor t to MS	DEMAN D MET	SCH	UN SCH	TOTAL	REST. DEMAN D	UNREST. DEMAND
1:00	50.00	3172	2965	257	611	329	440	581	5183	3219	145	0	241	1258	40	438	0	378	160	606	375	0	-1396	-703	86	-123	5	0	4728	9912	4673	-55	-8	9848	0	0	0	9852	9852
2:00	50.00	3146	2941	257	494	325	429	623	5068	3067	122	0	241	1258	39	436	0	374	154	449	374	0	-1203	-614	97	-123	5	0	4675	9743	4623	-52	-8	9682	0	0	0	9685	9685
3:00	50.00	3145	2941	258	456	322	406	628	5010	2889	90	0	241	1256	34	436	0	368	148	221	377	0	-893	-523	108	-132	3	0	4624	9634	4642	18	-8	9644	0	0	0	9646	9646
4:00	50.01	3148	2943	258	453	323	389	598	4964	2774	92	0	241	1265	31	434	0	362	148	161	375	0	-611	-576	81	-128	3	0	4654	9617	4612	-41	-8	9568	0	0	0	9570	9570
5:00	50.01	3155	2950	252	444	335	386	568	4935	2755	82	0	238	1285	31	433	0	349	140	113	369	0	-611	-446	92	-125	3	0	4707	9642	4689	-18	-8	9616	0	0	0	9618	9618
6:00	49.98	3166	2960	257	472	337	408	544	4979	2979	90	0	241	1300	34	433	5	367	150	273	370	0	-611	-412	111	-120	3	0	5214	10193	5176	-38	-8	10147	0	0	0	10156	10156
7:00	50.01	3153	2948	285	546	350	420	589	5139	3202	96	0	241	1303	34	432	18	374	154	299	376	0	-624	-517	115	-144	3	0	5363	10501	5423	60	-9	10552	0	0	0	10555	10555
8:00	50.03	3103	2901	292	477	353	390	728	5140	2945	90	0	238	1305	31	431	148	374	155	158	358	0	-624	-375	109	-197	3	0	5151	10291	5269	118	-9	10399	0	0	0	10401	10401
9:00	50.03	3032	2834	293	483	337	352	886	5186	2656	54	0	235	1285	20	431	265	320	123	64	371	0	-624	-361	74	-252	3	0	4664	9850	5055	391	-8	10232	0	0	0	10234	10234
10:00	50.01	2965	2771	284	402	312	345	1002	5117	2502	34	0	235	1284	18	431	361	302	116	18	358	0	-623	-625	97	-299	3	0	4211	9328	4854	643	-8	9963	0	0	0	9966	9966
11:00	50.02	2879	2691	267	407	300	330	1062	5057	2464	37	0	232	1292	18	431	430	284	111	20	357	0	-623	-815	62	-331	3	0	3971	9028	4675	704	-7	9726	0	0	0	9729	9729
12:00	50.01	2838	2653	256	371	298	325	1078	4981	2362	37	0	223	1283	15	431	441	275	101	19	351	0	-624	-826	73	-353	3	0	3810	8790	4592	782	-7	9566	0	0	0	9570	9570
13:00	50.01	2778	2597	256	317	274	312	1076	4832	2350	26	0	221	1335	15	431	423	270	90	19	354	0	-624	-801	92	-362	3	0	3841	8673	4707	866	-7	9532	0	0	0	9539	9539
14:00	50.01	2797	2615	248	361	268	319	1049	4860	2278	23	0	223	1320	16	430	390	252	74	72	345	0	-624	-765	99	-356	3	0	3779	8639	4626	847	-7	9479	0	0	0	9484	9484
15:00	49.97	2897	2708	251	386	262	345	978	4930	2397	26	0	229	1328	24	427	287	306	114	257	339	0	-637	-948	68	-312	3	0	3906	8836	4667	761	-6	9591	0	0	0	9602	9602
16:00	49.99	2975	2780	243	411	243	365	835	4877	2586	27	0	232	1311	26	428	181	320	122	346	339	0	-637	-992	67	-261	3	0	4099	8976	4668	569	-7	9538	0	0	0	9544	9544
17:00	49.98	3044	2845	248	414	247	370	660	4785	2786	35	0	238	1328	28	428	66	338	132	318	352	0	-637	-821	70	-205	3	0	4458	9243	4785	327	-7	9563	0	0	0	9570	9570
18:00	49.98	3071	2871	277	500	269	381	499	4796	2831	33	0	238	1321	30	433	6	338	137	276	357	0	-637	-575	90	-164	3	0	4717	9513	4861	143	-8	9648	0	0	0	9656	9656
19:00	50.02	3129	2925	313	591	305	425	432	4993	2987	111	0	241	1308	37	440	0	368	160	494	381	0	-637	-798	100	-125	3	0	5071	10063	5068	-3	-8	10052	0	0	0	10055	10055
20:00	50.00	3167	2961	339	719	310	448	437	5214	3429	64	0	241	1275	39	446	0	380	160	623	365	0	-947	-743	104	-127	3	0	5312	10526	5246	-66	-10	10451	0	0	0	10459	10459
21:00	50.00	3178	2971	335	741	314	451	460	5274	3468	53	0	241	1252	39	445	0	380	157	594	373	0	-1150	-910	102	-130	3	0	4919	10193	4848	-71	-10	10112	0	0	0	10117	10117
22:00	50.03	3178	2972	312	735	325	451	482	5278	3474	55	0	241	1249	39	444	0	380	158	599	359	0	-1153	-949	102	-130	3	0	4872	10150	4827	-45	-10	10095	0	0	0	10096	10096
23:00	50.01	3174	2968	285	753	373	451	510	5340	3423	70	0	241	1248	39	444	0	379	158	609	371	0	-1155	-903	106	-132	3	0	4904	10244	4867	-37	-9	10198	0	0	0	10202	10202
24:00	50.04	3171	2966	268	704	367	447	551	5301	3375	77	0	241	1249	39	444	0	379	158	571	377	0	-1155	-833	103	-132	3	0	4897	10198	4777	-119	-9	10070	0	0	0	10070	10070
Avg.	50.01	3061	2862	275	510	312	391	702	5052	2883	66	0	237	1287	30	435	126	342	137	299	363	0	-794	-701	92	-198	4	0	4606	9658	4843	237	-8	9886	0	0	0	9891	9891
00 TO 06 HRS.	50.00	3155	2950	256	488	328	410	590	5023	2947	104	0	241	1270	35	435	1	366	150	304	373	0	-888	-546	96	-125	4	0	4767	9790	4736	-31	-8	9751	0	0	0	9755	9755
06 TO 12 HRS.	50.02	2995	2800	279	448	325	360	891	5103	2688	58	0	234	1292	23	431	277	321	127	96	362	0	-624	-586	88	-263	3	0	4528	9631	4978	450	-8	10073	0	0	0	10076	10076
12 TO 18 HRS.	49.99	2927	2736	254	398	261	348	850	4847	2538	29	0	230	1324	23	430	225	304	111	215	348	0	-633	-817	81	-277	3	0	4133	8980	4719	585	-7	9559	0	0	0	9566	9566
06TO 18 HRS.	50.01	2961	2768	267	423	293	354	870	4975	2613	43	0	232	1308	23	430	251	313	119	155	355	0	-628	-702	84	-270	3	0	4331	9306	4848	518	-8	9816	0	0	0	9821	9821
18 TO 24 HRS.	50.02	3166	2961	309	707	332	446	479	5233	3359	72	0	241	1264	39	444	0	378	158	582	371	0	-1033	-856	103	-129	3	0	4996	10229	4939	-57	-9	10163	0	0	0	10166	10166

Discomwise Hourly Average Schedule Drawal , Actual Drawal &Over(+)/Under(-) Drawal
Month :- April 2023

FIGURES IN MW

Hrs.	FREQ.	EZONE							CZONE							WZONE							Railway	
		SCH	Demand Met	O/U DRL	SCH LS	Unsch LS	Restricted Demand	Unrestricted Demand	SCH	Demand Met	O/U DRL	SCH LS	Unsch LS	Restricted Demand	Unrestricted Demand	SCH	Demand Met	O/U DRL	SCH LS	Unsch LS	Restricted Demand	Unrestricted Demand	Total Sch	Total Drawal
1:00	50.00	3041	2998	-42	0	0	2999	2999	3329	3281	-49	0	0	3282	3282	3285	3239	-46	0	0	3240	3240	351	367
2:00	50.02	2902	2825	-77	0	0	2825	2825	3279	3191	-87	0	0	3192	3192	3176	3094	-82	0	0	3094	3094	352	366
3:00	50.01	2776	2766	-10	0	0	2766	2766	3153	3144	-10	0	0	3144	3144	3158	3149	-10	0	0	3149	3149	352	357
4:00	50.00	2780	2749	-30	0	0	2750	2750	3151	3116	-35	0	0	3117	3117	3177	3142	-35	0	0	3143	3143	364	362
5:00	49.99	2721	2699	-22	0	0	2701	2701	3122	3095	-26	0	0	3097	3097	3205	3178	-28	0	0	3180	3180	346	344
6:00	49.98	2867	2860	-8	0	0	2862	2862	3380	3370	-10	0	0	3373	3373	3415	3406	-8	0	0	3409	3409	360	359
7:00	50.05	3198	3158	-40	0	0	3158	3158	3506	3462	-44	0	0	3462	3462	3770	3723	-47	0	0	3723	3723	370	366
8:00	50.05	3068	3051	-18	0	0	3051	3051	3386	3366	-20	0	0	3367	3367	3817	3795	-23	0	0	3795	3795	358	356
9:00	50.03	3033	3019	-14	0	0	3020	3020	3332	3316	-15	0	0	3317	3317	3836	3818	-18	0	0	3819	3819	357	353
10:00	50.01	2990	2918	-72	0	0	2919	2919	3203	3126	-77	0	0	3127	3127	3809	3718	-91	0	0	3719	3719	360	356
11:00	50.01	2934	2925	-9	0	0	2926	2926	3006	2998	-8	0	0	2999	2999	3807	3795	-11	0	0	3797	3797	341	338
12:00	49.98	2823	2787	-36	0	0	2790	2790	3046	3009	-37	0	0	3012	3012	4065	4016	-50	0	0	4019	4019	338	334
13:00	49.98	2844	2810	-34	0	0	2813	2813	3027	2992	-36	0	0	2995	2995	4154	4107	-48	0	0	4110	4110	345	342
14:00	49.98	2785	2743	-42	0	0	2746	2746	3007	2962	-44	0	0	2966	2966	4022	3963	-59	0	0	3967	3967	338	337
15:00	49.96	2816	2793	-23	0	0	2797	2797	3029	3005	-24	0	0	3009	3009	4065	4033	-32	0	0	4039	4039	344	341
16:00	49.97	2735	2694	-41	0	0	2697	2697	3070	3024	-46	0	0	3028	3028	4025	3967	-59	0	0	3971	3971	335	332
17:00	49.98	2624	2574	-50	0	0	2576	2576	3079	3020	-60	0	0	3022	3022	3633	3565	-68	0	0	3567	3567	356	354
18:00	49.99	2531	2508	-23	0	0	2509	2509	3059	3031	-28	0	0	3033	3033	3485	3456	-29	0	0	3457	3457	352	352
19:00	50.01	2963	2923	-40	0	0	2924	2924	3343	3297	-46	0	0	3298	3298	3590	3540	-50	0	0	3541	3541	357	359
20:00	50.02	3048	3002	-46	0	0	3002	3002	3470	3415	-55	0	0	3416	3416	3367	3312	-55	0	0	3313	3313	353	361
21:00	50.00	2957	2897	-59	0	0	2899	2899	3249	3184	-64	0	0	3186	3186	3190	3125	-65	0	0	3126	3126	361	368
22:00	50.01	2967	2925	-42	0	0	2926	2926	3257	3212	-45	0	0	3213	3213	3323	3277	-46	0	0	3279	3279	351	365
23:00	49.99	3180	3159	-21	0	0	3162	3162	3356	3334	-22	0	0	3336	3336	3405	3382	-23	0	0	3385	3385	348	365
24:00	50.01	3159	3110	-49	0	0	3111	3111	3346	3293	-53	0	0	3294	3294	3305	3256	-50	0	0	3257	3257	346	363
Avg.	**50.00**	**2906**	**2871**	**-35**	**0**	**0**	**2872**	**2872**	**3216**	**3177**	**-39**	**0**	**0**	**3179**	**3179**	**3587**	**3544**	**-43**	**0**	**0**	**3546**	**3546**	**351**	**354**
00 TO 06 HRS.	50.00	2848	2816	-32	0	0	2817	2817	3236	3200	-36	0	0	3201	3201	3236	3201	-35	0	0	3203	3203	354	359
06 TO 12 HRS.	50.02	3008	2976	-31	0	0	2977	2977	3246	3213	-33	0	0	3214	3214	3851	3811	-40	0	0	3812	3812	354	351
12 TO 18 HRS.	49.98	2722	2687	-35	0	0	2690	2690	3045	3006	-40	0	0	3009	3009	3897	3848	-49	0	0	3852	3852	345	343
06TO 18 HRS.	50.00	2865	2832	-33	0	0	2834	2834	3146	3109	-36	0	0	3111	3111	3874	3830	-45	0	0	3832	3832	349	347
18 TO 24 HRS.	50.01	3046	3003	-43	0	0	3004	3004	3337	3289	-48	0	0	3290	3290	3363	3315	-48	0	0	3317	3317	353	364

Discomwise Hourly Average Schedule Drawal , Actual Drawal &Over(+)/Under(-) Drawal
Month :- May 2023

FIGURES IN MW

Hrs.	FREQ.	EZONE							CZONE							WZONE							Railway	
		SCH	Demand Met	O/U DRL	SCH LS	Unsch LS	Restricted Demand	Unrestricted Demand	SCH	Demand Met	O/U DRL	SCH LS	Unsch LS	Restricted Demand	Unrestricted Demand	SCH	Demand Met	O/U DRL	SCH LS	Unsch LS	Restricted Demand	Unrestricted Demand	Total Sch	Total Drawal
1:00	50.03	3135	3057	-79	0	0	3057	3057	3525	3434	-90	0	0	3435	3435	3259	3184	-75	0	0	3184	3184	364	366
2:00	50.02	3036	2974	-62	0	0	2974	2974	3396	3328	-68	0	0	3328	3328	3178	3120	-58	0	0	3120	3120	359	360
3:00	50.01	3002	2981	-21	0	0	2982	2982	3290	3269	-21	0	0	3270	3270	3218	3196	-22	0	0	3197	3197	350	350
4:00	50.01	2996	2947	-50	0	0	2948	2948	3234	3185	-49	0	0	3186	3186	3199	3146	-53	0	0	3147	3147	363	363
5:00	49.99	2885	2847	-38	0	0	2849	2849	3225	3190	-36	0	0	3192	3192	3215	3170	-45	0	0	3172	3172	349	349
6:00	50.00	2925	2888	-37	0	0	2890	2890	3426	3381	-45	0	0	3384	3384	3335	3292	-43	0	0	3294	3294	361	361
7:00	50.03	3055	3000	-55	0	0	3000	3000	3401	3337	-63	0	0	3338	3338	3486	3422	-64	0	0	3422	3422	367	366
8:00	50.05	2964	2919	-45	0	0	2919	2919	3329	3278	-50	0	0	3279	3279	3468	3415	-52	0	0	3416	3416	349	348
9:00	50.03	2933	2909	-24	0	0	2909	2909	3386	3359	-28	0	0	3360	3360	3411	3383	-28	0	0	3384	3384	362	362
10:00	50.00	2950	2898	-52	0	0	2900	2900	3312	3254	-58	0	0	3256	3256	3505	3443	-62	0	0	3445	3445	354	354
11:00	50.02	2961	2909	-52	0	0	2910	2910	3245	3190	-55	0	0	3190	3190	3601	3538	-63	0	0	3539	3539	346	346
12:00	49.97	2941	2903	-38	0	0	2906	2906	3199	3159	-41	0	0	3162	3162	3791	3743	-48	0	0	3747	3747	333	333
13:00	49.96	2942	2933	-10	0	0	2937	2937	3164	3154	-9	0	0	3159	3159	3844	3834	-11	0	0	3839	3839	342	342
14:00	49.97	2887	2872	-15	0	0	2875	2875	3184	3169	-15	0	0	3172	3172	3785	3766	-20	0	0	3770	3770	334	336
15:00	49.96	2898	2881	-17	0	0	2885	2885	3253	3232	-21	0	0	3236	3236	3818	3791	-27	0	0	3797	3797	342	342
16:00	49.99	2784	2755	-30	0	0	2757	2757	3301	3266	-35	0	0	3268	3268	3807	3767	-40	0	0	3770	3770	334	334
17:00	50.00	2647	2569	-77	0	0	2571	2571	3315	3221	-94	0	0	3223	3223	3572	3470	-102	0	0	3472	3472	354	354
18:00	50.01	2515	2466	-49	0	0	2467	2467	3110	3053	-57	0	0	3054	3054	3396	3335	-61	0	0	3336	3336	354	353
19:00	50.06	2785	2765	-20	0	0	2765	2765	3194	3173	-21	0	0	3173	3173	3455	3433	-22	0	0	3433	3433	357	359
20:00	50.00	3061	3027	-34	0	0	3028	3028	3461	3422	-39	0	0	3423	3423	3443	3403	-40	0	0	3404	3404	363	368
21:00	49.98	3005	2976	-29	0	0	2979	2979	3390	3357	-33	0	0	3361	3361	3272	3240	-32	0	0	3243	3243	364	366
22:00	50.01	3120	3105	-15	0	0	3106	3106	3433	3415	-18	0	0	3416	3416	3282	3265	-17	0	0	3266	3266	364	370
23:00	49.98	3314	3305	-10	0	0	3309	3309	3573	3561	-11	0	0	3565	3565	3397	3385	-11	0	0	3389	3389	360	373
24:00	50.03	3328	3265	-62	0	0	3266	3266	3565	3498	-67	0	0	3499	3499	3329	3267	-62	0	0	3267	3267	358	371
Avg.	**50.00**	**2961**	**2923**	**-38**	**0**	**0**	**2925**	**2925**	**3330**	**3287**	**-43**	**0**	**0**	**3289**	**3289**	**3461**	**3417**	**-44**	**0**	**0**	**3419**	**3419**	**353**	**355**
00 TO 06 HRS.	50.01	2997	2949	-48	0	0	2950	2950	3349	3298	-52	0	0	3299	3299	3234	3185	-49	0	0	3186	3186	358	358
06 TO 12 HRS.	50.02	2967	2923	-44	0	0	2924	2924	3312	3263	-49	0	0	3264	3264	3543	3491	-53	0	0	3492	3492	352	351
12 TO 18 HRS.	49.98	2779	2746	-33	0	0	2749	2749	3221	3182	-39	0	0	3185	3185	3704	3660	-43	0	0	3664	3664	343	343
06TO 18 HRS.	50.00	2873	2834	-39	0	0	2836	2836	3266	3223	-44	0	0	3225	3225	3624	3576	-48	0	0	3578	3578	347	347
18 TO 24 HRS.	50.01	3102	3074	-28	0	0	3075	3075	3436	3404	-31	0	0	3406	3406	3363	3332	-31	0	0	3334	3334	361	368

Discomwise Hourly Average Schedule Drawal , Actual Drawal &Over(+)/Under(-) Drawal
Month :- June 2023

FIGURES IN MW

Hrs.	FREQ.	EZONE							CZONE							WZONE							Railway	
		SCH	Demand Met	O/U DRL	SCH LS	Unsch LS	Restricted Demand	Unrestricted Demand	SCH	Demand Met	O/U DRL	SCH LS	Unsch LS	Restricted Demand	Unrestricted Demand	SCH	Demand Met	O/U DRL	SCH LS	Unsch LS	Restricted Demand	Unrestricted Demand	Total Sch	Total Drawal
1:00	50.01	3252	3207	-45	0	0	3207	3207	3423	3377	-46	0	0	3377	3377	3383	3337	-46	0	0	3337	3337	362	374
2:00	50.01	3176	3116	-60	0	0	3117	3117	3366	3302	-64	0	0	3303	3303	3329	3266	-63	0	0	3267	3267	367	373
3:00	50.01	3125	3102	-23	0	0	3103	3103	3271	3247	-24	0	0	3248	3248	3393	3368	-25	0	0	3369	3369	367	368
4:00	50.02	3082	3051	-31	0	0	3052	3052	3231	3200	-32	0	0	3200	3200	3322	3289	-33	0	0	3290	3290	373	373
5:00	50.00	2984	2965	-19	0	0	2966	2966	3217	3197	-20	0	0	3198	3198	3334	3313	-21	0	0	3314	3314	365	365
6:00	49.99	3024	2982	-42	0	0	2984	2984	3415	3369	-46	0	0	3371	3371	3399	3355	-44	0	0	3357	3357	371	370
7:00	50.01	3082	3042	-40	0	0	3042	3042	3380	3336	-44	0	0	3337	3337	3554	3508	-46	0	0	3509	3509	370	371
8:00	50.09	3031	2940	-91	0	0	2940	2940	3383	3281	-102	0	0	3281	3281	3615	3506	-109	0	0	3506	3506	356	357
9:00	50.06	2990	2903	-87	0	0	2903	2903	3304	3208	-96	0	0	3209	3209	3585	3481	-103	0	0	3481	3481	364	365
10:00	50.01	2914	2876	-38	0	0	2877	2877	3144	3105	-39	0	0	3106	3106	3596	3552	-43	0	0	3553	3553	356	356
11:00	50.02	2910	2863	-46	0	0	2864	2864	3135	3088	-47	0	0	3089	3089	3634	3580	-54	0	0	3581	3581	332	330
12:00	50.00	2948	2892	-56	0	0	2893	2893	3134	3076	-58	0	0	3077	3077	3766	3700	-67	0	0	3701	3701	333	333
13:00	50.01	2979	2953	-26	0	0	2956	2956	3116	3088	-29	0	0	3090	3090	3817	3783	-34	0	0	3787	3787	345	346
14:00	49.99	2937	2919	-17	0	0	2922	2922	3136	3120	-16	0	0	3123	3123	3786	3767	-20	0	0	3770	3770	342	342
15:00	49.98	2979	2939	-40	0	0	2942	2942	3188	3145	-43	0	0	3148	3148	3867	3815	-53	0	0	3818	3818	347	347
16:00	50.00	2863	2832	-31	0	0	2833	2833	3195	3160	-35	0	0	3162	3162	3922	3880	-41	0	0	3882	3882	331	331
17:00	50.01	2735	2666	-69	0	0	2667	2667	3203	3125	-78	0	0	3126	3126	3713	3623	-91	0	0	3624	3624	348	349
18:00	50.03	2552	2541	-11	0	0	2541	2541	3072	3058	-14	0	0	3058	3058	3544	3528	-16	0	0	3529	3529	351	351
19:00	50.02	2792	2761	-32	0	0	2762	2762	3193	3156	-37	0	0	3157	3157	3580	3541	-40	0	0	3542	3542	371	371
20:00	50.00	3132	3101	-31	0	0	3103	3103	3477	3442	-35	0	0	3444	3444	3520	3486	-34	0	0	3489	3489	362	364
21:00	49.99	3134	3085	-49	0	0	3087	3087	3449	3395	-54	0	0	3397	3397	3343	3290	-53	0	0	3292	3292	368	373
22:00	50.04	3234	3193	-40	0	0	3194	3194	3436	3394	-42	0	0	3394	3394	3326	3285	-41	0	0	3285	3285	351	363
23:00	50.00	3375	3343	-31	0	0	3346	3346	3466	3433	-32	0	0	3437	3437	3477	3444	-33	0	0	3447	3447	348	373
24:00	50.04	3357	3293	-64	0	0	3294	3294	3466	3399	-67	0	0	3400	3400	3400	3335	-66	0	0	3335	3335	352	379
Avg.	**50.01**	**3024**	**2982**	**-43**	**0**	**0**	**2983**	**2983**	**3283**	**3238**	**-46**	**0**	**0**	**3239**	**3239**	**3550**	**3501**	**-49**	**0**	**0**	**3503**	**3503**	**355**	**359**
00 TO 06 HRS.	50.01	3107	3070	-37	0	0	3071	3071	3320	3282	-38	0	0	3283	3283	3360	3321	-39	0	0	3323	3323	368	370
06 TO 12 HRS.	50.03	2979	2919	-60	0	0	2920	2920	3247	3182	-64	0	0	3183	3183	3625	3554	-70	0	0	3555	3555	352	352
12 TO 18 HRS.	50.00	2841	2808	-32	0	0	2810	2810	3152	3116	-36	0	0	3118	3118	3775	3733	-42	0	0	3735	3735	344	344
06TO 18 HRS.	50.02	2910	2864	-46	0	0	2865	2865	3199	3149	-50	0	0	3150	3150	3700	3643	-56	0	0	3645	3645	348	348
18 TO 24 HRS.	50.02	3171	3129	-41	0	0	3131	3131	3414	3370	-45	0	0	3372	3372	3441	3397	-44	0	0	3398	3398	359	371

Discomwise Hourly Average Schedule Drawal , Actual Drawal &Over(+)/Under(-) Drawal
Month :- July 2023

FIGURES IN MW

Hrs.	FREQ.	EZONE							CZONE							WZONE							Railway	
		SCH	Demand Met	O/U DRL	SCH LS	Unsch LS	Restricted Demand	Unrestricted Demand	SCH	Demand Met	O/U DRL	SCH LS	Unsch LS	Restricted Demand	Unrestricted Demand	SCH	Demand Met	O/U DRL	SCH LS	Unsch LS	Restricted Demand	Unrestricted Demand	Total Sch	Total Drawal
1:00	50.00	3227	3208	-20	0	0	3209	3209	3572	3549	-23	0	0	3551	3551	2730	2713	-17	0	0	2714	2714	375	378
2:00	50.00	3172	3153	-19	0	0	3154	3154	3484	3463	-21	0	0	3464	3464	2708	2691	-17	0	0	2692	2692	374	375
3:00	50.00	3143	3147	4	0	0	3148	3148	3457	3463	6	0	0	3463	3463	2654	2658	4	0	0	2658	2658	377	377
4:00	50.01	3137	3124	-13	0	0	3125	3125	3432	3417	-15	0	0	3418	3418	2663	2652	-12	0	0	2652	2652	375	375
5:00	50.01	3084	3083	0	0	0	3084	3084	3436	3433	-3	0	0	3433	3433	2734	2731	-3	0	0	2732	2732	369	369
6:00	49.98	3074	3064	-10	0	0	3067	3067	3614	3603	-11	0	0	3607	3607	3118	3109	-9	0	0	3112	3112	370	370
7:00	50.01	3181	3173	-8	0	0	3174	3174	3689	3679	-10	0	0	3680	3680	3334	3324	-10	0	0	3325	3325	376	376
8:00	50.03	3167	3116	-51	0	0	3117	3117	3688	3628	-60	0	0	3628	3628	3352	3297	-55	0	0	3297	3297	358	358
9:00	50.03	3124	3089	-35	0	0	3089	3089	3650	3609	-41	0	0	3610	3610	3198	3163	-36	0	0	3164	3164	371	371
10:00	50.01	3026	3008	-18	0	0	3009	3009	3611	3588	-23	0	0	3589	3589	3027	3008	-19	0	0	3009	3009	358	359
11:00	50.02	3018	2974	-44	0	0	2975	2975	3591	3538	-53	0	0	3539	3539	2899	2858	-41	0	0	2859	2859	357	356
12:00	50.01	2987	2951	-36	0	0	2952	2952	3492	3449	-42	0	0	3451	3451	2849	2814	-35	0	0	2815	2815	351	352
13:00	50.01	2948	2934	-14	0	0	2936	2936	3470	3453	-17	0	0	3455	3455	2806	2791	-14	0	0	2793	2793	354	354
14:00	50.01	2900	2896	-4	0	0	2897	2897	3443	3439	-4	0	0	3441	3441	2803	2799	-3	0	0	2801	2801	345	345
15:00	49.97	2918	2918	0	0	0	2922	2922	3475	3474	-1	0	0	3478	3478	2861	2859	-2	0	0	2863	2863	339	340
16:00	49.99	2840	2826	-13	0	0	2828	2828	3492	3476	-17	0	0	3478	3478	2909	2897	-12	0	0	2899	2899	339	339
17:00	49.98	2764	2738	-27	0	0	2740	2740	3556	3522	-34	0	0	3525	3525	2979	2950	-29	0	0	2952	2952	352	353
18:00	49.98	2729	2708	-21	0	0	2710	2710	3519	3494	-25	0	0	3497	3497	3111	3090	-21	0	0	3092	3092	357	357
19:00	50.02	2972	2951	-21	0	0	2952	2952	3540	3517	-23	0	0	3518	3518	3222	3202	-21	0	0	3203	3203	381	382
20:00	50.00	3288	3257	-31	0	0	3260	3260	3705	3670	-35	0	0	3673	3673	3171	3140	-31	0	0	3142	3142	365	383
21:00	50.00	3281	3248	-33	0	0	3250	3250	3562	3526	-36	0	0	3528	3528	2977	2946	-30	0	0	2948	2948	373	392
22:00	50.03	3311	3291	-20	0	0	3291	3291	3572	3551	-21	0	0	3551	3551	2893	2876	-17	0	0	2876	2876	359	377
23:00	50.01	3362	3338	-24	0	0	3340	3340	3660	3636	-24	0	0	3637	3637	2853	2835	-18	0	0	2836	2836	371	389
24:00	50.04	3342	3296	-46	0	0	3296	3296	3672	3622	-51	0	0	3622	3622	2804	2765	-39	0	0	2765	2765	377	387
Avg.	**50.01**	**3083**	**3062**	**-21**	**0**	**0**	**3063**	**3063**	**3557**	**3533**	**-24**	**0**	**0**	**3535**	**3535**	**2944**	**2924**	**-20**	**0**	**0**	**2925**	**2925**	**363**	**367**
00 TO 06 HRS.	50.00	3140	3130	-10	0	0	3131	3131	3499	3488	-11	0	0	3489	3489	2768	2759	-9	0	0	2760	2760	373	374
06 TO 12 HRS.	50.02	3084	3052	-32	0	0	3053	3053	3620	3582	-38	0	0	3583	3583	3110	3077	-33	0	0	3078	3078	362	362
12 TO 18 HRS.	49.99	2850	2837	-13	0	0	2839	2839	3492	3476	-16	0	0	3479	3479	2911	2898	-14	0	0	2900	2900	348	348
06TO 18 HRS.	50.01	2967	2944	-23	0	0	2946	2946	3556	3529	-27	0	0	3531	3531	3011	2988	-23	0	0	2989	2989	355	355
18 TO 24 HRS.	50.02	3259	3230	-29	0	0	3231	3231	3618	3587	-32	0	0	3588	3588	2987	2961	-26	0	0	2962	2962	371	385

F. No.09/01/2021-RCM
Government of India
Ministry of Power
(RCM Division)
***

Shram Shakti Bhawan, Rafi Marg,
New Delhi, the 28th June, 2023

To

1. ACS/Principal Secretaries/Secretaries (Power/Energy) of all State Governments/UTs.
2. CMD/MDs of State Gencos/ Discoms
3. All Central Power Sector Utilities

Sub: Guidelines for Resource Adequacy Planning Framework for India-reg.

Sir/Madam,

The Ministry of Power has issued Electricity (Amendment) Rules, 2022 on 29th December, 2022.

2. In exercise of the powers conferred under the Rule 16 of Electricity (Amendment) Rules, 2022, the Guidelines for Resource Adequacy Planning Framework for India, framed in consultation with Central Electricity Authority (CEA), are hereby issued. The guidelines are placed at **Annexure**.

3. These guidelines shall be followed by all the institutions and stakeholders, who shall ensure sufficient tie up of capacities to meet resource adequacy requirements on different time horizons.

4. This issues with the approval of **Hon'ble Minister of Power and New & Renewable Energy.**

Yours sincerely,

Hemant
28/06/23

(Hemant Kumar Pandey)
Chief Engineer (R&R)
Tel. No. 011-23710389

Encl: As above

Copy to:

1. Secretary, Ministry of New & Renewable Energy, New Delhi
2. The Chairperson, CEA, New Delhi
3. The Secretary, CERC, Chanderlok Building, Janpath, New Delhi
4. Secretaries of All State Electricity Regulatory Commissions/JERCs

Copy for information to:

1. PS to Hon'ble Minister of Power and NRE
2. APS to Hon'ble Minister of State for Power & Heavy Industries
3. Sr. PPS to Secretary(P)/ PPS to SS&FA/ PPS to AS (EC&ET/Hydro)/ PPS to JS (Thermal/Distribution)/ PPS to JS (Trans)/ PPS to JS (Hydro) / PPS to EA/ PPS to CE (OM)
4. All DS/Directors, Ministry of Power
5. Technical Director, NIC (with the request to publish it on Ministry of Power's website)

ANNEXURE

GUIDELINES

FOR

RESOURCE ADEQUACY PLANNING

FRAMEWORK FOR INDIA

(Framed under the Rule 16 of Electricity (Amendments) Rules, 2022)

JUNE 2023

INDEX

In exercise of the powers conferred under the Rule 16 of Electricity (Amendment) Rules, 2022, the Ministry of Power, Government of India, in consultation with Central Electricity Authority (CEA) hereby issues the guidelines for Resource Adequacy for the Indian electricity sector. These guidelines shall be followed by all institutions and stakeholders, as provided in these guidelines.

SECTION – 1

Introduction

1.1. For the past few years, India has been the fastest growing large economy in the World; and the growth will continue. Currently, it is the fifth largest economy in the World; and it is poised to become the third largest economy by 2030. This will only be possible if there is sufficient electricity to power this growth. It is essential that generation capacity is added at a pace matching the growth in demand- and in fact slightly ahead of the demand; so that the shortage of electricity does not slow down growth. Resource Adequacy planning is designed to ensure this. The guidelines aim to achieve the following key objectives:

1.1.1. Energy for growth: It is necessary to timely add adequate generation capacity to meet the projected demand while maintaining necessary reserves.

1.1.2. It is incumbent upon the DISCOMs to supply 24 X 7 reliable power to its consumers. All DISCOMs are duty bound to tie up sufficient capacity to meet the demand of its consumers. If any DISCOM does not do so, it is failing in its duty. Compliance to the Resource adequacy norms and Guidelines shall ensure that DISCOMs tie up sufficient capacity to meet the demand of the area they are licensed to serve. Rights of Electricity Consumers Rules, 2020 prescribe payment of compensation to consumers for avoidable load shedding.

1.1.3. The capacity which the DISCOMs tie up shall be a judicious mix of long/medium and short term contracts to ensure security of supply to their consumers at least cost. Over reliance on the electricity market is to be avoided.

1.1.4. As a part of its Nationally Determined Contributions (NDCs) to combat climate change, India has pledged that by 2030 it will have 50 percent of its power generation capacity coming from non-fossil sources. Accordingly, all obligated entities must fulfil their Renewable Purchase Obligation (RPO). Compliance with RPO will also include compliance with targets for Roof top solar and other Distributed Renewable Energy segments.

1.2. Resource Adequacy means tying up sufficient capacity to reliably serve expected demand of the consumers in the DISCOMs license area in a cost effective manner. Reliability is measured through the instances/probability of system peak exceeding the contracted capacity that is effectively available at a National/State level. The guidelines aim to establish a Resource Adequacy framework for power procurement by distribution licensees, ensuring a reliable operation of the power system across all timeframes. The Resource Adequacy exercise will assess the required capacity to be contracted on long term, medium term, and short-term basis. A key aspect of resource adequacy planning is to ensure that adequate generation capacities are available, round-the-clock, to reliably serve demand, under various scenarios. This translates into requirement of an adequate reserve to cater to varying levels of demand and supply conditions prevailing in the grid.

1.3. The resource adequacy framework lays down the optimal capacity mix required to meet the projected demand at minimum cost. New generation capacities, energy storage and other flexible resources needed to reliably meet future demand growth at optimal cost to the system will be timely assessed. It must also incorporate likely retirement of existing capacity on account of completion of economic life.

1.4. Procurement actions according to Resource Adequacy framework must be taken up timely by DISCOMs so that generation capacity becomes available well before its requirement to meet projected growth.

1.5. The implementation of these guidelines shall be ensured by the Appropriate Commission.

SECTION – 2

Resource Adequacy Plan to arrive at optimal capacities in the long-term and fulfil Resource Adequacy

2.1 The DISCOM will draw up the demand profile; the demand growth rate; the present contracted capacity and the quantity being procured from the Power Exchanges. The plan shall be drawn up keeping in view the fact that gratuitous load shedding entails penalties as per the present Rules-therefore load shedding is not an option.

2.2 The plan will undertake a least cost generation optimization to meet the demand such that it minimizes the overall system cost - including operations and maintenance costs, costs to procure spinning reserves, fuel costs, start-up, and shut-down costs of generating units. The optimization includes all constraints related to power plant operations like ramp-up / ramp-down limits, start-up/ shut-down limits and their costs, generation limits, energy storage operations, interconnection limits (import/export), renewable addition(RPO) targets, Solar Rooftop/ distributed generation capacities, retirement schedules of existing generation plants, planning reserve margin etc. The Resource Adequacy exercise shall have a planning horizon of 10 years on a rolling basis.

2.3 A consideration to include energy storage and other flexible resources, which is necessary in balancing out the variability and intermittency of RE, should be included for increasing reliability and reducing system costs.

2.4 Resource adequacy shall be determined based on the resource availability and accessibility after taking into account the possibility of sharing of resources from other utilities/ states.

2.5 The Resource Adequacy Plan will lay down the **quantum and type of resources** required in the portfolio of a distribution licensee to meet the demand in an optimal (least cost and secure) manner. The plan shall give the **year-on-year optimal generation** (conventional plus Renewable) and **storage capacities required to meet the system demand** and the **planning reserve margin** securely and at least cost.

2.6 The data requirements and methodology for preparation of Resource Adequacy Plan have been provided as Annexure E.

SECTION – 3

Institutional mechanism for Resource Adequacy and Compliance Monitoring

3.1 The Central Electricity Authority shall publish Long-term National Resource Adequacy Plan (LT-NRAP) which shall determine the optimal Planning Reserve Margin (PRM) requirement at the All-India level conforming to the reliable supply targets.

a) The report shall publish the national-level PRM as a guidance for all the States/UTs to consider while undertaking their RA exercises.

b) The report shall also publish the Optimal Generation mix for the next 10 years required to ensure that the national-level system is RA compliant while meeting the All-India demand at least-cost. This shall guide capacity buildout investments in the country.

c) The report shall also publish the capacity credits for different resource types on a regional basis.

d) The report shall specify the State/UT's contribution towards national peak.

e) The LT-NRAP shall be updated annually.

3.2 NLDC shall annually publish a one-year look-ahead Short-term National Resource Adequacy Plan (ST-NRAP) which shall include parameters such as demand forecasts, resource availability based on under-construction status of new projects, planned maintenance schedules of existing stations, station-wise historic forced outage rates and decommissioning plans.

3.3 The hourly demand forecasts used by CEA and NLDC shall be aligned with the projections furnished by individual Distribution Licensees to CEA and NLDC. The STU / SLDC, on behalf of the distribution licensees in the State shall provide to CEA and NLDC by the month of May every year, the details regarding demand forecasts (peak and energy requirement) for the next 10 years, assessment of existing generation resources and such other details as may be required for the LT-NRAP and ST-NRAP.

3.4 The LT-NRAP and ST-NRAP shall be published by the month of July for the period starting from the month of April in the subsequent year.

3.5 The LT-NRAP shall allocate the share in national peak for each state. In States/UTs where there are multiple distribution licensees, the respective STU / SLDC shall allocate each

distribution licensee's share in the national peak within 15 days of the publication of LT-NRAP.

3.6 Based on the share in national peak provided in LT-NRAP, each distribution licensee shall plan to contract the capacities (peak contribution * (1 + National level PRM)) prescribed by LT-NRAP or higher to be procured to meet their Resource Adequacy Requirement (RAR) at the time of national peak. The distribution licensees shall demonstrate to the SERC/JERC 100% tie-up for the first year and a minimum 90% tie-up for the second year to meet the requirement of their contribution towards meeting national peak. Only resources with long / medium / short-term contracts shall be considered to contribute to the RAR.

The share of long-term contracts is suggested to be in the range of 75-80%[1] of the total supply side RAR, or as specified by the respective SERC/JERC. The medium–term contracts are suggested to be in the range of 10% - 20% of the total supply side RAR while the rest can be met through short-term contracts. Power procurement through the power exchanges, such as the Day-Ahead Market segment, shall not be considered to contribute to RAR. However, these ratios of long, medium and short term contracts may be reviewed periodically based on further experience.

For subsequent three years, the distribution licensees shall furnish a plan to meet estimated requirement of their contribution to meet national peak for SERC/JERC approval.

3.7 Each Distribution licensee shall undertake a Resource Adequacy Plan (RAP) for a 10-year horizon (Long-term Distribution Licensee Resource Adequacy Plan (LT-DRAP)) to meet their own peak and electrical energy requirement. The plan shall be vetted/validated by Central Electricity Authority for leveraging the benefit of national level optimization for the Distribution licensees. The LT-DRAP shall be undertaken as per the methodology outlined in Annexure-E of these guidelines.

3.7.1 The distribution licensees shall take inputs if required from the LT-NRAP like PRM, capacity credits, etc., while formulating their LT-DRAP and submit their plans to CEA by the month of September for the period starting from the month of April in the subsequent year.

[1] This value is subject to change from time to time, as guided by CEA

3.7.2 After being vetted by CEA, the plan LT-DRAP along with details for meeting the RAR of national peak for the utility may be submitted to SERC/JERC by the month of November for the period starting from the month of April in the subsequent year for their approval.

3.7.3 Distribution licensees are free to consider higher planning reserve margins, subject to approval from the SERC/JERC.

3.7.4 The LT-DRAP shall be carried out by the distribution licensees on an annual rolling basis considering the contracted capacity as a part of the system and shall optimize for additional capacity required.

3.8 Distribution licensees, through the LT-DRAP, shall also demonstrate to the SERC/JERC, their plan to meet their Peak demand and energy requirement with a mix of long-term, medium-term and short-term contracts, including power exchanges. The composition of the contracts will depend upon the load curve of each distribution utility. The share of long-term contracts is suggested to be atleast 75% of the required capacities as per LT-DRAP or as specified by the respective SERC/JERC. The medium–term contracts are suggested to be in range of 10-20% while the rest can be met through short-term contracts. Distribution licensees shall also demonstrate their plans to contract existing capacities and plans to build or contract future capacity for the planning horizon.

3.9 The share of long-term contracts in the entire mix of the contracts of the utility shall be atleast the maximum of the quantum of long term contracts determined for meeting RAR of national peak and quantum obtained from LT-DRAP for fulfilling own energy and peak requirement.

3.10 The Distribution Licensee shall submit the details of the contracted capacities for the ensuing year for meeting RAR of national peak to the respective STU / SLDC after approval of respective SERC/JERC by the month of January. The STUs / SLDCs shall aggregate the total contracted capacities at the state level and submit the information to the respective RLDC. The RLDCs shall aggregate the capacities at the regional level and submit the information to the NLDC by the month of February. NLDC shall aggregate the capacities at the national level and check compliance with ST-NRAP and identify shortfall for the ensuing year, if any. In case of shortfall, NLDC shall either communicate the shortfall to the SERC/JERC for compliance or facilitate a national-level auction for the balance capacity[2] with participation from distribution licensees with capacity shortfall[3]. The

[2] $balance\ capacity = (1 + National\ PRM) \times NationalPeak\ - sum\ of\ contracted\ capacities$

contracting for the balance capacity shortfall shall be completed by the month of March prior to the start of the delivery year (1st April). NLDC shall come out with a methodology to carry out national level auction for the procurement of the balance capacity.

3.11 The STUs/SLDC shall prepare one-year look ahead ST-DRAP (Short term Distribution Resource Adequacy Plan), on an annual basis for operational planning, at the state level based on the LT-DRAP study results. The SLDC shall review the ST-DRAP on a daily, monthly and quarterly basis based on actual availability of generation resources.

3.12 In terms of Section 86(1)(b) of the Electricity Act, 2003, the Appropriate Commission may ensure the compliance of Resource Adequacy Planning by the distribution licensees. The Appropriate Commission may also specify the non-compliance charges."

3.13 The CERC in consultation with the Forum of Regulators (FOR) may come out with model regulations for implementing the resource adequacy process in the States/UTs and the distribution utilities.

3.14 A schematic illustrating the Resource Adequacy implementation timelines is given in **Annexure F**.

[3] $capacity\ shortfall = (1 + National\ PRM) \times Licensee\ Demand\ during\ National\ Peak - sum\ of\ contracted\ capacities\ by\ the\ licensee$

Section 4

Guidelines for Procurement of Required Resources

4.1 The outcome of the Resource Adequacy Studies would provide the **quantum and type of generation resources** required in the portfolio of a distribution licensee to meet the demand in an optimal (least cost and secure) manner. The future capacity mix may comprise of existing capacities, planned capacities and capacity addition required to meet the increasing demand of the utility considering appropriate gestation period of the generation resource.

4.2 The distribution licensee shall contract the optimal portfolio of resources to meet its future demand and Resource Adequacy Requirement (RAR) obligations, based on the output derived from the LT-NRAP study results. Long / medium / short-term firm contracts of generation resources shall be considered to contribute to the RAR. Power procurement through the power exchanges, such as the Day-Ahead Market segment, shall not be considered to contribute to RAR.

4.3 The distribution licensee shall contract additional resources source-wise if required based on the LT-DRAP to meet its own peak demand.

4.4 The states can either put up their own generation capacities for meeting their future demand or the respective state distribution licensee shall procure the required resources through the tariff based competitive bidding guidelines for procurement of power notified under the provisions of section 63 of the Electricity Act 2003.

4.5 The power capacity procurement from renewable energy sources for fulfilling the RPO targets shall be carried out taking into account the RE potential in that State and fungibility within the RE resources as per the latest RPO order. The power procurement corresponding to wind, solar PV, Wind solar Hybrid, Round the Clock (RTC) power shall be carried out as per the guidelines for tariff based competitive bidding process for procurement of power from respective grid connected wind, solar PV, Wind solar Hybrid, Round the Clock (RTC) power projects.

4.6 The Distribution Licensee can contract storage capacity corresponding to the results of LT-DRAP capacity addition requirement for future years as per the guidelines issued under the provisions of Section 63 of the Electricity Act, 2003 for procurement of energy from BESS through competitive bidding, from grid connected Projects.

4.7 The Distribution Licensee can contract power through Central Agencies / Intermediaries / Traders / Aggregators / Power Exchanges or through bilateral agreements / Banking arrangement with other distribution licensees. The Distribution Licensee can carry out power procurement on short-term and medium term basis through DEEP and PUShP portal.

4.8 The distribution licensee must ensure that procurement process for the projected demand is undertaken and completed sufficiently in advance so that the procured capacity becomes available when it is required to serve the projected load. The following table gives the number of years before which procurement process must be completed in advance as compared to the year of projected requirement for various types of generation and types of procurement:

Resource	**Long Term**	**Medium Term**
Coal/Lignite Based Capacity	7	2
Hydro	9	2
Solar	2	1
Wind	3	1
PSP	5	3
Other Storage	2	1
Nuclear	9	3

ANNEXURE A

Key design parameters for RA framework

- **Reliability** is key to power systems operations and hence adequacy of supply needs to be maintained at all points in time. There could be unavoidable outages, due to unforeseen circumstances and reasons, but the resource adequacy planning should be such that these outages (loss of load events) are minimized..
- **Loss of Load Probability (LOLP)** is a measure of the probability that a system's load may exceed the generation and firm power contracts available to meet that load in a year

Parameter	Definition
Loss of Load Probability (LOLP)	Measure of the ***probability that a system's load may exceed the generation*** and firm power contracts available to meet that load in a year. E.g., 0.0274 % probability of load being lost.

- Additionally, another metric which could be utilized in conjunction with LOLP is the **Expected Energy Not Served (EENS).**

Parameter	Definition
Expected Energy Not Served (EENS)	Expected amount of energy (MWh) that may not be served for each year within the planning period under study. It is a summation of the expected number of megawatt hours of demand that may not be served for the year. This is an energy-centric metric that considers the magnitude and duration of energy being not served, calculated in MegaWatt hours (MWh). The metric can be normalized (i.e., divided by total system load) to create a Normalized Energy Not Served (NENS) metric.

- "Normalized ENS(NENS)" is the total expected load shed due to supply shortages (MWh) as a percent (%) of the total system energy, and therefore represents an overall percentage of system load that cannot be served.
- Most systems in advanced electricity markets use LOLP / NENS as the RA planning criteria.
- To meet the prescribed standard of LOLP / NENS conditions, sufficient reserve margins need to be maintained in the system for adequately addressing the demand and supply variations. **Planning Reserve Margin (PRM)** is the predominant metric used to ensure adequacy of

generation resources in the system. PRM in a power system is expressed as a certain % of peak load forecast of the system.

- CEA, from time to time, publishes the desired values for reliability indices such as LOLP and NENS required for resource adequacy in India and accordingly estimate the PRM required to be maintained optimally at the national level. The LOLP and NENS values adopted by CEA for the purposes of the National Electricity Plan (NEP) are 0.2% and 0.05%, respectively.

  Similarly, system studies can be undertaken by the utilities to determine the PRM through any scientific method, provided the reliability criteria (LoLP and NENS) are more stringent or as guided by CEA from time to time[4]. The methodology for conducting the Optimal Reserve Margin study is highlighted in **ANNEXURE B.**

[4] In future amendments, once the RA process is established, utilities can conduct their own reliability studies to determine the optimal level of reliability (LoLP and NENS) of supply side portfolio as per the methodology prescribed in ANNEXURE A and ANNEXURE C. In case of any shortfall, NLDC can communicate to RLDCs/SLDCs the shortfall or facilitate a national-level auction for the balance capacity with participation from distribution licensees with capacity shortfall.

ANNEXURE B

Determination of LOLP / NENS, Optimal Planning Reserve Margin (PRM) and Resource adequacy targets

- The optimal level of "target" or "planning" reserve margins should be arrived at through measures such as "Loss of Load Probability (LoLP)" and Normalized Energy Not Served (NENS). Loss of load can happen due to various factors such as:
    - Forced outages/planned maintenance of conventional generation
    - Real time unforeseen excursion in demand/demand forecast errors
    - Generation forecast errors /RE intermittency
- A loss of load occurs when the system load exceeds available in a particular time. Appropriate LOLP / NENS metrics should be considered based on consultation with stakeholders and international best practices.
- The first step in determining the Resource Adequacy targets would be to determine the target generation capacities at a nominal Planning Reserve Margin using a **generation planning** model.
- Once the generation capacities are estimated, it becomes important to estimate the several demand-supply patterns and then determine if the required generation capacity in the system can always meet demand reliably by calculating the loss of load and energy not served. A natural outcome of the above objective is to construct many possible future scenarios based on the uncertainty surrounding the demand for power, intermittency of RE sources, availability of power plants, tie-lines, inter-state and inter-regional transmission constraints etc. These future scenarios shall be constructed based on following indicative parameters viz:
    - Demand variations / forecast errors
    - Hydro conditions (normal, wet, or dry years)
    - Planned and forced outages of power plants and interconnectors
    - RE Generation forecast errors, etc.
- **Multiple future scenarios** should be created using stochastic models to account for **uncertainty** and analyse any occurrence of lost load. Each such future scenario is

established based on historical data. The key inputs for generating future possible states are as follows:

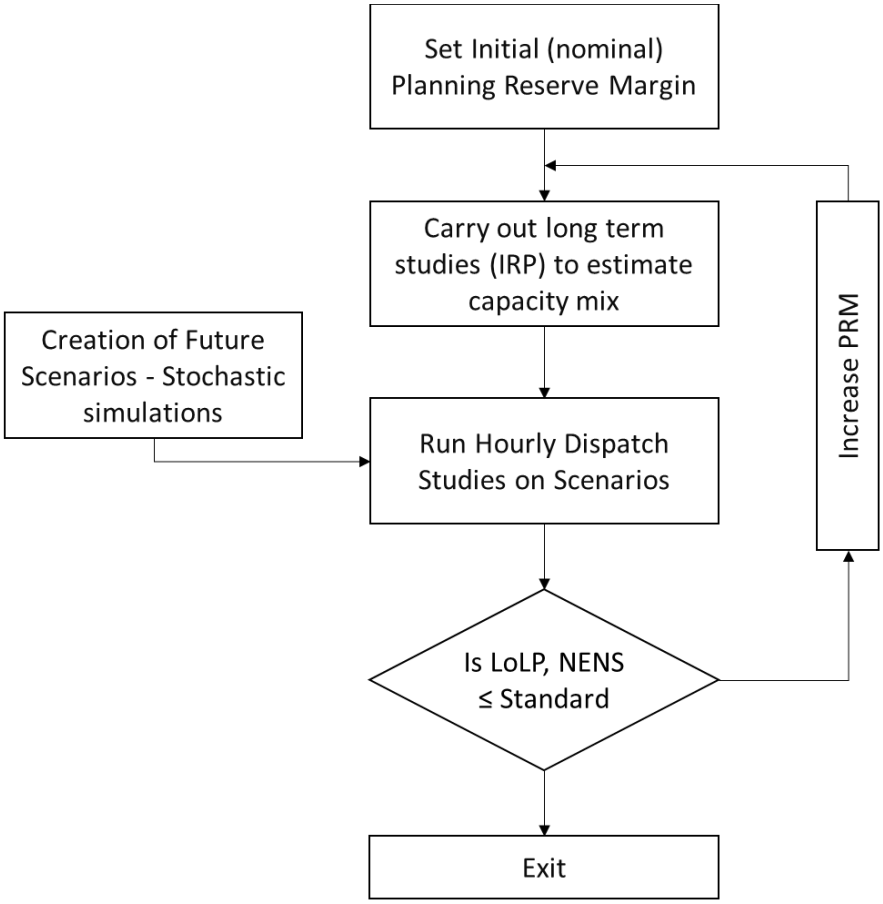
- **Demand volatility:** Uncertainty in demand can be built into the model through two categories, long-term uncertainty driven by underlying factors such as load growth forecasting errors, unanticipated economic growth, etc., and short-term uncertainty which may be defined as the sum of a typical (or mean) monthly load pattern for the day and the historical deviation observed from the mean load.
- **Conventional generator outages:** Planned outages and scheduled maintenance for thermal generators may be scheduled either based on historic patterns or during low demand periods based on a uniform probability distribution. For forced outages, Monte Carlo draws for each unit based on historical outage rates may be simulated.
- **Variable Renewable Generation Intermittency:** To capture the intermittency of solar and wind plants, PV, and wind generation data of past several years can be analysed and multiple scenarios which match the projected CUF levels may be created. Annual CUF projections may also be generated through Monte Carlo Draws based on the annual CUFs observed in the historical profiles.
- **Availability of ATC for short-term import:** In the distribution licensee-level / State-level planning, short-term import is limited to the available transfer capability. However, as there is no visibility about the power generation profile of other States, unpredictability in the availability of tie line power form other utilities and regions must be factored in. To incorporate the above-mentioned unpredictability, availability of each tie line for each hour can be derated by a factor drawn from a probability distribution using Monte Carlo Simulations. Details on the appropriate probability distribution to be considered may be provided by NLDC / CEA from time to time.

- Once the demand-supply projections / scenarios are established and the possible future states are predicted, a demand-supply matching simulation with the estimated capacities should be performed. The objective of such a simulation would be to use the capacities obtained from the Resource Adequacy Plan to meet the demand and assess the duration of the loss of load events and energy not served for each scenario and for the specified planning margin/capacity mix.
- The above process needs to be then iterated by **incrementing** the **planning reserve margin levels** until the **desired levels of LOLP / NENS** is achieved in the system. This iterative

model would enable identification of a target PRM level as per the desired LOLP figures. An illustrative flowchart of the process is shown in Figure 1.

- While arriving at the target LOLP / NENS figures, consideration should be given to system costs. The objective should be to have an optimal level of Reserve margins which would represent the optimal trade-off between system costs and reliability. For this purpose, an evaluation of the marginal cost of reducing load shed is required. The PRM at which the marginal cost of reducing load shed is equal to the Value of Lost Load as defined by the distribution licensee is the economically optimal PRM. The procedure of calculation of marginal cost of reducing load shed is given in Annexure **D**.

Figure 1: Flowchart of the Optimal Reserve Margin Study



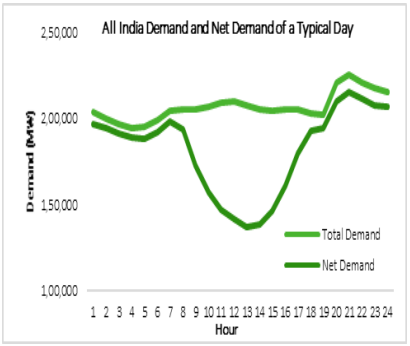
ANNEXURE C

Determination of capacity credits for Renewable resources

- This step is important for determining how much of energy-limited resources (hydro, wind, solar, storage) may count toward resource adequacy requirements. Generation planning is set to become more complex as larger amounts of weather-based, variable renewable generation are added to the system. This is because resources such as wind and solar PV are intermittent, and their generation may not coincide with periods of peak demand.
- Each generator can provide a "firm capacity," which represents the amount of power the generator can reliably provide. Capacity credit expresses firm capacity as a percentage of the installed nameplate capacity.
- Following are the various methodologies to determine capacity credits of Renewable energy adopted internationally. These methodologies can also be extended to demand response resources.

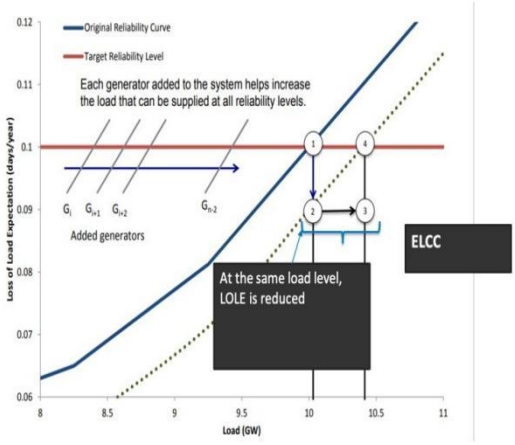
a) **Capacity credit approximation with Top Demand Hours**: In this case, a basic approximation of capacity credit can be obtained by averaging the historical contribution of a generator / generator class during peak demand hours. The selection of how many peak demand hours to include, however, often varies across geographies.

b) **Capacity credit approximation with Top Net Load Hours:** In this case, consideration is given to the fact that periods of system stress occur when high demand coincides with low renewable energy generation. A metric called 'net load' is defined as 'total renewable energy generation subtracted from overall demand', which must be met from dispatchable resources like thermal plants, hydro plants, etc. Due to system stress caused by the duck curve, net load is a better proxy for system stress for new capacities than peak demand. In this method, capacity credit can be obtained by averaging the contribution of a generator / generator class during top net load hours.



c) **Expected Load carrying capability:** In this method, a model uses an hourly time-series demand data for a particular period. The model also uses the availability of different generation resources in each hour of the year. Random outages of generators

are also applied considering the historical and expected outage conditions. Determine supply matching is used to determine the LOLP of the system.



- To calculate capacity credit, the model first removes a generator from the system and calculates the system LOLP. This represents Point 1 in the system reliability curve, as shown alongside.
- The model then adds the generator back to the system and repeats the LOLP calculation. The additional generator increases system-wide firm capacity and resource adequacy, so the curve shifts right to Point 2 (system reliability is higher), and so it can accommodate more load at the previous LOLP (Point 4). The additional load that can be accommodated represents the generator's ELCC.

- The Capacity Factor Approximation with Top Net Load Hours can be considered to determine the capacity credits for new resources and the Top Demand Hours methodology can be considered to determine the capacity credits for existing resources. The ELCC method can be adopted later, once the required capabilities and data are available with the state utilities.
- The utilities may plan their firm capacity as per their contribution in the national peak which implies that the capacity credits of all resource types are to be calculated on the national-level load profile.
- The calculation of firm capacity to meet the Resource Adequacy Requirement (RAR) is shown below:

$$RAR = \sum_{i=1}^{num\_solar} Solar\_Capacity * Solar\_Capacity\_Credit + \sum_{i=1}^{num\_wind} Wind\_Capacity * Wind\_Capacity\_Credit + \sum_{i=1}^{num\_hydro} Hydro\_Capacity * Hydro\_Capacity\_Credit + \sum_{i=1}^{num\_thermal} Thermal\_Capacity * Thermal\_Capacity\_Credit + \sum_{i=1}^{num\_nuclear} Nuclear\_Capacity * Nuclear\_Capacity\_Credit + \sum_{i=1}^{num\_storage} Storage\_Capacity * Storage\_Capacity\_Credit + \sum_{i=1}^{num\_other} OtherResource\_Capacity * OtherResource\_Capacity\_Credit + \sum_{i=1}^{num\_other} Import\_limit * capacity\_credit$$

ANNEXURE D

Marginal Cost of Reducing Load Shed

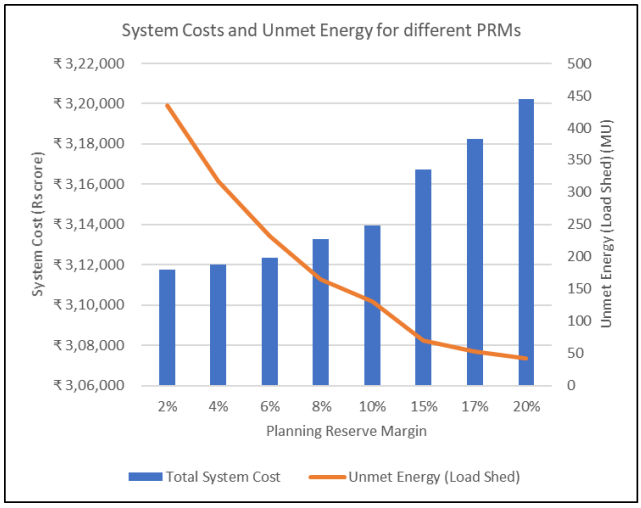
- The marginal cost of reducing load shed is the effective increase in cost for every unit of load shed reduced. It is calculated as the increase in system costs by the reduction in load shed:

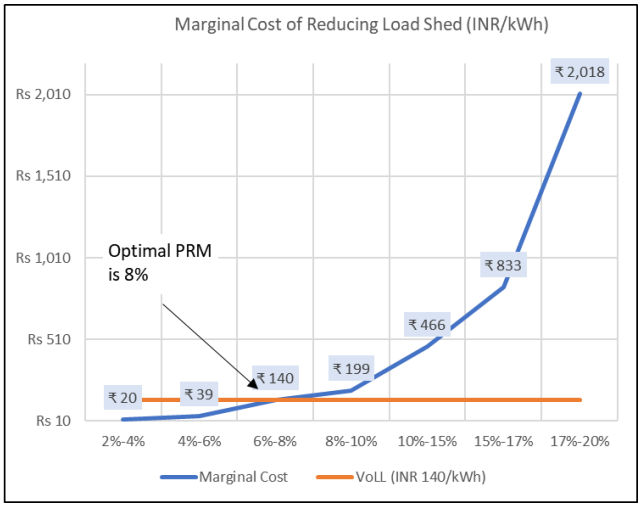
$$Marginal\ Cost = \frac{System\ Cost_{PRM_{i+1}} - System\ Cost_{PRM_i}}{ENS_{PRM_i} - ENS_{PRM_{i+1}}}$$

- The economic optimal planning reserve margin is the planning reserve margin at which the marginal cost of reducing load shed is equal to the value of lost load. Utilities can rely on this planning reserve margin in case they decide to plan beyond the minimum PRM as determined by CEA.

Illustration: An illustration of the calculation of marginal costs of reducing load shed is shown in Figure 2. The capacity expansion planning model is run for different PRMs between 2% and 20%. Based on the capacities obtained, the system costs are calculated. Demand-supply matching using these capacities on future scenarios created using stochastic simulations are used to obtain the total load shed (unmet energy). Based on the system costs and unmet energy (graph on the left), the marginal cost of reducing load shed (graph on the right) is calculated using the formula in C1. Assuming a Value of Lost Load (VoLL) of INR 140/kWh, the optimal PRM would be around 8%.

Figure 2: Illustration of Calculation of Marginal Cost of Reducing Load Shed





ANNEXURE E

Methodology of Preparation of Resource Adequacy Plan

- For preparation of Resource Adequacy Plans, data on the following needs to be obtained but not limited to:
    a) Planning Reserve Margin as prescribed by CEA or as determined by the distribution licensee and approved by the SERC/JERCs.
    b) Actual demand met by the state / distribution licensee in granular time block resolutions (hourly) for last 5 years
    c) Estimated load growth during the planning period
    d) Technical parameters of conventional generation plants viz. Name of plant, location (State/Region), Capacity (MW) (for existing and planned capacities), Auxiliary Consumption (MW), Maximum and Minimum Generation Limits (MW), Ramp Up and Ramp Down Rate (MW/min), Minimum up and down time, Plant Availability Factor (% of time), etc.
    e) Under-construction capacity/retirement of generation capacity/contracted capacity/bilateral contracts.
    f) Potential investment options, technologies, gestation periods and lifetime of different assets.
    g) Capacities and generation profile of renewable generation
    h) Capital costs, variable costs, O&M costs, reserve offers, start up and shut down Cost of generators, etc.
    i) Historical forced outage rates and planned maintenance rates of generation capacities
    j) Tie line details and transmission expansion plans
    k) Spinning reserve requirements
    l) Renewable Purchase Obligation (RPO) and Energy Storage Obligation targets, etc.
- The hourly demand profile for the distribution licensee shall be projected over the planning horizon, based on the forecasted values of annual energy requirement and peak demand trajectory. The annual energy requirement and peak demand shall be forecasted using trend

method, time series, econometric methods, or any state-of-the-art methods. The projected hourly demand for the future years shall be used as inputs into the model. It shall be ensured that the generation expansion planning model chosen is capable of simulating on an hourly chronological resolution[5]. This is necessary to capture the behaviour of the system with respect to ramping of conventional generation, profiles of RE generation, behaviour of energy storage, etc.

- After establishment of demand profile for all future years, the model would undertake an optimization exercise to minimize the total system cost to meet the future demand adhering to all power system parameters. Following constraints should be considered while modelling:
    - **Planning Reserve Margin / Resource Adequacy Requirement:** The Resource Adequacy Requirement (RAR) constraint shall ensure that the total Resource Adequacy (Generation capacity) of the distribution licensee fulfils the Planning Reserve Margin as determined by CEA or by the distribution licensee's own studies and approved by the SERC/JERC. The resource adequacy requirement for each distribution licensee is computed as:

$$RAR = contribution^{6}\ to\ forecasted\ national\ peak\ demand\ in\ GW \times (1 + PRM)$$

From the supply side, the RAR is the sum of the "firm capacity" or "capacity credits" of contracted / planned capacities (including renewables, storage, other resources such as demand response) along with derated interconnection limits (imports)[7].

Both, supply side and demand side RAR shall match. The Thermal capacity credit is calculated by reducing the auxiliary consumption and the forced outage rate from the installed capacity. Planned outage rate is generally not considered, as planned maintenance may be carried out during low net-demand periods and thus may not affect reliability.

The capacity credits for generating resources and demand response resources to meet the national peak shall be estimated by CEA[8]. The capacity credits published by CEA for each resource type may differ between existing and new resources and between resources in different regions. For example, a solar based power plant in the southern

[5] It is preferred to simulate all 8760 hours on a chronological resolution in a year. However, if computational challenges are faced, the States/UTs can select the representative periods which may be different for each state. The representative periods chosen are reflective of various projected demand and supply profiles for the base year and future years. Initially, hourly simulation is planned based on hourly data availability, however, the time granularity may be increased to sub-hourly provided there is availability of sub-hourly demand and RE generation data.

[6] This is calculated as distribution licensee's demand at the time of national peak demand.

[7] The calculation of firm capacity is provided in Annexure C

[8] The methodologies that can be used to determine capacity credits for generating resources and demand response resources are outlined in **Annexure C.**

region will have a capacity credit which could be different compared to a solar plant in the northern region. Similarly, an upcoming wind-based power plant could have a different capacity credit compared to an already commissioned wind plant in the same region. Utilities shall use these capacity credits while planning to meet their RAR. For example, a distribution licensee having a PPA with an existing solar based power plant located in a southern state would use the capacity credit of existing solar based power plants in the southern region.

Portfolio balance constraints: The portfolio balance constraints shall ensure that the total generation within a control area of region/State/Distribution licensee and the import of power to the control area of region/State/Distribution licensee is equal to the sum of the demand, the exports from the control area of region/State/Distribution licensee, any energy not served and curtailment, for each hour.

RE Generation constraints: For renewable resources, such as solar and wind, the generation is constrained as per the hourly profile of the resource. Historic profiles of renewable sources shall be used to generate the hourly profiles. Additional constraints to ensure that the distribution licensee's overall renewable generation targets are met, shall also be included.

- **Conventional Generation constraints:**
  - Unlike solar and wind, thermal resources are dispatchable. However, the thermal resources are bound by constraints such maximum and minimum generation limits, ramp rates, spinning reserve offers, plant availability and unit commitment decisions.
  - The dispatch (energy offer) plus the reserve offer (specified through regulations) for each generator is constrained to be within the maximum and minimum generation limits. Generation between two consecutive time blocks also must be within the ramping capabilities of the resources. Unit commitment decisions, such as start-up/shut-down, minimum up and down times, etc., require binary variables to implement and are to be included. Additionally, generation units may have periods of outages which may need to be captured by using an availability factor.
  - The capacity for each year needs to be tracked by a constraint which shall ensure that the capacity in a particular year is equal to the capacity last year plus any new capacity investment minus capacity retirement, if any.

- **RPO constraints:** Fulfilment of Renewable purchase obligation should be considered as one of the objectives of Resource Adequacy. Technology options like renewable generation for round the clock energy supply backed with storage (Battery and PSP), standalone renewable capacity along with hydro capacity for balancing renewable generation may be considered while carrying out resource adequacy exercise for distribution licensees.

- **Storage constraints:** Due to the intermittent nature of renewable generation, the need for resources which can store surplus energy and despatch the stored energy during low RE periods becomes vital. Storage charge and discharge at any instant are constrained by the storage level or the state of charge (SoC) of the storage resource, and the maximum charge / discharge limit. The resource can only discharge if there is sufficient energy present due to prior charging of the resource. To implement this, considering the chronological sequence of time is also important. Since storage resources convert electricity to other forms of energy, there are also some efficiency losses (round-trip efficiency) which shall be accounted for. Different technologies may have different discharge periods (energy limits), power outputs (maximum charge / discharge) and levels of efficiency.

- **Operating (Spinning) Reserve constraints:** Operating reserve constraints ensure that sufficient resources are in the system and kept online or on standby each hour to account for load forecast errors, intermittency of renewables or meeting contingencies in the real time. The thumb rule for operating reserve requirement shall be defined based on discussions with the state SLDC and shall be considered as an input parameter to the model.

- **Demand Response:** Potential for demand side management such as shifting of load or demand response can be considered while undertaking the Resource Adequacy Plan(RAP). The constraints such as periods when load shifting can occur, and the maximum quantum of load which can be shifted over a period shall be included.

ANNEXURE F

Resource Adequacy Implementation Timeline

Entity	Description	May'xx	Jun'xx	Jul'xx	Aug'xx	Sep 'xx	Oct'xx	Nov'xx	Dec'xx	Jan'(xx+1)	Feb'(xx+1)	Mar'(xx+1)
STU/SLDC	STU/SLDC, on behalf of distrubution licensees shall provide to CEA and NLDC the details regarding demand forecasts for the next 5 years, assessment of exisiting generation resources and other details required for LT-NRAP and ST-NRAP											
CEA	To publish LT-NRAP containing National PRM, Reliabillity Metrics, Coincident peak, capacity credits and Optimal Generation mix for 10 years horizon.											
NLDC	To publish ST-NRAP.											
Discoms	LT-DRAP exercise for long term horizon(10 years) which is RA compliant as per coincident peak to be submitted to CEA											
CEA	Vetting of discom's contracting plan for coincident peak contribution and to meet their own energy and peak											
SERC	SERC to approve of discom's contracting plan for coincident peak contribution and to meet their own energy and peak											
Discoms	To contract capacities as per approved plans.											
	Submit contract capacities to STU/SLDC											
STU/SLDC	STU/SLDC to submit state-level aggregated capacities to RLDC											
RLDC	RLDC submit regional-level aggregated capacities to national level											
POSOCO/NLDC	POSOCO/NLDS to check RA compliance at national level											
	Any Shortfall shall be communicated to the SERC for comliance or is balanced through a national level auction mechanism											

Delivery Period(Apr'(xx+1) - Mar'(xx+2))

******

Annexure-I

Sl.No.	Meter No.	Modem No.	Circle	Division	Substation	Feeder	Error
1	XB593845	MOD99741	UJJAIN	T.DN.UJJAIN	NALKHEDA 220	40MVA MAKE ALSTOM SN B-30818	No Active Sim Card
2	XB593902	X1116228	UJJAIN	T.DN.UJJAIN	NALKHEDA 220	63MVA MAKE BBL 5790-21	No Active Sim Card
3	X1316352	X0209633	NAGDA	T.DN.400KV S/S BADNAWAR	BILPANK 132	40MVA MAKE EMCO HT1661-12505	No Active Sim Card
4	MPP30272	X0209697	NAGDA	T.DN.400KV S/S BADNAWAR	KANWAN 220	63MVA MAKE BBL SN 5582-04	No Active Sim Card
5	MP924844	MOD70133	BHOPAL 400	T.DN BARELI	GAIRATGANJ 132	63MVA MAKE BBL SN 5308-01	No Active Sim Card
6	XF409798	X1116181	SEONI	T.DN.SEONI	NAINPUR 132	40MVA MAKE BBL 5033-26	No Active Sim Card
7	X1105789	X1116180	SEONI	T.DN.SEONI	WARASEONI 132	50MVA MAKE BBL 5831-15	No Active Sim Card
8	MPP28395	MOD70277	SATNA	T.DN.REWA	REWA 132	40MVA MAKE BHEL SN 2014002	No Active Sim Card
9	MPP28335	MOD70301	SATNA	T.DN.SATNA	MAIHAR 220	132 KV KJS Cement	Network Not Available
10	X1317646	XG476657	MANDSAUR	T.DN.NEEMUCH	SINGOLI 132	50MVA MAKE BBL SN 575705	Network Not Available
11	MPC57144	MPP08798	BINA 400	T.DN.VIDISHA	RUNAHA 132	63MVA MAKE BBL SN 5308-10	Network Not Available
13	XB549199	MOD99693	SATNA	T.DN. SINGROLI	DONGRITAL 132	20MVA MAKE EMCO SN 1058B-10930	Network Not Available
14	X1317043	MOD70427	SATNA	T.DN. SINGROLI	DONGRITAL 132	20MVA MAKE NGEF SN 2800050840	Network Not Available
15	XE486214	XG442195	SEONI	T.DN NARSINGHPUR	DEONAGAR 132	40MVA MAKE BBL SN 5687-1	Network Not Available
16	XD449689	MOD70317	SEONI	T.DN NARSINGHPUR	PALOHABADA 132	50MVA MAKE BBL SN 5571-04	Network Not Available
17	XB587786	MDM01698	SATNA	T.DN.SATNA	MAIHAR 220	132 KV MAIHAR CEMENT	Meter Defective
18	MPE53418	MOD70615	INDORE	T.DN. 400KV PITHAMPUR	PITHAMPUR (SEC-III)	63MVA MAKE BBL (SEZ) SN 5442-8	Meter Defective
19	MPB24600	MOD99755	SATNA	T.DN.SATNA	SATNA 220	132KV Satna Cement BCL (Main)	Meter Defective

Annexure_II

S. No.	Meter No.	Modem No.	Circle	Division	Substation	Feeder
1	X1317050	X1116300	UJJAIN	T.DN.SHUJALPUR	KALAPIPAL 132	50 MVA
2	XF409783	X0209656	NAGDA	T.DN.400KV S/S NAGDA	220KV NAGDA	50 MVA
3	Y0221815	X1116157	SATNA	T.DN. SINGROLI	DEOSAR 132	50 MVA
4	XD532652	X1116168	JABALPUR	T.DN. KATNI	MANSAKRA 132	63 MVA
5	Y0221469	X1116313	BHOPAL	T.DN.HOSHANGABAD	SEONI MALWA 132	40MVA
6	X1177082	X1116299	BHOPAL	T.DN.HOSHANGABAD	HARDA 132	63 MVA
7	X1572651	X1116384	SAGAR	T.DN.TIKAMGARTH	ORCHA 132	50 MVA

M.P. POWER TRANSMISSION COMPANY LTD

NAME OF Substation :- -----

132KV/33KV INPUT/OUTPUT AT TRANSFORMERS - (ACTIVE ENERGY IN MWH)												Month						
Sl. No.	NAME OF SUBSTATION	DETAILS OF TRANSFORMERS	220/132/33 KV SIDE	METER SERIAL NO.	IMPORT						EXPORT						REMARKS
					PREVIOUS READING WITH TIME & DATE	PRESENT READING WITH TIME & DATE	MF	DIFF.	ASSESEMENT (MWH)	CONSUMPTION (MWH)	PREVIOUS READING WITH TIME & DATE	PRESENT READING WITH TIME & DATE	MF	DIFF.	ASSESEMENT (MWH)	CONSUMPTION (MWH)	
1																	
2																	
	Substation Auxilary Consumtion																

Observations of The Protection Audit Committee

S. No.	Substation Name	Observations
1	220 KV Jabalpur	1) Battery room flooring found damage.
		2) Cable trench cover of ACDB/DCDB room are not available.
		3) Very old 220 kv CT Make - ABB, YOM-1989 are in service for Sukha ckt 1 & 2.
		4) Scrap material in large quantity is availble at 220 kV Yard.
		5) Metal gravels levell are not found in order in yard.
		6) Some structure are found in rusted also equipment foundation required painting.
		7) Old 220 kV CT are not having metering class of 0.2s, need replacment.
		8) Few 220 kV and 132 kv CB MB approach ladder in not available
		9) Yard cable trench cover are not Available at some loctions in yard.
		10) 220/132 kv 160 MVA BHEL x-mer having oil leakage from 132 kV side Y-ph OSR relay and having seepage from raditors also.
		11) Surge counter are not avaiable on some 220 kV feeders.
		12) Earthing isolators operating rod handle should be colored in green color.
		13) Earthing MS plate for earthing of Structure and equipment should be colured in green color
		14) Main-2 protection relay is not available in 220 kV Narsinghpur feeder C&R panel.
		15) Main-2 protection relay is not available in 220 kV class X-mer C&R panel.
		16) Very OLD ABB make C&R panel is required to be replace for 220 KV side of 160 MVA GEC X-mer.
		17) Only single DC source -1 is available at 220 kV Class C&R panel .
		18) LBB protection scheme is found not comissioned for 132 kV Class X-mer and feeder.
2	220 KV Sukha	1) Very old 220 kv CT Make - ABB, YOM-1989 are in service for Jabalpur ckt 1 & 2 and 220 kV side ICT-
		2) Revamping of yard is required for Metal gravels and cable trenches.
		3) Surge counter are not avaiable on LA of 220 kV feeders.
		4) Earthing isolators operating rod handle should be colored in green color.
		5) Earthing MS plate for earthing of Structure and equipment should be colured in green color
		6) Main-2 protection relay is not available in 220 kV Jabalpur ckt-1 feeder C&R panel.
		7) Main-2 protection relay is not available in 220/33 kV class 2 * 50 MVA X-mer C&R panel.
		8) 220 kv Side few relays are not time synchronised with GPS clock.
		9) Only single DC source -1 is available, being a 220 kV substation 2nd source DC is required.
		10) G.I. Plate should be used in X-mer earth pit for clamping of neutral conductor in placed of MS plates.

		11) NIFPS protection is still not comissioned on 2*50 MVA 220/33 kv X-mer even after the 2 years of comissioning of xmer
3	220 KV Gorabazar	1) 132 kV Buscoupler CT should be agumented from 400/1 CT ratio to 800/1 CT Ratio
		2) Oil leakage observed from multiple location on 220/132 160 MVA BHEL X-mer.
		3) REF trip should be in service in 160 MVA and 63 MVA X-mer relay setting in place of REF alarm mode.
		4) Zone-3 should be cover in power swing blocking for 220 kV feeder
		5) Main-2 protection relay is not available in 220 kV feeder C&R panel.
		6) Main-2 protection relay is not available in 220 kV class X-mer C&R panel.
		7) Only single DC source -1 is available. .
4	220 KV Datia	1) Identification of earth pits are not mentioned.
		2) Oil seepage observed in 160 MVA-I (BHEL), 40 MVA-I (BHEL)
		3) Air cell is not charged in 160MVA-I,40 MVA-I and 40 MVA-II.
		4) As per norms two separate station (33kv/433V) supply shall be available .Only one supply is available.
		5) REF Protection in 40MVA-I (BHEL) and 40 MVA (TELK) transformers is not available.
		6) Date of last filling and expiry in fire extinguishers is not mentioned.
		7) Distance Relays of 220kv/132kv are not time synch with the GPS Clock.
		8) Transformers Life Sketch Book needs to be completed.
5	220 KV Pichhore	1) Identification and marking of line Bays, Transformers, earth pits are not mentioned.
		2) 33KV bus PT is very old needs replacement.
		3) Oil seepage observed in 40 MVA transformer (Make BHEL) and its Y-phase (132kv side) CT.
		4) As per norms two separate station (33kv/433V) supply shall be available Only one supply is available.
		5) 110V Battery bank-I and 48V Battery Bank-I are very old and survey reported, needs immediate replacement.
		6) REF Protection in 160MVA, 40MVA and 50 MVA transformers is disabled.
		7) Distance characteristic in DPR relays of 132KV Bus Traction-I and II is mho.
		8) Time delay of Zone-4 of 132kv Feeders shall be revised to 200 msec.
		9) Transformers Life Sketch Book needs to be completed.
		1) Distance Protection Relay Main-I is available and in service in 220KV PGCIL-I and II,Main -II is not available.
		2) Auto reclose function in both 220KV is out of service at PGCIL end PLCC panel is out.
		3) In 160 MVA Online DGA instrument alarm is coming, needs to be attended. How ever DGA results are in limit.
		4) 110V Battery Charger-II is in boost mode, Float mode is not working.

6	220 KV Gwalior (Sitholi)	5) As per norms two 48v DC supply shall available but Only One DC Source (48V) and One Charger is available and healthy.
		6) Working Platforms are not available in 220KV Circuit Breakers for individual Bays.
		7) As per Norms two separate station supply should be available,but only one supply is available and Healthy.
		8) In RTCC Panel of 160 MVA Transformer-1,Tap position Indicator is out.
		9) Silica Gel needs to be replaced in all Transformers.
		10) Both 160MVA Transformer-I and II Oil Seepage found.
		11) REF Protection shall be taken into service in 50 MVA transformer
7	220 KV Omkareshwar	1. Time Grading is required in stage-1 of over voltage setting in all feeders.
		2. Auto Reclose Scheme is disabled in all the feeders. It should be enabled in consultation with MPPTCL.
		3. Breaker CO, OC, OCO is not in testing practice. Same shall be adopted.
		4. DPR setting of Main-1, Main -II relays are different and not as per norms, it shall be reviewed.
		5. OSP-Nimrani tap Barwaha Zone-II DPR setting must be reviewed.
		6. PSB setting of lines must be reviewed. Presently it is kept Blocked in Zone-I.
8	220 KV Mandideep	1. LBB protection is not connected in 220 KV BUS BAR (GE B-90) protection. It has to be wired up and to be taken in service.
		2. The Instantaneous over current (IOC) time setting should be revised in 160 MVA AREVA transformer. It is found that, the 132 KV side time setting of IOC is higher than 220 KV Side time setting. It should be properly time coordinated.
		3. Take the IOC/DTOC feature in Differential relay for tripping of LV side breaker from Differential relay with proper time and current grading.
		4. The Restricted earth fault (REF) is not in service in any transformer. It has to be used in all the transformer if NCT is provided.
		5. LBB protection is not used in any 132 KV Side feeder or transformer. LBB protection has to be used in 132 KV Side also.
		6. Tan delta of 1Uand 1V phase bushings of 160 MVA AREVA transformer in last maintenance on dated 25.05.2021 recorded is 0.61% (both 10 and 1V). Before that it's value was recorded 0.18% and 0.33% respectively, testing done on dated 15.06.2020. The value has increased drastically high. It is suggested that repeat the test again and if value comes higher side, take the corrective action.
		7. Main II protection relay is not commissioned in any 220 KV feeders. Main II protection has to be taken in service.
		8. The differential relay MICOM P633 commissioned in 100MVA, 220/33 KV transformer is mounted on top of the panel, that is not the right place. Commission the relay either in front side or back side in the panel.

		9. Load dropping scheme is not connected in any transformer. It has to be connected in all the transformers.
		10. GPS relay is not Synchronized with any Numerical relays.
		11. Online DGA is not commissioned in both 220/132 KV, 160 MVA transformer, 220/33 KV, 100 MVA transformer.
		12. Tan delta and capacitance of 220 KV CT,132 KV CT of 160 MVA Areva transformer is due.
		13. CB timing, IR value of core-frame-tank etc not filled in Transformer life sketch book.
		14. C-Tan delta of 220,132 KV CT of Transformer (Imp) is due.
9	220 KV Mugaliyachap	1. LBB protection in 132 KV Side of 160MVA and 40MVA transformers has to be commissioned.
		2. Overload Scheme is not connected in both the transformers.
		3. CB timing of all the 220,132 KV breaker is due.
		4. Testing of Distance protection relays (DPR) of all the 220/132 Kv feeder is due.
		5. GPS Clock is not available.
		6. Post Monsoon maintenance of 160 MVA transformer is due. Testing of all it's associated equipment are also to be done.
		7. The Capacitive Voltage transformer of Y and B phase of 220 KV Astha feeder are not connected.
		8. The load circuit from DG set is not connected.
		9. One 110 V battery set and 110 V battery charger is in service. Another set of battery and battery charger yet to be commissioned.
		10. Oil seepage is observed in 160MVA and 40MVA Transformers.
		11. Online DGA of 160MVA Transformer is not working.
		12. Only 01 nos LT supply provisioned for the Switchyard.
		1. LBB protection is not commissioned in 137 KV Side transformers and feeders.
		2. Load dropping scheme is not commissioned in 40 MVA BBI Transformer
		3. Auto reclosure are not in service in 220 KV PGCIL 1 and PGCIL 2 feeder.
		4. Trip Circuit supervision relay found faulty in 220KV Pipariya, Sarni-II and PGCIL-II feeders, which needs replacement
		5. Transfer Bus Coupler (REL670) is faulty needs replacement.
		6. Carrier aided protection in 220 KV Handia feeder is not in service. It's end to end testing is pending.
		7. 132 KV Side panel of 40 MVA BBL Transformer and 220 KV Side panel of 3X40 MVA Transformer are very old. The date of commissioning is of these panel is 17/12/1979 and 08/12/1966 respectively. These panels are very old and needs replacement.
		8. The last measurement date of transformers earth pit is 14.05.2020. The earth pit resistance measurement is due
		9. The 1 no. PRV of 160 MVA NGEF is out of service. It has to be taken in the service.

10	220 KV Itarsi	10. The online DGA is not commissioned in any transformer.
		11. GPS is not synchronized with any Numerical relays
		12. Trench cover of control room is open. It has to be cover all the trenches.
		13. Grass in 50/40 MVA earth pit is increased, so neutral conductor is not visible. Remove the grass and clean the earth pit so that neutral conductor becomes visible.
		14. Inter trip details, Annunciation details, HV CT, LV CT maintenance details, LA's testing. CB Timing etc of 40 MVA BBL Transformer is incomplete in life sketch book.
		15. Post Monsoon maintenance of 40 MVA BBL Transformer is due
		16. The JVS relay type (JNFO60) of synchronizing trolley is defective. It needs replacement
		17. Post Monsoon Maintenance of 50 MVA BHEL transformer is due.
		18. Tan delta and capacitance test, core frame tank IR value test Differential trip test inter trip details, Annunciation details, HV CT, LV CT maintenance details, LA's testing, CB Timing etc of 40 MVA BBL Transformer is incomplete in life sketch book. Complete the testing results and oil parameter, DGA report in Transformer life sketch book.
		19. Winding resistance measurement of 50 MVA BHEL transformer is due.
		20. 220 KV feeder's, 132 KV feeder's CT tan delta is due.
		21. Oil and DGA Parameters of all the four transformers are due since January 2021.
		22. Leakages observed in Y phase unit of 220 KV 3x40 MVA Transformer of yard.
		23. LCM test of LA's is due.
11	220 KV Barwaha	1. Switch Yard resistance measured on 12.06.2023 & 13.06.2023 are well within permissible limits.
		2. Silica gel breather in all old transformer needs to be replaced along with silica gel.
		3. Problem of oil leakage found in old transformers and these transformers need complete servicing.
		Condition of Metal in some of the areas of switch yard is not satisfactory. Needs immediate action.
		5.Battery Voltage 103.7V/130V Source-I (+) to earth 97 Volt (-) to earth 5.6 Volt Source-II (+) to earth 63.48 Volt (-) to earth 66.7 Volt 5.Battery Voltage 103.7V/130V
		6. It is suggested to minimize joints in earthing strips of every equipment.
		7. DC leakage should be arrested at first available opportunity.
		8. Ten Delta of many CT's is found very high. Needs immediate replacement to avoid any outage.
		9. Cable laying in old Control room found in improper manner due to unavailability of space. Needs proper dressing & laying.

		10. Trip Coil Supervision in Handia & Indore - II is out of service. Needs immediate Action and rectification.
		11. Auto start in DG Set is not available. Corrective action should be taken
		12. 63 MVA & 40 MVA Transformer protection panel relay are not time synchronized. Needs corrective action.
		13. PID testing of switch yard disc insulator string may be carried out on yearly basis to avoid, any outage due to insulator string failure.
		14. LBB scheme in 63 MVA Transformer checked & found ok.
		15. Special protection scheme (Load Dropping Scheme) should be reviewed in consultation with testing cell of MPPTCL.
		16. AS found, rate of failure of LA's is on higher side. Hence it is suggested to check and ensure proper earthing of LA's and continuous watch on leakage current should be ensured.
12	220 Kv Nimrani	1. Control Cable of all bays must be dressed and laid in systematic manner.
		2. Cable trench should be prepared & cable routing should be done in proper manner.
		3. 160 MVA transformer Silica gel breathers should be replaced, as most of the breathers have lost transparency and condition of silica gel is not visible. No soak pit is found in any HV transformer. It is advised to check possibility for preparation of oil soak pit in every HV transformer.
		4. Most of the LA counters are found defective and should be replaced.
		5. Battery Voltage 127.6V/123V Source-1 (+) to earth 58 Volt (-) to earth 59 Volt Source-II (+) to earth 53 Volt (-) to earth 52 Volt
		6. No DC leakage found.
		7. U/F relay for load shedding checked & found ok.
		8. GPS Time Synchronization of DPR main - I & II is required.
		9. Main-1 & II protection should be fed from available separate PS Core of CT.
		10. Earthing resistance of switch yard has been measured on 23.06.2023. It must be measured yearly, preferably in the month of April May. On checking of register, resistance in some of the earth pit found on higher side. Special attention may please be given to keep earth resistance within permissible limit.
		11. Direct trip from LBB to be assigned, to individual feeder in 220 KV LBB protection.
		12. Special protection scheme (Load Dropping Scheme) tripping sequence may be revised, as per availability of 3X160 MVA X-mer, in consultation with testing cell of MPPTCL.

		13. PID of switch yard insulators may be carried out on yearly basis to avoid, any outage due to insulator string failure.
		14. Relay Setting calculation register checked and found in order.
		15. Verified Setting from register in relay by sampling from 220 KV feeder & 132 KV feeder and found in line.
		16. In 132 KV feeder zone timing verified and found OK.
		17. Setting for Incoming back up relay including DTOC features verified.
		18. Healthiness of bus bar protection checked and found OK.
		19. Setting for auto reclose has been checked in 220 KV feeders & found ok.
		20. Auto start of D.G. Set checked and found OK.
		21. REF Setting:- 160 MVA Transformer verified and found in line.
		22. NIFPS System found in service.
13	220 KV Morena	1. Yard metalling is poor.
		2. Battery charger is working only in boost mode.
		3. Yard light and illumination is not sufficient.
		4. Main I DPR is available. Main II DPR protection is required in all 220KV feeders.
		5. Suitable furniture is not available in substation.
		6. Only one AC source of station transformer is available.
		7. Working platform for all 220KV feeder GCB is not available.
		8. Earthing flat rusted, green color painting is to be done.
		9. Fire fighting equipment refilling is to be done periodically.
		10. Observed oil leakage in 160MVA Xmer 2 (BHEL).
		11. Surge counters are not available on 132KV Side LAs of 160MVA Xmer 1 (BBL)
		12. Fire protection wall is not available between both 160MVA Xmer.
		13. All 220KV/132KV relay testing not performed periodically.
		14. All 220KV/132KV feeders GCB timing test not performed periodically.
		All 220KV/132KV feeders CT tan delta not performed periodically.
		1. The LBB in the 220 KV Bus bar (GE B-90) is out of service. It is also not connected in any 160 MVA transformer and feeder panel.
		2. Time delay in Instantaneous Over current (IOC) feature of all the 160 MVA and 63 MVA transformers is not properly coordinated. It has to properly Coordinated.
		3. Restricted earth fault (REF) protection is disabled in 160 MVA No. II BHEL Transformer and 63 MVA BBL No. I Transformer. It should be taken in the service.
		4. Load dropping Scheme is not connected in 160 MVA BHEL, 220/132 transformer No. II, 160 MVA BHEL 220/132 KV BHEL Transformer No. III and in both 63 MVA 132/33 KV BBL transformers. Load dropping scheme has to be connected in all the transformer.

14	220 KV Vidhisha	5. Trip transformer Scheme in 63 MVA BBL No. Il transformer is not connected. It has to be connected.
		6. NIFPS is not commissioned in 160 MVA EMCO Transformer and out of service in 160 MVA BHEL Transformer No.3
		7. Main II Distance protection relay in all the 220 KV feeders is not in service. CT/VT/ Tripping has to be connected.
		8. Fire fighting equipment is expired. It must be refilled as earliest.
		9. In RTCC panel of all the 160 MVA transformer, PT secondary is not connected. Voltages are not appearing in the Indicator.
		10. Circuit breaker timings of 220/132 KV breaker of 160 MVA EMCO transformer is due.
		11. Circuit breaker timings af 220/132 KV breaker of 160 MVA NO. II BHEL transformer is due. CB timing of all 220/132KV feeders are due.
		12. Capacitance and tan delta of winding of 160 MVA BHEL Transformer no.II is due.
		13. Tan delta and capacitance bushings/ winding of 63 MVA BBL transformer No.II and all 220/ 132 feeders is due.
		14. Oil Parameters testing of all the Transformers is due.
		15. DC-Source II is available but not in service and under commissioning.
		16. GPS is not synchronized with any Numerical relays.
		17. Leakage observed in all (BHEL, EMCO an BBL) Transformers.
		18. Online DGA commissioned in 160MVA BHEL-II Transformer and BHEL-III Transformer, however it is not available in EMCO Transformer.
		1. Main-II DPR's are available and commissioned in alarm mode, and needs to be connected in tripping mode in 220 KV Feeders.
		2. Relay testing of 220KV Feeders were tested during 2019,should be done st once in a year.
		3. Backup EM Relays to be ugraded by Numerical Relays.
		4. IInd Harmonic Block setting were not less than 15% (observed 20%) and Vth Harmonic Block setting should be 35% (observed 40%).
		5. Only one Dc Source (110V) and one charger is available and the same is healthy.
		6. PLCC Channel is available and healthy in 220KV Feeders.
		7. Only one Dc Source (48V) and one charger is available and the same is healthy.
		8. Time setting of Relays not found synchronized with GPS although GPS clock is available.
		9. DG starts in auto, however changeover been taken manually.
		10. REF Prot. is available in 160 MVA CGL Transformers, however not available in 160 MVA Areva Transformer.

15	220 KV Bairagarh	11. Oil Seepage observed in both 160 MVA Transformers.
		12. The Differential relay (Make Easun Reyroll, DUOBIAS) commissioned in 160 MVA AREVA Transformer does not communicate with Laptop, its replacement is required.
		13. Replacement of DPR Relay(GE D60) battery is required in 132 KV Runaha Feeder.
		14. Replacement of batteries of Bus Bar Relay 87BB AND 87 BL(GE B90) battery is required.
		15. Non directional O/c is available in all Transformers. Directional O/C relay to be provided.
		16. Star point of the CT secondary is earthed at one point and multiple earthling not found in CT.
		17. NIFPS are available in both 160MVA Transformers.
		18. Online DGA is not available in both 160MVA Transformers.
		19. Painting of structures needs to be taken up.
		20. Working Platform of 132 KV Feeders (Circuit Breaker's) is not proper.
		21. LCM measurement of Lightning Arrestor not done since one year may be taken up.
		22. Factories Test results to be filled in 50MVA BHEL Transformer Life Sketch Book.
16	220 KV Bhopal	1. Renovation activity going in the building so lot of dirt and dust observed.
		2. Oil leakage found in the BHEL make Transformer.
		3. Star point of the CT secondary is earthed at one point and multiple earthing not found in CT.
		4. Fire Protection wall is not found available between 160MVA Transformers.
		5. Painting of structures needs to be taken up.
		6. Scaling found in the terminals of the Battery Bank. (Vijeta Make).
		7. Panel replacement activity going on needs to be expedited.
		8. 2nd Harmonic Block setting should be 15% (observed 20%) and Vth Harmonic Block setting should be 35% (observed 40%).
		9. Electro mechanical and Static Relays found in various Panels of Substation, the same needs to be replaced by Numeric Relay.
		10. Dynamic Contact Resistance Measurement (DCRM) of Circuit Breakers needs to be carried out.
		11. LCM measurement of Lightning Arrestor not done since one year may be taken up.
		12. Post monsoon testing of Transformers yet to be taken up.
		13. Online DGA working in one transformer, appropriate action for others to be taken up.
		14. Scrap material found lying in yard, to be arranged properly

17	220 KV Mahalgaon	1. 132/33 KV 63 MVA BHEL Oil leakage observed and Need replacement of MOG.
		2. 220/132 kv 160 MVA BHEL X-mer Oil leakage observed.
		3. Need to change the silica gel of breathers.
		4. Need Air cell commissioning of X-mers.
		5. GPS time synchronization system available but time synchronization with protection relay needs rectification.
18	220 KV Malanpur	1. DC leakage measurement is done and 110 Volt. source 1 Negative found earthed. Voltage measured as follow. Positive to Earth 122.0 volt Negative to Earth 0.0 volt Positive to Negative 122.0 volt
		2. 132/33 kv 40 MVA BHEL X-mer surge counter are to be provided on 132 kv LA.
		3. Need to change the silica gel of breathers.
		4. Need Updation record of Tan-delta of CTs in substation maintenance register.
		5. observe Oil leakage in 160 MVA 220/132 kv BHEL & CGL make X-mers.
		6. observe Oil leakage in 40 MVA 132/33 kv BHEL make X-mer.
		7. Ensure winding resistance of all X-mers as per schedule.
		8. WTI & OTI need calibration and defective may be replaced by new one.
		9. GPS time synchronization system available but time synchronization with protection relay nee rectification.
		10. 2021 MPPTCL oil test results of X-mer need to be rechecked.
19	220 KV Ganjbasoda	1. 220 KV Bus bar protection is out of service since 16.11.2021.
		2. Since 220 KV Bus bar is out of service, so LBB protection should be used in 220 KV Side transformer and feeders.
		3. Time setting of DTOC 1 and DTOC 2 of 220 KV side of 160 MVA transformer is same i.e.200 ms. Time and current grading should be properly coordinated.
		4. Tan delta and capacitance of 160 MVA transformer bushings and winding is due.
		5. Online DGA is not commissioned in 160 MVA transformer.
		6. Tan delta and capacitance of 220 KV CT of 160 MVA transformer and feeders is due.
		7. Oil parameter of 160 MVA Transformer is due.
		8. There is no tripping connected in Main II feeder Protection relays (DPR).
		9. Tan delta and capacitance of 220/132 KV feeders is due.
		10. Numerical relays of 220/132 KV side is not synchronized with GPS.
		11. Since maximum load of 33 KV side reaches beyond the individual capacity of both the transformers, so load dropping scheme in 40 MVA/50 MVA transformer must be implemented.

		12. Routine testing results of transformer body protection test is not filled in testing register. It should be filled in proper checklist form. Same should be filled in Transformer life sketch book.
		13. Differential relay testing results, backup relay testing results is not filled in 160 MVA Transformer life sketch book.
		14. Factory test results of 160MVA transformer is incomplete.
		15. On 50 MVA Transformer, battery replacement indication is appearing. Battery should be replaced.
		16. Circuit breaker timing of all 220 KV/132 KV feeder is due.
		17. Float charger of 110V, 200 AH battery charger is not working. It should be rectified.
		18. DC Voltage of 48 V,300 AH Battery charger is on lower side, Positive to earth is 2.5 V and Negative earth is -45. It should be rectified.
		19. Oil leakage in 160 MVA, 50 MVA,40 MVA transformers is found. This needs to be attended.
20	220 KV Jetpura	1.As found 110 V Battery set 1 - 1192 Volt 110 V Battery set 2 - 122.3 Volt 48 V Battery set 1 - 51.2 Volt
		2. Both 110V DC source found in healthy condition.
		3. DC supply, Direct through Battery terminal on DC distribution board on Main MCCB and both source synchronize system in circuit.
		4. 48 V Battery set 2 required and set 1 is in unhealthy condition, it needs replacement.
		5. Gravity checked found ok.
		6.DC supply leakage (set 1) checked values are as under- (+ve) to Earth = 58.2 volt (-ve) to Earth = 59.1 volt (+ve) to (-ve) = 117.3 volt
		7. New 110 V battery sets required, as the existing ones completed their service life and are in poor condition.
		8. A/R scheme is enabled.
		9. 220kv Bus bar protection found in healthy condition.
		10. GPS clock is not time synchronized.
		11. Main-II protection required in 220 kV PGCIL ckt 1, 2 as per prevailing norms.
		12. Various precautionary, warning flexes and DC failure action plan should be in control room.
		13. Y&B ph LA leakage current monitoring of 132KV RTS are not working.

		14. Silica gel found pink in 160 MVA Transformer -1
		15. Foundation of both 160MVA X-mers are not proper.
		16. NIFPS found in 160MVA transformer.
		17. Earth integrity test results not found, it should be done periodically.
		18. Earth Resistance Measurement should be done periodically.
		19. Fire extinguisher found in good condition.
		20. R, Y & B Phases identification radium reflector required.
		21. All measuring kit should be calibrated once in a year, calibration report not found.
		22. Various materials and equipment found scattered in the yard.
		23. Grasses, herbs and shrubs found inside the yard, they needs to be cleared.
		24. Cable trenches in the yard found open and broken at some places.
		25. DG set is under working condition.
21	220 KV Mangliya, Indore	1.As found 110V Battery set 1 - 123.9 Volt 110 V Battery set 2 -127.7 Volt 48 V Battery set 1 48.6 Volt 48 V Battery set 2 48.7 Volt
		2. Both 110V DC source found in healthy condition, DC failure alarm checked and found ok.
		3. DC supply. Direct through Battery terminal on DC distribution board on Main MCCB and both source synchronize system in circuit.
		4. Gravity checked found ok.
		5.DC supply leakage checked values are as under - (+ve) to Earth = 58.4 volt (-ve) to Earth = 57.0 volt (+ve) to (-ve) = 123.0 volt
		6. DT feature found enabled.
		7. Bus bar protection found in healthy condition.
		8. Earth resistance measurement shall be carried periodically.
		9. TCSR relay Y-phase in 160 MVA Transformer panel coil-1 features is defective.
		10. Main-II protection required in all 220 kV feeder bays as per prevailing norms.
		11. Various precautionary, warning flexes and DC failure action plan should be in control room.
		12. Most of the earthing strips and nut bolts found rusted, it should be of GI material.
		13. Sillica gel found pink in 160 MVA Transformer & 63 MVA Transformer.
		14. Last earth integrity test dated 30.08.2018, it should be done periodically.
		15. NIEPS found in 160 MVA transformer-1.

		16. Fire extinguisher found in good condition.
		17. In yard, equipment painting and R,Y & B Phases identification required.
		18. All measuring kit should be calibrated once in a year, calibration report not found.
		19. Various material found near 160 MVA Transformer.
22	220 KV North Zone Indore	1.As found 110 V Battery set 1 - 117 Volt 110 V Battery set 2 - 112 Volt 48 V Battery set -52.7 Volt
		2. Both 110V DC source found in healthy condition, DC failure alarm checked and found ok.
		3. DC supply, Direct through Battery terminal on DC distribution board on Main MCCB and both source synchronize system in circuit.
		4. Battery terminal found oxidized, needs proper cleaning and maintenance.
		5. 2nd Battery set of 48 V required.
		6. Gravity checked found ok.
		7.DC supply leakage checked values are as under- (+ve) to Earth = 59.3 volt (-ve) to Earth = 54.8 volt (+ve) to (-ve) = 114.4 volt
		8. Auto reclose reclaim time is 25 sec. as per recommendation.
		9. DT feature found enabled.
		10. Bus bar protection found in healthy condition but communication fiber optical cable not connected.
		11. Earth resistance measurement last conducted in 2018. Periodic measurement shall be carried out.
		12. Winding resistance measurement test not done periodically.
		13. Main-II protection required in all 220 kV feeder bays as per prevailing norms.
		14. Various precautionary, warning flexes and DC failure action plan should be in control room.
		15. Most of the earthing strips and nut bolts found rusted, it should be of GI material.
		16. Earthing pit found dry, it should be watered well.
		17. Last earth integrity test dated 28.07.2018, it should be done periodically.
		18. NIFPS found in 160 MVA transformer-1 and under commissioning in 160 MVA transformer 2.
		19. Oil leakage found in 160 MVA transformer-2.
		20. Poor foundation found in 160 MVA transformer-2 and gravels not found.
		21. Fire extinguisher found in good condition.

		22. In yard, equipment painting and R,Y & B Phases identification required.
		23. All measuring kit should be calibrated once in a year, calibration report not found.
		24. Extended overhead conductor found in 220 KV yard, it should be removed to avoid any mishap.
		25. Poor metaling and grasses found in 132 kV yard.
23	220 KV South Zone Indore	1.As found 110 V Battery set 1 - 116.2 Volt 110 V Battery set 2-114.3 Volt 48 V Battery set 1 - 50.7 Volt
		2. Both 110V DC source found in healthy condition, DC failure alarm checked and found ok.
		3. DC supply, Direct through Battery terminal on DC distribution board on Main MCCB and both source synchronize system in circuit.
		4. 48 V Battery set 2 required.
		5. Gravity checked found ok.
		6.DC supply leakage (set 1) checked values are as under- (+ve) to Earth = 57.9 volt (-ve) to Earth = 58.3 volt (+ve) to (-ve) = 116.2 volt
		7. A/R scheme is not adopted due to short length of line and a tapped line and DT feature is also not enabled.
		8. 220kv Bus bar protection found in healthy condition.
		9. Looking to the high fault level of 132kv system, Bus bar protection recommended at 132kv side.
		10. Main-II protection required in all 220 kV feeder bays as per prevailing norms.
		11. Various precautionary, warning flexes and DC failure action plan should be in control room.
		12. LA Connectors nut bolts found rusted, it should be of Gl.
		13. Silica gel found pink in 160 MVA Transformer-1
		14. Earth integrity test results not found, it should be done periodically.
		15. NIFPS found in 160MVA transformers.
		16. Fire extinguisher found in good condition.
		17. In yard, equipment painting and R,Y & B Phases identification required.
		18. All measuring kit should be calibrated once in a year, calibration report not found.
		19. Various materials and equipment found scattered in the yard.

		20. Too much Grasses, herbs and shrubs found inside the yard, they needs to be cleared. Various shrubs found in the cables leading to battery room.
		21. Proper metaling/gravelling required in the yard.
		22. Cable trenches in the yard found open and broken at some places.
		23. Earth pit found dry, they must be watered well.
		24. 160 MVA make Telk DGA results are showing abnormalities.
		25. Oil seepage and Oil leakage found in 160MVA X-mer 4 and 160MVA X-mer 3 respectively.
		26. LA leakage current monitoring of 160MVA X-mer 1 and 3 are not working.
		27. In DG set, leakage found in hose pipe, it requires maintenance.
		28. Control room and AC/DC DB room requires renovation. New AC/DC DB arrangement required.

S. No.	Name	Designation	Office name	Contact no	E-Mail ID	Signature
25	Shri R.K. Gupta	SE	LD(E&T)	9425805182	rajeshgpta@yahoo.co.in	
26	Shri Rajeev kumar	AE	-do-	9425804677		
27	Ashish Verma	A.E	—"—	9301769022		
28	Prashant Kathal	EE	—"—	9425805109		
29	Vilas Nylat	AC	CE(TRE)	9425805045		
30	S. Mujalde	AE	SLDC (ABT)	9425806851	doulatsldc@gmail.com	
31	Harsh Gupta	SE	CE (Hydel)	9424807238	cehydel.jabalpur@gmail.com	
32	Vivek K. Agrawal	SE	CE (SLDC)	9425805235	victa.vka@gmail.com	
33	Shikhar Verma	AE	—"—	9425805299	shikharverma07@gmail.com	
34						
35						
36						
37						
38						
39						
40						
41						
42						
43						
44						
45						
46						
47						

Details of participants of "86th" OCC Meeting of MP", held at MP SLDC Jabalpur on date -06.09.2023

S. No.	Name	Designation	Office name	Contact no	E-Mail ID	Signature
1	Sh. Pradeep Sachan	CE	SLDC	9425805277	P.sachan@mptransco.nic.in	
2	Sh. K.K. Parbhakar	Advisor	SLDC	9425805267		
3	Aashish Gupta	EE	SLDC	9425806913		
4	A.K. Chouby	EE	SLDC Bhopal	9425804984		
5	S.K. Mehta	EE	SLDC, Jabalpur	9425805017		
6	S.V. VAZE	ACE	(T&C) JBP	9425805025		
7	DR HIMANSHU SHIVHARE	EE	SCADA, JBP	9425806850		
8	P.K Dewangan	AE	Carrier Room	9425805479		
9	Abhishek Rai	A.E	EHT-M(MPPTCL)	9425827764	abhishek.rai@mptransco.nic.in	
10	Basharuddin Khan	ACE	MPPGCL	9425806560	edomg_mpeb@rediffmail.com	
11	Brijesh Kumar Maravi	EE	MPPGCL	9425806537	gcc.mppgcl@gmail.com	
12	J.S. Paricha	GM	MPPMCL	9425805875	jaswant.paricha@mppmcl.com	
13	D.K. Malviya	SSO	PCEE/WCR/JBP	9752415324	dyceetrdwcr@gmail.com	
14	S P Singh	A.E.	O/o Chm(OM)CZ	9425805573	[illegible]	
15	Sunil Nishad	AM	Omkareshwar P/S	9206012861	omkareshwar.nhdc@gmail.com	
16	S.K. Vaishwar	EE	DCC, CZ, Bhopal NHDC	9893810449	plm.mpcz@gmail.com	
17	Dilip Pradhan	Sr. Mngr	MP Pkg-2 (Adani)	6359932224	dilip.pradhan@adani.com	
18	Dhirendra Bharati	P.E.	JP. Bina	9630092356	dhirendrabharati86@gmail.com	
19	Manoj Kumar Gupta	DGM	STPL (Adani)	9996783244	manoj.kumar@[illegible].com	
20	Babita Gajbhiye	EE	O/o CE (EHT-I)	9425806904	babita.gajbhiye@mptransco.co.in	
21	S.K. Roy	AE	O/o CE I/D	9425310291	[illegible]	
22	Sudhir Nema	SE	O/o CE (P&D)	9425805142	sudhir.nema@mptransco.nic.in	
23	Praveen K Jain	CGM	MPPMCL, JBP	9425805930	praveen.jain@[illegible]	
24	Anurag Pathak	EE	SLDC, JBP	9425805283	[illegible]	