Resource Adequacy Plan for Transmission System of Madhya Pradesh up to the year 2034-35

Government of India

Ministry of Power

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EXECUTIVE SUMMARY

Madhya Pradesh, endowed with a diversified generation mix comprising substantial coal-based thermal capacity, hydro stations and a rapidly expanding renewable energy portfolio (particularly solar) is emerging as a key power hub in central India. The state hosts numerous generation and industrial load centres, making it a critical contributor to the national grid. As a power-surplus state with significant inter-state power exchanges, the development of a robust, reliable, and future-ready transmission network is essential. With increasing integration of variable renewable energy into the conventional baseload-dominated system, ensuring grid stability, flexibility, and resilience has become paramount. A modernized transmission system facilitates efficient load balancing, congestion management, and prevention of grid disturbances.

With respect to electricity demand, Madhya Pradesh has exhibited consistent growth over the years, driven by industrialization, urbanization, and agricultural demand. The state has witnessed an all-time high peak demand of 19902 MW in January 2026. The state has recorded a steady rise in peak demand in recent years, reflecting an average annual growth trend of around 6.203%. As per projections in the 20th Electric Power Survey (EPS), the peak electricity demand of Madhya Pradesh is expected to rise to 29097 MW by 2034–35, necessitating timely augmentation of the transmission system.

A comprehensive transmission system strengthening study for Madhya Pradesh, encompassing both Inter-State Transmission System (ISTS) and Intra-State networks, has been carried out by the Central Electricity Authority in coordination with CTUIL, Grid-India, and MP Power Transmission Company Limited (MPPTCL). Based on detailed load flow, contingency, and reliability analyses, a Resource Adequacy (RA) plan for transmission has been formulated, outlining the phased addition of transmission capacity and associated infrastructure in the state up to the year 2034–35 to ensure secure, reliable, and economical power supply.

Summary of existing and planned transmission system under ISTS and InSTS in Madhya Pradesh is given below:

Existing transmission system in Madhya Pradesh as on 31.03.2026:

	1200 kV	765 kV	400 kV	220 kV	132 kV	Total
Inter-State Transmission System (ISTS)						
Transformation Capacity (MVA)	2000	29500	16875	0	0	**48375**
Transmission Line (ckm)	1.9	11892	12342	0	0	**24235.9**
Intra-State Transmission System (InSTS)						
Transformation Capacity (MVA)	0	0	14195	34110	37363	**85668**
Transmission line (ckm)	0	0	4127	15106	23846	**43079**

Transmission System addition planned/ under planning by 2030 (220 kV and above voltage level):

	765 kV	400 kV	220 kV	Total
Inter-State Transmission System (ISTS)				
Transformation Capacity (MVA)	27000	25000	600	**52600**
Transmission Line (ckm)	3984	1409	0	**5393**
Intra-State Transmission System (InSTS)				
Transformation Capacity (MVA)	0	6315	7420	**13735**
Transmission line (ckm)	0	964.2	2205.5	**3169.7**

Transmission System addition planned/ under planning between 2030 and 2035 (220 kV and above voltage level):

	765 kV	400 kV	220 kV	Total
Intra-State Transmission System (InSTS)				
Transformation Capacity (MVA)	0	6870	3600	**10470**
Transmission line (ckm)	0	2380	1442.5	**3822.5**

Chapter-1

Power supply scenario in Madhya Pradesh and projected electricity demand

1.1 Background

Madhya Pradesh is the second-largest state in India by area, with a total geographical area of about 308,245 sq km (around 9.4% of the country's total land area**).** Located in central India, the state's geography is characterised by a diverse landscape that includes the Malwa Plateau, the Vindhya and Satpura ranges**,** extensive plains, and major river systems such as the Narmada, Chambal, Betwa, and Son**.** The climate is predominantly sub-tropical, with hot summers, a monsoon-dominated rainfall pattern, and mild winters, which together shape the state's natural and agricultural environment.

Madhya Pradesh has emerged as an important state in India's power sector. The state has significant solar potential due to high solar insolation and large tracts of available land, and it also has moderate wind potential in select regions. Landmark projects such as the Rewa Ultra Mega Solar Park, along with large solar parks in Neemuch, Agar-Shajapur, and Morena, have positioned Madhya Pradesh as a key contributor to India's renewable capacity. Given its large geographical size and the dispersed location of generation centres, electricity needs to be transmitted over long distances. A reliable transmission system is essential to ensure uninterrupted power supply to both urban centres and remote rural areas. Madhya Pradesh also exports surplus power to neighbouring states, supporting regional grid stability and contributing to national energy security. With urbanisation, industrial growth, and rising agricultural demand, the state's electricity requirement continues to increase, making a strong transmission backbone indispensable.

Madhya Pradesh has a well-developed and expanding electricity transmission network, which plays a critical role in evacuating power from thermal stations as well as from renewable energy projects, and in ensuring reliable supply across the state. Owing to the rapid growth of renewable energy and increasing load demand, the transmission infrastructure has undergone significant augmentation in recent years. With higher penetration of variable renewable energy, maintaining grid stability, voltage control, and load balancing has become increasingly important, and a modern transmission system is central to preventing grid disturbances.

Accordingly, a comprehensive system study of the transmission system of Madhya Pradesh has been carried out by the Central Electricity Authority (CEA) in association with MPPTCL, CTUIL, and Grid-India, and a Resource Adequacy Plan has been prepared indicating the transmission capacity additions required in the state up to the year 2034-35.

1.2 Present Power Scenario in Madhya Pradesh

1.2.1 Installed Generation Capacity (Intra-State) (as on 31.03.2026)

Table 1.1: Installed Capacity (in MW) of Power Utilities in Madhya Pradesh, as per Allocated Shares in Joint and Central Sector Utilities. (As on 31.03.2026)

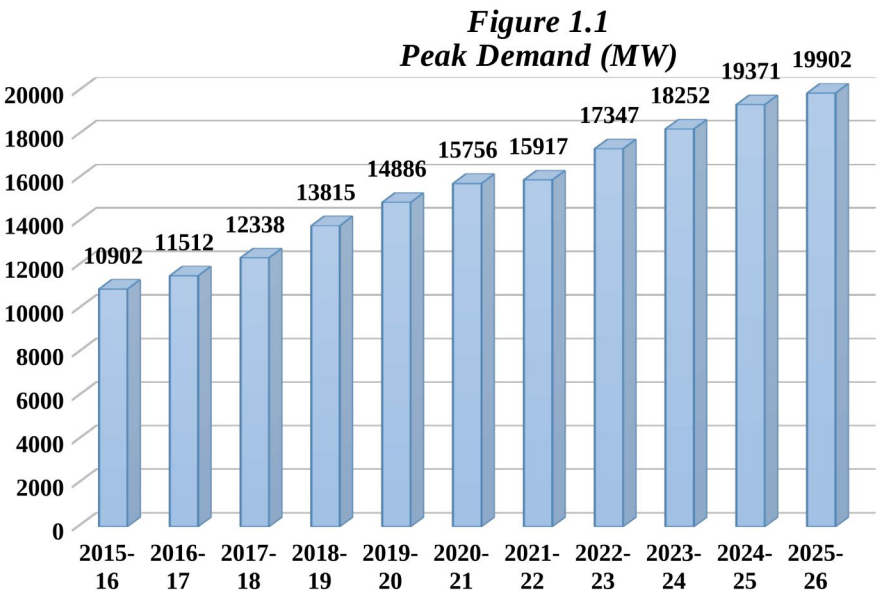
Ownership/ Sector	Mode Wise Breakup									
	Thermal (in MW)					Nuclear (in MW)	Renewable (in MW)			Grand Total (in MW)
	Coal	Lignite	Gas	Diesel	Total		Hydro	RES (MNRE)	Renewable Total	
State	4570.00	0.00	0.00	0.00	4570.00	0.00	1703.66	168.56	1872.22	6442.22
Private	5744.00	0.00	75.00	0.00	5819.00	0.00	0.00	8894.88	8894.88	14713.88
Central	5186.60	0.00	257.00	0.00	5443.60	491.98	1559.40	884.20	2443.60	8379.18
Total	15500.60	0.00	332.00	0.00	15832.60	491.98	3263.06	9947.64	13210.70	29535.28

1.2.2 Electricity Demand of Madhya Pradesh

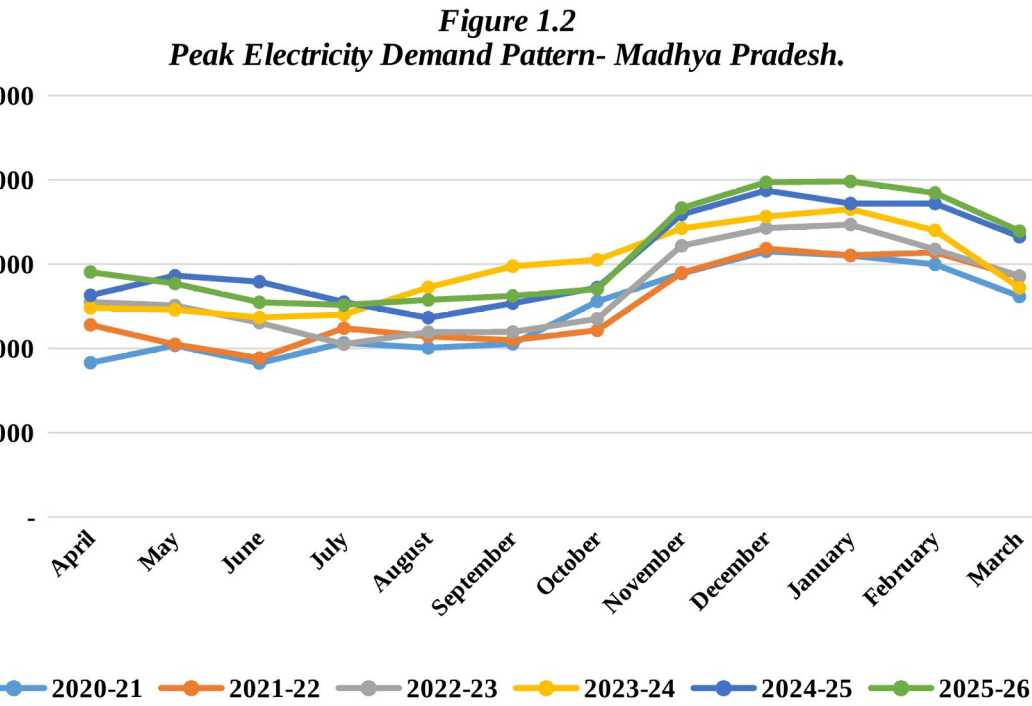
Till date, Madhya Pradesh has witnessed an all-time high peak demand of 19902 MW in January 2026. From the analysis of peak demand of Madhya Pradesh for past 11 years, it has been observed that peak demand of Madhya Pradesh has grown @ 6.203% per year. The recorded peak demand of Madhya Pradesh for eleven years starting from FY 2015-16 to FY 2025-26 is given in the Table 1.2.

Table 1.2: Recorded Peak Demand of Madhya Pradesh

Sr. No.	Year	Peak Demand (MW)
1	2015-16	10902
2	2016-17	11512
3	2017-18	12338
4	2018-19	13815
5	2019-20	14886
6	2020-21	15756
7	2021-22	15917
8	2022-23	17347
9	2023-24	18252
10	2024-25	19371
11	2025-26	19902



Peak electricity demand in Madhya Pradesh is generally experienced in the months of December/January. Monthly variation of Maximum Demand pattern of Madhya Pradesh for past 6 years is shown in Fig. 1.1.



1.3 Projected Electricity Demand:

As per the revised 20th Electric Power Survey (EPS) Report, peak electricity demand is projected to increase to 29 GW by 2034-35. Yearwise projected electricity demand of Madhya Pradesh is given in the Table 1.3 below:

Table 1.3: Projected electricity demand in Madhya Pradesh

Sl. No.	Year	Peak electricity demand in Madhya Pradesh (MW)
1.	2025-26 (Actual)	19902
2.	2026-27 (Projection)	21653
3.	2027-28 (Projection)	22560
4.	2028-29 (Projection)	23472
5.	2029-30 (Projection)	24306
6.	2030-31 (Projection)	25020
7.	2031-32 (Projection)	27085
8.	2032-33 (Projection)	27889
9.	2033-34 (Projection)	28526
10.	2034-35 (Projection)	29097

1.4 Existing Transmission Network in Madhya Pradesh (as on 31.03.2026)

1.4.1 Intra-State Transmission System in Madhya Pradesh

The details of existing intra-state transmission network in Madhya Pradesh is given in Table 1.4, Table 1.5 and Table 1.6.

Table 1.4: Existing Intra-State Transmission system (Substations)

S.No.	Voltage level	Existing Intra- State transmission system (Substations) of MPPTCL (MVA)
1	400 kV	14195
2	200 kV	34110
3	132 kV	37363
Total		**85668**

Table 1.5: Existing Intra-State Transmission system (Transmission Lines)

S.No.	Voltage level	Existing Intra- State transmission system (Transmission Lines) of MPPTCL (ckm)
1	400 kV	4127
2	220 kV	15106
3	132 kV	23846
Total		**43079**

List of 400 kV substations:

S.N	Name of Substation	Capacity (MVA)
1	Astha 400/220kV S/s	3x315
2	Badnawar 400/220kV S/s	2x315+1x500
3	Bhopal 400/220kV S/s	2x315+2x500
4	Bina (MPPTCL) 400/220kV S/s	3x315
5	Chhegaon 400/220kV S/s	2x315
6	Guna (PBGTL) 400/220kV S/s (TBCB)	2x500
7	Indore (MPPTCL) 400/220kV S/s	4x315
8	Julwania 400/220kV S/s	2x315+1x500
9	Katni 400/220kV S/s	2x315
10	Kirnapur (Balaghat) 400/132kV S/s	3x100
11	Mandsaur (Sitamau) 400/220kV S/s	2x315+1x500
12	Nagda 400/220kV S/s	4x315
13	Pithampur 400/220kV S/s	3x315
14	Sagar 400/220kV S/s	2x315
15	Ujjain 400/220kV S/s	2x315

Details of reactors:

Shunt reactors are installed on the buses and transmission lines at the voltage levels of 400 kV and 220 kV. Details of the bus and line reactors in terms of numbers and MVAR capacity is included in the Table 1.6.

Table 1.6: Details of Reactors

S. No.	Voltage level (kV)	Bus Reactors (Nos.)	Bus Reactors (MVAR)	Line Reactors (Nos.)	Line Reactor Capacity (MVAR)	**Total (MVAR)**
1	400 kV	23	2136	29	1746	**3882**
2	220 kV	1	50	0	0	**50**
Total		**24**	**2186**	**29**	**1746**	**3932**

1.4.2 Inter-State Transmission System in Madhya Pradesh

The details of existing inter-state transmission network in Madhya Pradesh is given in Table 1.7, Table 1.8 amd Table 1.9.

Table 1.7: Existing Inter-State Transmission system (Substations)

S.No.	Voltage level	Existing Inter- State transmission system (Substations)

1	1200 kV	1	1200/400 kV	2000
2	765 kV	9	765/400 kV	29500
			400/220 kV (at five nos. substations)	5020
3	400 kV	11	400/220 kV	11855
Total		**21**		**48375**

Table 1.8: Existing Inter-State Transmission system (Transmission Lines)

S.No.	Voltage level	Existing Inter- State transmission system (Transmission Lines) in ckm
1	1200 kV	1.9
2	765 kV	11892
3	400 kV	12342
	Total	**24235.9**

List of 1200 kV Substations:

Sl.No.	Name of Substation	Capacity (MVA)
1	Bina – NTS 1200/400kV S/s	2x1000

List of 765 kV Substations:

Sl.No.	Name of Substation	Capacity (MVA)
1	Bhopal BDTCL 765/400 kV S/s	2x1500, 765/400 kV
2	Bina PG 765/400/220 kV S/s	(2x1000, 765/400 kV) + (1x315, 400/220 kV)
3	Gwalior 765/400/220 kV S/s	(2x1500, 765/400 kV) + (3x315, 400/220 kV)
4	Indore PG 765/400/220 kV S/s	(3x1500, 765/400 kV) + (3x500, 400/220 kV)
5	Jabalpur PS 765/400 kV S/s	2x1500, 765/400 kV
6	Khandwa PS 765/400 kV S/s	2x1500, 765/400 kV
7	Satna 765/400/220 kV S/s	(2x1000, 765/400 kV) + (1x500 + 2x315, 400/220 kV)
8	Seoni 765/400/220 kV S/s	(3x1500, 765/400 kV) + (1x500 + 2x315, 400/220 kV)
9	Vindhyachal 765/400 kV S/s	3x1500, 765/400 kV

List of 400 kV Substations:

Sl.No.	Name of Substation	Capacity (MVA)
1	Betul GIS 400/220 kV S/s	2x315
2	Damoh 400/220 kV S/s	1x500 + 2x315
3	Itarsi 400/220 kV S/s	1x315 + 2x500
4	Jabalpur 400/220 kV S/s	3x315
5	Khandwa 400/220 kV S/s	2x315 + 1x500
6	Morena (Adani) 400/220 kV S/s	2x315 + 500
7	Neemuch PS 400/220 kV S/s	2x500
8	Pachora PS 400/220 kV S/s	3x500
9	Rajgarh 400/220 kV S/s	2x315
10	Rewa RUMS 400/220 kV S/s	3x500
11	Shujalpur 400/220 kV S/s	3x315

Table 1.9: Reactors in Madhya Pradesh under ISTS

S. No.	Voltage level (kV)	Bus Reactors (Nos.)	Bus Reactors (MVAR)	Line Reactors (Nos.)	Line Reactor Capacity (MVAR)	Total (MVAR)
1	765 kV	13	3120	61	15360	**18480**
2	400 kV	35	3808	73	4020	**7828**
Total		**48**	**6928**	**134**	**19380**	**26308**

1.5 Operational constraints in transmission network in Madhya Pradesh:

Constraints	Remedial measure	Status and Anticipated CoD
(N-1) contingency of Gwalior PG 3x315 MVA ICTs	Establishment of 765/400/220 kV Karera S/s along with associated transmission system	Under Construction SCoD: 2026-27
Constraints in Satna/Tikamgarh area	Establishment of 765/400/220 kV Ishanagar S/s along with associated transmission system	Under Construction SCoD: 2026-27
Constraints in Bhopal area	Establishment of 765/400/220/132 kV Kurawar S/s along with transmission system	Under Construction SCoD: 2026-27
	Establishment of 400/220/132kV Mandideep GIS S/s (TBCB) alongwith transmission system	Under Construction SCoD: 2026-27
(N-1) contingency of Sagar MP, 2x315MVA ICTs	LILO of 400 kV Damoh-Bhopal S/c line at Sagar	Commissioned
(N-1) contingency of Satna PG 2x315+1x500 MVA ICTs (220 kV Satna-Maihar S/c	1. Installation of 1x500 MVA, 400/220 kV ICT (4^{th})	Under Construction SCoD: 2026-27

kept out)	2. LILO of 220 kV Satna-Katni line at Maihar 220kV S/s. 3. LILO of Satna 220kV - Maihar 220kV line at Satna (PG) S/s (Commissioned)	
(N-1) contingency of 220kV Bina MP-Bina D/C lines (Rating 260MW)	220 kV Bina - Ganjbasoda line LILO at Bina MP	Commissioned
(N-1) contingency 220kV Nagda MP-Nagda D/C (Rating 260 MW)	LILO of one circuit of Nagda - Daloda 220 kV line at Nagda 220kV S/s	Commissioned
(N-1) contingency 220 kV Shukha-Jabalpur D/C	Installation of 400/220 kV ICTs at Jabalpur-PS along with 220 kV outlets	400/220 kV, 500 MVA ICTat Jabalpur PS commissioned, 220 kV outlets Under Construction (SCoD: 2026-27)
(N-1) contingency of 220 kV Gwalior PG - Mahalgaon D/C line	LILO of Mahalgaon Datiya 220kV line at Gwalior – (PG)	Commissioned
(N-1) contingency 220 kV Satna PG-Satna T/c	LILO of Satna 220 kV - Maihar 220 kV line at Satna (PG) S/s	Under Construction SCoD: 2026-27
(N-1) contingency 132kV Vindhyachal - Waidhan D/C [Rating 92 MW]	Re-conductoring of line with high capacity conductor	Planned SCoD: 2027-28

Chapter-2

Transmission System under Requirement Intra-State by 2034-35

2.1 Load flow studies for preparation of Resource Adequacy of transmission system in Madhya Pradesh

System studies for the resource adequacy plan for Madhya Pradesh's InSTS have been carried out using PSSE Software. The studies that have been carried out include the following:

(i) Steady state load flow studies

(ii) Contingency Analysis

(iii) Short Circuit Studies

The load flow studies have been carried out for the year 2034-35 with following considerations:

(i) MPPTCL's transmission network has been represented at 132 kV and above voltage levels, where loads have been considered incidental on 132 kV buses.

(ii) Load power factor has been considered within ± 0.95 as per the Central Electricity Authority (Technical Standards for Connectivity to the Grid) (Amendment) Regulations, 2019.

(iii) 'N-1' criterion has been considered as recommended in the Manual on Transmission Planning Criteria of CEA (2025).

(iv) Transformation capacity of the substations have been considered as per the Manual on Transmission Planning Criteria of CEA (2025).

(v) The system voltage has been considered within the following limits as per the Manual on Transmission Planning Criteria of CEA (2025).

2.1.1. Generation to be added under Intra-state during 2026-2035:

(a) Generation to be during 2026-2030

Thermal Plants:

(i) Mahan Energen Limited TPP(Phase–II): 2x800 MW(MP share: 1230 MW)

(ii) Amarkantak TPS Extension: 1x660 MW

Solar:

(i) 600 MW solar at Morena Phase –I with BESS (440 MW/ 880 MWh)

(b) Generation to be added during 2030-2035:

Thermal Plants:

(i) Hindustan Thermal Projects Limited (Anuppur Distt.) : 1x800MW
(ii) Torrent Power Limited (Anuppur Distt.) : 2x800 MW
(iii) M/s Adani Power Limited (Anuppur Distt.) : 2x800MW
(iv) Satpura TPS (Sarni) extention: 1x660 MW

2.1.2 Projected Electricity Demand:

As per the revised 20th Electric Power Survey (EPS) Report, peak electricity demand is projected to increase to 29 GW by 2034-35. The same has been considered in the load flow studies.

2.2 Summary of the transmission schemes planned to be added under Intra-State during 2026-2030 (220 kV and above voltage level) is given below (Details given in Annexure A):

2.2.1 Transformation capacity (MVA) to be added under intra-state during 2026-2030 (220 kV and above voltage level)

Table 2.1: Transformation capacity (MVA) to be added under Intra-state during 2026-2030

Transformation Capacity (MVA)				
S.No.	**Voltage level**	**Under Construction**	**Planned**	**Total**
1	400/220 kV	3315	3000	**6315**
2	220/132 & 220/33 kV	3140	4280	**7420**
	Total	**6455**	**7280**	**13735**

2.2.2 Transmission lines (ckm) to be added under intra-state during 2026-30 (220 kV and above voltage level)

Table 2.2: Transmission lines (ckm) to be added under Intra-state during 2026-30

Transmission Lines (ckm)				
S.No.	**Voltage level**	**Under Construction**	**Planned**	**Total**
1	400 kV	744.22	220.0	**964.2**
2	220 kV	1370.3	835.2	**2205.5**
	Total	**2114.5**	**1055.2**	**3169.7**

2.2.3 Substations to be added under intra-state during 2026-30 (220 kV and above voltage level)

Table 2.3: No of substations to be added to be added during 2026-30

Voltage level	No of substations
400 kV	5
220 kV	9

Total	14

2.2.4 Major transmission schemes and substations planned under intra-state to be added during 2026-30 are given below:

1. Transmission system assocaited with MEL (Phase-II: 2x800MW) Power Evacuation (MP Share - 1230MW)

(i) 400/220/132 kV, 2x500 MVA + 2x200 MVA, Rewa (Sagra) 400kV S/s (TBCB).
(ii) 400/220/132 kV, 2x500 MVA + 2x200 MVA Amarpatan 400KV S/s (TBCB).

2. 400 kV substations planned under other schemes:

(i) 400/220/132 kV, 2x500 MVA + 2x160 MVA, Mandideep (STU) S/s (TBCB).
(ii) 400/220/132 kV, 3x500 MVA + 2x200 MVA, Sabalgarh (STU) S/s (MPPTCL).
(iii) 400/220/132 kV, 2x500 MVA + 2x200 MVA, Kukshi 400kV S/s (TBCB).

2.2.5 Reactive compensation planned under intra-state during 2026-30:

Table 2.4: Bus reactors planned under intra-state during 2026-30

Voltage level (kV)	Under Construction		Planned		Total	
	No of reactor	MVAR	No of reactor	MVAR	No of reactor	MVAR
400	3	375	4	500	**7**	**875**

Table 2.5: Line reactors planned under intra-state during 2026-30

Voltage level (kV)	Under Construction		Planned		Total	
	No of reactor	MVAR	No of reactor	MVAR	No of reactor	MVAR
400	2	160	0	0	**2**	**160**

2.3 Summary of the transmission schemes to be added under Intra-State during 2030-2035 is given below (220 kV and above voltage level) (Details given in Annexure B):

2.3.1 Transformation capacity (MVA) to be added under intra-state during 2030-2035 (220 kV and above voltage level)

Table 2.6: Transformation capacity (MVA) planned to be added under Intra-state during 2030-2035

S.No.	Voltage level	Transformation Capacity (MVA)
1	400/220 kV	6870

2	220/132 & 220/33 kV	3600
	Total	**10470**

2.3.2 Transmission lines (ckm) to be added under intra-state during 2030-35 (220 kV and above voltage level)

Table 2.7: Transmission lines (ckm) to be added under Intra-state during 2030-2035

S.No.	Voltage level	Transmission Lines (ckm)
1	400 kV	2380
2	220 kV	1442.5
Total		**3822.5**

Table 2.8: No of substations to be added to be added during 2030-35

Voltage level	No of substations
400 kV	4
220 kV	4
Total	**8**

Table 2.9: Reconductoring of existing line with higher capacity conductor required during 2030-35

Voltage level	No of lines	ckm
220 kV	9	272.5

2.3.3 Reactive compensation planned under intra-state during 2030-2035:

Table 2.9: Line reactors planned under intra-state during 2030-35

	Bus Reactors		Line Reactors	
Voltage level (kV)	**No of reactors**	**MVAR**	**No of reactors**	**MVAR**
400	10	1250	15	974

2.3.4 Major transmission schemes and substations planned under intra-state to be added during 2030-2035 are given below:

- **Power Evacuation Arrangements through STU Network for evacuation of 4000 MW from upcoming Thermal Power Plants in Madhya Pradesh.**

(i) Establishment of 400kV STU Pooling Substation near Shahdol (With 1x125 MVAr, 420 kV Bus Reactor)

(ii) Establishment, 400/220/132kV, 4x500MVA + 4x200MVA, STU Substation near Jabalpur (Towards Barela Side), 2 x 125 MVAR Bus Reactor.
(iii) Establishment, 400/220/132kV, 3x500 MVA + 3x200 MVA, STU Substation near Gadarwara (Towards Narsinghpur Side) 2x125 MVAR Bus Reactor.
(iv) Establishment, 400/220/132kV, 3x500 MVA + 3x200 MVA, STU Substation near Chhindwara (Towards Chourai side) 2x125 MVAR Bus Reactor.

2.4 The transmission constraints observed as per load flow studies and planned remedial measures:

Load flow studies were carried out considering the above mentioned under construction/ planned transmission elements and loading in some of the transmission elements was observed to be approaching the thermal limit under N-1 contingency. Therefore, real time loading may be monitored on these elements and accordingly some additional transmission system may be planned as and when required. The constraints observed in the study files and suggested remedial measures are as given below:

2.4.1 Constraints observed in transmission lines:

S.No.	Transmission Constraints	Remedial Measures
1.	Modak (Rajasthan) - Bhanpura 220 kV S/c line	Loading on Modak- Bhanpura and Sakatpura- Bhanpura (Natural ISTS lines between MP and Rajasthan) to be restricted in coordination with Rajasthan.
2.	Sakatpura (Rajasthan) - Bhanpura 220 kV S/c line	
3.	Bhanpura-Suwasra 220 kV S/c line	
4.	Bhanpura- Niponiya (Marut Shakti) 220 kV S/c line	
5.	Mandideep (400 kV) – Mandideep (220 kV) 220 kV S/c line	Reconductoring of the line with HTLS conductor of 450/500 MVA capacity
6.	Guna (400 kV) - Guna 220 kV D/c line	Load of Guna to be shifted to Bhonra 220 kV substation
7.	Nepanagar- Khandwa 220 kV S/c line	Additional 220 kV line from Khandwa to Nepanagar
8.	Bina (400 kV)- Bina 220 kV D/c line	Reconductoring of the line with HTLS conductor of 450/500 MVA capacity
9.	Rewa UMSP- Sidhi 220 kV D/c line	New substation to be planned with interconnection from Rewa Sagra/ Rums with shifting load of bargwana to to the new substation
10.	Sidhi- Bargawan 220 kV S/c line	
11.	Rajgarh (PG)- Rajgarh (MP) 220 kV D/c line	Load diversion from Rajgarh (MP)/ Reconductoring of the line with HTLS conductor of 450/500 MVA capacity
12.	Satpura- Sarni 220 kV S/c line	Reconductoring of the line with HTLS conductor of 450/500 MVA capacity
13.	Sanawad – Nimrani 220 kV S/c line	As the line is tapped, new line to be planned for removal of tap.
14.	Sanawad – Omkareshwar 220 kV S/c line	

15.	Indore (400 kV) – Indore (220 kV) D/c line	Load diversion from Indore (220 kV)/ Reconductoring of the line with HTLS conductor of 450/500 MVA capacity
16.	Nagda (400 kV) – Nagda (220 kV) 220 kV D/c line and Nagda (400 kV) – Nagda (220 kV) 220 kV S/c line	Reconductoring of the line with HTLS conductor of 450/500 MVA capacity
17.	Satna (PG)- Ajaygarh 220 kV S/c line	Load diversion from Ajaygarh
18.	Kalmeshwar- Pandhuran 220 kV S/c line	Loading on the line (Natural ISTS lines between MP and Maharashtra) to be restricted in coordination with Maharashtra
19.	Chhegaon- Malwa 220 kV S/c line	Reconductoring of the line with HTLS conductor of 450/500 MVA capacity/ additional interconnection.
20.	Amarpatan- Maihar 220 kV D/c line	Reconductoring of the line with HTLS conductor of 450/500 MVA capacity
21.	Bhopal- Mugchhap 220 kV S/c line	Reconductoring of the line with HTLS conductor of 450/500 MVA capacity
22.	Indore (400 kV) - Indore East 220 kV S/c line	Load diversion from Indore East/ Reconductoring of the line with HTLS conductor of 450/500 MVA capacity
23.	Pithampur (400 kV) – Pithampur (Sector-3) 220 kV D/c line	Additional 220 kV D/c line

2.4.2 Constraints observed in ICTs:

S.No.	Transmission Constraints	Remedial Measures
1.	4x315 MVA, 400/220 kV ICTs at Indore	Replacement of existing 2x315 MVA ICT with 2x500 MVA ICT (Due to space constraint)
2.	3x100 MVA, 400/132 kV ICTs at Kirnapur	200/315 MVA ICT augmentation (4^{th})
3.	3x315 MVA, 400/220 kV ICTs at Ashta	500 MVA ICT augmentation (4^{th})
4.	2x315 MVA, 400/220 kV ICTs at Chegaon	500 MVA ICT augmentation (3^{rd})
5.	2x315+500 MVA, 400/220 kV ICTs at Julwania	Load diversion/ replacement of existing 1x315 MVA ICTs with 1x500 MVA ICTs (Due to space constraint)

2.5 Short Circuit Studies:

As per the short circuit studies, fault level at various Intra-state substations in Madhya Pradesh are either near or higher than the designed limits. List of substations with higher fault level is given below:

Substation	Voltage level (kV)	Fault Level (kA)

Bhopal	400	51.7
Nagda	400	51.1
Bina	400	49.7
Ujjain	400	48.1
Indore	400	47.6
Ashta	400	45.8
Pithampur	400	43.9
Badnawar	400	43.0
Gadarwara	400	42.1
Mandideep	400	41.2
Indore (400 kV)	220	50.9
Bhopal (400 kV)	220	50.7
Jabalpur (STU 400 kV)	220	49.7
Jabalpur (220 kV)	220	49.0
Satna	220	47.1
Indore-SZ	220	45.3
Bina (400 kV)	220	44.1
Itarsi (220 kV)	220	43.1
Gadarwara	220	41.1
Nagda (400 kV)	220	39.5
Ujjain (400 kV)	220	39.1

Considering the high fault levels, it is recommended to implement remedial measures such as bus splitting and implementation of series reactors. As a long-term solution, it is recommended to replace the existing equipment with the higher rating equipment. It is also recommended that all new substations should be planned with higher short circuit capacity, as per the CEA Manual on Transmission Planning Criteria, 2025 which is given below:

"The maximum short-circuit level on any new substation bus should not exceed 80% of the rated short circuit capacity of the substation equipment. The 20% margin is intended to take care of the increase in short-circuit levels as the system grows. The rated breaking current capability of switchgear at different voltage levels may be taken as given below:

Voltage Level	Rated Breaking Capacity
765 kV	50 kA / 63 kA
400 kV	63 kA / 80 kA
220 kV	40 kA / 50 kA / 63 kA
132 kV	25 kA / 31.5 kA / 40 kA
66 kV	31.5 kA

Chapter-3

Transmission System Planned under ISTS

3.1 Summary of transmission elements to be added in Madhya Pradesh under ISTS during 2026-30 (220 kV and above voltage level) is given below (Details given in Annexure C):

3.1.1 Transformation capacity (MVA) to be added under ISTS during 2026-30 (220 kV and above voltage level

Table 3.1: Transformation capacity (MVA) to be added under ISTS during 2026-2030

Transformation Capacity (MVA)				
S.No.	**Voltage level**	**Under Construction**	**Planned/ Under Planning**	**Total**
1	765/400 kV	19500	7500	**27000**
2	400/220 kV	16000	9000	**25000**
3	220/132 kV	600	0	**600**
	Total	**36100**	**16500**	**52600**

3.1.2 Transmission lines (ckm) to be added under ISTS during 2026-30 (220 kV and above voltage level

Table 3.2: Transmission lines (ckm) to be added under ISTS during 2026-30

Transmission Lines (ckm)				
S.No.	**Voltage level**	**Under Construction**	**Planned/ Under Planning**	**Total**
1	765 kV	3494	490	**3984**
2	400 kV	1329	80	**1409**
	Total	**4823**	**570**	**5393**

3.1.3 Substations to be added under ISTS during 2026-30

Table 3.3: No of substations to be added to be added during 2026-30

Voltage level	No of substations
765 kV	5
400 kV	2
Total	**7**

Major transmission schemes and substations planned to be added during 2026-30 are given below:

1. **Transmission System for Evacuation of Power from Rajasthan REZ Ph-IV (Part-2: 5.5 GW) (Jaisalmer/Barmer Complex)**
   (i) Establishment, 765/400/220 kV, 3x1500 + 5x500 MVA, Mandsaur Pooling Station along with 2x330 MVAR (765 kV) Bus Reactors & 2x125 MVAR, 420 kV Bus Reactor.
   (ii) Establishment of 765/400/220/132 kV, 2x1500 MVA +2x500 MVA + 3x200 MVA Kurawar S/s with 2x330 MVAR 765 kV bus reactor and 1x125 MVAR, 420 kV bus reactor.
2. **Western Region Expansion Scheme XXXIII (WRES-XXXIII): Part C (CKM-10, MVA-4000)**
   (i) Establishment of 765/400/220 kV, 2x1500 MVA + 2x500 MVA, Ishanagar (New) S/s along with 1x330 MVAr, 765 kV & 1x125 MVAr, 420 kV bus reactor.
3. **Transmission system for Evacuation of Power from RE Projects in Rajgarh (1500 MW) SEZ in Madhya Pradesh-Phase III and Evacuation of Power from RE Projects in Neemuch (1000 MW) SEZ in Madhya Pradesh-Phase II:**
   (i) Establishment of 400/220 kV, 2x500 MVA at Handiya alongwith 2x125 MVAr 420 kV Bus Reactors
4. **Western Region Expansion Scheme XXXIII (WRES-XXXIII): Part B.**
   (i) Establishment of 765/400/220 kV, 2x1500 MVA + 2x500 MVA at Karera (near Datiya) along with 1x330MVAr 765 kV bus reactor & 1x125 MVAr, 420 kV bus reactor.
5. **Transmission system for Evacuation of Power from RE Projects in Morena SEZ in Madhya Pradesh-Phase I (2500MW)**
   (i) Establishment, 765/400/220 kV, 3x1500 MVA + 2x500MVA Morena PS (South of Sabalgarh) with 2x330 MVAr 765 kV bus reactor and 2x125 MVAr 420kV bus reactor.
6. **Transmission system for Evacuation of Power from RE Projects in Sagar area in Madhya Pradesh- (1500MW)**
   (i) Establishment, 400/220 kV, 4x500 MVA, Sagar PS along with 2x125 MVAr (400 kV) Bus Reactor.
7. **Common Network Expansion Scheme to facilitate evacuation of RE power at Mandsaur S/s (Additional 1500MW) and Thermal power of Gadarwara Ph-II (2x800MW)**

(i) Establishment of 765 kV switching station at Gadarwara-ll along with 2x330 MVAR 765kV bus reactors.

8. **Inter-regional (NR-WR) Transmission System strengthening to relieve the loading of 765 kV Vindhyachal-Varanasi D/c line**
9. **Transmission system for evacuation of power from RE projects in Rajgarh (1000 MW) SEZ in Madhya Pradesh-Phase II**

3.1.4 Reactive compensation planned under ISTS during 2026-30:

Table 3.4: Bus reactors planned under ISTS during 2026-30

Voltage level (kV)	Under Construction		Planned/ Under Planning		Total	
	No of reactor	MVAR	No of reactor	MVAR	No of reactor	MVAR
765	8	2640	4	1320	**12**	**3960**
400	9	1125	2	250	**11**	**1375**
Total	**17**	**3765**	**6**	**1570**	**23**	**5335**

Table 3.5: Line reactors planned under ISTS during 2026-30

Voltage level (kV)	Under Construction		Planned		Total	
	No of reactor	MVAR	No of reactor	MVAR	No of reactor	MVAR
765	16	4200	3	720	**19**	**4920**
400	12	600	0	0	**12**	**600**
Total	**28**	**4800**	**3**	**720**	**31**	**5620**

Chapter-4

Recommendations

4.1 Intra-State Transmission system to be added by 2029-30 in Madhya Pradesh comprises of 3169.7 ckm of transmission lines and 13635 MVA of transformation capacity (220 kV and above voltage level) as detailed below:

Table 4.1: Transformation capacity and transmission lines (MVA & ckm) to be added under Intra-state during 2026-30 (220 kV and above voltage level).

	Ckm and MVA to be added during 2026-30		
	400 kV	**220 kV**	**Total**
Transmission lines (ckm)	964.2	2205.5	**3169.7**
Transformation Capacity (MVA)	6315	7420	**13735**

4.2 Intra-State Transmission system planned to be added during 2030 to 2035 comprises of 3822.5 ckm of transmission lines and 10470 MVA of transformation capacity (220 kV and above voltage level) as detailed below:

Table 4.2: Transformation capacity and transmission lines (MVA & ckm) to be added under Intra-state during 2030-35 (220 kV and above voltage level).

	Ckm and MVA to be added during 2030-35		
	400 kV	**220 kV**	**Total**
Transmission lines (ckm)	2380	1442.5	**3822.5**
Transformation Capacity (MVA)	6870	3600	**10470**

4.3 All the planned transmission network should be timely implemented. Tendering and award of the transmission elements should also be expedited.

4.4 MPPTCL should keep adequate space provision in the new substatins for extension/augmentation to meet future load growth. Also, MPPTCL should provide appropriate space provisions 33 kV bays in their 220/33 kV and 132/33 kV grid substations for supply of power to DISCOMs.

4.5 As per the short circuit studies, it has been observed that the fault level at various substations is either near or higher than the designed limits. Therefore, bus splitting arrangement/ implementation of series reactors have been proposed at these substations. It is also suggested to replace the equipment with the higher rating equipment so as to restore the bus split arrangement and enhance the reliability of power supply. Considering the high fault levels in Madhya Pradesh, it is recommended that all new substations should be planned with higher short circuit capacity as per the manual on Transmission Planning Criteria.

4.6 Transmission schemes which are not yet under implementation and are at planned stage for implementation by 2029-30 and 2034-35, may be taken up earlier or later as per requirement of Discom, actual load growth, commissioning of upcoming power plants etc. Accordingly, the Resource Adequacy study for transmission system in the state may be reviewed in the coming years.

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Annexure A

Transmission schemes to be added in Madhya Pradesh under Intra-State during 2026-30

S.No.	Scheme/Details	Voltage (kV)	Line Length (in ckm)	Total MVA	Status (Under Construction/ Planned/ Under planning)	Anticipated Schedule of Commissioning
(A)	**Transmission system assocaited with MEL (Phase-II : 2x800MW) Power Evacuation (MP Share - 1230MW)**					
1	**400/220/132 kV, 2x500 MVA + 2x200 MVA, Rewa (Sagra) 400 kV S/s (TBCB) with 125 MVAR 420 kV bus reactor**	400/220/132	0	1400	Under Construction	2026-27
	PTEMPL (MEL) Switchyard to Rewa(Sagra) 400 kV D/c line with 80 MVAR switchable line reactor on each circuit at Rewa (Sagra) end	400	340	0	Under Construction	2026-27
	LILO of both circuit of Rewa - Sirmour/Bansagar-I 220 kV line at Rewa (Sagra) 400 kV S/s.	220	40	0	Under Construction	2026-27
	Rewa (Sagra) to Kotar 220 kV D/c line	220	90	0	Under Construction	2026-27
2	**400/220/132 kV, 2x500 MVA + 2x200 MVA Amarpatan 400 kV S/s (TBCB) with 125 MVAR 420 kV bus reactor**	400/220/132	0	1400	Under Construction	2026-27
	Rewa(Sagra) 400 kV to Amarpatan 400 kV D/c line	400	100	0	Under Construction	2026-27
	LILO of both circuit of Maihar -Satna (PGCIL) 220 kV line at Amarpatan 400 kV S/s.	220	80	0	Under Construction	2026-27
(B)	**400 kV Substations alongwith associated transmission lines**					
1	**400/220/132 kV, 2x500 MVA + 2x160 MVA, Mandideep (TBCB) GIS with 125 MVAR 420 kV bus reactor**	400/220/132	0	1320	Under Construction	2026-27
	LILO of both circuit of Itarsi (PGCIL) - Bhopal 400 kV line (on Twin Moose) at	400	28.64	0	Under Constructi	2026-27

	Mandideep 400 kV S/s (TBCB.).				on	
	LILO of both circuits of Hoshangabad - Mandideep - Adampur 220 kV line at Mandideep 400 kV S/s (TBCB.).	220	24.32	0	Under Construction	2026-27
	LILO of Mandideep 132 kV - Bagroda 132 kV line at Mandideep 400 kV GIS S/s (TBCB)	132	3.7	0	Under Construction	2026-27
	LILO of Mandideep220 - MACT Bhopal 132 kV line at Mandideep 400 kV S/s	132	4.16	0	Under Construction	2026-27
2	**400/220/132 kV, 3x500 MVA + 2x200 MVA, Sabalgarh (STU) S/s (MPPTCL) with 2x125 MVAR 420 kV bus reactor**	400/220/132	0	1900	Planned	2027-28
	Morena Pooling 765kV substation (ISTS) to Sabalgarh (New) 400 kV D/c line	400	60	0	Planned	2027-28
	LILO of Morena (MPPTCL) - Sabalgarh 220 kV line at Sabalgarh (New) 400 kV S/s.	220	40	0	Planned	2027-28
	LILO of Morena (Adani) - Sabalgarh 220 kV line at Sabalgarh (New) 400 kV S/s.	220	40	0	Planned	2027-28
	LILO of both circuit of Sabalgarh - Sheopur 220 kV DCDS line at Sabalgarh (New) 400 kV S/s.	220	80	0	Planned	2028-29
	Sabalgarh (New) (400 kV) S/s to Sheopur 220 kV D/c line	220	200	0	Planned	2028-29
3	**400/220/132 kV, 2x500 MVA + 2x200 MVA, Kukshi 400 kV S/s (TBCB) with 125 MVAR 420 kV bus reactor**	400/220/132	0	1400	Planned	2028-29
	LILO of both circuit of 400 kV lines from Sardar Sarovar HEP 400 kV S/s to Rajgarh (Dhar) (PGCIL) 400 kV S/s at Kukshi (New) 400/220/132 kV S/s	400	160	0	Planned	2028-29
	LILO of both circuit of Julwaniya - Kukshi 220 kV DCDS line at 400 kV S/s Kukshi (Alirajpur.).	220	80	0	Planned	2028-29
(C)	**220 kV Substations alongwith associated transmission lines**					
1	**220/132 kV, 2x160 MVA, Bisonikala (TBCB) S/s.**	220/132	0	320	Under Constructi	2026-27

					on	
	LILO of both Circuit of Handia(MPPTCL) (220 kV) to Bisonikala (TBCB) 220 kV lines at new Handia 400 kV ISTS S/s.	220	60	0	Planned	2028-29
	LILO of both circuits of Satpura-Itarsi-Handiya 220 kV line at Bisonikala 220 kV S/s (TBCB)	220	68	0	Under Construction	2026-27
	LILO of Seoni Malwa-Harda 132 kV S/c line at Bisonikala	132	8.6	0	Under Construction	2026-27
2	**220/132 kV, 2x160 MVA, Khargone (TBCB) S/s**	220/132	0	320	Under Construction	2026-27
	LILO of both circuits of Chhegaon - Nimrani 220 kV line at Khargone 220 kV S/s (TBCB)	220	140	0	Under Construction	2026-27
3	**220/33 kV, 2x50 MVA, Shahpur (TBCB) S/s**	220/33	0	100	Under Construction	2026-27
	LILO one circuit of Satpura TPS-Itarsi 220 kV line at Shahpur 220 kV S/s (TBCB.).	220	25.2	0	Planned	2026-27
4	**220/132 kV, 2x200 MVA, Jatara S/s.**	220/132	0	400	Under Construction	2026-27
	Ishanagar 765kV S/s (ISTS) to Jatara 220 kV D/c line	220	90	0	Under Construction	2026-27
	Jatara to Prithvipur 132 kV D/c line	132	104	0	Under Construction	2026-27
	Jatara (220 kV) to Jatara (132 kV) 132 kV D/c line	132	20	0	Under Construction	2026-27
	Jatara to Tikamgarh 132 kV S/c line (2nd circuit)	132	37	0	Under Construction	2026-27
	Jatara to Nowgaon 132 kV D/c line	132	140	0	Under Constructi	2026-27

					on	
5	**220/132 kV, 2x200 MVA, Narsinghgarh (Upgradation) S/s.**	220/132	0	400	Under Construction	2026-27
	Shujalpur 220 kV (MPPTCL) to Narsinghgarh 220 kV line (Second circuiting of Shujalpur220 - Narsinghgarh(U/G on 220kV) DCSS line (with HTLS conductor from Shujalpur 220kV S/s upto LILO location for Shujalpur 400kV S/s)) (49 Km)	220	57	0	Under Construction	2026-27
	LILO of one (2nd) circuit of Shujalpur 220 - Narsinghgarh (U/G on 220 kV) line at Shujalpur 400 kV S/s (with HTLS conductor on portion of Shujalpur400 kV to Shujalpur220 kV (circuiy-III) upto LILO point for Shujalpur 400 kV S/s)	220	8	0	Under Construction	2026-27
	Narsinghgarh to Biora 132 kV D/c line.	132	40	0	Under Construction	2026-27
	Narsinghgarh to Suthaliya 132 kV S/c line. (2nd circuit)	132	50	0	Under Construction	2026-27
6	**220/132 kV, 2x200 MVA, Seondha (Upgradation) S/s.**	220/132	0	400	Under Construction	2026-27
	Karera 765kV S/s to Seondha 220 kV D/c line	220	230	0	Under Construction	2026-27
	Seondha to Indergarh 132 kV D/c line	132	80	0	Under Construction	2026-27
7	**220/132 kV, 2x200 MVA, Bhonra S/s .**	220/132	0	400	Planned	2028-29
	Guna 400 kV (TBCB) to Bhonra 220 kV D/c line	220	90	0	Planned	2028-29
8	**220/132 kV, 2x200 MVA, Alirajpur (TBCB) S/S**	220/132	0	400	Planned	2028-29
	Kukshi (Alirajpur) (400 kV) S/s to Alirajpur (New) 220 kV D/c line	220	80	0	Planned	2028-29
9	**220/132 kV, 2x200 MVA, Hatod (Super**	220/132		400	Planned	2027-28

	Corridor) (Indore) S/s					
	Pithampur to Hatod Indore 220 kV D/c line	220	100	0	Planned	2028-29
(D).	**Transmission lines:**					
	400 kV lines					
1	Katni 400 kV to Damoh 400 kV 400 kV S/c line (Arrangement for charging of second ckt. of Katni-Damoh 400 kV DCDS line (Presently charged on 220 kV between Katni and Damoh 220 kV S/s) on 400 kV level between Katni and Damoh (PG) S/s))	400	115.58	0	Under Construction	2026-27
	220 kV lines					
1	LILO of one ckt of Birsinghpur TPS - Katni 400 kV D/C line at ATPS New 400 kV Switchyard.	400	160	0	Under Construction	2029-30
2	LILO of Itarsi to Handia(MPPTCL) 220 kV S/c line at new Handia 400 kV ISTS S/s.	220	20	0	Planned	2028-29
3	LILO of Itarsi(MP) to Barwaha(MP) 220 kV line at new Handia 400 kV ISTS S/s	220	20	0	Planned	2028-29
4	LILO of both circuit Bina - Datiya220 kV line at Karera765kV S/s (ISTS)	220	112	0	Under Construction	2026-27
5	Karera (765 kV)- Pichhore 220 kV D/c line (Extention of LILO portion of Datiya 220 kV-Bina 400 kV line for Pichhore 220 kV upto Karera.)	220	70	0	Under Construction	2026-27
6	Chhatarpur to Tikamgarh 220 kV 220 kV line (2nd circuit)	220	110	0	Under Construction	2026-27
7	LILO of both circuits of Chhtarpur - Tikamgarh220 kV line at Ishanagar 765KV S/s (ISTS)	220	80	0	Under Construction	2026-27
8	LILO of both circuits of 220 kV line between Bhopal and Shujalpur220 at Kurawar 765 KV (ISTS)	220	60	0	Under Construction	2026-27
9	LILO of both circuits of 220 kV line between ATPS and Shahdol/Sidhi 220 at Amarkantak (Anoopur)	220	60	0	Under Construction	2026-27
10	LILO of Satna220 - Katni 220 kV line at	220	3	0	Under	2025-26

	Maihar 220 kV S/s.				Construction	
11	LILO of both circuit of Narsinghgarh 220 kV - Jabalpur (MP) 220 kV line at Jabalpur Pool (PGCIL)	220	48	0	Under Construction	2025-26
	132 kV lines					
1	Kurawar (765 kV) to Runaha 132 kV D/c line.	132	70	0	Under Construction	2026-27
2	Kurawar (765 kV) to Pilukhedi 132 kV D/c line.	132	70	0	Under Construction	2026-27
3	Kurawar (765 kV) to Kurawar 132 kV D/c line.	132	10	0	Under Construction	2026-27
4	Kurawar (765 kV) to Shujalpur 132 kV S/c line.	132	45	0	Under Construction	2026-27
5	Kurawar (765 kV) to Bairagarh 132 kVS/c line.	132	55	0	Under Construction	2026-27
6	Kurawar (765 kV) to Kalapipal 132 kV S/c line.	132	30	0	Under Construction	2026-27
7	Berasiya to Runaha 132 kV D/c line.	132	50	0	Under Construction	2026-27
(E).	**ICT Augmentation.**					
	Additional 400/220 kV and 220/132 kV ICTs					
1	Installation of additional 400/220 kV ICT at Bina 400 kV S/s (4th)	400/220		315	Under Construction	2026-27
2	Installation of additional 400/220 kV ICT at Ujjain 400 kV S/s (3rd)	400/220		500	Planned	2029-30
3	Installation of additional 220/132 kV ICT at	220/132		160	Planned	2026-27

	Mangliya 220 kV S/s (2nd)					
4	Installation of additional 220/132 kV ICT at Sheopur Kalan 220 kV S/s (3rd)	220/132		200	Planned	2028-29
5	Installation of additional 220/132 kV ICT at Chhanera 220/132 kV S/s (3rd)	220/132		200	Planned	2028-29
6	Installation of additional 220/132 kV ICT at Datiya 220/132 kV S/s (3rd)	220/132		200	Planned	2028-29
7	Installation of additional 220/132 kV ICT at Sidhi 220/132 kV S/s (3rd)	220/132		200	Planned	2028-29
8	Installation of additional 220/132 kV ICT at Shujalpur 220 kV S/s	220/132		200	Planned	2028-29
9	Installation of additional 220/132 kV ICT at Chhatarpur 220 kV S/s	220/132		200	Planned	2028-29
10	Installation of additional 220/132 kV ICT at Birsinghpur(Pali) 220 kV S/s	220/132		200	Planned	2028-29
11	Installation of additional 220/132 kV ICT at Shahdol 220 kV S/s	220/132		200	Planned	2029-30
12	Installation of additional 220/132 kV ICT at Udaipura 220 kV S/s	220/132		200	Planned	2029-30
13	Installation of additional 220/132 kV ICT at Chhindwada 220 kV S/s	220/132		200	Planned	2029-30
	Agumentation of existing 220/132 kV ICTs					
1	Agumentation of 160MVA X-mer by 200MVA X-mer at Handiya.	220/132		40	Under Constructi on	2026-27
2	Agumentation of 160MVA X-mer by 200MVA X-mer at Ratlam.	220/132		40	Under Constructi on	2026-27
3	Augmentation of 160MVA Xmer to 200MVA Xmer at Nagda 220/132 kV S/s	220/132		40	Planned	2028-29
4	Augmentation of 2x160MVA Xmer to 2x200MVA Xmer at Indore(NZ) 220/132 kV S/s	220/132		80	Planned	2028-29

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Annexure B

Transmission schemes planned to be added in Madhya Pradesh under Intra-State during 2030-2035

S.No.	Scheme/Details	Voltage (kV)	Line Length (in ckm)	Total MVA
A	**Power Evacuation Arrangements through STU Network for evacuation of 4000MW from upcoming Thermal Power Plants in Madhya Pradesh.**			
1	**Thermal Power Plant to Pooling Station.**			
	Establishment of 400 kV STU Pooling Substation near Shahdol (With 1x125MVAr, 420kV Bus Reactor)	400	0	0
	M/s Adani Power Ltd. Switchyard (2x800MW) to Shahdol (STU) Pooling Station 400 kV DCDS (Quad Moose / High Capacity) line. (Alongwith 125MVAr 420kV Bus Reactor at Generator end)	400	70	0
	M/s Torrent Power Ltd. Switchyard (2x800MW) to Shahdol (STU) Pooling Station 400 kV DCDS (Quad Moose / High Capacity) line. (Alongwith 125MVAr 420kV Bus Reactor at Generator end)	400	50	0
	M/s Hindustan Power Ltd. Switchyard (1x800MW) to Shahdol (STU) Pooling Station 400 kV DCDS (Quad Moose / High Capacity) line. (Alongwith 125MVAr 420kV Bus Reactor at Generator end)	400	50	0
2	**STU Network Work.**			
(i)	**Establishment, 400/220/132 kV, 4x500MVA + 4x200MVA, STU Substation near Jabalpur (Towards Barela Side) with 2 x 125 MVAR Bus Reactor**	400/220/132	0	2800
	STU Pooling Station (near Shahdol) - Jabalpur (STU) 400 kV 2xDCDS (Quad Moose / High Capacity) line. (Alongwith 80MVAR switchable line reactor at Shahdol end of each 400 kV circuit)	400	600	0
	LILO of both circuit of Amarkantak TPS - Jabalpur (Nagagaon) / Gorabazar 220 kV line at Jabalpur (STU) S/s.	220	60	0
	LILO of both circuit of Panagar - Jabalpur (Sukha) 220 kV line at Jabalpur (STU) 400 kV S/s.	220	160	0

S.No.	Scheme/Details	Voltage (kV)	Line Length (in ckm)	Total MVA
	LILO of Jabalpur (Nagagaon) - Jabalpur (Vinoba Bhave) 132 kV line at Jabalpur (STU) 400 kV S/s.	132	30	0
	LILO of both circuit of Gorabazar - Maneri 132 kV line at Jabalpur (STU) 400 kV S/s	132	40	0
(ii)	**Establishment, 220/132/33kV, 2x200 MVA + 2x50 MVA, Substation near Jabalpur (near Jhurjhuru)**	220/132/33	0	500
	220 kV DCDS line from Jabalpur (STU) 400 kV S/s to Jabalpur (near Jhurjhuru) (New) 220 kV S/s. (Alongwith associated feeder bays)	220	60	0
	LILO of Jabalpur (Nagagaon) - Jabalpur (VFJ) 132 kV line at Jabalpur (near Jhurjhuru) (New) 220 kV S/s	132		0
	LILO of one circuit of Panagar - Dheemarkheda 132 kV line at Jabalpur (near Jhurjhuru) (New) 220 kV S/s	132		0
	400 kV STU Pooling Station (near Shahdol) - Amarpatan(TBCB-MTL) 400 kV DCDS (Quad Moose / High Capacity) line. (Alongwith 63MVAR switchable line reactor on each 400 kV circuit at both ends)	400	440	0
	LILO of one circuit of Damoh(PGCIL) – Katni(MPPTCL) 400 kV D/C (Twin Moose) line at Amarpatan (TBCB) 400 kV S/s. (Alongwith50MVAr Switchable line reactor at Amarpatan (TBCB) end for Damoh(PGCIL) – Amarpatan 400 kV S/c line) Note: The same shall be carried out after Upgrading the existing of 220 kV Damoh- Katni S/c line to 400 kV level	400	90	0
(iii)	**Establishment, 220/132/33kV, 2x200MVA + 2x50MVA Substation near Nagod (Near Satna)**	220/132/33	0	500
	220 kV DCDS line from Amarpatan (TBCB-MTL) 400 kV S/s to Nagod (Near Satna) (New) 220 kV S/s. (Alongwith associated feeder bays)	220	120	0
	132 kV DCDS line from Nagod (New) 220 kV S/s to Nagod (Existing) 132 kV S/s (Alongwith associated	132	20	0

S.No.	Scheme/Details	Voltage (kV)	Line Length (in ckm)	Total MVA
	feeder bays)			
	132 kV DCDS line from Nagod (New) 220 kV S/s to Devendra Nagar (TBCB) 132 kV S/s (Alongwith associated feeder bays)	132	60	0
(iv)	**Establishment, 400/220/132 kV, 3x500 MVA + 3x200 MVA, STU Substation near Gadarwara (Towards Narsinghpur Side) with 2x125MVAR Bus Reactor**	400/220/ 132	0	2100
	Jabalpur (STU) - Gadarwara (STU) 400 kV DCDS (Quad Moose / High Capacity) line. (Alongwith 63MVAR switchable line reactor on each 400 kV circuit at Gadarwara end)	400	260	0
	Gadarwara (STU) - Mandideep (TBCB) 400 kV DCDS (Quad Moose / High Capacity) line. (Alongwith 80MVAR switchable line reactor on each 400 kV circuit at Gadarwara (STU) end)	400	300	0
	Gadarwara (STU) – Gadarwara switching station (765kV ISTS) 400 kV DCDS line (Quad Moose / High Capacity) *	400	40	0
	LILO of both circuit of Narsinghpur - Chichli / Pipariya 220 kV line at Gadarwara (STU) 400 kV S/s	220	60	0
	LILO of both circuit of Chichli - Udaipura 220 kV line at Gadarwara (STU) 400 kV S/s	220	60	0
	Gadarwara (STU)400 - Karapgaon 132 kV DCDS line (Alongwith associated feeder bays)	132	60	0
	Gadarwara (STU)400 - Tendukheda 132 kV DCDS line (Alongwith associated feeder bays)	132	60	0
	Gadarwara (STU)400 - Palohaabada 132 kV DCDS line (Alongwith associated feeder bays	132	30	0
	Gadarwara (STU)400 - Bankhedi 132 kV DCDS line (Alongwith associated feeder bays)	132	80	0
	LILO of one circuit of Gadarwara (STU)400 - Bankhedi 132 kV line at Pondar (Saali Choka) 132 kV S/s	132	10	0
(v)	**Establishment, 220/132/33kV, 2x200MVA +**	220/132/33	0	500

S.No.	Scheme/Details	Voltage (kV)	Line Length (in ckm)	Total MVA
	2x50MVA Substation near Karakbel (Narsinghpur)			
	Gadarwara (STU)400 - Karakbel(Narsinghpur) 220 kV DCDS line (Alongwith associated feeder bays)	220	140	0
	LILO of both circuit of Narsinghpur220 - Karakbel 132 kV DCDS line at Karakbel (Narsinghpur) 220 kV S/s	132	40	0
	LILO of Narsinghpur132 - Shrinagar 132 kV line at Karakbel (Narsinghpur) 220 kV S/s	132	20	0
(vi)	**Establishment, 400/220/132 kV, 3x500 MVA + 3x200 MVA, STU Substation near Chhindwara (Towards Chourai side) 2x125MVAR Bus Reactor**	400/220/ 132	0	2100
	Jabalpur (STU) - Chindwara (STU) 400 kV DCDS (Quad Moose / High Capacity) line. (Alongwith with 50MVAr Switchable line reactor at Chhindwara end and 63 MVAr Switchable line reactor Jabalpur (STU) end on each 400 kV circuit)	400	360	0
	Seoni (PGCIL)765 - Chhindwara (STU) 400 kV DCDS (Quad Moose / High Capacity) line.	400	120	0
	LILO of both circuit of Seoni (PGCIL) - Chhindwara (MPPTCL) 220 kV line at Chhindwara (STU) 400 kV S/s	220	20	0
	LILO of both circuit of Chhindwara (MPPTCL) - Pandhurna / Betul 220 kV line at Chhindwara (STU) 400 kV S/s	220	60	0
	LILO of both circuit of Chhindwara220 (MPPTCL) - Chourai / Amarwada 132 kV line at Chhindwara (STU) 400 kV S/s	132	40	0
	LILO of one circuit of Chhindwara (MPPTCL) - Saori 132 kV line at Chhindwara (STU) 400 kV S/s	132	30	0
	LILO of one circuit of Chand (TBCB) - Bichhua 132 kV line at Chhindwara (STU) 400 kV S/s	133	30	0
(vii)	**Establishment, 220/132/33kV, 2x200 MVA + 2x50 MVA, Substation near Waraseoni (Balaghat)**	**220/132/33**	**0**	**500**

S.No.	Scheme/Details	Voltage (kV)	Line Length (in ckm)	Total MVA
	Chhindwara (STU)400 - Waraseoni (Balaghat) 220 kV DCDS (High Capacity - 1400Amps & above) line (Alongwith associated feeder bays)	220	240	0
	LILO of Warseoni (Existing) - Balaghat 132 kV line at new Warseoni (Balaghat) 220 kV S/s	132	20	0
	LILO of Katangi - Seoni 132 kV line at new Warseoni (Balaghat) 220 kV S/s	132	20	0
	LILO of Balaghat - Lalbarra 132 kV line at new Warseoni (Balaghat) 220 kV S/s	132	30	0
B	**Additional transmission elements suggested as per load flow study results:**			
	(a) Transmission lines:			
	Nepanagar- Khandwa 220 kV D/c line	220	120	
	Pithampur (400 kV) – Pithampur (Sector-3) 220 kV D/c line (2nd)	220	70	
	(b) Reconductoring of existing lines			
	Mandideep (400 kV) – Mandideep (220 kV) 220 kV S/c line	220	15	
	Bina (400 kV)- Bina 220 kV D/c line	220	34	
	Rajgarh (PG)- Rajgarh (MP) 220 kV D/c line	220	25	
	Satpura- Sarni 220 kV S/c line	220	4	
	Nagda (400 kV) – Nagda (220 kV) 220 kV D/c line and Nagda (400 kV) – Nagda (220 kV) 220 kV S/c line	220	5.5	
	Chhegaon- Malwa 220 kV S/c line	220	48	
	Amarpatan- Maihar 220 kV D/c line	220	60	
	Bhopal- Mugchhap 220 kV S/c line	220	71	
	Indore (400 kV) - Indore East 220 kV S/c line	220	10	

S.No.	Scheme/Details	Voltage (kV)	Line Length (in ckm)	Total MVA
	(c) ICT augmentations			
	Replacement of existing 2x315 MVA, 400/220 kV ICT with 2x500 MVA ICT at Indore (Due to space constraint)	400/220		370
	315 MVA, 400/132 kV ICT augmentation (4th) at Kirnapur	400/132		315
	500 MVA, 400/220 kV ICT augmentation (4th) at Ashta	400/220		500
	500 MVA, 400/220 kV ICT augmentation (3rd) at Chegaon	400/220		500
	Replacement of existing 1x315 MVA ICTs with 1x500 MVA ICTs at Julwania (Due to space constraint)	400/220		185

Annexure C

Transmission schemes to be added in Madhya Pradesh under ISTS during 2026-30

S.No.	Scheme/Details	Voltage (kV)	Line Length (in ckm)	Total MVA	Status (Under Construction/ Planned/ Under planning)	Anticipated Schedule of Commissioning
1	**Transmission System for Evacuation of P3Power from Rajasthan REZ Ph-IV (Part-2: 5.5 GW) (Jaisalmer/Barmer Complex): Part C (SPV Name: POWERGRID Mandsaur Transmission Limited))**					
	Establishment, 765/400/220 kV, 3x1500 + 5x500 MVA, Mandsaur Pooling Station along with 2x330 MVAR (765 kV) Bus Reactors & 2x125 MVAR, 420 kV Bus Reactor	765/400/220	0	7000	Under Construction	2026-27
	Mandsaur PS - Indore (PG) 765 kV D/C Line. 1x330 MVAR switchable line reactor (SLR) on each ckt at Mandsaur end of Mandsaur PS – Indore(PG) 765 kV D/c Line	765	338	0	Under Construction	2026-27
2	**Transmission System for Evacuation of Power from Rajasthan REZ Ph-IV (Part-2: 5.5 GW) (Jaisalmer/Barmer Complex): Part E (SPV Name: POWERGRID Mewar Transmission Limited))**					
	Rishabdeo - Mandsaur PS 765 kV D/C line along with 240 MVAR switchable line reactor at Rishabhdeo end	765	250	0	Under Construction	2026-27
3	**Transmission System for Evacuation of Power from Rajasthan REZ Ph-IV (Part-2: 5.5 GW) (Jaisalmer/Barmer Complex): Part D (SPV Name: POWERGRID Beawar-Mandsaur Transmission Limited)**					
	Beawar-Mandsaur PS 765KV D/C line along with 240 MVAr switchable line reactor on each circuit at each end.	765	553	0	Under Construction	2026-27
4	**Transmission System for Evacuation of Power from Rajasthan REZ Ph-IV (Part-2: 5.5 GW) (Jaisalmer/ Barmer Complex): Part H1 (SPV name: POWERGRID Kurawar Transmission Limited)**					

	Establishment of 2x1500 + 2x500 + 3x200 MVA 765/400/220/132 kV Kurawar S/s with 2x330 MVAR 765 kV bus reactor and 125 MVAR 420 kV bus reactor	765/400/220/132	0	4600	Under Construction	2026-27
	Mandsaur – Kurawar 765 kV D/c line with 240 MVAr switchable line reactors at both ends.	765	402	0	Under Construction	2026-27
	Kurawar – Ashta 400 kV D/c line	400	112	0	Under Construction	2026-27
	Shujalpur – Kurawar 400 kV D/c line	400	57	0	Under Construction	2026-27
	LILO of one circuit of Indore – Itarsi 400 kV D/c line at Ashta S/s	400	112	0	Under Construction	2026-27
	LILO of one circuit of Indore – Bhopal 765 kV S/c line at Kurawar S/s	765	53	0	Under Construction	2026-27
5	**Rajasthan REZ Ph-V (Part-1: 4 GW) [Sirohi/Nagaur] Complex (SPV Name: Rajasthan V Power Transmission Limited)**					
	Sirohi – Mandsaur PS 765 kV D/C line with 240 MVAr switchable line reactor at Sirohi S/s end and 330 MVAr switchable line reactor at Mandsaur PS end for each circuit of Sirohi – Mandsaur PS 765KV D/c line	765	622	0	Under Construction	2026-27
	Mandsaur PS – Khandwa (New) 765 kV D/C line along with 240 MVAr switchable line reactor for each circuit at each end of Mandsaur PS – Khandwa (New) 765 kV D/c line	765	535	0	Under Construction	2026-27
6	**Transmission System for evacuation of power from Mahan Energen Limited Generating Station in Madhya Pradesh (SPV Name: POWERGRID MEL Power Transmission Limited)**					
	Mahan (existing bus) – Rewa PS (PG) 400 kV D/c (Quad ACSR/AAAC/AL59 moose equivalent) line	400	277	0	Under Construction	2027-28
7	**Augmentation of Transformation Capacity and Implementation of Line Bays at Mandsaur S/S for RE Interconnection (SPV Name: POWERGRID Mandsaur I RE Transmission Limited)**		0	0	Under Construction	2026-27
	ICT augmentation, 765/400 kV, 1x1500 MVA, ICT (4th) (Terminated at 400 kV & 765kV Bus Section-II).	765 / 400	0	1500	Under Construction	2026-27

	ICT augmentation, 400/220kV, 1x500 MVA (6th) (Terminated on 400 kV Bus Section-I & 220kV Bus Section-II).	400 / 220	0	500	Under Construction	2026-27
	ICT augmentation, 400/220kV, 1x500 MVA (7th) (Terminated on 400 kV Bus Section-II & 220kV Bus Section-III) at Mandsaur PS	400 / 220	0	500	Under Construction	2026-27
8	**Inter-regional (NR-WR) Transmission System strengthening to relieve the loading of 765 kV Vindhyachal-Varanasi D/c line**					
	765 kV Vindhyachal Pool - Prayagraj D/C line along with 330 MVAr line reactor (switchable) at Prayagraj end on each circuit of 765 Kv Vindhyachal Pool - Prayagraj D/C line	765	440	0	Under Construction	2027-28
	Bypassing of both circuits of 765 kV Sasan – Vindhyachal Pool 2xS/C line at Vindhyachal Pool and connecting it with 765 kV Vindhyachal Pool - Prayagraj D/C line, thus forming 765 kV Sasan - Prayagraj D/C line.	765	1	0	Under Construction	2027-28
9	**Western Region Expansion Scheme XXXIII (WRES-XXXIII): Part C**					
	765/400/220, 2x1500 MVA + 2x500 MVA, Ishanagar (New) S/s along with 1x330 MVAr, 765 kV & 1x125 MVAr, 420 kV bus reactor	765 / 400 / 220	0	4000	Under Construction	2026-27
	LILO of one circuit of Jabalpur – Orai 765 kV D/c line at Ishanagar 765 kV S/s	765	35	0	Under Construction	2026-27
10	**Transmission system for evacuation of power from RE projects in Rajgarh (1000 MW) SEZ in Madhya Pradesh-Phase II**					
	Pachora PS – Ujjain (MPPTCL) 400 kV D/c line	400	118	0	Under Construction	2026-27
	400/220 kV, 3x500 MVA ICT augmentation (4th, 5th and 6th) at Pachora PS.	400 / 220	0	1500	Under Construction	2026-27
11	**Transmission system for Evacuation of Power from RE Projects in Rajgarh (1500 MW) SEZ in Madhya Pradesh-Phase III and Evacuation of Power from RE Projects in Neemuch (1000 MW) SEZ in Madhya Pradesh-Phase II (SPV:M/s G R Infra Projects Limited)**					
	400/220 kV, 3x500 MVA ICT augmentation at Pachora PS and creation of New 220 kV Bus Section with 220 kV Bus Sectionaliser.	400 / 220	0	1500	Under Construction	2027-28

	Pachora PS – Rajgarh(PG) 400 kV D/c line along with associated line bays at both ends and 50 MVAr Switchable Line Reactors (Sw LR) on each ckt at both ends	400	185	0	Under Construction	2027-28
	ICT augmentation, 400/220 kV, 3x500 MVA at Neemuch S/s and creation of New 220 kV Bus Section-II at Neemuch PS.	400 / 220	0	1500	Under Construction	2027-28
	Neemuch PS – Pachora PS 400 kV D/c line along associated Line bays and 50 MVAr Switchable Line Reactor (Sw LR) on each ckt at both ends	400	221	0	Under Construction	2027-28
	Establishment, 400/220 kV, 2x500 MVA at Handiya alongwith 2x125 MVAr 420 kV Bus Reactors	400 / 220	0	1000	Under Construction	2027-28
	Pachora PS – Handiya 400 kV D/c line along with associated bays at Pachora PS end and 50 MVAr Switchable Line Reactor (Sw LR) on each ckt at both ends	400	214	0	Under Construction	2027-28
	LILO of Khandwa (PG) – Itarsi (PG) 400 kV D/c line at Handiya S/s.	400	30	0	Under Construction	2027-28
12	**Western Region Expansion Scheme XXXIII (WRES-XXXIII): Part B**					
	765/400/220 kV, 2x1500 MVA + 2x500 MVA at Karera (near Datiya) along with 1x330MVAr 765 kV bus reactor & 1x125 MVAr, 420 kV bus reactor	765 / 400 / 220	0	4000	Under Construction	2026-27
	LILO of Satna-Gwalior 765 kV S/c line at Karera	765	85	0	Under Construction	2026-27
13	**Western Region Expansion Scheme XXXIII Part A (WRES-XXXIII Part A))**					
	ICT 400/220 kV, 2x500 MVA at 765/400 KV Jabalpur PS 400/220 KV and creation of 220KV level.	400/220	0	1000	Under Construction	2026-27
14	**Western Region Expansion Scheme XXXIII Part D (WRES-XXXIII Part D))**					
	Installation, 400/220 kV, 1x500MVA (4th) ICT at Satna (PG) SS along with associated bays and 2 no. 220kV Line Bays for LILO of 220kV Satna-Maihar line at Satna (PG)	400 / 220	0	500	Under Construction	2026-27
15	**Augmentation of Transformation Capacity at 400/220KV Rajgarh (PG) S/S in MP by 400/220KV, 1x500 MVA ICT (3rd))**					
	Part A: ICT augmentation, 400/220KV, 1x500 MVA at Rajgarh.	400 / 220	0	500	Under Construct	2026-27

					ion	
16	**Augmentation of Transformation Capacity at 400/220KV Rajgarh (PG) S/s in MP by 400/220KV 500MVA ICT (4th)**					
	ICT augmentation, 400/220KV, 1x500 MVA, Rajgarh (PG) S/s in MP ICT (4th)	400 / 220	0	500	Under Construction	2026-27
17	**Network Expansion Scheme to control fault level at Vindhyachal Complex of Madhya Pradesh and for providing connectivity to 2x800MW singrauli STPS-III**					
	PART A: Vindhyachal IV – Vindhyachal PS 400kV 1st D/c (quad) line (of POWERGRID) and Vindhyachal PS – Sasan 400kV D/c (twin) line (of POWERGRID) to be bypassed at Vindhyachal PS and interconnected with each other at outskirts of Vindhyachal PS (Under scope of ISTS) so as to form Vindhyachal IV (2x500MW) – Sasan 400kV D/c line	400	3		Under Construction	2027-28
18	**Transmission system for Evacuation of Power from RE Projects in Morena SEZ in Madhya Pradesh-Phase I (2500MW)**					
	Establishment, 765/400/220 kV, 3x1500 MVA + 2x500MVA Morena PS (South of Sabalgarh) with 2x330 MVAr 765 kV bus reactor and 2x125 MVAr 420kV bus reactor	765 / 400 / 220	0	5500	Under Construction	2028-29
	Morena PS (South of Sabalgarh) – Karera (near Datia) 765 kV D/c line	765	180	0	Under Construction	2028-29
	1x500 MVA 400/220 kV ICT augmentation (3rd) at 765/400/220 kV Karera (near Datia) S/s (Sec-I)	400 / 220	0	500	Under Construction	2028-29
19	**ICT augmentation at Morena PS**					
	Augmentation of Transformation capacity at Morena PS by 400/220kV 500MVA ICT (3rd, 4th & 5 th)	400 / 220	0	1500	Planned	2027-28
20	**Transmission system for Evacuation of Power from RE Projects in Morena SEZ in Madhya Pradesh-Phase II (3500MW)**					
	Augmentation of 3x1500 MVA, 765/400 kV & 8x500MVA,400/220kV Morena PS (South of Sabalgarh) with 2x330 MVAr 765 kV bus reactor and 2x125 MVAr 420 kV bus reactor	765/400/200	0	8500	Under Planning	2029-30
	Morena PS (South of Sabalgarh)(Sec-II) –	765	180		Under	2029-30

	Karera (near Datia)(Sec-II) 765 kV 2 nd D/c line				Planning	
	LILO of Gwalior-Orai (NR) 765kV S/c line at Karera (near Datia) (Sec-II) S/s	765	80		Under Planning	2029-30
21	**Transmission system for Evacuation of Power from RE Projects in Sagar area in Madhya Pradesh- (1500MW)**					
	Establishment, 400/220 kV, 4x500 MVA, Sagar PS along with 2x125 MVAr (400 kV) Bus Reactor	400 / 220	0	2000	Under Planning	2029-30
	Sagar – Damoh (PG) 400 kV D/c (quad moose) line	400	80	0	Under Planning	2029-30
22	**Common Network Expansion Scheme to facilitate evacuation of RE power at Mandsaur S/s (Additional 1500MW) and Thermal power of Gadarwara Ph-II (2x800MW)**					
	ICT augmentation 765/400 kV, 2x1500MVA, (5th& 6th) (Terminated at 400 kV & 765kV Bus Section-II) at Mandsaur PS.	765 / 400	0	3000	Planned	2029-30
	ICT augmentation 400/220 kV, 3x500MVA, (8th,9th & 10th) (Terminated on 400 kV Bus Section-II & 220kV Bus Section-III) at Mandsaur PS.	400 / 220	0	1500	Planned	2029-30
	Establishment of 765 kV switching station at Gadarwara-ll along with 2x330 MVAR 765kV bus reactors	765	0	0	Planned	2029-30
	Kurawar- Gadarwara-ll 765 kV D/c line (~230Km) with LILO of one circuit at Bhopal (BDTCL) S/s: o 240MVAr Sw Line Reactors at both ends of Kurawar – Gadarwara II 765kV line o 240MVAr Sw Line Reactors at Bhopal end of Bhopal- Gadarwara-ll 765 kV line	765	230	0	Planned	2029-30