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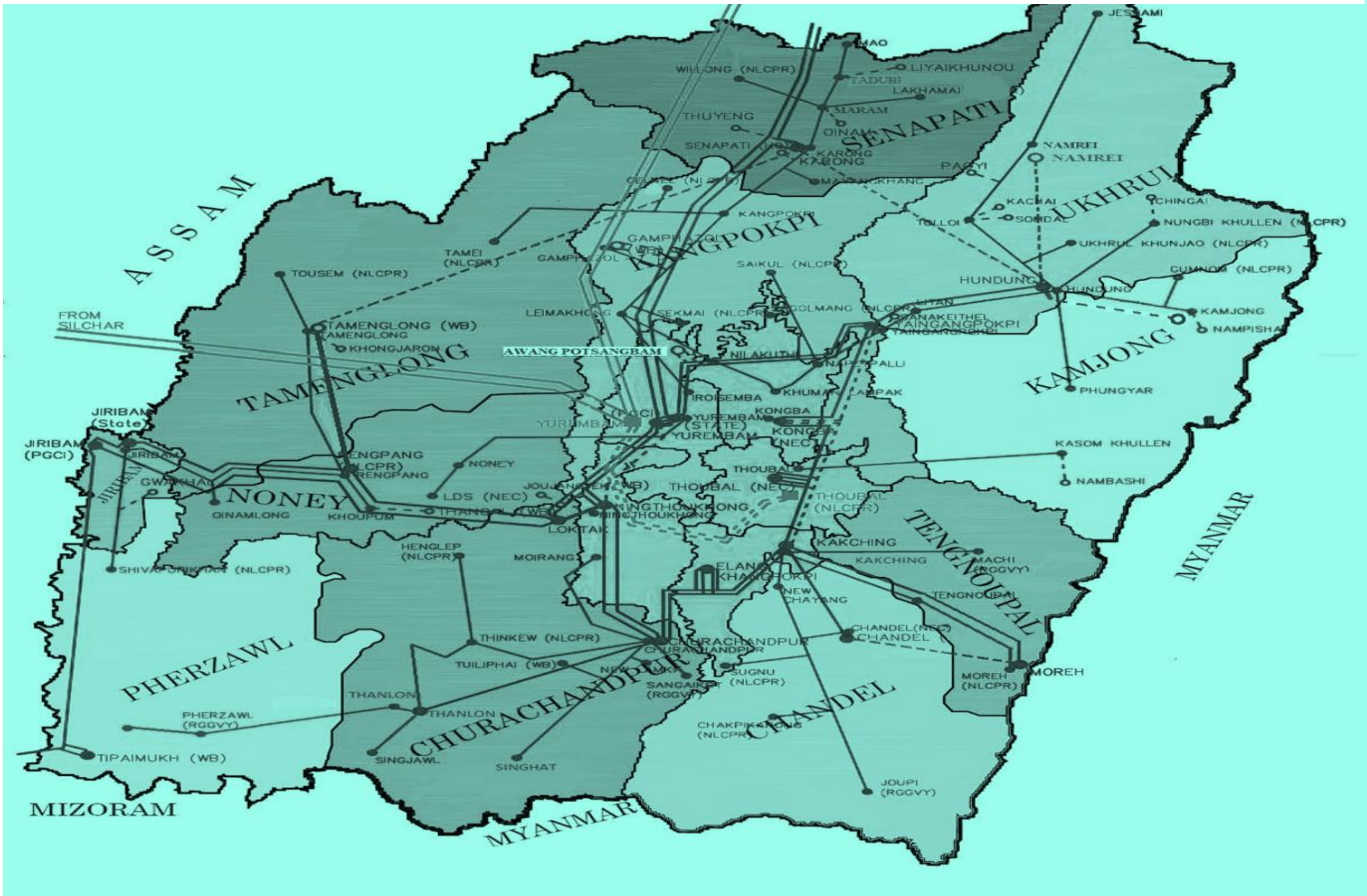
REPORT ON INTRA STATE TRANSMISSION RESOURCE ADEQUACY PLAN FOR MANIPUR BY THE YEAR 2034-35



CENTRAL ELECTRICITY AUTHORITY

NEW DELHI

Disclaimer

This Intra-State Transmission Resource Adequacy Plan for the State has been prepared based on data and inputs provided by the State utilities. The analysis, findings, and conclusions contained herein rely on the accuracy, completeness, and timeliness of the information furnished by the State. Any errors, omissions, or inconsistencies in the data may influence the results of this study.

The Central Electricity Authority (CEA) has facilitated and supported the State in the preparation of this plan to address intra-state transmission requirements. The recommendations of this study—including but not limited to the establishment of new substations, construction of new transmission lines, reconductoring of existing lines, and augmentation of substations— depends upon data furnished by the State utilities. It is suggested to take up new intra-state elements, commensurate to the generation/demand in the area.

Executive Summary

Electricity (Transmission System Planning, Development and Recovery of Inter-State Transmission Charges) Rules 2021, provides that CEA to draw up short term plan every year on rolling basis for up to next five years and perspective plan every alternate year on rolling basis for next ten years.

Further, Guidelines for Resource Adequacy Planning Framework for India issued by MoP on 28.06.2023 provides that CEA to prepare the Resource Adequacy Plan for each states. Generation resource adequacy studies for the Manipur State has already been carried out by CEA.

For the transmission part, this report presents a comprehensive assessment of the intra-state transmission infrastructure in Manipur, with projections and planning aimed at ensuring transmission resource adequacy by the year 2034-35. The analysis incorporates current electricity demand, projected growth, existing and planned transmission assets, and key recommendations for strengthening the state's transmission network.

The highest peak demand met by Manipur in 2024-25 was 269 MW, and Projected Peak Demand by 2034-35 is estimated to 512 MW, which is slightly less than the Electric Power Survey report. Further, existing Installed Capacity in the state is about 271.16 MW and state has planned 120 MW hydro capacity by 2034-35. Presently, the state has 864.84 ckm of 132 kV lines and 90.20 ckm of 400 kV lines. It has transformation capacity of 667.4 MVA at 132 kV and 315 MVA at 400 kV level.

Considering the anticipated demand, generation capacity, demand pattern, operational feedback from NERLDC and SLDC, system studies have been conducted for winter evening peak (low hydro availability) and high hydro low demand scenarios for the timeframe 2031-32 and 2034-35 in consultation with Manipur, CTUIL and Grid-India. Based on the studies, the requirement of transmission system by the year 2034-35 has been identified.

A total of 640 MVA transformation capacity addition/augmentation and 647 ckm of new transmission lines/reconductoring of old lines at an estimated cost of ₹ 767.52 Cr. would be required in the intra-state transmission system for meeting the electricity demand of the state by the year 2034-35. Further, reactive power compensation need to be provided at various substations at distribution level for addressing low voltage issues.

Summary of year-wise MVA capacity, ckm addition and tentative expenditure required for implementation of above recommended proposals is given below:

Financial Year	**MVA Capacity Addition**		**Transmission line ckm Addition**	**Reconductoring (ckm)**	**Estimated Cost (in ₹ Cr.)**
	132 kV	**400 kV**	**132 kV**	**132 kV**	
FY 2026-27	-	-	-	02	02.48
FY 2027-28	-	-	-	-	-
FY 2028-29	150	-	141	-	244.57
FY 2029-30	-	315	140	-	178.84
FY 2030-31	-	-	60	-	54.47
FY 2031-32	-	-	142	52	150.87

FY 2032-33	175	-	110	-	136.29
FY 2033-34	-	-	-	-	-
FY 2034-35	-	-	-	-	-
Total	**325**	**315**	**593**	**54**	**767.52**

To ensure reliable and adequate power supply in Manipur by 2034-35, substantial investments and infrastructure upgrades are essential. With a projected demand of 512 MW and local generation and contracted capacity covering only part of this, a robust and resilient transmission network becomes critical. The outlined plan, if implemented timely, will ensure resource adequacy and support economic and industrial development in the state.

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Intra State Transmission Resource Adequacy of Manipur by the year 2034-35

1. Demographics

Manipur is a state in Northeast India, with the city of Imphal as its capital. It is bounded by the Indian states of Nagaland in the North, Mizoram in the South and Assam in the West. It also borders two regions of Myanmar, Sagaing Region in the East and Chin State (Myanmar) in the South. The state covers an area of 22,327 square kilometres (8,621 square mi) and has a population of almost 3 million. Manipur has been at the crossroads of Asian economic and cultural exchange for more than 2,500 years.

2. Electricity profile of state

2.1. Power generation-demand scenario of state:

2.1.1. In the FY 2024-25, Manipur had peak electricity demand of 269 MW and electrical energy requirement of 1073 MU. As on 28.02.2025, state has central sector of 215.92 MW which includes hydro plants (87.24 MW) and thermal plants (128.68 MW). In addition, installed capacity in state sector is 41.45 MW and installed capacity in private sector is 13.79 MW. The per capita consumption of the state was 354 kWh in the year 2022-23.

2.1.2. Peak demand & Energy of Manipur state is given at Table 2-1 below

Table 2-1 Peak demand & Energy of Manipur

Financial Year	Peak Demand(MW)	Energy(MU)
2018-19	219	905
2019-20	226	924
2020-21	252	974
2021-22	258	1019
2022-23	248	1014
2023-24	258	1023
2024-25	269	1073

Source: Power Supply Position Report, CEA

2.1.3. The graph indicating the above Peak Demand (MW) and Energy (MU) is given at Figure 2-1 & Figure 2-2 respectively below.

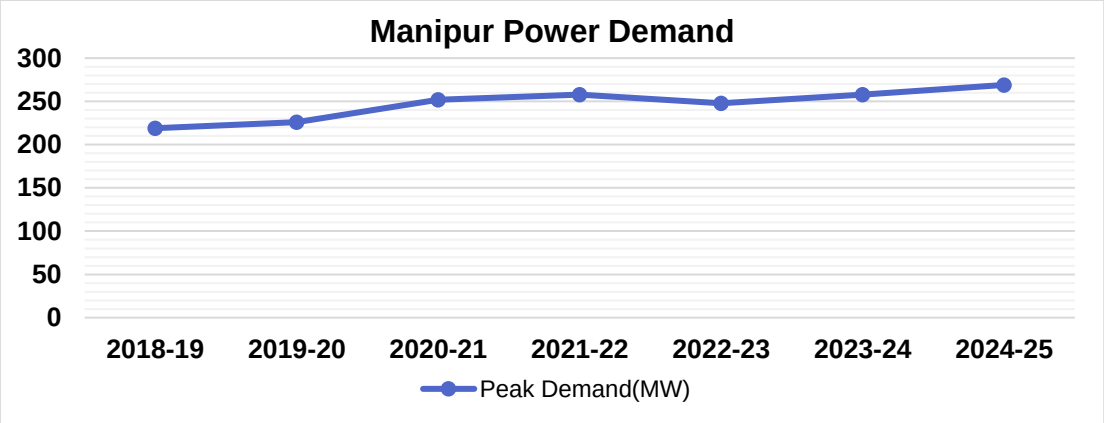

Figure 2-1 Peak Demand

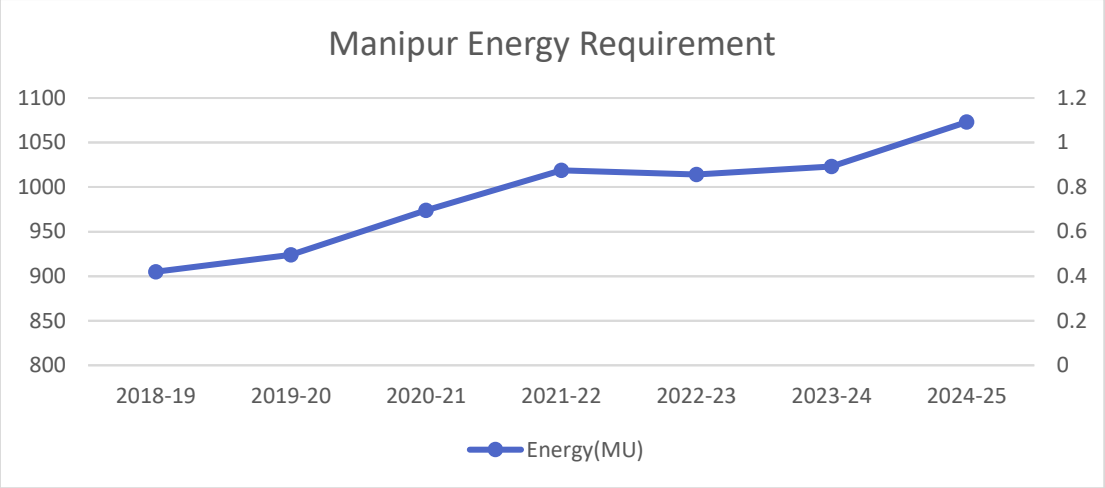

Figure 2-2 Energy requirement

2.1.4. The peak demand of Manipur generally occurs in winter months. The graph indicating of Seasonal Load variation in the year 2024 is given at Figure 2-3 below.

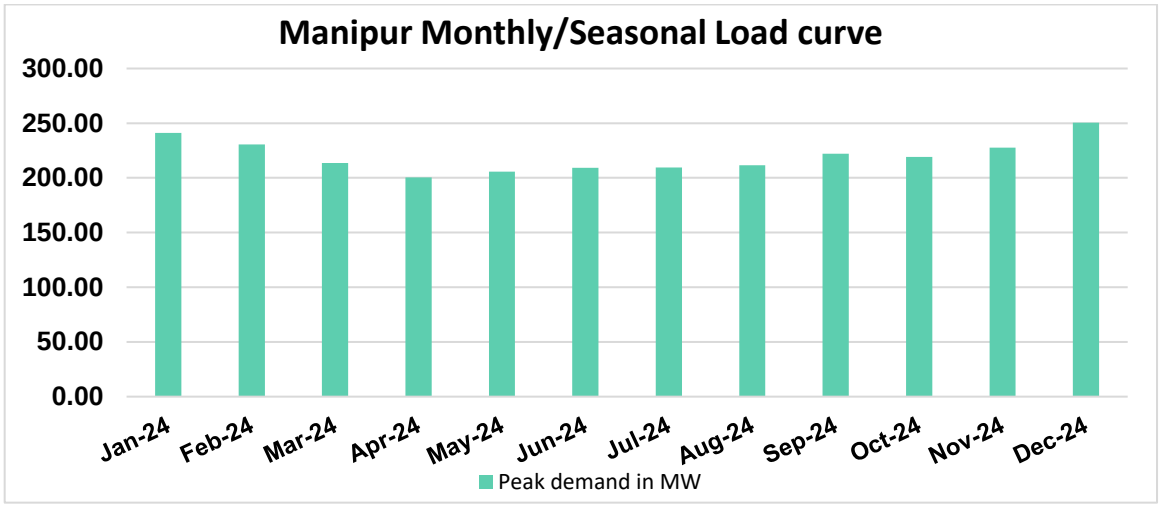

Figure 2-3 Seasonal Load Curve

2.1.5. Daily peak generally occurs in the evening period. The graph indicating of Hourly Load variation in the year 2024 is given at Figure 2-4 below.

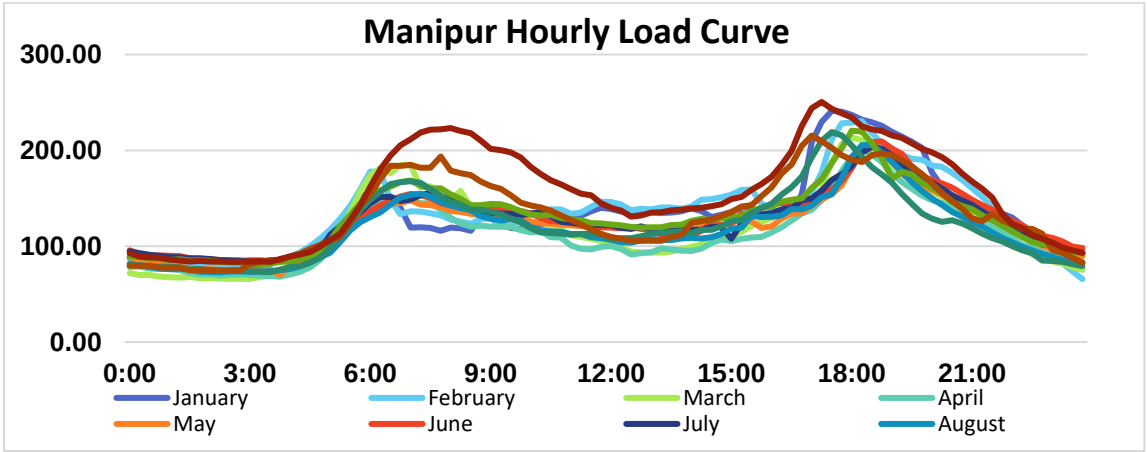

Figure 2-4 Hourly Load Curve

2.1.6. Contracted capacity (MW) of Manipur as on March-2025 is given at Table 2-2 below:

Table 2-2 Contracted capacity by Manipur

(all fig. in MW)

SECTOR	HYDRO		THERMAL				NUC LEAR	R.E.S. (MNRE)	TOTAL
		COAL	LIGNITE	GAS	DIESEL	TOTAL			
State	0.00	0.00	0.00	0.00	36.00	36.00	0.00	5.45	41.45
Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.79	13.79
Central allocation	87.24	47.10	0.00	81.58	0.00	128.68	0.00	0.00	215.92
Total	87.24	47.10	0.00	81.58	36.00	164.68	0.00	19.24	271.16
%	32.17	17.37	0.00	30.08	13.27	60.75	0.00	7.01	100.00

Source: Installed Capacity Report, CEA

2.1.7. The graph indicating the generation capacity mix is given at Figure 2-5 below:

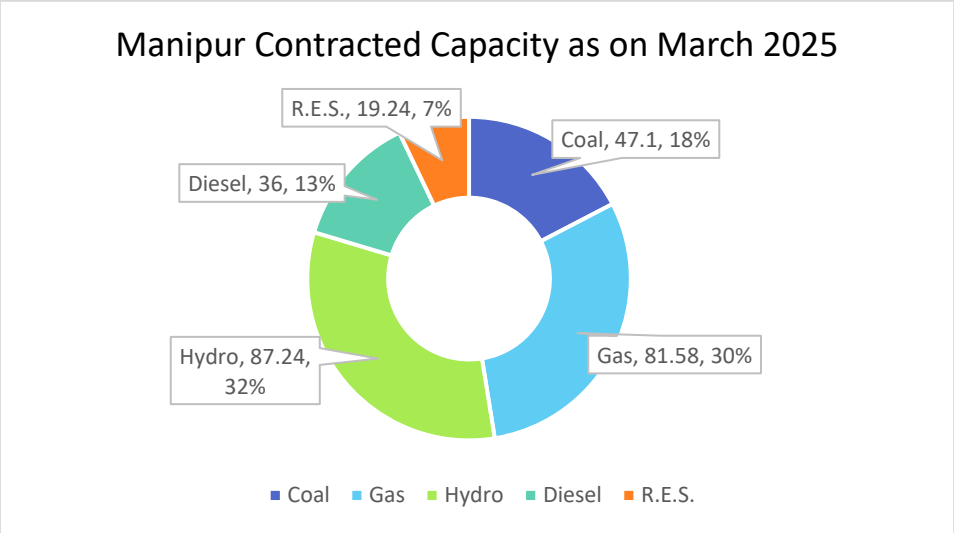

Figure 2-5 Contracted Capacity

2.1.8. As on March 2025, the General Network Access (GNA) quantum for ISTS drawal of the state is 204 MW and Available Transfer Capability (ATC) for FY 2024-25 is varying from 305 MW to 355 MW.

3. Existing Transmission System

The details of existing Intra-state and Inter-state transmission system in Manipur are as under.

3.1. Existing Intra State Transmission assets (as on March 2025):

3.1.1. Intra State Transmission assets of Manipur state in past five years is given at Table 3-1 below

Table 3-1 Intra State Transmission assets in Manipur

Financial Year	Voltage (kV)	Transmission lines (ckm)	Substation (MVA)
2018-19	132	693.13	598.30
2019-20	132	699.34	598.30
2020-21	132	699.34	638.30

Financial Year	Voltage (kV)	Transmission lines (ckm)	Substation (MVA)
2021-22	132	699.34	638.30
	400	90.20	315
2022-23	132	798.18	667.40
	400	90.20	315
2023-24	132	864.84	667.40
	400	90.20	315
2024-25	132	864.84	667.40
	400	90.20	315

Manipur state has total 864.84 ckm of 132 kV, 90.2 ckm of 400 kV transmission line and 667.4 MVA of 132 kV, 315 MVA of 400 kV Substation capacity in Intra-state transmission system.

3.1.2. The graph indicating of year on year growth of Transmission lines is given at Figure 3-1 below.

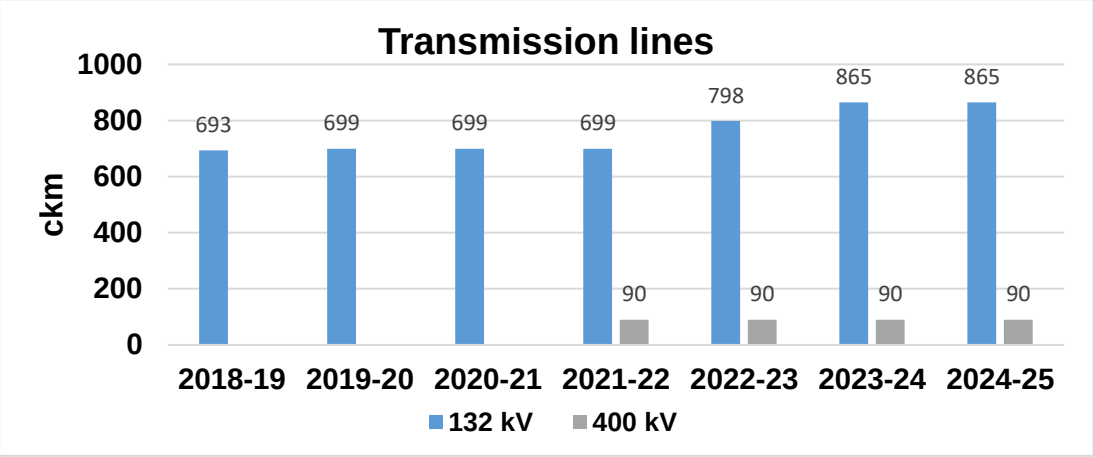

Figure 3-1 Existing Transmission Line

3.1.3. The graph indicating of year on year growth of substation MVA capacity is given at Figure 3-2 below.

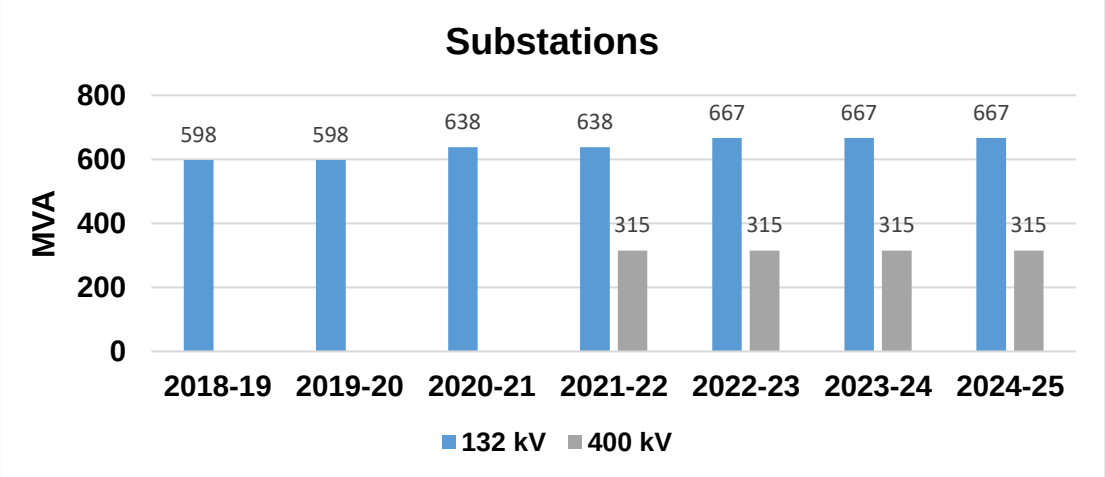

Figure 3-2 Existing Substations

3.2. Existing Inter State Transmission system in the state:

3.2.1. The state has a 400/132/33 kV, 730 MVA ISTS substation at Imphal. The state also has a 132 kV ISTS switching substations at Jiribam.

3.2.2. State has total 1180 ckm of ISTS network. Brief details of the ISTS network (including ISTS lines owned by State) are given at Table 3-2:

Table 3-2 Existing ISTS in Manipur

Voltage level	Existing
132 kV	572 ckm + 55 ckm (ISTS line owned by state)
400 kV	608 ckm
Total	1235 ckm (including 55 ckm ISTS line owned by state)

4. Under implementation Transmission System

4.1. **Under implementation Intra-State Transmission assets (as on March 2025):**

The summary of under implementation Intra-state transmission system in Manipur are given at Table 4-1 below:

Table 4-1 Under Implementation Intra-state Transmission assets in Manipur (as on March 2025)

Voltage (kV)	Transmission lines (ckm)	Substations (MVA)
132	37.13	60

5. System operator feedback:

5.1. The operational constraint faced in the Intra-state transmission network by Manipur SLDC including transmission line constraints, ICT constraints, nodes experiencing high voltage/ low voltage are attached at **Annexure-I**.

The operational constraint faced in the Intra-state and Inter-state transmission network by NERLDC including transmission line constraints, ICT constraints, nodes experiencing high voltage/ low voltage are attached at **Annexure-II**.

6. Assumptions for study:

6.1. Peak electricity demand (MW) of Manipur according to the 20th EPS Report and estimated peak demand of state are given at Table 6-1 below:

Table 6-1 Peak electricity demand

Reference↓ / Parameter→	**Year**	**Peak Demand (MW)**	**CAGR**
Actual Peak	2024-25	269	
As per 20th EPS	2025-26	325	20.82
	2026-27	344	13.08
	2027-28	363	10.51
	2028-29	383	9.23
	2029-30	404	8.47
	2030-31	426	7.96
State Estimated Peak electricity demand	2031-32	470	8.30
	2034-35	512*	6.65
As per 20th EPS	2036-37	576	6.55

**including upcoming industrial demand.*

6.1.1. Industrial Demand: The total industrial demand of 118 MW is expected by 2034-35 at Yurembam, Awang Potsangbam, Ningthoukhong, Renpang, Karong and Kongba area of Manipur.

6.2. The following Parameters were considered during the study

a) The total intra state generation installed capacity: 120 MW (Barak 3: 24 MW, Irang-3: 24 MW, Imphal HEP: 22.5 MW & Barak 4: 49.5 MW) by the year 2031-32
b) Peak Demand: 470 MW (including 65 MW non-scalable industrial demand) by the year 2031-32 and 512 MW (including 118 MW non-scalable industrial demand) by 2034-35.
c) Diesel/HFO generation of 36 MW, connected at Leimakhong at 33 kV level is not in operation, therefore, it has not been considered in study.
d) Scenario of Study:

S.No.	Scenario	Demand Factor (Scalable load)	Dispatch Factors
1.	Winter evening peak i.e low hydro peak demand	100%	Hydro Plant: 30%
2.	High hydro low demand	50%	Hydro Plant: 90%

7. Study Results

7.1. Based on the demand and generation projections, the State has outlined its need for new transmission elements. Taking into account the operational feedback from Manipur SLDC and NERLDC, as well as the provisions in the Manual on Transmission Planning Criteria, 2025, studies were conducted to identify the state's transmission system requirements. New elements/ augmentations detailed in Paragraph 8 are proposed to keep the system parameters with in limits during base case and contingency scenarios.

Taking in account of identified system and related assumptions the import/export on tie lines by the year 2031-32 are presented at Table 7-1 below:

Table 7-1 study results for the timeframe of 2031-32

Parameter↓ / Scenario→	**Winter evening peak i.e Low Hydro Peak Demand**	**High Hydro Low Demand**
Generation despatch (intra-state + ISGS located in state) (in MW)	68	203
Demand (in MW)	470	268
Net interchange ((-)import / (+)export) at ISTS-STU periphery (in MW)	-370	-172

The import/export on tie lines by the year 2034-35 are presented in Table 7-2 below.

Table 7-2 study results for the timeframe of 2034-35

Parameter↓ / Scenario→	**Winter evening peak i.e Low Hydro Peak Demand**	**High Hydro Low Demand**
Generation despatch (intra-state + ISGS located in state) (in MW)	68	203
Demand (in MW)	512	318
Net interchange ((-)import / (+)export) at ISTS-STU periphery (in MW)	-403	-159

7.2. The Low Hydro Peak Demand Scenario was found to be critical scenario during the system studies.

7.3. The line flows and voltage were in permissible limit as mentioned in the Manual on Transmission Planning Criteria, 2025 in the critical as well as other scenario after modelling the required additional transmission system by 2031-32 & 2034-35.

7.4. The planned transmission system of the state is N-1 contingency criteria compliant. The planned system addresses all the constraints in the Intra-state transmission as mentioned by Manipur SLDC and NERLDC listed at **Annexure-I** and **Annexure-II** respectively.

7.5. According to CEA's generation recourse adequacy report for Manipur (2031-32), Manipur is likely to have unserved energy in coming years and may need to contract fossil-based capacities for meeting energy requirements other than the planned capacities. The quantum of coal-based capacities required to be contracted is about 57 MW in the year 2026-27 which increases to around 111 MW in the year 2031-32.

The electricity demand of the state by the year 2034-35 would be 512 MW. The intra state generation and contract capacity would be 225 MW. The state would require to import additional power from ISTS network.

7.6. The agreed system by the year 2031-32 & 2034-35 was modelled and studied considering the N-1 contingency criteria and no constraints were observed in transmission system of Manipur taking into account additional contracted capacity requirement as mentioned in para above. Hence, the transmission system as planned by 2031-32 & 2034-35 (including new schemes identified in this report) ensures Transmission Resource Adequacy.

8. Intra-state Transmission system requirement by 2034-35.

8.1. New substations alongwith their associated transmission lines which are required by 2034-35 are listed at Table 8-1 below

Table 8-1 New substations alongwith their associated transmission lines of Manipur

S.No	Transmission System	Justification	Estimated Cost (in ₹ Cr.)	Remarks
1.	**i. Establishment of new 132/33 kV, 2x 50 MVA, S/s at Awang Potsangbam**	Presently, the power in the area is supplied from 33/11 kV substations at Nilakuthi, Ibudhou Marjing, Mantripukhri, Civil Secretariat through 33 kV line from Yurembem(State) via Iroisemba. To meet the increase in power demand due to the spike in energy consumption, to ease the load on the existing 33 kV line and to provide a reliable 24x7 power supply to the critical administrative installations of the State, a new 2x50 MVA, 132/33 kV substation at Awang Potsangbam with associated line is proposed.	57.87	**Time frame: 2028-29**
	ii. LILO of Yurembam – Yaingangpokpi 132 kV S/c on D/c line at Awang Potsangbam (03 km loop in and 03 km loop out)		5.02	
2.	**i. Establishment of new 132/33 kV, 2x25 MVA, 132/33 kV S/s at Namrei**	Power to all the 33 kV substations of Ukhrul district are fed from 132/33 kV substation at Hundung which lies in the southern part of Ukhrul through long 33 kV lines passing through the hilly and dangerous terrains of Manipur. Some of these 33 kV line is over 100 km (e.g. Hundung to Jessami) and leads to non-reliable power supply to the villages of Ukhrul. Therefore, a new 2x25 MVA, 132/33 kV substation at Namrei with associated 132 kV line is proposed.	40.93	**Time frame: 2028-29** In case of contingency of Namrei – Ukrul 132 kV S/c line, Voltage at Namrei is reduce to 120 kV, Therefore MSPCL may install suitable capacitor at Namrei S/s.
	ii. Hundung – Namrei 132kV D/c line (55 ckm) alongwith 2 Nos. 132 kV line bay at Hundung		69.53	
	iii. LILO of one ckt of Hundung – Namrei D/c line at Karong (40 km loop in and 40 km loop out).		71.22	

S.No	Transmission System	Justification	Estimated Cost (in ₹ Cr.)	Remarks
3.	i. **Establishment of new 132/33 kV, 2x12.5 MVA, 132/33 kV S/s at Kamjong**	All the 33/11 kV sub-stations in Kamjong district are supplied through very long 33 kV lines reducing the reliability of power supply to the district. Many 33/11 kV sub-stations in the Kamjong district are located in remote corners bordering Myanmar which experience considerable voltage drop due to long transmission lines supplying power to these bordering villages. Hence, a new 132/33 kV sub-station is proposed at Kamjong to supply reliable & quality power to strategically important border villages as well as for the development of tourism infrastructure in the district.	30.66	**Time frame: 2032-33**
	ii. Kamjong-Hundung 132 kV, D/c line (110 ckm) alongwith 2 Nos. 132 kV line bay at Hundung		63.07	

8.2. New Intra-state Transmission lines which are required by 2034-35 are listed at Table 8-2 below:

Table 8-2 New Transmission lines of Manipur

S.No	Transmission System	Justification	Estimated Cost (in₹ Cr.)	Remarks
1.	Tamenglong – Karong 132 kV D/c line (140 ckm) alongwith associated bays at both end	Tamenglong is connected in the intra-state grid feeding from Rengpang S/s. Connectivity with Karong S/s will enhance the reliability of the power supply system in Tamenglong as Karong is connected to NER Grid. This will also reduce loading at Rengpang –	62.84	**Time frame: 2029-30**

S.No	Transmission System	Justification	Estimated Cost (in₹ Cr.)	Remarks
		Jiribam (Manipur) 132 kV S/c line as it is old line)		
2.	Moreh – Chandel 132 kV S/c line (60 ckm) alongwith associated bay at both end	To form an outer 132 kV ring main of Kakching – Moreh – Chandel for enhanced reliability. The power supply to Tamu town of Myanmar from Moreh 132 kV S/s will be uninterrupted if this ring main is formed.	54.47	**Time frame: 2030-31**

8.3. Reconductoring of existing transmission lines which are required by 2034-35 are listed at Table 8-3 below:

Table 8-3 Reconductoring of existing transmission lines of Manipur

S.No	Transmission System	Justification	Estimated Cost (in ₹ Cr.)	Remarks
1.	Reconductoring of Two circuits of Yurembam (State) – Yurembam (PGCIL) 132 kV triple circuit line-(1 km) along with upgradation of requisite bay equipment	The 1st Ckt of the transmission line was replaced by HTLS by POWERGRID through NERSS. The remaining two ckts have to be replaced by HTLS for maximum power drawal. • Ampacity of Existing conductor- 350 A • Year of commissioning- **i.** Ckt-II- 1980 **ii.** Ckt-III- 2019 • Ampacity of HTLS- 800 A	2.48	**Time frame: 2026-27**
2.	Restringing of Rengpang – Jiribam 132 kV S/c line (52 ckm) along with upgradation of requisite bay equipment	• Ampacity of Existing conductor- 350 A • Year of commissioning-1983 • Ampacity of New conductor- 465 A (ACSR panther)	38.22	**Time frame: 2031-32** In matching timeframe with new generation in Rengpang and Tamenglong area

Note: - Before taking up the reconductoring, state shall ensure the tower healthiness and communsurate rating of Bay equipment.

8.4. Augmentation of Substations which are required by 2034-35 are listed at Table 8-4 below

Table 8-4 Augmentation of Substations of Manipur

S.No.	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
1.	Augmentation of Thoubal 400/132 kV S/s with 1x315 MVA 2nd ICT (3x105 MVA single phase units)	Presently, Manipur have two strong 400 kV sources at Yurembam and Thoubal. Thoubal presently have 1x315 MVA ICT, in case of outage of this ICT the Yurembam S/s gets accentuated. Providing additional ICT at Thoubal S/s would enhance the reliability of 132 kV ring with two strong point viz. Imphal and Thoubal. Existing ICT capacity: 1x315 MVA	116.00	**Time frame: 2029-30** After augmentation ICT capacity: 2x315 MVA The cost of Augmentations includes the following: • Cost of 3 single phase units of 105 MVA transformer. • Cost of 400 kV ICT GIS Bay (2 circuit breaker scheme) • Approx. 900 meter 400 kV single phase GIS Bus duct. • Approx. 250 meter 132 kV three phase GIS Bus duct.
2.	Augmentation of Yurembam 132/33 kV S/s by replacement of: 3x31.5 MVA ICTs with 3x50 MVA ICTs	At present, the main Imphal valley of Manipur is supplied from 3x31.5 MVA transformers at Yurembam S/s. Maximum loading of approx. 63 MW is recorded during winter peak. With consideration of N-1 contingency of one ICT, the remaining ICTs are unable to cater the the present load demand. Existing ICT capacity: 3x31.5 MVA	42.56	**Time frame: 2032-33** After augmentation ICT capacity: 3x50 MVA

8.5. Evacuation system for upcoming hydro projects which are required by 2034-35 are listed at Table 8-5:

Table 8-5 Evacuation system for upcoming hydro projects of Manipur

S.No	Transmission System	Justification	Estimated Cost(in₹ Cr.)	Remarks
1.	Irang-3 HEP – Rengpang 132 kV D/c line (50 ckm) alongwith 2 Nos. 132 kV line bay at Rengpang	Transmission system for evacuation of power from HEP	36.21	**Time frame: 2031-32** matching with Generating Station
2.	Barak-3 HEP – Rengpang 132 kV D/c line (30 ckm) alongwith 2 Nos. 132 kV line bay at Rengpang	Transmission system for evacuation of power from HEP	25.11	**Time frame: 2031-32** matching with Generating Station
3.	Imphal HEP – Chandel 132kV D/c line (32 ckm) alongwith 2 Nos. 132 kV line bay at Chandel	Transmission system for evacuation of power from HEP	26.22	**Time frame: 2031-32** matching with Generating Station
4.	Barak-4 HEP – Tamenglong 132kV D/c line (30 ckm) alongwith 2 Nos. 132 kV line bay at Tamenglong	Transmission system for evacuation of power from HEP	25.11	**Time frame: 2031-32** matching with Generating Station

8.6. The power map of the state, including the above planned system is attached at **Annexure-III.**

9. Inter-state Transmission system requirement by 2034-35.

9.1. The existing ISTS system in Manipur seems sufficient to draw required power from outside the state. However, the requirement of Inter-state transmission system (ISTS) in Manipur would be identified after the study of complete transmission system including neighbouring states and GNA quantum indicated by the state.

10. Reactive Power Compensation:

10.1. The following reactive power compensation requirement has been identified to be implemented:

i. Capacitor requirement at downstream distribution level of Namrei 132 kV S/s with 2x15 MVAr capacity.

11. Summary of identified transmission system by 2034-35:

11.1. A total of 640 MVA transformation capacity addition/augmentation and 647 ckm of new transmission lines/reconductoring of old lines at an estimated cost of ₹

767.52 Crs. would be required for implementing the intra-state transmission proposals for meeting the electricity demand of the state by the year 2034-35.

The brief summary of voltage wise identified transmission system of the state by 2034-35 is as below:

400 kV Transmission system

S.No	Transmission System	No.	Length (in ckm)	Capacity (in MVA)	Estimated Cost (in ₹ Cr.)*
1.	Augmentation of existing substation	1		315	116.00

132 kV Transmission system

S.No	Transmission System	No.	Length (in ckm)	Capacity (in MVA)	Estimated Cost (in ₹ Cr.)*
1.	New substation	3	-	175	129.46
2.	Augmentation of existing substation	1	-	150	42.56
3.	New transmission line including LILO and 2nd Ckt Stringing	10	593	-	438.8
4.	Reconductoring of transmission line	2	54	-	40.7

**Note: The estimated cost of the above transmission system is based on Manipur State Transmission - Schedule of Rates - 2014. However the rates in the SOR are before the implementation of GST and include CST and Excise Duty (ED) @ of 12.5% and 2% respectively. Hence the ex-work price after removing the obsolete taxes are used while preparing the estimate. Cost escalation per annum is assumed as 3%.*

11.2. Summary of year-wise MVA capacity, ckm addition and tentative expenditure required for implementation of above recommended proposals is given Table 11-1 at below:

Table 11-1 Yearwise implementation summary of proposed transmission system

Financial Year	**MVA Capacity Addition**		**ckm Addition**	**Reconductoring (ckm)**	**Estimated Cost (in ₹ Cr.)**
	132 kV	**400 kV**	**132 kV**	**132 kV**	
FY 2026-27	-	-	-	02	02.48
FY 2027-28	-	-	-	-	-
FY 2028-29	150	-	141	-	244.57
FY 2029-30	-	315	140	-	178.84
FY 2030-31	-	-	60	-	54.47
FY 2031-32	-	-	142	52	150.87

FY 2032-33	175	-	110	-	136.29
FY 2033-34	-	-	-	-	-
FY 2034-35	-	-	-	-	-
Total	**325**	**315**	**593**	**54**	**767.52**

12. Conclusion

12.1. By the year 2034-35, the power demand of Manipur would be increasing significantly. Total expected demand of Manipur by the year 2034-35 is around 512 MW. This anticipated increase in demand includes the expected industrial load coming progressively from 2024-25 to 2034-35.

12.2. About 04 Nos. of hydro power projects connected with Intra-state transmission network are expected to be commissioned by 2034-35.

12.3. In order to meet this growing load demand, evacuation of power from hydro generation and for drawal of power from ISTS in accordance with GNA requirement of Manipur by 2034-35, the intra-state as well as inter-state transmission system of Manipur need to be strengthened. It has been observed that the transmission system infrastructure in Manipur at voltage levels of 132 kV and 400 kV needs to be upgraded.

12.4. The planned network is related to the intra-state transmission system of the State, the State is also advised to plan its downstream network at distribution level in matching timeframe with this planned transmission system.

12.5. At some of the sub-stations there may be low voltage issues due to long lines the State is advised to installed suitable capacitor at distribution level (i.e. 33 kV or 11 kV level). The compensation requirement is given at Paragraph-10 above in this report.

12.6. It is recommended that Manipur shall update their intra-state transmission systems on the PM GatiShakti (PMGS) National Master Plan on regular basis.

12.7. The quantum of GNA is nearing the ATC of the Manipur and demand of the state is increasing, therefore, the state is advice to take up their transmission system strengthening progressively. As per CERC (Connectivity and General Network Access to the Inter-State Transmission System) Regulations, 2022 States (STUs) may apply for additional GNA once in a financial year by the month of September for the next 3 (three) financial years. Therefore, it is suggested that State shall asses their GNA requirement and apply well before considering the timelines prescribed in the regulations.

12.8. A total of 465 MVA transformation capacity addition/augmentation and 537 ckm of new transmission lines/reconductoring of old lines at an estimated cost of ₹

631.23 Cr. would be required for implementing the intra-state transmission proposals for meeting the electricity demand of the state by the year 2031-32.

12.9. Further, total of 640 MVA transformation capacity addition/augmentation and 652 ckm of new transmission lines/reconductoring of old lines at an estimated cost of ₹ 767.52 Crs. would be required for implementing the intra-state transmission proposals for meeting the electricity demand of the state by the year 2034-35.

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Annexure-I

Operational Feedback from Manipur SLDC.

a) Overloading in following transmission lines in base case scenario.

Sl No	Name of Line	Remark
1.	Loktak- Ningthoukhong 132 kV S/c line	Overloading observed during winter peak with full generation of Loktak HEP

b) Overloading observed in following transmission lines Under N-1 Contingency Condition

Sl No	Name of Line	Remark
1.	Imphal(PG) –Imphal (MSPCL) 132 kV D/c line	overloading observed with contingency at 400 kV thoubal ICT

Annexure-II

Operational feedback from NERLDC/NLDC

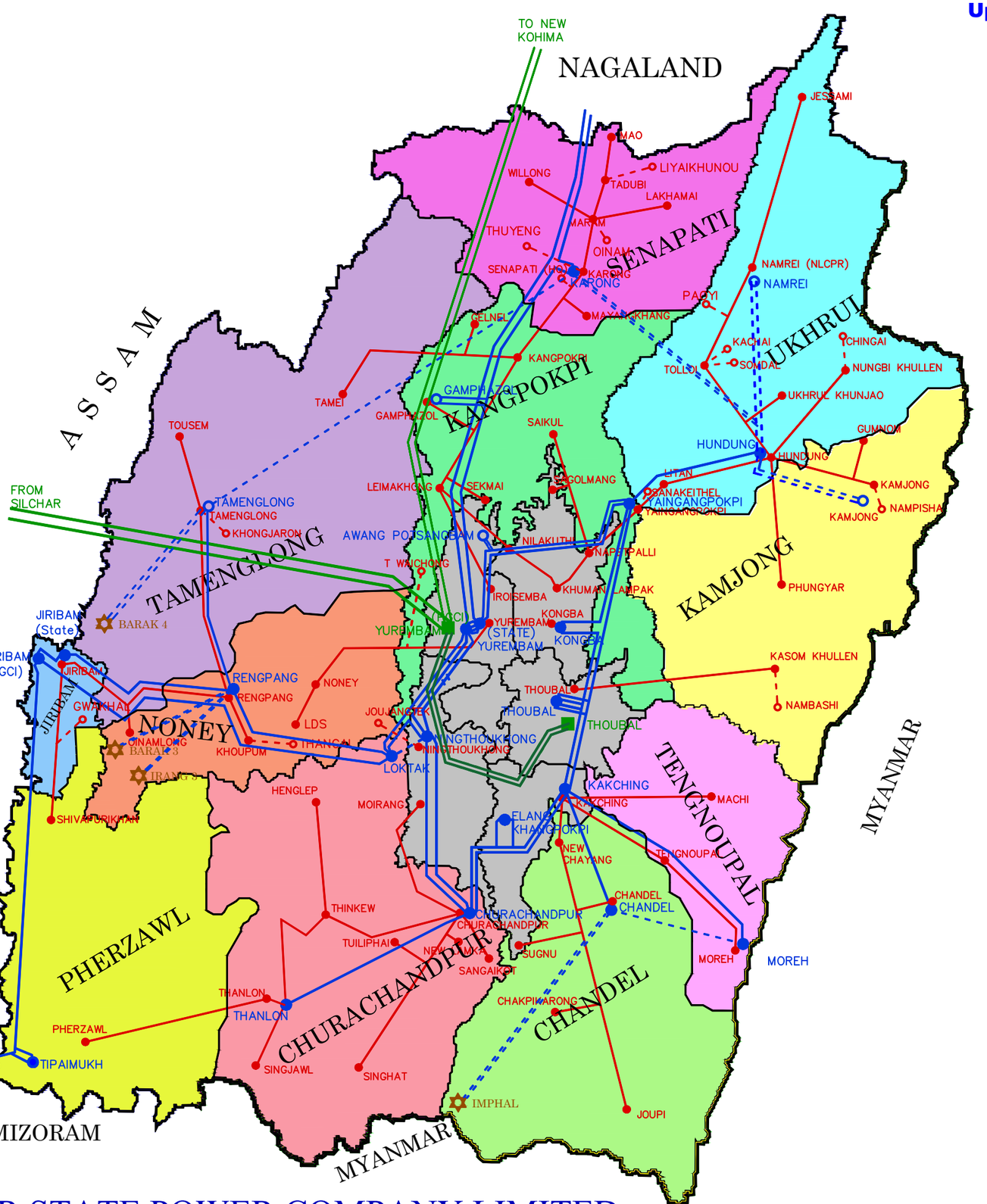
a) ICT constraints in Manipur system

Sl. No	ICT	Season/ Antecedent Conditions
1	Non-compliance of N-1 criteria of 1X315 MVA ICT at 400 kv Thoubal	Due to the outage of this critical 400 kV connectivity, the major power supply to Manipur is currently being routed through only two substations: i. 400/132 kV Imphal Substation ii. 132 kV Loktak Substation As a result, during peak hours, Manipur's load is being fed radially, which violates the N-1 reliability criterion. This poses a significant risk to the stability and reliability of the power supply in the state. To ensure compliance with the N-1 criterion, it is imperative to install a second 315 MVA ICT at the 400/132 kV Thoubal Substation

Annexure-III

POWER MAP OF MANIPUR (33 KV & ABOVE)

Upto the year 2034-35



LEGEND

■	400 KV SUB-STATION UNDER CONSTRUCTION / PROPOSAL	
▬	EXISTIG 400 KV LINE	
- - -	400 KV LINE UNDER CONSTRUCTION / PROPOSAL	
●	EXISTING 132 KV SUB-STATION	
▬	EXISTING 132 KV LINE	
○	132 KV SUB-STATION UNDER CONSTRUCTION / PROPOSAL	
- - -	132 KV LINE UNDER CONSTRUCTION / PROPOSAL	
●	EXISTING 33 KV SUB-STATION	
▬	EXISTING 33 KV LINE	
○	33 KV SUB-STATION UNDER CONSTRUCTION/ PROPOSAL	
- - -	33 KV LINE UNDER CONSTRUCTION / PROPOSAL	
✡	HYDRO ELECTRIC PROJECT UNDER CONSTRUCTION / PROPOSAL	

MANIPUR STATE POWER COMPANY LIMITED