Annexures

Annexure 1: *"Transmission System requirement of North Eastern states and Sikkim by the year 2031-32"* issued by the Central Electricity Authority (CEA) on October, 2024

Transmission System requirement of North Eastern states and Sikkim by the year 2031-32

October 2024

CENTRAL ELECTRICITY AUTHORITY

NEW DELHI

TRANSMISSION SYSTEM REQUIREMENT OF NORTH EASTERN STATES AND SIKKIM BY THE YEAR 2031-32

October, 2024

Central Electricity Authority

PSPA-II Division

Executive Summary

1.1. MoP vide letter No. 6/5/2022-Trans dated 16.02.2022, had requested CEA to ascertain requirements of North Eastern States to augment their transmission systems.

1.2. After due consulatation with NER States and Sikkim, CEA vide letter dated 25.02.2023 had submitted a Report on "Intra state transmission system strengthening requirement of North Eastern States and Sikkim by the year 2030" to MoP.

1.3. Subsequently, in the meeting held on 17.01.2024 under the chairpersonship of Secretary (Power), it was directed to revise the NER 2030 report considering resource adequacy plan, evacuation plans of small hydro plants, plotting of existing as well as planned network on PM Gati Shakti (PMGS) National Master Plan, separate plan for required distribution network (downstream) and other requirements.

1.4. As the National Electricity Plan of CEA upto 2032 was under finalisation, it was decided to prepare the requirement of NER States and Sikkim by 2031-32.

1.5. The peak demand of the States have been considered in accordance with the projections of 20th Electric Power Survey (EPS), however, some states requested to consider higher peak demand due to increased load growth, rapid industrialisation and other factors. Accordingly, the same has been considered for transmission planning studies. The demand projections as per 20th EPS Report and the demand figures considered for the study/analysis are given below:

States	Actual Peak Electricity Demand in 2023-24 (MW)	Peak Electricity Demand in 2031-32 as per 20th EPS Report (MW)	Estimated demand in 2031-32 as per States (MW)
Arunachal Pradesh	186	282	560
Assam	2413	4128	6247
Manipur	258	448	470
Meghalaya	405	575	660
Mizoram	162	331	331
Nagaland	174	235	404
Tripura	362	731	731
Sikkim	133	241	241

1.6. Total demand of NER states by 2031-32 is expected to be about 9400 MW and of Sikkim about 241 MW.

1.7. While preparing the plan the upcoming Inter-state Generating Stations (ISGS) such as Rangit-IV (120 MW), Lower Kopili (120 MW), Lower Subansiri (2000 MW), Teesta- VI (500 MW), Teesta -IV (520 MW), Tato-I (186 MW), Heo (240

MW), Tato-II (700 MW), Naying (1000 MW), Attunli (680 MW), Etalin (3097 MW), Dibang (2880 MW), Talonga Londa (225 MW), Demwe Lower (1750 MW) and Dikhu (186 MW) has been considered in the timeframe of 2031-32. Further, following upcoming generation projects intended to be connected to intra-state transmission network has been considerd.

- Manipur: Barak-3(24 MW), Irang-3(24 MW), Imphal HEP (22.5 MW) and Barak 4 (49.5 MW).
- Meghalaya: Myntdu Leshka Hydro Electric Project (MLHEP)-II (210 MW) and Ganol-II SHP (14 MW)
- Nagaland: Zunki HEP (24 MW)

1.8. The operational feedback from Grid-India has been duly taken into consideration during preparation of this transmission plan. Further, Resource Adequacy aspect of the transmission system have been factored in the studies.

1.9. Power system studies carried out in consultation of CTUIL, Grid-India and the States, thereafter, transmission system requirement by theyear 2031-32 has been identified. A total of **11,949 MVA** transformation capacity addition/augmentation and **7,756 ckm** of new transmission lines/reconductoring of old lines at an estimated cost of **Rs. 14226 Crs.** would be required for implementing the intra-state transmission proposals for meeting the electricity demand of states of NER and Sikkim by the year 2031-32.

1.10. Summary of state-wise identified transmission system including new substation, new transmission lines, reconductoring and augmentation required by 2031-32 and tentative expenditure required for implementation of the transmission schemes is given below:

Sl. No.	**State**	**Estimated Peak Electricity Demand by 2031-32 (in MW)**	**MVA Capacity Addition /Augmentation (in MVA)**	**Transmission Line addition / Reconductoring (in ckm)**	**Tentative expenditure (in Rs. Crs.)**
1.	Arunachal Pradesh	560	160	774	**966**
2.	Assam	6247	8520	3674	**6822**
3.	Manipur	470	465	485	**593**
4.	Meghalaya	660	710	1100	**2227**
5.	Mizoram	331	244	526	**504**
6.	Nagaland	404	460	579	**1151**
7.	Tripura	731	1140	505	**1331**
8.	Sikkim	241	250	113	**632**
	Total		***11949***	***7776***	***14226***

1.11. Assam has secured funding for some of the elements. Further, Arunachal Pradesh, Meghalaya, Mizoram and Tripura have requested funding under 10% GBS and other schemes of MoDONER (As the funding has not yet been approved yet). Accordingly, considering the elemets for which funding has been secured the transmission system given at table below may require separate funding. A total of **9,414 MVA** transformation capacity addition/augmentation and **6,871 ckm** of new transmission lines/reconductoring of old lines at an estimated cost of **Rs. 12,143 Crs.** would be required for implementing the intra-state transmission proposals for meeting the electricity demand of states of NER and Sikkim by the year 2031-32

1.12. Further, summary of the recommended transmission system for framing the new scheme along with estimated cost are given below. This transmission scheme excludes the system in which States are seeking funding through own/other sources

Sl. No.	**State**	**Estimated Peak Electricity Demand 2031-32 (MW)**	**MVA Capacity Addition /Augmentation (in MVA)**	**Transmission Line addition / Reconductoring (in ckm)**	**Tentative expenditure (in Rs. Crs)**
1.	Arunachal Pradesh	560	160	753	**956**
2.	Assam	6247	6260	2900	**5054**
3.	Manipur	470	465	485	**593**
4.	Meghalaya	660	435	1010	**1922**
5.	Mizoram	331	244	526	**504**
6.	Nagaland	404	460	579	**1151**
7.	Tripura	731	1140	505	**1331**
8.	Sikkim	241	250	113	**632**
Total			***9414***	***6871***	***12143***

1.13. A separate Distribution Plan is under preparation by CEA. States also need to plan reactive power compensation at distribution level, for which locations have been identified in the report.

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1. Introduction

1.1. MoP vide letter No. 6/5/2022-Trans dated 16.02.2022, advised CEA to ascertain requirements of North Eastern States to augment their transmission systems.

1.2. CEA vide letter dated 25.02.2023 had submitted a Report on "Intra state transmission system strengthening requirement of North Eastern States and Sikkim by the year 2030" to MoP after due consultation with NER States and Sikkim.

1.3. Subsequently, in the meeting held on 17.01.2024 (copy attached at **Annexure-1.1**) under the chairmanship of Secretary (Power), it was directed to revise the NER 2030 report considering resource adequacy plan, evacuation plans of small hydro plants, plotting of existing as well as planned network on PM GatiShakti (PMGS) National Master Plan, separate plan for required distribution network (downstream) and other requirements.

1.14. Accordingly, to update the proposals of states of NER and Sikkim, several meetings were held between concerned state and CTUIL, details of the same are at Table 1-1. As the National Electricity Plan of CEA upto 2032 was under finalisation, it was decided to prepare the requirement of NER States and Sikkim by 2031-32.

Table 1-1 Meetings with States

States	Date of meeting
Arunachal Pradesh	17.05.2024 and 28.06.2024
Assam	22.04.2024, 24.05.2024, 12.06.2024 and 13.06.2024
Manipur	21.05.2024 and 28.06.2024
Meghalaya	23.04.2024, 21.05.2024 and 21.06.2024
Mizoram	21.05.2024, 20.06.2024 and 25.07.2024
Nagaland	22.05.2024 and 26.06.2024
Tripura	24.05.2024 and 24.06.2024
Sikkim	22.05.2024, 07.06.2024, 19.06.2024 and 03.07.2024

1.4. Following were considered and reviewed during the discussions in the meetings with states:

- Node wise present and anticipated demand (by the FY 2031-32).
- Industrial load growth by the FY 2031-32.
- Segregation of proposals: voltage-wise and transmission system-wise Existing, under implementation and proposed intra state generation (by the FY 2031-32)
- Justification of each proposal.

- State Power Map indicating the existing, under implementation and proposed networks.
- PSSE load flow study files having existing, under construction and proposed networks.
- Conductor details of the lines in case of reconductoring proposals.

1.5. PM GatiShakti – National Master Plan Portal has been developed with an objective to integrate all major infra projects in a holistic/comprehensive fashion. The portal facilitate in finalization of transmission line route/substation location. This would result into ease of monitoring of infrastructure projects and identification of critical gaps in infrastructure. The portal save time as well as cost of the project planning and also provides tremendous impetus in execution of the projects.

NER states and Sikkim were also apprised about Standard Operating Procedure (SOP) for Data Management on PM GatiShakti National Master Plan Portal. States have started the activities to integrate their existing, under construction and planned system on the Portal in accordance with the Standard Opearting Procedure (SOP) for Data Management on PM GatiShakti National Master Plan Portal. Necessary support was extended to the states for plotting of existing and planned network at PM Gati-Shakti portal.

1.6. During the meetings with the states it was apprised that their estimated peak demand (MW) by 2031-32 needs to be modified. The peak demand figures as per 20th EPS Report and the estimated demand figures as indicated by the States are given below:

Table 1-2 Estimated demand of States

States	**Actual Peak Electricity Demand in 2023-24 (MW)**	**Peak Electricity Demand in 2031-32 as per 20th EPS Report (MW)**	**Estimated demand in 2031-32 as per States (MW)**
(A)	(B)	(C)	(D)
Arunachal Pradesh	186	282	560
Assam	2413	4128	6247
Manipur	258	448	470
Meghalaya	405	575	660
Mizoram	162	331	331
Nagaland	174	235	404
Tripura	362	731	731
Sikkim	133	241	241

1.7. While carrying out the analysis, the estimated demand by 2031-32 as provided by states [column (D)] have been considered.

1.8. The upcoming Inter-state generating Stations (ISGS) and their associated transmission system have been considered in this transmission plan. Further,

Operational Feedback from Grid-India has been duly taken into the account while preparing this transmission plan.

1.9. Analysis of the proposals has been done considering resource adequacy plan, evacuation plan of hydro plants, plotting of existing as well as planned network on PM Gati Shakti (PMGS) National Master Plan portal. Analysis for each state/ISTS and recommendations are given in the subsequent chapters.

1.10. Based on the discussions in the meetings and studies a draft report was prepared and shared with the states, CTU and Grid-India. Subsequently, a meeting was held on 23rd and 24th August 2024 with NERPC, NERLDC, CTUIL, NER States and Sikkim at NERPC Shillong. In the meeting, transmission system of North Eastern States and Sikkim mentioned in this Report was finalised.

2. Power System in NER and Sikkim

2.1. Indian power grid is demarcated into five regions i.e. Northern, Western, Southern, Eastern and North-Eastern. National grid was formed with the commissioning of Raichur – Sholapur 765 kV S/c line in December, 2013.

2.2. The peak demand of NER during the current FY i.e. 2024-25 has reached to 3,859 MW and for Sikkim it has reached to 111 MW (as on 31.08.2024).

2.3. North Eastern Electricity Grid Region covers the state of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland and Tripura. Peak electricity demand (in MW) and Electrical Energy Requirement (in MU) of NER States for the financial year 2031-32, as per the 20th EPS Report is given below:

Peak electricity demand/ Electrical energy requirement as per 20th EPS Report (FY 2031-32)	
Peak electricity demand (MW)	6,519
Electrical energy requirement (MU)	32,373

2.4. Sikkim, though considered in Eastern Regional Electricity Grid, shares similar demography to the states of North Eastern Region. Peak demand (in MW) and Energy Requirement (in MU) for Sikkim for the year 2031-32 as per the 20th EPS Report is given below:

Peak electricity demand/ Electrical energy requirement as per 20th EPS Report (FY 2031-32)	
Peak electricity demand (MW)	241
Electrical energy requirement (MU)	1093

2.5. Total Installed generating capacity of NER was 5496 MW (as on 31st July 2024). Most of the generation comes from Hydro and Gas based plants. Installed Generating capacity of NER vis-à-vis other regions is given at Table 2-1:

Table 2-1 Installed generating capacity (in MW) as on 31.07.2024

REGION	**HYDRO**	**THERMAL**					**NUCLEAR**	**R.E.S.**	**TOTAL**
		COAL	**LIGNITE**	**GAS**	**DIESEL**	**TOTAL**			
NORTHERN	20830	56658	1580	5995	0	64233	1620	40671	127353
WESTERN	7563	74663	1400	10806	0	86869	3240	51187	148858
SOUTHERN	11827	49717	3640	6272	434	60063	3320	55734	130944
EASTERN	4764	28690	0	80	0	28770	0	2036	35570
N.EASTERN	1944	1242	0	1665	36	2943	0	609	5496
ISLANDS	0	0	0	0	120	120	0	40	160
ALL-INDIA	46928	210970	6620	24818	589	242997	8180	150276	448381
%	**10.47**	**47.05**	**1.48**	**5.54**	**0.13**	**54.19**	**1.82**	**33.52**	**100.00**

2.6. Details of ISTS network in NER states and Sikkim is given at Table 2-2:

Table 2-2 ISTS network in NER states and Sikkim

State	Transmission lines (in ckm)		Transformation Capacity (in MVA)	
	Existing	Under construction/ planned	Existing	Under construction/ planned
Arunachal Pradesh	1811 (including 51 ckm ISTS line owned by state)	1322	205	370
Assam	12397 (including 309 ckm ISTS line owned by state)	2605 (including 277 ckm reconductoring)	8530	1400
Manipur	1293 (including 55 ckm ISTS line owned by state)	36.6 (reconductoring of lines)	730	0
Meghalaya	766 (including 181ckm ISTS line owned by state)	404 (including 122 ckm lines for reconductoring)	0	320
Mizoram	624	12 (reconductoring of lines)	0	0
Nagaland	1300 (including 92 ckm ISTS line owned by state)	0.67 (reconductoring of lines)	1610	0
Tripura	1729 (including 29 ckm ISTS line owned by state)	12	1265	0
Sikkim	1206 (including 60 ckm ISTS line owned by state)	-	2075	50

2.7. Details of Intra- State transmission network in NER states and Sikkim is given at Table 2-3:

Table 2-3 Intra-state transmission network in NER States and Sikkim

State	Transmission lines (in ckm)		Transformation Capacity (in MVA)	
	Existing	Under construction	Existing	Under construction
Arunachal Pradesh	482	1943	369	829
Assam	5586	497	9349	4543
Manipur	750	60	1065	60
Meghalaya	1360	283	2410	420
Mizoram	1000	350	350	62.5
Nagaland	358	266	400	635
Tripura	679	510	1049	916
Sikkim	484	359	510	780

2.8. Further, transmission system is also being planned / under implementation in NER states and Sikkim under intra-state and ISTS.

3. Intra State Transmission Schemes under implementation with Central Assistance

3.1. Background

3.1.1. The roadmap for development of power sector specifying the need for strengthening of overall Transmission, Sub-transmission and Distribution system in NER and Sikkim was brought out in the "Pasighat Proclamation on Power" released during the first Sectoral Summit of North Eastern Council at Pasighat in Arunachal Pradesh in January, 2007.

3.1.2. Pursuant to recommendations of Pasighat summit, a Sub-Group was constituted under the Chairmanship of Member (Power Systems), CEA, on transmission, sub-transmission and distribution related issues in North Eastern Region. Accordingly, a comprehensive scheme for strengthening of transmission, sub-transmission and distribution system was evolved by CEA in consultation with POWERGRID and States of North Eastern Region and Sikkim.

3.1.3. Under the subject project, implementation of the scheme in six states of NER viz. Assam, Meghalaya, Tripura, Mizoram, Manipur and Nagaland was envisaged through funding from World Bank / Govt. of India and implementation in Arunachal Pradesh and Sikkim was envisaged under a separate project funded by Govt. of India.

3.1.4. Accordingly, sanctions for two schemes i.e. North Eastern Region System Improvement Project (NERPSIP) and Comprehensive Scheme for strengthening of Transmission & Distribution in Arunachal Pradesh and Sikkim (CSAS) were accorded by Govt. of India.

3.2. North Eastern Region Power System Improvement Project (NERPSIP)

3.2.1. Implementation of this project (as Central Sector Scheme, with funding on 50:50 basis by Govt. of India & World Bank) would strengthen the Intra-State Transmission & Distribution infrastructure of six states of North Eastern Region (Assam, Meghalaya, Manipur, Mizoram, Nagaland and Tripura); improve its connectivity to the upcoming load centres, and thus would extend the benefits of the grid-connected power to all the consumers. The project would also provide the required grid connectivity to such villages and towns of the States, where development of distribution system at the downstream level has been taking place under Govt. of India sponsored RGGVY/ APDRP/ R-APDRP schemes. NERPSIP covers many Transmission & Distribution lines & sub-stations at 33 kV, 66 kV, 132 kV and 220 kV voltage levels.

3.2.2. General Details:

Date of Govt. approval	Dec, 2014
Implementing Agency	POWERGRID

Sanctioned Cost (Rs. Crs)	Rs. 5111.33 Cr. (at Feb, 2014 price level)
Revised Cost Estimates	Rs. 6700.00 Cr. (Approved in Dec'20)
Funding	50:50 (Govt. of India: World Bank)
Completion schedule	December 2018 (48 months from date of release of 01st instalment)
Anticipated Schedule	December, 2024

3.2.3. State wise summary of the scheme is given at Table 3-1:

Table 3-1 State wise summary of transmission network under NERPSIP Scheme

States	**Line Length (ckm)**			**New Substations (Nos.)**			**Total MVA (New & Augmentation)**		
	Trans.	**Dist.**	**Total**	**Trans.**	**Dist.**	**Total**	**Trans.**	**Dist.**	**Total**
Assam	371	364	735	11	16	27	1668	240	1908
Manipur	255	92	347	2	13	15	132	275	407
Meghalaya	410	187	597	3	11	14	940	150	1090
Mizoram	116	4	120	3	1	4	100	6.3	106
Nagaland	220	75	295	5	10	15	260	200	460
Tripura	455	673	1128	9	34	43	1390	488	1878
Total	**1827**	**1395**	**3222**	**33**	**85**	**118**	**4490**	**1359**	**5849**

3.2.4. The list of elements under NERPSIP is attached at **Annexure 3.1**.

3.2.5. Progress:

- Physical Progress (till July-2024)

Total Elements Sanctioned (Nos.)	**Elements Completed (Nos.)**
446	438

- **Financial progress (till July-2024)**

Description	**Total (₹ in Cr.)**
Revised Project cost	**6700.00**
Received	4,987.84
Spent	4,925.09

3.3. Comprehensive Scheme for strengthening of Transmission & Distribution in Arunachal Pradesh and Sikkim (CSAS):

3.3.1. When the CSAS scheme was conceived, only 5 out of 20 Districts of Arunachal Pradesh were connected to the transmission network at 132/220 kV level. The 33 kV system was backbone of power distribution system in the State. Due to low population density spread over its geographical area of 84,000 sq.km, power demand in Arunachal Pradesh was scattered. Hence, it was necessary to strengthen 132 kV network in the state for proper voltage management and lower losses. Similarly, the distribution system in Sikkim mainly relied on 66 kV network, which needed to be strengthened substantially. In view of this, it was proposed to take up projects for strengthening intra-state T&D systems of the

two States through 31 new 132 kV sub-stations, 12 substations of 66/11 kV, 2,153 km of transmission lines (220 kV ,132 kV and 66 kV) and 1923 km of transmission lines (33 kV). The project is being implemented through POWERGRID.

3.3.2. General Details:

Date of Govt. approval	October, 2014
Implementing Agency	POWERGRID
Sanctioned Cost (Rs. Cr.)	Rs. 4754.42 Cr.
Revised Cost Estimates	Rs. 9129.32 Cr. (Approved in Mar'21)
Funding	Govt. of India
Completion schedule	March, 2025

3.3.3. The list of elements under CSSTDS is attached at **Annexure 3.2:**

3.3.4. Progress:

- **Physical progress (till July-2024)**

Total Elements Sanctioned (Nos.)	**Elements Completed (Nos.)**
294 (Sikkim-55, Arunachal-239)	182 (Sikkim-41, Arunachal-141)

- **Financial progress (till July-2024)**

Description	**Total / Overall (₹ in Cr)**
Revised Project cost	9129.32
Received	6701.31 (out of which Rs. 227.06 cr. Lapsed)
Spent	6683.28

4. Arunachal Pradesh

4.1. Demographics:

4.1.1. Arunachal Pradesh, situated in the extreme North-East of India and it is the largest state of the Region. The state remains as a hidden treasure of minerals and natural resources till today. Arunachal Pradesh, known for its pristine natural beauty and rugged terrain, holds immense potential in the field of hydropower.

4.2. Electricity profile of state

4.2.1. Power generation-demand scenario of state:

- In the FY 2023-24, Arunachal Pradesh had peak power demand of 186 MW and total energy requirement of 1014 MU. As on 31.07.2024, state has central sector allocation of 628.42 MW which is majorly from hydro. In addition, the state has state sector installed capacity of 116.61 MW and private sector installed capacity of 38.54 MW. The per capita consumption of the state is 651 kWh in the year 2022-23.
- The projected peak demand of state as per the 20th EPS report will be 282 MW by the year 2031-32.
- Installed capacity (in MW) of generating stations in Arunachal Pradesh as on 31.07.2024 is given at Table 4-1.

Table 4-1 Installed Capacity of Arunachal Pradesh

Sector	Hydro	Thermal					Nuclear	R.E.S.	Total
		Coal	Lignite	Gas	Diesel	Total			
State	0	0	0	0	0	0	0	116.61	116.61
Private	0	0	0	0	0	0	0	38.54	38.54
Central allocation	544.55	37.05	0	46.82	0	83.87	0	0	628.42
Total	544.55	37.05	0	46.82	0	83.87	0	155.15	783.57
%	69.5%	4.7%	0.0%	6.0%	0.0%	10.7%	0.0%	19.7%	100.0%

Source: Installed Capacity Report, CEA

- As on August 2024, the General Network Access (GNA) quantum for ISTS drawal and Available Transfer Capability (ATC) of the state is 225 MW and 210 MW respectively.

4.2.2. Inter State Transmission system in the state:

- The state has five Nos. of 132/33 kV ISTS substations, having total capacity of 205 MVA at Roing, Tezu, Namsai, Ziro and Nirjuli. Further, a 220/132 kV, 320 MVA ISTS substation at Namsai is under implementation.
- State has total 1811 ckm of existing ISTS network and 1322 ckm of planned / under construction ISTS network. Details of the ISTS network (including ISTS lines owned by states) are given at Table 4-2

Table 4-2 Existing and Under Construction ISTS in Arunachal Pradesh

Voltage level	Existing	Under Construction/ Planned
132 kV	654 ckm + 32 ckm (ISTS line owned by state)	312 ckm
220 kV	19 ckm (ISTS line owned by state)	150 ckm
400 kV	1106 ckm	860 ckm
Total	**1811 ckm** (including 51 ckm ISTS line owned by state)	**1322 ckm**

4.2.2.1. Detailed of under implementation and planned ISTS network in Arunachal Pradesh (as on July, 2024) is as given below:

A. Under Construction ISTS: RTM Mode

i. NERES-XXIII:

- Stringing of 2nd circuit of Pasighat (Arunachal Pradesh) – Roing (POWERGRID) 132 kV S/c on D/c line with ACSR Panther conductor- 103 km
- Stringing of 2nd circuit of Roing (POWERGRID) – Tezu (POWERGRID) 132 kV S/c on D/c line with ACSR Panther conductor- 73 km
- Stringing of 2nd circuit of Tezu (POWERGRID) – Namsai (POWERGRID) 132 kV S/c on D/c line with ACSR Panther conductor- 95.24 km
- Extension at Pasighat (DoP, Arunachal Pradesh): 1 No. 132 kV AIS line bay for termination of 2nd circuit of Pasighat (Arunachal Pradesh) – Roing (POWERGRID) 132 kV D/c line
- Extension at Roing (POWERGRID) S/s: 2 Nos. 132 kV AIS line bay for termination of 2nd circuit of Pasighat (Arunachal Pradesh) – Roing (POWERGRID) 132 kV D/c line and 2nd circuit of Roing (POWERGRID) – Tezu (POWERGRID) 132 kV D/c line.
- Extension at Tezu (POWERGRID) S/s: 2 Nos. 132 kV AIS line bay for termination of 2nd circuit of Roing (POWERGRID) – Tezu (POWERGRID) 132 kV D/c line and 2nd circuit of Tezu (POWERGRID) – Namsai (POWERGRID) 132 kV D/c line
- Extension at Namsai (POWERGRID) S/s: 1 No. 132 kV AIS line bay for termination of 2nd circuit of Tezu (POWERGRID) – Namsai (POWERGRID) 132 kV D/c line.

B. Under Construction ISTS: TBCB Mode

i. **NERSS-XV: by ER NER Transmission Limited (ENTL) (subsidiary of POWERGRID)** (*only Arunachal Pradesh portion*)

- Upgradation of existing 132 kV Namsai (POWERGRID) S/s to 220 kV (with 220 kV side as GIS) with 2x160 MVA ICTs
- Kathalguri (NEEPCO) – Namsai (POWERGRID) 220 kV D/c line (150ckm)

ii. **NERES-XVI: M/s NERES XVI Power Transmission Limited, a subsidiary of M/s Techno Electric and Engineering Company Limited (TEECL)** (*only Arunachal Pradesh portion*)

- Extension works at Gerukamukh (Arunachal Pradesh) 132 kV S/s
  - 2 Nos. of 132 kV line bays for termination of Gogamukh (ISTS) – Gerukamukh (Arunachal Pradesh) 132kV D/c line
- Gogamukh (ISTS) – Gerukamukh (Arunachal Pradesh) 132 kV ACSR Zebra D/c line
- LILO of one D/c (ckt-1 & ckt-2 of line-1) of Lower Subansiri – Biswanath Chariali 400 kV (Twin Lapwing) 2xD/c lines at Gogamukh S/s

C. Planned ISTS

i. **NERGS-II:** (*only Arunachal Pradesh portion*)

- Dibang – Gogamukh 400 kV 2xD/c (Quad) line – 215 km
- Extension works at Gogamukh S/s at 400 kV level
  - 4 Nos. of 400 kV line bays for termination of Dibang – Gogamukh 2xD/c lines
  - 4x63 MVAr switchable line reactors at Gogamukh end of Dibang –Gogamukh 400 kV 2xD/c lines, one in each circuit

Note: *4x63MVAr switchable line reactors at Dibang end of Dibang –Gogamukh 400kV 2xD/c lines, one in each circuit to be installed by NHPC Ltd.*

ii. **NERES-XXIX:** (*only Arunachal Pradesh portion*)

- Installation of new 1x50 MVA, 132/33 kV (3rd) ICT at Namsai (POWERGRID) S/s along with associated bays

4.2.3. **Intra State Transmission assets (as on 31.07.2024):**

Voltage (kV)	Transmission lines (ckm)		Substations (MVA)	
	Existing	Under construction	Existing	Under construction
132	463	1943	269	829
220	19	-	100	-
400	-	-	-	-

4.3. **Intra State transmission/distribution schemes under implementation:**

4.3.1. Under Comprehensive Scheme for strengthening of Transmission & Distribution in Arunachal Pradesh and Sikkim, a total of 239 elements of transmission & distribution system were sanctioned which includes 110 Nos. of lines & 129 Nos. of substation. As of July-2024, a total of 141 elements were completed. The details of the elements are attached at **Annexure-3.2**

4.4. **Transmission proposals submitted:**

The proposals submitted by Arunachal Pradesh includes the new substation and new transmission lines at 132 kV level, reconductoring of existing transmission lines and augmentations of existing sub-stations. The details of the proposals received from State are at **Annexure- 4.1.**

4.5. **Assumptions:**

4.5.1. Peak electricity demand (in MW) of Arunachal Pradesh as per the 20th EPS Report and as estimated by the state for the year 2031-32 are given below:

Demand	Actual Peak electricity demand (2023-24)	Peak electricity demand as per 20th EPS Report for the year 2031-32	Estimated Peak electricity demand for the year 2031-32
Peak electricity demand (MW)	186	282	560*
CAGR	-	5.34%	14.77%

**including upcoming heavy industry demand.*

4.5.2. Industrial Demand:

(i). The following Alloy industries are expected to come progressively from 2024-25 in Niglok area.
- Ather Alloy (36 MW),
- Alloy Craft Industry (30 MW)
- Arunachal Ferro Alloy (90 MW)

(ii). In addition to above construction power to various hydro projects has also been considered.

4.5.3. The following Parameters were considered during the study

(i). Time Frame of Study: 2031-32

(ii). The total intra state generation installed capacity: 24 MW (excluding small hydro projects of the state which are having low Plant Load Factor (PLF) and mostly not connected to the grid)

(iii). Peak Demand: 560 MW (including 305 MW non-scalable industrial demand)

(iv). Scenario of Study:

S.No.	Scenario	Demand Factor	Dispatch Factors
1.	Low Hydro	100%	Hydro Plant: 20%
2.	High Hydro	100%	Hydro Plant: 90%

4.5.4. Resource Adequacy

(i). The Government of India has notified new Renewable Purchase Obligation (RPO) trajectory till 2029-30 vide Gazette Notification dated 20.10.2023 which ensure certain amount of energy consumption to be met from renewable energy sources. After 2029-30, RPO targets assumed based on the anticipated RE capacity requirement on national level given in National Electricity Plan 2022-32, (Vol-I Generation). While carrying out the transmission studies the RPO compliance of the state has been taken into account.

(ii). The generation resource adequacy study for Arunachal Pradesh was carried out by CEA considering the demand projections from the 20th EPS (i.e. 259 MW by the year 2029-30). According to the study, total energy required to meet RPO is 558 MU Arunachal Pradesh is surplus in fulfilment of its Renewable Purchase Obligations (RPO) and need not to add/contract any renewable capacities by 2029-30 in gradual manner.

(iii). During the study of Transmission System proposals, the demand of Arunachal Pradesh has been considered as 560 MW for 2031-32 time frame which translate to 2780 MU energy requirement, this requirement is higher than 20th EPS demand projections (i.e.282 MW and 1400 MU) by 2031-32. Considering the 41.50% RPO compliance total 1150 MU would be required to meet RPO compliance. Arunachal Pradesh is surplus of 2859 MU (2638 MU in Hydro and 221 MU in other RPO) in RPO generation by 2029-30. This surplus is sufficient to meet the obligation by the year 2031-32 therefore, Arunachal Pradesh need not to add/contract any renewable capacities by 2031-32. The surplus renewable capacity is likely to be available to trade with other states.

(iv). The agreed system by the year 2031-32 was modelled and studied considering the N-1 contingency criteria, in such situation no constraints were observed in transmission system of Arunachal Pradesh taking into account of above RPO compliance. Hence, the transmission system as planned by 2031-32 (including new schemes identified in this report) ensure the Transmission Resource Adequacy.

4.6. **Study Results.**

4.6.1. Considering the above assumptions import/export on tie lines is given below:

Parameter↓ / Scenario→	**Low hydro**	**High hydro**
Generation despatch (intra-state + ISGS located in state) (in MW)	628	2825
Demand (in MW)	560	560
Net interchange ((-)import / (+)export) at ISTS-STU periphery (in MW)	-471	-451

4.6.2. The peak demand with Low hydro scenario was found to be critical scenario during the system studies.

4.6.3. The line flows and voltage were in permissible limit as mentioned in the Manual on Transmission Planning Criteria, 2023 in the critical as well as other scenario after modelling the required additional transmission system by 2031-32.

4.6.4. The transmission system of the states were ensured to be N-1 contingency criteria compliant.

4.7. Transmission system requirement by 2031-32.

4.7.1. New substations alongwith the associated transmission lines which are required by 2031-32 are listed at Table 4-3:

Table 4-3 New substations alongwith the associated transmission lines of Arunachal Pradesh

S.No	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
1.	i. **Establishment of new 132/33 kV, 2x10 MVA S/s at Kimin (Papum Pare)**	The length of existing 33 kV distribution line feeding Kimin area is around 47 km and the area faces frequent trippings, voltage/power quality issues etc. The proposed Kimin S/s would improve reliability and power quality issues in the area.	58.81	**Time frame: 2027-28**
	ii. LILO of Yupia - Gerukamukh 132 kV S/c line at 132/33 kV Kimin S/s. (7.5 km loop in and 7.5 km loop out.)		25.75	
	iii. 2nd circuit stringing of Gerukamukh – Yupia – Banderdewa (bypassed at Yupia) (84 ckm) alongwith associated bays at Gerukamukh & Banderdewa S/s		24.59	
	iv. LILO of Gerukamukh – Banderdewa (bypassed at Yupia) 132 kV S/c line at 132/33 kV Kimin S/s. (7.5 km loop in and 7.5 km loop out.)		25.75	
2.	i. **Establishment of new 132/33 kV, 2x10 MVA S/s at Raga, (Kamle)**	The approximate distance between Ziro to Raga is around 45 km. Presently, power supply at Raga is through low voltage long lines which faces frequent trippings and voltage regulation issues. The proposed Raga S/s would improve reliability and power	52.36	**Time frame: 2027-28** Ziro – Daporijo 132 kV S/c line to be reconductored in Intra-STS with HTLS-1000 A.
	ii. LILO of Ziro – Daporijo 132 kV S/c line at Raga (Kamle) with HTLS 1000 A. (6.5 km loop in and 6.5 km loop out.)		36.33	

S.No	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
		quality issues in the area.		
3.	i. **Establishment of new 132/33 kV, 2x10 MVA S/s at Tato (Shi Yomi),**	For quality powering of the systems being built at Yorlung, Manigong, Lamang, Tadadege, Tato, and Mechuka in Shi Yomi district, to ensure reliable power supply to military establishments in the border district and to provide a 132 kV node for meeting the construction power requirements of the upcoming HEPs at Tato.	52.36	**Time frame: 2027-28**
	ii. LILO of Kamba – Mechuka 132 kV S/c line at Tato (Shi Yomi)- (5 km loop in and 5 km loop out.)		17.17	
	iii. 132 kV Bay at Kamba for Tato line		2.15	

4.7.2. Augmentation of Sub Station which are required by 2031-32 are listed at Table 4-4.

Table 4-4 Augmentation of substation of Arunachal Pradesh

S.No	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
1.	**Replacement of 132/33 kV, 2x20 MVA ICT with 2x50 MVA, ICT at Chimpu, Itanagar S/s.**	The 2x20 MVA, 132/33 kV ICTs of Chimpu/Itanagar Sub-Station has started saturation load of 22 MW leaving no capacity redundancy. Being the only powering Sub-Station to the State Capital city of Itanagar, it is vital and high time for augmentation of the existing 2x20 MVA transformers which to 2x50 MVA transformer for stable capacity redundancy. Existing ICT capacity: 2x20 MVA	25.50	**Time frame: 2027-28** After augmentation Total ICT capacity: **2x50 MVA** The replaced 2x20 MVA ICT will be used at Lekhi S/s

4.7.3. Further, new transmission lines which are required by 2031-32 are listed at Table 4-5.

Table 4-5 New Transmission lines of Arunachal Pradesh

S.No	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
1.	Likabali – Basar 132 kV D/c line (160 ckm) alongwith associated bays	The upcoming 400 km long 'Khuppi-Pasighat 132 kV line via Seppa, Rilo, Sagalee, Naharlagun, Gerukamukh, Likabali, Niglok, Napit and Pasighat' under Comprehensive Scheme shall be running in parallel to the existing 132 kV long radial line of RHEP to Pasighat via Ziro, Daporijo, Aalo and Pasighat of equal length without any inter-connecting anchoring and power source in between. Hence, for stabilizing power flow of both these two lines and increase redundancies, the proposed inter-connecting line is essential.	287.55	**Time frame: 2029-30** This line shall be implemented along with 400/132 kV Gerukamukh S/s
2.	KaHEP – Khuppi 132 kV D/c Line (with Zebra conductor) (20 ckm) alongwith associated bays	The Khuppi – Kime (KaHEP) old S/c line is critically overloaded. Hence, to alleviate the overloading, the proposed Double Circuit line between KaHEP/Kime and Khuppi 132 kV Sub-Station is essentially vital.	43.29	**Time frame: 2026-27** Presently space for only one bay is available at Kimi Kameng. The D/c line shall be implemented after dismantling of existing S/c line that will free up the space for new bay.
3.	2nd circuit Stringing of Gerukamukh – Likabali 132 kV S/c line on D/c tower (52 ckm) alongwith associated bays	To meet the power requirement of the industrial consumers at Niglok the stringing of the second circuit of Gerukamukh – Likabali line is required.	16.86	**Time frame: 2029-30** This line shall be implemented along with 400/132 kV Gerukamukh and in tandem with physical progress of the principal line under

S.No	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
				Comprehensive Scheme
4.	2nd circuit Stringing of Likabali – Niglok 132 kV S/c line on D/c tower (66 ckm) alongwith associated bays	To meet the power requirement of the industrial consumers at Niglok the stringing of the second circuit of Likabali – Niglok line is required.	20.24	**Time frame: 2029-30** This line shall be implemented in tandem with physical progress of the principal line under Comprehensive Scheme.
5.	2nd circuit Stringing of Niglok – Pasighat New (Napit) 132 kV S/c line on D/c tower (21 ckm) alongwith associated bays	To meet the power requirement of the industrial consumers at Niglok the stringing of the second circuit of Niglok – Pasighat New (Napit) line is required.	**9.37**	**Time frame: 2026-27** Arunachal Pradesh has already provisioned this line under State Budget of 2024-25)
6.	2nd circuit Stringing of Seijosa – Rilo 132 kV line (44 ckm) alongwith associated bays	To meet the power requirement of the industrial consumers at Niglok the stringing of the second circuit of Niglok – Pasighat New (Napit) line is required.	**14.92**	**Time frame: 2029-30** In matching time-frame of Balipara – Seijosa 132 kV D/c line. Balipara – Seijosa 132 kV D/c line is being planned under ISTS.
7.	2nd circuit Stringing of Rilo – Sagali 132 kV line (33 ckm) alongwith associated bays		12.27	**Time frame: 2029-30** In matching time-frame of Balipara – Seijosa 132 kV D/c line. Balipara – Seijosa 132 kV D/c line is being

S.No	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
				planned under ISTS.
8.	2nd circuit Stringing of Sagali – Yupia 132 kV line (39 ckm) alongwith associated bays		13.72	**Time frame: 2026-27** This 2nd ckt stringing shall be implemented in tandem with physical progress of the principal line under Comprehensive Scheme
9.	Kimin – Yachuli (Ziro-New) 132 kV D/c line (100 ckm) alongwith associated bays		184.83	**Time frame: 2027-28** This line shall be implemented in matching time frame of Kimin Substation

4.7.4. Reconductoring of existing transmission lines which are required by 2031-32 are listed at Table 4-6:

Table 4-6 Reconductoring of existing transmission lines of Arunachal Pradesh

S.No	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
1.	Lekhi – Chimpu 132 kV S/c line (14.5 ckm) along with upgradation of requisite bay equipment	Lekhi – Chimpu 132 kV Transmission Line was initially strung with ACSR Lynx conductors for wheeling of power to 132/33 kV Chimpu (Itanagar) EHV Substation and was envisaged as a radial line for meeting demand of Itanagar Capital Region. The EHV Substation at Chimpu is presently connected to the grid through several lines and serves as node for Inter-State power exchange wherein the loading capacity of ACSR Lynx is found to be limiting and needs	6.54	**Time frame: 2026-27**

		upgradation to meet any contingent scenario. Therefore the line is proposed to be restrung with HTLS or Panther conductor. • Ampacity of Existing conductor- 340 A at 75° (ACSR Lynx) • Year of commissioning- 2007 • Restringing with Panther or HTLS equivalent to existing conductor		
2.	Ziro – Daporijo 132 kV S/c line (87 ckm) (being LILOed at Raga) along with upgradation of requisite bay equipment	• Ampacity of Existing conductor- 374 A at 75° (ACSR Panther) • Year of commissioning- 2003 • Ampacity of HTLS conductor- 900 A	35.26	**Time frame: 2026-27**

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

4.7.5. The power map of the state, including the above planned system is attached at **Exhibit-4.1.**

4.8. Summary of identified transmission system by 2031-32

A total of 160 MVA transformation capacity addition/augmentation and 774 ckm of new transmission lines/reconductoring of old lines at an estimated cost of Rs. 966 crs. would be required for implementing the intra-state transmission proposals for meeting the electricity demand of the state by the year 2031-32.

The summary of identified transmission system of the state by 2031-32 is as below:

132 kV Transmission system

S.No.	Transmission System	No.	Length (in ckm)	Capacity (in MVA)	Estimated Cost (Rs. in Cr.)*
1	New substation	3	-	60	163.53
2	Augmentation of existing substation	1	-	100	25.50
3	New transmission line including LILO and 2nd Ckt Stringing	14	672	-	734.77
4	Reconductoring of transmission line	2	101.5	-	41.80

**Note: The estimated cost of the above transmission system is based on SoR 2021-22 of the state.*

5. Assam

5.1. Demographics

5.1.1. Assam is a state in North Eastern India, South of the Eastern Himalayas along the Brahmaputra and Barak River valleys. Assam covers an area of 78,438 sq km (30,285 sq mi). The state is bordered by Bhutan and Arunachal Pradesh to the North; Nagaland and Manipur in the East; Meghalaya, Tripura, Mizoram and Bangladesh in the South; and West Bengal in the West. Assamese and Bodo are the official languages of Assam, while Bengali is official language in the Barak Valley.

5.2. Electricity profile of state

5.2.1. Power generation-demand scenario of state:

- In the FY 2023-24, Assam had peak electricity demand of 2413 MW and total electrical energy requirement of 12445 MU. As on 31.07.2024, state has central sector allocation of 1757.16 MW which includes hydro plants (422.08 MW), thermal plants (1310.08 MW) and R.E.S plants (25 MW). In addition, state sector installed capacity is 411.37 MW and private sector installed capacity is 184.40 MW. The per capita consumption of the state was 398 kWh in the year 2022-23.
- The projected electricity demand as per 20th EPS report will be 4128 MW in the year 2031-32.
- Installed capacity (in MW) of generating stations in Assam as on 31.07.2024 is given at Table 5-1:

Table 5-1 installed capacity of generating station in Assam

Sector	Hydro		Thermal				Nucl-ear	R.E.S. (MNRE)	Total
		Coal	Lignite	Gas	Diesel	Total			
State	100.00	0	0	306.36	0	306.36	0	5.01	411.37
Private	0	0	0	0	0	0	0	184.40	184.40
Central allocation	422.08	874.52	0	435.56	0	1310.08	0	25.00	1757.16
Total	522.08	874.52	0	741.92	0	1616.44	0	214.41	2352.93
%	22.18	37.18	0	31.53	0	68.67	0	9.1	100.00

Source: Installed Capacity Report, CEA

- As on August 2024, the General Network Access (GNA) quantum for ISTS drawal and Available Transfer Capability (ATC) of the state is 1900 MW and 2060 MW respectively.

5.2.2. Inter State Transmission system in the state:

- The state has four Nos. of 400/220 kV ISTS substations, having total capacity of 3575 MVA at Misa, Balipara, Mariani and Bongaigaon. The state also has

two Nos. of 400/132 kV ISTS substations, having total capacity of 1115 MVA at Silchar and Biswanath Chariali. Further, the state has a 220/132 kV ISTS substation, having total capacity of 840 MVA ISTS substation at Salakati, Balipara & Kopili (NEEPCO). The state has two Nos. of 132 kV ISTS switching substations at Haflong & Badarpur.

- The state has 3000 MW, ± 800 kV HVDC converter station at Biswanath Chariali.
- State has total 12397 ckm of existing ISTS network and 2605 ckm (including 277 ckm reconductoing) of planned /under construction ISTS network. Brief details of the ISTS network (including ISTS lines owned by states) are given at Table 5-2:

Table 5-2 Existing and Under Construction/Planned ISTS in Assam

Voltage level	Existing	Under Construction/ Planned
132 kV	1117 ckm + 309 ckm (ISTS line owned by state)	77 ckm + 277 ckm (reconductoing)
220 kV	791 ckm	150 ckm
400 kV	6720 ckm	1771ckm
765 kV	-	330 ckm
HVDC	3460 ckm	-
Total	**12397 ckm** (including 309 ckm ISTS line owned by state)	**2605 ckm** (including 277 ckm reconductoing)

5.2.2.1. Detailed of under implementation and planned ISTS system in Assam (as on July, 2024) are as given below:

A. Under Construction ISTS: RTM Mode

i. NERES-XX (only Assam portion):

- Reconductoring of existing Single AAAC Panther Khandong (NEEPCO) – Khliehriat (POWERGRID) 132 kV S/c line-2 (40.93 km) of POWERGRID with Single HTLS conductor of ampacity of 800 A (at nominal voltage level).
- Reconductoring of existing Single AAAC Panther Khliehriat (POWERGRID) – Badarpur (POWERGRID) 132 kV S/c line (76.64 km) with Single HTLS conductor of ampacity of 900 A (at nominal voltage level).

ii. NERES-XXII:

- Decommissioning of existing 420 kV, 2x50 MVAr bus reactors at Bongaigaon (POWERGRID) S/s
- Installation of a new 420 kV, 1x125 MVAr bus reactor at Bongaigaon (POWERGRID) S/s in one of the vacated bays after decommissioning of above mention 420kV, 2x50 MVAr bus reactors.

- One of the existing 2x80 MVAr bus reactors (presently installed in parallel in same bay) may be installed at Bongaigaon (POWERGRID) S/s in other vacated bay after decommissioning of above mentioned 420 kV, 2x50 MVAr bus reactors.

iii. NERES-XXIV:

- Reconductoring of Khandong (NEEPCO) – Halflong (POWERGRID) 132 kV S/c line [excluding the LILO portion of this line at Umrangshu (AEGCL) S/s, which is owned by AEGCL] with Single HTLS conductor of ampacity 600A (at nominal voltage level) (63.06 km)
- Reconductoring of Halflong (POWERGRID) – Jiribam (POWERGRID) 132 kV S/c line with Single HTLS conductor of ampacity 600 A (at nominal voltage level) (100.63 km)

iv. NERES-XXVI:

- Decommissioning of existing 420 kV, 50 MVAr (bus reactor-1) and installation of new 420 kV, 125 MVAr bus reactor in its place along with replacement of associated main and tie bay equipment at Balipara (POWERGRID) S/s.

v. NERES-XXVIII:

- Installation of new 420 kV, 1x125 MVAr, 3-Ph Variable Shunt Reactor (VSR) having variable range from 63 MVAr to 125 MVAr (with at least 25 tap positions) along with associated GIS bay at Misa (POWERGRID) S/s

B. Under Construction ISTS: TBCB Mode

i. **Establishment of new 220/132 kV, 2x160MVA substation at Nangalbibra (Nangalbibra Bongaigaon Transmission Limited, a subsidiary of Sterlite)** (only Assam portion):

- Bongaigaon – Nangalbibra 400 kV D/c line (initially operated at 220 kV) alongwith associated bays at both ends – 245 ckm
- Hatsinghmari (Assam) – Ampati (Meghalaya) 132kV D/c line alongwith associated bays – 37 ckm
- Extension at Bongaigaon (POWERGRID) S/s:
  - 2 Nos. of 220 kV line bays for termination of Bongaigaon (POWERGRID) – Nangalbibra 400 kV D/c line (initiated operated at 220 kV)
- Extension at Hatsinghmari (Assam) S/s:
  - 2 Nos. of 132 kV line bays for termination of Hatsinghmari (Assam) – Ampati (Meghalaya) 132 kV D/c line.

ii. **NERSS-XV: by ER NER Transmission Limited (ENTL) (subsidiary of POWERGRID)-** *(only Assam Portion)*

- Kathalguri (NEEPCO) – Namsai (POWERGRID) 220 kV D/c line (150 ckm)
- Extension at Kathalguri (NEEPCO) switchyard: 2 Nos. of GIS line bays for termination of Kathalguri (NEEPCO) – Namsai 220 kV D/c line

iii. **NERES-XVI: (M/s NERES XVI Power Transmission Limited, a subsidiary of M/s Techno Electric and Engineering Company Limited) –**

- Establishment of Gogamukh 400/220/132 kV substation
- 400/220 kV, 2x500 MVA ICTs alongwith associated ICT bays at both levels
- 220/132 kV, 2x200 MVA ICTs alongwith associated ICT bays at both levels
- 420 kV, 2x125 MVAr bus reactor along with associated bays
- 400 kV line bays
  - 4 Nos. for termination of LILO of one D/c line (ckt-1 & ckt-2 of line-1) of Lower Subansiri – Biswanath Chariali 400 kV (Twin Lapwing) 2xD/c lines
- 220 kV line bays
  - 2 Nos. for termination of Bihpuria – Gogamukh 220 kV D/c line (line to be implemented by AEGCL)
- 132 kV line bays
  - 2 Nos. for termination of LILO of one circuit of North Lakhimpur – Dhemaji 132 kV new D/c line (LILO to be implemented by AEGCL)
  - 2 Nos. for termination of Gogamukh (ISTS) – Gerukamukh (Arunachal Pradesh) 132 kV D/c line
- Extension works at Gerukamukh (Arunachal Pradesh) 132 kV S/s
  - 2 Nos. of 132 kV line bays for termination of Gogamukh (ISTS) – Gerukamukh (Arunachal Pradesh) 132 kV D/c line
- Gogamukh (ISTS) – Gerukamukh (Arunachal Pradesh) 132 kV ACSR Zebra D/c line (20km)
- LILO of one D/c (ckt-1 & ckt-2 of line-1) of Lower Subansiri – Biswanath Chariali 400 kV (Twin Lapwing) 2xD/c lines at Gogamukh S/s

Note:

a. *DoP, Arunachal Pradesh to provide space at Gerukamukh (Arunachal Pradesh) S/s for implementation of 2 Nos. 132 kV line bays. TSP to provide Rs. 39.36 Lakhs to DoP, Arunachal Pradesh pertaining to additional land acquisition at Gerukamukh (Arunachal Pradesh) S/s and dismantling and erection of already installed structures with the associated civil works in Gerukamukh (Arunachal Pradesh) S/s.*

b. *Bihupuria (AEGCL) – Gogamukh (ISTS) 220 kV D/c line is to be implemented by AEGCL.*

c. *LILO of one ckt of North Lakhimpur (AEGCL) – Dhemaji (AEGCL) 132 kV new D/c line is to be implemented by AEGCL.*

iv. **NERGS-I: (M/s NERGS-I Power Transmission Limited, a subsidiary of M/s Techno Electric and Engineering Company Limited) -**

- Establishment of new 400 kV switching station (to be upgraded to 400/220kV level in future) at Bokajan in Assam
- LILO of both circuits of Misa (POWERGRID) – New Mariani (POWERGRID) 400 kV D/c line at Bokajan.

C. Planned ISTS

i. **765 kV D/c Katihar (India) – Parbotipur (Bangladesh) – Bornagar (India) cross border transmission link** (*Only NER portion)* – by POWERGRID

- Upgradation of Bornagar s/s with 765/400 kV, 2x1500 MVA*
- Bornagar (Assam, India) – Parbotipur (Bangladesh) 765 kV D/c line *(Indian portion – 165 km)*
  - *Indian portion: 165 km*
  - *Bangladesh portion: 104 km*

Note: **Bornagar 400 kV Switching substation has been taken up separately in NERES-XXV scheme with completion timeframe of 30 months from date of award.*

ii. **NERGS-II:**

- Dibang – Gogamukh 400 kV 2xD/c (Quad) line
- Extension works at Gogamukh S/s at 400kV level
  - 4 Nos. of 400 kV line bays for termination of Dibang – Gogamukh 2xD/c lines
  - 4x63 MVAr switchable line reactors at Gogamukh end of Dibang – Gogamukh 400 kV 2xD/c lines, one in each circuit
- Gogamukh – Biswanath Chariali 400 kV D/c (Quad) line
- Extension works at Biswanath Chariali (POWERGRID) S/s at 400 kV level

- 2 Nos. of 400 kV line bays for termination of Gogamukh – Biswanath Chariali 400 kV D/c (Quad) line

- Extension works at Gogamukh S/s at 400 kV level
  - 2 Nos. of 400 kV line bays for termination of Gogamukh – Biswanath Chariali 400 kV D/c (Quad) line
  - 2x80 MVAr switchable line reactors at Gogamukh end of Gogamukh –Biswanath Chariali 400 kV D/c line, one in each circuit

Note: *4x63 MVAr switchable line reactors at Dibang end of Dibang –Gogamukh 400 kV 2xD/c lines, one in each circuit to be installed by NHPC Ltd.*

iii. NERES-XXI Part-B:

- Upgradation of Single Main and Transfer Bus to Double Bus arrangement with Green GIS at 132 kV Badarpur (POWERGRID) switching station

Note: *As the Green GIS is being introduced for first time in ISTS in the Indian network, the ISTS transmission licensee shall involve CTU officials at various stages of implementation such as detailed engineering, design, testing, commissioning etc., and also after commissioning, so as to assess the environmental impact, operational performance, ageing characteristics etc. of the Green GIS.*

iv. NERES-XXV Part- A:

- Establishment of new 400 kV Bornagar (ISTS) switching station in Assam (765 kV and 220 kV levels to be established in future)
- LILO of both circuits of existing Bongaigaon (POWERGRID) – Balipara (POWERGRID) 400 kV D/c (Quad) line at Bornagar (ISTS)
- Disconnection of Alipurduar (POWERGRID) – Bongaigaon (POWERGRID) 400 kV D/c (Quad) line from Bongaigaon (POWERGRID) end and extension of the line for termination at Bornagar (ISTS) S/s so as to form Alipurduar (POWERGRID) – Bornagar (ISTS) 400 kV D/c (Quad) line
- Installation of 420 kV, 1x80 MVAr switchable line reactor (along with 500ohm NGR and NGR bypass arrangement) at Bornagar (ISTS) end in each circuit of Alipurduar (POWERGRID) – Bornagar 400 kV D/c (Quad) line formed after shifting of Alipurduar (POWERGRID) – Bongaigaon (POWERGRID) 400 kV D/c (Quad) line from Bongaigaon (POWERGRID) end to Bornagar (ISTS) S/s
- Installation of 420 kV, 1x63 MVAr switchable line reactor (along with 400ohm NGR and NGR bypass arrangement) at Bornagar (ISTS) end in each circuit of Bornagar (ISTS) – Balipara (POWERGRID) 400 kV D/c (Quad) line formed after LILO of both circuits of existing Bongaigaon (POWERGRID) – Balipara (POWERGRID) 400 kV D/c (Quad) line

v. **NERES-XXV Part- B:**

- Conversion of existing 420 kV, 1x63 MVAr fixed line reactor at Bongaigaon (POWERGRID) end in each circuit of Bongaigaon (POWERGRID) – Borngar (ISTS) 400 kV D/c line formed after LILO of both circuits of existing Bongaigaon (POWERGRID) – Balipara (POWERGRID) 400 kV D/c (Quad) line at Bornagar (ISTS) to Switchable Line Reactor along with implementation of NGR bypass arrangement

vi. **NERES-XXIX:** *(only Assam portion)*

- Installation of new 420 kV, 125 MVAr Bus Reactor at Biswanath Chariali (POWERGRID) S/s along with associated bays

5.2.3. **Intra State Transmission assets (as on 31.07.2024):**

Voltage (kV)	Transmission lines (ckm)		Substations (MVA)	
	Existing	Under construction	Existing	Under construction
132	3498	170	5249	463
220	2081	300	3470	2080
400	6.46	27	630	2000

5.3. **Under implementation Intra State transmission/distribution schemes:**

5.3.1. Under North Eastern Region Power System Improvement Project (NERPSIP), a total of 116 elements of transmission & distribution system were sanctioned which includes 56 Nos. of lines and 60 Nos. of substation. As of July-2024, all the 116 elements were completed. The details of the elements are attached at **Annexure-3.1**

5.4. **Transmission proposals submitted:**

The proposals submitted by Assam includes the new substation and new transmission lines at 400 kV, 220 kV and 132 kV level, reconductoring of existing transmission lines and augmentations of existing sub-stations. The details of the proposals received from State are at **Annexure-5.1**.

5.5. **Assumptions for study:**

5.5.1. Peak electricity demand (MW) of Assam according to the 20th EPS Report and as estimated by the state for the year 2031-32 are given below:

Demand	**Actual peak electricity demand (2023-24)**	**Peak electricity demand as per 20th EPS Report for the year 2031-32**	**Estimated Peak electricity demand for the year 2031-32**
Peak electricity demand (MW)	2413	4128	6247*
CAGR	-	6.94%	12.6%

**including upcoming heavy industry and traction demand.*

5.5.2. Industrial Demand:

The details of upcoming heavy industy are as under.

(i). IOCL-Digboi requested for 220 kV connectivity for 25 MW load demand. AEGCL proposed from 220 kV Tinsukia GSS.

(ii). IOCL-Guwahati Refinery requested for 220 kV connectivity for 47-50 MW load demand. AEGCL proposed connectivity from upcoming 220 kV Panjabari GSS.

(iii). IOCL-Bongaigaon Refinery requested for 220 kV connectivity for 138 MW load demand. AEGCL proposed connectivity from upcoming 220 kV Dhaligaon GSS.

(iv). Numaligarh Refinery Limited requested for connectivity for 305 MW load demand. AEGCL proposed 400 kV D/c connectivity from upcoming 400 kV Khumtai GSS.

(v). Calcom Cements India Ltd clinker-II plant is coming up at Umrangsho, Dima Hasao. AEGCL proposed connectivity of 21.75 MW load from 132 kV Umrangsho GSS.

(vi). Tata Electronic Semi-Conductor Plant with a load of 85 MW is coming up at Jagiroad area and connectivity has been finalized at Morigaon (AEGCL) 220 kV S/s through 220 kV D/c line.

(vii). In addition to above Assam has envisaged 550 MW additional industrial and traction load demand in the time frame of 2031-32.

5.5.3. The following Parameters were considered during the study

(i). Time Frame of Study: 2031-32

(ii). The total intra state generation installed capacity: 1870 MW

(iii). Peak Demand: 6247 MW (including 1215 MW non-scalable industrial demand)

(iv). Scenario of Study:

S.No.	Scenario	Demand Factor	Dispatch Factors	Remark
1.	Peak Demand	100%	Gas Based Plant: 40% Hydro Plant: 90% Solar Generation: 0%	BESS at Mirza (25 MW) will be in discharging mode (power delivery mode)
2.	Max Solar	70%	Gas Based Plant: 40% Hydro Plant: 90% Solar Generation: 100%	BESS at Mirza (25 MW) in charging mode (power absorption mode)
3.	Low Hydro	70%	Gas Based Plant: 40% Hydro Plant: 30% Solar Generation: 0%	BESS at Mirza (25 MW) in discharging

				mode (power delivery mode).

5.5.4. Resource Adequacy

(i). The Government of India has notified new Renewable Purchase Obligation (RPO) trajectory till 2029-30 vide Gazette Notification dated 20.10.2023 which ensure certain amount of energy consumption to be met from renewable energy sources. After 2029-30, RPO targets assumed based on the anticipated RE capacity requirement on national level given in National Electricity Plan 2022-32, (Vol-I Generation). While carrying out the transmission studies the RPO compliance of the state has been taken into account.

(ii). The generation resource adequacy study for Assam was carried out by CEA considering the demand projections from the 20th EPS (i.e. 3683 MW by the year 2029-30). According to the study, total energy required to meet RPO is 7879 MU for which Assam required to add 141 MW and 2288 MW additional capacities in respect of wind and solar & other renewable energy/power respectively by 2029-30 in gradual manner.

(iii). During the study of Transmission System proposals, the demand of Assam has been considered as 6247 MW for 2031-32 time frame which translate to 30700 MU energy requirement, this requirement is higher than 20th EPS demand projections (i.e. 4128 MW and 20285 MU) by 2031-32. Considering the 41.50% RPO compliance total 12750 MU would be required to meet RPO compliance out of which 7879 MU is required by 2029-30. Approximately 4870 MU (12750 -7879 MU) energy additionally required in the year 2031-32. Additional renewable power would be required by 2031-32 is 2530 MW. Total 2429 MW (2288+141 MW) would be required to add by 2029-30 and additional 2530 MW would be require to add/contract in 2031-32. Therefore, Assam would require to add/contract 4959 MW (2429+2530 MW) by 2031-32 in gradual manner for their RPO compliance.

(iv). The agreed system by the year 2031-32 was modelled and studied considering the N-1 contingency criteria. No constraints were observed in transmission system of the state taking into account of above RPO compliance. Hence, the transmission system planned up to 2031-32 (including new schemes identified in this report) ensure the Transmission Resource Adequacy.

5.6. **Study Results**

5.6.1. Considering the above assumptions import/export on tie lines is given below:

Parameter↓ / Scenario→	**Low hydro**	**High hydro**	**Max Solar**
Generation despatch (intra-state + ISGS located in state) (in MW)	909	1303	3314

Demand (in MW)	6031	6031	4350
Net interchange ((-)import / (+)export) at ISTS-STU periphery (in MW)	-5660	-5749	-2625

5.6.2. The peak demand with high hydro scenario was found to be critical scenario during the system studies.

5.6.3. The line flows and voltage were in permissible limit as mentioned in the Manual on Transmission Planning Criteria, 2023 in the critical as well as other scenario after modelling the required additional transmission system by 2031-32.

5.6.4. The planned transmission system of the state is N-1 contingency criteria compliant.

5.7. Transmission system requirement by 2031-32

5.7.1. New substations alongwith the associated transmission lines which are required by 2031-32 are listed at Table 5-3:

Table 5-3 New substations alongwith the associated transmission lines of Assam

S.No	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
1.	**i) Creation of 400 kV level by installation of 400 kV GIS, 3x500 MVA, 400/220 kV at under construction 220/132/33 kV Khumtai GIS substation**	In the 01st NERPC-TP meeting the upgradation of existing 220/132 kV substation to 400/220 kV GIS substation at Khumtai with BNC (PGCIL) – Khumtai 400 kV D/c (Twin Moose) line had been agreed. Khumtai 220/132/33 kV S/s is under construction, creation of 400 kV level in the same S/s is proposed.	505.10	**Time frame: 2027-28** Assam had informed that they are seeking funding from other sources (10% GBS) as the proposal is of urgent nature. Further, Assam required to implement the proposals as S.No. (iv) to (vi) in matching time frame of S.No. (i) to (iii).
	ii) BNC (PGCIL) – Khumtai 400 kV D/c (Twin Moose) Line (238 ckm) alongwith 2 Nos. of 400 kV line bays at BNC (PGCIL) S/s		632.87	
	iii) Extension of 220 kV GIS Bus at under construction Khumtai (220/132/33 kV) GSS for interconnection of 3 x 500 MVA, 400/220 kV ICT bays at 220 kV level.		22.97	
	iv) LILO of both circuits of Samaguri – Mariani 220 kV 2xS/c line at 400/200/132 kV Khumtai S/s. (12 km		10.90	

	loop in and 12 km loop out)			
	v) LILO of Jorhat (W) – Bokaghat 132 kV S/c line at 400/200/132 kV Khumtai S/s. (10.5 km loop in and 10.5 km loop out)		10.80	
	vi) Sarupathar – Khumtai 132 kV D/c line (124 ckm) alongwith 2 Nos. of 132 kV line bays at Sarupathar S/s (124 ckm)		40.10	
2.	**i) Establishment of new 220/132 kV, 2x160 MVA GIS substation at Rowta**	In the 01st NERSCT the proposal had already been agreed.	117.77	**Time frame: 2026-27** Assam had informed that they are seeking funding from other sources as the proposal is of urgent nature.
	ii) Rowta (New)-Rangia (New) 220kV D/c Line (Single zebra) (160 ckm) alongwith 2 Nos. of 220 kV line bays at Rangia (New) S/s		122.16	
3.	**i) Establishment of new 220/33 kV, 2x 100 MVA GIS Substation at Boragaon (Jalukbari)**	In the 01st NERSCT the proposal had already been agreed.	112.45	**Time frame: 2026-27** Assam had informed that they are seeking funding from other sources as the proposal is of urgent nature.
	ii) Boragaon (Jalukbari) (New) – Mirza 220 kV D/c Line (Single zebra) (42 ckm) alongwith 2 Nos. of 220 kV line bays at Mirza S/s		120.30	
4.	**i) Establishment of new 220/33 kV, 2x 100 MVA GIS Substation at Panjabari**	In the 01st NERSCT the proposal had already been agreed. Industrial load of IOCL load upto 47 MW will be connected at this S/s.	112.45	**Time frame: 2026-27** Assam had informed that they are seeking funding from other sources as the proposal is of urgent nature.
	ii) LILO of Sonapur-Sarusajai 220 kV S/c Line at Panjabari (New) (Single zebra) – (3 km loop in and 3 km loop out)		4.19	
5.	**i) Establishment of new 220/132 kV, 2 x200 MVA and 220/33 kV, 2x80 MVA GIS Substation at existing 132/33kV**	North Bank of Lower Assam (132 kV Rangia-Barnagar-Dhaligaon Section) is already overloaded condition. This part of the system is more than 50 years old. Also two new	154.30	**Time frame: 2028-29**

	Barnagar GIS Substation	substations i.e., Barpeta and Nathkuchi are also coming up in the section. According to load flow studies requirement of this S/s has been identified to cater the future loading.		
	ii) Barnagar (ISTS)-Barnagar (New) 220kV D/c Line (Twin Moose) (60 ckm) alongwith 2 Nos. of 220kV line bays at Barnagar (ISTS) S/s		105.00	
	iii) Barnagar (New) - Barnagar (Existing) 132 kV D/c line (Twin Moose conductor) (1 ckm) alongwith 2 Nos. of 132 kV line bays at Barnagar (ISTS)		4.00	
6.	**i) Establishment of new 220/132 kV 2x160 MVA and 220/33 kV, 2x100 MVA GIS Substation at New Dhaligaon**	In the 03rd NERPC-TP the proposal had already been agreed	169.00	**Time frame: 2028-29**
	ii) LILO of both circuits of Rangia – BTPS 220 kV D/c Line at New Dhaligaon (2 km loop in and 2 km loop out) alongwith reconductoring of BTPS-New Dhaligaon 220kV D/c section with HTLS(1400A)		35.00	
	iii) New Dhaligaon-Dhaligaon (Existing) 132 kV D/c Line (Twin Zebra or equivalent HTLS conductor of 1400 Amps) (2 ckm) alongwith 2 Nos. 132 kV line bays at Dhaligaon (Existing) S/s		5.00	
7.	**i. Establishment of new 132/33kV, 2x50 MVA Substation at Lower Haflong**	Halflong is presently connected with one S/c line from Halflong (PG). However, to satisfy 'N-1' criteria at 132 kV level, and enhanced reliability & redundancy the	42.60	**Time frame: 2030-31** Capacitor bank at 33 kV Lower Halflong bus is also required.
	ii. Lower Haflong-Haflong (Existing) 132 kV S/c Line		28.56	

		(Single panther)(40 ckm) alongwith 1 No. 132 kV line bays at Haflong (Existing)	transmission system is proposed.		
	iii.	Lumding – Lower Haflong 132 kV D/c Line (Single panther)(100 ckm) alongwith 2 Nos. 132 kV line bays at Lumding		157.08	
8.	**i.**	**Creation of 220 kV level at 132/33 kV Diphu existing substation with 2x160 MVA ICT**	In the 3rd NERPC-TP following transmission line was agreed: i. New Mariani (PGCIL-existing) – Diphu (New) 220 kV D/c Line ii. Sankardevnagar (AEGCL-New)-Diphu (AEGCL-New) 220kV D/c Line iii. Diphu – Bokajan 132kV **S/c** line	98.78	**Time frame: 2028-29**
	ii.	New Mariani (PGCIL-existing) – Diphu (New) 220 kV D/c Line (Single zebra) (310 ckm) alongwith 1 No. 220kV line bays at New Mariani (1 bay already available at New Mariani)		542.50	
	iii.	Sankardevnagar (AEGCL-New)-Diphu (AEGCL-New) 220kV D/c Line (Single zebra) (162 ckm) along with 2 Nos. of 220 kV bays at Sankardevnagar (AEGCL-New) S/s		283.50	
	iv.	Diphu – Bokajan 132kV D/c (Single panther) (one ckt via. East Karbi) (90 ckm) alongwith 2 Nos. of 132 kV bays at Bokajan S/s		97.50	
9.	**i.**	**Establishment of new 132/33 kV, 2x80 MVA Substation at Silcoorie**	The substation is required to meet the demand in Ghungur, Udarbond and Silcoorie area.	51.29	**Time frame: 2026-27**
	ii.	Silchar (PGCIL) – Silcoorie 132 kV D/c Line (Single panther) (40 ckm) alongwith 2 Nos. 132 kV line bays at Silchar (POWERGRID)		50.08	

10.	**i. Establishment of new 132/33 kV, 2x 50 MVA GIS Substation at Lumding**	In the 01st NERSCT the, establishment of 132/33 kV, 2x 50 MVA GIS Substation at Lumding had been agreed with following connectivity: i. LILO of Shakardevnagar (AEGCL- Existing) Line – Diphu (AEGCL-Existing) S/c Line at Lumding (AEGCL-New)	76.11	**Time frame: 2026-27** Assam had informed that they are seeking funding from other sources as the proposal is of urgent nature.
	ii. Sankardevnagar – Lumding (New) 132 kV D/c Line (Single panther) (80 ckm) along with 2 Nos. of 132 kV bays at Sankardevnagar		45.66	
11.	**i. Establishment of new 132/33 kV (2x50 MVA) AIS Substation at Agamoni**	In the 06th SCM of NER, establishment of new 220/132 kV, 2 x 160 MVA and 132/33 kV, 2 x 50 MVA GIS Substation at Agamoni had been agreed with following connectivity: i. LILO of both ckt of Alipurduar (PGCIL) - Bongaigaon (PGCIL) D/c line at Agamoni (AEGCL-New) ii. LILO of Gossaigaon – Gauripur S/c (AEGCL Existing) Line at Agamoni (AEGCL- New)	56.05	**Time frame: 2026-27** Assam had informed that they are seeking funding from other sources as the proposal is of urgent nature.
	ii. Gossaigaon (AEGCL-New) – Agamoni (AEGCL New) 132 kV D/c line (Single panther) (66 ckm) along with 2 Nos. of 132 kV bays at Gossaigaon (AEGCL-New) S/s		29.05	
12.	**i. Establishment of new 132/33 kV, 2x50 MVA Substation at Serfanguri**	In the 01st NERSCT, establishment of new 132/33 kV, 2x50 MVA Substation at Serfanguri had been agreed with following connectivity: i. Serfanguri (AEGCL-New) – Kokrajhar (AEGCL-Existing) D/C Line	53.55	**Time frame: 2026-27** Assam had informed that they are seeking funding from other sources as the proposal is of urgent nature.
	ii. Serfanguri (New) – Gossaigaon (AEGCL-New) 132 kV D/c Line (Single panther) (40 ckm) along with 2 Nos. of 132 kV bays at Gossaigaon (AEGCL-New) S/s.		29.05	
13.	**i. Establishment of new 132/33 kV, 2 x 50 MVA Substation at Dhing**	In the 01st NERSCT, establishment of new 132/33 kV, 2 x 50 MVA AIS Substation at Dhing had been agreed with following connectivity: i. Dhing (AEGCL- New) – Nagaon (AEGCL-Existing) 132 kV S/c Line	53.55	**Time frame: 2026-27** Assam had informed that they are seeking funding from other sources as the proposal is of urgent nature.
	ii. Dhing (AEGCL-New) – Nagaon (AEGCL-Existing) 132 kV D/c Line (70 ckm) along with 2 Nos. of 132 kV		30.66	

	bays at Nagaon (AEGCL-Existing) S/s			
14.	**i. Establishment of new 132/33 kV, 2x50 MVA Substation at Udarbond**	To meet the demand in Ghungur, Udarbond and Silcoorie area.	78.61	**Time frame: 2026-27** Assam had informed that they are seeking funding from other sources as the proposal is of urgent nature.
	ii. Silchar (PGCIL) – Udarbond 132 kV D/c Line (Single Moose or equivalent (800A)) (30 ckm) along with 2 Nos. of 132 kV bays at Silchar (PGCIL) S/s		20.00	
15.	**i. Establishment of new 132/33 kV (2x50 MVA) GIS Substation at Titabor**	In the 01st NERSCT the proposal had already been agreed	80.61	**Time frame: 2026-27** Assam had informed that they are seeking funding from other sources as the proposal is of urgent nature.
	ii. Titabor – Mariani (Existing) 132 kV D/c Line (40 ckm) along with 2 Nos. of 132 kV bays at Mariani S/s		17.25	
16.	**i. Establishment of new 132/33 kV (2x50 MVA) AIS Substation at Chabua**	In the 01st NERSCT, establishment of new 132/33 kV (2x50 MVA) AIS Substation at Chabua had been agreed with following connectivity: **i.** LILO of Tinsukia (AEGCL-Existing) - Dibrugarh (AEGCL-Existing) S/c Line (AAAC Panther conductor) The substation is required to meet the industrial demand at Chabua.	58.05	**Time frame: 2026-27** Assam had informed that they are seeking funding from other sources as the proposal is of urgent nature.
	ii. LILO of Tinsukia – Dibrugarh 132 kV S/c Line at Chabua (4 km loop in and 4 km loop out) [Chabua to LILO point towards Tinsukia with HTLS (1000A) and Chabua to LILO point towards Dibrugarh with ACSR panther] alongwith reconductoring of LILO point towards Tinsukia – Tinsukia section with HTLS conductor (1000A)		12.91	
17.	**i. Establishment of 220/132 kV, 2x160 MVA & 132/33 kV, 2x80 MVA (GIS) substation at Morigaon**	In the 01st NERSCT, establishment of 132/33 kV, 2x50 MVA (GIS) substation at Morigaon had been agreed with following connectivity: i. Baghjhap(Existing)-Morigaon(New) D/c Line	171.20	**Time frame: 2026-27** Assam had informed that they are seeking funding from other sources as the proposal is of urgent nature.
	ii. LILO of 220 kV Sonapur New – Karbi Langpi D/c line (Formed after LILO		16.90	

	of Sarusajai-Karbi Langpi D/c at Sonapur New) at Morigaon (AEGCL-New) (Single zebra) (2 km loop in and 2 km loop out)	This substation is required for industrial demand of TATA Semiconductor 85 MW load at 220 kV level.		
	iii. Marigaon (AEGCL-New) – Dhing 132 kV D/c Line (Single panther) (64 ckm) along with 2 Nos. of 132 kV bays at Dhing S/s		72.00	
18.	**i. Establishment of new 132/33 kV (2x50 MVA) AIS substation at Amayapur**	In the 01st NERSCT the proposal had already been agreed.	58.05	**Time frame: 2026-27** Assam had informed that they are seeking funding from other sources as the proposal is of urgent nature.
	ii. Amayapur (AEGCL-New) – Hajo (AEGCL-Existing) 132 kV D/c Line (Single Panther) (50 ckm) along with 2 Nos. of 132 kV bays at Hajo (AEGCL-Existing) S/s		28.75	
19.	**i. Establishment of new 132/33kV (2x50 MVA) AIS substation at Dhupdhara**	In the 01st NERSCT the proposal had already been agreed.	58.05	**Time frame: 2026-27** Assam had informed that they are seeking funding from other sources as the proposal is of urgent nature.
	ii. Dhupdhara (AEGCL-New) – Boko (AEGCL-Existing) D/c Line (Single Panther)-(50 ckm) along with 2 Nos. of 132 kV bays at Boko (AEGCL-Existing) S/s		40.35	
20.	**i. Establishment of new 132/33kV (2x80 MVA) AIS substation at Ishabheel**	To meet the future demand and improved voltage regulation in the area the substation is required.	43.44	**Time frame: 2030-31** The reconductoring of LILO portion at Isabeel substation by HTLS has to be in accordance to the HTLS conductor used by CTU for complete reconductoring of line 132 kV Badapur – Kumarghat Line.
	ii. LILO of Karimganj - Kumarghat 132 kV S/c Line with HTLS (1000 A) at Ishabheel S/s (15 km loop in and 15 km loop out)		33.00	

				LILO portion of Karimganj GSS shall also have to be reconductored with same capacity.
21.	i. **Establishment of new 220/132kV, 2x160 MVA; 132/33kV, 2x80 MVA GIS Substation at Digboi**	To meet up the high load growth of Digboi area and the IOC-Digboi which presently depends on 33 kV supply from Margherita.	129.63	**Time frame: 2028-29**
	ii. Tinsukia – Digboi (New) 220 kV D/c Line (Single zebra)(70 ckm) along with 2 Nos. of 220 kV bays at Tinsukia S/s		122.5	
22.	i. **Establishment of new 132/33 kV 2x80 MVA AIS substation at Jonai**	The Jonai 33 kV S/s of APDCL caters to the load of eastern most parts of Dhemaji district. Jonai 132/33 kV S/s, once commissioned shall be able to cater to the load of eastern part of Dhemaji district as well as the border area of Assam and Arunachal Pradesh.	43.44	**Time frame: 2028-29**
	ii. Silapathar – Dhemaji 2nd Ckt Stringing (Single Panther) (36 ckm) alongwith associated bay at both end		37.58	
	iii. Silapathar – Jonai 132 kV D/c line (Single Panther) (150 ckm) along with 2 Nos. of 132 kV bays at Silapathar S/s		108.53	
23.	i. **Establishment of new 132/33 kV 2x80 MVA AIS substation at Ghilamora**	In the 03rd NERPC-TP establishment of new 132/33 kV 2x80 MVA AIS substation at Ghilamora had been agreed with following connectivity: **(i).** LILO of 132 kV North Lakhimpur - Dhemaji S/c line at Ghilamora S/s.	47.36	**Time frame: 2030-31**
	ii. North Lakhimpur – Gogamukh 132 kV D/c line alongwith LILO of one circuit at Ghilamora (Single Panther) (72 km + 12.5 km Loop in + 12.5 km Loop out) (2 Nos. on 132 kV bays at North Lakhimpur S/s)		88.41	
	iii. Majuli – Ghilamora 132 kV S/c on D/c		91.39	

	tower (Single panther) (120 ckm) along with 1 No. of 132 kV bays at Majuli S/s			
	iv. Gogamukh – Dhemaji 132 kV D/c (Single Moose-800A) (60 ckm) alongwith associated bays at both end		59.94	
24.	**i. Establishment of new 132/33 kV, 2x80 MVA substation at Bartari**	To meet the increasing demand and address the Low voltage issues. For enhanced reliability and redundancy	43.44	**Time frame: 2029-30**
	ii. Barnagar (New) – Bartari 132 kV D/c Line (Single panther) (70 ckm) along with 2 Nos. of 132 kV bays at Barnagar(New) S/s		49.98	
25.	**i. Establishment of new 132/33 kV, 2x80 MVA substation at Tikrikilla**	In the 03rd NERPC-TP, the establishment of new 132/33 kV, 2x80 MVA substation at Tikrikilla had been agreed with following connectivity: i. LILO of Agia – Hatsingimari D/c line at Tikrikilla (Single panther)	51.29	**Time frame: 2029-30**
	ii. 2nd Circuit stringing of Agia – Hatsingimari 132 kV S/c on D/c tower (Single panther)-(110 ckm) along with 132 kV bay at both end		25	
	iii. LILO of Agia – Hatsingimari D/c line at Tikrikilla (Single panther) (7.5 km loop in and 7.5 km loop out)		37.98	
26.	**i. Establishment of new 132/33 kV, 2x80 MVA substation at Modertoli**	In the 03rd NERPC-TP the proposal had already been agreed.	51.29	**Time frame: 2029-30**
	ii. LILO of both circuits of Samaguri – Sankardevanagr 132 kV D/c Line at Modertoli (Kampur) (Single panther) (15 km loop in and 15 km loop out)		40.00	
27.	**i. Establishment of new 132/33 kV,**	Currently, Power Supply to Missamari area is through a	46.53	

		2x80 MVA GSS at Missamari	dedicated 33 kV feeder from Depota GSS. The feeder from Depota GSS is approximately 34 km long and it traverses through dense bamboo plantation (for approx. 16 km) which results in frequent power disruptions. The power requirement of the station will increase at this area. Thus, a proposal has been made for establishment of a new 132/33kV GSS at Missamari to enhance the power supply scenario to critical load centre in the area.		**Time frame: 2027-28**
	ii.	Balipara – Missamari 132 kV D/c line (Single Panther) (40 ckm) along with 2 nos of 132 kV bays at Balipara S/s		41.89	
	iii.	LILO of Rowta – Depota 132 kV S/c line at Missamari (Single panther) (5 km loop in and 5 km loop out)		14.76	
28.	**i.**	**Establishment of new 132/33kV, 2x80 MVA substation at Kalain (AIS)**	To meet the industrial demand in this area.	43.44	**Time frame: 2031-32**
	ii.	LILO of Lumshnong – Panchgram S/c line at Kalain (Single panther)(15 km loop in and 15 km loop out)		27.11	

5.7.2. Augmentation of Substation which are required by 2031-32 are listed at Table 5-4

Table 5-4 Augmentation of Substation of Assam

S.No	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
1.	Augmentation of transformer capacity by Installation of 3rd ICT of rating 1x200 MVA, 220/132 kV at **Amingaon S/s**	To cater the future load demand and to satisfy N-1 contingency criteria the Augmentation is required. Existing ICT capacity: 2x160 MVA	**23.57**	**Time frame: 2030-31** Total capacity after augmentation: 2x160+1x200 MVA
2.	Augmentation of transformer capacity by Replacement of 1x100 MVA ICT with 1x200 MVA at 220/132 kV **Rangia S/s**	To cater the future load demand and to satisfy N-1 contingency criteria the Augmentation is required Existing ICT capacity: 1x100+ 1x200 MVA	**23.57**	**Time frame: 2026-27** 1x200 MVA transformer is being installed by Assam. Total capacity after

S.No	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
				augmentation: 2x200 MVA
3.	Augmentation of transformer capacity by Replacement of 2x100 MVA ICT with 2x200 MVA at 220/132 kV **Tinsukia S/s**	To cater the future load demand and to satisfy N-1 contingency criteria the Augmentation is required Existing ICT capacity: 2x100 MVA	**47.14**	**Time frame: 2026-27** Total capacity after augmentation: 2x200 MVA
4.	Augmentation of transformer capacity by Replacement of 2x100 MVA ICT with 2x200 MVA at 220/132 kV **Sonapur S/s**	To cater the future load demand and to satisfy N-1 contingency criteria the Augmentation is required Existing ICT capacity: 2x100 MVA	**47.14**	**Time frame: 2028-29** Total capacity after augmentation: 2x200 MVA
5.	Augmentation of transformer capacity by Installation of 3rd ICT of rating of 1x160 MVA at 220/132 kV **Salakati S/s**	To cater the future load demand and to satisfy N-1 contingency criteria the Augmentation is required Existing ICT capacity: 2x160 MVA	**22.27**	**Time frame: 2027-28** Total capacity after augmentation: 3x160 MVA Assam had informed that they are seeking funding through own resources as the proposal is of urgent nature.
6.	Augmentation of transformer capacity by Installation of 3rd ICT of rating of 1x200 MVA at 220/132 kV **Mariani S/s**	To cater the future load demand and to satisfy N-1 contingency criteria the Augmentation is required Existing ICT capacity: 2x100 MVA	**23.57**	**Time frame: 2027-28** Total capacity after augmentation: 2x100+1x200 MVA

5.7.3. New transmission lines which are required by 2031-32 are listed at Table 5-5:

Table 5-5 New transmission lines of Assam

S.No	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
1.	Mariani – Mariani (New) 220 kV S/c line through underground cable of length 3 ckm (at least 1300 A) (bay already available at both ends)	For reliable supply of power from Mariani (New) and reliable evacuation of power from gas based plants in upper Assam area	15.00	**Time frame: 2026-27** As Upper Assam, where isolated gas pipelines supply gas to the Assam Gas-Based Power Plants (AGBPP) at Lakwa and Namrup. Due to generation evacuation challenges, these gas plants are forced to either flare the gas to maintain schedule or generate beyond the scheduled limit, resulting in penalties under the Deviation Settlement Mechanism (DSM).
2.	2nd Ckt Stringing of Namrup – Mariani 220 kV S/c line on D/c tower (146 ckm) along with associated bays at both ends.	2nd ckt of 220 kV Namrup-Mariani Line is required for Grid security and reliability. Moreover, Namrup Replacement Power Plant (NRPP) (100 MW) is coming up along with 70 MW Solar plant at Amguri between Mariani and Namrup. 2nd ckt is of urgent necessity for Grid operation.	25.00	**Time frame: 2028-29**
3.	LILO of Lakwa – Mariani 132 kV at Sivasagar S/s (15 km loop in and 15 km loop out)	LILO is required for Grid security and reliability.	39.00	**Time frame: 2028-29**

5.7.4. Reconductoring of existing transmission lines which are required by 2031-32 are listed at Table 5-6:

Table 5-6 Reconductoring of existing transmission lines of Assam

S.No	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
1.	Sonabil – Depota 132 kV S/c line (17.73 ckm) along with upgradation of requisite bay equipment	Due to increased loading in the area reconductoring of this line is required. • Existing conductor - ACSR Panther • Year of commissioning- 2016 • Ampacity of HTLS-1000 A	24.83	**Time frame: 2026-27** Assam had informed that they are seeking funding from other sources as the proposal is of urgent nature.
2.	Sonabil – Ghoramari 132 kV S/c line (8.73 ckm) along with upgradation of requisite bay equipment	Due to increased loading in the area reconductoring of this line is required. • Existing conductor - ACSR Panther • Year of commissioning- 2016 • Ampacity of HTLS-1000 A	8.87	**Time frame: 2026-27** Assam had informed that they are seeking funding from other sources as the proposal is of urgent nature
3.	Kamakhya – Sishugram 132 kV S/c line (6 ckm) along with upgradation of requisite bay equipment	Combined load of Kamakhya GSS, Kamakhya Traction and a portion of Sishugram GSS crosses 80 MW. The loading of the line will further increase after charging of the 132 kV Paltan Bazar GIS. Sishugram will have to be shifted towards Amingaon & Rangia GSS which will again result in voltage drop & load shedding due to saturation of the ICT's at Rangia. Reconductoring/ampacity enhancement of the line will enable loading of Sishugram, Kamakhya & Kamakhya Traction from Amingaon GSS increase in shutdown of 132kV Sarusajai-Kamakhya transmission line thereby increasing the reliability of the Capital area of Assam. • Existing conductor - ACSR Panther • Year of commissioning- 1965 (Main line) • Ampacity of HTLS-1000 A	4.82	**Time frame: 2026-27** Assam had informed that they are seeking funding from other sources as the proposal is of urgent nature.
4.	Sishugram – Amingaon S/c 132 kV line (20 ckm) along with upgradation of requisite bay equipment	The total load of the Sishugram GSS is above 80 MW, presently, being feed from both Kamakhya and Rangia end. Charging of 220 kV Amingaon GSS will help in feeding Sishugram from	15.57	**Time frame: 2026-27** Assam had informed that they are seeking funding from other sources

		Amingaon. However, to feed the entire load of Sishugram from Amingaon, capacity enhancement of the transmission line is required. • Existing conductor - ACSR Panther • Year of commissioning- 1965 (Main line) • Ampacity of HTLS-1000 A		as the proposal is of urgent nature.
5.	Kahilipara – AIIMS 132 kV S/c line (20 ckm) along with upgradation of requisite bay equipment	Due to increased loading in the area reconductoring of this line is required. • Existing conductor - ACSR Panther • Year of commissioning- 1965(Main line) • Ampacity of HTLS-1000 A	15.67	**Time frame: 2026-27** Assam had informed that they are seeking funding from other sources as the proposal is of urgent nature.
6.	AIIMS – Amingaon 132 kV S/c line (14 ckm) along with upgradation of requisite bay equipment	Due to increased loading in the area reconductoring of this line is required. • Existing conductor – ACSR Panther • Year of commissioning- 1965 (Main line) • Ampacity of HTLS-1000 A	11.20	**Time frame: 2026-27** Assam had informed that they are seeking funding from other sources as the proposal is of urgent nature.
7.	Rangia – Kamalpur 132 kV D/c line (28 ckm) along with upgradation of requisite bay equipment	Due to increased loading in the area reconductoring of this line is required. • Existing conductor -ACSR Panther • Year of commissioning- 1965(Main line) • Ampacity of HTLS-1000 A	22.40	**Time frame: 2026-27**
8.	Barnagar – Nathkuchi 132 kV S/c line (43 ckm) along with upgradation of requisite bay equipment	Due to increased loading in the area reconductoring of this line is required. • Existing conductor – ACSR Panther • Year of commissioning- 1982 (Main line) • Ampacity of HTLS-1000 A	38.00	**Time frame: 2026-27**
9.	Dhaligaon – Barpeta 132 kV S/c line (75.69 ckm) along with upgradation of requisite bay equipment	Due to increased loading in the area reconductoring of this line is required. • Existing conductor - ACSR Panther • Year of commissioning- 1982(Main line) • Ampacity of HTLS-1000 A	68.40	**Time frame: 2026-27**

10	Salakati – Kokrajhar 2nd Circuit 132 kV S/c line (10.27 ckm) along with upgradation of requisite bay equipment	Due to increased loading in the area reconductoring of this line is required. • Existing conductor - ACSR Panther • Year of commissioning- 2016 • Ampacity of HTLS-800 A	6.33	**Time frame: 2026-27**
11	Tinsukia – Rupai 132 kV S/c lin (40 ckm) along with upgradation of requisite bay equipment	It is experienced that whenever any disruption occurs or shutdown is taken at any element, in between Panyor (Ranganadi) Hydro-Electric Plant and Pasighat node, quantum of power to Arunachal Pradesh is restricted to mere 10-15 MW through the Roing-Chapakhowa corridor despite its adequate transmission capacity, thereby forcing unabated load-shedding in Arunachal Pradesh. The reason of this constraint is reported to system inadequacies in the upstream systems at Chapakhowa Rupai-Tinsukia and Rupai-Margherita and Rupai-Tinsukia networks. The above TLs are more than 45 years old and can carry only upto 50 MW. Many instances of grid disturbances have been reported in the past few months due to conductor snapping of the lines. • Existing conductor – ACSR Panther • Year of commissioning- 1996 (Main line) • Ampacity of HTLS-1000 A	33.23	**Time frame: 2026-27** Assam had informed that they are seeking funding from other sources as the proposal is of urgent nature.
12	Rupai – Ledo (Margherita) 132 kV S/c line (72 ckm) along with upgradation of requisite bay equipment		55.92	
13	Tinsukia – Ledo (Margherita) 132 kV line(52.8 ckm) along with upgradation of requisite bay equipment		40.44	
14	Dibrugarh – Behiating 132 kV S/c line (9.3 ckm) along with upgradation of requisite bay equipment	Due to increased loading in the area reconductoring of this line is required. • Existing conductor – ACSR Panther • Year of commissioning- 2013 • Ampacity of HTLS-1000 A	20.00	**Time frame: 2026-27**
15	Rangia(New) – Nalbari 132 kV D/c line (60 ckm) along with upgradation of requisite bays equipment	Due to increased loading in the area reconductoring of this line is required. • Existing conductor - ACSR Panther	70.00	**Time frame: 2027-28** Line has been awarded in June 2024 and AEGCL

		• Expected Year of commissioning – 2027-28 • Ampacity of HTLS-1000 A		confirmed that they will change the conductor to HTLS 1000A
16	BTPS – New Dhaligaon 220 kV D/c line (HTLS conductor of 1600 A) (40 ckm) along with upgradation of requisite bays equipment	Due to increased loading in the area reconductoring of this line is required. • Existing conductor - ACSR Single Zebra (700A) • Year of commissioning- 2019 • Ampacity of HTLS-1600 A	21.00	**Time frame: 2026-27**
17	Reconductoring of LILO portion of Badarpur – Kumarghat at Karimganj 132kV S/c line with HTLS (1000 A) (4 km loop in & 4 km loop out) along with upgradation of requisite bay equipment	Due to increased loading in the area reconductoring of this line is required. • Existing conductor - ACSR Panther • Year of commissioning- 2021 • Ampacity of HTLS-1000 A	10.00	**Time frame: 2030-31**
18	Restringing of Dharamnagar (Tripura) – Durlavchera (Assam) 132 S/c line (26 ckm) with panther conductor along with upgradation of requisite bay equipment	Due to increased loading in the area reconductoring of this line is required. • Existing conductor - ACSR Panther • Year of commissioning- 1974 • Restringing with Panther	20.00	**Time frame: 2029-30** Matching time frame with Tripura **Note**: Only AEGCL portion (26 ckm)
19	Restringing of Srikona – Pailapol 132 kV S/c line (35 ckm) with panther conductor along with upgradation of requisite bay equipment	Due to increased loading in the area reconductoring of this line is required. • Existing conductor - ACSR Panther • Year of commissioning- 1984 • Restringing with Panther	27.48	**Time frame: 2027-28** Assam had informed that they are seeking funding from other sources as the proposal is of urgent nature.
20	Restringing of Panchgram – Hailakandi 132kV S/c line (23 ckm) along with upgradation of requisite bay equipment	Due to increased loading in the area reconductoring of this line is required. • Existing conductor - ACSR Panther • Year of commissioning- 1984 • Restringing with Panther	17.71	**Time frame: 2027-28** Assam had informed that they are seeking funding from other sources as the proposal is of urgent nature.

21	Restringing of Hailakandi – Durlavchera 132 kV S/c line (31.4 ckm) with panther conductor along with upgradation of requisite bay equipment	Due to increased loading in the area reconductoring of this line is required. • Existing conductor - ACSR Panther • Year of commissioning- 1988 • Restringing with Panther	23.22	**Time frame: 2027-28** Assam had informed that they are seeking funding from other sources as the proposal is of urgent nature.

Note: AEGCL to ensure to assess healthiness of towers and commensurate rating of Bay equipment as well before implementation of above reconductoring.

5.7.5. The power map of the state, including the above planned system is attached at **Exhibit – 5.1.**

5.8. **Summary of identified transmission system by 2031-32:**

A total of 8520 MVA transformation capacity addition/augmentation and 3674 ckm of new transmission lines/reconductoring of old lines at an estimated cost of Rs. 6822 Crs. would be required for implementing the intra-state transmission proposals for meeting the electricity demand of the state by the year 2031-32.

The summary of voltage wise identified transmission system of the state by 2031-32 is as below:

400 kV Transmission system

S.No	Transmission system	No.	Length (in ckm)	Capacity (MVA)	Estimated Cost (Rs. Cr.)*
1.	New substation	1	-	1500	505.10
2.	Augmentation of existing substation				
3.	New transmission line including LILO and 2nd Ckt Stringing	1	238	-	632.87
4.	Reconductoring of transmission line		-	-	-

220 kV Transmission system

S.No	Transmission system	No.	Length (in ckm)	Capacity (MVA)	Estimated Cost (Rs. Cr.)*
1.	New substation	8	-	3080	1065.55
2.	Augmentation of existing substation	6	-	1560	187.26
3.	New transmission line including LILO and 2nd Ckt Stringing	12	1023	-	1425.92

4.	Reconductoring of transmission line	1	40	-	21.00

132 kV Transmission system

S.No	Transmission system	No.	Length (in ckm)	Capacity (MVA)	Estimated Cost (Rs. Cr.)*
1.	New substation	19	-	2380	1036.73
2.	Augmentation of existing substation	-	-	-	-
3.	New transmission line including LILO and 2nd Ckt Stringing	32	1772	-	1413.36
4.	Reconductoring of transmission line	20	601	-	534.09

**Note: The estimated cost of the above transmission system is based on recently awarded works with a 5% escalation factor per annum from AIIB and NERPSIP-funded projects in Assam.*

6. Manipur

6.1. Demographics

6.1.1. 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, including the Meiteis, Nagas, Kukis, Zomis and other smaller communities who speak a variety of Sino-Tibetan languages. Manipur has been at the crossroads of Asian economic and cultural exchange for more than 2,500 years.

6.2. Electricity profile of state

6.2.1. Power generation-demand scenario of state:

- In the FY 2023-24, Manipur had peak electricity demand of 258 MW and electrical energy requirement of 1023 MU. As on 31.07.2024, state has central sector allocation of 215.92 MW which includes hydro plants (87.24 MW) and thermal plants (128.67 MW). In addition, installed capacity in state sector is 41.45 MW and installed capacity in private sector is 13.04 MW. The per capita consumption of the state was 354 kWh in the year 2022-23.
- The projected peak electricity demand in Manipur as per 20th EPS report will be 448 MW by the year 2031-32.
- Installed capacity (MW) of generating stations in Manipur as on 31.07.2024 is given at Table 6-1:

Table 6-1 Installed capacity of generating stations in Manipur

Sector	Hydro	Thermal					Nuclear	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	13.04	13.04
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**	**18.49**	**270.41**
%	**32.26**	**17.41**	**0.00**	**30.17**	**22.9**	**60.90**	**0.00**	**6.83**	**100.00**

Source: Installed Capacity Report, CEA

- As on August 2024, the General Network Access (GNA) quantum for ISTS drawal and Available Transfer Capability (ATC) of the state is 204 MW and 305 MW respectively.

6.2.2. Inter State Transmission system in the state:

- 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.

- State has total 1238 ckm of ISTS network. Brief details of the ISTS network (including ISTS lines owned by states are given at Table 6-2:

Table 6-2 Existing and Under Construction ISTS in Manipur

Voltage level	**Existing**	**Under Construction/ Planned**
132 kV	536 ckm + 55 ckm (ISTS line owned by state)	36.6 ckm (reconductoring of lines)
400 kV	608 ckm	-
Total	1293 ckm (including 55 ckm ISTS line owned by state)	36.6 ckm (reconductoring of lines)

6.2.2.1. Detailed of under implementation ISTS network in Manipur (as on July, 2024) are as given below:

A. Under Construction ISTS: RTM Mode

i. NERSS-XIII (Manipur portion only)**:**

- Installation of CT of 132 kV Imphal (POWERGRID) – Imphal (Manipur) bay-2 to be upgraded to 1200 A at Imphal (POWERGRID) end:

ii. NERES-XIX:

- Reconductoring of Loktak (NHPC) – Imphal (POWERGRID) 132 kV S/c line with HTLS conductor with Ampacity of single HTLS as 800 A (at nominal voltage) along with strengthening of associated structure in NHPC switchyard, if necessary. (36.60ckm)
- Replacement of existing CT of 600-400-200/1 A at Loktak HEP end in Loktak – Imphal 132 kV S/c line with rating commensurate with ampacity (800A) of HTLS conductor.

6.2.3. **Intra State Transmission assets (as on 31.07.2024):**

Voltage (kV)	Transmission lines (in ckm)		Substations (in MVA)	
	Existing	Under construction	Existing	Under construction
132	660	60	750	60
220	-	-	-	-
400	90.2	-	315	-

6.3. **Under implementation intra state transmission/distribution schemes:**

6.3.1. Under North Eastern Region Power System Improvement Project (NERPSIP), a total of 71 elements of transmission & distribution system were sanctioned which includes 19 Nos. of lines & 52 Nos. of substation. As of July-2024, a total of 70 elements were completed. The details of the elements are attached at **Annexure-3.1.**

6.4. **Transmission proposals submitted:**

The proposals submitted by Manipur includes the new substation and new transmission lines at 132 kV level, evacuation system of new Generating Stations, reconductoring of existing transmission lines and augmentation of existing sub-station. The details of the proposals received from State are at **Annexure-6.1**

6.5. **Assumptions for study:**

6.5.1. Peak electricity demand (MW) of Manipur for the year 2031-32 according to the 20th EPS Report and as estimated by the state are given below:

Demand	Actual peak electricity demand (2023-24)	Peak electricity demand as per 20th EPS Report for the year 2031-32	Estimated Peak electricity demand for the year 2031-32
Peak electricity demand (MW)	258	448	470*
CAGR	-	7.14%	7.78%

**including upcoming heavy industry*

6.5.2. Industrial Demand:

The details of upcoming heavy industries are as under.

(i). The total industrial demand of 65 MW is expected to come by 2031-32 at Yurembam, Awang Potsangbam, Ningthoukhong and Kongba area of Manipur.

6.5.3. The following Parameters were considered during the study

(i). Time Frame of Study: 2031-32

(ii). The total intra-state generation installed capacity of Manipur: 120 MW (Barak 3: 24 MW, Irang-3: 24 MW, Imphal HEP: 22.5 MW & Barak 4: 49.5 MW)

(iii). Peak Demand: 470 MW (including 65 MW non-scalable industrial demand)

(iv). Scenario of Study:

S.No.	Scenario	Demand Factor	Dispatch Factors
1.	Peak Demand low hydro	100%	Hydro Plant: 30%
2.	High Hydro	80%	Hydro Plant: 90%

6.5.4. Resource Adequacy

(i). The Government of India has notified new Renewable Purchase Obligation (RPO) trajectory till 2029-30 vide Gazette Notification dated 20.10.2023 which ensure certain amount of energy consumption to be met from renewable energy sources. After 2029-30, RPO targets assumed based on the anticipated RE capacity requirement on national level given in National Electricity Plan 2022-32, (Vol-I Generation). While carrying out the transmission studies the RPO compliance of the state has been taken into account.

(ii). The generation resource adequacy study for Manipur was carried out by CEA considering the demand projections from the 20th EPS (i.e. 404 MW by the year 2029-30). According to the study, total energy required to meet RPO is 697 MU for which Manipur required to add 8.77 MW, 2.17 MW and 49.26 MW additional capacities in respect of Wind, Hydro and Solar & other renewable energy/power respectively by 2029-30 in gradual manner.

(iii). During the study of Transmission System proposals, the demand of Manipur has been considered as 470 MW for 2031-32 time frame which translate to 1890 MU energy requirement, this is slightly higher than 20th EPS demand projections by 2031-32 (i.e.448 MW and 1794 MU). Considering the 41.50% RPO compliance total 780 MU would be required to meet RPO compliance out of which 697 MU is required by 2029-30. Approximately 83 MU (780-697 MU) energy additionally required in the year 2031-32. Additional renewable power would be required by 2031-32 is 45 MW. Total 60 MW (8.77+2.17+49.26 MW) would be required to add by 2029-30 and additional 45 MW would be require to add/contract in 2031-32. Therefore, Manipur would require to add/contract 105 MW (60+45 MW) by 2031-32 in gradual manner for their RPO compliance.

(iv). The agreed system by the year 2031-32 was modelled and studied considering the N-1 contingency criteria. No constraints were observed in transmission system of the state taking into account of above RPO compliance. Hence, the transmission system as planned upto 2031-32 (including new schemes identified in this report) ensure the Transmission Resource Adequacy.

6.6. **Study Results.**

6.6.1. Considering the above assumptions import/export on tie lines is given below:

Parameter↓ / Scenario→	**Low hydro**	**High hydro**
Generation despatch (intra-state + ISGS located in state) (in MW)	68	203
Demand (in MW)	470	379
Net interchange ((-)import / (+)export) at ISTS-STU periphery (in MW)	-370	-297

6.6.2. The Peak Demand low hydro scenario was found to be critical scenario during the system studies.

6.6.3. The line flows and voltage were in permissible limit as mentioned in the Manual on Transmission Planning Criteria, 2023 in the critical as well as other scenario after modelling the required additional transmission system by 2031-32.

6.6.4. The planned transmission system of the state is to be N-1 contingency criteria compliant.

6.7. **Transmission system requirement by 2031-32**

6.7.1. New substations alongwith the associated transmission lines which are required by 2031-32 are listed at Table 6-3

Table 6-3 New substations alongwith the associated transmission lines of Manipur

S.No	Transmission System	Justification	Estimated Cost (in Rs. 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 at Karong on one ckt of Hundung – Namrei D/c line. (40 km loop in and 40 km loop out)		71.22	

6.7.2. Augmentation of Substation which are required by 2031-32 are listed at Table 6-4

Table 6-4 Augmentation of Substation 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.

**Note: The cost estimate for Augmentation at Thoubal S/s is provided by CTUIL based on recently executed works.*

6.7.3. New transmission lines which are required by 2031-32 are listed at Table 6-5:

Table 6-5 New transmission lines of Manipur

S.No	Transmission System	Justification	Estimated Cost (in Rs. 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 – Jiribam (Manipur) 132 kV S/c line as it is old line)	62.84	**Time frame: 2029-30**
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**

6.7.4. Reconductoring of existing transmission lines which are required by 2031-32 are listed at Table 6-6:

Table 6-6 Reconductoring of existing transmission lines of Manipur

S.No	Transmission System	Justification	Estimated Cost (in Rs. 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**

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

6.7.5. Evacuation system for upcoming hydro projects which are required by 2031-32 are listed at Table 6-7:

Table 6-7 Evacuation system for upcoming hydro projects of Manipur

S.No	Transmission System	Justification	Estimated Cost (in Rs. 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)	Transmission system for evacuation of power from HEP	25.11	**Time frame: 2031-32**

S.No	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
	alongwith 2 Nos. 132 kV line bay at Tamenglong			matching with Generating Station

6.7.6. The power map of the state, including the above planned system is attached at **Exhibit -6.1.**

6.8. **Summary of identified transmission system by 2031-32:**

A total of 465 MVA transformation capacity addition/augmentation and 485 ckm of new transmission lines/reconductoring of old lines at an estimated cost of Rs. 593 Crs. would be required for implementing the intra-state transmission proposals for meeting the electricity demand of the state by the year 2031-32.

The brief summary of voltage wise identified transmission system of the state by 2031-32 is as below:

400 kV Transmission system

S.No	Transmission System	No.	Length (in ckm)	Capacity (in MVA)	Estimated Cost (in Rs. Cr.)*
1.	New substation	-	-	-	-
2.	Augmentation of existing substation	1		315	116.00
3.	New transmission line including LILO and 2nd Ckt Stringing	-	-	-	-
4.	Reconductoring of transmission line	-	-	-	-

132 kV Transmission system

S.No	Transmission System	No.	Length (in ckm)	Capacity (in MVA)	Estimated Cost (in Rs. Cr.)*
1.	New substation	2	-	150	98.80
2.	Augmentation of existing substation	-	-	-	-
3.	New transmission line including LILO and 2nd Ckt Stringing	9	483	-	375.73
4.	Reconductoring of transmission line	1	02	-	2.48

**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%.*

7. Meghalaya

7.1. Demographics

Meghalaya was previously part of Assam, but on 21st January 1972, the districts of Khasi, Garo and Jaintia Hills became the new state of Meghalaya. The population of Meghalaya as of 2014 was estimated to be 3,211,474. Meghalaya covers an area of approximately 22,430 square kilometres.

7.2. Electricity profile of state

7.2.1. Power generation-demand scenario of state:

- In the FY 2023-24, Meghalaya had peak electricity demand of 405 MW and total electrical energy requirement of 2,236 MU. As on 31.07.2024, state has central sector allocation of 256.67 MW which includes hydro plants (95.38 MW) and thermal plants (161.29 MW). In addition, installed capacity in state sector is 377.03 MW and installed capacity in private sector is 18.04 MW. Per capita consumption of the state was 730 kWh in the year 2022-23.
- The projected peak electricity demand as per 20th EPS report will be 575 MW in the year 2031-32.
- Installed capacity (MW) of generating stations in Meghalaya is given at Table 7-1:

Table 7-1 Installed capacity of generating station of Meghalaya

SECTOR	HYDRO	THERMAL					NUCL -EAR	R.E.S. (MNRE)	TOTAL
		COAL	LIGNITE	GAS	DIESEL	TOTAL			
State	322	0	0	0	0	0	0	55.03	377.03
Private	0	0	0	0	0	0	0	18.08	18.08
Central allocation	95.38	51.6	0	109.69	0	161.29	0	0	256.67
Total	**417.38**	**51.6**	**0**	**109.69**	**0**	**161.29**	**0**	**73.11**	**651.78**
%	**64.04**	**7.91**	**0**	**16.83**	**0**	**24.74**	**0**	**11.21**	**100.00**

Source: Installed Capacity Report, CEA

- As on August 2024, the General Network Access (GNA) quantum for ISTS drawal and Available Transfer Capability (ATC) of the state is 238 MW and 290 MW respectively.

7.2.2. Inter State Transmission system in the state:

- The State has a 132 kV ISTS switching station at Khliehriat. Further, a 220/132 kV, 320 MVA ISTS substation at Nangalbibra is under implementation which is scheduled for completion in October 2024.
- The State has a total of 766 ckm of existing ISTS network. Brief details of the ISTS network (including ISTS lines owned by states) are given at Table 7-2:

Table 7-2 Existing, under-implementation/ planned ISTS of Meghalaya

Voltage level	Existing	Under Construction / Planned
132 kV	168 ckm + 181 ckm (ISTS line owned by state)	37 ckm + 122 ckm (reconductoing)
220kV	-	-
400 kV *(operated at 220 kV)*	-	245 ckm
400 kV	417 ckm	-
Total	**766 ckm** (including 181ckm ISTS line owned by state)	**404 ckm** (including 122 ckm lines for reconductoing)

7.2.2.1. Detailed of under implementation/planned ISTS network in Meghalaya (as on July, 2024) are as given below:

A. Under Construction ISTS : RTM Mode

i. NERES-XX: *(only Meghalaya portion)*

- Reconductoring of existing Single ACSR Panther Khandong (NEEPCO) – Khliehriat (POWERGRID) 132 kV S/c line-1 (42.48 km) of POWERGRID with Single HTLS conductor of ampacity of 800 A (at nominal voltage level) (42.5 ckm)
- Reconductoring of existing Single AAAC Panther Khandong (NEEPCO) – Khliehriat (POWERGRID) 132 kV S/c line-2 (40.93 km) of POWERGRID with Single HTLS conductor of ampacity of 800 A (at nominal voltage level) (41 ckm)
- Reconductoring of existing Single ACSR Panther Khliehriat (POWERGRID) – Khliehriat (MePTCL) 132 kV S/c POWERGRID line-1 (7.8 km) of POWERGRID with Single HTLS conductor of ampacity of 800 A (at nominal voltage level). (8 ckm)
- Reconductoring of existing Single AAAC Panther Khliehriat (POWERGRID) – Badarpur (POWERGRID) 132 kV S/c line (76.64km) with Single HTLS conductor of ampacity of 900 A (at nominal voltage level) .(73 ckm)

ii. NERES-XXI Part-A :*(Meghalaya portion only)*

- Upgradation of Single Main and Transfer Bus to Double Bus arrangement with GIS at 132 kV Khliehriat (POWERGRID) switching station

B. Under Construction ISTS: TBCB Mode

i. Establishment of new 220/132 kV substation at Nangalbibra (*Meghalaya portion only*)**: (Nangalbibra Bongaigaon Transmission Limited, a subsidiary of Sterlite):**

- Establishment of new S/s at Nangalbibra with 2x160 MVA, 220/132 kV ICT
- Bongaigaon (POWERGRID) – Nangalbibra 400 kV D/c line (operated at 220 kV) – 245 ckm
- Hatsinghmari (AEGCL) – Ampati (MePTCL) 132 kV D/c line – 37 ckm
- Extension at Ampati (MePTCL) S/s:
  - 2 No. of 132 kV line bays for termination of Hatsinghmari (AEGCL) – Ampati (MePTCL) 132 kV D/c line.

7.2.3. **Intra State Transmission assets (as on 31.07.2024):**

Voltage (kV)	Transmission lines (in ckm)		Substations (in MVA)	
	Existing	Under construction	Existing	Under construction
132	1097		820	100
220	259	283	960	320
400	4.2	-	630	-

7.3. **Under implementation intra-state transmission/distribution schemes:**

7.3.1. Under North Eastern Region Power System Improvement Project (NERPSIP), a total of 41 elements of transmission & distribution system were sanctioned which includes 20 Nos. of lines & 21 Nos. of substation. As of July-2024, all the 41 elements were completed. The details of the elements are attached at **Annexure- 3.1**.

7.4. **Transmission proposals submitted:**

The proposals submitted by Meghalaya includes the new substation and new transmission lines at 400 kV, 220 kV, 132 kV level, evacuation system of new Generating Stations, reconductoring of existing transmission lines and augmentation of existing sub-station. The details of the proposals received from State are at **Annexure-7.1**.

7.5. **Assumptions for study:**

7.5.1. Peak electricity demand (MW) of Meghalaya according to the 20th EPS Report and as estimated by the state for the year 2031-32 are given below:

Demand	**Actual peak electricity demand (2023-24)**	**Peak electricity demand as per 20th EPS Report for the year 2031-32**	**Estimated Peak electricity demand for the year 2031-32**
Peak electricity demand (MW)	408	575	660*
CAGR	-	4.4%	6.2%

**including upcoming industrial demand.*

7.5.2. Industrial Demand:

The details of upcoming Industries are as under.

(i). The total industrial demand of 200 MW is expected to coming by 2032 at following locations.

- Export Promotion Industrial Park (EPIP)-I (45 MW),
- EPIP-II (30 MW),
- Mynkre (80 MW) and
- Lumshong (45 MW) area of Meghalaya.

7.5.3. The following Parameters were considered during the study

(i). Time Frame of Study: 2031-32

(ii). The total intra state generation installed capacity: 600 MW

(MLHEP-II: 210 MW, Ganol-II: 14 MW) (Excluding about 26.5 MW small hydro projects of the state which is expected to be connected at 33 kV and below voltage level)

(iii). Peak Demand: 660 MW (including 200 MW non-scalable industrial demand)

(iv). Scenario of Study:

S.No.	Scenario	Demand Factor	Dispatch Factors
1.	Low hydro	100%	Hydro Plant: 30%
2.	High Hydro	60%	Hydro Plant: 90%

7.5.4. Resource Adequacy

(i). The Government of India has notified new Renewable Purchase Obligation (RPO) trajectory till 2029-30 vide Gazette Notification dated 20.10.2023 which ensure certain amount of energy consumption to be met from renewable energy sources. After 2029-30, RPO targets assumed based on the anticipated RE capacity requirement on national level given in National Electricity Plan 2022-32, (Vol-I Generation). While carrying out the transmission studies the RPO compliance of the state has been taken into account.

(ii). The generation resource adequacy study for Meghalaya was carried out by CEA considering the demand projections from the 20th EPS (i.e. 546 MW by the year 2029-30). According to the study, total energy required to meet RPO is 1297 MU Meghalaya is surplus of 611 MU (26 MU in Hydro and 585 MU in other RPO) in RPO generation by 2029-30. This surplus is sufficient to meet the obligation by the year 2031-32 therefore, Meghalaya need not to add/contract any renewable capacities by 2031-32. The surplus renewable capacity is likely to be available to trade with other states.

(iii). The agreed system by the year 2031-32 was modelled and studied considering the N-1 contingency criteria. No constraints were observed in transmission system of the state taking into account of above RPO compliance. Hence, the transmission system as planned by 2031-32 (including new schemes identified in this report) ensure the Transmission Resource Adequacy.

7.6. Study Results

7.6.1. Considering the above assumptions import/export on tie lines is given below:

Parameter↓ / Scenario→	**Low hydro**	**High hydro**
Generation despatch (intra-state + ISGS located in state) (in MW)	176	527
Demand (in MW)	660	660
Net interchange ((-)import / (+)export) at ISTS-STU periphery (in MW)	-477	-110

7.6.2. The low hydro peak demand scenario was found to be critical scenario during the system studies.

7.6.3. The line flows and voltage were in permissible limit as mentioned in the Manual on Transmission Planning Criteria, 2023 in the critical as well as other scenario after modelling the required additional transmission system by 2031-32.

7.6.4. The planned transmission system of the state is N-1 contingency criteria compliant.

7.7. Transmission system requirement by 2031-32.

7.7.1. New substations alongwith their associated transmission lines which are required by 2031-32 are listed at Table 7-3

Table 7-3 New substations alongwith their associated transmission lines of Meghalaya

Sl.No.	**Transmission System**	**Justification**	**Estimated Cost (in Rs. Cr.)**	**Remarks**
1.	**i. Establishment of 132/33 kV, 2x25 MVA S/s at Nongpoh**	This area is District Headquarter and most industrialised. To meet the load and provide reliable power supply, the Nongpoh 132/33 kV S/s is proposed.	40.94	**Time frame: 2027-28** Meghalaya had informed that they are seeking funding from own resources as the proposal is of urgent nature.
	ii. LILO of both the circuits of Stage-III Power House - Umtru Power House 132 kV D/c line on Multi circuit towers at Nongpoh – (5km loop in and 5km loop out)		9.01	
2.	**i. Establishment of 132/33 kV, 2x25 MVA S/s Killing (New) near the existing Killing**	To meet the load and provide reliable downstream connectivity, the proposal of Killing	53.10	**Time frame: 2030-31**

Sl.No.	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
	400/220/132 kV S/s	(New) 132/33 kV, 2x25 MVA GIS S/s at/nearby existing Killing 400/220/132 kV S/s is proposed.		
	ii. Killing (existing) – Killing (New) 132 kV D/c line (5 ckm) along with 2 Nos. 132kV line bays at Killing 400/220/132kV S/s		9.50	
3.	**i. Establishment of 132/33 kV, 2x25 MVA S/s at Baghmara**	To evacuavte Power from Nangalbibra ISTS To meet N-1, this line may be implemented as D/c line from Nangalbibra ISTS.	30.45	**Time frame: 2030-31**
	ii. Nangalbibra (ISTS) – Baghmara 132 kV D/c line– (150 ckm) along with 2 Nos. 132 kV line bays at Nangalbibra (ISTS) S/s		313.74	
4.	**i. Establishment of 132/33 kV, 2x25 MVA S/s at Pongtung**	Pongtung (near Mawlynnong) is a toursit destination as well as border area and needs reliable power supply. As such, to resolve the issue of long 33 kV lines, Pongtung (near Mawlynnong) 132/33 kV, 2x25 MVA Sub station is proposed.	38.36	**Time frame: 2027-28** Meghalaya had informed that they are seeking funding from own resources as the proposal is of urgent nature.
	ii. Sohra – Pongtung 132 kV D/c line (60 ckm) along with 2 Nos. 132kV line bays at Sohra 132/33kV S/s		116.40	
5.	**i. Establishment of 132/33 kV, 2x50 MVA S/s at Mawkhanu**	To meet the future load demand the S/s is required	49.82	**Time frame: 2027-28** Meghalaya had informed that they are seeking funding from other sources as the proposal is of urgent nature.
	ii. New Shillong – Mawkhanu D/c line (20 ckm) along with 2 Nos. 132 kV line bays at New Shillong 132/33kV S/s		42.66	

7.7.2. New Transmission lines which are required by 2031-32 are listed at Table 7-4

Table 7-4 New Transmission lines of Meghalaya

Sl.No.	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
1.	New Shillong – Sohra 132kV D/c line (110 ckm) alongwith	In the 3rd NERPC-TP New Shillong – Sohra 132 kV D/c line was	228.00	**Time frame: 2031-32**

Sl.No.	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
	associated bays at both end	agreed to supply reliable power to Sohra.		
2.	New Shillong – IIM 132 kV S/c line (8 ckm) alongwith associated bay at both end	To cater the increased load in the area.	31.88	**Time frame: 2026-27**
3.	Mawkhanu -Mawlyndep 132 kV S/c line (30 ckm) alongwith associated bay at both end	To reduce loading of Khliehriat – Mustem – Mawlyndep 132kV corridor	119.58	**Time frame: 2027-28**
4.	Nangalbibra (ISTS) – Nangalbibra (MePTCL) 132 kV D/c line (20 ckm) alongwith associated bays at both end	In 1st NERPC-TP meeting this line was agreed to be implemented in matching timeframe of Nangalbira (ISTS) S/s	21.1	**Time frame: 2026-27** Meghalaya had informed that they are seeking funding from own resources as the proposal is of urgent nature.
5.	Nangalbibra (ISTS) – New Shillong (MePTCL) 220 kV D/c line – (300 ckm) alongwith associated bays at both end	To cater the increased load in the area.	574.02	**Time frame: 2026-27**
6.	MLHEP-I – Mustem 132 kV S/c line (30 ckm) alongwith associated bay at both end	To provide N-1 contingency for evacuation from MLHEP-1	60	**Time frame: 2027-28**

7.7.3. Reconductoring of existing transmission lines which are required by 2031-32 are listed at Table 7-5

Table 7-5 Reconductoring of existing transmission lines of Meghalaya

S.No	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
1.	Restringing of NEHU – Mawlyndep-Mustem- Khliehriat 132 kV S/c line (56 ckm) with panther conductor along with upgradation of requisite bay equipment	Due to increased loading in the area reconductoring of this line is required. • Existing conductor - ACSR Panther, (Ampacity: 350 A) • Year of commissioning- 1967 • Restringing with panther (tower assessment review)	12.26	**Time frame: 2026-27**

S.No	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
2.	Umiam Stage1-Umiam 132KV S/c line (6 ckm) along with upgradation of requisite bay equipment	Due to increased loading in the area reconductoring of this line is required. • Existing conductor - ACSR Panther (Ampacity: 350 A) • Year of commissioning-1996 • Ampacity of HTLS: 800 A	3.60	**Time frame: 2026-27**
3.	Umiam-NEHU S/c line (14 ckm) along with upgradation of requisite bay equipment	Due to increased loading in the area reconductoring of this line is required. • Existing conductor - ACSR Panther(Ampacity: 350 A) • Year of commissioning-1996 • Ampacity of HTLS: 800 A	4.80	**Time frame: 2026-27**
4.	Umiam Stage1-Mawlai 132KV S/c line (12.35 ckm) along with upgradation of requisite bay equipment	Due to increased loading in the area reconductoring of this line is required. • Existing conductor - ACSR Panther(Ampacity: 350 A) • Year of commissioning-1964 • Ampacity of HTLS: 800 A	4.63	**Time frame: 2026-27**
5.	Mawphlang-Mawlai 132KV S/c line (20.26 ckm) along with upgradation of requisite bay equipment	Due to increased loading in the area reconductoring of this line is required. • Existing conductor - ACSR Panther(Ampacity: 350 A) • Year of commissioning-1977 • Reconductoring with panther (tower assessment review)	6.21	**Time frame: 2028-29**
6.	Restringing of Mawlai – Sohra 132kV S/c line (42 ckm) (being LILOed at Mawphlang) with panther conductor along with upgradation of requisite bay equipment	Due to increased loading in the area reconductoring of this line is required. • Existing conductor - ACSR Panther(Ampacity: 350 A) • Year of commissioning-1974 • Restringing with panther (tower assessment review)	9.54	**Time frame: 2028-29**

S.No	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
7.	Khliehriat- Khliehriat (PG) – circuit- 2 132 kV line (5.35 ckm) along with upgradation of requisite bay equipment	To cater to the increase in ISTS power flow due to increase in demand. • Existing conductor - ACSR Panther(Ampacity: 350 A) • Year of commissioning- 2006 • Ampacity of HTLS: 800 A	3.45	**Time frame: 2026-27**

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

7.7.4. Augmentation of Substations which are required by 2031-32 are listed at Table 7-6

Table 7-6 Augmentation of Substations of Meghalaya

S.No	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
1.	Augmentation of 132/33 kV, 1x12.5 MVA ICTs with additional 2x12.5 MVA ICTs at **Sohra S/s**	To cater the future load demand and to satisfy N-1 contingency criteria the Augmentation is required Existing ICT capacity: 1x12.5 MVA	0.35	**Time frame: 2026-27** After augmentation Total ICT capacity: **3x12.5 MVA** 1 No. of ICT to be sourced from Nangalbibra
2.	Augmentation of 132 kV bus alongwith replacement of 132/33 kV, 1x12.5 (out of 1x12.5+1x25) MVA ICTs with 1x25 MVA ICTs at 132 kV **Nangalbibra S/s**	To cater the future load demand and to satisfy N-1 contingency criteria the Augmentation is required Existing ICT capacity: 1x12.5 + 1x25 MVA	28.00	**Time frame: 2026-27** After augmentation Total ICT capacity: **2x25 MVA** Meghalaya had informed that they are seeking funding from own resources.
3.	Augmentation of S/s by Replacement of 132/33 kV, 2x20 MVA ICTs with 2x50 MVA ICTs at **Nehu S/s**	To cater the future Load demand in Shillong. Existing ICT capacity: 2x20 MVA	22.43	**Time frame: 2026-27** After augmentation Total ICT capacity: **2x50 MVA**
4.	Augmentation of S/s by Replacement of 132/33 kV, 1x5 (out of 2x20 + 1x5) MVA ICTs with 1x20 MVA ICTs at **Rongkhon S/s**	To cater the future load demand in Tura and to satisfy N-1 contingency criteria the Augmentation is required. Existing ICT capacity: 2x20 + 1x5 MVA	0.80	**Time frame: 2027-28** After augmentation Total ICT capacity: **3x20 MVA** 1 No. of ICT to be sourced from Mawlai or Nehu)

S.No	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
5.	Augmentation of 132 KV bus at 132 kV Mawlai S/s alongwith Replacement of 132/33 KV, 3x20 MVA ICTs with 3x50 MVA ICTs at **Mawlai S/s**	To cater the future load demand and to satisfy N-1 contingency criteria the Augmentation is required. Existing ICT capacity: 3x20 MVA	79.23	**Time frame: 2026-27** After replacement Total ICT capacity: **3x50 MVA** Conversion from AIS to GIS. Already been taken up in some other scheme
6.	Augmentation of 132/33 kV, 1x50 MVA ICTs with additional 1x50 MVA ICTs at **EPIP-II S/s**	Augment, Upgrade, Modernise old substations to ensure reliability and extend life span. Existing ICT capacity: 1x50 MVA	12.02	**Time frame: 2027-28** After augmentation Total ICT capacity**: 2x 50 MVA**
7.	Augmentation of 132/33 kV, 1x20 MVA ICTs with additional 1x20 MVA ICTs at **Nongstoin S/s**	Augment, Upgrade, Modernise old substations to ensure reliability and extend life span. Existing ICT capacity: 1x20 MVA	0.20	**Time frame: 2026-27** After augmentation Total ICT capacity: **2x20 MVA** 1 No. of ICT to be sourced from NEHU or Mawlai
8.	Augmentation of 132/33 kV, 2x20 MVA ICTs with additional 1x20 MVA ICTs at **Mawphlang** S/s	Augment, Upgrade, Modernise old substations to ensure reliability and extend life span. Existing ICT capacity: 2x20 MVA	0.15	**Time frame: 2026-27** After augmentation Total ICT capacity: **3x20 MVA** 1 No. of ICT to be sourced from NEHU or Mawlai

7.7.5. Evacuation system for upcoming hydro projects which are required by 2031-32 are listed at Table 7-7

Table 7-7 Evacuation system for upcoming hydro projects of Meghalaya

S.No	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
1.	MLHEP-II – New Shillong 220 kV D/c line (160 ckm) along with 2 Nos. 220 kV line bays at New Shillong S/s	Evacuation of power from Leshka II Hydro Project of 210 MW	310.00	**Time frame: 2031-32** matching with generation project (expected by 2031-32)
2.	Ganol-II – Praharinagar 132 kV S/c line (20.75 ckm) with 1 Nos. 132 kV line bay at Praharinagar S/s	Evacuation of power from Ganol-II Hydro Project of 14 MW	10.36	**Time frame: 2031-32** matching with generation project

S.No	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
3.	Ganol-II – Ganol-I 132 kV S/c line (19.52 ckm) with 1 Nos. 132 kV line bay at Ganol-I S/s		8.58	(expected by 2031-32)

7.7.6. The power map of the state, including the above planned system is attached at **Exhibit -7.1**

7.8. Summary of identified transmission system by 2031-32:

A total of 710 MVA transformation capacity addition/augmentation and 1100 ckm of new transmission lines/reconductoring of old lines at an estimated cost of Rs. 2227 Crs. would be required for implementing the intra-state transmission proposals for meeting the electricity demand of the state by the year 2031-32.

The summary of voltage wise identified transmission system of the state by 2031-32 is as below:

220 kV Transmission system

S.No	Transmission system	No.	Length (in ckm)	Capacity (in MVA)	Estimated Cost (Rs. Cr.)*
1.	New substation	-	-	-	-
2.	Augmentation of existing substation	-	-	-	-
3.	New transmission line including LILO and 2nd Ckt Stringing	2	460		884.02
4.	Reconductoring of transmission line	-	-	-	-

132 kV Transmission system

S.No	Transmission system	No.	Length (in ckm)	Capacity (in MVA)	Estimated Cost (Rs. Cr.)*
1.	New substation	5	-	300	212.67
2.	Augmentation of existing substation	8		410	114.83
3.	New transmission line including LILO and 2nd Ckt Stringing	12	484	-	970.81
4.	Reconductoring of transmission line	7	156	-	44.49

**Note: The estimated cost of the above transmission system is based on SoR of POWERGRID (March 2022) & Meghalaya Public Works Department (2021-22).*

8. Mizoram

8.1. Demographics

8.1.1. Mizoram is a state in Northeastern India, with Aizawl as its seat of Government and capital city. The name of the state is derived from "Mizo", the self-described name of the native inhabitants, and "Ram", which in the Mizo language means "land." Thus "Mizo-ram" means "land of the Mizos". Within India's northeast region, it is the southernmost landlocked state, sharing borders with three of the Seven Sister States, namely Tripura, Assam and Manipur. The state also shares a 722-kilometre (449 mi) border with the neighbouring countries of Bangladesh and Myanmar.

8.2. Electricity profile of state

8.2.1. Power generation-demand scenario of state:

- In the FY 2023-24, Mizoram had peak electricity demand of 162 MW and total energy requirement of 684 MU. As on 31.07.2024, state has central sector allocation of 189.45 MW, which includes hydro plants (97.94 MW) and thermal plants (91.51 MW). In addition, state sector installed capacity is 45.47 MW and private sector installed capacity is 30.31 MW. The per capita electricity consumption of the state was 564 kWh in the year 2022-23.
- The projected load as per 20th EPS report will be around 331 MW by the year 2031-32.
- Installed capacity (MW) of generating stations in Mizoram is given a Table 8-1:

Table 8-1 Installed capacity of generating station of Mizoram

Sector	Hydro		Thermal				Nuclear	RES (MNRE)	Total
		Coal	Lignite	Gas	Diesel	Total			
State	0	0	0	0	0	0	0	45.47	45.47
Private	0	0	0	0	0	0	0	30.31	30.31
Central allocation	97.94	31.05	0	60.46	0	91.51	0	0	189.45
Total	97.94	31.05	0	60.46	0	91.51	**0**	**75.78**	**265.23**
%	**36.98**	**11.70**	**0**	**25.95**	**0**	**34.71**	**0**	**28.30**	**100.00**

Source: Installed Capacity Report, CEA

- As on August 2024, the General Network Access (GNA) quantum for ISTS drawal and Available Transfer Capability (ATC) of the state is 150 MW and 140 MW respectively.

8.2.2. Inter State Transmission system (ISTS) in the state:

- The state has two Nos. of 132 kV ISTS switching substations at Melriat & Aizwal and 1 No. 132/33kV S/s at Sihhmui.
- State has total 624 ckm of ISTS network. Brief details of the ISTS network (including ISTS lines owned by states) are given at Table 8-2:

Table 8-2 Existing & under-implementation/ planned ISTS of Mizoram

Voltage level	Existing	Under Construction/ Planned
132 kV	337 ckm	12 ckm (reconductoring of lines)
400 kV	287 ckm	-
Total	**624 ckm**	**12 ckm** (reconductoring of lines)

8.2.2.1. Detailed of under implementation ISTS network in Mizoram (as on July, 2024) are as given below:

A. <u>Under Construction ISTS: RTM Mode</u>

1. **NERES-XVIII:**

- Reconductoring of Melriat (GIS) (POWERGRID) – Zuangtui (Mizoram) 132 kV ACSR Panther S/c line with Single HTLS conductor of 900A (at nominal voltage level) (10.19ckm)

  Note: *The existing line bay and dead tower at Melriat (POWERGRID) end of Melriat (POWERGRID) – Zuangtui (Mizoram) 132kV HTLS S/c line may be kept as spare bay after shifting of the line to newly constructed bay*

- One (1) new 132kV line bay at Melriat (GIS) (POWERGRID) S/s (of rating commensurate with rating of HTLS viz. 900A) for shifting of Melriat (GIS) (POWERGRID) – Zuangtui (Mizoram) 132kV HTLS line from existing bay and termination of the HTLS line in the new bay (0.5km including approx. 5 Nos. towers) (1ckm)
- Replacement of existing CT of 600/1A at Zuangtui (Mizoram) end in Melriat (GIS) (POWERGRID) – Zuangtui (Mizoram) 132kV S/c line with rating commensurate with ampacity (900A) of HTLS conductor

B. <u>Planned ISTS</u>

- Upgradation of existing Melriat (POWERGRID) 132kV switching station to 400/132kV S/s

8.2.3. Intra State Transmission assets (as on 31.03.2024):

Voltage (kV)	Transmission lines (in ckm)			Substations (in MVA)		
	Existing	Under construction		Existing	Under construction	
132	1000	350		350	62.5	
220	-	-		-	-	
400	-	-		-	-	

8.3. **Under implementation intra-state transmission/distribution schemes:**

8.3.1. Under North Eastern Region Power System Improvement Project (NERPSIP), a total of 11 elements of transmission & distribution system were sanctioned which includes 05 Nos. of lines & 06 Nos. of substation. As of July-2024, all the 11 elements were completed. The details of the elements are attached at **Annexure- 3.1**.

8.4. **Transmission proposals submitted:**

The proposals submitted by Mizoram includes the new substation and new transmission lines at 132 kV level, reconductoring of existing transmission lines and augmentation of existing sub-station. The details of the proposals received from State are at **Annexure- 8.1**.

8.5. **Assumptions for study:**

8.5.1. Peak electricity demand (MW) of Mizoram for the year 2031-32 according to the 20th EPS Report and as estimated by the state are given below:

Demand	Actual peak electricity demand (2023-24)	Peak electricity demand as per 20th EPS Report for the year 2031-32	Estimated Peak electricity demand for the year 2031-32
Peak electricity demand (MW)	162	331	331
CAGR	-	9.34%	9.34%

8.5.2. The details of upcoming industry are as under.

(i). Food processing, agro based industries in various parts of Mizoram is being envisaged.

8.5.3. The following Parameters were considered during the study

(i). Time Frame of Study: 2031-32

(ii). The total intra-state generation installed capacity of Mizoram: 108 MW

(iii). Peak Demand: 331 MW

(iv). Scenario of Study:

S.No.	Scenario	Demand Factor	Dispatch Factors
1.	Low Hydro	100%	Hydro Plant: 30% Solar Plant: 50%
2.	High Hydro	100%	Hydro Plant: 90% Solar plant: 0%

8.5.4. Resource Adequacy

(i). The Government of India has notified new Renewable Purchase Obligation (RPO) trajectory till 2029-30 vide Gazette Notification dated 20.10.2023 which ensure certain amount of energy consumption to be met from renewable energy sources. After 2029-30, RPO targets assumed

based on the anticipated RE capacity requirement on national level given in National Electricity Plan 2022-32, (Vol-I Generation). While carrying out the transmission studies the RPO compliance of the state has been taken into account.

(ii). The generation resource adequacy study for Mizoram was carried out by CEA considering the demand projections from the 20th EPS (i.e. 289 MW by the year 2029-30). According to the study, total energy required to meet RPO is 682 MU for which Mizoram required to add 21 MW and 13 MW additional capacities in respect of wind and solar & other renewable energy/power respectively by 2029-30 in gradual manner.

(iii). During the study of Transmission System proposals, the demand of Mizoram has been considered as 331 MW and 1816 MU energy requirement for 2031-32 according to 20th EPS demand projections. Considering the 41.50% RPO compliance total 750 MU would be required to meet RPO compliance out of which 682 MU is required by 2029-30. Approximately 68 MU (750-682 MU) energy additionally required in the year 2031-32. Addition of renewable power would be required by 2031-32 is 40 MW. Total 34 MW (21+13 MW) would be required to add by 2029-30 and additional 40 MW would be require to add/contract in 2031-32. Therefore, Mizoram would require to add/contract 74 MW (34+40 MW) by 2031-32 in gradual manner for their RPO compliance.

(iv). The agreed system by the year 2031-32 was modelled and studied considering the N-1 contingency criteria, in such situation no constraints were observed in transmission system of Mizoram taking into account of above RPO compliance. Hence, the transmission system as planned by 2031-32 (including new schemes identified in this report) ensure the Transmission Resource Adequacy.

8.6. **Study Results.**

8.6.1. Considering the above assumptions import/export on tie lines is given below:

Parameter↓ / Scenario→	**Low hydro**	**High hydro**
Generation despatch (intra-state + ISGS located in state) (in MW)	18	78.5
Demand (in MW)	331	331
Net interchange ((-)import / (+)export) at ISTS-STU periphery (in MW)	-292	-231

8.6.2. The Peak Demand scenario with low hydro scenario was found to be critical scenario during the system studies.

8.6.3. The line flows and voltage were in permissible limit as mentioned in the Manual on Transmission Planning Criteria, 2023 in the critical as well as other scenario after modelling the required additional transmission system by 2031-32.

8.6.4. The planned transmission system of the state is N-1 contingency criteria compliant.

8.7. Transmission system requirement by 2031-32.

8.7.1. New substations alongwith the associated transmission lines which are required by 2031-32 are listed at Table 8-3

Table 8-3 New substations alongwith the associated transmission lines of Mizoram

Sl.No.	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
1.	**Establishment of new 132/33 kV, 2x12.5MVA Sub-Station at Hnahthial**	To meet the future load demand the S/s is required	31.87	**Time frame: 2028-29**
	Bukpui – Hnahthial 132 kV D/c line (110 ckm) along with 2 Nos. of 132 kV bays at Bukpui S/s		69.94	

8.7.2. New transmission lines which are required by 2031-32 are listed Table 8-4

Table 8-4 New transmission lines of Mizoram

Sl.No.	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
1.	Melriat (POWERGRID) – Melriat (Mizoram) 132 kV S/c line (using at least 1000 A HTLS conductor) (23 ckm) alongwith associated bay at both end	Melriat (POWERGRID) – Melriat (Mizoram) are connected via Aizawl (POWERGRID) and Luangmual (Mizoram). This direct line will provide additional path to feed Melriat (Mizoram)	26.95	**Time frame: 2028-29**
2.	2nd circuit Stringing of Khawzawl – Champhai 132 kV S/c line on D/c tower (18 ckm) alongwith associated bay at both end	Improvement in reliability and redundancy in power supply at Champhai District	22.78	**Time frame: 2028-29**
3.	Tuirial HEP – Darlawn 132 kV S/c line on D/c tower (70 ckm) alongwith associated bay at both end	At present, Darlawn 132/33 kV S/s is connected to only Saitual S/s at 132 kV level. As such, to provide N-1 reliability at Darlwan, the line from Tuirial HEP to Darlawn 132 kV S/c on D/c tower is proposed. Improvement in reliability and	130.03	**Time frame:2029-30**

Sl.No.	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
		redundancy in power supply & evacuation of power from 60MW Tuirial HEP		
4.	Siaha – Lawngtlai 132 kV D/c line (87 ckm) (initially to be operated at 33 kV) alongwith associated bays at both end	Improvement in reliability and redundancy in power supply at Siaha District	51.15	**Time frame: 2028-29** Mizoram has informed that they are seeking funding from other sources (10% GBS). It is to mention that this line has been agreed as Single Circuit for 10% GBS.
5.	S.Bungtlang – Lawngtlai 132 kV S/c line on D/c tower (initially to be charged at 33kV) (60 ckm) alongwith associated bay at both end	Improvement in reliability and redundancy in power supply at Lawngtlai District	70.29	**Time frame: 2028-29** Mizoram has informed that they are seeking funding from other sources (10% GBS).
6.	Marpara – Thenhlum 132 kV S/c line (initially to be operated at 33kV) (26 ckm) alongwith associated bay at both end	Improvement in reliability and redundancy in power supply at Serchhip District	30.46	**Time frame: 2026-27** Mizoram has informed that they are seeking funding from other sources (10% GBS).

8.7.3. Reconductoring of existing transmission lines which are required by 2031-32 are listed at Table 8-5 :

Table 8-5 Reconductoring of existing transmission lines of Mizoram

Sl.No.	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
1.	Zuangtui – Sihhmui 132 kV S/c line (27 ckm) with at least 800 A HTLS conductor along with	On N-1 contingency of Zuangtui – Melriat (PG) 132 kV S/c line, the other circuit gets overloaded. To relieve the loading of Zuangtui – Melriat 132 kV S/c line on N-1	12.34	**Time frame: 2026-27**

Sl.No.	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
	upgradation of requisite bay equipment	contingency, reconductoring of this line is required. • Ampacity of Existing conductor- 395 A • Year of commissioning- 1995 • Ampacity of HTLS- 800 A		
2.	Luangmual – Melriat 132 kV S/c line (17 ckm) with at least 800 A HTLS conductor along with upgradation of requisite bay equipment	Improvement in reliability and redundancy in power supply at State Capital. • Ampacity of Existing conductor- 395 A • Year of commissioning- 2015 • Ampacity of HTLS- 800 A	5.60	**Time frame: 2026-27**
3.	Zuangtui – Bukpui 132 kV S/c line (15 ckm) with at least 800 A HTLS conductor along with upgradation of requisite bay equipment	Improvement in reliability and redundancy in power supply within the State N-1 contingency of Zuangtui – Saitual 132 kV S/c line, leads to overloading of Zuangtui – Bukpui 132 kV S/c line. • Ampacity of Existing conductor- 395 A • Year of commissioning- 1986 • Ampacity of HTLS- 800 A	20.86	**Time frame: 2026-27**

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

8.7.4. Augmentation of following 132 kV Sub-Station (7 Nos) which are required by 2031-32 are listed at Table 8-6:

Table 8-6 Augmentation of Substations of Mizoram

Sl.No.	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
1.	Augmentation of 132/33 kV, Bawktlang S/s	Improvement in reliability and redundancy in power supply within the State Existing ICT capacity: 2x12.5 MVA	7.21	**Time frame: 2026-27** After augmentation Total ICT capacity**: 2x25 MVA** Mizoram has informed that they are seeking funding from other sources (10% GBS).
2.	Augmentation of 132/33 kV, Saitual S/s	Improvement in reliability and redundancy in power supply within the State	2.75	**Time frame: 2026-27** After augmentation Total ICT capacity**: 2x12.5 MVA**

Sl.No.	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
		Existing ICT capacity: 1x12.5 MVA		Mizoram has informed that they are seeking funding from other sources (10% GBS).
3.	Augmentation of 132/33 kV, Melriat S/s	Improvement in reliability and redundancy in power supply within the State Existing ICT capacity: 2x12.5 MVA	7.31	**Time frame: 2026-27** After augmentation Total ICT capacity**: 2x25 MVA** Mizoram has informed that they are seeking funding from other sources (10% GBS).
4.	Augmentation of 132/33 kV, Khawzawl S/s	Improvement in reliability and redundancy in power supply within the State Existing ICT capacity: 1x12.5 MVA	2.77	**Time frame: 2026-27** After augmentation Total ICT capacity**: 2x12.5 MVA** Mizoram has informed that they are seeking funding from other sources (10% GBS).
5.	Augmentation of 132/33 kV, Champhai S/s	Improvement in reliability and redundancy in power supply within the State Existing ICT capacity: 1x12.5 MVA	2.81	**Time frame: 2026-27** After augmentation Total ICT capacity**: 2x12.5 MVA** Mizoram has informed that they are seeking funding from other sources (10% GBS).
6.	Augmentation of 132/33 kV, Serchhip S/s	Improvement in reliability and redundancy in power supply within the State Existing ICT capacity: 2x12.5 MVA	5.96	**Time frame: 2026-27** After augmentation Total ICT capacity**: 1x25 & 1x12.5 MVA** Mizoram has informed that they are seeking funding from other sources (10% GBS).
7.	Augmentation of 132/33 kV, E.Lungdar S/s	Improvement in reliability and redundancy in power supply within the State Existing ICT capacity: 1x6.3 MVA	2.83	**Time frame: 2026-27** After augmentation Total ICT capacity**: 1x6.3 & 1x12.5 MVA** Mizoram has informed that they are seeking funding from other sources (10% GBS).

8.7.5. The power map of the state, including the above planned system is attached at **Exhibit -8.1.**

8.8. **Summary of identified transmission system by 2031-32:**

A total of 244 MVA transformation capacity addition/augmentation and 526 ckm of new transmission lines/reconductoring of old lines at an estimated cost of Rs. 504 Crs. would be required for implementing the intra-state transmission proposals for meeting the electricity demand of the state by the year 2031-32. The summary of identified transmission system of the state by 2031-32 is as below:

132 kV Transmission system

S.No.	Transmission System	No.	Length (in ckm)	Capacity (in MVA)	Estimated Cost (Rs. in Cr.)*
1.	New substation	1	-	25	31.87
2.	Augmentation of existing substation	7	-	218.8	31.64
3.	New transmission line including LILO and 2nd Ckt Stringing	7	428	-	401.60
4.	Reconductoring of transmission line	3	98	-	38.80

**Note: The estimated cost of the above transmission system is based on Schedule of Rates (SoR) 2023 of Power & Electricity Department, Mizoram.*

9. Nagaland

9.1. Demographics:

Nagaland is a state in North Eastern India. It is bordered by the state of Arunachal Pradesh in the North, Assam in the West, Manipur in the South and the Sagaing Region of Myanmar in the East. Its capital city is Kohima and its largest city is Dimapur. It has an area of 16,579 square kilometres (6,401 sq mi) with a population of 1,980,602 per the 2011 Census of India, making it one of India's smallest states.

9.2. Electricity profile of state

9.2.1. Power generation-demand scenario of state:

- In the FY 2023-24, Nagaland had peak electricity demand of 174 MW and electrical energy requirement of 921 MU. As on 31.07.2024, state has Central sector allocation of 172.36 MW which includes hydro plants (66.33 MW) and thermal plants (106.03 MW). In addition, installed capacity in state sector is 32.67 MW. The per capita consumption of the state was 445 kWh in the year 2022-23.
- The projected peak electricity demand as per 20th EPS Report is 235 MW in the year 2031-32.
- Installed capacity (MW) of generating stations in Nagaland as on 31.07.2024 is given at Table 9-1:

Table 9-1 installed capacity of generating station of Nagaland

Sector	Hydro		Thermal				Nucl-ear	RES (MNRE)	Total
		Coal	Lignite	Gas	Diesel	Total			
State	0	0	0	0	0	0	0	32.67	32.67
Private	0	0	0	0	0	0	0	3.17	3.17
Central allocation	66.33	32.10	0	73.93	0	106.03	0	66.33	172.36
Total	**66.33**	32.10	**0.00**	73.93	**0.00**	106.03	**0.00**	**102.17**	**208.20**
%	**31.85**	**15.41**	**0.00**	**35.51**	**0.00**	**50.93**	**0.00**	**49.07**	**100.00**

Source: Installed Capacity Report, CEA

- As on August 2024, the General Network Access (GNA) quantum for ISTS drawal and Available Transfer Capability (ATC) of the state is 145 MW and 255 MW respectively.

9.2.2. Inter State Transmission system in the state:

- The state has a 400/220 kV, 1000 MVA ISTS substation at New Kohima. Further the state has two Nos. of 220/132 kV ISTS substations, having total capacity of 610 MVA at Dimapur and Mokokchung.
- State has total 1300 ckm of existing ISTS network. Brief details of the ISTS network (including ISTS lines owned by states) are given at Table 9-2:

Table 9-2 exiting & under-implementation/planned ISTS of Nagaland

Voltage level	Existing	Under Construction/ Planned
132 kV	357 ckm + 92 ckm (ISTS line owned by state)	0.67 ckm (reconductoring of lines)
220 kV	343 ckm	
400 kV	508 ckm	-
Total	**1300 ckm** (including 92 ckm ISTS line owned by state)	0.67 ckm (reconductoring of lines)

9.2.2.1. Detailed of under implementation ISTS network in Nagaland (as on July, 2024) are as given below:

A. <u>Under Construction ISTS: RTM Mode</u>

i. NERES-XXVII:

- Reconductoring of ISTS portion of Dimapur (POWERGRID) – Dimapur (DoP, Nagaland) 132kV (ckt-2) ACSR Panther S/c line with Single HTLS conductor of 800A – 0.335km
- Reconductoring of ISTS portion of Dimapur (POWERGRID) – Kohima (DoP, Nagaland) 132kV ACSR Panther S/c line with Single HTLS conductor of 800 A – 0.335 km.

9.2.3. <u>Intra State Transmission assets (as on 31.07.2024):</u>

Voltage (kV)	Transmission lines (in ckm)			Substations (in MVA)		
	Existing	Under construction		Existing	Under construction	
132	355	116		400	335	
220	2.6	150		-	300	
400	-	-		-	-	

9.3. **Under implementation transmission/distribution schemes:**

9.3.1. Under North Eastern Region Power System Improvement Project (NERPSIP), a total of 56 elements of transmission & distribution system were sanctioned which includes 18 Nos. of lines & 38 Nos. of substation. As of July-2024, a total of 54 elements were completed. The details of the elements are attached at **Annexure- 3.1**.

9.4. **Transmission proposals submitted:**

The proposals submitted by Nagaland includes the new substation and new transmission lines at 132 kV level, evacuation system of new Generating

Station and reconductoring of existing transmission lines. The details of the proposals received from State are at **Annexure-9.1**.

9.5. **Assumptions for study:**

9.5.1. Peak electricity demand (MW) of Nagaland for the year 2031-32 according to the 20th EPS Report and as estimated by the state are given below:

Demand	Actual peak electricity demand (2023-24)	Peak electricity demand as per 20th EPS Report for the year 2031-32	Estimated Peak electricity demand for the year 2031-32
Peak electricity demand (MW)	174	235	404*
CAGR	-	3.83%	11.1%

**including upcoming industrial demand and traction demand.*

9.5.2. Industrial Demand

The total expected industrial demand of Nagaland by 2031-32 will be around 60 MW. The details of upcoming heavy Industries and traction are as under.

(i). Steel Rolling Mill (15MW) at Ganeshnagar and

(ii). Cement industry (5 MW) at Wazeho (near Meluri).

(iii). The major industrial load are concentrated at Old Showba, Niuland, Liphi & Champang area of Nagaland (foothill area of Nagaland).

(iv). Traction demand has been considered as 10 MW.

9.5.3. The following Parameters were considered during the study

(i). Time Frame of Study: 2031-32

(ii). The total intra state generation installed capacity of Nagaland: 132 MW (New Generating Station considered:- Zunki HEP: 24 MW)

(iii). Peak Demand: 404 MW (including 60 MW non-scalable industrial demand)

(iv). Scenario of Study:

S.No.	Scenario	Demand Factor	Dispatch Factors	Remark
1.	High Hydro	100%	Hydro Plant: 90%	For Doyand HEP, 65 MW generation is considered
2.	Low Hydro	100%	Hydro Plant: 20%	

9.5.4. Resource Adequacy

(i). The Government of India has notified new Renewable Purchase Obligation (RPO) trajectory till 2029-30 vide Gazette Notification dated 20.10.2023 which ensure certain amount of energy consumption to be met from

renewable energy sources. After 2029-30, RPO targets assumed based on the anticipated RE capacity requirement on national level given in National Electricity Plan 2022-32, (Vol-I Generation). While carrying out the transmission studies the RPO compliance of the state has been taken into account.

(ii). The generation resource adequacy study for Nagaland was carried out by CEA considering the demand projections from the 20th EPS (i.e. 221 MW by the year 2029-30). According to the study, total energy required to meet RPO is 532 MU for which Nagaland would be sufficient to fulfil its Renewable Purchase Obligations (RPO) and need not to contract any renewable capacities by 2029-30.

(iii). During the study of Transmission System proposals, the demand of Nagaland has been considered as 404 MW for 2031-32 time frame which translate to 2250 MU energy requirement, this requirement is higher than 20th EPS demand projections (i.e. 235 MW and 1299 MU) by 2031-32. Considering the 41.50% RPO compliance total 930 MU would be required to meet RPO compliance out of which 532 MU is required by 2029-30. Approximately 400 MU (930-532 MU) energy additionally required in the year 2031-32. Additional renewable power would be required by 2031-32 is 205 MW. There is no additional requirement to add capacity for RPO compliance by 2029-30 and additional 205MW would be required to add/contract in 2031-32.

(iv). The agreed system by the year 2031-32 was modelled and studied considering the N-1 contingency criteria. No constraints were observed in transmission system of Nagaland taking into account of above RPO compliance. Hence, the transmission system as planned by 2031-32(including new schemes identified in this report) ensure the Transmission Resource Adequacy.

9.6. **Study Results.**

9.6.1. Considering the above assumptions import/export on tie lines is given below:

Parameter↓ / Scenario→	**Low hydro**	**High hydro**
Generation despatch (intra-state + ISGS located in state) (in MW)	41	184
Demand (in MW)	404	404
Net interchange ((-)import / (+)export) at ISTS-STU periphery (in MW)	-318	-232

9.6.2. The Peak Demand with low hydro scenario was found to be critical scenario during the system studies.

9.6.3. The line flows and voltage were in permissible limit as mentioned in the Manual on Transmission Planning Criteria, 2023 in the critical as well as other scenario after modelling the required additional transmission system by 2031-32.

9.6.4. Considering the planned transmission system in this report, the line flows and bus voltages (at 132 kV and above system) were observed to be within permissible limit according to the Manual on Transmission Planning Criteria, 2023.

9.6.5. The planned transmission system of the state is N-1 contingency criteria compliant.

9.7. Transmission system requirement state by 2031-32.

9.7.1. proposed New substations alongwith their associated transmission lines which are required by 2031-32 are listed at Table 9-3

Table 9-3 New substations alongwith their associated transmission lines of Nagaland

Sl.No.	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
1.	i. **Establishment of 132/33 kV, 2x25 MVA S/s at Mon**	Power supply to Mon district is catered through the lone, aged, long (165 km) S/c 66 kV line fed from 132/66 kV Substation at Mokokchung via Tuli-Naganimora-Tizit. The existing 66 kV line passes through a dense forest coupled with hilly & difficult terrain. With such a long span of 165 km, the frequency of un-scheduled disruption of line is very high and due to the remoteness of the location of the transmission line, it takes days to locate and rectify the fault/ restore the transmission line. And since there is no alternate source of power supply, there has been many instances wherein the whole district was blacked out for almost a week. Nagaland will be phasing out 66 kV network from their system.	41.29	**Time frame: 2030-31** Capacitor bank is required at Tizit
	ii. Longleng – Mon 132 kV S/c line on D/c tower (44 ckm) alongwith 1 No. 132 kV line bay at Longleng		71.41	
2.	i. **Establishment of 132/33 kV 2x 50 MVA S/s at Old Showuba (near Referral Hospital Dimapur**)	Presently, power supply along the foothill areas is catered through various aged and long spans of 33 kV & 11 kV lines and as such the power supply is very erratic and unreliable. Recognizing the importance of a robust Power network so as to facilitate and	47.02	**Time frame: 2030-31** Out of the total line length of 27 km, reconductoring

Sl.No.	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
	ii. LILO of Dimapur (PG) – Kohima 132 kV S/c line at Old Showuba (with HTLS reconductoring from Dimapur (PG) to Old Showuba line section Sub-station) (12 km loop in 12 km loop out) with upgradation of bay equipments at PG Dimapur S/s.	promote socio-economic growth such as agro-forest products manufacturing and processing plants like Tea and Rubber, cold storages etc., the Power Department therefore proposes a 132 kV system along the foothill road from Niuland town to Champang (identified petroleum oil belt in Nagaland) along with special emphasis towards Chumukedima, Old Showuba, Dhansaripar, Ganeshnagar etc. where the growth of socio-economic developmental. Expansion in the area is very rapid. Further, the proposal has also considered a 60 MW Thermal power plant that is coming up at Tuli for which a 132 kV system is required for power evacuation. With the implementation of this project, the whole state of Nagaland will have a complete 132 kV ring system.	40.84	portion is 15 km and the LILO portion is 12 km (i.e. loop in 12 km and loop out 12 km) For reconductoring, the existing conductor is ACSR panther conductor, commissioned during the early 1980s, which is now proposed to be replaced with HTLS conductor with 800A capacity.
3.	i. **Establishment of 132/33 kV, 2x25 MVA S/s at Niuland**		38.63	**Time frame: 2031-32**
	ii. Zhadima – Niuland 132kV D/c line (Zebra conductor) (54 ckm) alongwith 2 Nos. 132 kV line bays at Zhadima.		56.22	
	ii. Niuland – Champhang 132kV S/c line (55 ckm)		85.61	
4.	i. **Establishment of 132/33 kV, 2x10 MVA S/s at Champang**		34.86	**Time frame: 2031-32**
	ii. Champang – Longnak 132 kV S/c on D/c lines (64 ckm) alongwith 1 No. 132kV line bay at Longnak		101.03	
5.	i. **Establishment of 132/33 kV, 2x 50 MVA S/s at Old TPS 7th Mile Dimapur**		39.06	**Time frame: 2030-31**

Sl.No.	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
	ii. Tsitrongse – Old TPS 7th Mile Dimapur 132 kV D/c line (26 ckm) alongwith 2 Nos. 132 kV line bays at Tsitrongse		28.96	
6.	i. **Establishment of 132/33 kV, 2x25 MVA S/s at Tuli** (near NPPCL)	Nagaland is phasing out 66 kV network from their system.	38.60	**Time frame: 2031-32**
	ii. Mokokchung (PG) – Tuli 132 kV D/c transmission line (112 ckm) alongwith 2 Nos. 132 kV line bays at Mokokchung		100.16	
	iii. Tuli – Naginimora 132 kV S/c line on D/c tower – (34 ckm)		55.29	
	iv. Longleng – Tuli 132 kV S/c line on D/c tower (50 ckm) alongwith 1 No. 132kV line bay at Longleng		80.79	
7.	i. **Establishment of 132/33 kV, 2x10 MVA at Naganimora**	Nagaland is phasing out 66 kV network from their system.	36.98	**Time frame: 2031-32**
	ii. Naginimora – Tizit 132 kV S/c line on D/c tower (44 ckm)		67.60	
8.	i. **Establishment of 132/33 kV, 2x10 MVA at Tizit**	Nagaland is phasing out 66 kV network from their system.	36.86	**Time frame: 2031-32** With increase in load demand DoPN may plan Capacitor bank at 33kV level
	ii. Tizit – Mon 132 kV S/c on D/c tower line (30 ckm)		46.09	
9.	i. **Establishment of 132/33 kV, 2x50 MVA S/s at Ganeshnagar**	This new sub-station is proposed to upgrade the 66/33 kV system into 132/33 kV system and phase	41.70	**Time frame: 2030-31**

Sl.No.	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
	ii. Tsitrongse – Ganeshnagar 132 kV D/c Line (20 ckm) alongwith 2 Nos. 132kV line bay at Tsitrongse.	out the 66 kV system. Once upgraded, the existing 66 kV transmission line beyond Ganeshnagar (presently charged at 33 kV) shall be permanently converted to 33 kV system. The proposal has been conceptualised with an aim to meet the demand of power from industrial sector at the State designated Industrial Growth Centre, Ganeshnagar. Nagaland is phasing out 66 kV network from their system.	23.52	

9.7.2. Evacuation of power from new hydro projects which are required by 2031-32 are listed at Table 9-4

Table 9-4 Evacuation of power from new hydro projects of Nagaland

Sl.No.	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
1.	**Zungki HEP – Kiphire 132 kV S/c line** along with 132 kV end equipments at Kiphire substation (22 ckm)	DoPN proposes to construct 132 kV S/c line for evacuation of the generated power from the Zungki HEP and inject the power into the grid at the nearest 132 kV sub-station, i.e. 132 kV Kiphire sub-station. In this regard, a dedicated 132 kV bay is also required to be constructed at 132 kV Kiphire S/s.	38.16	**Time frame: 2031-32**

9.7.3. The power map of the state, including the above planned system is attached at **Exhibit -9.1.**

9.8. Summary of identified transmission system by 2031-32:

A total of 460 MVA transformation capacity addition/augmentation and 579 ckm of new transmission lines/reconductoring of old lines at an estimated cost of Rs. 1151 Crs. would be required for implementing the intra-state transmission proposals for meeting the electricity demand of the state by the year 2031-32.

The summary of identified transmission system of the state by 2031-32 is as below:

132 kV Transmission system

S.No.	Transmission System	No.	Length (in ckm)	Capacity (in MVA)	Estimated Cost (Rs. in Cr.)*

1.	New substation	9	-	460	355.00
2.	Augmentation of existing substation	-	-	-	-
3.	New transmission line including LILO and 2nd ckt Stringing	13	579	-	795.68
4.	Reconductoring of transmission line	-	-	-	-

**Note: The estimated cost of the above transmission system is based on Department of Power, Nagaland Draft SoR 2021 for supply & erection/ installation works of electrical items and Nagaland Public Works Department SoR 2021 for associated civil works.*

10. Tripura

10.1. Demographics:

Tripura is a state in North Eastern India. The third smallest state in the country, it covers 10,491.69 km2 (4,050.86 sq mi) and is bordered by Bangladesh in the North, South, and West, and the Indian states of Assam and Mizoram in the East. In 2011 the state had 3,671,032 residents, constituting 0.3% of the country's population. Agartala, the capital, is located on a plain to the West.

10.2. Electricity profile of state

10.2.1. Power generation-demand scenario of state:

- In the FY 2023-24, Tripura had peak electricity demand of 362 MW and electrical energy requirement of 1691 MU. As on 31.03.2024, state has installed capacity of 511.43 MW in Central Sector which includes hydro plants (68.49 MW) and thermal plants (437.94 MW). In addition, installed capacity in state sector is 121 MW and installed capacity in private sector is 13.46 MW. The per capita consumption of the state was 444 kWh in the year 2022-23. In addition, about 160MW power is exported to Bangladesh from state network.
- The projected peak electricity demand as per 20th EPS Report is 731 MW in the year 2031-32.
- Installed capacity (MW) of generating stations in Tripura is given at Table 10-1:

Table 10-1 installed capacity of generating station of Tripura

Sector	Hydro		Thermal				Nucl-ear	RES (MNRE)	Total
		Coal	Lignite	Gas	Diesel	Total			
State	0	0	0	105	0	105.00	0	16.01	121.01
Private	0	0	0	0	0	0	0	15.26	15.46
Central allocation	68.49	56.00	0	381.94	0	437.94	0	5.00	511.43
Total	68.49	56.00	0.00	486.94	0.00	542.94	0.00	34.47	647.70
%	**10.57**	**8.64**	**0.00**	**75.18**	**0.00**	**83.82**	**0.00**	**5.32**	**100.00**

Source: Installed Capacity Report, CEA

- As on August 2024, the General Network Access (GNA) quantum for ISTS drawal and Available Transfer Capability (ATC) of the state is 311 MW and 314 MW respectively.

10.2.2. Inter State Transmission system in the state:

- The state has two Nos. of 400/132 kV ISTS substations having total capacity of 1,260 MVA at PK Bari and Surajmaninagar. Further, the state has a 132/33 kV, 5 MVA ISTS substation at New Kumarghat.
- State has total 1729 ckm of existing ISTS network and 12 ckm of planned /under construction ISTS network. Brief details of the ISTS network (including ISTS lines owned by states) are given at Table 10-2:

Table 10-2 exiting & under-implementation/planned ISTS of Tripura

Voltage level	Existing	Under Construction/ Planned
132 kV	572 ckm + 29 ckm (ISTS line owned by state)	-
400 kV	1128 ckm	12 ckm
Total	**1729 ckm** (including 29 ckm ISTS line owned by state)	**12 ckm**

10.2.2.1. Detailed of under implementation ISTS network in Tripura (as on July, 2024) are as given below:

A. Under Construction ISTS: RTM Mode

i. POWERGRID works associated with NERSS-V (only Tripura portion)

- Shifting of Palatana – Surajmaninagar (TSECL) 400 kV D/c line (operated at 132 kV) to the 400/132 kV ISTS S/s at Surajmaninagar so as to form Palatana – Surajmaninagar (ISTS) 400 kV D/c line and its operation at 400 kV (24 ckm):

ii. NERSS-XIV:

- LILO of Palatana – Surajmaninagar (ISTS) 400 kV D/c line at 400/132 kV Surajmaninagar (TSECL) S/s along with associated 4 No. 400 kV line bays (12 ckm) - In matching timeframe of upgradation of 400/132kV Surajmaninagar (TSECL) substation.

10.2.3. **Intra State Transmission assets (as on 31.07.2024):**

Voltage (kV)	Transmission lines (in ckm)		Substations (in MVA)	
	Existing	Under construction	Existing	Under construction
132	679	510	1049	916
220	-	-	-	-
400	-	-	-	-

10.3. **Under implementation intra-state transmission/distribution schemes:**

10.3.1. Under North Eastern Region Power System Improvement Project (NERPSIP), a total of 151 elements of transmission & distribution system were sanctioned which includes 76 Nos. of lines & 75 Nos. of substation. As of July-2024, a total of 146 elements were completed. The details of the elements are attached at **Annexure-3.1.**

10.4. **Transmission proposals submitted**:

The proposals submitted by Tripura includes the new substation and new transmission lines at 132 kV level, reconductoring of existing transmission lines and augmentation of existing sub-station. The details of the proposals received from State are at **Annexure-10.1**.

10.5. **Assumption for study:**

10.5.1. Peak electricity demand (MW) of Tripura for the year 2031-32 as per the 20th EPS Report and demand estimated for the year 2031-32 as per the state is given below:

Demand	Actual peak electricity demand (2023-24)	Peak electricity demand as per 20th EPS Report for the year 2031-32	Estimated Peak electricity demand for the year 2031-32
Peak electricity demand (MW)	362	731	731*
CAGR	-	9.18%	9.18%

**including upcoming industrial demand and traction demand. This excludes 160 MW export to Bangladesh*

10.5.2. Industrial & traction Demand

(i). The total industrial demand of 50 MW is expected by 2031-32 at Bodhjangnagar & Badarghat area of Tripura.

(ii). Traction demand of about 50 MW is expected by 2032.

10.5.3. The following Parameters were considered during the study

(i). Time Frame of Study: 2031-32

(ii). The total intra state generation installed capacity of Tripura: 338 MW (excluding small generation projects of the state which are having low PLF)

(iii). Peak Demand: 731 MW (including 100 MW non-scalable industrial & traction demand)

(iv). New intra state generation considered: Rokhia Gas (conversion to CCGT-60 MW), Baramura Gas (40MW)

(v). Scenario of Study:

S.No.	Scenario	Demand Factor	Dispatch Factors
1.	Peak Demand	100%	Gas Based Plant: 50% Hydro Plant: 80%
2.	Low Gas and low hydro	65%	Gas Based Plant: 20% Hydro Plant: 20%

10.5.4. Resource Adequacy

(i). The Government of India has notified new Renewable Purchase Obligation (RPO) trajectory till 2029-30 vide Gazette Notification dated 20.10.2023 which ensure certain amount of energy consumption to be met from renewable energy sources. After 2029-30, RPO targets assumed based on the anticipated RE capacity requirement on national level given in National Electricity Plan 2022-32, (Vol-I Generation). While carrying out the transmission studies the RPO compliance of the state has been taken into account.

(ii). The generation resource adequacy study for Tripura was carried out by CEA considering the demand projections from the 20th EPS (i.e. 645 MW by the year 2029-30). According to the study, total energy required to meet RPO is 1075 MU for which Tripura required to add 27.12 MW, 3.71 MW and 114 MW additional capacities in respect of wind, Hydro and solar & other renewable energy/power respectively by 2029-30.

(iii). During the study of Transmission System proposals, the demand of Tripura has been considered as 731 MW and 2648 MU for 2031-32 time frame according to 20th EPS demand projections. Considering the 41.50% RPO compliance total 1100 MU would be required to meet RPO compliance out of which 1075 MU is required by 2029-30. Approximately 25 MU (1100-1075 MU) energy additionally required in the year 2031-32. Additional renewable power would be required by 2031-32 is 15 MW. Total 145 MW (27.12+3.71+114 MW) would be required to add by 2029-30 and additional 15 MW would be required to add/contract in 2031-32. Therefore, Tripura would require to add/contract 160 MW (145+15 MW) by 2031-32 in gradual manner for their manner for their RPO compliance.

(iv). The agreed system by the year 2031-32 was modelled and studied considering the N-1 contingency criteria. No constraints were observed in transmission system of Tripura taking into account of above RPO compliance. Hence, the transmission system as planned by 2031-32(including new schemes identified in this report) ensure the Transmission Resource Adequacy.

10.6. **Study Results.**

10.6.1. Considering the above assumptions import/export on tie lines is given below:

Parameter↓ / Scenario→	**Low Gas**	**High Gas**
Generation despatch (intra-state + ISGS located in state) (in MW)	240	600
Demand (in MW)	731	731
Net interchange ((-)import / (+)export) at ISTS-STU periphery (in MW)	-659	-556

10.6.2. The Peak Demand with low gas scenario was found to be critical scenario during the system studies.

10.6.3. The line flows and voltage were in permissible limit as mentioned in the Manual on Transmission Planning Criteria, 2023 in the critical as well as other scenario after modelling the required additional transmission system by 2031-32.

10.6.4. The planned transmission system of the state is N-1 contingency criteria compliant.

10.7. **Transmission system requirement by 2031-32.**

10.7.1. New substations alongwith their associated transmission lines which are required by 2031-32 are listed at Table 10-3

Table 10-3 New substations alongwith their associated transmission lines of Tripura

Sl.No.	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
1.	**i. Establishment of 132/33 kV 2x80 MVA S/s at Badharghat (GIS)**	Ring Main Power Supply arrangement for Agartala City (Agartalla – Aralia – Surajmaninagar (TSECL) – Badharghat)	132.47	**Time frame: 2028-29** Considering 80% of line section thorugh Monopole in Agartala area as per site condition
	ii. LILO of both circuit of 79 Tilla Grid-Rokhia 132 kV D/c line at Badharghat (HTLS Ampacity-800 A) (3.6 km Loop in and 3.6 km loop in).		84.24	
	iii. Surajmaninagar (ISTS)-Badharghat 132 kV D/c line (HTLS Ampacity-800 A) (48 ckm) alongwith 2 Nos. of bays at Surajmaninagar (ISTS) S/s		90.70	
2.	**i. Establishment of 132/33 kV 2x50 MVA S/s at Aralia**	Ring Main Power Supply arrangement for Agartala City (Agartalla – Aralia – Surajmaninagar (TSECL) – Badharghat) TSECL has informed that present load at Aralia is being met through long 33 kV lines which faces frequent outages.	91.88	**Time frame: 2028-29** Considering 80% of line section thorugh Monopole in Agartala area as per site condition
	ii. LILO of both circuit of 79 Tilla Grid – Surjamaninagar 132 kV D/c line at Aralia (HTLS) (2 km loop in and 2 km loop out.)		60.5	
3.	i. **Establishment of 132/33 kV 2x25 MVA S/s at Ompi**	TSECL has informed that they are dismantling all 66	42.51	**Time frame: 2028-29**

Sl.No.	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
	ii. Gamaitilla – Ompi (ACSR Panther) 132 kV S/c line on D/c tower (22 ckm) alongwith 1 No. of 132 kV bay at Gamaitilla S/s	kV network and planning to upgrade to 132 kV transmission system to feed the demand at these substations.	70.60	
	iii. Ompi – Amarpur (ACSR Panther) 132 kV S/c on D/c line (21 ckm) alongwith 1 No. of 132 kV bay at Amarpur S/s		72.00	
4.	i. **Establishment of 132/33 kV 2x25 MVA S/s at Jatanbari S/s**		42.51	**Time frame: 2028-29**
	ii. Amarpur – Jatanbari (ACSR Panther) 132 kV D/c line (20 ckm) alongwith 2 Nos. of 132 kV bays at Amarpur S/s		61.20	
5.	i. **Establishment of 132/33 kV 2x25 MVA S/s at Boxanagar.**		42.51	**Time frame: 2028-29**
	ii. LILO of both circuit of Rokhia – Rabindranagar 132 kV D/c line at Boxanagar (ACSR Panther) (7.5 km loop in and 7.5 km loop out)		23.40	

10.7.2. New transmission lines which are required by 2031-32 are listed at Table 10-4

Table 10-4 New transmission lines of Tripura

Sl.No.	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
1.	Palatana – Udaipur 132 kV 2nd S/c line (HTLS) (12 ckm) alongwith associated bay at both end	Strengthening of Intra-State Transmission System with improved reliability and stability.	32.21	**Time frame: 2027-28**
2.	Kanchanpur – Vangmun 132 kV S/c on D/c line (ACSR Panther) (32 ckm) alongwith associated bay at both end	To provide redundancy corridor in power supply to remotely located tribal habitation	74.51	**Time frame: 2029-30** The line will be initially operated at 33 kV as Vangmun is 33/11 kV S/s.
3.	Amarpur – Gandacherra 132 kV S/c on D/c line (ACSR Panther) (30 km)	To provide redundancy of corridor in power	80.47	**Time frame: 2029-30**

Sl.No.	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
	alongwith associated bay at both end	supply to remotely located tribal habitation		The line will be initially operated at 33 kV level.
4.	LILO of 2nd circuit of Surajmaninagar (TSECL) – Bodhjungnagar 132 kV D/c line with HTLS conductor at Surajmaninagar (ISTS) 400/132 kV S/s along with associated bays (3.5 km loop in and 3.5 km loop out)	For enhancing intra-state system reliability and stability	41.3	**Time frame: 2027-28** One circuit of Surajmaninagar-Bodhjungnagar 132 kV D/c line with HTLS conductor at Surajmaninagar (ISTS) 400/132 kV S/s has already been LILOed.

10.7.3. Augmentation of Substation which are required by 2031-32 are listed at Table 10-5

Table 10-5 Augmentation of Substation of Tripura

Sl.No.	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
1.	Augmentation of transformer capacity by • replacement of all 132/33 kV ICT with 3x80 MVA or 4x50 MVA ICT and • addtional 132/11 kV 20 MVA ICT at **79 Tilla Grid S/s**	To cater the future load demand and to satisfy N-1 contingency criteria the Augmentation is required. Existing ICT capacity: • 132/33 kV : 2x25+3x15 MVA and • 132/11 kV : 1x20 MVA	27.16	**Time frame: 2027-28** After augmentation Total ICT capacity: • 132/33 kV : 3x80 MVA or 4X50 MVA and • 132/11 kV : 2x20 MVA
2.	Augmentation of transformer capacity by replacement of all 132/33 kV ICT and one addtitional ICT with 3x80 MVA at **Surajmaninagar S/s**	To cater the future load demand and to satisfy N-1 contingency criteria the Augmentation is required Existing ICT capacity: 132/33 kV 2x25 MVA	13.58	**Time frame: 2027-28** After augmentation Total ICT capacity: 132/33 kV 3x80 MVA
3.	Augmentation of transformer capacity by replacement of ICT with 132/33 kV, 2x25MVA &	To cater the future load demand and to satisfy N-1 contingency criteria the Augmentation is required Existing ICT capacity:	18.19	**Time frame: 2027-28** After augmentation Total ICT capacity:

Sl.No.	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
	132/11kV, 1x15MVA S/s at **PK Bari S/s**	• 132/33 kV : 2x15 MVA and • 132/11 kV : 1x15 MVA		• 132/33 kV with 2x25 MVA (sourced from Surajmaninagar / 79 Tila/ Bodhjungnagar) • 132/11 kV 1x15 MVA
4.	Augmentation of transformer capacity by installation of additional 1x25 MVA ICT at **132/33 kV Mission Tilla S/s**	To cater the future load demand and to satisfy N-1 contingency criteria the Augmentation is required Existing ICT capacity: 132/33 kV 1x25 MVA	18.19	**Time frame: 2028-29** After augmentation Total ICT capacity: 2x25MVA 1 No. of 1x25 MVA ICT sourced from Surajmaninagar/ 79 Tila/ Bodhjungnagar
5.	Augmentation of transformer capacity by replacement of all 132/33 kV ICT with 2x50MVA at **132/33 kV, Bodhjungnagar S/s**	To cater the future load demand and to satisfy N-1 contingency criteria the Augmentation is required Existing ICT capacity : 1x25 + 1x15 MVA	24.98	**Time frame: 2028-29** After augmentation Total ICT capacity: 2x50 MVA
6.	Augmentation of transformer capacity by installation of ICTs with 132/33 kV, 2x15 MVA + 132/11 kV 2x15MVA at **Gamaitilla S/s**	To cater the future load demand and to satisfy N-1 contingency criteria the Augmentation is required Existing ICT capacity: 132/11 kV, 1x15 MVA	9.30	**Time frame: 2028-29** After augmentation Total ICT capacity: • 132/33 kV : 2x15 MVA (sourced from PK bari/79 Tilla/ Bodhjungnagar) and • 132/11 kV : 2x15 MVA
7.	Augmentation of transformer capacity by installation of ICTs with • 132/33 kV, 1x16 MVA + 1x15 MVA + • 132/11 kV, 1x15 MVA at **Kamalpur S/s**	To cater the future load demand and to satisfy N-1 contingency criteria the Augmentation is required Existing ICT capacity: • 132/33 kV: 1x16 MVA and • 132/11 kV: 1x10 MVA	9.30	**Time frame: 2028-29** After augmentation Total ICT capacity: • 132/33 kV : 1x16 MVA + 1x15MVA (sourced from PK bari/79 Tilla/ Bodhjungnagar) and

Sl.No.	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
				• 132/11kV: 1x10 MVA + 1x15MVA

10.7.4. Reconductoring of existing transmission lines which are required by 2031-32 are listed at Table 10-6

Table 10-6 Reconductoring of existing transmission lines of Tripura

Sl.No.	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
1.	Surjamaninagar (TSECL) – LILO point of Surjamaninagar (ISTS) 132 kV S/c line (5.5 km loop in amd 5.5 km loop out) along with upgradation of requisite bay equipment	In 3rd NERPCTP meeting, the proposal had been agreed. To maintain stability of Tripura Power network. • Ampacity of Existing conductor - ACSR Panther (Ampacity 358 A) • Year of commissioning-2013 • Ampacity of HTLS: 800 A	8.84	**Time frame: 2026-27** TSECL has informed that as these proposals are of urgent nature, they are seeking funding from other sources.
2.	Bodhjungnagar (TSECL) – LILO point of Surjamaninagar (ISTS) 132 kV S/c line(6.5 km loop in & 6.5 km loop out km) along with upgradation of requisite bay equipment	Due to increased loading in the area reconductoring of this line is required. • Ampacity of Existing conductor - ACSR Panther (Ampacity 358 A) • Year of commissioning-2013 • Ampacity of HTLS: 800 A	10.12	**Time frame: 2026-27** TSECL has informed that as these proposals are of urgent nature, they are seeking funding from other sources.
3.	Surjamaninagar – Bodhjungnagar 132 kV S/c line-(18.5 ckm) along with upgradation of requisite bay equipment	Due to increased loading in the area reconductoring of this line is required. • • Ampacity of Existing conductor - ACSR Panther (Ampacity 358 A) • Year of commissioning-2013 • Ampacity of HTLS: 800 A	14.90	**Time frame: 2026-27** TSECL has informed that as these proposals are of urgent nature, they are seeking funding from other sources.

Sl.No.	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
4.	Ambassa – LILO point of P.K. Bari (ISTS) 132 kV S/c line via Manu – (36.5 ckm) along with upgradation of requisite bay equipment	Due to increased loading in the area reconductoring of this line is required. • Ampacity of Existing conductor - AAAC Panther (Ampacity 358 A) • Year of commissioning-2006 • Ampacity of HTLS: 800 A	27.37	**Time frame: 2026-27** TSECL has informed that as these proposals are of urgent nature, they are seeking funding from other sources.
5.	P.K. Bari (TSECL) – LILO point of P.K. Bari (ISTS) 132 kV S/c line via Manu (6.5 ckm) along with upgradation of requisite bay equipment	Due to increased loading in the area reconductoring of this line is required. • Ampacity of Existing conductor - AAAC Panther (Ampacity 358 A) • Year of commissioning-2006 • Ampacity of HTLS: 800 A	9.24	**Time frame: 2026-27** TSECL has informed that as these proposals are of urgent nature, they are seeking funding from other sources.
6.	P.K. Bari – Kumarghat (PGCIL) 132 kV S/c line (2.5 ckm) along with upgradation of requisite bay equipment	Due to increased loading in the area reconductoring of this line is required. • Ampacity of Existing conductor - ACSR Panther (Ampacity 358 A) • Year of commissioning-2001 • Ampacity of HTLS: 800 A	3.12	**Time frame: 2026-27** TSECL has informed that as these proposals are of urgent nature, they are seeking funding from other sources.
7.	Udaipur – Palatana 132kV S/c line (12 ckm) (by HTLS Conductor, Ampacity 800 Amp) along with upgradation of requisite bay equipment	Re-conductoring the line with HTLS conductor and allied accessories are proposed to cope up with increased power flow with improved reliability. • Ampacity of Existing conductor - ACSR Panther (Ampacity 358 A) • Year of commissioning-2011 • Ampacity of HTLS: 800 A	9.97	**Time frame: 2027-28**
8.	Udaipur – Rokhia 132 kV S/c line-(46 ckm) with 800A HTLS along with upgradation of	Due to increased loading in the area reconductoring of this line is required.	25.72	**Time frame: 2026-27**

Sl.No.	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
	requisite bay equipment	• Ampacity of Existing conductor - ACSR Panther (Ampacity 358 A) • Year of commissioning-2002 • Ampacity of HTLS: 800 A		TSECL has informed that as these proposals are of urgent nature, they are seeking funding from other sources.
9.	Ambassa – Kamalpur 132 kV S/c line-(31 ckm) with 800A HTLS along with upgradation of requisite bay equipment	Due to increased loading in the area, reconductoring of this line is required. • Ampacity of Existing conductor - ACSR Panther (Ampacity 358 A) • Year of commissioning-2008 • Ampacity of HTLS: 800 A	19.72	**Time frame: 2026-27** TSECL has informed that as these proposals are of urgent nature, they are seeking funding from other sources.
10.	Restringing of P.K.Bari (TPTL) – Dharmanagar 132kV S/c line (36.5 ckm) with ACSR Panther or its equivalent conductor along with upgradation of requisite bay equipment.	Due to increased loading in the area reconductoring of this line is required. • Ampacity of Existing conductor – AAAC Panther (Ampacity 358 A) • Year of commissioning-2010 • Ampacity of ACSR Panther: 395 A	6.71	**Time frame: 2029-30**
11.	Restringing of Dharmanagar (TPTL) – Durllavchera (AEGCL) 132 kV S/c line (13 ckm) (*Inter-State Line*) with ACSR panther or its equivalent conductor along with upgradation of requisite bay equipment	Due to increased loading in the area reconductoring of this line is required. • Ampacity of Existing conductor - AAAC Panther (Ampacity 358 A) • Year of commissioning-2010 • Ampacity of ACSR panther: 395 A	6.74	**Time frame: 2029-30** The is ISTS between Tripura and Assam Tripura section: 13 km
12.	Restringing of Gamaitilla – Dhalabil 132 kV S/c line (30.4 ckm) with HTLS-800 A conductor along with upgradation of requisite bay equipment	Due to increased loading in the area reconductoring of this line is required. • Ampacity of Existing conductor - ACSR Panther (Ampacity 358 A) • Year of commissioning-2001	20.55	**Time frame: 2028-29**

Sl.No.	Transmission System	Justification	Estimated Cost (in Rs. Cr.)	Remarks
		• Ampacity of ACSR panther: 395 A		
13.	Reconductoring of Rabindra Nagar – Monarchak 132 kV D/c (5.24 ckm) with HTLS-800 A along with upgradation of requisite bay equipment	Due to increased loading in the area reconductoring of this line is required. • Ampacity of Existing conductor - ACSR Panther (Ampacity 358 A) • Year of commissioning- 2012 • Ampacity of HTLS: 800 A	4.54	**Time frame: 2026-27** TSECL has informed that they are seeking funding from other sources.

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

10.7.5. The power map of the state, including the above planned system is attached at **Exhibit -10.1.**

10.8. **Summary of identified transmission system by 2031-32:**

A total of 1120 MVA transformation capacity addition/augmentation and 505 ckm of new transmission lines/reconductoring of old lines at an estimated cost of Rs. 1331 Crs. would be required for implementing the intra-state transmission proposals for meeting the electricity demand of the state by the year 2031-32.

The summary of voltage wise identified transmission system of the state by 2031-32 is as below:

132 kV Transmission system

S.No.	Transmission System	No.	Length (in ckm)	Capacity (in MVA)	Estimated Cost (Rs. in Cr.)*
1.	New substation	5	-	410	351.88
2.	Augmentation of existing substation	7	-	730	120.70
3.	New transmission line	11	244	-	691.13
4.	Reconductoring of transmission line	13	261	-	167.54

**Note: The estimated cost of the above transmission system is based on Schedule of Rates (SoR) 2023 of Tripura Power Transmission Limited provided by the State.*

11. Sikkim

11.1. Demographics

Sikkim, the 22nd state of India, is a mountainous state with a very rich flora and fauna, low valleys and extremely high mountains. The entire Himalayan belt being young fold mountains, Sikkim is constantly tormented by its fragile geology. With a population of about 6.79 lakh within an area of 7096 sq. km, the state is rapidly developing. Sikkim is also very strategically located sharing international border with three countries - Nepal, Bhutan and China.

The transmission network in Sikkim currently comprises of a mixture of 66 kV and 132 kV transmission lines and sub-stations within the state grid with 66 kV lines being the mainstay. Transmission lines under PGCIL comprises of 132 kV network connecting the state grid with the national grid at three interconnection points.

11.2. Electricity profile of state

11.2.1. Power generation-demand scenario of state:

- In the FY 2023-24, Sikkim had peak electricity demand of 133 MW and electrical energy requirement of 544 MU. As on 31.07.2024, state has central sector allocation of 167.54 MWr which includes hydro plants (64 MW) and thermal plants (103.54 MW). In addition, installed capacity in state sector is 415.11 MW and installed capacity in private sector is 216.04 MW. The per capita consumption of the state was 954 kWh in the year 2022-23.
- The projected peak electricity demand of the state as per 20th EPS Report is 241 MW in the year 2031-32.
- Installed capacity (MW) of generating stations in Sikkim as on 31.07.2024 is given at Table 11-1 :

Table 11-1installed capacity of generating station of Sikkim

Sector	Hydro	Thermal					Nucl -ear	R.E.S. (MNRE)	Total
		Coal	Lignite	Gas	Diesel	Total			
State	360.00	0	0	0	0	0	0	55.11	415.11
Private	209.00	0	0	0	0	0	0	7.56	216.56
Central allocation	64.00	103.54	0	0	0	103.54	0	0	167.54
Total	633.00	103.54	0.00	0.00	0.00	103.54	0.00	62.67	799.21
%	79.25	12.96	0.00	0.00	0.00	12.96	0.00	7.78	100.00

Source: Installed Capacity Report, CEA

- As on August 2024, the General Network Access (GNA) quantum for ISTS drawal and Available Transfer Capability (ATC) of the state is 111 MW and 175 MW respectively.

11.2.2. Inter State Transmission system in the state:

- The state has a 132/66 kV, 100 MVA ISTS substation at Gangtok. Further the state has a 400/200/132 kV, 1975 MVA ISTS substations at Rangpo. The state has a 220 kV ISTS switching substation at new Melli.
- State has total 1206 ckm of existing ISTS network. Brief details of the ISTS network (including ISTS lines owned by states) are given at Table 11-2:

Table 11-2 existing & under-implementation/planned ISTS of Sikkim

Voltage level	Existing	Under Construction/ Planned
66 kV	37 ckm+ 60 ckm (ISTS line owned by state)	-
132 kV	326 ckm	-
220 kV	52 ckm	-
400 kV	731 ckm	-
Total	**1206 ckm** (including 60 ckm ISTS line owned by state)	-

11.2.3. Details of under implementation/planned ISTS network in Sikkim (as on July, 2024) is as given below :

A. Under Construction ISTS: RTM Mode

i. ERES-XXX:

- Installation of existing spare 132/66 kV, 1x50 MVA ICT (already stationed at Gangtok) as 3rd ICT at Gangtok (POWERGRID) S/s along with conversion of existing 132 kV TBC bay as 132 kV ICT bay for 3rd ICT and construction of new 66kV ICT bay in Hybrid/Outdoor GIS with suitable modification in the gantry structure of 66 kV side.
- Construction of new 132 kV TBC bay in Hybrid/Outdoor GIS.

ii. ERES-XXXIII:

- Reconductoring of Rangpo – Gangtok 132 kV D/c line with single HTLS conductor of 800 A (at nominal voltage level).
- Upgradation of CTs at Gangtok end in both circuits of Rangpo – Gangtok 132 kV D/c line from 600A to rating commensurate with rating of HTLS conductor.

iii. ERES-XXXV:

- Switching arrangement within the Rangpo (POWERGRID) GIS S/s premises such that Rangpo - Melli and Rangpo – Rangit 132 kV S/c lines can be bypassed at Rangpo S/s end, such that the lines can either be terminated at Rangpo 132 kV bus or bypassed, as per operational requirement.

- 132 kV, 1250 A, SF_6, 3-Ph GIB – Approx. 250 m to 300 m length
- 3 Phase, 1250 A, SF_6 to Air bushing – 02 Nos.
- 132 kV, 1250 A, 31.5 kA, AIS Disconnector with one E/S – 01 No.
- 132 kV BPI AIS – Approx. 05 Nos.

B. Planned ISTS

i. ERBS-II: Intimation issued. Connectivity Agreement yet to be signed.

- Extension at Rangpo 400/220/132 kV GIS substation
  - 132 kV GIS Line bays: 2 Nos. (bay No. 117 & 118) [for termination of Rammam – Rangpo (POWERGRID) 132 kV D/c (minimum 680 A per circuit) dedicated transmission line (line under the scope of NTPC Ltd.)]
  - 145 kV *GIB: 150 m approx.*

Note: *ISTS licensee should build the 132kV line bays of rating commensurate with rating of the dedicated transmission line*

11.2.4. **Intra State Transmission assets (as on 31.07.2024):**

Voltage (kV)	Transmission lines (in ckm)			Substations (in MVA)		
	Existing	Under construction	Planned	Existing	Under construction	Planned
66	404.9	247	63	385.5	130	186
132	68.5	111.5	-	125	450	20
220	10	-	5	-	200	100
400	-	-	-	-	-	-

11.3. **Under implementation intra-state transmission/distribution schemes:**

11.3.1. Under Comprehensive Scheme for strengthening of Transmission & Distribution in Arunachal Pradesh and Sikkim , a total of 55 elements of transmission & distribution system were sanctioned which includes 28 Nos. of lines & 27 Nos. of substation. As of July-2024, a total of 41 elements were completed. The details of the elements are attached at **Annexure-3.2**.

11.4. **Transmission proposals submitted:**

The proposals submitted by Sikkim includes the new substation and new transmission lines at 66 kV level and augmentation of existing sub-stations. The details of the proposals received from State are at **Annexure-11.1**.

11.5. **Assumptions for study:**

11.5.1. Peak electricity demand (in MW) of Sikkim for the year 2031-32 as per the 20th EPS Report and demand estimated for the year 2031-32 by the state is given below:

Demand	Actual peak electricity demand (2023-24)	Peak electricity demand as per 20th EPS Report for the year 2031-32	Estimated Peak electricity demand for the year 2031-32
Peak electricity demand (MW)	133	241	241*
CAGR	-	7.71%	7.71%

**including upcoming industrial demand.*

11.5.2. The details of upcoming industrial and traction demand are as under.

(i) Industrial demand of 60MW and Traction demand of 20MW has been considered.

11.5.3. The following Parameters were considered during the study

(i). Time Frame of Study: 2031-32

(ii). The total intra state generation installed capacity of Sikkim: 167 MW

(iii). Peak Demand: 241 MW (including traction:20 MW, Ranipool (Lower Lagyap Hydro): 10 MW, Mamring: 32 MW, Pakyong: 9 MW, Rongli:9 MW non-scalable demand)

(iv). Scenario of Study:

S.No.	Scenario	Demand Factor	Dispatch Factors
1.	Peak Demand with low hydro	100%	Hydro Plant: 30%
2.	High Hydro	80%	Hydro Plant: 90%

11.5.4. Resource Adequacy

i. The Government of India has notified new Renewable Purchase Obligation (RPO) trajectory till 2029-30 vide Gazette Notification dated 20.10.2023 which ensure certain amount of energy consumption to be met from renewable energy sources. After 2029-30, RPO targets assumed based on the anticipated RE capacity requirement on national level given in National Electricity Plan 2022-32, (Vol-I Generation). While carrying out the transmission studies the RPO compliance of the state has been taken into account.

ii. The generation resource adequacy study for Sikkim was carried out by CEA considering the demand projections from the 20th EPS (i.e. 241 MW by the year 2031-32). According to the study, Sikkim is surplus in fulfilment of its Renewable Purchase Obligations (RPO) and need not to add/contract any renewable capacities by 2031-32.

iii. The agreed system by the year 2031-32 was modelled and studied considering the N-1 contingency criteria. No constraints were observed in transmission system of the state taking into account of above RPO compliance. Hence, the transmission system planned up to 2031-32 (including new schemes identified in this report) ensure the Transmission Resource Adequacy

11.6. **Study Results.**

11.6.1. Considering the above assumptions import/export on tie lines is given below:

Parameter↓ / Scenario→	**Low hydro**	**High hydro**
Generation despatch (intra-state + ISGS located in state) (in MW)	890	2373
Demand (in MW)	250	201
Net interchange ((-)import / (+)export) at ISTS-STU periphery (in MW)	-199	-61

11.6.2. The Peak Demand with low hydro scenario was found to be critical scenario during the system studies.

11.6.3. The line flows and voltage were in permissible limit as mentioned in the Manual on Transmission Planning Criteria, 2023 in the critical as well as other scenario after modelling the required additional transmission system by 2031-32.

11.6.4. The planned transmission system of the state is N-1 contingency criteria compliant.

11.7. **Transmission system requirement by 2031-32.**

11.7.1. New substations alongwith the associated transmission lines which are required by 2031-32 are listed at Table 11-3.

Table 11-3 New substations alongwith the associated transmission lines of Sikkim

S.No	**Name of the proposal**	**Justification**	**Estimated Cost (in Rs. Cr.)**	**Remarks**
1.	**i. Establishment of Assam Lingzey 2x10MVA, 66/11kV S/s**	To meet the future load demand and reliable power supply to the area the S/s is required.	33.15	**Time frame: 2027-28**
	ii. Assam Lingzey-LLHP 66 kV D/c line (10 ckm) alongwith 2 Nos. of bay at LLHP		34.52	
2.	**i. Establishment of Ingtang (Yuksom) 66/11 kV , 2x10 MVA S/s**	Currently 11 kV fed through Gyalshing S/s. Nearest DT is 11 km and the farthest DT is 30 km.	33.15	**Time frame: 2029-30**

S.No	Name of the proposal	Justification	Estimated Cost (in Rs. Cr.)	Remarks
	ii. Relichu – Yuksom 66 kV S/c line (14 ckm) alongwith 01 No. of 66 kV bay at Relichu	Lowest recorded voltage is 9.0 kV. Further, the S/s is also required to supply the power to critical infrastructure in the area.	49.92	
	iii. Pelling – Yuksom 66 kV S/c line(18 ckm) alongwith 01 No. of 66 kV bay at Pelling S/s		62.6	
3.	i. **Establishment of Dentam 66/11 kV, 2X5 MVA S/s**	Currently 11 kV fed through Gyalshing S/s. Nearest DT is 18 km and the farthest DT is 43 km. Lowest recorded voltage is 8.9 kV. Further, the S/s is also required to supply the power to critical infrastructure in the area.	31.23	**Time frame: 2027 - 28**
	ii. Dentam – Pelling 66 kV S/c line (12 ckm) alongwith 01 No. of 66 kV bay at Pelling S/s		43.58	
	iii. Dentam – Rinchenpong 66 kV S/c line (16 ckm) alongwith 01 No. of 66 kV bay at Rinchenpong		56.26	
4.	**i. Establishment of Rabomchu (New) (Chungthang), 66/11 kV, 2×15 MVA S/s**	To meet the future load demand and reliable power supply to the area the S/s is required. The S/s is required for evacuation of power from 12 MW Robomchu hydro.	33.73	**Time frame: 2026-27** LILO to be done from the junction point of 220 kV and 66 kV line.
	ii. LILO of Singhik – Lachen 66 kV Line at Rabomchu (New) from the junction point of 220 kV D/c (twin Moose) and 66 kV conductor with Singhik – Rabomchu (new) section with 220 kV D/c (twin moose) conductor and Rabomchu (new) – Lachen section with 66 kV D/c conductor - (7 km loop in and 7 km loop out)		32.83	

S.No	Name of the proposal	Justification	Estimated Cost (in Rs. Cr.)	Remarks
	iii. LILO of Rabom – Maltin 66 kV S/c line at Rabomchu (New) (9 km loop in and 9 km loop out)		53.28	

11.7.2. New transmission lines which are required by 2031-32 are listed at Table 11-4

Table 11-4 New transmission lines of Sikkim

S.No	Transmission lines proposed	Brief Justification by State	Estimated Cost (in Rs. Cr.)	Remarks
1.	Rorathong – Rhenock 66 kV S/c on D/c line (5.4 ckm) alongwith associated bay at both end	Rhenock is currently connected with 66 kV network of long lines from LLHP-Pakyong-Rongli-Rhenock. Further, Rhenock is not compliant to N-1 contingency	47.47	**Time frame: 2027-28**
2.	Topakhani – Samardung 66 kV S/c line (5.1 ckm) alongwith associated bay at both end	To cater the increased load and enhance reliability of power supply in the area.	27.24	**Time frame: 2027-28** In view of space constraint at Topakhani, only 1 bay can be accommodated, therefore this line is proposed as S/c line.
3.	Melli (132/66 kV S/s) – Melli (66/11 kV S/s) D/c 66 kV line (0.2 ckm) alongwith associated bays at both end	For N-1 compliant of 66/11KV Melli S/s and to cater the load of entire 03 districts.	23.08	**Time frame: 2027-28** Presently Gantry of Melli (132/66 kV) – Melli (66/11 kV) are connected. Now it is would be connected through tower and bay arrangement.

11.7.3. Augmentation of 132 kV Sub Station which are required by 2031-32 are listed at Table 11-5

Table 11-5 Augmentation of 132 kV Sub Station of Sikkim

Sl. No.	Details of the Proposed transformation Capacity	Justification	Estimated Cost (in Rs. Cr.)	Remarks
1.	Augmentation of transformer capacity by additional 1x50 MVA 132/66 kV ICT along	To cater the future load demand and to satisfy N-1 contingency criteria the Augmentation is required.	11.09	**Time frame: 2026-27**

Sl. No.	Details of the Proposed transformation Capacity	Justification	Estimated Cost (in Rs. Cr.)	Remarks
	with one No. 132/66 kV ICT bay at **Melli 132/66 kV S/s**.	Existing ICT Capacity: 132/66 kV : 2x50 MVA		After augmentation Total ICT capacity: 132/66 kV, 3x50 MVA Space for 2 no 66 kV line bays each at Melli 132/66 kV and 66/11 kV S/s for 66 kV D/c line.
2.	Augmentation of transformer capacity by replacement of 2x5 MVA, 66/11 kV with 2x15 MVA 66/11 kV ICT at **Phodong 66/11 kV S/s**	To cater the future load demand and to satisfy N-1 contingency criteria the Augmentation is required Existing ICT Capacity: 66/11 kV : 2x5 MVA	15.83	**Time frame: 2027-28** After augmentation Total ICT capacity: 66/11 kV 2x15 MVA
3.	Augmentation of transformer capacity by replacement of 2x2.5 MVA, 66/11 kV transformer with 2x15 MVA ICTs **at Namchi 66/11 kV S/s**	To cater the future load demand and to satisfy N-1 contingency criteria the Augmentation is required Existing ICT Capacity: 66/11 kV : 2x2.5 MVA	15.83	**Time frame: 2027-28** After augmentation Total ICT capacity: 66/11 kV 2x15 MVA
4.	Augmentation of transformer capacity by replacement 1x5 MVA and 1x10 MVA, 66/11 kV transformer S/s with 2x15 MVA ICTs at **Melli 66/11 kV S/s**	To cater the future load demand and to satisfy N-1 contingency criteria the Augmentation is required Existing ICT Capacity: 66/11 kV : 1x5 MVA + 2x10 MVA	15.83	**Time frame: 2027-28** After augmentation Total ICT capacity: 66/11 kV 1x10 MVA + 2x15 MVA
5.	Augmentation of transformer capacity with additional 132/66 kV, 20 MVA ICT alongwith extension of 132 kV Bay at **Gyalshing 132/66 kV S/s**	To cater the future load demand and to satisfy N-1 contingency criteria the Augmentation is required Existing ICT Capacity: 132/66 kV : 1x20 MVA	10.90	**Time frame: 2026-27** After augmentation Total ICT capacity: 2x 20 MVA

11.7.4. The power map of the state, including the above planned system is attached at **Exhibit -11.1.**

11.8. Summary of identified transmission system by 2031-32:

A total of 250 MVA transformation capacity addition/augmentation and 113 ckm of new transmission lines/reconductoring of old lines at an estimated cost of Rs. 632 Crs. would be required for implementing the intra-state transmission proposals for meeting the electricity demand of the state by the year 2031-32.

The brief summary of voltage wise identified transmission system of the state by 2031-32 is as below:

66 kV Transmission system

S.No.	Transmission System	No.	Length (in ckm)	Capacity (in MVA)	Estimated Cost (Rs. in Cr.)*
1.	New substation	4	-	80	131.26
2.	Augmentation of existing substation	3	-	100	47.49
3.	New transmission line including LILO and 2nd ckt Stringing	10	113	-	430.78
4.	Reconductoring of transmission line	-	-	-	-

132 kV Transmission system

S.No.	Transmission System	No.	Length (in ckm)	Capacity (in MVA)	Estimated Cost (Rs. in Cr.)*
1.	New substation	-	-	-	-
2.	Augmentation of existing substation	2	-	70	21.99
3.	New transmission line including LILO and 2nd ckt Stringing	-	-	-	-
4.	Reconductoring of transmission line	-	-	-	-

**Note: The estimated cost of the above transmission system is based on SoR of Government of Sikkim.*

12. Reactive Power Compensation Requirement

12.1. The system studies of NER states and Sikkim has identified the Reactive power compensation requirement by 2031-32 at distribution level (33 kV or 11 kV) and at a few of 132 kV level S/s.

12.2. The following reactive power compensation requirement has been identified to be implemented alongwith implementation of above recommended Intra-state transmission system:

Sl. No.	Name of Substation (132 kV Level)	Capacitor requirement at downstream Distribution level (in MVAr)
Assam		
1.	Agamoni	3x15
2.	Agia	3x15
3.	AIIMS	3x15
4.	Amayapur	2x15
5.	Amingaon	3x15
6.	Azara	15
7.	Bagjhap	15
8.	Barpeta	4x15
9.	Bilasipara	3x15
10.	Bokakhat	15
11.	Boko	3x15
12.	Bornagar Ex	15
13.	Bornagar New	15
14.	BTPS	3x15
15.	Burhigaon	2x15
16.	Depota	15
17.	Dhaligaon	2x15
18.	Dhekiajuli	15
19.	Dhupdhara	3x15
20.	Dibrugarh	15
21.	Diphu	15
22.	Dispur	15
23.	Gauripur	3x15
24.	Guwahati Medical College (GMC)	15
25.	Golaghat	3x15
26.	Gossaigaon	2x15
27.	Gossaigaon-N	3x15
28.	Hajo	15
29.	Halflong	2x15
30.	Isabheel	15
31.	Jogigopa APM	2x15
32.	Jorhat	2x15
33.	Kahilipara	3x15
34.	Kamakhya	15
35.	Kamalpur	2x15
36.	Karimganj	15
37.	Kokrajhar	15
38.	Margherita	2x15

Sl. No.	Name of Substation (132 kV Level)	Capacitor requirement at downstream Distribution level (in MVAr)
39.	Mariani-Assm	15
40.	Matia	2x15
41.	Nalbari	3x15
42.	Narengi	3x15
43.	Nathkuchi	2x15
44.	North lakhimpur	15
45.	Pailapol	2x15
46.	Paltan Bazar	2x15
47.	Rangia	2x15
48.	Rangia New	2x15
49.	Rowta	15
50.	Rupai	2x15
51.	Salakati	4x15
52.	Sankar D Nagar	15
53.	Sarusajai	15
54.	Shishugram	15
55.	Silapathar	15
56.	Sipajhar	3x15
57.	Tangla	15
58.	Teok	15
59.	Titabor	2x15
60.	Zoo road	2x15
Arunachal Pradesh		
61.	Aalo	2x15
62.	Dambuk	15
63.	Daporijo	10
64.	Napit	2x15
65.	Niglok	2x15
66.	Pasighat	15
67.	Tato	5
Manipur		
68.	Namrei	2x15
Mizoram		
69.	Champhai	2x15
70.	Hnahthial	10
71.	Lunglei-khaw	15
72.	Melriat-mizoram	10
73.	S khawbung	10
74.	Saiha	10
Meghalaya		
75.	Ampati	15
76.	Lumshnong	15
77.	Phulbari	15
Nagaland		
78.	Tizit	12.5
79.	Tsitrongse	12.5
Sikkim		
80.	Dikchu pool	15
81.	Pakyong	15

12.3. The states to install capacitor banks around the above listed locations at lower voltage levels so as to maintain minimum reactive power exchange with the grid and maintain the voltage within permission levels.

13. ISTS Requirement

13.1. The system studies of NER states and Sikkim has identified the Intra-state requirement by 2031-32, in order to holistically develop transmission system the commensurate ISTS system is critical.

13.2. The following transmission system has been identified to be implemented on or before implementation of recommended Intra-state transmission system.

Table 13-1 Identifies ISTS requirement in NER by 2031-32

S.No	Transmission System	State
1.	Reconductoring of Rangnadi – Ziro (PG) 132 kV S/c line	Arunachal Pradesh
2.	Balipara (PG) – Seijosa (DoP, AP) 132 kV D/c line	Assam / Arunachal Pradesh
3.	New 400 kV ISTS substation near Niglok area with Gogamukh – Niglok 400 kV line	Arunachal Pradesh
4.	Space for 2 Nos. of 132 kV line bays at Silcher (POWERGRID) end for termination of Silcher (PG) – Silcoorie (AEGCL) 132 kV D/c line.	Assam
5.	Space for 2 Nos. of 132 kV line bays at Silcher (POWERGRID) end for termination of Silcher (PG) – uderbond (AEGCL) 132 kV D/c line	Assam
6.	Reconductoring of Kumarghat (PG) – Badarpur (PG) 132 kV S/c line LILOed at Karimganj with HTLS conductor. LILO portion will be reconductored by AEGCL.	Assam
7.	Reconductoring of Silchar (PG) – Srikona 132 kV D/c line	Assam
8.	Reconductoring of Balipara (PG) – Sonabil 220 kV D/c line	Assam
9.	Space for 2 Nos. of 132 kV line bays at Nangalbibra (ISTS) end for termination of Nangalbibra (ISTS) – Baghmara 132 kV D/c line	Meghalaya
10.	Space for 1 No. of 132 kV line bays at Melriat (POWERGRID) end for termination of Melriat (Powergrid) – Melriat (Mizoram) 132 kV S/c line with HTLS conductor (1000A)	Mizoram
11.	Melriat 400/132 kV S/s, with space for 132 kV future bays	Mizoram

13.3. Apart from above ISTS schemes, the new ISTS system need to plan in western part of Assam i.e. around Gossaigaon and Salakati area.

13.4. In addition to the above, various pooling points in Arunachal Pradesh may be required by 2031-32 for evacuation of power from upcoming hydro projects in Arunachal Pradesh. The same would be planned upon receipt of connectivity applications from various generation developers. The details of the same is given below:

Table 13-2 Transmission system of upcoming HEPs in Bramaputra Basin

Sl. No.	Name of HEP	Capacity (MW)	Expected Year of Commissioning	Pooling point	Dedicated Transmission system	Common transmission system
1.	Rangit-IV	120	2025-26	New Melli	Rangit-IV – New Melli 220 kV D/c line	Existing System
2.	Lower Kopili (APGCL)$	120	2025-26	Sankardevnagar	Lower Kopili – Sankardevnagar 220 kV D/c line	Existing System
3.	Lower Subansiri	2000	2026-27	Biswanath Chariali	Lower Subansiri – Biswanath Chariali 400 kV 2xD/c line	Existing System
4.	Teesta- VI	500	2027-28	Rangpo	Teesta-VI – Rangpo 220 kV D/c (Twin Moose) line	Existing System
5.	Teesta -IV	520	2031-32	Generation switchyard	LILO of Teesta-III – Rangpo 400 kV D/c (Q) line at Mangan (new ISTS pooling station)	Existing System
6.	Tato-I	186	2028-29	Naying	Tato-I – Naying* Pooling station 220 kV D/c line	Naying PS– Gogamukh 400 kV D/c (Q) line
7.	Heo	240	2028-29		Heo – Naying* Pooling station 220 kV D/c line	
8.	Tato-II	700	2030-31		Tato-II – Naying* Pooling station 400 kV D/c line	
9.	Naying	1000	2031-32		Naying – Naying* Pooling station 400 kV D/c line	
10.	Attunli	680	2030-31	Etalin	Attunli – Etalin* Pooling station 400 kV D/c line	1. Etalin – Chapakhowa 400 kV 2xD/c (Q) line 2. Chapakhowa – Naharkatia 400 kV D/c (Q) line 3. Chapakhowa – NR/ER ±800 kV HVDC link
11.	Etalin	3097	2031-32		Etalin - Etalin* Pooling station 400 kV 2xD/c (Quad) line	
12.	Dibang	2880	2031-32	Niglok	Dibang – Niglok* Pooling station 400 kV 2xD/c line	1. Dibang – Naharkatia 400 kV D/c (Q) line 2. Chapakhowa – NR/ER ±800 kV HVDC link
13.	Talonga Londa	225	2031-32	Tawang	Talonga Londa – Tawang* Pooling station 220 kV D/c line	Tawang PS – Biswanath Chariali 400

Sl. No.	Name of HEP	Capacity (MW)	Expected Year of Commissioning	Pooling point	Dedicated Transmission system	Common transmission system
						kV D/c (Q) line
14.	Demwe Lower	1750	2031-32	Namsai	Demwe Lower - Namsai* Pooling station 400 kV D/c line	Namsai – Naharkatia 400 kV D/c (Q) line
15.	Dikhu	186	2029-30		Dikhu HEP – Mokokchung 220 kV D/c line	Existing System
		14204				

* The pooling station and common transmission system beyond this would be identified after receipt of connectivity application by generation developer.

14. Recommendations

14.1. By the year 2031-32, the power demand of the NER states and Sikkim would be increasing significantly. Total demand of NER states is expected to be about 9400 MW. This anticipated increase in demand includes the expected industrial load coming progressively from 2024-25 to 2031-32. It is observed that there is significant load growth expected in Assam and Arunachal Pradesh mainly because of industrial growth in Assam, Arunachal Pradesh and Nagaland and construction power for HEPs in Arunachal Pradesh.

14.2. About 15 Nos. of hydro power projects connected with ISTS are expected to be commissioned by 2031-32.

14.3. 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 States by 2031-32, the intra-state as well as inter-state transmission system of NER States & Sikkim need to be strengthened. It has been found observed the transmission system infrastructure in the NER states at voltage levels of 132 kV, 220 kV and 400 kV needs to be upgraded.

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

14.5. At some of the sub-stations there may be low voltage issues due to long lines States are advised to installed suitable capacitor at distribution level (i.e. 33 kV or 11 kV level). The compensation requirement is available in the separate chapter of this report.

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

14.7. Considering the upcoming generation under ISGS and there is strengthening requirement in ISTS and for mitigating operational constraint new elements /augmentation required under ISTS is given at Table 13-1 and Table 13-2 of the report.

14.8. The General Network Access and Available Transfer Capability of the NER states and Sikkim for the month of August 2024 is listed at Table 14-1.

Table 14-1 ATC and GNA of the States as on August 2024

S.No.	State	GNA (in MW)	ATC (in MW)
1.	Arunachal Pradesh	225	210
2.	Assam	1900	2060
3.	Manipur	204	305
4.	Meghalaya	238	290
5.	Mizoram	150	140
6.	Nagaland	145	255
7.	Tripura	311	314
8.	Sikkim	111	175

The quantum of GNA is near about the ATC of the states and demand of the states are increasing, therefore, states are advise 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 States shall asses their GNA requirement and shall apply well before considering the timelines prescribed in the regulations.

14.9. Some the state has informed that they are seeking funding from other sources due to the urgent nature of the proposals. The state has applied for funding through various schemes of MoDONER and 10% GBS. However, funding for these proposals has not yet been secured. In order to avoid duplicity such transmission system have been highlighted in the Report.

14.10. Considering the availability of funds with States, it is recommended that a transmission scheme may be formulated for all the intra state transmission proposals of NER state & Sikkim in line with NERPSIP and CSSTDS for implementation of the identified system. Wherever the State seeking/tied up the funding from other sources may be excluded from this new scheme. However, if funding has not tied up, the same may be considered in the scheme. The elements shall be removed from the scheme if the funding is sanctioned before taking up the scheme.

14.11. Details of the recommended transmission system for framing the new scheme along with estimate cost are given below. This transmission system excludes the system in which States are seeking funding through own/other sources

14.11.1. **Arunachal Pradesh**

A. <u>New substations alongwith the associated transmission lines</u>:

Table 14-2 New substations alongwith the associated transmission lines of Arunachal Pradesh

S.No	Transmission System	Estimated Cost (in Rs. Cr.)	Remarks
1.	**i. Establishment of new 132/33 kV, 2x10 MVA S/s at Kimin (Papum Pare)**	58.81	**Time frame: 2027-28**
	ii. LILO of Yupia - Gerukamukh 132 kV S/c line at 132/33 kV Kimin S/s. (7.5 km loop in and 7.5 km loop out.)	25.75	
	iii. 2nd circuit stringing of Gerukamukh - Yupia – Banderdewa (bypassed at Yupia). (84 ckm) alongwith associated bays at Gerukamukh & Banderdewa S/s	24.59	
	iv. LILO of Gerukamukh – Banderdewa (bypassed at Yupia) 132 kV S/c line at 132/33 kV Kimin S/s. (7.5 km loop in and 7.5 km loop out.)	25.75	

S.No	Transmission System	Estimated Cost (in Rs. Cr.)	Remarks
2.	i. **Establishment of new 132/33 kV, 2x10 MVA S/s at Raga, (Kamle)**	52.36	**Time frame: 2027-28**
	ii. LILO of Ziro – Daporijo 132 kV S/c line at Raga (Kamle) with HTLS 1000 A. (6.5 km loop in and 6.5 km loop out.)	36.33	
3.	i. **Establishment of new 132/33 kV, 2x10 MVA S/s at Tato (Shi Yomi),**	52.36	**Time frame: 2027-28**
	ii. LILO of Kamba – Mechuka 132 kV S/c line at Tato (Shi Yomi)- (5 km loop in and 5 km loop out.)	17.17	
	iii. 132 kV Bay at Kamba for Tato line	2.15	

B. Augmentation of Sub Station:

Table 14-3 Augmentation of substation of Arunachal Pradesh

S.No	Transmission System	Estimated Cost (in Rs. Cr.)	Remarks
1.	Replacement of 132/33 kV, 2x20 MVA ICT with 2x50 MVA, ICT at Chimpu, Itanagar S/s.	25.50	**Time frame: 2027-28**

C. New transmission lines

Table 14-4 New Transmission lines of Arunachal Pradesh

S.No	Transmission System	Estimated Cost (in Rs. Cr.)	Remarks
1.	Likabali – Basar 132 kV D/c line (160 ckm) alongwith associated bays	287.55	**Time frame: 2029-30**
2.	KaHEP – Khuppi 132 kV D/c Line (with Zebra conductor) (20 ckm) alongwith associated bays	43.29	**Time frame: 2026-27**
3.	2nd circuit Stringing of Gerukamukh – Likabali 132 kV S/c line on D/c tower (52 ckm) alongwith associated bays	16.86	**Time frame: 2029-30**
4.	2nd circuit Stringing of Likabali – Niglok 132 kV S/c line on D/c tower (66 ckm) alongwith associated bays	20.24	**Time frame: 2029-30**
5.	2nd circuit Stringing of Seijosa – Rilo 132 kV line (44 ckm) alongwith associated bays	14.92	**Time frame: 2029-30** In matching time frame of Balipara – Seijosa 132 kV D/c ISTS line.
6.	2nd circuit Stringing of Rilo – Sagali 132 kV line (33 ckm) alongwith associated bays	12.27	**Time frame: 2029-30** In matching time frame of Balipara – Seijosa 132 kV D/c ISTS line.
7.	2nd circuit Stringing of Sagali – Yupia 132 kV line (39 ckm) alongwith associated bays	13.72	**Time frame: 2026-27**

S.No	Transmission System	Estimated Cost (in Rs. Cr.)	Remarks
			Shall be implemented in tandem with physical progress of the principal line under Comprehensive Scheme
8.	Kimin – Yachuli (Ziro-New) 132 kV D/c line (100 ckm) alongwith associated bays	184.83	**Time frame: 2028-29** In matching time frame of Kimin Substation

D. Reconductoring of existing lines

Table 14-5 Reconductoring of existing transmission lines of Arunachal Pradesh

S.No	Transmission System	Estimated Cost (in Rs. Cr.)	Remarks
1.	Lekhi – Chimpu 132 kV S/c line (14.5 ckm) with Panther or HTLS equivalent to existing conductor along with upgradation of requisite bay equipment	6.54	**Time frame: 2026-27**
2.	Ziro – Daporijo 132 kV S/c line (87 ckm) (being LILOed at Raga) with 900 A HTLS along with upgradation of requisite bay equipment	35.26	**Time frame: 2026-27**

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

14.11.2. **Assam:**

A. New substations alongwith the associated transmission lines

Table 14-6 New substations alongwith the associated transmission lines of Assam

S.No	Transmission System	Estimated Cost (in Rs. Cr.)	Remarks
1.	i) **Creation of 400 kV level by installation of 400 kV** GIS, **3x500 MVA, 400/220 kV at under construction 220/132/33 kV Khumtai GIS substation**	505.1	**Time frame: 2027-28** Assam had informed that they are seeking funding from other sources (10% GBS) for S.No. (i) to (iii).
	ii) BNC (PGCIL) – Khumtai 400 kV D/c (Twin Moose) Line (238 ckm) alongwith 2 Nos. of 400 kV line bays at BNC (PGCIL) S/s	632.87	
	iii) Extension of 220 kV GIS Bus at under construction Khumtai (220/132/33 kV) GSS for interconnection of 3 x 500 MVA, 400/220 kV ICT bays at 220 kV level.	22.97	
	iv) LILO of both circuits of Samaguri – Mariani 220 kV 2xS/c line at 400/200/132 kV Khumtai S/s. (12 km loop in and 12 km loop out)	10.9	
	v) LILO of Jorhat (W) – Bokaghat 132 kV S/c line at 400/200/132 kV Khumtai S/s. (10.5 km loop in and 10.5 km loop out)	10.8	
	vi) Sarupathar – Khumtai 132 kV D/c line (124 ckm) alongwith 2 Nos. of 132 kV line bays at Sarupathar S/s (124 ckm)	40.1	

2.	**i) Establishment of new 220/132 kV, 2 x200 MVA and 220/33 kV, 2x80 MVA GIS Substation at existing 132/33 kV Barnagar GIS Substation**	154.3	**Time frame: 2028-29**
	ii) Barnagar (ISTS) – Barnagar (New) 220kV D/c Line (Twin Moose) (60 ckm) alongwith 2 Nos. of 220kV line bays at Barnagar (ISTS) S/s	105	
	iii) Barnagar (New) – Barnagar (Existing) 132 kV D/c line (Twin Moose conductor) (1 ckm) alongwith 2 Nos. of 132 kV line bays at Barnagar (ISTS)	4	
3.	**i) Establishment of new 220/132 kV 2x160 MVA and 220/33 kV, 2x100 MVA GIS Substation at New Dhaligaon**	169.0	**Time frame: 2028-29**
	ii) LILO of both circuits of Rangia – BTPS 220 kV D/c Line at New Dhaligaon (2 km loop in and 2 km loop out) alongwith reconductoring of BTPS-New Dhaligaon 220 kV D/c section with HTLS(1400A)	35	
	iii) New Dhaligaon-Dhaligaon (Existing) 132 kV D/c Line (Twin Zebra or equivalent HTLS conductor of 1400 Amps) (2 ckm) alongwith 2 Nos. 132 kV line bays at Dhaligaon (Existing) S/s	5	
4.	**i. Establishment of new 132/33kV, 2x50 MVA Substation at Lower Haflong**	42.60	**Time frame: 2030-31**
	ii. Lower Haflong – Haflong (Existing) 132 kV S/c Line (Single panther)(40 ckm) alongwith 1 No. 132 kV line bays at Haflong (Existing)	28.56	
	iii. Lumding – Lower Haflong 132 kV D/c Line (Single panther)(100 ckm) alongwith 2 Nos. 132 kV line bays at Lumding	157.08	
5.	**i. Creation of 220 kV level at 132/33 kV Diphu existing substation with 2x160 MVA ICT**	98.78	**Time frame: 2028-29**
	ii. New Mariani (PGCIL-existing) – Diphu (New) 220 kV D/c Line (Single zebra) (310 ckm) alongwith 1 No. 220kV line bays at New Mariani (1 bay already available at New Mariani)	542.5	
	iii. Sankardevnagar (AEGCL-New)-Diphu (AEGCL-New) 220kV D/c Line (Single zebra) (162 ckm) along with 2 Nos. of 220 kV bays at Sankardevnagar (AEGCL-New) S/s	283.5	
	iv. Diphu – Bokajan 132kV D/c (Single panther) (one ckt via. East Karbi) (90 ckm) alongwith 2 Nos. of 132 kV bays at Bokajan S/s	97.5	
6.	**i. Establishment of new 132/33 kV, 2x80 MVA Substation at Silcoorie**	51.29	**Time frame: 2026-27**
	ii. Silchar (PGCIL) –Silcoorie 132 kV D/c Line (Single panther) (40 ckm) alongwith 2 Nos. 132 kV line bays at Silchar (POWERGRID)	50.08	
7.	**i. Establishment of new 132/33kV (2x80 MVA) AIS substation at Ishabheel**	43.44	**Time frame: 2030-31**
	ii. LILO of Karimganj - Kumarghat 132 kV S/c Line with HTLS (1000 A) at Ishabheel S/s (15 km loop in and 15 km loop out)	33.00	
8.	**i. Establishment of new 220/132kV, 2x160 MVA; 132/33kV, 2x80 MVA GIS Substation at Digboi**	129.63	**Time frame: 2028-29**

	ii.	Tinsukia – Digboi (New) 220 kV D/c Line (Single zebra)(70 ckm) along with 2 Nos. of 220 kV bays at Tinsukia S/s	122.5	
9.	**i.**	**Establishment of new 132/33 kV 2x80 MVA AIS substation at Jonai**	43.44	**Time frame: 2028-29**
	ii.	Silapathar –Dhemaji 2nd Ckt Stringing (Single Panther) (36 ckm) alongwith associated bay at both end	37.58	
	iii.	Silapathar – Jonai 132 kV D/c line (Single Panther) (150 ckm) along with 2 Nos. of 132 kV bays at Silapathar S/s	108.53	
10.	**i.**	**Establishment of new 132/33 kV 2x80 MVA AIS substation at Ghilamora**	47.36	**Time frame: 2030-31**
	ii.	North Lakhimpur – Gogamukh 132 kV D/c line alongwith LILO of one circuit at Ghilamora (Single Panther) (72 km + 12.5 km Loop in + 12.5 km Loop out) (2 Nos. on 132 kV bays at North Lakhimpur S/s)	88.41	
	iii.	Majuli – Ghilamora 132 kV S/c on D/c tower (Single panther) (120 ckm) along with 1 No. of 132 kV bays at Majuli S/s	91.39	
	iv.	Gogamukh – Dhemaji 132 kV D/c (Single Moose- 800A) (60 ckm) alongwith associated bays at both end	59.94	
11.	**i.**	**Establishment of new 132/33 kV, 2x80 MVA substation at Bartari**	43.44	**Time frame: 2029-30**
	ii.	Barnagar (New) –Bartari 132 kV D/c Line (Single panther) (70 ckm) along with 2 Nos. of 132 kV bays at Barnagar(New) S/s	49.98	
12.	**i.**	**Establishment of new 132/33 kV, 2x80 MVA substation at Tikrikilla**	51.29	**Time frame: 2029-30**
	ii.	2nd Circuit stringing of Agia –Hatsingimari 132 kV S/c on D/c tower (Single panther)- (110 ckm) along with 132 kV bay at both end	25	
	iii.	LILO of Agia –Hatsingimari D/c line at Tikrikilla (Single panther) (7.5 km loop in and 7.5 km loop out)	37.98	
13.	**i.**	**Establishment of new 132/33 kV, 2x80 MVA substation at Modertoli**	51.29	**Time frame: 2029-30**
	ii.	LILO of both circuits of Samaguri – Sankardevanagr 132 kV D/c Line at Modertoli (Kampur) (Single panther) (15 km loop in and 15 km loop out)	40.00	
14.	**i.**	**Establishment of new 132/33 kV, 2x80 MVA GSS at Missamari**	46.53	**Time frame: 2027-28**
	ii.	Balipara – Missamari 132 kV D/c line (Single Panther) (40 ckm) along with 2 Nos. of 132 kV bays at Balipara S/s	41.89	
	iii.	LILO of Rowta – Depota 132 kV S/c line at Missamari (Single panther) (5 km loop in and 5 km loop out)	14.76	
15.	**i.**	**Establishment of new 132/33kV, 2x80 MVA substation at Kalain (AIS)**	43.44	**Time frame: 2031-32**
	ii.	LILO of Lumshnong – Panchgram S/c line at Kalain (Single panther)(15 km loop in and 15 km loop out)	27.11	

B. Augmentation of Substation

Table 14-7 Augmentation of Substation of Assam

S.No	Transmission System	Estimated Cost (in Rs. Cr.)	Remarks
1.	Augmentation of transformer capacity by Installation of 3rd ICT of rating 1x200 MVA, 220/132 kV at **Amingaon S/s** *(Total capacity after augmentation: 2x160+ 1x200 MVA)*	23.57	**Time frame: 2030-31**
2.	Augmentation of transformer capacity by Replacement of 1x100 MVA ICT with 1x200 MVA at **Rangia S/s** *(Total capacity after augmentation: 2x200 MVA)*	23.57	**Time frame: 2026-27**
3.	Augmentation of transformer capacity by Replacement of 2x100 MVA ICT with 2x200 MVA at **Tinsukia S/s** *(Total capacity after augmentation: 2x200 MVA)*	47.14	**Time frame: 2026-27**
4.	Augmentation of transformer capacity by Replacement of 2x100 MVA ICT with 2x200 MVA at **Sonapur S/s** *(Total capacity after augmentation: 2x200 MVA)*	47.14	**Time frame: 2028-29**
5.	Augmentation of transformer capacity by Installation of 3rd ICT of rating of 1x200 MVA at **Mariani S/s** *(Total capacity after augmentation: 2x100+1x200 MVA)*	23.57	**Time frame: 2027-28**

C. New transmission lines

Table 14-8 New transmission lines of Assam

S.No	Transmission System	Estimated Cost (in Rs. Cr.)	Remarks
1.	**Mariani – Mariani (New) 220 kV S/c line** through underground cable of length 3 ckm (at least 1300 A) (bay already available at both ends)	15	**Time frame: 2027-28**
2.	**2nd Ckt Stringing of Namrup – Mariani 220 kV S/c line** on D/c tower (146 ckm) along with associated bays at both ends.	25	**Time frame: 2028-29**
3.	**LILO of Lakwa – Mariani 132 kV at Sivasagar S/s** (15 km loop in and 15 km loop out)	39	**Time frame: 2028-29**

D. Reconductoring of existing transmission lines

Table 14-9 Reconductoring of existing transmission lines of Assam

S.No	Transmission System	Estimated Cost (in Rs. Cr.)	Remarks
1.	Sonabil – Depota 132 kV S/c line (17.73 ckm) with 1000 A HTLS along with upgradation of requisite bay equipment	24.83	**Time frame: 2026-27** Assam had informed that they are seeking funding from other sources as the proposal is of urgent nature.
2.	Sonabil – Ghoramari 132 kV S/c line (8.73 ckm) with 1000 A HTLS along with upgradation of requisite bay equipment	8.87	**Time frame: 2026-27** Assam had informed that they are seeking funding from other sources as the proposal is of urgent nature

3.	Kamakhya – Sishugram 132 kV S/c line (6 ckm) with 1000 A HTLS along with upgradation of requisite bay equipment	4.82	**Time frame: 2026-27** Assam had informed that they are seeking funding from other sources as the proposal is of urgent nature.
4.	Sishugram – Amingaon S/c 132 kV line (20 ckm) with 1000 A HTLS along with upgradation of requisite bay equipment	15.57	**Time frame: 2026-27** Assam had informed that they are seeking funding from other sources as the proposal is of urgent nature.
5.	Kahilipara – AIIMS 132 kV S/c line (20 ckm) with 1000 A HTLS along with upgradation of requisite bay equipment	15.67	**Time frame: 2026-27** Assam had informed that they are seeking funding from other sources as the proposal is of urgent nature.
6.	AIIMS – Amingaon 132 kV S/c line (14 ckm) with 1000 A HTLS along with upgradation of requisite bay equipment	11.20	**Time frame: 2026-27** Assam had informed that they are seeking funding from other sources as the proposal is of urgent nature.
7.	Rangia – Kamalpur 132 kV D/c line (28 ckm) with 1000 A HTLS along with upgradation of requisite bay equipment	22.40	**Time frame: 2026-27**
8.	Barnagar – Nathkuchi 132 kV S/c line (43 ckm) with 1000 A HTLS along with upgradation of requisite bay equipment	38.00	**Time frame: 2026-27**
9.	Dhaligaon – Barpeta 132 kV S/c line (75.69 ckm) with 1000 A HTLS along with upgradation of requisite bay equipment	68.40	**Time frame: 2026-27**
10.	Salakati – Kokrajhar 2nd Circuit 132 kV S/c line (10.27 ckm) with 800 A HTLS along with upgradation of requisite bay equipment	6.33	**Time frame: 2026-27**
11.	Tinsukia – Rupai 132 kV S/c line (40 ckm) with 1000 A HTLS along with upgradation of requisite bay equipment	33.23	**Time frame: 2026-27** Assam had informed that they are seeking funding from other sources as the proposal is of urgent nature.
12.	Rupai – Ledo (Margherita) 132 kV S/c line (72 ckm) with 1000 A HTLS along with upgradation of requisite bay equipment	55.92	
13.	Tinsukia – Ledo (Margherita) 132 kV line (52.8 ckm) with 1000 A HTLS along with upgradation of requisite bay equipment	40.44	
14.	Dibrugarh – Behiating 132 kV S/c line (9.3 ckm) with 1000 A HTLS along with upgradation of requisite bay equipment	20.00	**Time frame: 2026-27**
15.	BTPS – New Dhaligaon 220 kV D/c line (40 ckm) with 1600 A HTLS along with upgradation of requisite bays equipment	21.00	**Time frame: 2026-27**
16.	Reconductoring of LILO portion of Badarpur – Kumarghat at Karimganj 132 kV S/c line (4 km loop in & 4 km loop out) with 1000 A HTLS along with upgradation of requisite bay equipment	10.00	**Time frame: 2030-31**
17.	Restringing of Dharamnagar (Tripura) – Durlavchera (Assam) 132 kV S/c line (26 ckm) with panther conductor along with upgradation of requisite bay equipment	20.00	**Time frame: 2029-30** Matching time frame with Tripura

			Note: Only AEGCL portion (26 ckm)
18.	Restringing of Srikona – Pailapol 132 kV (35 ckm) with panther conductor along with upgradation of requisite bay equipment	27.48	**Time frame: 2027-28** Assam had informed that they are seeking funding from other sources as the proposal is of urgent nature.
19.	Restringing of Panchgram – Hailakandi 132 kV S/c line (23 ckm) with panther conductor along with upgradation of requisite bay equipment	17.71	**Time frame: 2027-28** Assam had informed that they are seeking funding from other sources as the proposal is of urgent nature.
20.	Restringing of Hailakandi – Durlavchera 132 kV S/c line (31.4 ckm) with panther conductor along with upgradation of requisite bay equipment	23.22	**Time frame: 2027-28** Assam had informed that they are seeking funding from other sources as the proposal is of urgent nature.

14.11.3. **Manipur:**

A. New substations alongwith the associated transmission lines

Table 14-10 New substations alongwith the associated transmission lines of Manipur

S.No	Transmission System	Estimated Cost (in Rs. Cr.)	Remarks
1.	**i. Establishment of new 132/33 kV, 2x 50 MVA, S/s at Awang Potsangbam**	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**	40.93	**Time frame: 2028-29**
	ii. Hundung – Namrei 132kV D/c line (55 ckm) alongwith 2 Nos. 132 kV line bay at Hundung	69.53	
	iii. LILO at Karong on one ckt of Hundung – Namrei D/c line. (40 km loop in and 40 km loop out)	71.22	

B. Augmentation of Substation

Table 14-11 Augmentation of Substation of Manipur

S.No	Transmission System	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)	116.00	**Time frame: 2029-30**

C. New transmission lines

Table 14-12 New transmission lines of Manipur

S.No	Transmission System	Estimated Cost (in Rs. Cr.)	Remarks
1.	**Tamenglong –Karong 132 kV D/c line** (140 ckm) alongwith associated bays at both end	62.84	**Time frame: 2029-30**
2.	**Moreh – Chandel 132 kV S/c** line – (60 ckm) alongwith associated bay at both end	54.47	**Time frame: 2030-31**

D. Reconductoring of existing transmission lines

Table 14-13 Reconductoring of existing transmission lines of Manipur

S.No	Transmission System	Estimated Cost (in Rs. Cr.)	Remarks
1.	Reconductoring of Two circuits of Yurembam (State) – Yurembam (PGCIL) 132 kV triple circuit line-(1 km) with 800 A HTLS along with upgradation of requisite bay equipment	2.48	**Time frame: 2026-27**

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

E. Evacuation system for upcoming hydro projects

Table 14-14 Evacuation system for upcoming hydro projects of Manipur

S.No	Transmission System	Estimated Cost (in Rs. Cr.)	Remarks
1.	**Irang-3 HEP – Rengpang 132 kV D/c line** (50 ckm) alongwith 2 Nos. 132 kV line bay at Rengpang	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	25.11	**Time frame:2031-32** Matching with Generating Station
3.	**Imphal HEP – Chandel 132 kV D/c line** (32 ckm) alongwith 2 Nos. 132 kV line bay at Chandel	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	25.11	**Time frame:2031-32** Matching with Generating Station

14.11.4. **Meghalaya**

A. New substations alongwith their associated transmission lines

Table 14-15 New substations alongwith their associated transmission lines of Meghalaya

Sl.No.	Transmission System	Estimated Cost (in Rs. Cr.)	Remarks
1.	**i. Establishment of 132/33 kV, 2x25 MVA S/s Killing (New) near the existing Killing 400/220/132 kV S/s**	53.10	**Time frame: 2030-31**

Sl.No.	Transmission System	Estimated Cost (in Rs. Cr.)	Remarks
	ii. Killing (existing) –Killing (New) 132 kV D/c line (5 ckm) along with 2 Nos. 132kV line bays at Killing 400/220/132kV S/s	9.50	
2.	**i. Establishment of 132/33 kV, 2x25 MVA S/s at Baghmara**	30.45	**Time frame: 2030-31**
	ii. Nangalbibra (ISTS) – Baghmara 132 kV D/c line– (150 ckm) along with 2 Nos. 132 kV line bays at Nangalbibra (ISTS) S/s	313.74	
3.	**i. Establishment of 132/33 kV, 2x50 MVA S/s at Mawkhanu**	49.82	**Time frame: 2027-28**
	ii. New Shillong –Mawkhanu D/c line (20 ckm) along with 2 Nos. 132kV line bays at New Shillong 132/33kV S/s	42.66	Meghalaya had informed that they are seeking funding from other sources as the proposal is of urgent nature.

B. New Transmission lines

Table 14-16 New Transmission lines of Meghalaya

Sl. No.	Transmission System	Estimated Cost (in Rs. Cr.)	Remarks
1.	**New Shillong – Sohra 132kV D/c line** (110 ckm) alongwith associated bays at both end	228.00	**Time frame: 2030-31**
2.	**New Shillong – IIM 132 kV S/c line** (8 ckm) alongwith associated bay at both end	31.88	**Time frame: 2026-27**
3.	**Mawkhanu – Mawlyndep 132 kV S/c line** (30 ckm) alongwith associated bay at both end	119.58	**Time frame: 2027-28**
4.	**Nangalbibra (ISTS) – New Shillong (MePTCL) 220 kV D/c line** – (300 ckm) alongwith associated bays at both end	574.02	**Time frame: 2026-27**
5.	**MLHEP-I – Mustem 132 kV S/c line** (30 ckm) alongwith associated bay at both end	60	**Time frame: 2027-28**

C. Reconductoring of existing transmission lines

Table 14-17 Reconductoring of existing transmission lines of Meghalaya

S. No	Transmission System	Estimated Cost (in Rs. Cr.)	Remarks
1.	Restringing of NEHU – Mawlyndep- Mustem- Khliehriat 132 kV S/c line (56 ckm) with panther conductor along with upgradation of requisite bay equipment	12.26	**Time frame: 2026-27**

S. No	Transmission System	Estimated Cost (in Rs. Cr.)	Remarks
2.	Umiam Stage1-Umiam 132 kV S/c line (6 ckm) with 800 A HTLS along with upgradation of requisite bay equipment	3.60	**Time frame: 2026-27**
3.	Umiam-NEHU 132 kV S/c line (14 ckm) with 800 A HTLS along with upgradation of requisite bay equipment	4.80	**Time frame: 2026-27**
4.	Umiam Stage1-Mawlai 132 kV S/c line (12.35 ckm) with 800 A HTLS along with upgradation of requisite bay equipment	4.63	**Time frame: 2026-27**
5.	Restrining of Mawphlang-Mawlai 132 kV S/c line (20.26 ckm) with panther conductor along with upgradation of requisite bay equipment	6.21	**Time frame: 2028-29**
6.	Restringing of Mawlai – Sohra 132 kV S/c line (42 ckm) (being LILOed at Mawphlang) with panther conductor along with upgradation of requisite bay equipment	9.54	**Time frame: 2028-29**
7.	Khliehriat- Khliehriat (PG) circuit- 2 132 kV line (5.35 ckm) with 800 A HTLS along with upgradation of requisite bay equipment	3.45	**Time frame: 2026-27**

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

D. Augmentation of Substations

Table 14-18 Augmentation of Substations of Meghalaya

S.No	Transmission System	Estimated Cost (in Rs. Cr.)	Remarks
1.	Augmentation of 132/33 kV, 1x12.5 MVA ICTs with additional 2x12.5 MVA ICTs at **Sohra S/s** *(After augmentation Total ICT capacity: 3x12.5 MVA)*	0.35	**Time frame: 2026-27**
2.	Augmentation of S/s by Replacement of 132/33 kV, 2x20 MVA ICTs with 2x50 MVA ICTs at **Nehu S/s** *(After augmentation Total ICT capacity: 2x50 MVA)*	22.43	**Time frame: 2026-27**
3.	Augmentation of S/s by Replacement of 132/33 kV, 1x5 (out of 2x20 + 1x5) MVA ICTs with 1x20 MVA ICTs at **Rongkhon S/s** *(After augmentation Total ICT capacity: 3x20 MVA)*	0.80	**Time frame: 2027-28**
4.	Augmentation of 132/33 kV, 1x50 MVA ICTs with additional 1x50 MVA ICTs at **EPIP-II S/s** *(After augmentation Total ICT capacity: 2x 50 MVA)*	12.02	**Time frame: 2027-28**
5.	Augmentation of 132/33 kV, 1x20 MVA ICTs with additional 1x20 MVA ICTs at **Nongstoin S/s** *(After augmentation Total ICT capacity: 2x20 MVA)*	0.20	**Time frame: 2026-27**
6.	Augmentation of 132/33 kV, 2x20 MVA ICTs with additional 1x20 MVA ICTs at **Mawphlang** S/s *(After augmentation Total ICT capacity: 3x20 MVA)*	0.15	**Time frame: 2026-27**

E. Evacuation system for upcoming hydro projects

Table 14-19 Evacuation system for upcoming hydro projects of Meghalaya

S.No	Transmission System	Estimated Cost (in Rs. Cr.)	Remarks
1.	**MLHEP-II – New Shillong 220 kV D/c line** (160 ckm) along with 2 Nos. 220 kV line bays at New Shillong S/s	310.00	**Time frame:2031-32** **Matching with generation project**
2.	**Ganol-II – Praharinagar 132 kV S/c line** (20.75 ckm) with 1 Nos. 132 kV line bay at Praharinagar S/s	10.36	**Time frame:2031-32**
3.	**Ganol-II – Ganol-I 132kV S/c line** (19.52 ckm) with 1 Nos. 132 kV line bay at Ganol-I S/s	8.58	**Matching with generation project**

14.11.5. Mizoram

A. New substations alongwith the associated transmission lines

Table 14-20 New substations alongwith the associated transmission lines of Mizoram

S.No.	Transmission System	Estimated Cost (in Rs. Cr.)	Remarks
1.	**Establishment of new 132/33 kV, 2x12.5MVA Sub-Station at Hnahthial**	31.87	**Time frame: 2028-29**
	Bukpui – Hnahthial 132 kV D/c line (110 ckm) along with 2 Nos. of 132 kV bays at Bukpui S/s	69.94	

B. New transmission lines

Table 14-21 New transmission lines of Mizoram

Sl.No.	Transmission System	Estimated Cost (in Rs. Cr.)	Remarks
1.	**Melriat (Powergid) – Melriat (Mizoram) 132 kV S/c line** (using at least 1000 A HTLS conductor) (23 ckm) alongwith associated bay at both end	26.95	**Time frame: 2028-29**
2.	2nd circuit Stringing of **Khawzawl – Champhai 132 kV S/c line** on D/c tower (18 ckm) alongwith associated bay at both end	22.78	**Time frame: 2028-29**
3.	**Tuirial HEP – Darlawn 132 kV S/c line** on D/c tower (70 ckm) alongwith associated bay at both end	130.03	**Time frame:2029-30**
4.	**Siaha – Lawngtlai 132 kV D/c line** (87 ckm) (initially to be operated at 33 kV) alongwith associated bays at both end	51.15	**Time frame: 2028-29** Mizoram has informed that they are seeking funding from other sources (10% GBS). It is to mention that this line has been agreed as

Sl.No.	Transmission System	Estimated Cost (in Rs. Cr.)	Remarks
			Single Circuit for 10% GBS.
5.	**S.Bungtlang – Lawngtlai 132 kV S/c line** on D/c tower (initially to be charged at 33kV) (60 ckm) alongwith associated bay at both end	70.29	**Time frame: 2028-29** Mizoram has informed that they are seeking funding from other sources (10% GBS).
6.	**Marpara – Thenhlum 132 kV S/c line** (initially to be operated at 33kV) (26 ckm) alongwith associated bay at both end	30.46	**Time frame: 2026-27** Mizoram has informed that they are seeking funding from other sources (10% GBS).

C. Reconductoring of existing transmission lines

Table 14-22 Reconductoring of existing transmission lines of Mizoram

Sl.No.	Transmission System	Estimated Cost (in Rs. Cr.)	Remarks
1.	Zuangtui – Sihhmui 132 kV S/c line (27 ckm) with at least 800 A HTLS conductor along with upgradation of requisite bay equipment	12.34	**Time frame: 2026-27**
2.	Luangmual – Melriat 132 kV S/c line (17 ckm) with at least 800 A HTLS conductor along with upgradation of requisite bay equipment	5.60	**Time frame: 2026-27**
3.	Zuangtui – Bukpui 132 kV S/c line with at least 800 A HTLS conductor along with upgradation of requisite bay equipment	20.86	**Time frame: 2026-27**

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

D. Augmentation of Substations

Table 14-23 Augmentation of Substations of Mizoram

Sl.No.	Transmission System	Estimated Cost (in Rs. Cr.)	Remarks
1.	Augmentation of 132/33 kV, Bawktlang S/s *(Existing ICT capacity: 2x12.5 MVA* *After augmentation Total ICT capacity: 2x25 MVA)*	7.21	**Time frame: 2026-27** Mizoram has informed that they are seeking funding from other sources (10% GBS).

Sl.No.	Transmission System	Estimated Cost (in Rs. Cr.)	Remarks
2.	Augmentation of 132/33 kV, Saitual S/s *(Existing ICT capacity: 1x12.5 MVA* *After augmentation Total ICT capacity: 2x12.5 MVA)*	2.75	**Time frame: 2026-27** Mizoram has informed that they are seeking funding from other sources (10% GBS).
3.	Augmentation of 132/33 kV, Melriat S/s *(Existing ICT capacity: 2x12.5 MVA* *After augmentation Total ICT capacity: 2x25 MVA)*	7.31	**Time frame: 2026-27** Mizoram has informed that they are seeking funding from other sources (10% GBS).
4.	Augmentation of 132/33 kV, Khawzawl S/s *(Existing ICT capacity: 1x12.5 MVA* *After augmentation Total ICT capacity: 2x12.5 MVA)*	2.77	**Time frame: 2026-27** Mizoram has informed that they are seeking funding from other sources (10% GBS).
5.	Augmentation of 132/33 kV, Champhai S/s *(Existing ICT capacity: 1x12.5 MVA* *After augmentation Total ICT capacity: 2x12.5 MVA)*	2.81	**Time frame: 2026-27** Mizoram has informed that they are seeking funding from other sources (10% GBS).
6.	Augmentation of 132/33 kV, Serchhip S/s *(Existing ICT capacity: 2x12.5 MVA* *After augmentation Total ICT capacity: 1x25 & 1x12.5 MVA)*	5.96	**Time frame: 2026-27** Mizoram has informed that they are seeking funding from other sources (10% GBS).
7.	Augmentation of 132/33 kV, E.Lungdar S/s *(Existing ICT capacity: 1x6.3 MVA* *After augmentation Total ICT capacity: 1x6.3 & 1x12.5 MVA)*	2.83	**Time frame: 2026-27** Mizoram has informed that they are seeking funding from other sources (10% GBS).

14.11.6. **Nagaland**

A. New substations alongwith their associated transmission lines

Table 14-24 New substations alongwith their associated transmission lines of Nagaland

Sl.No.	Transmission System	Estimated Cost (in Rs. Cr.)	Remarks
1.	i. **Establishment of 132/33 kV, 2x25 MVA S/s at Mon**	41.29	**Time frame: 2030-31**
	ii. Longleng – Mon 132 kV S/c line on D/c tower (44 ckm) alongwith 1 No. 132 kV line bay at Longleng	71.41	
2.	i. **Establishment of 132/33 kV 2x 50 MVA S/s at Old Showuba (near Referral Hospital Dimapur)**	47.02	**Time frame: 2030-31**

Sl.No.	Transmission System	Estimated Cost (in Rs. Cr.)	Remarks
	ii. LILO of Dimapur (PG) – Kohima 132 kV S/c line at Old Showuba (with HTLS reconductoring from Dimapur (PG) to Old Showuba line section Sub-station) (12 km loop in 12 km loop out) with upgradation of bay equipments at PG Dimapur S/s.	40.84	
3.	i. **Establishment of 132/33 kV, 2x25 MVA S/s at Niuland**	38.63	**Time frame: 2031-32**
	ii. Zhadima – Niuland 132kV D/c line (Zebra conductor) (54 ckm) alongwith 2 Nos. 132 kV line bays at Zhadima.	56.22	
	iii. Niuland – Champhang 132kV S/c line (55 ckm)	85.61	
4.	i. **Establishment of 132/33 kV, 2x10 MVA S/s at Champang**	34.86	**Time frame: 2031-32**
	ii. Champang - Longnak 132 kV S/c on D/c lines (64 ckm) alongwith 1 No. 132kV line bay at Longnak	101.03	
5.	i. **Establishment of 132/33 kV, 2x 50 MVA S/s at Old TPS 7th Mile Dimapur**	39.06	**Time frame: 2030-31**
	ii. Tsitrongse - Old TPS **7th** Mile Dimapur 132 kV D/c line (26 ckm) alongwith 2 Nos. 132 kV line bays at Tsitrongse	28.96	
6.	i. **Establishment of 132/33 kV, 2x25 MVA S/s at Tuli** (near NPPCL)	38.60	**Time frame: 2031-32**
	ii. Mokokchung (PG) – Tuli 132 kV D/c transmission line (112 ckm) alongwith 2 Nos. 132 kV line bays at Mokokchung	100.16	
	iii. Tuli – Naginimora 132 kV S/c line on D/c tower – (34 ckm)	55.29	
	iv. Longleng – Tuli 132 kV S/c line on D/c tower (50 ckm) alongwith 1 No. 132kV line bay at Longleng	80.79	
7.	i. **Establishment of 132/33 kV, 2x10 MVA at Naganimora**	36.98	**Time frame: 2031-32**
	ii. Naginimora – Tizit 132 kV S/c line on D/c tower (44 ckm)	67.60	
8.	i. **Establishment of 132/33 kV, 2x10 MVA at Tizit**	36.86	**Time frame: 2031-32**
	ii. Tizit – Mon 132 kV S/c on D/c tower line (30 ckm)	46.09	
9.	i. **Establishment of 132/33 kV, 2x50 MVA S/s at Ganeshnagar**	41.70	**Time frame: 2030-31**
	ii. Tsitrongse – Ganeshnagar 132 kV D/c Line (20 ckm) alongwith 2 Nos. 132kV line bay at Tsitrongse.	23.52	

B. Evacuation of power from new hydro projects

Table 14-25 Evacuation of power from new hydro projects of Nagaland

Sl.No.	Transmission System	Estimated Cost (in Rs. Cr.)	Remarks
1.	**Zungki HEP - Kiphire 132 kV S/c line** along with 132 kV end equipments at Kiphire substation (22 ckm)	38.16	**Time frame: 2031-32**

14.11.7. Tripura

A. New substations alongwith their associated transmission lines

Table 14-26 New substations alongwith their associated transmission lines of Tripura

Sl.No.	Transmission System	Estimated Cost (in Rs. Cr.)	Remarks
1.	**i. Establishment of 132/33 kV 2x80 MVA S/s at Badharghat**	132.47	**Time frame: 2028-29** Considering 80% of line section through Monopole in Agartala area as per site condition
	ii. LILO of both circuit of 79 Tilla Grid-Rokhia 132 kV D/c line at Badharghat (HTLS Ampacity-800 A) (3.6 km Loop in and 3.6 km loop in).	84.24	
	iii. Surajmaninagar (ISTS)-Badharghat 132 kV D/c line (HTLS Ampacity-800 A) (48 ckm) alongwith 2 Nos. of bays at Surajmaninagar (ISTS) S/s	90.70	
2.	**i. Establishment of 132/33 kV 2x50 MVA S/s at Aralia**	91.88	**Time frame: 2028-29** Considering 80% of line section thorugh Monopole in Agartala area as per site condition
	ii. LILO of both circuit of 79 Tilla Grid – Surjamaninagar 132 kV D/c line at Aralia (HTLS) (2 km loop in and 2 km loop out.)	60.5	
3.	i. **Establishment of 132/33 kV 2x25 MVA S/s at Ompi**	42.51	**Time frame: 2028-29**
	ii. Gamaitilla – Ompi (ACSR Panther) 132 kV S/c line on D/c tower (22 ckm) alongwith 1 No. of 132 kV bay at Gamaitilla S/s	70.60	
	iii. Ompi – Amarpur (ACSR Panther) 132 kV S/c on D/c line (21 ckm) alongwith 1 No. of 132 kV bay at Amarpur S/s	72.00	
4.	i. **Establishment of 132/33 kV 2x25 MVA S/s at Jatanbari S/s**	42.51	**Time frame: 2028-29**
	ii. Amarpur – Jatanbari (ACSR Panther) 132 kV D/c line (20 ckm) alongwith 2 Nos. of 132 kV bays at Amarpur S/s	61.20	
5.	i. **Establishment of 132/33 kV 2x25 MVA S/s at Boxanagar.**	42.51	**Time frame: 2028-29**
	ii. LILO of both circuit of Rokhia – Rabindranagar 132 kV D/c line at Boxanagar (ACSR Panther) (7.5 km loop in and 7.5 km loop out)	23.40	

B. New transmisssion lines

Table 14-27 New transmisssion lines of Tripura

Sl.No.	Transmission System	Estimated Cost (in Rs. Cr.)	Remarks
1.	**Palatana – Udaipur 132 kV 2nd S/c line (HTLS)** (12 ckm) alongwith associated bay at both end	32.21	**Time frame: 2027-28**

Sl.No.	Transmission System	Estimated Cost (in Rs. Cr.)	Remarks
2.	**Kanchanpur – Vangmun 132 kV S/c on D/c line (ACSR Panther)** (32 ckm) alongwith associated bay at both end	74.51	**Time frame: 2029-30**
3.	**Amarpur - Gandacherra 132 kV S/c on D/c line (ACSR Panther**) (30 km) alongwith associated bay at both end	80.47	**Time frame: 2029-30**
4.	**LILO of 2nd circuit of Surajmaninagar (TSECL)-Bodhjungnagar 132 kV D/c line with HTLS conductor at Surajmaninagar (ISTS)** 400/132 kV S/s along with associated bays (3.5 km loop in and 3.5 km loop out)	41.3	**Time frame: 2027-28**

C. Augmentation of 132 kV Substation

Table 14-28 Augmentation of Substation of Tripura

Sl.No.	Transmission System	Estimated Cost (in Rs. Cr.)	Remarks
1.	Augmentation of transformer capacity by • replacement of all 132/33 kV ICT with 3x80 MVA or 4x50 MVA ICT and • addtional 132/11 kV 20 MVA ICT at **79 Tilla Grid S/s** *(After augmentation Total ICT capacity: 132/33 kV : 3x80 MVA or 4X50 MVA and 132/11 kV : 2x20 MVA)*	27.16	**Time frame: 2027-28**
2.	Augmentation of transformer capacity by replacement of all 132/33 kV ICT and one addtitional ICT with 3x80 MVA at **Surajmaninagar S/s** *(After augmentation Total ICT capacity: 132/33 kV 3x80 MVA)*	13.58	**Time frame: 2027-28**
3.	Augmentation of transformer capacity by replacement of ICT with 132/33 kV, 2x25MVA & 132/11kV, 1x15MVA S/s at **PK Bari S/s** *(After augmentation Total ICT capacity: 132/33 kV with 2x25 MVA and 132/11 kV 1x15 MVA)*	18.19	**Time frame: 2027-28**
4.	Augmentation of transformer capacity by installation of additional 1x25 MVA ICT at **132/33 kV Mission Tilla S/s** *(After augmentation Total ICT capacity: 2x25 MVA)*	18.19	**Time frame: 2028-29**
5.	Augmentation of transformer capacity by replacement of all 132/33 kV ICT with 2x50MVA at **132/33 kV, Bodhjungnagar S/s** *(After augmentation Total ICT capacity:2x50 MVA)*	24.98	**Time frame: 2028-29**
6.	Augmentation of transformer capacity by installation of ICTs with 132/33 kV, 2x15 MVA + 132/11 kV 2x15MVA at **Gamaitilla S/s** *(After augmentation Total ICT capacity: 132/33 kV 2x15 MVA and 132/11 kV 2x15 MVA)*	9.30	**Time frame: 2028-29**
7.	Augmentation of transformer capacity by installation of ICTs with • 132/33 kV, 1x16 MVA + 1x15 MVA + • 132/11 kV, 1x15 MVA at **Kamalpur S/s** *(After augmentation Total ICT capacity: 132/33 kV 1x16 MVA + 1x15MVA and 132/11kV 1x10 MVA + 1x15MVA)*	9.30	**Time frame: 2028-29**

D. Reconductoring of existing transmission lines

Table 14-29 Reconductoring of existing transmission lines of Tripura

Sl.No.	Transmission System	Estimated Cost (in Rs. Cr.)	Remarks
1.	Surjamaninagar (TSECL) – LILO point of Surjamaninagar (ISTS) 132 kV S/c line (5.5 km loop in amd 5.5 km loop out) with 800 A HTLS along with upgradation of requisite bay equipment	8.84	**Time frame: 2026-27** TSECL has informed that as these proposals are of urgent nature, they are seeking funding from other sources.
2.	Bodhjungnagar (TSECL) – LILO point of Surjamaninagar (ISTS) 132 kV S/c line (6.5 km loop in & 6.5 km loop out km) with 800 A HTLS along with upgradation of requisite bay equipment	10.12	**Time frame: 2026-27** TSECL has informed that as these proposals are of urgent nature, they are seeking funding from other sources.
3.	Surjamaninagar – Bodhjungnagar 132 kV S/c line (18.5 ckm) with 800 A HTLS along with upgradation of requisite bay equipment	14.90	**Time frame: 2026-27** TSECL has informed that as these proposals are of urgent nature, they are seeking funding from other sources.
4.	Ambassa – LILO point of P.K. Bari (ISTS) 132 kV S/c line via Manu (36.5 ckm) with 800 A HTLS along with upgradation of requisite bay equipment	27.37	**Time frame: 2026-27** TSECL has informed that as these proposals are of urgent nature, they are seeking funding from other sources.
5.	P.K. Bari (TSECL) – LILO point of P.K. Bari (ISTS) 132 kV S/c line via Manu (6.5 ckm) with 800 A HTLS along with upgradation of requisite bay equipment	9.24	**Time frame: 2026-27** TSECL has informed that as these proposals are of urgent nature, they are seeking funding from other sources.
6.	P.K. Bari – Kumarghat (PGCIL) 132 kV S/c line (2.5 ckm) with 800 A HTLS along with upgradation of requisite bay equipment	3.12	**Time frame: 2026-27** TSECL has informed that as these proposals are of urgent nature, they are seeking funding from other sources.
7.	Udaipur – Palatana 132kV S/c line (12 ckm) with 800 A HTLS along with upgradation of requisite bay equipment	9.97	**Time frame: 2027-28**
8.	Udaipur – Rokhia 132 kV S/c line-(46 ckm) with 800 A HTLS along with upgradation of requisite bay equipment	25.72	**Time frame: 2026-27**

Sl.No.	Transmission System	Estimated Cost (in Rs. Cr.)	Remarks
			TSECL has informed that as these proposals are of urgent nature, they are seeking funding from other sources.
9.	Ambassa – Kamalpur 132 kV S/c line-(31 ckm) with 800 A HTLS along with upgradation of requisite bay equipment	19.72	**Time frame: 2026-27** TSECL has informed that as these proposals are of urgent nature, they are seeking funding from other sources.
10.	Restringing of P.K.Bari (TPTL) – Dharmanagar 132 kV S/c line (36.5 ckm) with ACSR Panther or its equivalent conductor along with upgradation of requisite bay equipment.	6.71	**Time frame: 2029-30**
11.	Restringing of Dharmanagar (TPTL) – Durllavchera (AEGCL) 132 kV S/c line (13 ckm) (*Inter-State Line*) with ACSR panther or its equivalent conductor along with upgradation of requisite bay equipment	6.74	**Time frame: 2029-30** The is ISTS between Tripura and Assam Tripura section: 13 km
12.	Restringing of Gamaitilla – Dhalabil 132 kV S/c line (30.4 ckm) ACSR panther or its equivalent conductor along with upgradation of requisite bay equipment	20.55	**Time frame: 2028-29**
13.	Rabindra Nagar – Monarchak 132 kV D/c (5.24 ckm) with 800 A HTLS along with upgradation of requisite bay equipment	4.54	**Time frame: 2026-27** TSECL has informed that they are seeking funding from other sources.

14.11.8. **Sikkim**

A. New substations alongwith the associated transmission lines

Table 14-30 New substations alongwith the associated transmission lines of Sikkim

S.No	Name of the proposal	Estimated Cost (in Rs. Cr.)	Remarks
1.	**i. Establishment of Assam Lingzey 2x10MVA, 66/11kV S/s**	33.15	**Time frame: 2027-28**
	ii. Assam Lingzey-LLHP 66 kV D/c line (10 ckm) alongwith 2 Nos. of bay at LLHP	34.52	
2.	**i. Establishment of Ingtang (Yuksom) 66/11 kV , 2x10 MVA S/s**	33.15	**Time frame: 2029-30**
	ii. Relichu – Yuksom 66 kV S/c line (14 ckm) alongwith 01 No. of 66 kV bay at Relichu	49.92	
	iii. Pelling – Yuksom 66 kV S/c line(18 ckm) alongwith 01 No. of 66 kV bay at Pelling S/s	62.6	

S.No	Name of the proposal	Estimated Cost (in Rs. Cr.)	Remarks
3.	i. **Establishment of Dentam 66/11 kV, 2x5 MVA S/s**	31.23	**Time frame: 2027-28**
	ii. Dentam – Pelling 66 kV S/c line(12 ckm) alongwith 01 No. of 66 kV bay at Pelling S/s	43.58	
	iii. Dentam – Rinchenpong 66 kV S/c line (16 ckm) alongwith 01 No. of 66 kV bay at Rinchenpong	56.26	
4.	**i. Establishment of Rabomchu (New) (Chungthang), 66/11 kV, 2×15 MVA S/s**	33.73	**Time frame: 2026-27**
	ii. LILO of Singhik – Lachen 66 kV Line at Rabomchu (New) from the junction point of 220 kV D/c (twin Moose) and 66 kV conductor with Singhik – Rabomchu (new) section with 220 kV D/c (twin moose) conductor and Rabomchu (new) – Lachen section with 66 kV D/c conductor - (7 km loop in and 7 km loop out)	32.83	
	ii. LILO of Rabom – Maltin 66 kV S/c line at Rabomchu (New) (9 km loop in and 9 km loop out)	53.28	

B. New transmission lines

Table 14-31 New transmission lines of Sikkim

S.No	Transmission lines proposed	Estimated Cost (in Rs. Cr.)	Remarks
1.	**Rorathong – Rhenock 66 kV S/c on D/c line** (5.4 ckm) alongwith associated bay at both end	47.47	**Time frame: 2027-28**
2.	**Topakhani – Samardung 66 kV S/c line** (5.1 ckm) alongwith associated bay at both end	27.24	**Time frame: 2027-28**
3.	**Melli (132/66 kV S/s) – Melli (66/11 kV S/s) D/c 66 kV line** (0.2 ckm) alongwith associated bays at both end	23.08	**Time frame: 2027-28**

C. Augmentation of 132 kV Sub Station

Table 14-32 Augmentation of 132 kV Sub Station of Sikkim

Sl. No.	Details of the Proposed transformation Capacity	Estimated Cost (in Rs. Cr.)	Remarks
1.	Augmentation of transformer capacity by additional 1x50 MVA 132/66 kV ICT along with one No. 132/66 kV ICT bay at **Melli 132/66 kV S/s**. *(After augmentation Total ICT capacity: 132/66 kV, 3x50 MVA)*	11.09	**Time frame: 2026-27**
2.	Augmentation of transformer capacity by replacement of 2x5 MVA, 66/11 kV with 2x15 MVA 66/11 kV ICT at **Phodong 66/11 kV S/s** *(After augmentation Total ICT capacity: 66/11 kV 2x15 MVA)*	15.83	**Time frame: 2027-28**
3.	Augmentation of transformer capacity by replacement of 2x2.5 MVA, 66/11 kV transformer with 2x15 MVA ICTs **at Namchi 66/11 kV S/s** *(After augmentation Total ICT capacity: 66/11 kV 2x15 MVA)*	15.83	**Time frame: 2027-28**

Sl. No.	Details of the Proposed transformation Capacity	Estimated Cost (in Rs. Cr.)	Remarks
4.	Augmentation of transformer capacity by replacement 1x5 MVA and 1x10 MVA, 66/11 kV transformer S/s with 2x15 MVA ICTs at **Melli 66/11 kV S/s** *(After augmentation Total ICT capacity: 66/11 kV 1x10 MVA + 2x15 MVA)*	15.83	**Time frame: 2027-28**
5.	Augmentation of transformer capacity with additional 132/66 kV, 20 MVA ICT alongwith extension of 132 kV Bay at **Gyalshing 132/66 kV S/s** *(After augmentation Total ICT capacity: 2x 20 MVA)*	10.90	**Time frame: 2026-27**

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

Sl. No	State	Parameter	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-31	FY 2031-32
1.	Arunachal Pradesh	MVA Capacity Addition	0	160	0	0	0	0
		ckm Addition	161	137	100	355	0	0
		Tentative expenditure (in Rs. Crs.)	99	321	185	352	0	0
2.	Assam	MVA Capacity Addition	760	1800	2440	480	620	160
		ckm Addition	498	573	1065	296	438	30
		Tentative expenditure (in Rs. Crs.)	559	1433	2047	319	625	71
3.	Manipur	MVA Capacity Addition	0	0	150	315	0	0
		ckm Addition	2	0	6	275	60	142
		Tentative expenditure (in Rs. Crs.)	2	0	104	320	54	113
4.	Meghalaya	MVA Capacity Addition	165	170	0	0	100	0
		ckm Addition	402	80	62	0	156	310
		Tentative expenditure (in Rs. Crs.)	657	285	16	0	407	557
5.	Mizoram	MVA Capacity Addition	219	0	25	0	0	0
		ckm Addition	158	0	298	70	0	0
		Tentative expenditure (in Rs. Crs.)	101	0	273	130	0	0
6.	Nagaland	MVA Capacity Addition	0	0	0	0	300	160

Sl. No	State	Parameter	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-31	FY 2031-32
		ckm Addition	0	0	0	0	114	465
		Tentative expenditure (in Rs. Crs.)	0	0	0	0	334	817
7.	Tripura	MVA Capacity Addition	0	530	610	0	0	0
		ckm Addition	170	31	194	110	0	0
		Tentative expenditure (in Rs. Crs.)	124	142	897	168	0	0
8.	Sikkim	MVA Capacity Addition	100	130	0	20	0	0
		ckm Addition	32	49	0	32	0	0
		Tentative expenditure (in Rs. Crs.)	142	344	0	146	0	0
TOTAL		***MVA Capacity Addition***	***1244***	***2790***	***3225***	***815***	***1020***	***320***
		ckm Addition	***1423***	***870***	***1725***	***1138***	***768***	***947***
		Tentative expenditure (in Rs. Crs.)	***1684***	***2525***	***3522***	***1435***	***1420***	***1558***

14.11.10. Summary of state-wise tentative expenditure required for implementation of above recommended proposals is given below:

Sl. No.	State	Estimated Peak Electricity Demand 2031-32 (MW)	MVA Capacity Addition /Augmentation (in MVA)	Transmission Line addition / Reconductoring (in ckm)	Tentative expenditure (in Rs. Crs)
1.	Arunachal Pradesh	560	160	753	**956**
2.	Assam	6247	6260	2900	**5054**
3.	Manipur	470	465	485	**593**
4.	Meghalaya	660	435	1010	**1922**
5.	Mizoram	331	244	526	**504**
6.	Nagaland	404	460	579	**1151**
7.	Tripura	731	1140	505	**1331**
8.	Sikkim	241	250	113	**632**
Total			**9414**	**6871**	**12143**

14.11.11. The power map of the NER States, including the above planned system is attached at **Exhibit -14.1.**

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Minutes of meeting held on 17.01.2024

No.6/5/2022-Trans
Government of India / भारत सरकार
Ministry of Power / विद्युत मंत्रालय
Transmission Division / पारेषण प्रभाग
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श्रम शक्ति भवन, रफी मार्ग, नई दिल्ली- 110001
दिनांक: 15th February, 2024

Office Memorandum

Subject: Meeting to discuss Intra-State Transmission System Strengthening Requirement of North Eastern States and Sikkim by the year 2030.

The undersigned is directed to forward herewith the minutes of the meeting held under the chairmanship of Secretary (Power) on the aforementioned subject on 17.01.2024 at 02:00 PM, for information and further necessary action.

2. It is requested that the action taken may please be shared with this Ministry, immediately.

15/2/24

(Bihari Lal)
Under Secretary to the Govt of India
Telefax: 23325242
Email: transdesk-mop@nic.in

Encl: (2)

To,

1. Chairperson, CEA, New Delhi.
2. Member (PS), CEA, New Delhi.
3. COO CTUIL, Gurugram.

Copy to:

1. Sr. PPS/ PPS/ PS to Secretary (Power)/ AS(Trans)/ JS(Trans)/ Director(Trans), M/o Power.

GOVERNMENT OF INDIA
MINISTRY OF POWER
***

MINUTES OF THE MEETING

Venue: Conference Hall, 2nd Floor, Shram Shakti Bhawan
Date of meeting: Wednesday, 17th January, 2024
Time of Meeting: 02:00 PM.
***

Subject: Meeting to discuss Intra-State Transmission System Strengthening Requirement of North Eastern States and Sikkim by the year 2030.

A meeting was held under the chairmanship of Secretary (Power). The list of participants is at **Annexure I.**

2. Chief Engineer (PSPA-II), CEA made a presentation on the subject **(Annexure II)**. He stated that, it is expected that the peak demand in North Eastern Region (NER) will increase from 3427 MW in 2021-22 to 5835 MW by 2030. Considering the increase in demand and reliability requirements, the InSTS scheme for NER and Sikkim is formulated. It comprises 120 elements. This will increase the transformation capacity by 5GVA from 40 GVA to 45 GVA. The InSTS network length will increase by 4375 ckm from 36,811 ckm to 41,186 ckm. Proposed cost is Rs. 6642 Cr. Cost estimates as provided by States have been considered.

3. After detailed deliberations, following directions were issued:

(i) Resource adequacy plans of the States to be factored in while preparing the scheme. [A: CEA]

(ii) Evacuation plans of small hydro plants also to be included. [A: CEA]

(iii) Existing as well as planned network to be plotted on PM GatiShakti (PMGS) National Master Plan. [A: CEA]

(iv) The requirement of 400 kV Substations/ network in Assam to be examined after optimizing the cost for inclusion either under the proposed scheme and/or under ISTS. [A: AS (SN)]

(v) Separate plan for required distribution network (downstream) to also be prepared, if required. [A: CEA]

(vi) Latest SOR of States along with annual escalation during project period to be considered while preparing the cost estimates. [A: CEA]

The meeting ended with a vote of thanks to all participants.

Annexure I

Date/time of the meeting: 17.01.2024 at 02.00 PM
Venue: Conference Room, 2nd Floor, Shram Shakti Bhawan, Ministry of Power.

List of Participants

Ministry of Power

1. Shri Pankaj Agarwal, Secretary (Power)--- In the Chair
2. Shri Srikant Nagulapalli, Additional Secretary (Trans)
3. Dr. D. Sai Baba, Joint Secretary (Trans)
4. Shri Om Kant Shukla, Director (Trans)

Central Electricity Authority (CEA)

1. Shri A. K. Rajput, Member (PS)
2. Shri Rakesh Goyal, Chief Engineer(PSPA-II)
3. Shri B.S. Bairwa, Director (PSPA-II)
4. Shri Deepanshu Rastogi, Deputy Director (PSPA-II)

CTUIL

1. Shri Ashok Pal, Deputy COO
2. Shri Rajesh Kumar, Sr. GM
3. Shri Manish Ranjan Keshari, Chief Manager

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List of the elements under North Eastern Region Power System Improvement Project (NERPSIP)

A. Assam

S No.	Name of Line/Substation	Sch./Ant. Comp.	Status
1.	Tinsukia – Behiating (new Dibrugarh) 220 kV D/C line	Mar'20	Completed in Feb'23
2.	Dhemaji – Silapathar 132 kV S/c on D/c line	Feb'20	Completed in Dec'21
3.	Rupai – Chapakhowa 132 kV S/c on D/c line	Feb'20	Completed in Mar'21
4.	LILO of one circuit of Rangia – Rowta 132 kV D/c line at Tangla	Jan'20	Completed in Jan'22
5.	Amingaon – Hazo 132 kV D/c line	Jan'20	Completed in Dec'22
6.	LILO of Kamalpur – Sishugram 132kV S/c line at Amingaon 220/132kV S/s	Jan'20	Completed in Mar'22
7.	LILO of Kamalpur – Kamakhya 132kV S/c line at Amingaon 220/132kV S/s	Jan'20	Completed in Mar'22
8.	LILO of Golaghat – Bokajan 132 kV S/c line at Sarupathar	Jan'20	Completed in Mar'21
9.	Sonabil – Tezpur (New) 132 kV D/c line	Jan'20	Completed in Feb'22
10.	LILO of Jorhat (Gormur) – Nazira 132 kV S/c on D/c at Teok	Jan'20	Completed in Feb'21
11.	Rangia – Amingaon 220 kV D/C line	May'24	Completed in May'24
12.	2x31.5 MVA, 132/33 kV new sub-station at Silapathar	Apr'19	Completed in Mar'22
13.	2x50 MVA, 132/33 kV new sub-station at Tezpur (New)	Apr'19	Completed in Feb'21
14.	Augmentation of Samaguri sub-station by replacing existing 200/132 kV, 2x50 MVA transformers by 200/132kV, 2x160 MVA transformers and installation of 132/33kV, 50MVA transformer.	Apr'19	1 No. 220/132 KV, 160 MVA transformer successfully charged in Nov'2018; 1 No. 132/33kV, 50MVA transformer charged in Aug'19; 1 No. 220/132 KV, 160 MVA transformer successfully charged in June'20.
15.	132kV Dhemaji (Extension) Substation	Apr'19	Completed in Mar'19
16.	132kV Sonabali (Extension) Substation	Apr'19	Completed in Mar'19
17.	2x31.5 MVA, 132/33 kV new Sub-station at Teok	Apr'19	Completed in Feb'21
18.	2x100 MVA, 220/132 kV substation at Behiating (New Dibrugarh)	Apr'19	Completed in Jan'22
19.	2x31.5 MVA, 132/33 kV new sub-station at Sarupathar	Apr'19	Completed in July'21

S No.	Name of Line/Substation	Sch./Ant. Comp.	Status
20.	2x31.5 MVA, 132/33 kV new sub-station at Chapakhowa	Apr'19	Completed in Mar'21
21.	220 kV Tinsukia (Extension) Substation	Apr'19	Completed in Sep'21
22.	132 kV Rupai (Extension) Substation	Apr'19	Completed in Sep'20
23.	2x31.5 MVA, 132/33 kV new sub-station at Tangla	Apr'19	Completed in Aug'21
24.	2x31.5 MVA, 132/33 kV new sub-station at Hazo	Apr'19	Completed in Dec'21
25.	220 kV Rangia (Extension) Substation	Apr'19	Completed in March'19
26.	132 kV Kahilipara (Extension) Substation	Apr'19	Completed in April'19
27.	Augmentation of Dhaligaon 132/33 kV sub-station by replacing existing 2x25 MVA transformer by 2x50MVA transformer	Apr'19	Transformer 1: charged in Jan'19. Transformer 2: charged in Oct'20.
28.	2x50 MVA, 132/33 kV new sub-station at Paltan Bazar (GIS)	Feb'19	Completed in Sep'21
29.	50 MVA, 132/33 kV new sub-station at Guwahati Medical College (GIS)	Feb'19	Completed in Mar'21
30.	2x160 MVA, 220/132 kV GIS at Amingaon	Feb'19	Completed in Feb'22
31.	Kamakhya – Paltan Bazar 132 kV S/C Underground Cable	Feb'19	Completed in March'23
32.	220 kV Underground cable from Amingaon to Rangia (2 km)	Feb'19	Completed in March'23
33.	132 kV Underground cable from GMCH to Kahilipara (6.4 km)	Jan'20	Completed in July'23
34.	132/33 kV Silapathar (New) S/s to 33/11 kV Silapathar-II (New) S/s	Apr'19	Completed in Nov'21
35.	LILO of existing 33 kV Silapathar-Jonai line at 132/33 kV Silapathar new S/	Apr'19	Completed in Mar'21
36.	Existing 132/33 kV Samaguri S/s to 33/11 kV Hathimurah-2 (New)S/s-	Apr'19	Completed in Jun'20
37.	132/33 kV Tezpur (New) S/s to 33/11 kV LGM hospital (New)S/s -	Apr'19	Completed in Feb'21
38.	132/33 kV Tezpur (New) S/s to 33/11 kV Parowa Existing S/s-	Apr'19	Completed in Oct'20.
39.	132/33 kV Tezpur (New) S/s to 3/11 kV Dolabari Existing S/s-	Apr'19	Completed in Feb'21
40.	Existing Shankardeo nagar to 33/11 kV Mailo (New)S/s	Apr'19	Completed in Jun'21
41.	2X5 MVA, 33/11kV new sub-station at Silapathar-II	Apr'19	Completed in May'22

S No.	Name of Line/Substation	Sch./Ant. Comp.	Status
42.	2X5 MVA, 33/11 kV at Hathimurah-2	Apr'19	Completed in Oct'19
43.	2X5 MVA, 33/11 kV new sub-station at Mailo	Apr'19	Completed in Feb'21
44.	2X10 MVA, 33/11 kV new sub-station at LGM hospital	Apr'19	Completed in Oct'20
45.	Extension of Parowa S/s	Apr'19	Completed in Dec'19
46.	Extension of Dolabari S/s	Apr'19	Completed in Oct'20.
47.	Extension of Samguri S/s	Apr'19	Completed in July'19
48.	Extn. of Shankardev nagar existing S/s	Apr'19	Completed in Aug'19
49.	Extn. of Silapatahar existing S/s	Apr'19	Completed in June'19
50.	220/132 kV Behiating (New) S/s to 33/11 kV Bogibil (New) S/s	Dec'18	Completed in Mar'21
51.	220/132 kV Behiating (New) S/s to 33/11 kV Dibrugarh (New) S/s	Dec'18	Completed in Mar'21
52.	132/33 kV Existing Dibrugarh S/s to 33/11 kV Romai (New) S/s	Dec'18	Completed in Dec'21
53.	132/33 kV Chapakhowa (New) S/s to 33/11 kV Chapakhowa existing S/s	Dec'18	Completed in Jun'20
54.	132/33 kV Sarupathar (New) S/s to Barapathar Existing 33/11 kV S/s	Dec'18	Completed in Dec'20
55.	132/33 kV Sarupathar (New) S/s to Sarupathar Existing 33/11 kV S/s	Dec'18	Completed in Dec'20
56.	132/33 kV Sarupathar (New) S/s to Sariajhan Existing 33/11 kV S/s	Dec'18	Completed in Nov'21
57.	132/33 kV Teok (New) S/s to Teok Existing 33/11 kV S/s	Dec'18	Completed in Dec'20
58.	132/33 kV Teok (New) S/s to Kakojaan Existing 33/11 kV S/s	Dec'18	Completed in Dec'21
59.	132/33 kV Teok (New) S/s to Zangi Existing 33/11 kV S/s	Dec'18	Completed in Feb'21
60.	132/33 kV Teok (New) S/s to Amguri Existing 33/11 kV S/s	Dec'18	Completed in Sep'21
61.	2X10 MVA, 33/11 kV new sub-station at Romai	Dec'18	Completed in Nov'20
62.	2X5 MVA, 33/11 kV new sub-station at Bogibil	Dec'18	Completed in Feb'20.
63.	2X10 MVA, 33/11 kV new sub-station at Dibrugarh	Dec'18	Completed in Aug'20
64.	Extn. of Dibrugarh 132/33 kV S/s	Dec'18	Completed in June'19
65.	Extn. of Chapakhowa 33/11 kV S/s	Dec'18	Completed in June'19
66.	Extn. of Barapathar 33/11 kV S/s	Dec'18	Completed in June'19
67.	Extn. of Sarupathar 33/11 kV S/s	Dec'18	Completed in July'19

S No.	Name of Line/Substation	Sch./Ant. Comp.	Status
68.	Extn. of Sariajhan 33/11 kV S/s	Dec'18	Completed in Oct'20
69.	Extn. of Teok 33/11 kV S/s	Dec'18	Completed in Sept'19
70.	Extn. of Kakojaan 33/11 kV S/s	Dec'18	Completed in Aug'20
71.	Extn. of Janji 33/11 kV S/s	Dec'18	Completed in Dec'19
72.	Extn. of Amguri 33/11 kV S/s	Dec'18	Completed in Dec'20
73.	Extn. of Behiating 33/11 kV S/s	Dec'18	Completed in Mar'20
74.	132/33kV Tangla (New) S/s to 33/11 kV Harsingha (New)S/s	Dec'18	Completed in Feb'21
75.	132/33 kV Tangla (New) S/s to Paneri Existing 33/11 kV S/s	Dec'18	Completed in Mar'21
76.	132/33 kV Tangla (New) S/s to Existing Kalaigaon 33/11 kV S/s	Dec'18	Completed in Jan'21
77.	132/33 kV Tangla (New) S/s to Existing Khairabari 33/11 kV S/s	Dec'18	Completed in Mar'21
78.	132/33kV Tangla (New) S/s to Existing Tangla 33/11kV S/s	Dec'18	Completed in Oct'20
79.	132/33 kV Hazo (New) S/s to 33/11kV Sesa (New)S/s	Dec'18	Completed in Feb'21
80.	132/33 kV Hazo (New) S/s to 33/11 kV Ramdiya (New)S/s	Dec'18	Completed in Dec'20
81.	132/33kV Hazo (New) S/s to 33/11kV Domdoma-hazo (New)S/s	Dec'18	Completed in Dec'20
82.	132/33 kV Hazo (New) S/s to 33/11 kV Mukalmuwa existing S/s	Dec'18	Completed in Dec'21
83.	2X5 MVA, 33/11 kV new sub-station at Harsingha	Dec'18	Completed in Nov'20
84.	2X5 MVA, 33/11 kV new sub-station at Sesa	Dec'18	Completed in Nov'19
85.	2X5 MVA, 33/11 kV new sub-station at Ramdiya	Dec'18	Completed in July'20
86.	33/11 kV new sub-station at Domdoma-Hazo	Dec'18	Completed in Dec'20
87.	2X10 MVA, 33/11 kV new sub-station at Chabipool	Dec'18	Completed in Sep'20
88.	Extn. Paneri Existing 33/11 kV S/s	Dec'18	Completed in Mar'19
89.	Kalaigaon Existing 33/11 kV S/s	Dec'18	Completed in Dec'20
90.	Tangla Existing 33/11 kV S/s	Dec'18	Completed in Nov'19
91.	Khairabari Existing 33/11 kV	Dec'18	Completed in April'19
92.	33/11 kV Mukalmuwa existing S/s	Dec'18	Completed in April'19
93.	Existing Paltanbazaar S/s	Dec'18	Completed in Mar'19

S No.	Name of Line/Substation	Sch./Ant. Comp.	Status
94.	Existing Judges Field S/s	Dec'18	Completed in Dec'19
95.	Existing Jail (Fancy bazaar) S/s	Dec'18	Completed in Apr'19.
96.	2X10 MVA, 33/11 kV new sub-station at GS Road	Mar'19	Completed in Mar'21
97.	2X10 MVA, 33/11 kV new sub-station at GMC-2	Mar'19	Completed in Mar'21
98.	2X10 MVA 33/11 kV new sub-station at Tarun Nagar	Mar'19	Completed in Jan'22
99.	2X10 MVA, 33/11 kV new sub-stationat Arya College (New) GIS S/s	Mar'19	Completed in Sep'21
100.	Extn. Of Existing GMC S/s	Mar'19	Completed in Apr'19
101.	Extn. Of Existing Ulubari S/s	Mar'19	Completed in May'19
102.	132/33 kV Guwahati M.C. (New) S/s to GS Road -(New) GIS S/s	Mar'19	Completed in Nov'20
103.	132/33 kV Guwahati M.C. (New) S/s to GMC-2-(New) GIS S/s	Mar'19	Completed in Oct'20
104.	132/33 kV GMC (New) S/s to Tarun Nagar -(New) GIS S/s	Mar'19	Completed in Jul'21
105.	132/33 kV GMC (New) S/s to Arya College -(New) S/s	Mar'19	Completed in Nov'20
106.	132/33 kV Guwahati M.C. (New) S/s to GMC Existing S/s	Mar'19	Completed in Dec'20
107.	Double Ckt. 132/33 kV Guwahati M.C. (New) S/s to Ullubari Existing S/s	Mar'19	Completed in Nov'20
108.	132/33 kV GMC (New) S/s to Chabipool -(New) S/s changed to Hengrabari	Mar'19	Completed in Feb'22
109.	132/33 kV Paltanbazar (New) S/s to Existing Paltan bazaar S/s	Mar'19	Completed in Nov'20
110.	132/33 kV Paltanbazar (New) S/s to Judges field Existing S/s	Mar'19	Completed in Mar'21
111.	132/33 kV Paltanbazar (New) S/s to Jail (Fancy bazaar) Existing S/s	Mar'19	Completed in Feb'21
112.	132 kV Narengi – 33 kV Bamunimaidam	Mar'19	Completed in Nov'22
113.	132 kV Narengi – 33 kV Uzan Bazar	Mar'19	Completed in Aug'23
114.	132kV Narengi – 33 kV Zoo Road	Mar'19	Completed in Jan'23
115.	33 kV Bamunimaindam – 33 kV Chandmari	Mar'19	Completed in Sep'22
116.	132 kV Paltan Bazar to 33 kV Stadium	Mar'19	Completed in Oct'21

B. Meghalaya

S No.	Name of Line/ Substation	Sch./Ant. Comp.	Status
1.	Byrnihat (Killing) – Mawngap – New Shillong 220 kV D/c line	Jun'19	Complete in Nov'23
2.	LILO of both circuits of MLHEP – Khliehriat 132 kV D/c line at Mynkre	Jun'19	Completed in Dec'20
3.	Phulbari – Ampati 132 kV D/c line	Jun'19	Completed in June'20
4.	2x50 MVA, 132/33 kV new sub-station at Mynkre	Oct'18	Completed in Mar'23
5.	2x50 MVA, 132/33 kV new sub-station at Phulbari	Oct'18	Completed in Jan'22
6.	132 kV Ampati (Extension) Substation	Oct'18	Completed in Feb'21
7.	2x160 MVA, 220/132 kV Mawngap GIS	Mar'19	Completed in Feb'21
8.	2x160 MVA, 220/132 kV + 2x50 MVA, 132/33 kV GIS at New Shillong	Mar'19	Completed in April'21
9.	220 kV Byrnihat (Killing) AIS Substation Extension	Mar'19	Completed in Nov'19
10.	33/11 kV new sub-station at Mynkre	Jan'19	Completed in Aug'20
11.	33/11 kV new sub-station at Rymbai	Jan'19	Completed in Jan'21
12.	33/11 kV new sub-station at Latyrke	Jan'19	Completed in Feb'20
13.	33/11 kV new sub-station at Byndihati	Jan'19	Completed in Feb'21
14.	132/33 kV Mynkre (New) – 33/11kV Mynkre	Jan'19	Completed in Sep'21
15.	132/33 kV Mynkre (New) – Rymbai	Jan'19	Completed in Mar'21
16.	132/33 kV Mynke – Lumshnong	Jan'19	Completed in Mar'21
17.	132/33 kV Mynkre – Latykre (Sutunga)	Jan'19	Completed in Feb'20
18.	33/11 kV new sub-station at Chibinang	Nov'18	Completed in July'19
19.	33/11 kV new sub-station at Raksambre (Potamati)	Nov'18	Completed in Sep'19
20.	33/11 kV new sub-station at Rajaballa Bhaitbari	Nov'18	Completed in Mar'22
21.	Extn. of 33/11 kV Phulbari S/s	Nov'18	1x5 MVA transformer charged in May'18 & other 1x5 MVA T/F charged in Nov'19
22.	Extn. of 33/11 kV Trikila S/s	Nov'18	Completed in Nov'20

S No.	Name of Line/ Substation	Sch./Ant. Comp.	Status
23.	132/33 kV Phulbari -Rajballa Bhaitbari	Nov'18	Completed in Mar'21
24.	132/33 kV Phulbari – Chibinang	Nov'18	Completed in Jul'19
25.	33/11 kV Tikrila – Raksambre	Nov'18	Completed in Jan'21
26.	132/33 KV Phulbari (New) - Phulbari (existing)	Nov'18	Completed in Feb'21
27.	LILO of Tikrila - Phulbari at Phulbari(New);	Nov'18	Completed in Feb'21
28.	Existing 33 kV Tikrila-Phulbari from tapping point to Tikrila SS	Nov'18	Completed in Mar'22
29.	33/11 kV new sub-station at Mawkynrew	Nov'18	Completed in June'19
30.	33/11 kV new sub-station at Mawpat	Nov'18	Completed in Sept'19
31.	33/11 kV new sub-station at Mawrenkneng	Nov'18	Completed in Feb'21
32.	33/11 kV new sub-station at New Shillong	Nov'18	Completed in Dec'19
33.	220/132/33kV New shillong – Mawpat	Nov'18	Completed in Mar'21
34.	33/11 kV SE Falls – Mawpat	Nov'18	Completed in July'21
35.	220/132/33 kV New Shillong - New Shillong	Nov'18	Completed in Jan'21
36.	220/132/33 kV New Shillong – Mawryngkneng	Nov'18	Completed in Jan'22
37.	LILO of exisiting Jowai-Landnongkrem Line at Mawryngkneng	Nov'18	Completed in Jan'21
38.	33/11 kV Jongksha-Mawkynrew	Nov'18	Completed in Jun'19
39.	Mawlyndeep to Mawryngkeng	Nov'18	Completed in Sep'22
40.	Extn of SE Falls 2x5 MVA to 2x10 MVA SS	Nov'18	Completed in Jun'19
41.	Extn of 33/11 kV Jongksha SS	Nov'18	Completed in Nov'19

C. Mizoram

S No.	Name of Line/ Substation	Sch./Ant. Comp.	Status
1.	Lungsen – Chawngte 132 kV S/c line (charged at 33 kV)	Mar'20	Completed in Sep'22
2.	Augmentation of Lunglei sub-station by replacing existing 2x12.5 MVA, 132/33 kV transformer with 2x25 MVA 132/33 kV transformer	Mar'20	Completed in Dec'21
3.	New sub-station at Lungsen with 132/33 kV, 2x12.5 MVA transformer	Mar'20	Completed in July'23
4.	New sub-station at W. Phaileng with 132/33 kV, 2x12.5 MVA transformer	May'20	Completed in April'22
5.	New 132/33kV sub-station at Marpara	May'20	Completed in March'23

6.	Chawngte – S. Bungtlang 132 kV S/c line via S. Bungtlang (to be charged at 33 kV)	May'20	Completed in March'23
7.	132 kV S/C Lunglei-Lungsen Interconnection	Dec'18	Completed in Jun'21
8.	West Phaileng – Marpara 132 kV S/c line on D/c tower	June'24	Completed in Jun'24
9.	33/11 kV South Bungtlang (New) Substation S/s	May'20	Completed in Mar'21
10.	Aug. 33kV West Paileng SS - addition of 2 new 33kV bays	May'20	Completed in Dec'20
11.	132/33kV Lungsen (new) - Lungsen line	May'20	Completed in Jan'21

D. Manipur

Sl No.	Name of line/ substation	Sch./Ant. Comp.	Status
1.	Imphal (PG) - Ningthoukhong 132 kV D/c line (33 km)	Nov'20	Completed in Mar'21
2.	Renovation of Yurembum – Karong - Mao (Manipur-Nagaland border) section of Yurembum-Karong-Kohima 132 kV S/c line (91 km)	Nov'20	Completed in Dec'21
3.	LILO of Yurembam (Imphal-State) – Karong 132 kV line at Gamphajol (1.4 Kms)	Nov'20	Completed in Sep'19
4.	Stringing of Yaingangpokpi - Kongba 132kV line (2ndckt) (33 km)	Nov'20	Completed in Dec'19
5.	Stringing of Kakching - Kongba 132kV line (2ndckt) (45 km)	Nov'20	Completed in Jan'20
6.	LILO of one circuit of Kongba – Kakching 132 kV D/c line (one ckt existing & other ckt under this scheme) at Thoubal 132/33kV substation (45 km)	Nov'20	Scope Deleted
7.	Rengpang-Tamenlong 132kV S/C line on D/C tower (19.5 km)	Nov'20	Completed in Apr'23
8.	2x20 MVA, 132/33 kV Gamphajol new sub-station	May'20	Completed in Feb'22
9.	Augmentation of Ningthoukhong by addition of 2nd transformer	May'20	Completed in Jan'22
10.	132 kV Imphal (PG) (Extension) Substation.	May'20	Completed in Oct'20
11.	Augmentation of Kongba by addition of 3rd transformer + 2 Line Bays:	Nov'20	Bay-1 charged in Dec'19. Bay-2 charged in July'20. Transformer charged in Oct'20.
12.	132 kV Kakching (Extension) Substation	Nov'20	Completed in Oct'19
13.	132 kV Yaingangpokpi (Extension) Substation	Nov'20	Completed in Nov'19
14.	132/33 kV Ukhrul (Augmentation) Substation	Nov'20	Completed in Feb'21

Sl No.	Name of line/ substation	Sch./Ant. Comp.	Status
15.	Extension of Rengpang SS	Jun'20	Completed in Dec'20
16.	Augmentation of Jiribam by addition of 2nd transformer	Jun'20	Completed in Aug'21
17.	132/33 kV Tamenglong (New) Substation	Jun'20/ Sept'24	Land acquisition : 100% Civil work: 90% Equipment received : 98% Equipment erected : 85%
18.	33/11 kV new sub-station at Hiyangthang	Nov'19	Completed in Dec'19
19.	33/11 kV new sub-station at Andro	Nov'19	Completed in May'20
20.	33/11 kV new sub-station at Pishum	Nov'19	Completed in Mar'21
21.	33/11 kV new sub-station at New Keithelmanbi	Nov'19	Completed in Feb'20
22.	33/11 kV new sub-station at Top Khonganggkhong	Nov'19	Completed in Feb'20
23.	Extn. of 33/11 kV Langdum S/s	Nov'19	Completed in Oct'19
24.	Extn. of 33/11 kV Mongsangei S/s	Nov'19	Completed in Jul'19
25.	Extn. of 33/11 kV Iroisemba S/s	Nov'19	Completed in Jul'19
26.	Extn. of 33/11 kV Porompat S/s	Nov'19	Completed in Jun'19
27.	Thoubal (Augmentation)	Nov'19	Completed in May'19
28.	Wangjing (Augmentation)	Nov'19	Completed in Aug'19
29.	Leimakhong (Augmentation)	Nov'19	Completed in May'19
30.	Kangpokpi (Augmentation)	Nov'19	Completed in Sep'19
31.	33/11 kV new sub-station at Lamphel (2x10 MVA)	Nov'19/ May'24	1x10MVA Transformer charged in May'24
32.	33/11 kV new sub-station at Takyel (2x5 MVA)	Nov'19/ May'24	1x5MVA Transformer charged in May'24
33.	LILO of Mongsangei to Kakwa at Pishum Sub-Station	Nov'19	Completed in Feb'21
34.	Mongsangei to hiyangthang	Nov'19	Completed in Dec'19
35.	LILO of Yurembum-Noney line at Keithelmanbi	Nov'19	Completed in Feb'20
36.	Iroisemba S/s to Lamphel S/s	Nov'19	Completed in Dec'21
37.	Existing Iroisemba SS to Takyel	Nov'19	Completed in Dec'22
38.	Top Khongnangkhong to Porompat	Nov'19	Completed in Feb'20
39.	Andro to Langdum S/s	Nov'19	Completed in May'20
40.	33/11 kV New Substation at Kwakta	Nov'19	Completed in Dec'19
41.	33/11 kV New Substation at Leimapokpam	Nov'19	Completed in Jan'20

Sl No.	Name of line/ substation	Sch./Ant. Comp.	Status
42.	Ningthoukhong(Augmentation)	Nov'19	Completed in Jun'19
43.	Yaingangpokpi(Augmentation)	Nov'19	Completed in Sep'19
44.	Nambol(Augmentation)	Nov'19	Completed in May'19
45.	Khwairakpan (Augmentation)	Nov'19	Completed in May'19
46.	Moirang Khunou(Augmentation)	Nov'19	Completed in Sep'19
47.	Jiribam(Augmentation)	Nov'19	Completed in Sep'19
48.	Khoupum (Augmentation)	Nov'19	Completed in Oct'19
49.	Tamenglong (Augmentation)	Nov'19	Completed in Sep'19
50.	Extn. of Nambol (bay addition) S/s	Nov'19	Completed in Jun'19
51.	Extn. of Existing Moriang S/s	Nov'19	Completed in Jul'19
52.	Moirang to Kwakta	Nov'19	Charged in Dec'19
53.	Existing Nambol S/s to Leinmapokpan	Nov'19	Charged in Jan'20
54.	33/11 kV New Substation at Porompat	Dec18	Completed in Jun'19
55.	33/11 kV New Substation at Thangal	Dec'18	Completed in Dec'19
56.	Aug. of Existing 33/11kV Khuman Lampak	Dec'18	Completed in Jan'19
57.	Extn. of Existing 33/11kV Khoupom	Dec'18	Completed in Apr'19
58.	1x5 MVA. Napetpalli (Augmentation)	Dec'18	Completed in Nov'18
59.	1x3.15 MVA Kamjong (Augmentation)	Dec'18	Completed in Jun'19
60.	1x3.15 MVA Saikul (Augmentation)	Dec'18	Completed in Dec'18
61.	1x3.15 MVA New Chayang (Augmentation)	Dec'18	Completed in Nov'18
62.	1x3.15 MVA Litan (Augmentation)	Dec'18	Completed in Jan'19
63.	Sanjenbam to Porompat	Dec'18	Completed in Jun'19
64.	Existing Khoupom to Thangal	Dec'18	Completed in Jan'21
65.	33/11 kV New S/s at Sanjenbam	Dec'18	Completed in Jul'19
66.	33/11 kV New S/s at Tuilaphai	Dec'18	Completed in Dec'18
67.	Extn. of Existing 33/11kV Napetpalli S/s	Dec'18	Completed in Dec'18
68.	1x5 MVA Karong (Augmentation)	Dec'18	Completed in Dec'18
69.	1x3.15 MVA Tadubi (Augmentation)	Dec'18	Completed in Dec'18
70.	1x3.15 MVA Maram (Augmentation)	Dec'18	Completed in Feb'19

Sl No.	Name of line/ substation	Sch./Ant. Comp.	Status
71.	LILO of existing 33 kV Churachandpur to Thankew line at Tuilaphai	Dec'18	Completed in Dec'18
72.	Existing Napetpalli to Sanjemba	Dec'18	Completed in Jun'19

E. Nagaland

S. No.	Name of line/ substation	Sch./Ant. Comp.	Status
1.	New Kohima – Mokokchung (PG) 220 kV S/c line on D/c tower	Jun'19	Completed in Sep'22
2.	New Kohima (Zadima) – New Secretariat Complex Kohima 132 kV D/c line	Jun'19	Completed in Feb'22
3.	Wokha (Doyang River) - Zunheboto – Mokokchung (Nagaland) 132 kV S/c	Dec'20	Completed in Feb'23
4.	LILO of Mokokchung (Nagaland) - Mariani (Assam) 132 kV D/c line at Longnak Works	Dec'20	Completed in Oct'20
5.	Tuensang – Longleng 132 kV S/c on D/c line	Dec'20	Completed in Jan'23
6.	LILO of Kohima – Wokha 132 kV S/c line at New Kohima	Dec'20	Completed in Mar'21
7.	LILO of Kohima – Meluri (Kiphire) 132 kV S/c line at Pfutsero	Dec'20	Completed in Nov'20
8.	2x25 MVA, 132/33 kV new sub-station at Longnak (Mongkolemba Junction)	Apr'20	Completed in Jun'21
9.	2x10 MVA, 132/33 kV new sub-station at Longleng	Apr'20	Completed in Dec'22
10.	2x25 MVA, 132/33 kV new sub-station at Zunheboto	Apr'20	Completed in Mar'23
11.	132kV Tuensang Substation Extension	Dec'24	Awarded to M/s GE in Aug'23
	Remark: The upgradation works of Tuensang substation was to be done originally by DoP, Nagaland. Due to paucity of funds with DoP, Nagaland, the proposal to upgrade existing 66/33kV Tuensang Sub-station to 132/33 kV level under NERPSIP was agreed technically by CEA in the meeting dated 30-05-2019. Despite of several discussions at various levels, work could not commence due to space constraints and non-inclusion of upgradation works in RCE as RCE was submitted earlier. MoP vide letter dated 7th Jan'22, communicated the concurrence/ approval to take-up the work with additional cost and additional time of 2 years. Due to reluctance of vendors in bidding process owing to tough area and limited scope of work, award of package delayed.		
12.	132kV Mokokchung (State) Substation Extension	Apr'20	Completed in Nov'20
13.	220kV Mokokchung (POWERGRID) Substation Extn	Apr'20	Completed in Apr'21
14.	2x25 MVA, 132/33 kV new sub-station at New Secretariat Complex Kohima	Dec'19	Completed in Sep'21
15.	220/132 kV New Kohima Substation (extension)	Dec'19	Completed in Nov'2020

S. No.	Name of line/ substation	Sch./Ant. Comp.	Status
16.	2x25 MVA, 132/33 kV new sub-station at Pfutsero	Apr'20/ Aug'24	Land acquisition : 100% Civil work: 85% Equipment received: 96% Equipment erected : 93%
17.	1x25 MVA, 132/33 kV transformer at Wokha (extension)	Apr'20	Completed in Nov'20
18.	33/11 kV New S/s at Longtho	Jan'20	Completed in Feb'21
19.	33kV Bay extension at Longnak	Jan'20	Completed in Nov'20
20.	Augmentation of 33kV Changtongya S/s	Jan'20	Completed in Jan'21
21.	Augmentation of 33kV Mangkolemba S/s	Jan'20	Completed in Nov'20
22.	Existing 33 kV Mok -Mariani line to prop. 33/11 kV Longtho S/s	Jan'20	Completed in Dec'20
23.	Prop.132/33 kV Longleng S/s to Prop. 33/11 kV Longleng town S/s	Jan'20	Completed in Aug'21
24.	LILO of Existing 33kV Mok -Mariani line at Exist. 33/11 kV Longnak S/s	Jan'20	Completed in Nov'20
25.	33/11 kV New S/s at Mokochung Town Power House	Jan'20	Completed in Sep'22
26.	33/11 kV New S/s at Mokochung Town Hospital Area	Jan'20	Completed in Jul'21
27.	33/11 kV New S/s at Zunheboto south point	Jan'20	Completed in Jan'21
28.	33 kV Bay extension at Mokokchung	Jan'20	Completed in Jan'21
29.	33 kV Bay extension at Suruhuto	Jan'20	Completed in Mar'21
30.	33 kV Bay extension at Akuloto	Jan'20	Completed in Jan'21
31.	33 kV Bay extension at Pughoboto	Jan'20	Completed in Nov'20
32.	33 kV Bay extension at Torogonyu	Jan'20	Completed in Dec'20
33.	Chukitong Existing S/s - Capacity Augmentation	Jan'20	Completed in Jan'21
34.	Tseminyu Existing S/s - Capacity Augmentation	Jan'20	Completed in Apr'21
35.	Wokha Power House Existing S/s - Capacity Augmentation	Jan'20	Completed in Mar'21
36.	Chukitong Existing S/s - Capacity Augmentation	Jan'20	Completed in Jan'21
37.	Tseminyu Existing S/s - Capacity Augmentation	Jan'20	Completed in Apr'21
38.	Wokha Power House Existing S/s - Capacity Augmentation	Jan'20	Completed in Mar'21
39.	Existing 66/33 kV Mokokchung S/s to New 33/11 kV S/s Mokokchung Town Power House	Jan'20	Completed in Aug'23

S. No.	Name of line/ substation	Sch./Ant. Comp.	Status
40.	Existing 66/33 kV Mokokchung S/s to New 33/11 kV S/s Mokokchung Town Hospital Area	Jan'20	Completed in Nov'21
41.	New 132/33 kV Zunheboto S/s to New 33/11 kV S/s Zunheboto South Point	Jan'20	Completed in Feb'21
42.	Existing 33/11 kV Suruhuto S/s to Exist. 33/11 kV S/s Akuloto	Jan'20	Completed in Aug'21
43.	Existing 33/11 kV Pughoboto S/s to Exist. 33/11 kV S/s Torogonyu	Jan'20	Completed in Mar'21
44.	33/11 kV New S/s at Lalmati	Dec'18	Completed in Jun'19
45.	33/11 kV New S/s at Zhadima (New Kohima)	Dec'18	Completed in Oct'20
46.	33/11 kV New S/s at Pfutsero	Dec'18	Completed in Dec'20
47.	Botsa (Augementation)	Dec'18	Completed in Jul'19
48.	Chakabhama (Augementation)	Dec'18	Completed in May'19
49.	ITI Kohima (Augementation)	Dec'18	Transformer-1 charged in Apr'19. Transformer-2 charged in Sep'19.
50.	33 kV TL from 132/33 kV new to 33/11 kV new Pfutsero S/s	Dec'18	Completed in Mar'21
51.	33/11 kV New S/s at Padam Pukhri	Dec'18	Completed in Mar'21
52.	33/11 kV New S/s at Tizit	Dec'18	Transformer-1 charged in Oct'19. Transformer-2 charged in Dec'19.
53.	Extn. of Existing 33/11kV Nagarjan	Dec'18	Completed in Dec'19
54.	Industrial Estate SS (Augementation)	Dec'18	Completed in Mar'19
55.	Refferal Hospital SS (Augementation)	Dec'18	Completed in Nov'20
56.	Existing 132/66/33 kV Nagarjan S/s to new 33/11 kV S/s Padampukhri	Dec'18	Completed in Dec'21

F. Tripura

S.No.	Name of line/ substation	Sch./Ant. Comp.	Status
1.	Udaipur - Bagafa 132 kV D/C line	Feb'20	Completed in Mar'22
2.	Bagafa – Belonia 132 kV D/C line	Feb'20	Completed in Aug'21
3.	132kV Interconnecting portion of 132kV Sabroom - Satchand at Satchand end	Feb'20	Completed in Mar'21
4.	Bagafa – Satchand 132 kV S/c on D/C line	Feb'20/ Sept'24	Line Length (km): 29.37 Tower Locations (Nos.) : 119 Foundation completed (Nos.) :119 Tower Erected (Nos.) : 119 Stringing completed (kms) :20
5.	LILO of one circuit of Surajmaninaqar - Rokhia 132 kV D/c line at Gokulnagar	Feb'20	Completed in Feb'21
6.	Belonia – Sabroom 132 kV D/C line	Feb'20	Completed in Dec'22
7.	132kV Interconnecting portion of 132kV Sabroom - Satchand at Sabroom end	Feb'20	Completed in Nov'20
8.	Rabindra Nagar – Belonia 132 kV D/C line	Feb'20/ Nov'23	Completed in Oct'23
9.	LILO of Ambassa – P. K. Bari 132 kV S/C at Manu	Feb'20	Completed in Nov'20
10.	Kailasahar – Dharmanagar 132 kV D/C line	Feb'20	Completed in Feb'23
11.	LILO of Agartala (79 Tilla) - Dhalabil (Khowai) 132 kV S/C line at Mohanpur	Feb'20	Completed in Jan'21
12.	Udaipur- Amarpur 132 kV D/C line	Feb'20	Completed in Mar'21
13.	132kV Interconnection portion from Manu (Old) S/s to Manu (New) S/s for charging of 132kV Manu - Chawmanu TL	Feb'20	Completed in Mar'21
14.	2x31.5 MVA, 132/33 kV new sub-station at Satchand	Oct'19	Completed in Sep'21
15.	2x31.5 MVA, 132/33 kV new sub-station at Sabroom	Oct'19	Completed in Oct'21
16.	2x50 MVA, 132/33 kV new sub-station at Belonia	Oct'19	Completed in Nov'21
17.	2x50 MVA, 132/33 kV new sub-station at Bagafa	Oct'19	Completed in Oct'21
18.	2x50 MVA, 132/33 kV new sub-station at Rabindra Nagar	Oct'19	Completed in Aug'21
19.	2x50 MVA, 132/33 kV new sub-station at Gokulnagar	Oct'19	Completed in Mar'21
20.	Augmentation of Udaipur sub-station	Oct'19	Completed in July'21
21.	Augmentation of Jirania sub-station	Oct'19	Completed in Sep'20

22.	132/33/11 kV Rokhia (Extn) Substation	Oct'19	Completed in Oct'20
23.	2x50 MVA, 132/33 kV new sub-station at Manu	Oct'19	Completed in Apr'22
24.	2x31.5 MVA, 132/33 kV new Substation at Amarpur	July'24	Completed in Jul'24
25.	2x31.5 MVA, 132/33 kV new sub-station at Mohonpur (Hezamara)	Oct'19	Completed in Feb'21
26.	Replacement of existing 2x7.5 MVA, 132/33 kV transformer by 2x50 MVA, 132/33 kV transformer at Kailasahar	Oct'19	Completed in Mar'23
27.	Augmentation of Ambassa sub-station by addition of 1x31.5, 132/33 kV transformer, 2x10 MVA, 33/11 kV transformer & 2x250 KVA 11/0.4 kV transformer including extension of control room	Oct'19	Completed in Feb'21
28.	Augmentation of Dhalabil (Khowai) sub-station by addition of 2x31.5, 132/33 kV transformer, 2x10 MVA, 33/11 kV transformer & 2x250 KVA 11/0.4 kV transformer including extension of control room-	Oct'19	Completed in Nov'21
29.	132/33/11 kV Dharmanagar (Extn.) Substation	Oct'19	Completed in Aug'21
30.	LILO of existing Tirthamukh - Silachari line at Karbook	Nov'19	Completed in Jan'20
31.	LILO of existing Jolaibari - Bagafa line at Muhuripur	Nov'19	Completed in Jan'23
32.	Dalak (Chelagang) - Amarpur line	Nov'19	Completed in Oct'21
33.	33/11 kV Belonia–Chittamara	Nov'19	Completed in Aug'21
34.	Dalak(Chelagang) – Jatanbari	Nov'19	Completed in Jan'22
35.	Garjee to Chittamara	Nov'19	Completed in Dec'21
36.	Udaipur to Maharani	Nov'19	Completed in July'21
37.	Garjee-Maharani	Nov'19	Completed in Oct'21
38.	132/33kV Amarpur-Chechua	Nov'19	Completed in Mar'22
39.	33/11 kV New S/s at Karbook	Nov'19	Completed in Nov'20
40.	33/11 kV New S/s at Muhuripur	Nov'19	Completed in Mar'23
41.	33/11 kV New S/s at Dalak (Chelagang)	Nov'19	Completed in Mar'22
42.	33/11 kV New S/s at Maharani	Nov'19	Completed in July'21
43.	33/11 kV New S/s at Chittamara	Nov'19	Completed in Sep'23
44.	33/11 kV New S/s at Chechua	Nov'19	Completed in Nov'22
45.	33/11 kV New S/s at Garjee	Nov'19	Completed in Sep'21
46.	33 kV Joliabari S/s (Cap. Aug.)	Nov'19	Completed in Jan'22
47.	33 kV Rani S/s (Cap. Aug.)	Nov'19	Completed in Oct'21

48.	33 kV S/s extension at Jatanbari	Nov'19	Completed in July'21
49.	33 kV S/s extension at 132/33kV Udaipur (existing)	Nov'19	Completed in May'21
50.	33 kV S/s extension at Belonia	Nov'19	Scope Deleted
51.	Sabroom - Manughat	Nov'19	Completed in Feb'22
52.	Manughat - Srinagar	Nov'19	Completed in Sep'22
53.	Satchand - Srinagar	Nov'19	Completed in Dec'21
54.	Tapping point on existing Belonia - Hrishyamukh to Srinagar	Nov'19	Completed in Dec'21
55.	Satchand - Rupaichari	Nov'19	Completed in Mar'21
56.	Rajnagar - Ekinpur	Nov'19	Completed in Mar'22
57.	LILO of existing Belonia - Rajnagar line at Barpathari	Nov'19	Completed in Dec'21
58.	Jolaibari - Silachari	Nov'19	Completed in Jan'23
59.	Jolaibari - Satchand	Nov'19	Completed in June'21
60.	Rupaichari - Sabroom	Nov'19	Completed in Feb'22
61.	LILO of existing Surajmaninagar -Takarjala line at Gabardi	Nov'19	Completed in Jan'20
62.	33/11 kV New S/s at Srinagar	Nov'19	Completed in Mar'23
63.	33/11 kV New S/s at Gabardi	Nov'19	Completed in Jan'20
64.	33/11 kV New S/s at Rupaichari	Nov'19	Completed in Feb'21
65.	33/11 kV New S/s at Ekinpur	Nov'19	Completed in Mar'22
66.	33 kV S/s extension & Augmentation at Rajnagar	Nov'19	Completed in Oct'21
67.	33 kV S/s extension at Silachari	Nov'19	Completed in April'21
68.	33 kV Hrishyamukh S/s (Cap. Aug.)	Nov'19	Completed in Jan'20
69.	33/11 kV New S/s at Manughat	Nov'19/ Sep'24	Land acquisition: 100% Civil work: 78% Equipment received: 69% Equipment erected: 30%
70.	33/11 kV New S/s at Barpathari	Nov'19/ Sep'24	Civil work: 92% Equipment received : 86% Equipment erected: 68%
	Remark: Work held up due to forest & wild life (0.22 ha.) involvement. Stage-I approval obtained on 04.03.20. Stage-II clearance (conditional) has been issued by RMoEF Shillong on 18.03.2021. Working permission received on 10.05.2021.		

71.	33kV S/C line (line length 4.0km) from Sekerkote new 33/11kV S/s to tapping point of Badharghat-Jangalia line.	Nov'19	Completed in Oct'21
72.	33kV S/C line (line length 3.0km) from Sekerkote new 33/11kV S/s to Gokulnagar new 132/33kV S/s	Nov'19	Completed in Oct'21
73.	33kV S/C line (line length 6.0km) from Gokulnagar new 132/33kV S/s to tapping point of Badharghat-Jangalia line.	Nov'19	Completed in Dec'21
74.	132/33kV Gokul Nagar (Proposed) to Golaghati	Nov'19	Completed in Dec'21
75.	Takarjala existing 33/11kV S/s to Golaghati	Nov'19	Completed in July'21
76.	Proposed Gokul Nagar 132/33kV S/s to Durganagar	Nov'19	Completed in May'21
77.	Madhupur existing 33/11kV S/s to Durganagar	Nov'19	Completed in July'21
78.	Kathalia Existing 33/11kV S/s to Nidaya	Nov'19	Completed in Apr'21
79.	Melagarh Existing 33/11kV S/s to Nalchar	Nov'19	Completed in May'21
80.	Bishramganj Existing 33/11kV S/s to Nalchar	Nov'19	Completed in May'21
81.	Proposed Gokul Nagar 132/33kV S/s to tapping at Madhupur to Jangalia Line	Nov'19	Completed in Feb'21
82.	Bishramganj 33/11kV S/s to Jangalia	Nov'19	Completed in Apr'22
83.	33/11 kV New S/s at Sekerkote	Nov'19	Completed in Feb'22
84.	33/11 kV New S/s at Golaghati	Nov'19	Completed in Sep'22
85.	33/11 kV New S/s at Durganagar	Nov'19	Completed in Jan'23
86.	33/11 kV New S/s at Nidaya	Nov'19	Completed in Mar'22
87.	33/11 kV New S/s at Nalchar	Nov'19	Completed in Mar'22
88.	33kV S/s Takarjala - Capacity Augmentation	Nov'19	Completed in Nov'22
89.	33kV S/s Madhupur - Capacity Augmentation & extension	Nov'19	Completed in Oct'22
90.	33kV S/s Melaghar - Capacity Augmentation	Nov'19	Completed in July'21
91.	33 kV S/s Kathalia - Capacity Augmentation	Nov'19	Completed in May'21
92.	33 kV S/s extension at Bishramhanj-	Nov'19	Completed in July'21
93.	33 kV S/s extension at Jangalia	Nov'19	Completed in July'21
94.	Rajnagar Existing 33/11kV S/s to Nidaya	Oct'19	Completed in Nov'21
95.	132/33kV S/s Mohanpur -Barkathal	Oct'19	Completed in Mar'22
96.	33/11kV S/s Lembucherra -Bamutia	Oct'19	Completed in Apr'21
97.	Champak Nagar- ADC Head Qtr	Oct'19	Completed in Aug'21
98.	Existing 132/33kV S/s Dhalabil –Khowai	Oct'19	Completed in Aug'21
99.	33/11kV S/s Hezamara- Simna	Oct'19	Completed in Jan'21

100.	Jirania -ADC Head Qtr.	Oct'19	Completed in Jan'21
101.	Hezamara -Barkathal	Oct'19	Completed in May'21
102.	Durjoynagar –Bamutia	Oct'19	Completed in Jan'22
103.	Hezamara- Dhalabil	Oct'19	Completed in Apr'22
104.	Ampura S/s (under RGGVY) - Khowai	Oct'19	Completed in Mar'22
105.	Tapping point on Mohanpur -Hezamara existing 33kV feeder-Simna	Oct'19	Completed in Mar'22
106.	132/33 kV Jirania (existing) to Champak Nagar	Oct'19	Completed in Dec'21
107.	132/33 kV Teliamura (existing) to Taidu	Oct'19	Completed in Jan'22
108.	Chechua to Taidu	Oct'19	Completed in Apr'22
109.	LILO of existing Agartala - Mohanpur line at Lembucherra	Oct'19	Complete in Jan'21
110.	LILO of existing Khayerpur - Jirania line at Ranirbazar	Oct'19	Completed in Jan'21
111.	LILO of existing Ambassa-Teliamura line at Mungiakami	Oct'19	Completed in Dec'21
112.	33/11 kV New S/s at Khowai	Oct'19	Completed in Aug'21
113.	33/11 kV New S/s at Simna	Oct'19	Completed in Feb'21
114.	33/11 kV New S/s at Barkathal	Oct'19	Completed in Mar'21
115.	33/11 kV New S/s at Bamutia	Oct'19	Completed in April'21
116.	33/11 kV New S/s at Lembucherra	Oct'19	Completed in Jan'22
117.	33/11 kV New S/s at Champak Nagar	Oct'19	Completed in Mar'21
118.	33/11 kV New S/s at Ranirbazar	Oct'19	Completed in Mar'22
119.	33/11 kV New S/s at ADC Head Qtr	Oct'19	Completed in Aug'21
120.	33/11 kV Mungiakami S/s	Oct'19	Completed in Sep'21
121.	33/11 kV Taidu S/s	Nov'19	Completed in July'23
122.	33 kV S/s extension at 132/33 kV S/s Dhalabil	Oct'19	Completed in June'21
123.	33 kV S/s extension at 33/11 kV S/s Durjoynagar	Oct'19	Completed in Jan'21
	33 kV S/s extension at Jirania	Oct'19	Scope deleted
124.	33 kV S/s extension & Cap. Aug. at Hezamara	Oct'19	Completed in Oct'18
125.	33 kV S/s extension at Ampura	Oct'19	Completed in Jan'21
126.	33 kV S/s extension at Telimura	Oct'19	Completed in Feb'21
127.	33 kV Khayerpur S/s (Cap. Aug)	Oct'19	Completed in Aug'21
128.	Ambassa existing 132/33kV S/s to Jawahar Nagar	Nov'19	Completed in July'21

129.	LILO of existing Chhamanu-Manu line at Chailengta	Nov'19	Completed in Jan'21
130.	Proposed Jawhar Nagar 33/11 kV S/s to Dhumachhera	Nov'19	Completed in Dec'22
131.	Proposed Manu 132/33 kV S/s to Dhumachera	Nov'19	Completed in Apr'21
132.	33 KV Line from Proposed Manu 132/33kV S/s to 82 Mile	Nov'19	Completed in Mar'22
133.	P K Bari Existing 132/33kV S/s to 82 Mile	Nov'19	Completed in Jan'22
134.	Kalaisahar - Tilla Bazar	Nov'19	Completed in Jan'22
135.	Proposed Manu 132/33kV S/s to tapping at Chawmanu - Manu line	Nov'19	Scope deleted
136.	33kV S/C line-I from Kamalpur 132/33/11kV S/s to Durgachowmohni New 33/11kV S/s	Nov'19	Completed in Jan'22
137.	33kV S/C line-II from Kamalpur 132/33/11kV S/s to Durgachowmohni New 33/11kV S/s	Nov'19	Completed in Dec'21
138.	33/11 kV New S/s at Jawahar Nagar	Nov'19	Completed in Mar'22
139.	33/11 kV New S/s at Chailengta	Nov'19	Completed in Mar'22
140.	33/11 kV New S/s at 82 mile	Nov'19	Completed in Feb'22
141.	33/11 kV New S/s at Durga Chowmohani	Nov'19	Completed in Feb'22
142.	33/11 kV New S/s at Dhumachhera	Nov'19/ Sep'24	Civil work: 83% Equipment received: 80% Equipment erected: 38%
143.	33/11 kV New S/s at Tilla Bazar	Oct'19	Completed in Nov'23
144.	33 kV S/s extension at 132/33 kV S/s P K Bari	Nov'19	Completed in June'21
145.	33 kV S/s extension at Kalaisahar	Nov'19	Completed in May'21
146.	33 kV S/s Gandacherra S/s (Cap. Aug)	Nov'19	Completed in Nov'21
147.	33 kV S/s Salema S/s (Cap. Aug)	Nov'19	Completed in Jan'22
148.	33 kV S/s Rangrung S/s (Cap. Aug)	Nov'19	Completed in Mar'21
149.	Chamanu S/s	Nov'19	Completed in Oct'21
150.	Reconductoring of Dhalabil to Kalyanpur	Aug'22 Completed in Dec'22	In 7th PSC meeting on 31.01.2020, it was agreed that 3 Nos. priority lines near Agartala city will be constructed as new lines (with steel poles and wolf conductor) in place of reconductoring. Further TSECL was
151.	Reconductoring of Mohanpur to Agartala	Aug'22/ Sept'24 Pole: 484/500 Strg (kms) : 9/18	
152.	33kV Jirania - Khayerpur new line (in place of Reconductoring)- 13.25 k m	Apr'22	

153.	Reconductoring of Belonia - Rajnagar	To be deleted	requested to assign priority to the balance lines so that a decision can be made for selection of the existing corridors which would require new lines (with steel poles and wolf conductor) restricting to the total cost of reconductoring of 15 lines as per contract provision. TSECL has intimated their priority list in Jun'20. It has been approved in the 9th PSC meeting dated 14.08.2021 to delete 12 reconductoring lines.
154.	Reconductoring of Belonia - Hriyshmukh	To be deleted	
155.	Reconductoring of Badarghat to Jangalia	To be deleted	
156.	Reconductoring of Rabindranagar 132/33 KV S/s to Kathlia	To be deleted	
157.	Reconductoring of Rabindranagar 132/33 KV S/s to Melaghar	To be deleted	
158.	Reconductoring of Badharghat to SM Nagar	To be deleted	
159.	Reconductoring of SM Nagar to Takarjala	To be deleted	
160.	Reconductoring of Teliamura to Kalyanpur	To be deleted	
161.	Reconductoring of Mohanpur to Hezamara	To be deleted	
162.	Reconductoring of Ambassa to Teliamura	To be deleted	
163.	Reconductoring of Julaibari to Bagafa	To be deleted	
164.	Reconductoring of Silachari to Tirthamukh	To be deleted	

List of elements under Comprehensive Scheme for strengthening of Transmission & Distribution

A. Arunachal Pradesh

SN	Name of Element	Type of Element
1.	132/33 kV Pasighat New S/s	EHV SS
2.	132/33 kV Niglok S/s	EHV SS
3.	132/33 kV Basar S/s	EHV SS
4.	132/33 kV Ziro (New) S/s	EHV SS
5.	132/33 kV Seppa S/s	EHV SS
6.	132/33 kV Rilo S/s	EHV SS
7.	132/33 kV Holongi S/s	EHV SS
8.	132/33 kV Naharlagun S/s	EHV SS
9.	132/33 kV Banderdewa S/s	EHV SS
10.	132/33 kV Jairampur S/s	EHV SS
11.	132/33 kV Miao S/s	EHV SS
12.	132/33 kV Halaipani S/s	EHV SS
13.	132/33 kV Dambuk S/s	EHV SS
14.	132/33 kV Koloriang S/s	EHV SS
15.	132/33 kV Bomdila S/s	EHV SS
16.	132/33 kV Tawang S/s	EHV SS
17.	132/33 kV Kalakhtang S/s	EHV SS
18.	132/33 kV Gerukamukh S/s	EHV SS
19.	132/33 kV Seijosa S/s	EHV SS
20.	132/33 kV Sagali S/s	EHV SS
21.	132/33 kV Changlang S/s	EHV SS
22.	132/33 kV Likabali S/s	EHV SS
23.	132/33 kV Bameng S/s	EHV SS
24.	132/33 kV Khonsa S/s	EHV SS
25.	132/33 kV Palin S/s (New)	EHV SS
26.	132/33 kV Yingkiong S/s (New)	EHV SS
27.	132/33 kV Kambang S/s (New)	EHV SS
28.	33/11 kV Napit S/s	DMS SS
29.	33/11 kV Likabali S/s	DMS SS
30.	33/11 kV Oyan S/s	DMS SS
31.	33/11 kV Ngopok S/s	DMS SS
32.	33/11 kV Ruksin S/s	DMS SS
33.	33/11 kV Mebo S/s	DMS SS
34.	33/11 kV Nari S/s	DMS SS
35.	33/11 kV Jeying S/s	DMS SS
36.	33/11 kV AIR Pasighat S/s	DMS SS

SN	Name of Element	Type of Element
37.	33/11 kV Hapoli S/s	DMS SS
38.	33/11 kV Gerukamukh S/s	DMS SS
39.	33/11 kV Koyu S/s	DMS SS
40.	33/11 kV Tirbin S/s	DMS SS
41.	33/11 kV Raga S/s	DMS SS
42.	33/11 kV Igo S/s	DMS SS
43.	33/11 kV Balemu S/s	DMS SS
44.	33/11 kV Jote S/s	DMS SS
45.	33/11 kV Doimukh S/s	DMS SS
46.	33/11 kV Raj Bhawan S/s	DMS SS
47.	33/11 kV Leopriang S/s	DMS SS
48.	33/11 kV Namsai S/s	DMS SS
49.	33/11 kV Chowkham S/s	DMS SS
50.	33/11 kV Damporijo S/s (earlier Giba)	DMS SS
51.	33/11 kV Maro S/s	DMS SS
52.	33/11 kV Murimugli S/s	DMS SS
53.	33/11 kV Nacho S/s	DMS SS
54.	33/11 kV Nyapin S/s	DMS SS
55.	33/11 kV Sippi S/s	DMS SS
56.	33/11 kV Tali S/s	DMS SS
57.	33/11 kV Thalia S/s	DMS SS
58.	33/11 kV Geku S/s	DMS SS
59.	33/11 kV Jengging S/s	DMS SS
60.	33/11 kV Kaying S/s	DMS SS
61.	33/11kV Koreng S/s	DMS SS
62.	33/11 kV Maryang S/s	DMS SS
63.	33/11 kV Mechuka S/s	DMS SS
64.	33/11 kV Rumgong S/s	DMS SS
65.	33/11 kV Tuting S/s	DMS SS
66.	33/11 kV Anini S/s	DMS SS
67.	33/11 kV Bolung S/s	DMS SS
68.	33/11 kV Etalin S/s	DMS SS
69.	33/11 kV Halaipani (Lautul) S/s	DMS SS
70.	33/11 kV Hawai S/s	DMS SS
71.	33/11 kV Wallong S/s	DMS SS
72.	33/11 kV Pipu S/s	DMS SS
73.	33/11 kV Thriziono S/s	DMS SS
74.	33/11 kV Bana S/s	DMS SS
75.	33/11 kV Gensi S/s	DMS SS
76.	33/11 kV Yazali S/s	DMS SS
77.	33/11 kV Rilo S/s	DMS SS

SN	Name of Element	Type of Element
78.	33/11 kV Seijosa S/s	DMS SS
79.	33/11 kV Mukto S/s	DMS SS
80.	33/11 kV Thimbu S/s	DMS SS
81.	33/11 kV Klimtao S/s (Shifted to Y-Junction)	DMS SS
82.	33/11 kV Lumla S/s	DMS SS
83.	33/11 kV AP Secretariate S/s	DMS SS
84.	33/11 kV Pappu Nallah S/s	DMS SS
85.	33/11 kV Kanubari S/s	DMS SS
86.	33/11 kV Gohpur Tenali S/s	DMS SS
87.	33/11 kV Changlang S/s	DMS SS
88.	33/11 kV Deomali S/s	DMS SS
89.	33/11 kV Manmao S/s	DMS SS
90.	33/11 kV Kharsang S/s	DMS SS
91.	33/11 kV Longding S/s	DMS SS
92.	33/11 kV Khonsa S/s	DMS SS
93.	33/11 kV Diyun S/s	DMS SS
94.	33/11 kV Khimiyong S/s	DMS SS
95.	33/11 kV Khenwa S/s	DMS SS
96.	33/11 kV Bijari S/s	DMS SS
97.	33/11 kV Boleng S/s	DMS SS
98.	132 kV LILO of Daporijo-Along TL at Basar	EHV TL
99.	132 kV Sagali-Naharlagun TL	EHV TL
100.	132 kV Naharlagun-Banderdewa TL	EHV TL
101.	132 kV Rilo-Sagalee TL	EHV TL
102.	132 kV Gerukamukh-Likabali TL	EHV TL
103.	132 kV Naharlagun-Gerukamukh TL	EHV TL
104.	132 kV S/C (on D/C) Roing-Dambuk TL	EHV TL
105.	132 kV S/C (on D/C) Tezu-Halaipani TL	EHV TL
106.	132 kV S/C (on D/C) Roing-Anini TL	EHV TL
107.	132 kV Seppa-Bameng TL	EHV TL
108.	132 kV S/C (on D/C) Along-Kambang TL	EHV TL
109.	132 kV S/C (on D/C) Kambang-Mechuka TL	EHV TL
110.	132 kV S/C (on D/C) Along-Yingkiong TL	EHV TL
111.	132 kV S/C (on D/C) Yingkiong-Tuting TL	EHV TL
112.	132 kV Khonsa-Changlang TL	EHV TL
113.	132 kV Khonsa-Longding TL	EHV TL
114.	132 kV Jairampur-Changlang TL	EHV TL
115.	132 kV S/C (on D/C) Khupi-Bomdila TL	EHV TL
116.	132 kV S/C (on D/C) Bomdila-Tawang TL	EHV TL
117.	132 kV S/C Bomdila-Kalakthang TL	EHV TL
118.	132 kV Ziro (PG)-Ziro(New) TL	EHV TL

SN	Name of Element	Type of Element
119.	132 kV S/C (on D/C) Ziro-Palin TL	EHV TL
120.	132 kV S/C (on D/C) Palin-Koloriang TL	EHV TL
121.	132 kV S/C (on D/C) Daporijo-Nacho TL	EHV TL
122.	132 kV S/C (on D/C) Likabali-Niglok TL	EHV TL
123.	132 kV S/C (on D/C) Pasighat (Old)-Mariyang TL	EHV TL
124.	132 kV S/C (on D/C) Niglok-Pasighat New TL	EHV TL
125.	132 kV D/C Pasighat New-Pasighat Old TL	EHV TL
126.	132 kV Seppa-Rilo TL	EHV TL
127.	132 kV Rilo-Seijosa TL	EHV TL
128.	132 kV Chimpu-Holongi TL	EHV TL
129.	132 kV Jairampur-Miao TL	EHV TL
130.	132 kV S/C Khupi-Seppa TL	EHV TL
131.	132 kV Tawang-Lumla TL	EHV TL
132.	132 kV Deomali-Khonsa TL	EHV TL
133.	132 kV Miao-Namsai TL	EHV TL
134.	33 kV Pasighat-Napit TL	DMS TL
135.	33 kV Ngopok-Mebo TL	DMS TL
136.	33 kV Old Pasighat-Mebo TL	DMS TL
137.	33 kV Old Pasighat-Jeying TL	DMS TL
138.	33 kV Rina-Koyu TL	DMS TL
139.	33 kV Garu-Gensi TL	DMS TL
140.	LILO of 33 kV Khupi-Seppa TL at Bana	DMS TL
141.	33 kV Chimpu-Rajbhawan TL	DMS TL
142.	33 kV Doimukh-Naharlagun TL	DMS TL
143.	33 kV Sagali-Leporiang TL	DMS TL
144.	33 kV Chimpu-Gohpur Tinali TL	DMS TL
145.	33 kV Jote-Gohpur Tinali TL	DMS TL
146.	33 kV Mukto-Jang TL	DMS TL
147.	33 kV Napit-Oyan TL	DMS TL
148.	33 kV Liromoba HEP-Tirbin TL	DMS TL
149.	33 kV Tamin-Raga TL	DMS TL
150.	33 kV Ziro New (Yachuli)-Yazali TL	DMS TL
151.	33 kV Daporijo-Sippi TL	DMS TL
152.	33 kV Koloriang-Kush HEP TL	DMS TL
153.	33 kV Sangram-Nyapin TL	DMS TL
154.	33 kV Daporijo-Damporijo TL	DMS TL
155.	33 kV Daporijo-Murimugli TL	DMS TL
156.	33 kV Tahila-Sippi TL	DMS TL
157.	33 kV Damporijo-Maro TL	DMS TL
158.	33 kV Palin-Tali TL	DMS TL
159.	33 kV Geku HEP (via Boleng S/s)-Koreng TL	DMS TL

SN	Name of Element	Type of Element
160.	33 kV Along-Rumgong TL	DMS TL
161.	33 kV Yingkyong-Jengging TL	DMS TL
162.	33 kV Yingkyong-Mariyang TL	DMS TL
163.	33 kV Kambang-Kaying TL	DMS TL
164.	33 kV Yingkyong-Geku TL	DMS TL
165.	LILO of Pasighat-Along TL at Koreng	DMS TL
166.	33 kV Boleng-Koreng TL	DMS TL
167.	LILO of Gegging-Along TL at Boleng	DMS TL
168.	33 kV Marbo S/s-Hawai TL	DMS TL
169.	33 kV Halaipani-Hayuliang TL	DMS TL
170.	33 kV Dambuk-Bijari TL	DMS TL
171.	33 kV Wallong-Hawai TL	DMS TL
172.	33 kV Roing-Bolung TL	DMS TL
173.	33 kV Tezu-Wakro TL	DMS TL
174.	33 kV Roing-Simari TL	DMS TL
175.	33 kV Napit-Koyu TL	DMS TL
176.	33 kV Igo-Koyu TL	DMS TL
177.	33 kV Ziro New (Yachuli)-Hapoli (New) TL	DMS TL
178.	33 kV Basar-Tirbin (New) TL	DMS TL
179.	33 kV AIR Pasighat-Napit TL	DMS TL
180.	33 kV Likabali-Igo (New) TL	DMS TL
181.	33 kV Tenzin Gaon-Balemu TL	DMS TL
182.	33 kV Khupi-Thrizino TL	DMS TL
183.	33 kV Existing Bameng-Khenewa TL	DMS TL
184.	33 kV Seppa-Pipu TL	DMS TL
185.	33 kV Tawang-Kimtao (Bumla) Y-Junction TL	DMS TL
186.	33 kV Jang-Thimbu TL	DMS TL
187.	33 kV Naharlagun-Pappu Nallah (New) TL	DMS TL
188.	33 kV Chimpu-AP Secretariat TL	DMS TL
189.	33 kV Deomali (PG)-Kanubari TL	DMS TL
190.	33 kV Longding-Kanubari (Khonsa-Longding)	DMS TL
191.	33 kV Miao-Kharsang TL	DMS TL
192.	33 kV Changlang-Khimiyong TL	DMS TL
193.	33 kV Namsai (PG)-Choukham TL	DMS TL
194.	33 kV Miao-Diyun TL	DMS TL
195.	33 kV Jairampur-Manmao TL	DMS TL
196.	33kV Namsai (PG)-Namsai TL	DMS TL
197.	33 kV Tezu-Tezu TL	DMS TL
198.	33 kV Ruksin-Oyan (New) TL	DMS TL
199.	33 kV Niglok-Ruksin TL	DMS TL
200.	33 kV Niglok-Nari TL	DMS TL

SN	Name of Element	Type of Element
201.	33 kV Basar-Igo (New) TL	DMS TL
202.	33 kV Niglok-Koyu TL	DMS TL
203.	33 kV Gerukamukh-Gerukamukh TL	DMS TL
204.	33 kV Seijosa-Seijosa TL	DMS TL
205.	33 kV Changlang-Changlang TL	DMS TL
206.	33 kV Khonsa-Khonsa TL	DMS TL
207.	33 kV Halaipani-Marbo TL	DMS TL
208.	132 kV Pasighat (Old) Bay Extn	EHV SS Extn
209.	132 kV Ziro Bay Extn	EHV SS Extn
210.	132 kV Khupi Bay Extn	EHV SS Extn
211.	132 kV Chimpu (Itanagar) Bay Extn	EHV SS Extn
212.	132 kV Namsai Bay Extn	EHV SS Extn
213.	132 kV Deomali Bay Extn	EHV SS Extn
214.	132 kV Tezu (PG) Bay Extn	EHV SS Extn
215.	132 kV Daporijo Augmentation	EHV SS Extn
216.	132 kV Along Bay Extn	EHV SS Extn
217.	132 kV Roing (PG) Bay Extn	EHV SS Extn
218.	132 kV Tawang Bay Extn	EHV SS Extn
219.	132 kV Dukumpani Bay Extn	EHV SS Extn
220.	33 kV Old Pasighat Bay Extn	DMS SS Extn
221.	33 kV Chimpu Bay Extn	DMS SS Extn
222.	33 kV Bameng Bay Extn	DMS SS Extn
223.	33 kV Jang Bay Extn	DMS SS Extn
224.	33 kV Deomali Bay Extn	DMS SS Extn
225.	33 kV Miao Upgradation	DMS SS Extn
226.	33 kV Sangram Bay Extn	DMS SS Extn
227.	33 kV Geku HEP Bay Extn	DMS SS Extn
228.	33 kV Along Bay Extn	DMS SS Extn
229.	33 kV Namsai Bay Extn	DMS SS Extn
230.	33 kV Sagali Bay Extn	DMS SS Extn
231.	33 kV Daporjio Bay Extn	DMS SS Extn
232.	33 kV Hayualing Augmentation	DMS SS Extn
233.	33 kV Simari Augmentation	DMS SS Extn
234.	33 kV Tezu Augmentation	DMS SS Extn
235.	33 kV Wakro Augmentation	DMS SS Extn
236.	33 kV Khupi Bay Extn	DMS SS Extn
237.	33 kV Roing Bay Extn	DMS SS Extn
238.	33 kV Roing Augmentation	DMS SS Extn
239.	33 kV Tamin Bay Extn	DMS SS Extn

B. Sikkim

SN	Name of Element	Type of Element
1.	220 kV D/C Samardong-Dikchu Pool TL	220kV TL
2.	220 kV D/C Rangpo-Samardong TL	220kV TL
3.	220 kV D/C New Melli-Legship Pool TL	220kV TL
4.	220 kV D/C Dikchu-Singhik TL	220kV TL
5.	220 kV D/C Singhik-Chungthang TL	220kV TL
6.	LILO of 132 kV S/C Rangit-Melli TL at Namchi	132kV TL
7.	132 kV D/C Dikchu-Parbing TL	132kV TL
8.	LI O of 132 kV S/C Rangit-Melli TL at Legship Pool	132kV TL
9.	LILO of 132 kV S/C Sagbari-Gayzing TL at Legship Pool	132kV TL
10.	66 kV S/C Singhik-Passingdong TL	66kV TL
11.	66 kV S/C Singhik-Mangan(exist) TL	66kV TL
12.	66 kV D/C Chungthang-Lachen TL	66kV TL
13.	66 kV S/C Makha-Temi	66kV TL
14.	66 kV D/C Dikchu Pool-Makha TL	66kV TL
15.	66 kV S/C Khamdong-Makha TL	66kV TL
16.	66 kV S/C Samardong-Namthang TL	66kV TL
17.	66 kV S/C Samardong-Mamring TL	66kV TL
18.	66 kV D/C Samardong-Kumrek TL	66kV TL
19.	66 kV D/C Kumrek-Rorathang TL	66kV TL
20.	66 kV D/C Rorathang-LILO point of Pakyong-Rongli TL	66kV TL
21.	66 kV S/C Parbing-Sichey TL	66kV TL
22.	66 kV S/C Parbing-Tadong	66kV TL
23.	66 kV D/C Parbing-Pangthang TL	66kV TL
24.	66 kV D/C Rinchenpong-LILO point on existing Namchi-Gezing	66kV TL
25.	66 kV S/C New Namchi Old-Namchi TL	66kV TL
26.	66 kV S/C Namchi-New Namchi TL	66kV TL
27.	LILO of 66 kV S/C Rohthak-Sombaria TL	66kV TL
28.	66 kV S/C Geysing-Rellichu TL	66kV TL
29.	132/66/11 kV Samardong GIS S/s	132kV S/s
30.	132/66 kV Parbing GIS S/s	132kV S/s
31.	132/66 kV Namchi S/s	132kV S/s
32.	132/66/11 kV Singhik S/s	132kV S/s
33.	220/132 kV Legship Pool S/s	220kV S/s
34.	132/66/11 kV Dikchu Pool S/s	132kV S/s
35.	66/33 kV Lachen S/s	66/33kV S/s
36.	66/11 kV Richenpong S/s	66/11kV S/s
37.	66/11 kV Passingdong S/s	66/11kV S/s
38.	66/11 kV Temi S/s	66/11kV S/s
39.	66/11 kV Namthang S/s	66/11kV S/s

SN	Name of Element	Type of Element
40.	66/11 kV Rorathang S/s	66/11kV S/s
41.	66/11 kV Makha S/s	66/11kV S/s
42.	66/11 kV Kumrek S/s	66/11kV S/s
43.	66/11 kV Pangthang S/s	66/11kV S/s
44.	66/11 kV Sombaria S/s	66/11kV S/s
45.	66/11 kV Rellichu S/s	66/11kV S/s
46.	132 kV Rangpo GIS Extn	Extn
47.	66 kV New Namchi S/s Extn	Extn
48.	66/11 kV Mangan S/s Extn	Extn
49.	66 kV Old Namchi S/s Extn	Extn
50.	66/11 kV Mamring S/s Extn	Extn
51.	66/11 kV Sichey S/s Extn	Extn
52.	66/11 kV Tadong S/s Extn	Extn
53.	66 kV Mew Melli GIS Extn	Extn
54.	66/11 kV Rohthak S/s Extn	Extn
55.	66/11 kV Geyzing S/s Extn	Extn

Proposals of Arunachal Pradesh

1. Proposed New Substations/Augmentation of existing substations along with associated transmission lines:

S.No	Name of the Sub-Station	Details of downstream networks /LV feeders	Estimated Cost (Rs. Cr.)	Brief Justification
1.	Kimin (Papum Pare) 132/33 kV, 2x10 MVA S/s LILO of Yupia - Gerukamukh 132 kV D/c line at 132/33kV Kimin S/s. (7.5 km)	Existing and upcoming local 33 kV feeders and Sub-Stations of Kimin area.	78	Presently, the town is powered through lengthy unreliable 33 kV Sub-Transmission lines all the way from Naharlagun and Ziro which travers through thick jungles. Proposed Sub-Station shall be fed from the upcoming Naharlagun-Gerukamukh 132 kV line through LILO arrangement to be included in the Sub-Station project.
2.	Raga, (Kamle) 132/33 kV, 2x10 MVA,S/s LILO of Ziro-Daporijo 132 kV S/c line at Raga (Kamle). (6.5 km):	Existing and upcoming local 33 kV feeders and Sub-Stations of Kamle district.	75	Presently Raga is fed power with long 11 kV local feeders from Tamen 33/11 kV Sub-Station which again draws unreliable power via a lengthy 33kV radial line passing through dense jungles from Ziro 132/33 kV Sub-Station.
3.	Replacement of 132/33kV, 2x20 MVA ICT with 2x50 MVA, ICT at Chimpu, Itanagar S/s.	Existing and upcoming 33 kV systems	35	The 2x20 MVA, 132/33 kV ICTs of Chimpu/Itanagar Sub-Station has started saturation load of 22MW leaving no capacity redundancy. Being the only powering Sub-Station to the State Capital city of Itanagar, it is vital and high time for augmentation of the existing 2x20 MVA transformers which to 2x50 MVA transformer for stable capacity redundancy.
4.	Tato (Shi Yomi), 132/33 kV, 2x10 MVA S/s 132 kV Bay at Kambang for Tato LILO of Kambang-Mechuka 132 kV S/c line at Tato (Shi	Upcoming 33/11 kV Substations at Manigong & Mechuka	69	For quality powering of the systems being built at Yorlung, Manigong, Lamang, Tadadege, Tato, and Mechuka in Shi Yomi district, to ensure reliable power supply to military establishments in the border district and to provide a 132 kV node for meeting the construction power

	Yomi). (5 km)			requirements of the upcoming HEPs at Tato.
	132 kV S/C Line near Kambang Substation (0.4 km)			
5.	DMP (NHPC) 132/33 kV, 2x60 MVA S/s			
	LILO of Roing-Anini 132 kV S/c line to DMP (NHPC) substation at Patharcamp (2.5 km)			

2. Proposed New Transmission Lines:

S.No	Name of line	Estimated Cost (Rs. Cr.)	Brief Justification
1	Likabali-Basar 132kV S/c line-(80km):	225	The upcoming 400 kM long 'Khuppi-Pasighat 132 kV line via Seppa, Rilo, Sagalee, Naharlagun, Gerukamukh, Likabali, Niglok, Napit and Pasighat' under Comprehensive Scheme shall be running in parallel to the existing 132 kV long radial line of RHEP to Pasighat via Ziro, Daporijo, Aalo and Pasighat of equal length without any inter-connecting anchoring and power source in between. Hence, for stabilizing power flow of both these two lines and increase redundancies, the proposed inter- connecting line is essential.
2	LILO of Pare-Chimpu 132kV S/c line at 132kV Naharlagun / Yupia S/s-(2km):	25	The existing Pare-Chimpu line with associated system has power sources at Pare and Ranganadi HEPs and grid connectivity at BNC 400/220/132 kV Sub-Station via Gohpur; while the upcoming Naharlagun/Yupia 132/33 kV Sub-Station under Comprehensive Scheme is connected on the long 132 kV Khuppi-Pasighat line under the same scheme without any intermediate anchoring and connectivity to any power source or grid system till Pasighat. Hence, for stabilized power flow on the Khuppi- Pasighat line corridor, the proposed LILO connectivity is inevitably essential.

3	KaHEP-Khuppi 132kV D/c Line-(10km):	60	As deliberated in various meetings of Transmission Planning forum, the Khuppi-Kimi (KaHEP) old S/c line is critically overloaded. Hence, to alleviate the overloading, the proposed Double Circuit line between KaHEP/Kimi and Khuppi 132 kV Sub-Station is essentially vital.
4	Gerukamukh-Likabali (Stringing of second circuit)	20.7	To meet the power requirement of the industrial consumers at Niglok the stringing of the second circuit of Gerukamukh-Likabali line is required and agreed by the CTU in the CMETS-NER.
5	Likabali-Niglok (Stringing of second circuit)	25.6	To meet the power requirement of the industrial consumers at Niglok the stringing of the second circuit of Likabali-Niglok line is required and agreed by the CTU in the CMETS-NER.
6	Niglok-Pasighat New (Napit) (Stringing of second circuit):	9.3	To meet the power requirement of the industrial consumers at Niglok the stringing of the second circuit of Niglok-Pasighat New (Napit) line is required and agreed by the CTU in the CMETS-NER.

3. Proposed reconductoring of existing lines:

S.No	Name of line	Estimated Cost (Rs. Cr.)	Brief Justification
1	Lekhi-Chimpu 132 kV S/c line-(14.5 km).	4.35	132 kV Lekhi-Chimpu Transmission Line was initially strung with ACSR Lynx conductors for wheeling of power to 132/33 kV Chimpu (Itanagar) EHV Substation and was envisaged as a radial line for meeting demand of Itanagar Capital Region. The EHV Substation at Chimpu is presently connected to the grid through several lines and serve as node for Inter-State power exchange wherein the loading capacity of ACSR Lynx is found to be limiting and needs upgradation to meet any contingent scenario. Therefore the line is proposed to be restrung with HTLS Panther.

Proposals of Assam

1. New substations alongwith the associated transmission lines:

S.No	Name of the proposal	Estimated Cost by State (in Rs. Crs)	Brief Justification by State
1.	**Establishment of new 400/220 kV (2 X 500 MVA) at Khumtai GIS Substation**	230.92	Already Approved (1st NERPC-TP)
	BNC (PGCIL) - Khumtai (AEGCL-New) 400kV D/c Line - (119km)	476	
	Khumtai (proposed)-Khumtai (existing 220/132kV S/s) 220kV D/c line – (1km)	1.23	
	LILO of both circuits of Samaguri-Mariani 220kV D/c line – (10km)	12.3	
2.	**Establishment of new 400/220 kV (2 X 500 MVA) and 220/132 kV (2 X 160 MVA) S/s at Naharkatia GIS Substation**	288.02	Eastern part of Upper Assam badly needs 400 kV connectivity. The Connectivity shall be from 400 kV Gogamukh. The CMETS- NER has already agreed (verbally) as AEGCL surrendered 400 kV Gogamukh (which was earlier given to AEGCL) only under the condition that 400 kV Naharkatia will be allowed to Assam. Load flow studies have already established the need for the substation.
	Naharkatia (AEGCL-New) - Gogamukh (PGCIL-New) 400kV D/c Line – (130km)	520	
	Naharkatia (AEGCL-New) - New Mariani (PGCIL-New) 400kV D/c Line – (155km)	620	
	Naharkatia (AEGCL-New) - Behiating (AEGCL-Existing) 220kV D/c Line – (40km)	49.2	
	Naharkatia (AEGCL-New) - Namrup (AEGCL-Existing) D/c Line – (26km)	31.98	
3.	**Establishment of new 220/132 kV (2 X 160 MVA) GIS Substation at Rowta**	105.03	Already Approved (1st NERSCT)

S.No	Name of the proposal	Estimated Cost by State (in Rs. Crs)	Brief Justification by State
	Rowta (AEGCL- New) - Rangia (AEGCL-Existing) 220kV D/c Line – (80km)	95.9	
4.	**Establishment of new 220/33 kV (2 X 100 MVA) GIS Substation at Boragaon (Jalukbari)**	98.78	Already Approved (1st NERSCT)
	Boragaon (Jalukbari) (AEGCL-New) - Kukurmara (AEGCL-Existing) D/c Line – (21km)	20.16	
5.	**Establishment of new 220/33 kV (2 X 100 MVA) GIS Substation at Panjabari**	98.78	Already Approved (1st NERSCT)
	LILO of Sonapur-Sarusajai (AEGCL-Existing) 220kV S/c Line at Panjabari (AEGCL- New) – (3km)	3.37	
6.	**Establishment of new 220/132 kV (2 X 160 MVA) and 220/33kV, 2x100MVA GIS Substation at Barnagar GIS Substation**	114.27	North Bank of Lower Assam (132 kV Rangia-Barnagar-Dhaligaon Section) is already overloaded condition. This part of the system is more than 50 years old. Also two new substations i.e., Barpeta and Nathkuchi are also coming up in the section. Load flow studies have already established the need for the substation.
	LILO of one circuit of Rangia (AEGCL-Existing) - Salakati (AEGCL-Existing) 220kV D/c Line at Barnagar (AEGCL-New)	29.52	
	Barnagar(New)- Barnagar (existing) 132kV D/c Line – (0.5km)	0.62	
7.	**Establishment of new 220/132 kV (2 X 160 MVA) and 220/33kV, 2x100MVA GIS Substation at New Dhaligaon**	86.17	Already Approved (3rd NERPC-TP)
	LILO of both circuits of Rangia (AEGCL-Existing) - Salakati (AEGCL-Existing) 220kV D/c Line	4.92	

S.No	Name of the proposal	Estimated Cost by State (in Rs. Crs)	Brief Justification by State
	at New Dhaligaon (AEGCL- New) – (4km)		
8.	**Establishment of new 220/33 kV (2 X 100 MVA) Substation at Halflong (GIS)**	97.67	Haflong is the District HQ of Dima Hasao District which is completely tribal dominated territory and Haflong is the only tourist hill station of Assam which is frequented by thousands of tourists every year. For the last several years the district has witnessed insurgency activities by different militant groups. During the recent flood situation, Haflong has remained without any power for more than 3 (three) days as both 132kV connectivity through PGCIL transmission network had been under outage due to collapse of transmission towers. It is to be noted that 132kV Haflong-Jiribam section (PGCIL) has witnessed repeated collapse of towers due to severe landslides. Considering these perennial problems & in view of the larger social issues like development of tribal areas, encouragement of tourism industry etc. NERPC tabled a special agenda for exploring an alternative route to Haflong. Accordingly, 2/3 no of transmission routes have been identified. We therefore once again request CEA to approve the establishment of the 220kV Substation at Haflong.
	Halflong (AEGCL- New) - Silcoorie (AEGCL-New) 220kV D/c Line – (94km)	115.62	
	Halflong (AEGCL- New) - Diphu (AEGCL-New) 220kV D/c Line – (148km)	182.04	
9.	**Establishment of new 220/33 kV (2 X 100 MVA) Substation at Diphu (AIS)**	58.36	Already Approved (03rd NERPC-TP)
	Halflong (AEGCL- New) - Diphu (AEGCL-New) 220kV D/c Line – (148km)	182.04	
	New Mariani (PGCIL-Existing) - Diphu (AEGCL-New) 220kV D/c Line – (155km)	190	
	Sankardev Nagar (AEGCL- New*) - Diphu (AEGCL-New) 220kV D/c Line – (81km)	99.63	

S.No	Name of the proposal	Estimated Cost by State (in Rs. Crs)	Brief Justification by State
	* Substation under implementation		
10.	**Establishment of new 220/132 kV (2 X 160 MVA) and 220/33kV, 2x100MVA Substation at Silcoorie (GIS)**	172.17	220/132/33kV grid S/S at Silcoorie is proposed to infuse 220kV connectivity to Barrak valley. This S/S will be connected through 220kV Mariani – Diphu – Haflong – Silcoorie connectivity. This 220kV connectivity will act as sufficient redundancy in case of outage of 400kV supply to Silchar (Powergrid) S/S. From Silcoorie S/S, 132kV link with upcoming Ghungur S/S is proposed. Further, 220/33kV transformation at Silcoorie will ease the future overloading proposition at Panchgram and Srikona S/S.
	Halflong (AEGCL- New) - Silcoorie (AEGCL-New) 220kV D/c Line – (94km)	115.62	
	Srikona(AEGCL- Existing) - Silcoorie (AEGCL-New) 132kV D/c Line – (15km)	13.2	
11.	**Establishment of new 220/132 kV (1 X 160 MVA) and 220/33kV, 1x50MVA Substation at Amguri (AIS)**	63.78	220/132/33kV S/S at Amguri is proposed (from S/c LILO of 220kV Namrup – Mariani D/c line). A solar power plant at Amguri is coming up very soon at Amguri. This grid S/S is proposed in the immediate vicinity of the upcoming solar plant. From Amguri distribution loading is proposed at 220/33kV level. Further, from Amguri the 132kV connectivity will also be established through 132kV Amguri – Dikhowmukh – Betbari D/c line. This will immensely ease the power supply position in the entire eastern and northern part of Sivasagar district.
	LILO of one circuit of Namrup (AEGCL-Existing) - Mariani (AEGCL-Existing) 220kV D/c Line at Amguri (AEGCL-New) AIS – (10km)	12.3	
	Amguri (AEGCL-New)-Dikhowmukh (AEGCL-New) 132kV D/c line – (28km)	24.64	
12.	**Establishment of new 132/33 kV (2 X 50 MVA) GIS Substation at Lumding**	70.23	Already Approved (1st NERSCT)
	LILO of Shakardevnagar (AEGCL- Existing) - Diphu (AEGCL-Existing) 132kV S/c Line at Lumding (AEGCL-New) – (10km)	8.05	
13.	**Establishment of new 132/33 kV (2 X 50 MVA) AIS Substation at Agamoni**	50.01	Already Approved (6^{th} SCM)
	LILO of Gossaigaon - Gauripur (AEGCL-Existing) 132kV S/c Line	15.41	

S.No	Name of the proposal	Estimated Cost by State (in Rs. Crs)	Brief Justification by State
	at Agamoni (AEGCL-New) – (10km)		
14.	**Establishment of new 132/33 kV (2 X 50 MVA) AIS Substation at Serfanguri**	50.01	Already Approved (1st NERSCT)
	Serfanguri (AEGCL- New) - Kokrajhar (AEGCL-Existing) 132kV D/c Line – (18km)	14.49	
15.	**Establishment of new 132/33 kV (2 X 50 MVA) AIS Substation at Dhing**	50.01	Already Approved (1st NERSCT)
	Dhing (AEGCL- New) - Nagaon (AEGCL-Existing) 132kV S/c Line – (35km)	19.09	
16.	**Establishment of new 132/33 kV (2 X 50 MVA) AIS Substation at Udarbond (Silchar-2)**	50.01	Already Approved (1st NERSCT)
	LILO of Pailapool (AEGCL- New) - Srikona (AEGCL- Existing) 132kV D/c Line – (5km)	4.02	
17.	**Establishment of new 132/33 kV (2 X 50 MVA) GIS Substation at Titabor**	70.23	Already Approved (1st NERSCT)
	Titabor (AEGCL-New) - Mariani (AEGCL-Existing) 132kV D/c Line – (20km)	16.1	
18.	**Establishment of new 132/33 kV (2 X 50 MVA) AIS Substation at Chabua**	50.01	Already Approved (1st NERSCT)
	LILO of Tinsukia (AEGCL-Existing) -Dibrugarh (AEGCL-Existing) 132kV S/c Line at Chabua (AEGCL-New) – (8km)	6.44	
19.	**Establishment of new 132/33 kV (2 X50 MVA) AIS Substation at Morigaon**	50.01	Already Approved (1st NERSCT)

S.No	Name of the proposal	Estimated Cost by State (in Rs. Crs)	Brief Justification by State
	Baghjhap (Existing)-Morigaon (New) 132kV D/c Line – (20km)	16.1	
20.	**Establishment of new 132/33 kV (2 X 50 MVA) AIS Substation at Amayapur**	50.01	Already Approved (1st NERSCT)
	Amayapur (AEGCL- New) - Hajo (AEGCL-Existing) 132kV D/c Line – (25km)	20.13	
21.	**Establishment of new 132/33 kV (2 X 50 MVA) AIS Substation at Dhupdhara**	50.01	Already Approved (1st NERSCT)
	Dhupdhra (AEGCL- New) - Boko (AEGCL-Existing) D/c Line – (25km)	20.13	
22.	**Establishment of new 132/33 kV (2 X 50 MVA) AIS Substation at Lala**	49.57	132/33kV S/S at Lala is proposed with connectivity through 132kV Haliakandi – Lala line. The area in and around Lala suffers from low voltage and frequent interruption of power on account of longer 33kV route. Establishment of Lala grid S/S will improve the quality of supply to these areas.
	Hailakandi(AEGCL-Existing)-Lala(AEGCL-New) 132kV S/c line – (20km)	17.6	
23.	**Establishment of new 132/33 kV (2 X 50 MVA) AIS Substation at Patharkandi**	51.05	132/33kV Patharkandi S/S is proposed (from LILO of 132kV Dullavcherra – Dharmanagar S/c line). Patharkandi comes almost midway between Dullavcherra and Dharmanagar (Tripura) which are separated by a distance of more than 60km. The area faces perennial low voltage problem due to longer 33kV route. Once a grid S/S comes up at Patharkandi from the LILO of 132kV Dullavcherra – Dharmanagar S/c line, along with additional 132kV connectivity from Karimganj grid S/S, reliability of not only the Patharkandi will vastly improve but also the reliability of Karimganj S/S will obviously improve manifold
	Karimganj(AEGCL-Existing)-Patharkandi(AEGCL-New) 132kV S/c line – (35km)	30.8	
	LILO of one circuit of Dullavchara (AEGCL-Existing)-Dharmanagar (PGCIL-Existing) 132kV D/c line at Patharkandi – (16km)	14.08	
24.	**Establishment of new 132/33 kV (2 X 50 MVA) AIS Substation at Dikhowmukh**	50.86	132/33kV S/S at Dikhowmukh is proposed with back to back connectivity of 132kV Amguri - Dikhowmukh- Betbari (Sibasagar) link. This S/S will cater to the expected load growth of Gaurisagar
	Amguri(AEGCL-New)-Dikhowmukh(AEGCL-	24.64	

S.No	Name of the proposal	Estimated Cost by State (in Rs. Crs)	Brief Justification by State
	New) 132kV D/c line – (28km)		and Dikhowmukh area. It is worth mentioning that the historic shrine of Azan Pir, the seventeenth century sufi saint, is situated in this area thereby possessing a very good potential for growth of tourism. Further, connecting the Betbari S/S from Dikhowmukh will increase reliability of Betbari as presently there is no redundancy for Betbari which caters to the load of major part of Sibasagar township.
	Betbari(AEGCL-Existing)-Dikhowmukh(AEGCL-New) 132kV D/c line – (32km)	28.16	
25.	**Establishment of new 132/33 kV (2 X 50 MVA) GIS Substation at Digboi**	70.23	132/33kV S/S at Digboi is proposed (from LILO of 132kV Tinsukia – Rupai S/c) to meet up the high load growth of Digboi area and the IOC-Digboi which presently depends on 33kV supply from Margherita.
	LILO of Margherita(Ledo) (AEGCL-Existing) - Tinsukia (AEGCL-Existing) 132kV S/c Line at Digboi (AEGCL-New) – (10km)	8.8	
26.	**Establishment of new 132/33 kV (2 X 50 MVA) AIS Substation at Jonai**	50.86	132/33kV S/S at Jonai is proposed through radial connection from 132kV Simen Chapori GSS. The 33kV Jonai S/S of APDCL caters to the load of eastern most parts of Dhemaji district. Jonai S/S, once commissioned shall be able to cater to the load of eastern part of Dhemaji district as well as the border area of Assam and Arunachal Pradesh.
	Jonai (AEGCL- New) - Silapathar (AEGCL-New) 132kV S/c Line on D/c Tower – (41km)	36.08	
27.	**Establishment of new 132/33 kV (2 X 50 MVA) AIS Substation at Ghilamora**	50.86	Already Approved (3rd NERPC-TP)
	LILO of one circuit of North Lakhimpur (AEGCL-Existing) - Dhemaji (AEGCL- Existing) 132kV D/c Line at Ghilamora Substation – (25km)	22	
28.	**Establishment of new 132/33 kV (2 X 50 MVA) AIS Substation at Belsiri**	50.07	132/33kV Belisiri S/S is proposed (132kV Dhekiajuli – Belsiri line) to meet up the growing demand of Missamari area of Sonitpur district. After a few years from now it will not be possible for Dhekiajuli GSS alone to cater to the growing demand of the area as a number of Tea-estates
	Dhekiajuli(AEGCL-Existing)- Belsiri (AEGCL-New) 132kV S/c line on D/c tower – (28km)	24.64	

S.No	Name of the proposal	Estimated Cost by State (in Rs. Crs)	Brief Justification by State
			along with vital defence installations are located in this area.
29.	**Establishment of new 132/33 kV (2 X 50 MVA) AIS Substation at Dumunichowki**	50.86	One 132/33kV S/S is proposed - either at Bezera (Kamrup-Rural district) or at Dumunichowki (Darrang district) through 132kV Sishugram – Bezera D/c line to cater to the high growth of demand in and around these locations as the proposed state capital region and the upcoming bridge across Brahmaputra from Bharalumukh area of Guwahati to North Guwahati connecting the proposed AIIMS will obviously give rapid boost to the development of the area. Further, for establishment of transmission linkage for this S/S, the Right of Way of existing 132kV Sishugram – PBSL line may be used. Also, the required land for the S/S may be acquired from the government land which is abundantly available within the complex of PBSL. The reliability of Sipajhar S/S at Mangaldoi will be increased through back to back connection of Sishugram – Dumunichowki - Sipajhar transmission link.
	Sishugram(AEGCL-Existing)- Dumunichowki (AEGCL-New) 132kV S/c line on D/c tower – (21km)	18.48	
30.	**Establishment of new 132/33 kV (2 X 50 MVA) AIS Substation at Doulasal**	50.86	132/33kV Doulasal S/S is proposed (from LILO of 132kV Barpeta-Amayapur D/c line) to meet up the growing demand of the southern parts of Nalbari district as well as the eastern part of Barpeta district. The reliability of Barpeta GSS will be enhanced through connection of 132kV Amayapur-Doulasal-Barpeta link as the new link will create redundancy for Barpeta in the event of loss of connectivity from Dhaligaon-Nalbari LILO.
	Barpeta(AEGCL-Existing)- Amayapur (AEGCL-New) 132kV D/c line with LILO of one circuit at Doulasal	52.8	
31.	**Establishment of new 132/33 kV (2 X 50 MVA) AIS Substation at North Salmara**	50.86	132/33 kV North Salmara S/S is proposed with S/c Line from 132kV APM(Jogighopa) to cater to the high growth of demand in and around the location and APM S/S will not be able to cater to all the load growth.
	North Salmara (AEGCL-New) - APM (AEGCL-Existing) 132kV S/c line – (12km)	10.56	

S.No	Name of the proposal	Estimated Cost by State (in Rs. Crs)	Brief Justification by State
32.	**Establishment of new 132/33 kV (2 X 50 MVA) AIS Substation at Tikrikilla**	50.86	Already Approved (3rd NERPC-TP)
	LILO of Agia - Hathsingimari (AEGCL-Existing) 132kV S/c Line at Tikrikilla – (8km)	7.04	
33.	**Establishment of new 132/33 kV (2 X 50 MVA) AIS Substation at Modertoli (Kampur)**	50.86	Already Approved (3rd NERPC-TP)
	LILO of one circuit of Samaguri (AEGCL-Existing) - Sankardevanagr (AEGCL-Existing) 132kV D/c Line at Modertoli (Kampur) – (10km)	8.88	

2. New transmission lines:

S.No	Transmission lines proposed	Estimated Cost by State (in Rs. Crs)	Brief Justification by State
1.	Amingaon-Mirza 220kV D/c Line – (38km)	140	220kV Amingaon Sub-station is coming up under NERPSIP scheme being implemented by PGCIL on behalf of AEGCL. The 220kV connectivity is only through a S/c LILO of D/c line between existing 220/132/33kV Rangia Sub-Station and 400/220kV Rangia new Sub-station.
2.	Rowta-Sonabil 220kV D/c Line – (75km)	92.25	Already Approved (3rd NERPC TP)
3.	2nd Ckt Stringing of Namrup-Mariani 220kV S/c on D/c Line – (146km)	35.03	2nd Ckt of 220kV Namrup-Mariani Line is required for Grid security and reliability. Moreover Namrup Replacement Power Plant (NRPP) (100MW) is coming up along with 70MW Solar plant at Amguri between Mariani and Namrup. 2nd CKT is of urgent necessity for Grid operation.
4.	Revival of one circuit of Samaguri-Mariani 220kV D/c Line – (168km)	93.92	220kV Samaguri-Mariani line-1 has been under very long outage. It is a very important link between Samaguri and Mariani S/S and new substations are also coming up in the section. Revival of this link is of utmost importance.

5.	North Lakhimpur- Dhemaji 132kV D/c Line – (63km)	55.44	Already Approved (3rd NERPC-TP)
6.	Diphu-Bokajan 132kV S/c Line – (50km)	44	Already Approved (3rd NERPC-TP)
7.	2nd circuit stringing of Agia-Hathsingimari 132kV S/c on D/c Line – (110km)	55	132/33kV Grid S/S is at Tikrikilla approved through LILO of 132kV Agia – Hatsingimari primarily due to the fact that the said route length of the line is more than 110 km and there is no Grid sub-station between Agia and Hatsingimari. 2nd Ckt of Agia-Hathsigimari is required for redundancy and stability of the Grid.

3. Reconductoring of existing transmission lines with HTLS:

S.No	Transmission lines proposed	Estimated Cost by State (in Rs. Crs)	Brief Justification by State
1.	Diphu-Bokajan 132 kV S/c Line – (17.73km)	10.1	Already Approved (3rd NERPC-TP)
2.	Sonabil-Pavoi 132 kV S/c line – (35.6km)	20.29	Already Approved (3rd NERPC-TP)
3.	Sonabil-Gohpur 132kV S/c Line – (87.6km)	49.93	Already Approved (3rd NERPC-TP)
4.	Pavoi-Gohpur 132kV S/c Line – (52.92km)	30.16	Already Approved (3rd NERPC-TP)
5.	Kahilipara-Amingaon 132kV both line sections with one circuit via Kamakhya and other via Sishugram – (32km)	32.96	Already Approved (3rd NERPC-TP)
6.	Amingaon-Dhaligaon 132kV Section except Rangia-Nathkuchi-Barnagar 132kV Section – (140km)	159.6	North Bank of Lower Assam (132 kV Rangia-Barnagar-Dhaligaon Section) is already under overloaded condition. This part of the system is more than 50 years old. Also two new substations i.e., Barpeta and Nathkuchi are also coming up in the section. Load flow studies have already established the need for the substation.

Proposals of Manipur

1. Proposed New Sub-Station along with associated transmission line:

S. No.	Name of Substation	Cost (in Rs. Cr)	Justification
1.	2x 20 MVA, 132/33 kV S/s at Awang Potsangbam	43.80	Awang Potsangbam is neighbor with villages like Mantripukhri, Nilakuthi and Heingang. The Capitol Project which comprises the State Legislative Assembly Complex, the Civil Secretariat Complex, the Police Head Quarter and the IT –SEZ Complex (the only IT Park in Manipur) are also located at Mantripukhri. Important security installation like IGAR South, CRPF HQ and BSF HQ are also around this area. The only Food Park of Manipur where various food processing and packaging industries are operated is located at Nilakuthi. Many developmental projects which will require large power supply are being taken up in and around Awang Potsangbam. In March 2024, the Hon;ble Chief Minister of Manipur inaugurated the 1st amusement park of Mnaipur at Awang Potsangbam Khunou with plans to expand it. The construction work of Imphal City Mall at Awang Leikinthabi, Koirengei, city's retail and entertainment shopping hub has already begun. However, the power in the above mentioned works and areas are supplied from 33/11 kV substations at Nilakuthi, Ibudhou Marjing, Mantripukhri, Civil Secretariat through 33 kV line from Yurembem(State) via Iroisemba. This line is facing power evacuation constraint due to high demand from the important installation mentioned above. 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 installtions of the State, a new 2x20 MVA, 132/33 kV substation at Awang Potsangbam with associated 132 kV LILO on Yurembam-Yaingangpokpi 132 kV D/c line is hereby proposed for CEA's consideration and recommendation.
2.	2x12.5 MVA, 132/33 kV S/s at Namrei	82.47	Power to all the 33kV 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. Considering the vastness of the area and to reduce the load, it has been proposed by the field engineers that a new 132/33 kV substation be constructed at Namrei which will feed power to the following 33/11 kV substations of Ukhrul • Nungbi Khullen • Jessami

			• Chingai(ongoing) • Tusom(ongoing) • Wahong (proposed) • Somdal (ongoing) It is, therefore, a new 2x25 MVA, 132/33 kV substation at Namrei with associated 132 kV line from 132/33 kV SS with Hundung to Namrei 132kV D/c along with LILO of one ckt at karong is hereby proposed for CEA's consideration and recommendation to give reliable power at Ukhrul and Kamjong districts of Manipur.

2. Augmentation of existing sub-station and stringing of 2nd circuit of existing S/c on D/c towers:

S.No	Name of the Substation	Estimated Cost by State (in Rs. Cr)	Brief Justification by State
1	Augmentaion at 132kV Yurembam S/s	21.51	These substations are the ones associated with re-conductoring of lines with HTLS conductor and are being augmented for compatibility purpose.
2	Augmentaion at 132kV Yaingangpokpi S/s	19.12	
3	Augmentation at 132kV Ningthoukhong S/s	16.73	
4	Augmentation at 132kV Churachandpur S/s	16.73	
5	Augmentation at 132kV Kakching S/s	21.03	
6	Augmentation at 132 kV Kongba S/s	18.4	

3. New transmission lines proposed:

S.No.	Name of line	Estimated Cost by State (in Rs.Crs)	Brief Justification by State
1.	Tamenglong-Karong132kV D/c line-70km	61.53	Tamenglong is connected in the intra state grid feeding from Rengpang. Connectivity with Karong will enhance the reliability of the power supply system in Tamenglong as Karong is connected to NER Grid.
2.	2nd circuit stringing of Rengpang Tamenglong S/c on D/c lines 29 Km	6.08	The S/c line was erected in D/c tower. The 2nd ckt are being planned in view of the increasing demand of the areas for future prospect.

3.	LILO of Imphal-Dimapur 132kV line at 132kV Karong S/s by HTLS-6km	11.42	Dimapur-Imphal 132kV transmission line is being re-conductored with HTLS. Hence the LILO transmission line at Karong on Imphal-Dimapur line is also proposed for re-conductoring with HTLS.
4.	132 kV Yaingangpokpi-Hundung 2nd circuit stringing on D/C tower – 26.810 km:	33.69	For enhanced reliability.
5.	132 kV Kakching-Chandel 2nd circuit stringing on D/C tower -16.065 km	21.80	For enhanced reliability.
6.	132 kV Kakching-Moreh 2nd circuit stringing – 55 km	7.91	For enhanced reliability.
7.	132 kV line from Hundung to Karong – 45 km	33.75	To form a complete outer132 kV ring main of Yurembam-Yaingapokpi-Hundung-Karong-Yurembam. In the 207th OCC and 25th TCC & 25th NERPC meetings, the forums in-principal agreed to take up this line in 2030-31 timeframe. This ring main will give power supply to two districts namely Ukhrul and Kamjong.
8.	132 kV line from Moreh to Chandel - 60 km:	43.59	To form an outer132 kV ring main of Kakching-Moreh-Chandel for enhanced reliability. The power supply to Tamu town of Myanmar from 132kV SS Moreh will be uninterrupted if this ring main is formed.

4. Re-conductoring of existing lines by HTLS conductor:

S. No.	Name of line	Estimated Cost by State (in Cr)	Brief Justification by State
1.	Yurembam–Yaingangpokpi 132kV D/c line-1st circuit–(41.36km)	30.73	The lines are part of Yurembam-Yaingangpokpi-Kongba –Thoubal-Kakching-Elangkhangpokpi-Churachnadpur-

2.	Yurembam–Yaingangpokpi132kV D/c line- 2ndcircuit–(46.99km)	30.75	Ningthoukhong-Yurembam132 kV ring main system. In case of disruption in any section of the ring, power supply has to be fed through the remaining healthy lines section. Hence these lines have to be replaced with high rating capacity.
3.	Ningthoukhong – Churachandpur132kV D/c line-(23.016km)	18.55	
4.	132 kV Yurembam (State)-Yurembam (PGCIL) line (II)-(0.95km)	3.82	The 1st Ckt of the transmission line was replaced by HTLS by Powergrid through NERSS. These remaining two ckts have to be replaced by HTLS for maximum power drawal.
5.	132 kV Yurembam (State)-Yurembam(PGCIL) line (III)-(0.92km)	3.76	
6.	Kakching–Churchandpur132kV D/C line-(37.858km)	28.37	The lines are part of Yurembam-Yaingangpokpi-Kongba –Thoubal-Kakching-Elangkhangpokpi-Churachnadpur-Ningthoukhong-Yurembam132kV ring main system. In case of disruption in any section of the ring, power supply has to be fed through the remaining healthy lines section. Hence these lines have to be replaced with high rating capacity.
7.	Yaingangpokpi – Kongba132 kV S/C line-(32.284km)	24.92	
8.	Kongba-Kakching 132 kV line (44.953 km)	33.26	
9.	Ningthoukhong-Yurembam 132kV D/c line -1st circuit (27.5 Km)	21.05	

Proposals of Meghalaya

1. Proposed new substations along with their associated transmission lines

Sl. No.	Name of Substation	Justification
1.	Mynkre 400/220 KV, 2x315 MVA and 220/132 KV, 2x160 MVA substation	Redundant evacuation of MLHEP-2 at 220 KV level and at 400 KV level to offset overloading of 132 KV Mynkre bus. South Assam load not scaled.
	LILO of 400 KV Silchar-Azara line at Mynkre – 6 km	
	MLHEP-II Mynkre 220 KV D/C line – 60 km	
2.	Sohra 220/132 KV, 2X160 MVA substation	Evacuation of MLHEP-II generation
	MLHEP-II Sohra 220 KV D/C line – 120 km	
	LILO of Nangalbibra—New Shillong D/C line at Sohra -240 km	
	Sohra-New Shillong 220 KV D/C line – 110 km	
3.	Pongtung 132/33 KV, 2x25 MVA substation	CEA approved plan
	Sohra-Pongtung 132 KV D/C line – 60 km	
4.	Nongpoh 132/33KV, 2x25 MVA substation	CEA approved plan
	LILO of 132 KV Stage-III Umtru D/C line at Nongpoh – 2x10 km	
5.	Killing (New) 132/33 KV, 2 x 25 MVA GIS	CEA approved plan
	Killing-Killing (New) 132 KV D/C line – 2.5 km	
6.	Baghmara 132/33 KV, 2x 25 MVA substation	To form a Ring Main system for district HQ Baghmara
	Nangalbibra-Baghmara S/C line on D/C towers – 65 km	
	Ampati-Baghmara 132 KV D/C line – 100 km	
7.	Mawkhanu 132/33 KV, 2x25 MVA substation	Industrial load
	New Shillong-Mawkhanu D/C line – 10 km	

2. **New Transmission lines**:

S.No.	Name of the transmission line	Justification
1.	New Shillong- IIM 132 kV S/c line (8 km)	N-1 redundancy for IIM
2.	Mawkhanu/New shillong -Mawlyndep 132 kV S/c line – (30 km)	To reduce loading on 132 KV Khliehriat-Mustem S/C line
3.	Nangalbibra (ISTS) – Nangalbibra (MePTCL) 132 KV D/C line – (10km)	For downstream evacuation of ISTS power flow

3. Augmentation of substations

S.No.	Name of substation	Remarks
1.	Augmentation of 132/33 KV, 2x20 MVA ICTs with 2x50 MVA ICTs at NEHU S/S	One 20 MVA transformer will be utilized at Nongstoin S/S and another 20 MVA transformer at Mawphlang S/S
2	Augmentation of 132/33 KV, 1x20 MVA ICTs with 2x20 MVA ICTs at Nongstoin S/S	20 MVA transformer from NEHU S/S to be utilized

3	Augmentation of 132/33 KV, 2x20 MVA ICTs with 3x20 MVA ICTs at Mawphlang S/S	20 MVA transformer from NEHU S/S to be utilized
4	Augmentation of 132/33 KV, 1x50 MVA ICTs with 2x50 MVA ICTs at EPIP-II S/S	No N-1 redundancy
5	Augmentation of 132/33 KV, 1x12.5 MVA ICTs with 2x12.5 MVA ICTs at Sohra S/S	12.5 MVA transformer from Nangalbibra S/S to be utilized
6	Augmentation of 132/33 KV, 3x20 MVA ICTs with 3x50 MVA ICTs at Mawlai S/S	Two 20 MVA transformers will be kept as spares
7	Augmentation of 132/33 KV, 45 (2x20 + 1x5) MVA ICTs with 3x20 MVA ICTs at Rongkhon S/S	20 MVA transformer from Mawlai S/S to be utilized
8.	Augmentation of 132 KV bus at 132 KV Mawlai S/S	Existing conductor will not be able to cater to increased loading
9.	Augmentation of 132 KV bus at 132 KV Mynkre S/S	To cater to power flows from MLHEP-1 and MLHEP-2
10.	Augmentation of 132 KV bus at 132 KV Nangalbibra S/S	To cater to increased power flows from ISTS and from intra state during high hydro

4. Reconductoring of existing transmission lines

Sl.no.	Name of the line	Existing conductor	COD	Justification
1	Umiam Stage1-Umiam 132KV S/C line – 6km	ACSR Panther	1991	No N-1 compliance for Shillong load centre
2	Umiam Stage1-Mawlai 132KV S/C line – 12.35 km	ACSR Panther	1964	No N-1 compliance for Shillong load centre
3	Umiam-NEHU 132KV S/C line - 14 km	ACSR Panther	1991	
4	Khliehriat – Khliehriat (PG) 132KV line 2 – 5.35 km	ACSR Panther	2006	No N-1 compliance for Khliehriat (PG)-Khliehriat corridor
5	NEHU-Mawlyndep-Mustem-Khliehriat 132 KV S/C line – 56km	ACSR Panther	1996	Anticipated overloading during high hydro and lean hydro seasons
6	Mawphlang-Mawlai 132KV S/C line – 20.26 km	ACSR Panther	1977	Overloading in the event of 132 KV bus shutdown at Umiam Stage-I P/S

Proposals of Mizoram

1. New substations alongwith the associated transmission lines:

S.No	Name of the proposal	Estimated Cost (in Rs. Cr.)	Justification	Time line for completion
1.	**Establishment of new 132/33 kV Sub-Station at Hnahthial** Bukpui to Hnahthial 132 kV D/c line: 55km	101.81	Bukpui to Hnahthial line was already agreed by CEA for 10% GBS. It is revised with inclusion of 132kV Hnahthial S/s	36 Months
2.	**2x12.5MVAr at 132kV level Capacitive Reactor at Khawiva**		Improvement in reliability and redundancy in power supply within the State	12 Months

2. New transmission lines:

S.No	Name of Project	Amount (Rs in Crore)	Justification/ remarks	Time line for completion
1.	Construction of 2nd 132kV Melriat (Powergid) to Zuangtui (Old) line	n/a	Improvement in reliability and redundancy in power supply at State Capital	24 Months
2.	Construction of 2nd 132kV Melriat (Powergid) to Melriat using at least 1000A HTLS conductor	n/a	Improvement in reliability and redundancy in power supply within the State	24 Months
3.	Construction of 132kV S/C line on d/C tower from Khawzawl to Champhai	22.78	Improvement in reliability and redundancy in power supply at Champhai District	24 Months
4.	Construction of 132kV S/C line on D/C tower from Hnahthial to Siaha via Sangau	120.35	Improvement in reliability and redundancy in power supply at Saiha & Lawngtlai District	36 Months

5.	Construction of 132kV S/C line on D/C tower from Tuirial HEP to Darlawn via Sakawrdai	118.64	Improvement in reliability and redundancy in power supply & evacuation of power from 60MW Tuirial HEP	36 Months
6.	Construction of 132kV S/C line on D/C tower from Champhai to E.Lungdar via S.Khawbung	97.71	Improvement in reliability and redundancy in power supply at Eastern Mizoram	36 Months
7.	Construction of 132kV D/C line from Khawiva to Hnahthial	58.73	Improvement in reliability and redundancy in power supply at Hnahthial District	24 Months
8.	Construction of 132kV S/C line on D/C tower from Darlawn to Ngopa	69.00	Improvement in reliability and redundancy in power supply at Khawzawl & Champhai District	36 Months
9.	132kV S/C line on D/C tower from Siaha to Lawngtlai (initially to be charged at 33kV)	51.15	Improvement in reliability and redundancy in power supply at Siaha District	36 Months
10	Construction of 132kV D/C line on D/C tower from Bukpui to Hnahthial	69.94	Improvement in reliability and redundancy in power supply at Hnahthial District	36 Months
11	Construction of 132kV S/C line on D/C tower from S.Bungtlang to Lawngtlai (initially to be charged at 33kV)	70.29	Improvement in reliability and redundancy in power supply at Lawngtlai District	36 Months
12	Construction of 132kV S/C line on S/C tower from Marpara to Thenhlum (initially to be charged at 33kV)	30.46	Improvement in reliability and redundancy in power supply at Serchhip District	36 Months

3. Reconductoring of existing lines by HTLS conductor alongwith upgradation of associated bay equipments:

S. No.	**Name of line**	**Estimated Cost (in Rs. Cr.)**	**Justification**

1.	Re-conductoring of Zuangtui to Sihhmui 132 kV S/c line with at least 1000 A HTLS conductor	12.34	• Improvement in reliability and redundancy in power supply at State Capital
2.	Re-conductoring of Luangmual to Melriat 132 kV S/c line with at least 1000 A HTLS conductor	5.60	• Improvement in reliability and redundancy in power supply at State Capital
3.	Re-conductoring of Zuangtui to Bukpui 132 kV S/c line with at least 1000 A HTLS conductor	20.86	
4.	Re-conductoring of Bukpui - Kawmzawl and Khawiva -Kawmzawl`132kV S/C line with at least 1000A HTLS conductor	26.68	

4. Augmentation of following 132 kV Sub-Station (7Nos):

S. No.	**Name of substation**	**Estimated Cost (in Rs. Cr.)**	**Brief Justification/remarks by state**
1.	Augmentation of 132/33 KV, Bawktlang S/s	6.17	• Improvement in reliability and redundancy in power supply within the State • Proposed capacity- 2x25 MVA
2.	Augmentation of 132/33 KV, Saitual S/s	2.85	• Improvement in reliability and redundancy in power supply within the State • Proposed capacity- 2x12.5 MVA
3.	Augmentation of 132/33 KV, Melriat S/s	7.91	• Improvement in reliability and redundancy in power supply within the State • Proposed capacity- 2x25 MVA
4.	Augmentation of 132/33 KV, Khawzawl S/s	2.85	• Improvement in reliability and redundancy in power supply within the State • Proposed capacity- 2x12.5 MVA
5.	Augmentation of 132/33 KV, Champhai S/s	2.85	• Improvement in reliability and redundancy in power supply within the State • Proposed capacity- 2x12.5 MVA
6.	Augmentation of 132/33 KV, Serchhip S/s	6.17	• Improvement in reliability and redundancy in power supply within the State • Proposed capacity- 1x25 & 1x12.5 MVA
7.	Augmentation of 132/33 KV, E.Lungdar S/s	2.85	• Improvement in reliability and redundancy in power supply within the State • Proposed capacity- 1x6.3 & 1x12.5 MVA

Proposals of Nagaland

1. Proposed New sub-stations alongwith their associated transmission lines

Sl.No.	Details of the proposal	Estimated Cost (Rs. In Cr)	Remarks
1.	**132/33 kV, 2x25MVA Sub-Station at Mon with sending end bay for Tizit**	33.44	The projects listed from Sl. 1 to Sl.4, have already been recommended by CEA for implementation under Intra-State requirement by 2030 in respect of Nagaland State vide letter *No.CEA-PS-12-16/1/2022-PSPA-II Division, Dt. 25.02.2023.*
	132kV S/C Transmission Line on D/C tower from Longleng to Mon- 44km	40.30	
2.	**132/33 kV, 2x50MVA Sub-Station at Tuli near NPPCL**	37.36	
	Construction of 132kV S/C transmission line on D/C tower from Mokokchung PG SS to Tuli- 56km	39.76	
	Construction of 132kV S/C transmission line on D/C tower from Tuli to Naginimora- 34km.	24.14	
	Construction of 132kV S/C transmission line on D/C tower from Longleng to Tuli- 50km	35.50	
3.	**132/33kV, 2x10MVA Sub-Station at Naginimora**	23.48	
	Construction of 132kV S/C transmission line on D/C tower from Naginimora to Tizit- 44km	31.24	
4.	**132/33kV, 2x10MVA Sub-Station at Tizit**	23.48	
	Construction of 132kV S/C transmission line on D/C tower from Tizit to Mon- 30km	21.30	
5.	**2x 50MVA,132/33 kV Sub-Station at Old Showuba near Referral Hospital Dimapur with sending end bay for Niuland and Diary Farm**	41.34	The proposals from Sl. 5 to Sl.10 was initially proposed to be funded by ADB under Externally Aided Project (EAP). However, the Ministry of Finance, GoI vide OM No.01(05)/PFC-II/2022, Dt. 25.05.2023, has introduced Capping limits of EAP funds for States due to which
	Up-gradation of 132kV sending end bay equipment along with re-conductoring of the Bus-bar with HTLS at PG SS Dimapur	1.06	
	Up-gradation of existing 132kV Dimapur (PG)-Kohima S/C line with HTLS from Dimapur (PG) to LILO point (15km) and construction of LILO from LILO point to Old Showuba Sub-station (12km) with HTLS conductor for Ckt-I and ACSR Panther for Ckt-II - 27km	34.81	

6.	**2x 50MVA, 132/33kV Sub-Station at Diary Farm (Kushiabill)**	35.30	only two hydro projects namely 42MW Lower Tizu HEP with an estimated cost of Rs. 541.12 Cr. and 24MW Zungki HEP with an estimated cost of Rs. 368.53 Cr. have been considered within the EAP fund provision. In view of the above, the projects from Sl. 5 to Sl.10, are now proposed for implementation under Intra-state transmission Plan 2030. **Note:** *The proposals submitted herein (from Sl.5 to 10) are in accordance with the recommendation of CEA conveyed vide letter No.CEA-PS-12-16/17/2018-PSPA-II Division, Dt. 21.09.2022.*
	132kV S/C Transmission line on D/C tower from Old Showuba to Diary Farm (Kushiabill)- 12km	14.29	
7.	**2x 25MVA, 132/33kV Sub-Station at Niuland with sending end bay for Liphi**	32.17	
	132kV D/C Transmission line with Zebra conductor from Zhadima to Niuland- 27km	36.17	
	132kV S/C Transmission line on D/C Tower from Old Showuba to Niuland- 24km	26.62	
8.	**2x 10MVA, 132/33kV Sub-Station at Liphi with sending end bay for Champang**	28.18	
	132kV S/C Transmission line on D/C Tower from Niuland to Liphi- 30km	32.37	
9.	**2x10MVA, 132/33kV Sub-Station at Champang with One sending end bay for Longnak**	30.09	
	132kV S/C Transmission line on D/C Tower from Liphi to Champang-25km	28.20	
	132kV S/C on D/C transmission line from Champang to Longnak- 64km	70.07	
10.	**2x 50MVA, 132/33kV Sub-Station at Old TPS 7th Mile Dimapur with one 132kV sending end bay**	35.60	
	132kV S/C Transmission line on D/C Tower from Tsitrongse to Old TPS 7th Mile Dimapur- 13km.	15.16	

2. New 132 kV Transmission lines:

S.No.	Details of proposal	Estimated Cost (in Rs. Cr.)	Remarks
2.	**Zungki HEP - Kiphire 132 kV S/c line** along with 132 kV end equipments at Kiphire substation for evacuation of power from 24 MW Zungki HEP-22 km	24.16	The projects 42MW Tizu HEP and 24MW Zungki HEP have been cleared by the Department of

S.No.	Details of proposal	Estimated Cost (in Rs. Cr.)	Remarks
3.	**Lower Tizu HEP - Kiphire 132 kV S/c on D/c line** along with 132 kV end equipments at Kiphire substation for evacuation of power from 42 MW Lower Tizu HEP-35 km.	37.32	Economic Affairs, Ministry of Finance, GoI and posed to ADB for implementation in January 2022 for 24MW Zungki HEP and February 2022 for 42MW Lower Tizu HEP respectively and is under conduct of due diligence for implementation of the project. As the implementation of the projects is underway, transmission line connectivity has become imperative and hence the proposals at Sl. 11 & 12 are submitted for consideration.

Proposals of Tripura

1. New 132/33kV Substations along-with their associated transmission lines and associated bays

S.No.	Name of the proposal	Estimated Cost (Rs. in Cr.)
1.	**Badharghat GIS S/s, 132/33 kV, 2x50 MVA**	115.39
	LILO of one circuit of 79 Tilla Grid-Rokhia 132 kV D/c line atBadharghat (HTLS) – 5 km.	11.05
	Surajmaninagar – Badharghat (HTLS) 132 kV D/c line – 15 km.	33.16
2.	**Ompi AIS S/s, 132/33 kV, 2x25 MVA**	42.51
	Gamaitilla - Ompi (ACSR Panther) 132 kV D/c line with associated bays -22 km.	57.53
	Ompi - Amarpur (ACSR Panther) 132 kV D/c line with associated bays -21km.	57.12
3.	**Jatanbari S/s, 132/33 kV, 2x25 MVA.**	42.51
	Amarpur - Jatanbari (ACSR Panther) 132 kV D/c line with associated bays -20 km	48.51
4.	**Boxanagar S/S, 132/33 kV 2x25 MVA.**	42.51
	LILO of one circuit of Rokhia–Rabindranagar 132kV D/c line at Boxanagar (ACSR Panther) -15 km.	13.41
5.	**Dhwajanagar AIS S/s, 132/33 kV, 2x30/50 MVA**	60
	1(One) Circuit LILO of 132 KV Surjamaninagar - Udaipur D/c line - 10 km	34
	33 kV Downstream Network	71.6
6.	**Baikhora AIS S/s, 132/33 kV, 2 x 30/50 MVA**	60
	1(One) Circuit LILO of 132 KV Bagafa - Satchand D/c line - 10 km	34
	33 KV Downstream Network	50.34
7.	**Matai AIS S/s, 132/33 kV, 2 x 30/50 MVA**	60
	1(One) Circuit LILO of132 KV Belonia - Sabroom D/c line - 10 km	34
	33 KV Downstream Network	108.26
8.	**Dalak AIS S/s, 132/33 kV, 2 x 31.5 MVA**	55
	1(One) Circuit LILO of 132 kV Amarpur - Jatanbari D/c line - 10 km	34
	33 kV Downstream Network	68.38
9.	**Bagbassa AIS S/s, 132/33 kV, 2 x 30/50 MVA**	60
	LILO of 132 kV Missiontilla - P.K.Bari S/c line - 10 km	34

	33 kV Downstream Network	64.46
10.	**Dolugaon AIS S/s, 132/33 kV, 2x30/50 MVA**	60
	LILO of 132 KV Gournagar - P.K.Bari S/c line - 10 km	34
	33 kV Downstream Network	44.48
11.	**Nabincherra AIS S/s, 132/33 KV, 2x30/50 MVA**	60
	LILO of 132 kV Missiontilla - P.K.Bari S/C line - 10 km	34
	33 kV Downstream Network	142.84
12.	**Santirbazaar AIS S/s, 132/33 kV, 2x30/50 MVA**	60
	LILO of 132 KV Ambassa - Kamalpur S/c line - 10 km	34
	33 kV Downstream Network	54.96
13.	**Ranirbazaar (Mohanpur) AIS S/s, 132/33 KV, 2x30/50 MVA**	60
	LILO of 132 kV Bodhjungnagar - Jirania S/c line - 10 km	34
	33 kV Downstream Network	52.34
14.	**Hezamara AIS S/s, 132/33 kV, 2x30/50 MVA**	60
	LILO of 132 kV Mohanpur - Dhalabil S/c line - 10 km	34
	33 kV Downstream Network	74.18
15.	**Kalyanpur AIS S/s, 132/33 kV, 2x30/50 MVA**	60
	LILO of 132 KV Gamaitilla - Dhalabil S/C line - 10 km	34
	33 kV Downstream Network	87.42
16.	**Kulubari AIS S/s, 132/33 kV, 2x30/50 MVA**	60
	1(One) Circuit LILO of 132 kV Rabindranagar - Rokhia D/c line - 10 km	34
	33 kV Downstream Network	78.5
17.	**Charilam AIS S/s, 132/33 kV, 2x30/50 MVA**	60
	132 kV Gokulnagar - Charilam D/c Line - 30 km	102
	132 kV Bishramganj - Charilam D/C Line - 14 km	47.6
	33 kV Downstream Network	52.9
18.	**Aralia GIS S/s, 132/33 kV 2x50 MVA**	101
	LILO of one circuit of 79 Tilla Grid –Surjamaninagar 132 kV D/c line at Aralia (HTLS)- 4 km.	

2. New 132 kV Lines

S.No	Name of the line	Estimated Cost (Rs. in Cr.)
1.	Palatana - Udaipur 132 kV S/c line (HTLS) with associated bays - 12km	32.21
2.	2nd circuit stringing of Bagafa – Satchand 132 kV S/c line (ACSR Panther) with associated bays - 40km	24.62

3.	Surjamaninagar (TSECL) - Udaipur 132 kV D/c line (ACSR panther) with associated bays – 45 km	94.11
4.	LILO of 2nd circuit of Surajmaninagar (TSECL)-Bodhjungnagar 132 kV D/c line with HTLS at Surajmaninagar (ISTS) 400/132 kV S/s along with associated bays - (7 km)	22.34
5.	*Kanchanpur- Vangmun 132 kV S/c on D/c line (ACSR Panther) with associated bays – 32 km	64.26
6.	*Amarpur –Gandacherra 132 kV S/c on D/c line (ACSR Panther)with associated bays – 30 km	77.26
7.	Satchand – Sabroom 132 kV S/c line (ACSR Panther) with associated bays at Satchand and Sabroom S/s – 20 km	30.00

3. Augmentation of 132kV existing Substations

S.No	Details of the Proposed transformation Capacity	Estimate Cost (Rs. in Cr.)
1.	79 Tilla Grid 132/33 kV, 4x50 MVA S/s	27.16
2.	Surajmaninagar, 132/33 kV, 2x50 MVA S/s	13.58
3.	PK Bari132/33 kV, 2x50 MVA S/s	18.19
4.	Mission Tilla132/33 kV, 2x50 MVA S/s	18.19
5.	Bodhjungnagar132/33 kV, 3x50 MVA S/s	24.98
6.	Gamaitilla132/33 kV, 2x25 MVA S/s	9.3
7.	Kamalpur 132/33 kV, 2x25 MVA S/s	4.6

8. Reconductoring of Existing 132kV Lines:

S.No.	Name of the line	Estimated Cost (Rs. in Cr.)	Remarks
1.	Udaipur – Palatana 132 kV S/c line-12km (by HTLS Conductor, Ampacity 800 Amp)	9.69	Recommended in 9th CMETS-NER Meeting and subsequently approved in 23rd NERPC Meeting
2.	P.K.Bari (TPTL) – Dharmanagar 132 kV S/c line - 36.5 km (Intra-State Line) (by HPC Conductor, AL59).	9.34	Recommended in 15th CMETS-NER Meeting and subsequently approved in 24th NERPC Meeting
3.	Dharmanagar (TPTL) – Durllavchera (AEGCL) 132 kV S/c line - 37.5 km (Inter-State Line) (by HPC Conductor, AL59).	9.87	
4.	Gamaitilla–Dhalabil 132 kV S/c line - 30.4 km (by HTLS Conductor, Ampacity 800 Amp)	26	

Proposals of Sikkim

1. New substations alongwith the associated transmission lines:

S.No	Name of the proposal	Justification
1.	**i. Establishment of Assam Lingzey 2x10MVA, 66/11kV S/s**	Peak Load of Assam Lingzey is around 5 MW which is fed through long 11 KV feeders facing frequent outages and voltage issues.
	ii. Assam Lingzey-LLHP 66 kV S/c line on D/c tower	
2.	**i. Establishment of Ingtang (Yuksom) 66/11 kV, 2x3 MVA S/s**	The entire division has only 11 KV supply from Pelling and Geyzing Sub-Station. As the division is geographically, a huge area the load cannot be catered from these 11 KV outgoing feeders. Also, the reliability of supply is less due to lengthy 11 KV lines emanating from these two s/s.
	ii. Gyalshing– Yuksom 66 kV D/c line	
3.	i. **Establishment of Lower Radhu (Dentam) 66/11 KV, 2X3 MVA S/**s	66 KV line and substation have higher capacity, allowing more power to be transmitted efficiently and meeting future growth in demand. Establishing a ring main system with two 66 KV sources from pelling and Rothak improves reliability and will maintain uninterrupted service to consumers.
	ii. Dentam – Pelling 66kV S/c line along with bay extension (01 No.) at Pelling S/s-12km	
4.	**i. Establishment of Rabom (Chungthang), 66/11kV, 2×10 MVA S/s**	This Substation and Transmission line shall be used for evacuation of 12MW Power generated by Rabomchu Power Plant.
	ii. LILO of Singhik-Lachen 66 kV Line at Rabom	
5.	**i. Establishment of New Melli, 220/66 kV, 2×50 MVA S/s**	The PGCIL 220 kV switching sub-station (GIS) at New Melli has been constructed with sole purpose of evacuating power generation from hydro-projects in Sikkim to various parts of the country through the National Power Grid. The Rothak 66/11 kV sub-station is in close proximity to the above PGCIL sub-station with an approx. distance of around 2.5 kms.
	ii. New Melli- Rothak 66 kV D/c line	

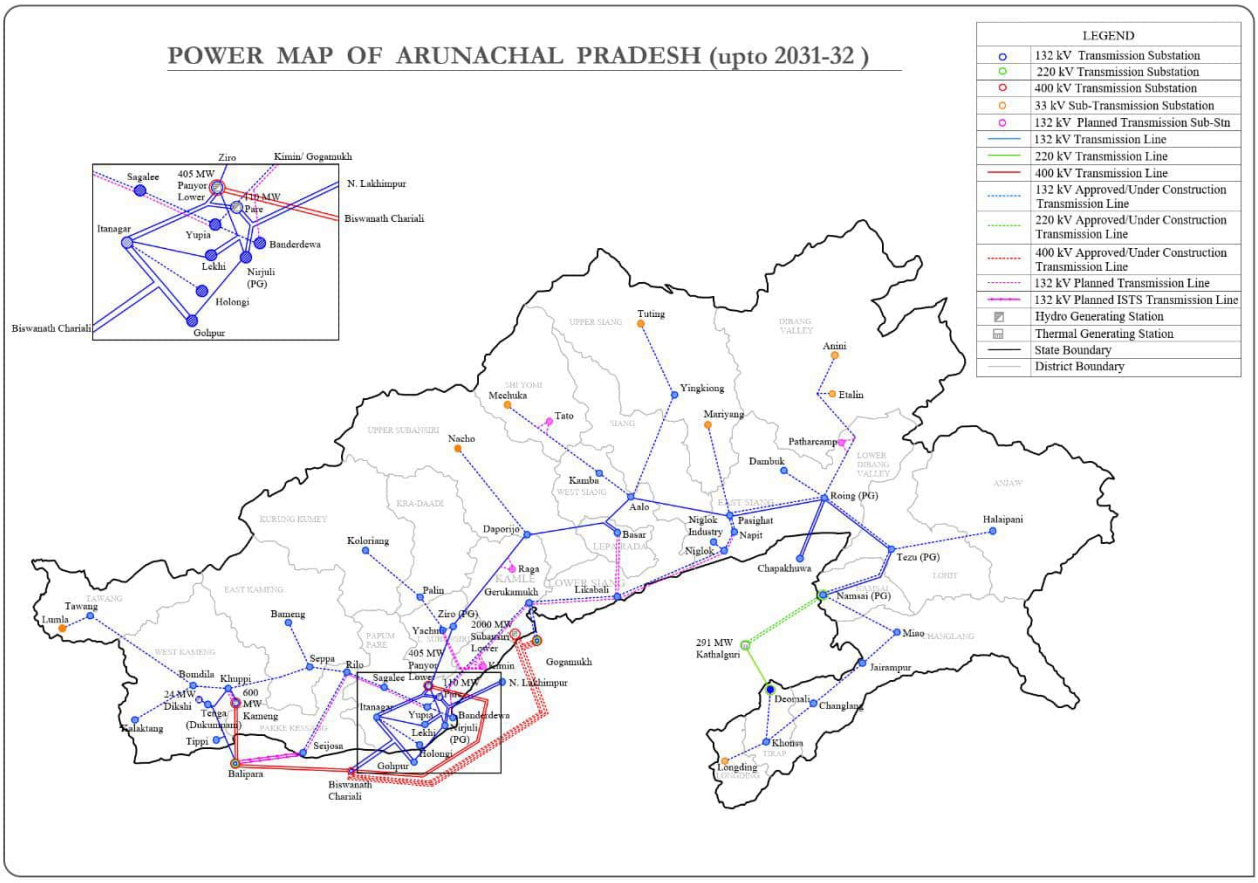
2. New transmission lines:

S.No	Transmission lines proposed	Brief Justification by State
1.	**Rorathong-Rhenock 66 kV S/c on D/c line -** 5.4 km along with bay extension (02 Nos) at Rorathang S/s and (02 Nos) at Rhenock S/s	Topakhani is currently connected with 66KV network of long lines from LLHP-Marchak-Macleods-URHP-Topakhani. Further, Topakhani is not compliant to N-1 contingency.to N-1 contingency.
2.	**Topakhani-Samardung 66 kV S/c line -** 5.1 km along with bay extension (01 Nos) at	Topakhani is currently connected with 66KV network of long lines from LLHP-Marchak-Macleods-URHP-Topakhani. Further,

S.No	Transmission lines proposed	Brief Justification by State
	Topakhani SS and (01 Nos) at Samardong S/s	Topakhani is not compliant to N-1 contingency.

3. Augmentation of 132 kV Sub Station

Sl. No.	Details of the Proposed transformation Capacity	Justification
1.	Augmentation of Melli 2x50 MVA, 132/66kV S/s with 1x50 MVA 132/66kV ICT along with one No. 132/66 kV ICT bay at Melli.	Capacity Augmentation proposed substations considering future load forecast up-to 2030
2.	Augmentation of Phodong, 2x5 MVA, 66/11kV S/s with additional 2x10 MVA 66/11kV ICT	Capacity Augmentation proposed substations considering future load forecast up-to 2030
3.	Augmentation of Namchi 2x2.5MVA, 66/11kV S/s with 2x10MVA ICTs	Capacity Augmentation proposed substations considering future load forecast up-to 2030
4.	Augmentation of Melli (1x5 MVA + 2x10 MVA), 66/11kV S/s with 2x10 MVA ICTs	Capacity Augmentation proposed substations considering future load forecast up-to 2030
5.	Installation of Additional 132/66 KV, 20 MVA Power Transformer Alongwith Extension of 132 KV Incoming Bay Extension at Kyongsha, Gyalshing District	Capacity Augmentation proposed substations considering future load forecast up-to 2030


POWER MAP OF ARUNACHAL PRADESH (upto 2031-32)
LEGEND
132 kV Transmission Substation
220 kV Transmission Substation
400 kV Transmission Substation
33 kV Sub-Transmission Substation
132 kV Planned Transmission Sub-Stn
132 kV Transmission Line
220 kV Transmission Line
400 kV Transmission Line
132 kV Approved/Under Construction Transmission Line
220 kV Approved/Under Construction Transmission Line
400 kV Approved/Under Construction Transmission Line
132 kV Planned Transmission Line
132 kV Planned ISTS Transmission Line
Hydro Generating Station
Thermal Generating Station
State Boundary
District Boundary
Ziro
Kimin/ Gogamukh
Sagalee
405 MW Panyor Lower
110 MW Pare
N. Lakhimpur
Biswanath Chariali
Itanagar
Yupia
Banderdewa
Lekhi
Nirjuli (PG)
Holongi
Golpur
Tuting
Anini
Yingkiong
Etalin
Mechuka
Tato
Mariyang
Nacho
Pathargamp
Dambuk
Kamba
Roing (PG)
Aalo
Niglok
Industry
Pasighat
Napit
Halaipani
Daporijo
Basar
Koloriang
Raga
Tezu (PG)
Chapakhuwa
Palin
Gerukamukh
Likabali
Namsai (PG)
Tawang
Lumla
Bameng
Ziro (PG)
2000 MW Subansiri Lower
Yachuli
Miao
291 MW Kathalguri
Seppa
Rilo
Kimin
Gogamukh
Bomdila
Khuppi
600 MW Kameng
24 MW Dikshi
Tenga (Dukmaisum)
Tippi
Jairampur
Deomali
Changlang
Khonsa
Longding
Seijosa
Balipara
Biswanath Chariali

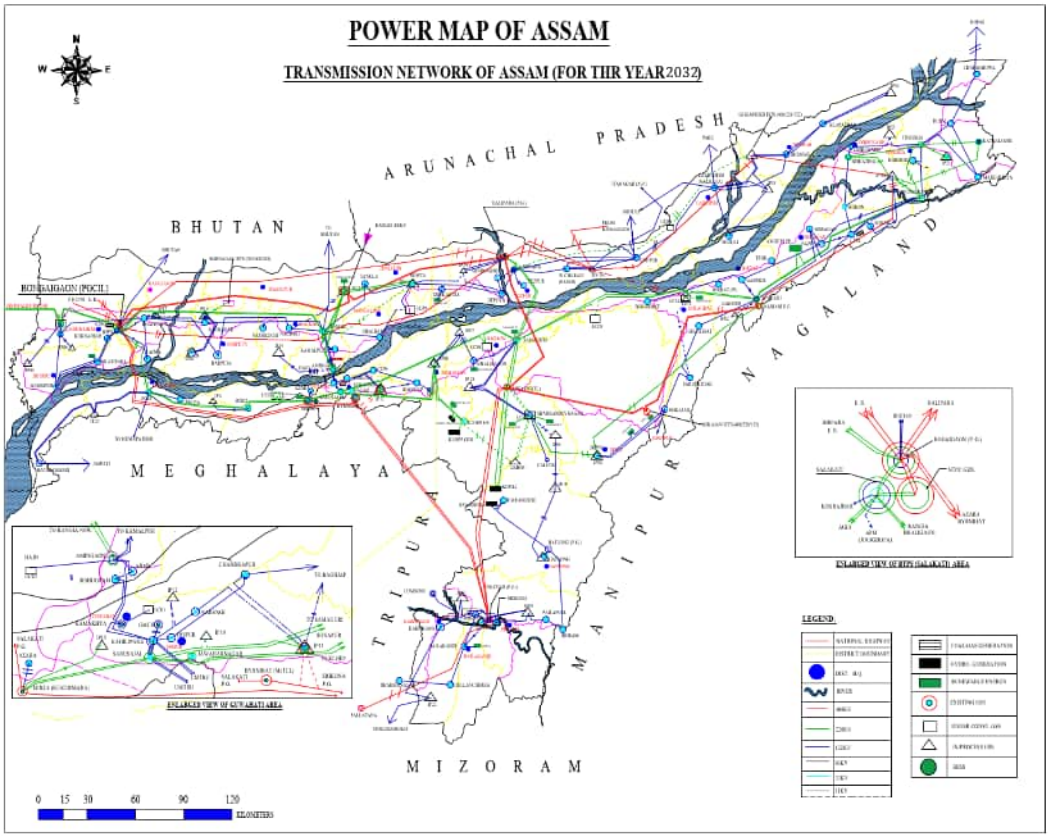
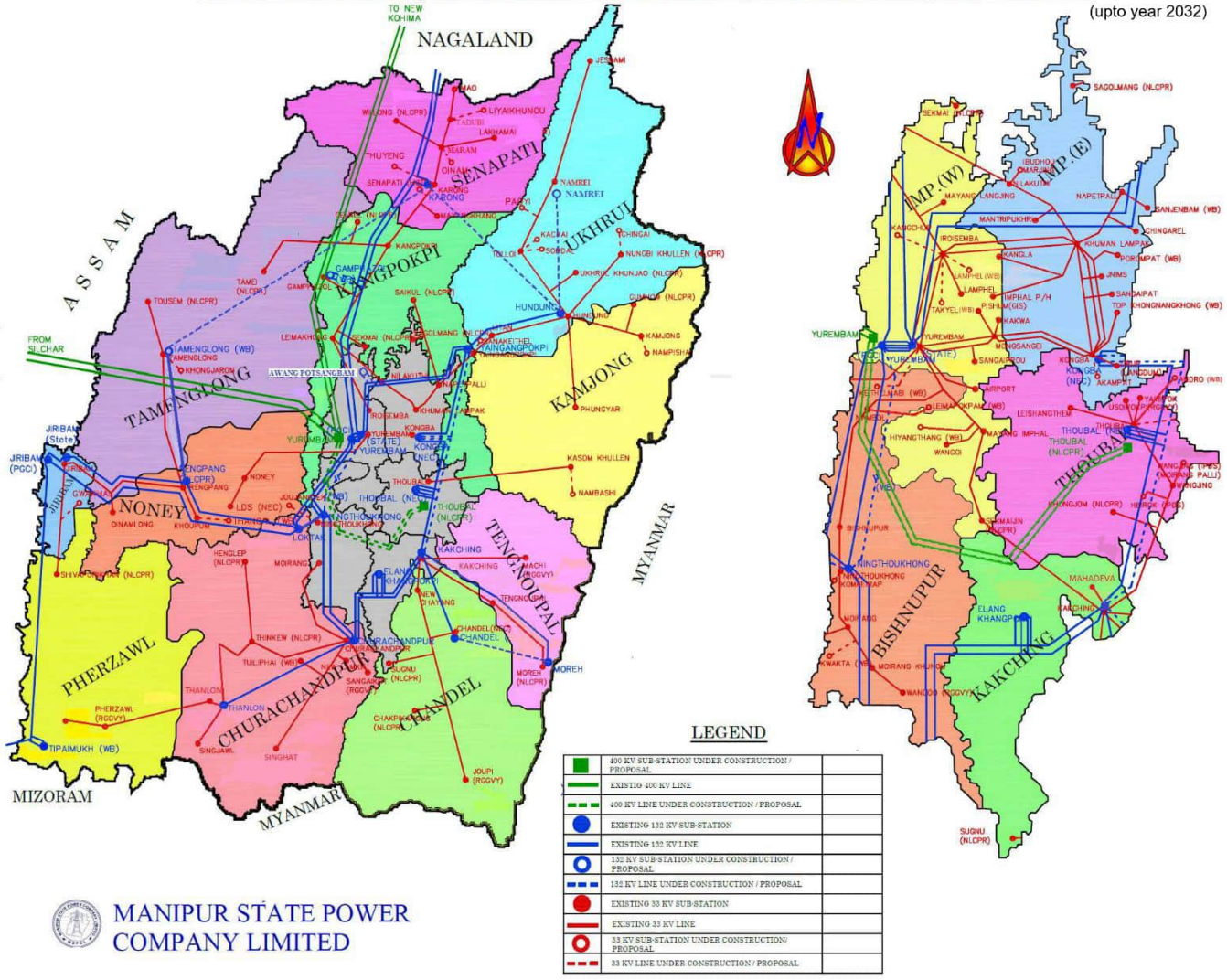

POWER MAP OF ASSAM
TRANSMISSION NETWORK OF ASSAM (FOR THE YEAR 2032)
N
W
E
S
ARUNACHAL PRADESH
BHUTAN
NAGALAND
MEGHALAYA
TRIPURA
MANIPUR
MIZORAM
BONGAIGAON (PGCIL)
ENLARGED VIEW OF GUWAHATI AREA
ENLARGED VIEW OF BTPS (SALAKATI) AREA
LEGEND
0 15 30 60 90 120
KILOMETERS

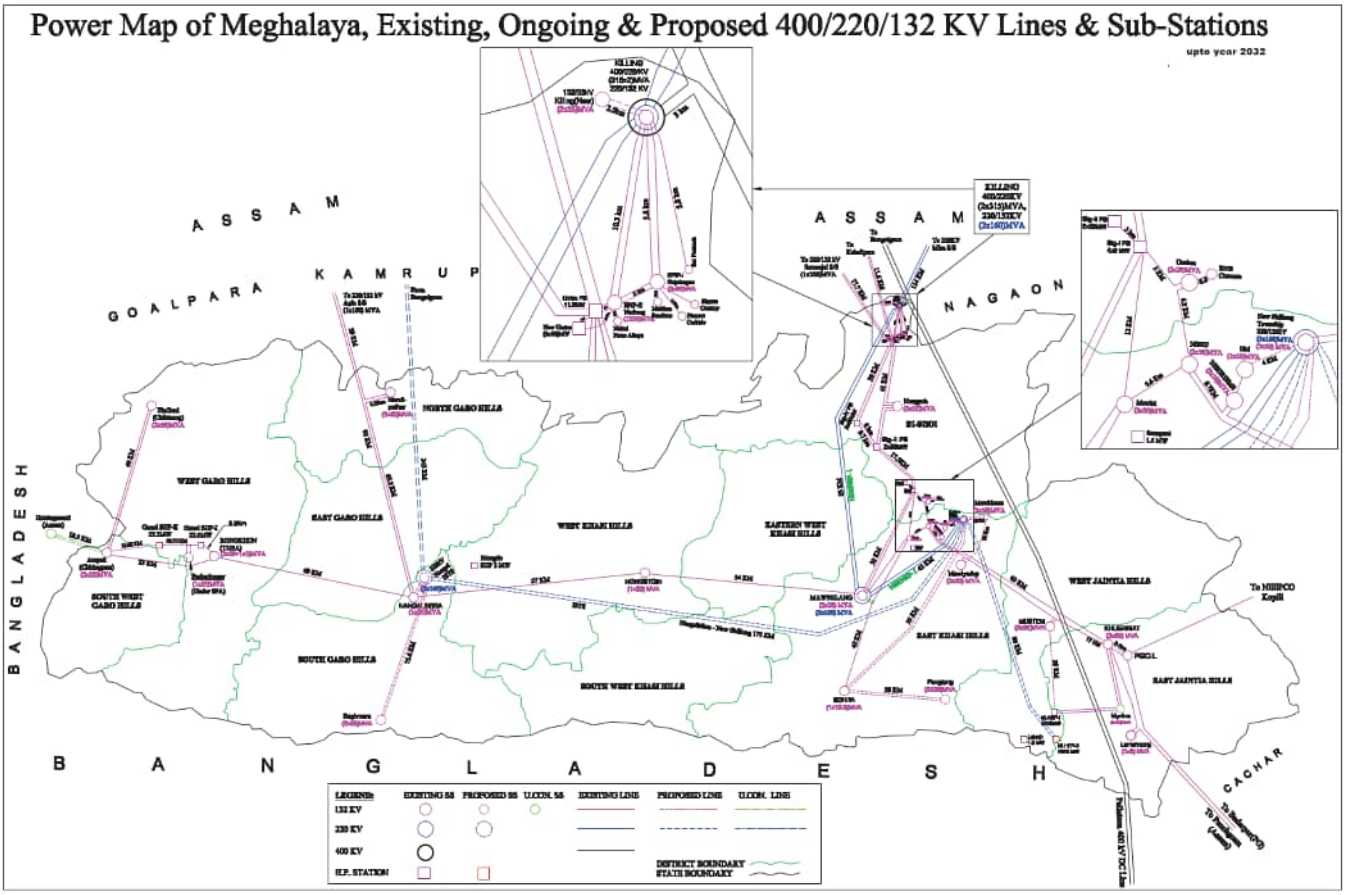
Exhibit 6.1

POWER MAP Existing and Under-Construction Intra-State Transmission System-MANIPUR

(upto year 2032)

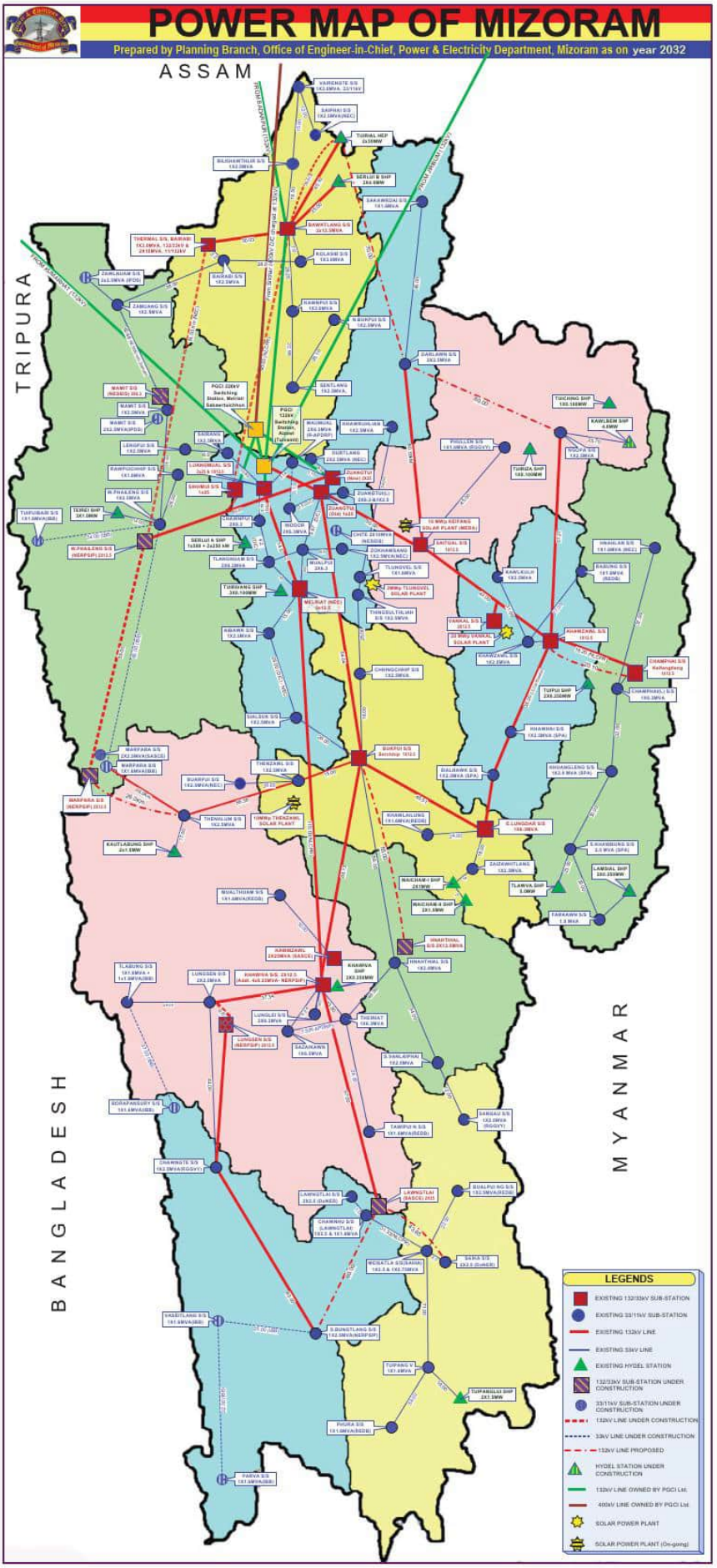


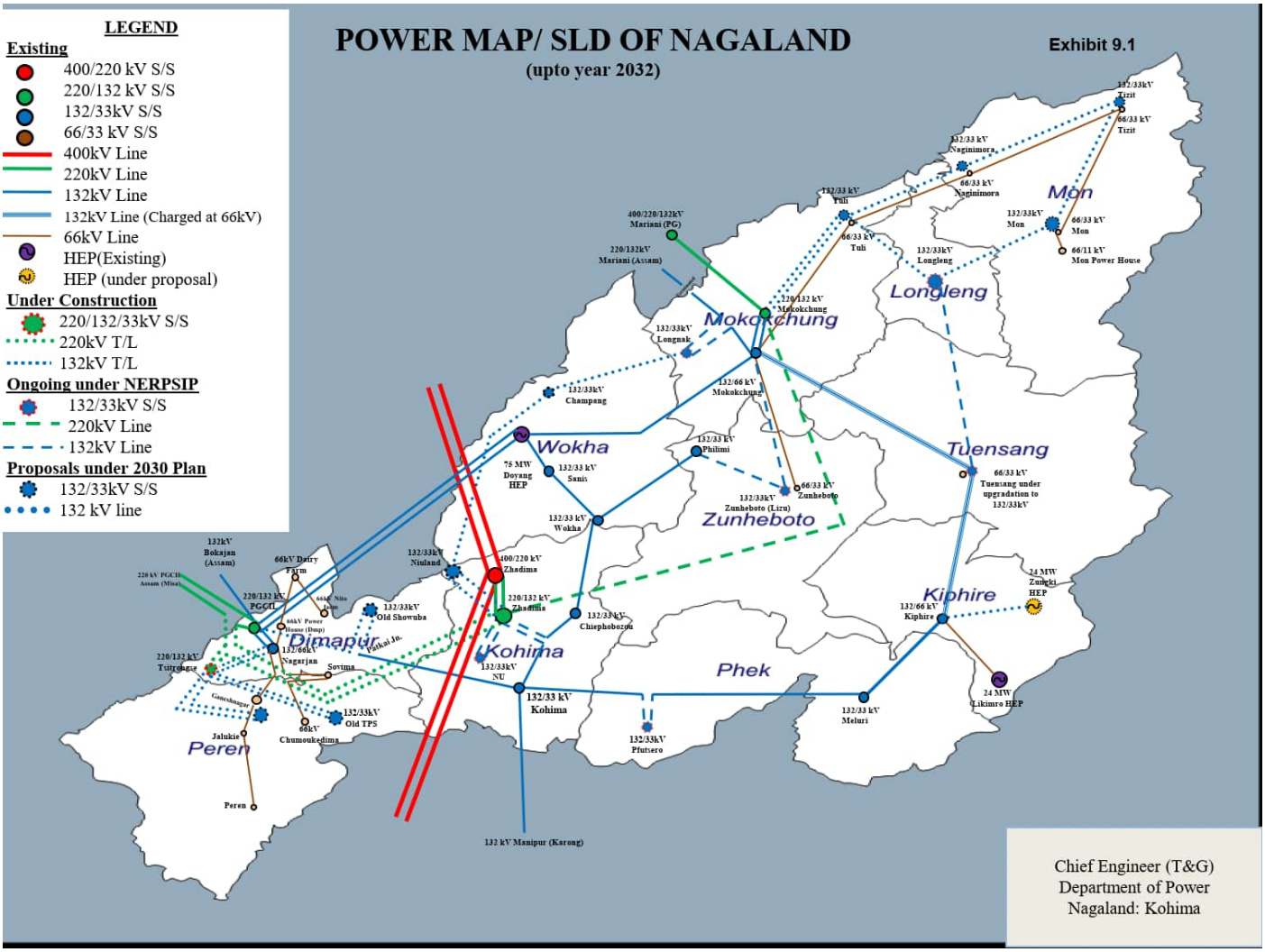
MANIPUR STATE POWER COMPANY LIMITED


Power Map of Meghalaya, Existing, Ongoing & Proposed 400/220/132 KV Lines & Sub-Stations
upto year 2032
ASSAM
GOALPARA
KAMRUP
NAGAON
BANGLADESH
BANGLADESH
CACHAR
NORTH GARO HILLS
WEST GARO HILLS
EAST GARO HILLS
SOUTH WEST GARO HILLS
SOUTH GARO HILLS
WEST KHASI HILLS
EASTERN WEST KHASI HILLS
SOUTH WEST KHASI HILLS
EAST KHASI HILLS
WEST JAINTIA HILLS
EAST JAINTIA HILLS
To NEEPCO Kopili
LEGENDS
EXISTING SS
PROPOSED SS
U.CON. SS
EXISTING LINE
PROPOSED LINE
U.CON. LINE
132 KV
220 KV
400 KV
H.P. STATION
DISTRICT BOUNDARY
STATE BOUNDARY

POWER MAP OF MIZORAM

Prepared by Planning Branch, Office of Engineer-in-Chief, Power & Electricity Department, Mizoram as on year 2032



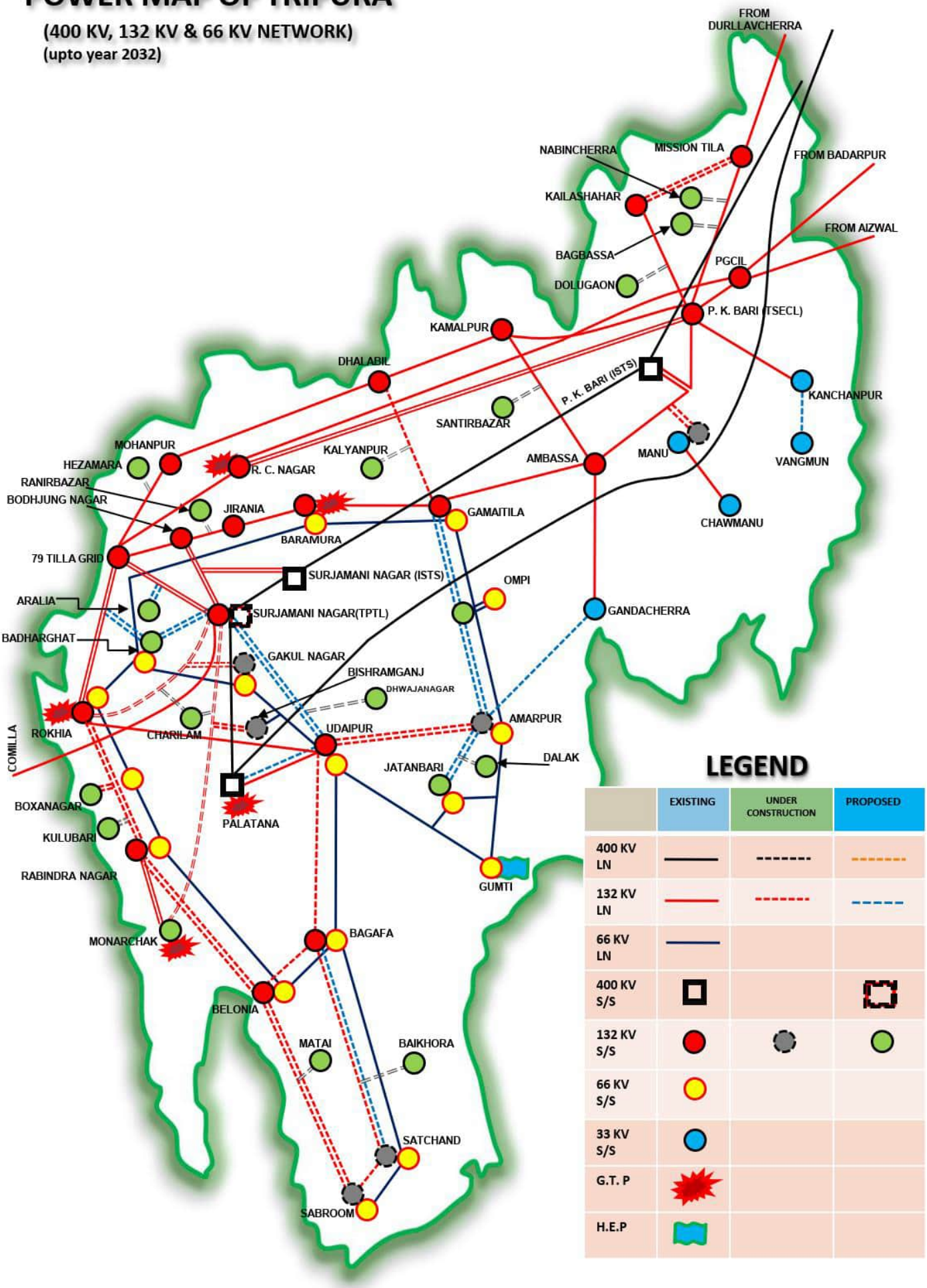


Chief Engineer (T&G)
Department of Power
Nagaland: Kohima

Exhibit 10.1

POWER MAP OF TRIPURA

(400 KV, 132 KV & 66 KV NETWORK)
(upto year 2032)



LEGEND

	EXISTING	UNDER CONSTRUCTION	PROPOSED
400 KV LN			
132 KV LN			
66 KV LN			
400 KV S/S			
132 KV S/S			
66 KV S/S			
33 KV S/S			
G.T. P			
H.E.P			

Exhibit 11.1

PROPOSED SCHEME FOR UPGRADATION OF TRANSMISSION NETWORK OF SIKKIM

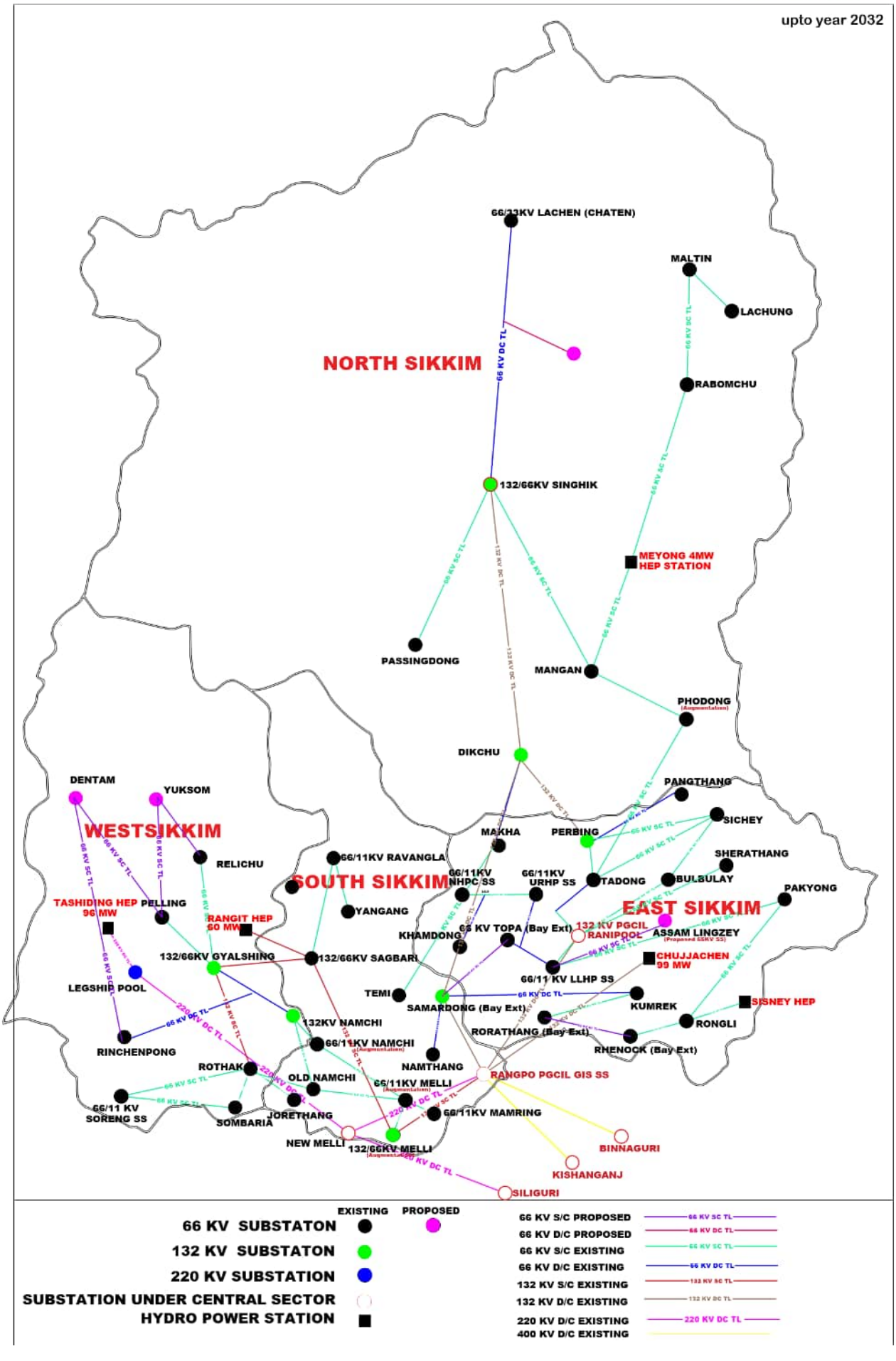
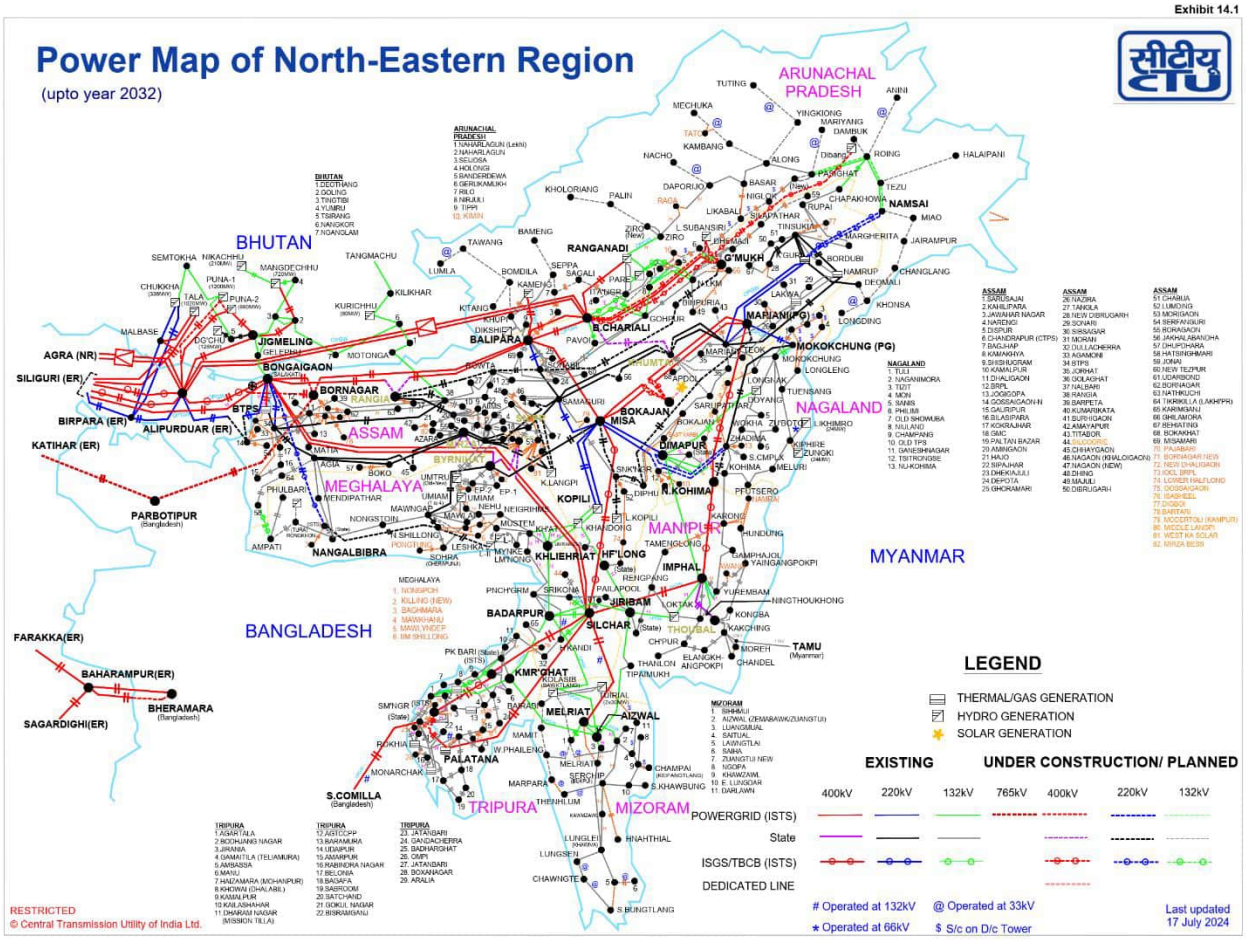


Exhibit 14.1


Power Map of North-Eastern Region
(upto year 2032)
ARUNACHAL PRADESH
BHUTAN
ASSAM
MEGHALAYA
NAGALAND
MANIPUR
TRIPURA
MIZORAM
BANGLADESH
MYANMAR
LEGEND
THERMAL/GAS GENERATION
HYDRO GENERATION
SOLAR GENERATION
EXISTING
UNDER CONSTRUCTION/ PLANNED
400kV
220kV
132kV
765kV
POWERGRID (ISTS)
State
ISGS/TBCB (ISTS)
DEDICATED LINE
Operated at 132kV
@ Operated at 33kV
★ Operated at 66kV
$ S/c on D/c Tower
RESTRICTED
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Last updated
17 July 2024

Annexure 2: Provisional expenditure statements, duly certified by the Senior Finance & Accounts Officer (SFO), Department of Power, Government of Arunachal Pradesh

Provisional Operation & Maintenance Expenses

Sr. No.	Particulars	Historical Expenditure Data			Current Year
		FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
		Actuals	Actuals	Actuals	Estimated
1	Operation & Maintenance Expenses				
1.1	Employee Expenses	11,53,88,712.00	12,60,28,836.00	13,20,05,837.00	13,26,02,521.00
1.2	Administration & General Expenses	76,80,07,779.00	67,37,189.00	58,34,928.00	1,94,99,052.00
1.3	Repair & Maintainance Expenses	33,35,02,000.00	33,47,69,713.00	44,04,43,980.00	32,09,47,967.00
2	Less: O&M Expense capitalised	-	-	-	-
3	**Total Operation & Maintenance Expenses (Net of Capitalisation)**	**1,21,68,98,491.00**	**46,75,35,738.00**	**57,82,84,745.00**	**47,30,49,540.00**

Employee Expenses

Sr. No.	Particulars	Historical Expenditure Data			Current Year
		FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
		Actuals	Actuals	Actuals	Estimated
1	Basic Salary	9,31,45,033.00	9,87,83,330.00	10,21,99,489.00	10,39,37,268.00
2	Dearness Allowance (DA)				
	Wages	2,15,60,036	2,42,28,572.00	2,89,35,829.00	2,76,18,987.00
3	House Rent Allowance				
4	Conveyance Allowance/DTE	4,90,190.00	10,46,587.00	7,65,665.00	8,80,335.00
5	Leave Travel Allowance	1,93,453.00	2,55,643.00	1,04,854.00	1,65,931.00
6	Earned Leave Encashment				
7	Other Allowances				
8	Medical Reimbursement		17,14,704.00		
9	Overtime Payment				
10	Bonus/Ex-Gratia Payments				
11	Interim Relief / Wage Revision				
12	Staff welfare expenses				
13	VRS Expenses/Retrenchment Compensation				
14	Commission to Directors				
15	Death & Accident Compensation				
16	Training Expenses				
17	Payment under Workmen's Compensation Act				
18	Net Employee Costs				
19	Terminal Benefits	-	-	-	-
19.1	Provident Fund Contribution				
19.2	Provision for PF Fund				
19.3	Pension Payments				
19.4	Gratuity Payment				
20	Others (Pls. specify)				
21	**Gross Employee Expenses**	11,53,88,712.00	12,60,28,836.00	13,20,05,837.00	13,26,02,521.00
22	Less: Expenses Capitalised				
23	**Net Employee Expenses**	11,53,88,712.00	12,60,28,836.00	13,20,05,837.00	13,26,02,521.00

Administration & General Expenses

Sr. No.	Particulars	Historical Expenditure Data			Current Year
		FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
		Actuals	Actuals	Actuals	Estimated
1	Rent Rates & Taxes				
2	Insurance				
3	Telephone & Postage, etc.				
4	Legal charges & Audit fee (Break-up as per separate Table)				
5	Professional Fee, Consultancy, Technical fee	6,94,000.00			5,00,000.00
6	Conveyance & Travel				
7	Electricity charges				
8	Water charges				
9	Security arrangements				
10	Fees & subscription				
11	Books & periodicals				
12	Computer Stationery				
13	Printing & Stationery				
14	Advertisements				
15	Purchase Related Advertisement Expenses				
16	Contribution/Donations				
17	License Fee and other related fee				
18	Vehicle Running Expenses Truck / Delivery Van/ POL(Vehicle)	34,17,954.00	32,99,789.00	15,85,983.00	93,19,999.00
19	Vehicle Hiring Expenses Truck / Delivery Van/Maint. Of Vehicle				
20	Cost of services procured				
21	Outsourcing of metering and billing system				
22	Freight On Capital Equipments				
23	V-sat, Internet and related charges				
24	Training				
25	Bank Charges				
26	Miscellaneous Expenses				
27	Office Expenses	16,96,385.00	32,91,954.00	34,49,337.00	62,94,278.00

Senior Finance & Accounts Officer
O/o the Chief Engineer (D) TDM Zone

28	CSR Expenses				
	Office Contigency	76,21,99,440.00	1,45,446.00		
	Other revenue expediture			4,99,995	12,84,793.00
	Minor Work Expenditure				7,50,000.00
	Repair & Maintenance			2,99,613.00	13,49,982.00
29	Others (Pls. specify)				
30	**Gross A&G Expenses**	76,80,07,779.00	67,37,189.00	58,34,928.00	1,94,99,052.00
31	Less: Expenses Capitalised				
32	**Net A&G Expenses**	76,80,07,779.00	67,37,189.00	58,34,928.00	1,94,99,052.00

Repair and Maintenance Expenses					
Sr. No.	**Particulars**	**Historical Expenditure Data**			**Current Year**
		FY 2021-22	**FY 2022-23**	**FY 2023-24**	**FY 2024-25**
		Actuals	**Actuals**	**Actuals**	**Estimated**
1	Plant & Machinery	5,56,00,000.00	5,53,40,000.00	6,52,51,000.00	6,67,00,300.00
2	Buildings				
3	Scheme Works	27,79,02,000.00	27,94,29,713.00	37,51,92,980.00	25,42,47,667.00
4	Hydraulic Works				
5	Lines & Cable Networks				
6	Vehicles				
7	Furniture & Fixtures				
8	Office Equipment				
9	Others (Pls. specify)				
10	**Gross R&M Expenses**	33,35,02,000.00	33,47,69,713.00	44,04,43,980.00	32,09,47,967.00
11	Less: Expenses Capitalised				
12	**Net R&M Expenses**	33,35,02,000.00	33,47,69,713.00	44,04,43,980.00	32,09,47,967.00

Senior Finance & Accounts Officer
O/o the Chief Engineer (P) TP&M Zone
Dop,Itanagar,A P-791111

Annexure 3: Transmission Division (TD) wise value of existing assets of the Petitioner certified by the Executive Engineers (EEs) of the three operational transmission divisions, namely TD-I (Dirang), TD-II (Itanagar), and TD-III (Pasighat) based on available division-wise provisional data

Data formats from TD-I (Dirang)

Data Formats: Transmission Division (TD) - I

Year-wise Asset Details in INR

Transmission Division (TD) - I

FY 2004-05

Particulars	Gross Block			
	As at the beginning of the Financial Year	Additions	Deductions	As at the end of the Financial Year
Land	-	-	-	-
Buildings	-	-	-	-
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	-	-	-	-
Lines & Cables	-	-	-	-
Vehicles	-	-	-	-
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	-	-	-	-

FY 2005-06

Particulars	Gross Block			
	As at the beginning of the Financial Year	Additions	Deductions	As at the end of the Financial Year
Land	-	-	-	-
Buildings	-	-	-	-
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	-	-	-	-
Lines & Cables	-	-	-	-
Vehicles	-	-	-	-
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	-	-	-	-

FY 2006-07

Particulars	Gross Block			
	As at the beginning of the Financial Year	Additions	Deductions	As at the end of the Financial Year
Land	-	-	-	-
Buildings	-	-	-	-
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	-	-	-	-
Lines & Cables	-	-	-	-
Vehicles	-	-	-	-
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	-	-	-	-

Executive Engineer (E)
Transmission Division No. I, Dirang
Department of Power
Arunachal Pradesh

Year-wise Asset Details in INR Transmission Division (TD) - I FY 2007-08				
Particulars	**Gross Block**			
	As at the beginning of the Financial Year	**Additions**	**Deductions**	**As at the end of the Financial Year**
Land	-	-	-	-
Buildings	-	1,05,12,000.00	-	1,05,12,000.00
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	-	12,68,19,000.00	-	12,68,19,000.00
Lines & Cables	-	33,22,96,000.00	-	33,22,96,000.00
Vehicles	-	-	-	-
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	-	46,96,27,000.00	-	46,96,27,000.00

FY 2008-09				
Particulars	**Gross Block**			
	As at the beginning of the Financial Year	**Additions**	**Deductions**	**As at the end of the Financial Year**
Land	-	-	-	-
Buildings	1,05,12,000.00	-	-	1,05,12,000.00
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	12,68,19,000.00	-	-	12,68,19,000.00
Lines & Cables	33,22,96,000.00	-	-	33,22,96,000.00
Vehicles	-	-	-	-
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	46,96,27,000.00	-	-	46,96,27,000.00

FY 2009-10				
Particulars	**Gross Block**			
	As at the beginning of the Financial Year	**Additions**	**Deductions**	**As at the end of the Financial Year**
Land	-	-	-	-
Buildings	1,05,12,000.00	-	-	1,05,12,000.00
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	12,68,19,000.00	-	-	12,68,19,000.00
Lines & Cables	33,22,96,000.00	-	-	33,22,96,000.00
Vehicles	-	-	-	-
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	46,96,27,000.00	-	-	46,96,27,000.00

Executive Engineer (E)
Transmission Division No. I, Dirang
Department of Power
Govt. of Arunachal Pradesh

Year-wise Asset Details in INR				
Transmission Division (TD) - I				
FY 2010-11				
Particulars	Gross Block			
	As at the beginning of the Financial Year	Additions	Deductions	As at the end of the Financial Year
Land	-	-	-	-
Buildings	1,05,12,000.00	-	-	1,05,12,000.00
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	12,68,19,000.00	-	-	12,68,19,000.00
Lines & Cables	33,22,96,000.00	-	-	33,22,96,000.00
Vehicles	-	15,37,000.00	-	15,37,000.00
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	46,96,27,000.00	15,37,000.00	-	47,11,64,000.00

FY 2011-12				
Particulars	Gross Block			
	As at the beginning of the Financial Year	Additions	Deductions	As at the end of the Financial Year
Land	-	-	-	-
Buildings	1,05,12,000.00	-	-	1,05,12,000.00
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	12,68,19,000.00	-	-	12,68,19,000.00
Lines & Cables	33,22,96,000.00	-	-	33,22,96,000.00
Vehicles	15,37,000.00	-	-	15,37,000.00
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	47,11,64,000.00	-	-	47,11,64,000.00

FY 2012-13				
Particulars	Gross Block			
	As at the beginning of the Financial Year	Additions	Deductions	As at the end of the Financial Year
Land	-	-	-	-
Buildings	1,05,12,000.00	-	-	1,05,12,000.00
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	12,68,19,000.00	-	-	12,68,19,000.00
Lines & Cables	33,22,96,000.00	-	-	33,22,96,000.00
Vehicles	15,37,000.00	-	-	15,37,000.00
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	47,11,64,000.00	-	-	47,11,64,000.00

Executive Engineer (E)
Transmission Division No. I, Dirang
Department of Power
Govt. of Arunachal Pradesh

Year-wise Asset Details in INR				
Transmission Division (TD) - I				
FY 2013-14				
Particulars	**Gross Block**			
	As at the beginning of the Financial Year	**Additions**	**Deductions**	**As at the end of the Financial Year**
Land	-	-	-	-
Buildings	1,05,12,000.00	-	-	1,05,12,000.00
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	12,68,19,000.00	-	-	12,68,19,000.00
Lines & Cables	33,22,96,000.00	-	-	33,22,96,000.00
Vehicles	15,37,000.00	-	-	15,37,000.00
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	47,11,64,000.00	-	-	47,11,64,000.00

FY 2014-15				
Particulars	**Gross Block**			
	As at the beginning of the Financial Year	**Additions**	**Deductions**	**As at the end of the Financial Year**
Land	-	-	-	-
Buildings	1,05,12,000.00	-	-	1,05,12,000.00
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	12,68,19,000.00	-	-	12,68,19,000.00
Lines & Cables	33,22,96,000.00	-	-	33,22,96,000.00
Vehicles	15,37,000.00	-	-	15,37,000.00
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	47,11,64,000.00	-	-	47,11,64,000.00

FY 2015-16				
Particulars	**Gross Block**			
	As at the beginning of the Financial Year	**Additions**	**Deductions**	**As at the end of the Financial Year**
Land	-	-	-	-
Buildings	1,05,12,000.00	-	-	1,05,12,000.00
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	12,68,19,000.00	-	-	12,68,19,000.00
Lines & Cables	33,22,96,000.00	-	-	33,22,96,000.00
Vehicles	15,37,000.00	12,76,537.00	-	28,13,537.00
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	47,11,64,000.00	12,76,537.00	-	47,24,40,537.00

Executive Engineer (E)
Transmission Division No. I, Dirang
Department of Power
Govt. of Arunachal Pradesh

Year-wise Asset Details in INR				
Transmission Division (TD) - I				
FY 2016-17				
Particulars	Gross Block			
	As at the beginning of the Financial Year	Additions	Deductions	As at the end of the Financial Year
Land	-	-	-	-
Buildings	1,05,12,000.00	-	-	1,05,12,000.00
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	12,68,19,000.00	-	-	12,68,19,000.00
Lines & Cables	33,22,96,000.00	-	-	33,22,96,000.00
Vehicles	28,13,537.00	7,76,833.00	-	35,90,370.00
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	47,24,40,537.00	7,76,833.00	-	47,32,17,370.00

FY 2017-18				
Particulars	Gross Block			
	As at the beginning of the Financial Year	Additions	Deductions	As at the end of the Financial Year
Land	-	-	-	-
Buildings	1,05,12,000.00	-	-	1,05,12,000.00
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	12,68,19,000.00	-	-	12,68,19,000.00
Lines & Cables	33,22,96,000.00	-	-	33,22,96,000.00
Vehicles	35,90,370.00	-	-	35,90,370.00
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	47,32,17,370.00	-	-	47,32,17,370.00

FY 2018-19				
Particulars	Gross Block			
	As at the beginning of the Financial Year	Additions	Deductions	As at the end of the Financial Year
Land	-	-	-	-
Buildings	1,05,12,000.00	-	-	1,05,12,000.00
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	12,68,19,000.00	-	-	12,68,19,000.00
Lines & Cables	33,22,96,000.00	-	-	33,22,96,000.00
Vehicles	35,90,370.00	-	-	35,90,370.00
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	47,32,17,370.00	-	-	47,32,17,370.00

Executive Engineer (E)
Transmission Division No. I, Dirang
Department of Power
Govt. of Arunachal Pradesh

Year-wise Asset Details in INR				
Transmission Division (TD) - I				
FY 2019-20				
Particulars	**Gross Block**			
	As at the beginning of the Financial Year	**Additions**	**Deductions**	**As at the end of the Financial Year**
Land	-	-	-	-
Buildings	1,05,12,000.00	-	-	1,05,12,000.00
Hydraulic works	-	-	-	-
Other Civil Works	-	3,00,00,000.00	-	3,00,00,000.00
Plant & Machinery	12,68,19,000.00	-	-	12,68,19,000.00
Lines & Cables	33,22,96,000.00	-	-	33,22,96,000.00
Vehicles	35,90,370.00	-	-	35,90,370.00
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	47,32,17,370.00	3,00,00,000.00	-	50,32,17,370.00

FY 2020-21				
Particulars	**Gross Block**			
	As at the beginning of the Financial Year	**Additions**	**Deductions**	**As at the end of the Financial Year**
Land	-	-	-	-
Buildings	1,05,12,000.00	-	-	1,05,12,000.00
Hydraulic works	-	-	-	-
Other Civil Works	3,00,00,000.00	-	-	3,00,00,000.00
Plant & Machinery	12,68,19,000.00	12,00,00,000.00	-	24,68,19,000.00
Lines & Cables	33,22,96,000.00	-	-	33,22,96,000.00
Vehicles	35,90,370.00	-	-	35,90,370.00
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	50,32,17,370.00	12,00,00,000.00	-	62,32,17,370.00

FY 2021-22				
Particulars	**Gross Block**			
	As at the beginning of the Financial Year	**Additions**	**Deductions**	**As at the end of the Financial Year**
Land	-	-	-	-
Buildings	1,05,12,000.00	-	-	1,05,12,000.00
Hydraulic works	-	-	-	-
Other Civil Works	3,00,00,000.00	-	-	3,00,00,000.00
Plant & Machinery	24,68,19,000.00	-	-	24,68,19,000.00
Lines & Cables	33,22,96,000.00	-	-	33,22,96,000.00
Vehicles	35,90,370.00	-	-	35,90,370.00
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	62,32,17,370.00	-	-	62,32,17,370.00

Executive Engineer (E)
Transmission Division No. I, Dirang
Department of Power
Govt. of Arunachal Pradesh

Year-wise Asset Details in INR				
Transmission Division (TD) - I				
FY 2022-23				
Particulars	Gross Block			
	As at the beginning of the Financial Year	Additions	Deductions	As at the end of the Financial Year
Land	-	-	-	-
Buildings	1,05,12,000.00	3,76,50,000.00	-	4,81,62,000.00
Hydraulic works	-	-	-	-
Other Civil Works	3,00,00,000.00	-	-	3,00,00,000.00
Plant & Machinery	24,68,19,000.00	2,48,43,000.00	-	27,16,62,000.00
Lines & Cables	33,22,96,000.00	-	-	33,22,96,000.00
Vehicles	35,90,370.00	-	-	35,90,370.00
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	62,32,17,370.00	6,24,93,000.00	-	68,57,10,370.00

FY 2023-24				
Particulars	Gross Block			
	As at the beginning of the Financial Year	Additions	Deductions	As at the end of the Financial Year
Land	-	-	-	-
Buildings	4,81,62,000.00	-	-	4,81,62,000.00
Hydraulic works	-	-	-	-
Other Civil Works	3,00,00,000.00	2,00,00,000.00	-	5,00,00,000.00
Plant & Machinery	27,16,62,000.00	-	-	27,16,62,000.00
Lines & Cables	33,22,96,000.00	-	-	33,22,96,000.00
Vehicles	35,90,370.00	-	-	35,90,370.00
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	68,57,10,370.00	2,00,00,000.00	-	70,57,10,370.00

FY 2024-25				
Particulars	Gross Block			
	As at the beginning of the Financial Year	Additions	Deductions	As at the end of the Financial Year
Land	-	-	-	-
Buildings	4,81,62,000.00	-	-	4,81,62,000.00
Hydraulic works	-	-	-	-
Other Civil Works	5,00,00,000.00	-	-	5,00,00,000.00
Plant & Machinery	27,16,62,000.00	8,00,00,000.00	-	35,16,62,000.00
Lines & Cables	33,22,96,000.00	1,54,60,000.00	-	34,77,56,000.00
Vehicles	35,90,370.00	-	-	35,90,370.00
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	70,57,10,370.00	9,54,60,000.00	-	80,11,70,370.00

Executive Engineer (E)
Transmission Division No. I, Dirang
Department of Power
Govt. of Arunachal Pradesh

Network Details for Transmission Division (TD) - I					
Sr. No.	Particulars	Previous Year FY 2021-22	Previous Year FY 2022-23	Previous Year FY 2023-24	Current Year FY 2024-25
A	**No of Substations**				
	Above 400 kV				
	400 KV				
	220 KV				
	132 KV	**2**	**2**	**2**	**2**
	66 KV and less				
B	**Transformation Capacity (in MVA)**				
	Above 400 kV				
	400 KV				
	220 KV				
	132 KV	**25**	**25**	**25**	**25**
	66 KV and less				
C	**Transmission Capacity (in MW)**	**80**	**80**	**80**	**80**

Executive Engineer (E)
Transmission Division No. I, Dirang
Department of Power
Govt. of Arunachal Pradesh

Data formats from TD-II (Itanagar)

Data Formats: Transmission Division (TD) - II

Year-wise Asset Details in INR Transmission Division (TD) - II FY 2004-05				
Particulars	**Gross Block**			
	As at the beginning of the Financial Year	**Additions**	**Deductions**	**As at the end of the Financial Year**
Land	-	-	-	-
Buildings	-	-	-	-
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	-	20,60,00,000.00	-	20,60,00,000.00
Lines & Cables	-	19,25,46,000.00	-	19,25,46,000.00
Vehicles	-	-	-	-
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	-	39,85,46,000.00	-	39,85,46,000.00

FY 2005-06				
Particulars	**Gross Block**			
	As at the beginning of the Financial Year	**Additions**	**Deductions**	**As at the end of the Financial Year**
Land	-	21,12,500.00	-	21,12,500.00
Buildings	-	-	-	-
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	20,60,00,000.00	-	-	20,60,00,000.00
Lines & Cables	19,25,46,000.00	7,23,43,000.00	-	26,48,89,000.00
Vehicles	-	-	-	-
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	39,85,46,000.00	7,44,55,500.00	-	47,30,01,500.00

FY 2006-07				
Particulars	**Gross Block**			
	As at the beginning of the Financial Year	**Additions**	**Deductions**	**As at the end of the Financial Year**
Land	21,12,500.00	-	-	21,12,500.00
Buildings	-	-	-	-
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	20,60,00,000.00	-	-	20,60,00,000.00
Lines & Cables	26,48,89,000.00	-	-	26,48,89,000.00
Vehicles	-	-	-	-
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	47,30,01,500.00	-	-	47,30,01,500.00

FY 2007-08	
Particulars	**Gross Block**

Executive Engineer (E)
Transmission Division No.-II
Department of Power, GoAP
Itanagar-791111

Year-wise Asset Details in INR				
Transmission Division (TD) - II				
	As at the beginning of the Financial Year	Additions	Deductions	As at the end of the Financial Year
Land	21,12,500.00	-	-	21,12,500.00
Buildings	-	-	-	-
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	20,60,00,000.00	-	-	20,60,00,000.00
Lines & Cables	26,48,89,000.00	-	-	26,48,89,000.00
Vehicles	-	-	-	-
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	47,30,01,500.00	-	-	47,30,01,500.00

FY 2008-09				
Particulars	Gross Block			
	As at the beginning of the Financial Year	Additions	Deductions	As at the end of the Financial Year
Land	21,12,500.00	-	-	21,12,500.00
Buildings	-	-	-	-
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	20,60,00,000.00	-	-	20,60,00,000.00
Lines & Cables	26,48,89,000.00	2,87,03,000.00	-	29,35,92,000.00
Vehicles	-	-	-	-
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	47,30,01,500.00	2,87,03,000.00	-	50,17,04,500.00

FY 2009-10				
Particulars	Gross Block			
	As at the beginning of the Financial Year	Additions	Deductions	As at the end of the Financial Year
Land	21,12,500.00	-	-	21,12,500.00
Buildings	-	-	-	-
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	20,60,00,000.00	-	-	20,60,00,000.00
Lines & Cables	29,35,92,000.00	-	-	29,35,92,000.00
Vehicles	-	12,28,000.00	-	12,28,000.00
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	50,17,04,500.00	12,28,000.00	-	50,29,32,500.00

FY 2010-11				
Particulars	Gross Block			
	As at the beginning of the Financial Year	Additions	Deductions	As at the end of the Financial Year
Land	21,12,500.00	-	-	21,12,500.00
Buildings	-	-	-	-

Executive Engineer (E)
Transmission Division No.-II
Department of Power, GoAP
Itanagar-791113

Year-wise Asset Details in INR				
Transmission Division (TD) - II				
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	20,60,00,000.00	-	-	20,60,00,000.00
Lines & Cables	29,35,92,000.00	-	-	29,35,92,000.00
Vehicles	12,28,000.00	-	-	12,28,000.00
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	50,29,32,500.00	-	-	50,29,32,500.00

FY 2011-12				
Particulars	**Gross Block**			
	As at the beginning of the Financial Year	**Additions**	**Deductions**	**As at the end of the Financial Year**
Land	21,12,500.00	-	-	21,12,500.00
Buildings	-	-	-	-
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	20,60,00,000.00	-	-	20,60,00,000.00
Lines & Cables	29,35,92,000.00	-	-	29,35,92,000.00
Vehicles	12,28,000.00	-	-	12,28,000.00
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	50,29,32,500.00	-	-	50,29,32,500.00

FY 2012-13				
Particulars	**Gross Block**			
	As at the beginning of the Financial Year	**Additions**	**Deductions**	**As at the end of the Financial Year**
Land	21,12,500.00	-	-	21,12,500.00
Buildings	-	3,42,94,150.00	-	3,42,94,150.00
Hydraulic works	-	-	-	-
Other Civil Works	-	1,13,30,000.00	-	1,13,30,000.00
Plant & Machinery	20,60,00,000.00	29,15,38,473.00	-	49,75,38,473.00
Lines & Cables	29,35,92,000.00	-	-	29,35,92,000.00
Vehicles	12,28,000.00	-	-	12,28,000.00
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	50,29,32,500.00	33,71,62,623.00	-	84,00,95,123.00

FY 2013-14				
Particulars	**Gross Block**			
	As at the beginning of the Financial Year	**Additions**	**Deductions**	**As at the end of the Financial Year**
Land	21,12,500.00	-	-	21,12,500.00
Buildings	3,42,94,150.00	-	-	3,42,94,150.00
Hydraulic works	-	-	-	-
Other Civil Works	1,13,30,000.00	-	-	1,13,30,000.00
Plant & Machinery	49,75,38,473.00	2,01,08,000.00	-	51,76,46,473.00
Lines & Cables	29,35,92,000.00	-	-	29,35,92,000.00

Executive Engineer (E)
Transmission Division No.-II
Department of Power, GoAP
Itanagar-791113

Year-wise Asset Details in INR				
Transmission Division (TD) - II				
Vehicles	12,28,000.00	5,00,000.00	-	17,28,000.00
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	84,00,95,123.00	2,06,08,000.00	-	86,07,03,123.00

FY 2014-15				
Particulars	**Gross Block**			
	As at the beginning of the Financial Year	**Additions**	**Deductions**	**As at the end of the Financial Year**
Land	21,12,500.00	-	-	21,12,500.00
Buildings	3,42,94,150.00	-	-	3,42,94,150.00
Hydraulic works	-	-	-	-
Other Civil Works	1,13,30,000.00	-	-	1,13,30,000.00
Plant & Machinery	51,76,46,473.00	-	-	51,76,46,473.00
Lines & Cables	29,35,92,000.00	-	-	29,35,92,000.00
Vehicles	17,28,000.00	13,24,000.00	-	30,52,000.00
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	86,07,03,123.00	13,24,000.00	-	86,20,27,123.00

FY 2015-16				
Particulars	**Gross Block**			
	As at the beginning of the Financial Year	**Additions**	**Deductions**	**As at the end of the Financial Year**
Land	21,12,500.00	-	-	21,12,500.00
Buildings	3,42,94,150.00	-	-	3,42,94,150.00
Hydraulic works	-	-	-	-
Other Civil Works	1,13,30,000.00	-	-	1,13,30,000.00
Plant & Machinery	51,76,46,473.00	-	-	51,76,46,473.00
Lines & Cables	29,35,92,000.00	-	-	29,35,92,000.00
Vehicles	30,52,000.00	7,97,000.00	-	38,49,000.00
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	86,20,27,123.00	7,97,000.00	-	86,28,24,123.00

FY 2016-17				
Particulars	**Gross Block**			
	As at the beginning of the Financial Year	**Additions**	**Deductions**	**As at the end of the Financial Year**
Land	21,12,500.00	-	-	21,12,500.00
Buildings	3,42,94,150.00	-	-	3,42,94,150.00
Hydraulic works	-	-	-	-
Other Civil Works	1,13,30,000.00	-	-	1,13,30,000.00
Plant & Machinery	51,76,46,473.00	-	-	51,76,46,473.00
Lines & Cables	29,35,92,000.00	-	-	29,35,92,000.00
Vehicles	38,49,000.00	16,36,000.00	-	54,85,000.00
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-

Executive Engineer (E)
Transmission Division No.-II
Department of Power, GoAP
Itanagar-791113

Year-wise Asset Details in INR				
Transmission Division (TD) - II				
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	86,28,24,123.00	16,36,000.00	-	86,44,60,123.00

FY 2017-18				
Particulars	**Gross Block**			
	As at the beginning of the Financial Year	**Additions**	**Deductions**	**As at the end of the Financial Year**
Land	21,12,500.00	-	-	21,12,500.00
Buildings	3,42,94,150.00	-	-	3,42,94,150.00
Hydraulic works	-	-	-	-
Other Civil Works	1,13,30,000.00	41,72,000.00	-	1,55,02,000.00
Plant & Machinery	51,76,46,473.00	-	-	51,76,46,473.00
Lines & Cables	29,35,92,000.00	1,03,50,000.00	-	30,39,42,000.00
Vehicles	54,85,000.00	-	-	54,85,000.00
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	86,44,60,123.00	1,45,22,000.00	-	87,89,82,123.00

FY 2018-19				
Particulars	**Gross Block**			
	As at the beginning of the Financial Year	**Additions**	**Deductions**	**As at the end of the Financial Year**
Land	21,12,500.00	-	-	21,12,500.00
Buildings	3,42,94,150.00	-	-	3,42,94,150.00
Hydraulic works	-	-	-	-
Other Civil Works	1,55,02,000.00	60,61,000.00	-	2,15,63,000.00
Plant & Machinery	51,76,46,473.00	7,53,00,000.00	-	59,29,46,473.00
Lines & Cables	30,39,42,000.00	54,62,00,000.00	-	85,01,42,000.00
Vehicles	54,85,000.00	31,42,000.00	-	86,27,000.00
Furniture & Fixtures	-	3,85,000.00	-	3,85,000.00
Office Equipments	-	27,75,000.00	-	27,75,000.00
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	87,89,82,123.00	63,38,63,000.00	-	1,51,28,45,123.00

FY 2019-20				
Particulars	**Gross Block**			
	As at the beginning of the Financial Year	**Additions**	**Deductions**	**As at the end of the Financial Year**
Land	21,12,500.00	-	-	21,12,500.00
Buildings	3,42,94,150.00	-	-	3,42,94,150.00
Hydraulic works	-	-	-	-
Other Civil Works	2,15,63,000.00	-	-	2,15,63,000.00
Plant & Machinery	59,29,46,473.00	9,12,57,000.00	-	68,42,03,473.00
Lines & Cables	85,01,42,000.00	-	-	85,01,42,000.00
Vehicles	86,27,000.00	-	-	86,27,000.00
Furniture & Fixtures	3,85,000.00	-	-	3,85,000.00
Office Equipments	27,75,000.00	-	-	27,75,000.00
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-

Executive Engineer (E)
Transmission Division No.-II
Department of Power, GoAP
Itanagar-791113

Year-wise Asset Details in INR				
Transmission Division (TD) - II				
TOTAL	1,51,28,45,123.00	9,12,57,000.00	-	1,60,41,02,123.00

FY 2020-21				
Particulars	**Gross Block**			
	As at the beginning of the Financial Year	**Additions**	**Deductions**	**As at the end of the Financial Year**
Land	21,12,500.00	-	-	21,12,500.00
Buildings	3,42,94,150.00	1,03,27,545.00	-	4,46,21,695.00
Hydraulic works	-	-	-	-
Other Civil Works	2,15,63,000.00	60,00,000.00	-	2,75,63,000.00
Plant & Machinery	68,42,03,473.00	20,00,000.00	-	68,62,03,473.00
Lines & Cables	85,01,42,000.00	6,37,00,000.00	-	91,38,42,000.00
Vehicles	86,27,000.00	-	-	86,27,000.00
Furniture & Fixtures	3,85,000.00	8,59,455.00	-	12,44,455.00
Office Equipments	27,75,000.00	93,20,000.00	-	1,20,95,000.00
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	75,00,000.00	-	75,00,000.00
Capital Spares	-	-	-	-
TOTAL	1,60,41,02,123.00	9,97,07,000.00	-	1,70,38,09,123.00

FY 2021-22				
Particulars	**Gross Block**			
	As at the beginning of the Financial Year	**Additions**	**Deductions**	**As at the end of the Financial Year**
Land	21,12,500.00	-	-	21,12,500.00
Buildings	4,46,21,695.00	-	-	4,46,21,695.00
Hydraulic works	-	-	-	-
Other Civil Works	2,75,63,000.00	-	-	2,75,63,000.00
Plant & Machinery	68,62,03,473.00	-	-	68,62,03,473.00
Lines & Cables	91,38,42,000.00	-	-	91,38,42,000.00
Vehicles	86,27,000.00	30,55,000.00	-	1,16,82,000.00
Furniture & Fixtures	12,44,455.00	-	-	12,44,455.00
Office Equipments	1,20,95,000.00	-	-	1,20,95,000.00
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	75,00,000.00	-	-	75,00,000.00
Capital Spares	-	-	-	-
TOTAL	1,70,38,09,123.00	30,55,000.00	-	1,70,68,64,123.00

FY 2022-23				
Particulars	**Gross Block**			
	As at the beginning of the Financial Year	**Additions**	**Deductions**	**As at the end of the Financial Year**
Land	21,12,500.00	-	-	21,12,500.00
Buildings	4,46,21,695.00	-	-	4,46,21,695.00
Hydraulic works	-	-	-	-
Other Civil Works	2,75,63,000.00	55,62,000.00	-	3,31,25,000.00
Plant & Machinery	68,62,03,473.00	-	-	68,62,03,473.00
Lines & Cables	91,38,42,000.00	31,96,39,000.00	-	1,23,34,81,000.00
Vehicles	1,16,82,000.00	-	-	1,16,82,000.00
Furniture & Fixtures	12,44,455.00	-	-	12,44,455.00
Office Equipments	1,20,95,000.00	-	-	1,20,95,000.00
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	75,00,000.00	-	-	75,00,000.00
Capital Spares	-	-	-	-
TOTAL	1,70,68,64,123.00	32,52,01,000.00	-	2,03,20,65,123.00

FY 2023-24

Department of Power, Govt. of A.P
Itanagar-791113

Year-wise Asset Details in INR				
Transmission Division (TD) - II				
Particulars	Gross Block			
	As at the beginning of the Financial Year	Additions	Deductions	As at the end of the Financial Year
Land	21,12,500.00	-	-	21,12,500.00
Buildings	4,46,21,695.00	-	-	4,46,21,695.00
Hydraulic works	-	-	-	-
Other Civil Works	3,31,25,000.00	-	-	3,31,25,000.00
Plant & Machinery	68,62,03,473.00	3,12,27,000.00	-	71,74,30,473.00
Lines & Cables	1,23,34,81,000.00	17,99,80,000.00	-	1,41,34,61,000.00
Vehicles	1,16,82,000.00	-	-	1,16,82,000.00
Furniture & Fixtures	12,44,455.00	-	-	12,44,455.00
Office Equipments	1,20,95,000.00	35,00,000.00	-	1,55,95,000.00
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	75,00,000.00	-	-	75,00,000.00
Capital Spares	-	-	-	-
TOTAL	2,03,20,65,123.00	21,47,07,000.00	-	2,24,67,72,123.00

FY 2024-25				
Particulars	Gross Block			
	As at the beginning of the Financial Year	Additions	Deductions	As at the end of the Financial Year
Land	21,12,500.00	-	-	21,12,500.00
Buildings	4,46,21,695.00	-	-	4,46,21,695.00
Hydraulic works	-	-	-	-
Other Civil Works	3,31,25,000.00	-	-	3,31,25,000.00
Plant & Machinery	71,74,30,473.00	7,50,00,000.00	-	79,24,30,473.00
Lines & Cables	1,41,34,61,000.00	2,60,84,000.00	-	1,43,95,45,000.00
Vehicles	1,16,82,000.00	-	-	1,16,82,000.00
Furniture & Fixtures	12,44,455.00	-	-	12,44,455.00
Office Equipments	1,55,95,000.00	-	-	1,55,95,000.00
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	75,00,000.00	-	-	75,00,000.00
Capital Spares	-	-	-	-
TOTAL	2,24,67,72,123.00	10,10,84,000.00	-	2,34,78,56,123.00

Executive Engineer (E)
Transmission Division No.-II
Department of Power, GoAP
Itanagar-791113

Network Details for Transmission Division (TD) - II					
Sr. No.	Particulars	Previous Year FY 2021-22	Previous Year FY 2022-23	Previous Year FY 2023-24	Current Year FY 2024-25
A	**No of Substations**				
	Above 400 kV				
	400 KV				
	220 KV				
	132 KV	**3**	**3**	**3**	**3**
	66 KV and less				
B	**Transformation Capacity (in MVA)**				
	Above 400 kV				
	400 KV				
	220 KV				
	132 KV	**70**	**70**	**70**	**70**
	66 KV and less				
C	**Transmission Capacity (in MW)**	**400**	**400**	**400**	**400**

Executive Engineer (E)
Transmission Division No.-II
Department of Power, GoAP
Itanagar-791113

Data formats from TD-III (Pasighat)

Data Formats: Transmission Division (TD) - III

Year-wise Asset Details in INR

Transmission Division (TD) - III

FY 2004-05

Particulars	Gross Block			
	As at the beginning of the Financial Year	Additions	Deductions	As at the end of the Financial Year
Land	-	-	-	-
Buildings	-	-	-	-
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	-	9,16,14,000.00	-	9,16,14,000.00
Lines & Cables	-	9,71,46,000.00	-	9,71,46,000.00
Vehicles	-	-	-	-
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	-	18,87,60,000.00	-	18,87,60,000.00

FY 2005-06

Particulars	Gross Block			
	As at the beginning of the Financial Year	Additions	Deductions	As at the end of the Financial Year
Land	-	-	-	-
Buildings	-	-	-	-
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	9,16,14,000.00	-	-	9,16,14,000.00
Lines & Cables	9,71,46,000.00	-	-	9,71,46,000.00
Vehicles	-	-	-	-
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	18,87,60,000.00	-	-	18,87,60,000.00

FY 2006-07

Particulars	Gross Block			
	As at the beginning of the Financial Year	Additions	Deductions	As at the end of the Financial Year
Land	-	-	-	-
Buildings	-	-	-	-
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	9,16,14,000.00	-	-	9,16,14,000.00
Lines & Cables	9,71,46,000.00	-	-	9,71,46,000.00
Vehicles	-	-	-	-
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	18,87,60,000.00	-	-	18,87,60,000.00

FY 2007-08

Particulars	Gross Block

Executive Engineer (E)
Transmission Division

Year-wise Asset Details in INR				
Transmission Division (TD) - III				
	As at the beginning of the Financial Year	Additions	Deductions	As at the end of the Financial Year
Land	-	-	-	-
Buildings	-	-	-	-
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	9,16,14,000.00	17,06,69,000.00	-	26,22,83,000.00
Lines & Cables	9,71,46,000.00	12,35,00,000.00	-	22,06,46,000.00
Vehicles	-	-	-	-
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	18,87,60,000.00	29,41,69,000.00	-	48,29,29,000.00

FY 2008-09				
Particulars	Gross Block			
	As at the beginning of the Financial Year	Additions	Deductions	As at the end of the Financial Year
Land	-	-	-	-
Buildings	-	-	-	-
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	26,22,83,000.00	-	-	26,22,83,000.00
Lines & Cables	22,06,46,000.00	-	-	22,06,46,000.00
Vehicles	-	-	-	-
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	48,29,29,000.00	-	-	48,29,29,000.00

FY 2009-10				
Particulars	Gross Block			
	As at the beginning of the Financial Year	Additions	Deductions	As at the end of the Financial Year
Land	-	-	-	-
Buildings	-	-	-	-
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	26,22,83,000.00	-	-	26,22,83,000.00
Lines & Cables	22,06,46,000.00	-	-	22,06,46,000.00
Vehicles	-	-	-	-
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	48,29,29,000.00	-	-	48,29,29,000.00

FY 2010-11				
Particulars	Gross Block			
	As at the beginning of the Financial Year	Additions	Deductions	As at the end of the Financial Year
Land	-	-	-	-
Buildings	-	-	-	-

Executive Engineer (E)
Transmission Division No-III
Department of Power
Pasighat

Year-wise Asset Details in INR				
Transmission Division (TD) - III				
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	26,22,83,000.00	-	-	26,22,83,000.00
Lines & Cables	22,06,46,000.00	-	-	22,06,46,000.00
Vehicles	-	-	-	-
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	48,29,29,000.00	-	-	48,29,29,000.00

FY 2011-12				
Particulars	**Gross Block**			
	As at the beginning of the Financial Year	**Additions**	**Deductions**	**As at the end of the Financial Year**
Land	-	-	-	-
Buildings	-	9,38,60,000.00	-	9,38,60,000.00
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	26,22,83,000.00	20,00,000.00	-	26,42,83,000.00
Lines & Cables	22,06,46,000.00	-	-	22,06,46,000.00
Vehicles	-	-	-	-
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	48,29,29,000.00	9,58,60,000.00	-	57,87,89,000.00

FY 2012-13				
Particulars	**Gross Block**			
	As at the beginning of the Financial Year	**Additions**	**Deductions**	**As at the end of the Financial Year**
Land	-	-	-	-
Buildings	9,38,60,000.00	-	-	9,38,60,000.00
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	26,42,83,000.00	-	-	26,42,83,000.00
Lines & Cables	22,06,46,000.00	-	-	22,06,46,000.00
Vehicles	-	-	-	-
Furniture & Fixtures	-	-	-	-
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	57,87,89,000.00	-	-	57,87,89,000.00

FY 2013-14				
Particulars	**Gross Block**			
	As at the beginning of the Financial Year	**Additions**	**Deductions**	**As at the end of the Financial Year**
Land	-	-	-	-
Buildings	9,38,60,000.00	-	-	9,38,60,000.00
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	26,42,83,000.00	-	-	26,42,83,000.00
Lines & Cables	22,06,46,000.00	-	-	22,06,46,000.00

Executive Engineer (E)
Transmission Division No-III
Department of Power
Pasighat

Year-wise Asset Details in INR				
Transmission Division (TD) - III				
Vehicles	-	12,00,000.00	-	12,00,000.00
Furniture & Fixtures	-	6,00,000.00	-	6,00,000.00
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	57,87,89,000.00	18,00,000.00	-	58,05,89,000.00

FY 2014-15				
Particulars	**Gross Block**			
	As at the beginning of the Financial Year	**Additions**	**Deductions**	**As at the end of the Financial Year**
Land	-	-	-	-
Buildings	9,38,60,000.00	-	-	9,38,60,000.00
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	26,42,83,000.00	3,76,000.00	-	26,46,59,000.00
Lines & Cables	22,06,46,000.00	-	-	22,06,46,000.00
Vehicles	12,00,000.00	12,18,000.00	-	24,18,000.00
Furniture & Fixtures	6,00,000.00	6,00,000.00	-	12,00,000.00
Office Equipments	-	-	-	-
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	58,05,89,000.00	21,94,000.00	-	58,27,83,000.00

FY 2015-16				
Particulars	**Gross Block**			
	As at the beginning of the Financial Year	**Additions**	**Deductions**	**As at the end of the Financial Year**
Land	-	-	-	-
Buildings	9,38,60,000.00	65,00,000.00	-	10,03,60,000.00
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	26,46,59,000.00	-	-	26,46,59,000.00
Lines & Cables	22,06,46,000.00	-	-	22,06,46,000.00
Vehicles	24,18,000.00	17,50,000.00	-	41,68,000.00
Furniture & Fixtures	12,00,000.00	6,00,000.00	-	18,00,000.00
Office Equipments	-	2,07,000.00	-	2,07,000.00
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	58,27,83,000.00	90,57,000.00	-	59,18,40,000.00

FY 2016-17				
Particulars	**Gross Block**			
	As at the beginning of the Financial Year	**Additions**	**Deductions**	**As at the end of the Financial Year**
Land	-	-	-	-
Buildings	10,03,60,000.00	5,00,000.00	-	10,08,60,000.00
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	26,46,59,000.00	13,92,95,000.00	-	40,39,54,000.00
Lines & Cables	22,06,46,000.00	46,19,19,000.00	-	68,25,65,000.00
Vehicles	41,68,000.00	8,00,000.00	-	49,68,000.00
Furniture & Fixtures	18,00,000.00	6,00,000.00	-	24,00,000.00
Office Equipments	2,07,000.00	-	-	2,07,000.00

Transmission Division No-III
Department of Power
Pasighat

Year-wise Asset Details in INR				
Transmission Division (TD) - III				
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	59,18,40,000.00	60,31,14,000.00	-	1,19,49,54,000.00

FY 2017-18				
Particulars	**Gross Block**			
	As at the beginning of the Financial Year	**Additions**	**Deductions**	**As at the end of the Financial Year**
Land	-	-	-	-
Buildings	10,08,60,000.00	43,00,000.00	-	10,51,60,000.00
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	40,39,54,000.00	-	-	40,39,54,000.00
Lines & Cables	68,25,65,000.00	-	-	68,25,65,000.00
Vehicles	49,68,000.00	-	-	49,68,000.00
Furniture & Fixtures	24,00,000.00	6,00,000.00	-	30,00,000.00
Office Equipments	2,07,000.00	7,000.00	-	2,14,000.00
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	1,19,49,54,000.00	49,07,000.00	-	1,19,98,61,000.00

FY 2018-19				
Particulars	**Gross Block**			
	As at the beginning of the Financial Year	**Additions**	**Deductions**	**As at the end of the Financial Year**
Land	-	-	-	-
Buildings	10,51,60,000.00	-	-	10,51,60,000.00
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	40,39,54,000.00	-	-	40,39,54,000.00
Lines & Cables	68,25,65,000.00	-	-	68,25,65,000.00
Vehicles	49,68,000.00	-	-	49,68,000.00
Furniture & Fixtures	30,00,000.00	-	-	30,00,000.00
Office Equipments	2,14,000.00	2,22,000.00	-	4,36,000.00
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	1,19,98,61,000.00	2,22,000.00	-	1,20,00,83,000.00

FY 2019-20				
Particulars	**Gross Block**			
	As at the beginning of the Financial Year	**Additions**	**Deductions**	**As at the end of the Financial Year**
Land	-	-	-	-
Buildings	10,51,60,000.00	1,00,00,000.00	-	11,51,60,000.00
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	40,39,54,000.00	6,00,00,000.00	-	46,39,54,000.00
Lines & Cables	68,25,65,000.00	4,20,000.00	-	68,29,85,000.00
Vehicles	49,68,000.00	16,62,000.00	-	66,30,000.00
Furniture & Fixtures	30,00,000.00	6,00,000.00	-	36,00,000.00
Office Equipments	4,36,000.00	13,13,000.00	-	17,49,000.00
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-

Transmission Division No-III
Department of Power

Year-wise Asset Details in INR				
Transmission Division (TD) - III				
TOTAL	1,20,00,83,000.00	7,39,95,000.00	-	1,27,40,78,000.00

FY 2020-21				
Particulars	**Gross Block**			
	As at the beginning of the Financial Year	**Additions**	**Deductions**	**As at the end of the Financial Year**
Land	-	-	-	-
Buildings	11,51,60,000.00	-	-	11,51,60,000.00
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	46,39,54,000.00	2,77,15,000.00	-	49,16,69,000.00
Lines & Cables	68,29,85,000.00	5,62,95,000.00	-	73,92,80,000.00
Vehicles	66,30,000.00	-	-	66,30,000.00
Furniture & Fixtures	36,00,000.00	5,72,000.00	-	41,72,000.00
Office Equipments	17,49,000.00	2,07,000.00	-	19,56,000.00
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	1,27,40,78,000.00	8,47,89,000.00	-	1,35,88,67,000.00

FY 2021-22				
Particulars	**Gross Block**			
	As at the beginning of the Financial Year	**Additions**	**Deductions**	**As at the end of the Financial Year**
Land	-	-	-	-
Buildings	11,51,60,000.00	50,00,000.00	-	12,01,60,000.00
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	49,16,69,000.00	16,80,000.00	-	49,33,49,000.00
Lines & Cables	73,92,80,000.00	-	-	73,92,80,000.00
Vehicles	66,30,000.00	-	-	66,30,000.00
Furniture & Fixtures	41,72,000.00	-	-	41,72,000.00
Office Equipments	19,56,000.00	3,20,000.00	-	22,76,000.00
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	1,35,88,67,000.00	70,00,000.00	-	1,36,58,67,000.00

FY 2022-23				
Particulars	**Gross Block**			
	As at the beginning of the Financial Year	**Additions**	**Deductions**	**As at the end of the Financial Year**
Land	-	-	-	-
Buildings	12,01,60,000.00	76,72,000.00	-	12,78,32,000.00
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	49,33,49,000.00	75,00,000.00	-	50,08,49,000.00
Lines & Cables	73,92,80,000.00	3,61,00,000.00	-	77,53,80,000.00
Vehicles	66,30,000.00	-	-	66,30,000.00
Furniture & Fixtures	41,72,000.00	12,61,000.00	-	54,33,000.00
Office Equipments	22,76,000.00	5,02,000.00	-	27,78,000.00
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	1,36,58,67,000.00	5,30,35,000.00	-	1,41,89,02,000.00

FY 2023-24

Executive Engineer (E)
Transmission Division No-III
Department of Power

Year-wise Asset Details in INR				
Transmission Division (TD) - III				
Particulars	Gross Block			
	As at the beginning of the Financial Year	Additions	Deductions	As at the end of the Financial Year
Land	-	-	-	-
Buildings	12,78,32,000.00	97,00,000.00	-	13,75,32,000.00
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	50,08,49,000.00	2,84,00,000.00	-	52,92,49,000.00
Lines & Cables	77,53,80,000.00	5,09,00,000.00	-	82,62,80,000.00
Vehicles	66,30,000.00	-	-	66,30,000.00
Furniture & Fixtures	54,33,000.00	9,04,000.00	-	63,37,000.00
Office Equipments	27,78,000.00	6,32,000.00	-	34,10,000.00
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	1,41,89,02,000.00	9,05,36,000.00	-	1,50,94,38,000.00

FY 2024-25				
Particulars	Gross Block			
	As at the beginning of the Financial Year	Additions	Deductions	As at the end of the Financial Year
Land	-	-	-	-
Buildings	13,75,32,000.00	-	-	13,75,32,000.00
Hydraulic works	-	-	-	-
Other Civil Works	-	-	-	-
Plant & Machinery	52,92,49,000.00	3,59,00,000.00	-	56,51,49,000.00
Lines & Cables	82,62,80,000.00	90,00,000.00	-	83,52,80,000.00
Vehicles	66,30,000.00	-	-	66,30,000.00
Furniture & Fixtures	63,37,000.00	6,60,000.00	-	69,97,000.00
Office Equipments	34,10,000.00	-	-	34,10,000.00
Capital Expenditure on Assets not belonging to utility	-	-	-	-
Spare Units	-	-	-	-
Capital Spares	-	-	-	-
TOTAL	1,50,94,38,000.00	4,55,60,000.00	-	1,55,49,98,000.00

Executive Engineer (E)
Transmission Division No-III
Department of Power
Pasighat

Network Details for Transmission Division (TD) - III					
Sr. No.	Particulars	Previous Year FY 2021-22	Previous Year FY 2022-23	Previous Year FY 2023-24	Current Year FY 2024-25
A	**No of Substations**				
	Above 400 kV				
	400 KV				
	220 KV	**1**	**1**	**1**	**1**
	132 KV	**3**	**3**	**3**	**3**
	66 KV and less				
B	**Transformation Capacity (in MVA)**				
	Above 400 kV				
	400 KV				
	220 KV	**99.90**	**99.90**	**99.90**	**99.90**
	132 KV	**57.00**	**57.00**	**57.00**	**57.00**
	66 KV and less				
C	**Transmission Capacity (in MW)**	**138.07**	**138.07**	**138.07**	**138.07**

Executive Engineer (E)
Transmission Division No-III
Department of Power
Pasighat

Annexure 4: Transmission Loss Data from Submission of Additional Information for approval of SLDC Charges

GOVERNMENT OF ARUNACHAL PRADESH
DEPARTMENT OF POWER
OFFICE OF THE EXECUTIVE ENGINEER (E) :: SLDC DIVISION
AP-SLDC Building, Near 132/33 KV Sub-Station Chimpu, Itanagar-791113.
E-mail: eesldcitaap@gmail.com

NO. EE/SLDC/W- 207/ 2024-25 Dated, Itanagar, the _____2025

To,

The Secretary,
Arunachal Pradesh State Electricity Regulatory Commission.
O.T Building, 2nd Floor.
Niti Vihar Market, T.T Marg.
Itanagar-791111
Arunachal Pradesh

Sub:- Submission of Additional Information for Approval of SLDC Charges for FY 2025-26 to FY 2029-30.
Ref:- APSERC/RA-28/11/2025-26/15 . Dated 10/04/2025

Sir,

With reference to subject cited above this is to inform you that the Audited Financial Reports for the last 5 (five) years is not available. The detail of total energy/power handled by SLDC during the last five years is appended herewith.

Yours Sincerely

Enclosed: As stated above

Executive Engineer (E)
SLDC Division
Department of Power, AP

NO. EE/SLDC/W- 207/ 2024-25 /117-121/ Dated, Itanagar, the 9th May 2025

1. The Superintending Engineer(E) SO & PSC, AP-SLDC Building, Near 132/33 KV Sub-Station Chimpu, Itanagar-791113, Govt. of Arunachal Pradesh for kind information please.
2. The Assistant Engineer (E), SLDC, AP-SLDC Building, Near 132/33 KV Sub-Station Chimpu, Itanagar-791113, Govt. of Arunachal Pradesh for kind information.
3. E-Mail Assistant for necessary action please.
4. Office Copy.

Executive Engineer (E)

(157)

2024-2025

	Particulars	Total (MWh)	MU
(A)	Total Energy Import i/c Free	1470662.652	1470.662652
(B)	Energy Export Outside the State	379314.7225	379.3147225
(C)	Energy Injectected in State C=(A)-(B)	1091347.93	1091.34793
	Transmission Loss	3.667952811	Applicable Loss % (posoco.in)
(D)	Transmission Loss on C	40030.12705	40.03
(E)	Net Energy Injected in State =C-D	1051317.802	1051.32
(F)	Total State Own Generation	192788.5219	192.7885219
(G)	Net Input Energy= E+F	1244106.324	1244.108522
(H)	Energy Sold in State	728181.4439	728.1814439

2023-2024

	Particulars	Total (MWh)	MU
(A)	Total Energy Import i/c Free	1440189.925	1440.189925
(B)	Energy Export Outside the State	383745.3181	383.7453181
(C)	Energy Injectected in State C=(A)-(B)	1056444.606	1056.444606
	Transmission Loss		Applicable Transmission Losses (posoco.in)
(D)	Transmission Loss on C	37552.43683	37.55243683
(E)	Net Energy Injected in State =C-D	1018892.17	1018.89217
(F)	Total State Own Generation	136483.0641	136.4830641
(G)	Net Input Energy= E+F	1155375.234	1155.375234
(H)	Energy Sold in State	673408.486	673.408486

2022-2023

	Particulars	Total (MWh)	MU
(A)	Total Energy Import i/c Free	1397893.695	1397.893695
(B)	Energy Export Outside the State	450814.4124	450.8144124
(C)	Energy Injectected in State C=(A)-(B)	947079.2822	947.0792822
	Transmission Loss	3.556666667	
(D)	Transmission Loss on C	33794.92424	
(E)	Net Energy Injected in State =C-D	913284.3579	913.2843579
(F)	Total State Own Generation	125257.946	125.257946
(G)	Net Input Energy= E+F	1038542.304	1038.542304
(H)	Energy Sold in State	582102.2085	582.1022085

2021-2022

	Particulars	Total (MWh)	MU
(A)	Total Energy Import i/c Free	1225339.866	1225.339866
(B)	Energy Export Outside the State	325889.209	325.889209
(C)	Energy Injectected in State C=(A)-(B)	899450.6574	899.4506574
	Transmission Loss	3.417185185	0.003417185
(D)	Transmission Loss on C	30840.16922	30.84016922
(E)	Net Energy Injected in State =C-D	868610.4881	868.6104881
(F)	Total State Own Generation	103718.9958	103.7189958
(G)	Net Input Energy= E+F	972329.484	972.329484
(H)	Energy Sold in State	518251.7246	518.2517246

(H)	**Energy Sold in State**	518251.7246	518.2517246
2020-2021			
Particulars		Total (MWh)	MU
(A)	Total Energy Import i/c Free	1052196.648	1052.196648
(B)	**Energy Export Outside the State**	285275.815	285.275815
(C)	**Energy Injectected in State C=(A)-(B)**	766920.8334	766.9208334
	Transmission Loss	2.771375	
(D)	**Transmission Loss on C**	21922.07733	21.92207733
(E)	**Net Energy Injected in State =C-D**	744998.7561	744.9987561
(F)	**Total State Own Generation**	95897.62	95.89762
(G)	**Net Input Energy= E+F**	840896.3761	**840.8963761**
(H)	**Energy Sold in State**	405109.5134	405.1095134