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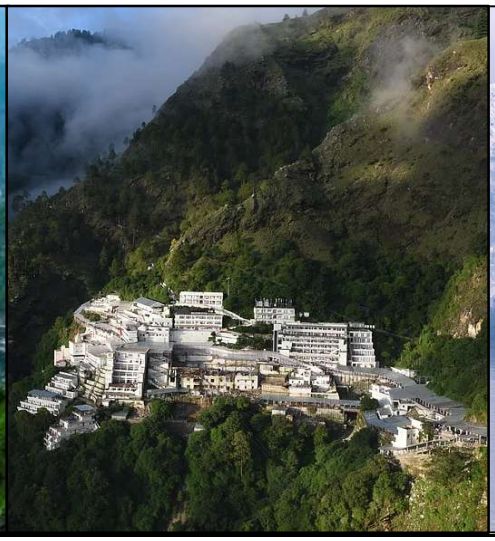
Government of India

Ministry of Power

Central Electricity Authority

Resource Adequacy Plan for Transmission System of Jammu & Kashmir up to Year 2035-36





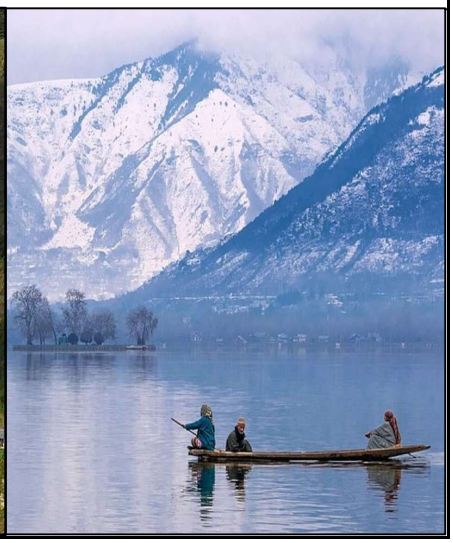


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Executive Summary

The Union Territory of Jammu & Kashmir, endowed with abundant hydropower resources and characterized by diverse geographical and climatic conditions, has been witnessing a steady increase in electricity demand due to rapid urbanization, industrial development, expansion of tourism, electrification of remote areas, increasing consumer load, and growing adoption of electric mobility. The unique topography, coupled with seasonal demand variations, particularly the high winter peak demand in the Kashmir Valley, necessitates a robust, reliable, and resilient transmission system to ensure secure and uninterrupted power supply across the Union Territory.

The power system of Jammu & Kashmir is predominantly supported by hydroelectric generation, supplemented by power imports from the Inter-State Transmission System (ISTS) to meet the demand-supply gap, especially during the lean hydro season. The Union Territory possesses significant untapped hydropower potential, and several hydroelectric projects are planned or under various stages of development, which are expected to substantially enhance the availability of clean energy in the coming years.

The peak electricity demand reached an all-time high of 1636 MW and 1974 MW during FY 2025-26 in Jammu and Kashmir region respectively, compared to 1574 MW and 1970 MW in FY 2024-25. As per the revised 20th Electric Power Survey (EPS), the peak demand for UT of Jammu and Kashmir is projected to increase to 4395 MW by 2030-31 and further to above 5000 MW by 2035-36.

A comprehensive assessment of UT of Jammu and Kashmir's transmission network, including both Intra-State and Inter-State systems, has been carried out by the Central Electricity Authority (CEA) in association with Jammu and Kashmir Power Transmission Company Limited (JKPTCL), CTUIL and Grid India. The Resource Adequacy Plan identifies the transmission infrastructure required to reliably meet the projected electricity demand up to 2035-36. The studies have been carried out on the basis of data/inputs furnished by JKPTCL.

During the period 2026-27 to 2030-31, addition of about 2320 MVA (220 kV level) in Jammu region and 1850 MVA (220 kV & above) in Kashmir region of transformation capacity, construction of approximately 1051 ckm in Jammu region and 327.5 ckm in Kashmir region of transmission lines (220 kV level) have been proposed. Further, reconductoring of existing transmission lines with HTLS conductors have been recommended.

For the period 2030-31 to 2035-36, additional augmentation with 2080 MVA of transformation capacity at 220 kV voltage level and 654 ckm of transmission lines (220 kV level) have been proposed in the UT to accommodate future load growth and maintain system reliability under contingency conditions.

The proposed transmission expansion plan will enhance network reliability, improve operational flexibility, optimize utilization of existing assets, facilitate future demand growth, and ensure secure power supply to Jammu and Kashmir up to the year 2035-36.

Chapter-1

Power supply scenario in Jammu & Kashmir and projected electricity demand

1.1 Background

Jammu and Kashmir is a Union Territory of India located in the northern Himalayan region, known for its diverse geography, rich cultural heritage, and abundant natural resources. It comprises the Jammu plains, the Kashmir Valley, and the Pir Panjal Mountain ranges, giving rise to varied climatic and ecological conditions. The region has significant hydropower potential due to its numerous perennial rivers, making it an important contributor to India's renewable energy sector. Agriculture, horticulture, tourism, handicrafts, and emerging infrastructure development form the backbone of its economy, while ongoing investments in power, transport, and public services are supporting its socio-economic growth.

Jammu & Kashmir (J&K) occupies a unique position in India's power sector owing to its abundant hydropower resources, mountainous terrain, climatic diversity, and rapidly evolving electricity demand profile. Despite being naturally endowed with significant renewable energy resources, J&K continues to face a persistent gap between electricity demand and locally available supply, particularly during the winter months when river flows decline sharply due to snowfall and freezing conditions. Hydropower constitutes the backbone of the region's electricity generation, with the majority of installed capacity contributed by central sector projects, while the remaining capacity is owned by the Jammu and Kashmir Power Development Corporation (JKPDC) and independent power producers. Since, generation within the UT alone is insufficient to meet the growing electricity requirement, the Union Territory remains heavily dependent on import from the Northern Grid. The seasonal mismatch between hydropower generation and electricity demand is one of the defining characteristics of J&K's power supply scenario. During summer, snowmelt and increased river discharge improve hydropower generation, whereas winter witnesses reduced water availability precisely when electricity demand rises because of widespread use of electric heating, lighting, commercial activities, and essential public services.

The transmission capacity has expanded over the last few years, thereby improving network reliability, reducing outages, and facilitating greater import of electricity from the national grid; however, several challenges continue to affect the quality and reliability of power supply. The increasing urbanization in cities such as Jammu and Srinagar, growing penetration of electrical appliances, expansion of commercial establishments, development of tourism infrastructure, improvements in healthcare facilities, growth in educational institutions, expansion of digital

services, and increasing electrification of rural areas are continuously driving electricity consumption upward. Also, industrial development, although relatively modest compared to other Indian states, is also expected to contribute to demand growth through new industrial estates, food processing units, cold storage facilities, information technology parks, and service sector expansion. Tourism, one of the major pillars of the regional economy, also imposes seasonal peaks in electricity demand due to increased hotel occupancy, transport services, commercial activities, and recreational facilities during pilgrimage and tourist seasons. Consequently, electricity demand in J&K is expected to grow consistently over the medium and long term, necessitating substantial augmentation of transmission infrastructure.

1.2 Present Power Scenario in Jammu & Kashmir

1.2.1 Installed Generation Capacity

The power sector in Jammu and Kashmir operates through a restructured corporate framework designed to streamline the generation, transmission, and distribution of electricity across the union territory. Under this model, distribution is handled by two regional entities: the Jammu Power Distribution Corporation Limited (JPDCL) and the Kashmir Power Distribution Corporation Limited (KPDCL), which are responsible for retail supply, revenue collection, and grid maintenance in their respective provinces. On the generation front, the Jammu & Kashmir State Power Development Corporation Limited (JKSPDC) serves as the primary state-owned generator, managing a diverse portfolio of hydroelectric projects. This state effort is heavily augmented by the Central Government's NHPC Limited and the Chenab Valley Power Projects Limited (CVPPL), a joint venture focused on tapping the immense hydroelectric potential of the Chenab basin. Supporting this entire ecosystem is the J&K Power Transmission Corporation Limited (JKPTCL), which manages the high-voltage network that connects these generation sources to the distribution hubs, ensuring energy is moved efficiently across the region's challenging geographical terrain.

The installed capacity of power utilities in the UT of J&K including allocated shares in joint & central sector utilities is given below at Table 1.1.

Table 1.1: Installed Electricity Generation Capacity in Jammu & Kashmir

	Capacity (MW)
State Sector	1372.97
Power tied up from Private Generating Stations	193.14
Allocation from Central Generating Stations	1917.23
Total	**3483.34**

Table 1.2: Existing HEPs (25 MW & above) in Jammu & Kashmir

S.No.	Hydro-Electric Project	Capacity (in MW)
	JKSPDC	
1	Baglihar I	450
2	Baglihar II	450
3	Lower Jhelum	105
4	Upper Sindh II	105
	NHPC	
1	Dulhasti	390
2	Salal I & II	690
3	Uri I	480
4	Uri II	240
5	Sewa II	120
6	Kishenganga	330
	Total (JKSPDC+NHPC)	**3360**

There are two Distribution Companies in UT of Jammu & Kashmir, Jammu Power Distribution Corporation Limited (JPDCL) for Jammu area and Kashmir Power Distribution Corporation Limited (KPDCL) for Kashmir valley region, which are supplying power to the end users in the UT of Jammu and Kashmir.

1.2.2 Electricity Demand of Jammu & Kashmir

Till date, Jammu & Kashmir has witnessed an all-time high peak demand of 3325 MW in 2025-26, which is about 2.75 % higher than the peak demand of 3236 MW in 2024-25.

Figure 1.1: Daily Peak Demand for Jammu & Kashmir in 2024-25

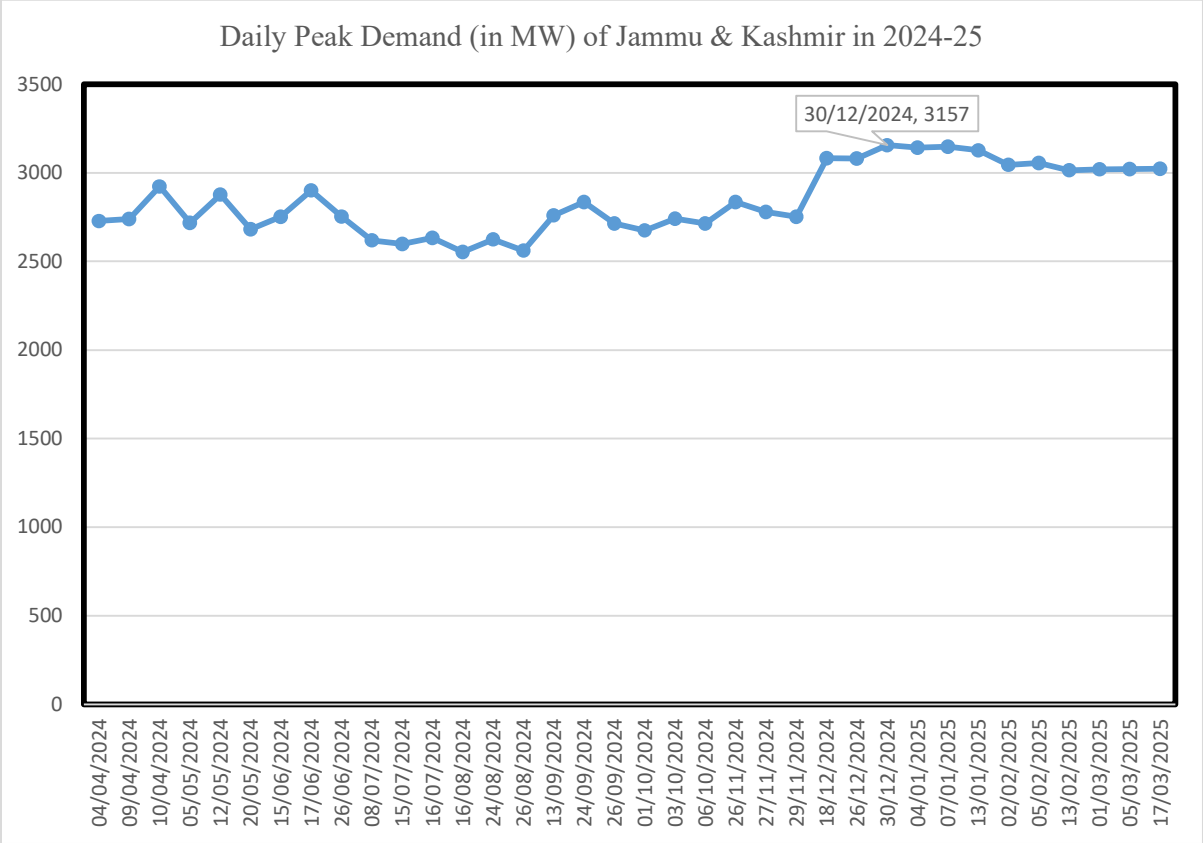


Figure 1.2: Monthly variation of peak electricity demand in Jammu & Kashmir

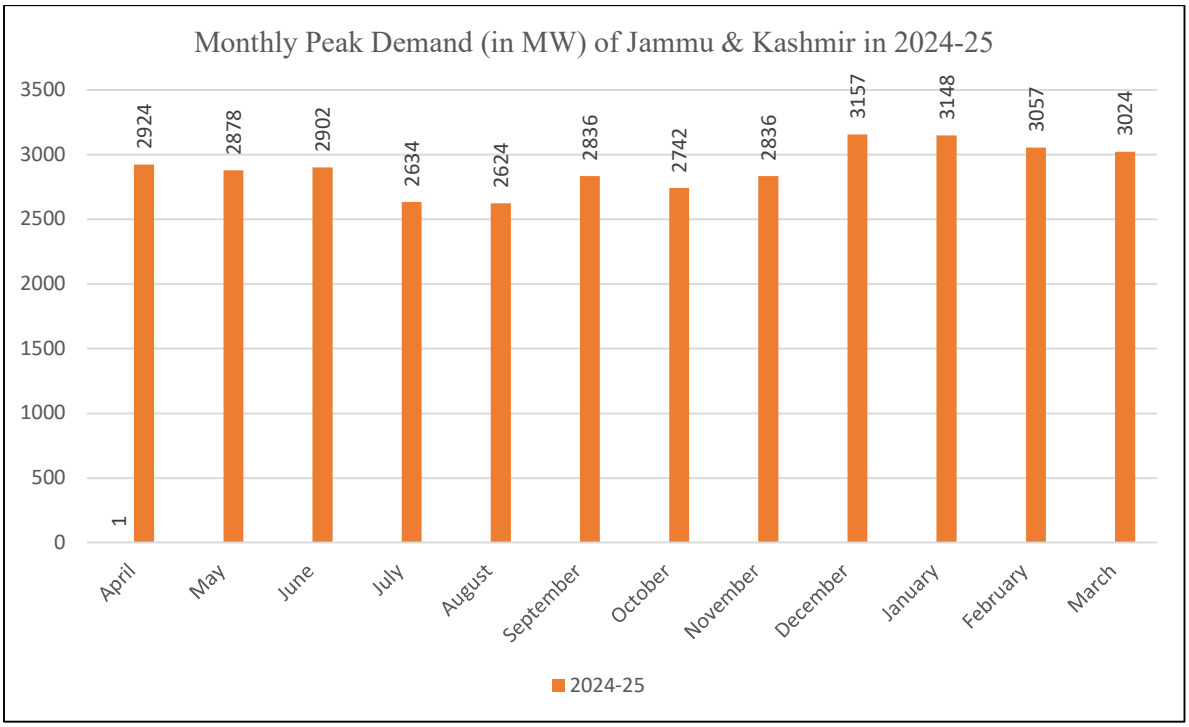


Figure 1.3: Hourly variation in Peak demand (in MW) for the month of January 2025

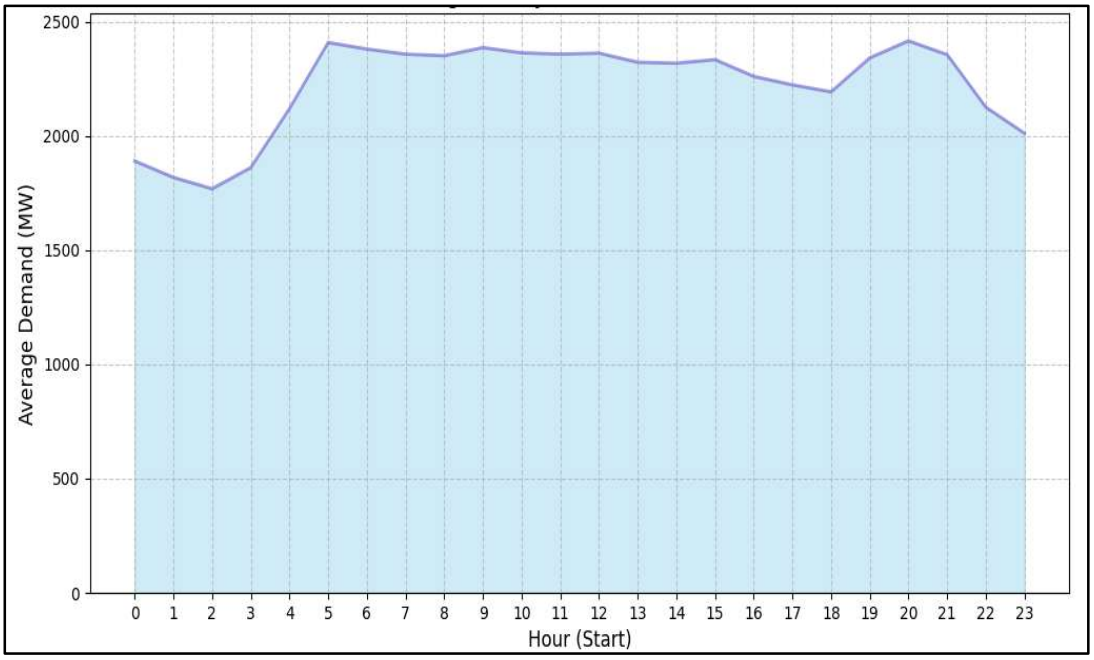
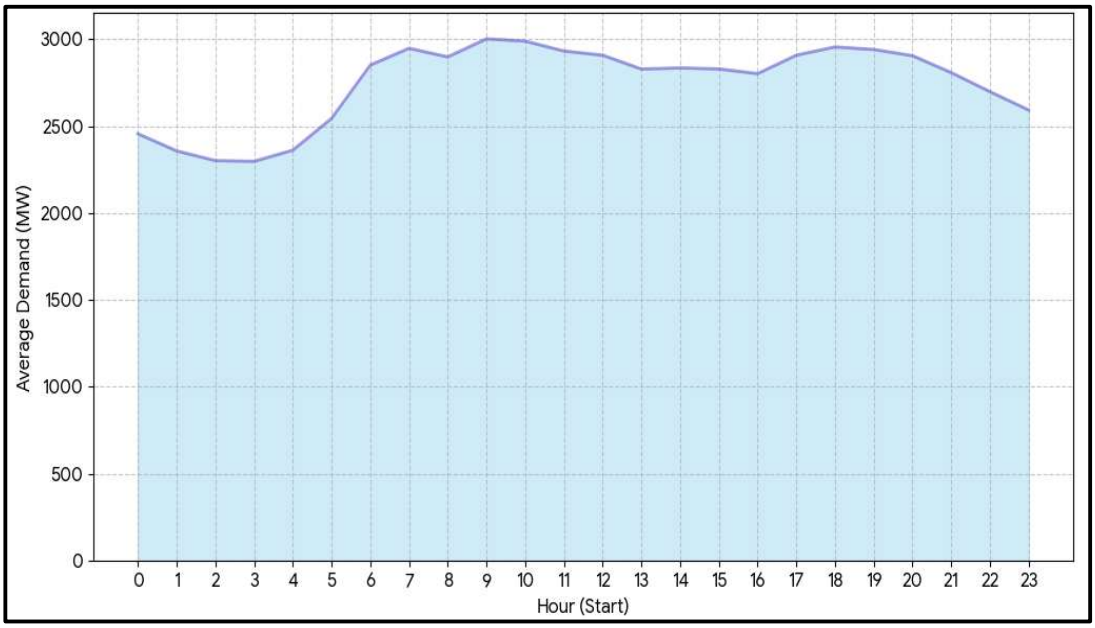


Figure 1.4: Hourly variation in Peak demand (in MW) for the month of June 2024



The recorded peak demand of Jammu region in 2024-25 is 1574 MW and in 2025-26 is 1636 MW while for Kashmir region, the recorded peak demand in 2024-25 is 1970 MW and in 2025-26 is 1974 MW.

1.3 Projected Electricity Demand of Jammu & Kashmir:

As per the revised 20th Electric Power Survey (EPS) Report, peak electricity demand is projected to increase to 4903 MW by 2034-35. Year-wise projected electricity demand of Jammu & Kashmir is given in the Table 1.2 below:

Table 1.3: Projected electricity demand in Jammu & Kashmir

Sl. No.	Year	Peak electricity demand in Jammu & Kashmir (MW)
1.	2023-24 (Actual)	3181
2.	2024-25 (Actual)	3236
3.	2025-26 (Actual)	3325
4.	2026-27 (Projection)	3813
5.	2027-28 (Projection)	3964
6.	2028-29 (Projection)	4117
7.	2029-30 (Projection)	4262
8.	2030-31 (Projection)	4395
9.	2031-32 (Projection)	4517
10.	2032-33 (Projection)	4651
11.	2033-34 (Projection)	4780
12.	2034-35 (Projection)	4903

1.4 Existing Transmission Network in Jammu & Kashmir

Jammu & Kashmir has 6 Nos. of 400 kV ISTS stations substations; 03 Nos. in Jammu region i.e. Samba, Kishenpur and Kishtwar S/s and 03 Nos. in Kashmir region i.e. New Wanpoh, Wagoora and Amargarh. In intra-state transmission system, Jammu region has 09 Nos. of 220 kV sub-stations and Kashmir has 08 No. of 220 kV sub-stations. At present, Jammu & Kashmir has ATC (Available Transfer Capacity) of 2700 MW (during high hydro summer seasons) and 2700/3400 MW (during lean hydro winter seasons) against operationalized GNA (General Network Access) of 1977 MW.

1.4.1 Intra-State Transmission System in Jammu & Kashmir

The details of the existing transmission system which includes the number of Grid sub- station (GSS), transformation capacity (MVA), length of transmission lines (circuit kilometer) is shown in Tables below:

Table 1.4: Existing Intra-State Substations in Jammu Region

S.No.	Voltage level	Existing Intra-State transmission system (Substations) of JKPTCL (Jammu)	
		No of S/s.	MVA
1	220/132 kV	3	920
2	220/132/66 kV	1	320
3	220/132/33 kV	2	1240
4	220/66 kV	2	320
5	220/33 kV	1	160
6	132/66 kV	1	100
7	132/33 kV	30	2614.5
	Total	**40**	**5674.5**

Table 1.5: Existing intra-state transmission lines in Jammu Region

S.No.	Voltage level	(ckm)
1	220 kV	828.067
2	132 kV	1191.532
	Total	**2019.599**

List of 220 kV substations of JKPTCL (Jammu):

i) 480 (3x160) MVA, 220/132 kV Bishnah S/s

ii) 2x160 MVA, 220/132 kV Udhampur S/s

iii) 3x40 MVA, 220/132 kV Ramban S/s

iv) 320 MVA, 220/132/66 kV Hiranagar S/s

v) 710 MVA (400 MVA+160 MVA+150MVA), 220 /132/33 kV Gladni S/s

vi) 3x160 +1x50 MVA, 220/132/33 kV Barn S/s

vii) 160 MVA, 220/66 kV Ghatti S/s

viii) 160 MVA, 220/66 kV IGC Samba S/s

ix) 160 MVA, 220/33 kV Chowadhi S/s

Table 1.6: Existing intra-state substations in Kashmir Region

S.No.	Voltage level	Existing Intra-State transmission system (Substations) of JKPTCL (Kashmir)	
		No of S/s.	MVA
1	220 kV	08	2815
2	132 kV	32	4020
	Total	**40**	**6835**

Table 1.7: Existing intra-state transmission lines Kashmir region

S. No.	Voltage level	(ckm)
1	220 kV	472.84
2	132 kV (including cables)	1053.63
	Total	**152**

List of 220 kV substations of JKPTCL (Kashmir):

i) 450 MVA, 220/132 kV Pampore S/s

ii) 475 MVA, 220/132 kV Mirbazar S/s

iii) 450 MVA, 220/132 kV Zainkote S/s

iv) 320 MVA, 220/132 kV Alusteng S/s

v) 320 MVA, 220/132 kV Budgam S/s

vi) 480 MVA, 220/132 kV Delina S/s

vii) 160 (53.33x3) MVA, 220/33 kV Lassipora GIS

viii) 160 (53.33x3) MVA, 220/33 kV Harwan GIS

1.4.2 Inter-State Transmission system in Jammu & Kashmir

The details of existing Inter-State transmission network in Jammu & Kashmir are given in Table 1.7 and Table 1.8:

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

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

1	400/220 kV	05	4725
2	400/132 kV	01	400
	Total	06	5125

List of 400 kV ISTS Substations:

Jammu Region:

i) 3x105 MVA+3x105 MVA+3x105 MVA, 400/220 kV Kishenpur S/s

ii) 3x315 MVA, 400/220 kV Samba S/s

iii) 3x66.67 MVA+3x66.67 MVA, 400/132 kV Kishtwar S/s

Kashmir Region:

i) 3x105 MVA+3x105 MVA+3x105 MVA, 400/220 kV Amargarh S/s

ii) 3x105 MVA+3x105 MVA, 400/220 kV New Wanpoh S/s

iii) 3x105 MVA+3x105 MVA+3x105 MVA+3x105 MVA, 400/220 kV Wagoora S/s

1.5 Constraints in Transmission Network in Jammu & Kashmir:

S. No.	Major Constraints	Remedial Solution
1	• 220 kV lines from Wagoora (PG) & Samba (PG): As demand of J&K increases significantly, it results high loading in 220 kV Wagoora - Ziankote D/c line, 220 kV Wagoora – Pampore D/c line, 220 kV Samba – Gladni line, 220 kV Samba – Hiranagar D/c line and 220 kV Samba – Bishnah line • 220 kV New Wanpoh - Mir Bazar D/c line, Salal-Gladni S/c line and Kishanpur-Barn lines are N-1 non-complaint	• J&K to plan additional connectivity in downward network as peak demand of J&K increasing rapidly during winter season. • Reconductoring of transmission lines with HTLS conductor to be taken up. • Restoration of Kishenpur - Mir Bazar 220 kV circuit under outage due to tower collapse to be expedited. • Terminal equipment of Wagoora - Pampore 220 kV D/c line to be upgraded
2	• Low voltage at 400 kV Amargarh, Wagoora and New Wanpoh: 400 kV voltages are reaching 360 kV at Amargarh, Wagoora and New Wanpoh substations.	• 2 units of STATCOM (+300MVAr) along with MSC (2x125 MVAr with each unit) at 400/220 kV Wagoora (PG) and Amargarh S/s has been planned under ISTS.

	• Around 800-900 MVAr reactive power is being drawn from 400/220 kV ICTs at Amargarh, Wagoora and New Wanpoh indicating huge requirement of MVAr supporting intra-state system. Even the SVC at New Wanpoh is being fully utilized and no margin is available for dynamic support.	• JKPTCL to plan additional capacitor banks at the intra-state sub-stations and keep the existing capacitor banks in fully operative condition.
3	Most of the intra-state sub-stations in J&K are N-1 non complaint resulting in load shedding in contingency conditions	JKPTCL to expeditiously complete the under-construction transmission schemes and plan necessary augmentation in intra-state transmission system.

Chapter-2

Transmission System Requirement by 2030-31

2.1 Load Flow Studies for Preparation of Resource Adequacy Plan of Intra-State Transmission System in Jammu and Kashmir

2.1.1 Scope of Load flow studies:

System studies for the Resource Adequacy plan for UT of Jammu and Kashmir's InSTS have been carried out using PSSE Software. The studies that have been carried out include the following:

(i) Steady state load flow studies

(ii) Contingency Analysis

The overall peak electricity demand in the UT of Jammu & Kashmir occurs in the winter season, coinciding with Peak electricity demand in Kashmir region along with lean hydro generation in the UT. The peak demand in Jammu region is observed in the summer seasons coinciding with high hydro generation.

The load flow studies have been carried out for two time-frames: 2030-31 and 2035-36 for winter peak scenario and summer peak scenario along with solar-hour and off-peak (night hour) scenarios for summer and winter seasons. To meet the projected electricity demand, augmentation required in both ISTS as well as Intra-State Transmission System has been worked out.

2.1.2 Transmission Planning Guidelines

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

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

(iii) 'N-1' criterion is generally followed for providing reliable power supply to the consumers.

(iv) Transformation capacity of any single sub-station at 220 kV and 400 kV levels has been considered to be limited to 1000 MVA and 2500 MVA respectively as per the Manual on Transmission Planning Criteria of CEA (2025).

(v) Due to RoW constraints, re-conductoring in the existing 220 kV and 132 kV lines with higher capacity conductors HTLS (High Temperature Low Sag), having the ampacity more than double of existing ampacity of conductor has been considered.

(vi) The system voltage has been considered within the following limits as per the Manual on Transmission Planning Criteria, 2025:

132 kV	Max 145 kV, Min 122 kV
220 kV	Max 245 kV, Min 198 kV
400 kV	Max 420 kV, Min 380 kV
765 kV	Max 800 kV, Min 728 kV

2.2 Load Flow Studies for the year 2030-31:

(i) The load flow studies have been carried out for the following scenarios:

a) Peak electricity demand scenario during winter season in the month of January coinciding with low hydro generation and;

b) Peak electricity demand scenario during summer season in the month of June coinciding with high hydro generation and;

c) Off-peak electricity demand scenario during summer and winter season and:

d) Solar hour scenario during summer and winter season

(ii) Peak electricity demand of UT of J&K in 2030-31 as per revised 20th EPS projections is 4395 MW. However, higher demand has been considered for studies taking into account the envisaged growth in demand projected by J&K especially due proposed elimination of presently imposed load restrictions.

(iii) For the peak demand scenario of 2030-31, the transmission elements (new lines/ reconductoring of the existing lines and new substations/ICT augmentations) already taken up for implementation by JKPTCL (Jammu) and JKPTCL (Kashmir) have been considered.

(iv) The generation projects to be commissioned by 2030-31 have been considered in the studies.

Table 2.1: Upcoming HEPs (25 MW & above) in UT of Jammu & Kashmir

S.No.	Hydro-Electric Project	Capacity (in MW)	Commissioning Timeframe
	CVPPL		
1	Pakal Dul	1000	2026-27
2	Kiru	624	2026-27

3	Kwar	540	2027-28
	NHPC		
4	Uri-I Stage-II	240	2029-30
5	Dulhasti-II	260	2029-30
	RHPCL		
6	Ratle	850	2028-29
	Total	**3514**	

(v) Under implementation/Planned ISTS Schemes in UT of Jammu and Kashmir to be commissioned by 2030-31 have been considered in the studies, details of which are given below:

a) ISTS schemes under implementation: Details of ISTS schemes under implementation/bidding is given below:

Table 2.2: ISTS schemes under implementation/bidding

S. No.	Transmission scheme	Status
1	Creation of 400/220 kV, 2x315 MVA S/s at Siot as a system strengthening scheme: • Establishment of 2x315 MVA, 400/220 kV Siot S/s with 1x125 MVAR, 420 kV bus reactor • LILO of both circuits of 400 kV D/c Amargarh (Kunzer) – Samba (PG) line at 400/220 kV Siot S/s	Under Bidding (Commissioning timeframe 2029-30)
2	Transmission scheme for evacuation of power from Ratle HEP (850 MW) & Kiru HEP (624 MW) Part-A: • LILO of 400 kV Kishenpur - Dulhasti line (Twin) at Kishtwar S/s • 400 kV Kishenpur - Samba D/c line (Quad) (only one circuit is to be terminated at Kishenpur utilizing 1 no. of 400 kV vacated line bay at Kishenur S/s (formed with bypassing of one ckt of 400 kV Kishtwar – Kishenpur 400 kV D/c line (Quad) at Kishenpur) while second circuit would be connected to bypassed circuit of 400 kV Kishtwar – Kishenpur line (Quad))	Under Construction (Commissioning timeframe 2027-28)

	• Bypassing of one ckt of 400 kV Kishtwar – Kishenpur 400 kV D/c line (Quad) at Kishenpur and connecting it with one of the circuits of Kishenpur - Samba 400 kV D/c line (Quad), thus forming 400 kV Kishtwar - Samba (Quad) direct line (one ckt) • 1x80 MVAr Switchable line reactor at Samba end of 400 kV Kishtwar-Samba 400 kV line165 km (Quad) [formed after bypassing of 400 kV Kishtwar – Kishenpur line (Quad) at Kishenpur and connecting it with one of the circuits of Kishenpur-Samba 400 kV D/c line (Quad)) • 1x63 MVAr Switchable line reactor on each ckt at Jallandhar end of Kishenpur – Jalandhar D/c direct line - 171 km (Twin) (formed after bypassing both ckts of 400 kV Kishenpur – Samba D/c line (Twin) & 400 kV Samba – Jalandhar D/c line (Twin) at Samba and connecting them together to form Kishenpur – Jalandhar D/c direct line (Twin))	
3	Transmission scheme for evacuation of power from Ratle HEP (850 MW) & Kiru (624 MW) HEP: Part B • Reconductoring of 400 kV Kishenpur - Kishtwar section (up to LILO point) with Twin HTLS (minimum 2100 MVA capacity) (formed after LILO of Kishenpur - Dulhasti line at Kishtwar S/s) along with bay upgradation works (2000 A to 3150 A) at Kishenpur end for above line. • Bypassing both ckts of 400 kV Kishenpur – Samba D/c line (Twin) & 400 kV Samba – Jalandhar D/c line (Twin) at Samba and connecting them together to form 400 kV Kishenpur– Jalandhar D/c direct line (Twin)	Under Construction (Commissioning timeframe 2027-28)
4	Augmentation of transformation capacity at 400/220 kV Samba (PG) S/s in Jammu & Kashmir by 1x500 MVA, 400/220 kV ICT (4th)	Under Construction (Commissioning timeframe 2026-27)

5	Augmentation of Transformation Capacity at 400/220 kV New Wanpoh (PG) S/s in Jammu & Kashmir by 400/220 kV, 1x315MVA (3x105MVA) ICT (3rd)	Under Construction (Commissioning timeframe 2027-28)

b) ISTS schemes planned: Details of ISTS schemes being planned is given below:

Table 2.3: Planned ISTS schemes

S. No.	Transmission scheme	Status
1	• Transmission scheme for evacuation of power from Kwar HEP (540 MW), Dulhasti Stage-II HEP (260 MW) & Uri-I Stage-II HEP (240 MW): • Establishment of 765/400/220 kV (765/400 kV, 3x1500 MVA and 400/220 kV, 2x315 MVA) Sub Station near Jammu (J&K) along with 2x240 MVAr (765 kV) & 2x125 MVAr (420 kV) bus reactor at Jammu (New) S/s • LILO of existing 765 kV Moga – Kishenpur 2xS/c line (765 kV line presently charged at 400 kV) at 765/400/220 kV Jammu S/s (LILO length: 30 km) • Kishenpur – Jammu 2xS/c line (formed after LILO) (765 kV line but shall remain charged at 400 kV) • Existing line reactors of 63 MVAR, 420 kV of Moga – Kishenpur 2xS/c line at Kishenpur ends shall be used as bus reactors at 400 kV level of Kishenpur S/s • Upgradation of Moga – Jammu 2xS/c line section at 765 kV voltage level (formed after LILO) along with 2x240 MVAr switchable line reactors at both ends • 400 kV Jammu – Kishtwar D/c line (Quad moose) (130 km) • Establishment of 400/220 kV, 3x500 MVA Substation near Dasuya (Punjab) along with 2x125 MVAr (420 kV) bus reactor at Dasuya S/s	Planned (Commissioning timeframe 2029-30)

	• 400 kV Jammu – Dasuya D/c line (Quad moose) (150 km) along with 80 MVAr switchable line reactors in each ckt at Dasuya end • LILO of 400 kV Amritsar – Parboti Pool (Banala) S/c at Dasuya S/s along with 80 MVAr switchable line reactors at Parboti Pool (Banala) end of 400 kV Dasuya - Parboti Pool (Banala) section (LILO length: 25km)	

(vi) Under construction /Planned Intra-State transmission schemes in UT of Jammu and Kashmir region to be commissioned by 2030-31 have been considered in the studies, details of which are given below:

Table 2.4: Details of under implementation/planned intra-state sub-stations in Jammu Region

S.No.	Sub-stations	Total MVA	Status	Timeframe
220 kV New Sub-stations				
1	2x50 MVA, 220/33 kV Nagrota Grid Station	100	Planned	2028-29
2	2x160 MVA, 220/132 kV Rajouri-II Grid Station	320	Under Bidding	2029-30
3	2x160 MVA, 220/132 kV + 2x50 MVA, 132/33 kV, Katra-II Grid Station	420	Under Bidding	2029-30
4	2x160 MVA, 220/132 kV + 2x50 MVA, 132/33 kV, Akhnoor-II (Domana) S/s	420	Under Bidding	2029-30
5	2x50 MVA, 220/33 kV Ramgarh Grid Station	100	Planned	2029-30
6	2x160 MVA, 220/66 kV Bhagthali substation	320	Planned	2030-31
	Total	**1680**		
132 kV New Sub-stations				
1	1x50 MVA, 132/33 kV Mendhar S/s	50	Under Construction	2027-28
2	2x50 MVA, 132/33 kV Muthi (Old City) GIS	100	Planned	2028-29
3	1x50 MVA, 132/33 kV Bhaderwah S/s	50	Planned	2028-29
4	1x40 MVA, 132/33 kV Barshalla S/s	40	Planned	2029-30
	Total	**240**		

Table 2.5: Under implementation/planned intra-state transmission lines in Jammu Region

S.No.	Transmission Lines	Line Length (in ckm)	Status	Timeframe
220 kV level				
1	Samba II - Ramgarh 220 kV D/c line	30	Planned	2029-30
2	Siot (400/220kV) - Rajouri-II (220/132kV) 220 kV D/c line	110	Under bidding	2029-30
3	Siot (400/220kV) - Katra-II 220 kV D/c line	110	Under bidding	2029-30
4	Siot (400/220kV) - Akhnoor-II (220/132/33kV) 220 kV D/c line	120	Under bidding	2029-30
5	Akhnoor-II - Barn 220 kV D/c line	15	Under bidding	2029-30
6	Samba(PG) - Chowadi (220/33kV) 220kV D/c line	40	Planned	2029-30
7	LILO of one ckt of Samba(PG) - Chowadi (220/33kV) 220 kV D/c line at Ramgarh (220/33kV) S/s	45	Planned	2029-30
8	Chowadi - Nagrota - Katra-II 220 kV D/c line	110	Planned	2029-30
9	LILO of Gladni - Udhampur 220 kV S/c line at Nagrota	10	Planned	2028-29
10	LILO of Sarna - Udhampur 220 kV S/c line at Gurah Karyal	4	Planned	2029-30
11	Jammu (ISTS New) - Samba II 220 kV D/c line	60	Planned	2029-30
12	Jammu (ISTS New) - Ramgarh 220 kV D/c line	100	Planned	2029-30
13	Jammu (ISTS New) - Chowadhi 220 kV D/c line	20	Planned	2029-30
14	Jammu (ISTS New) - Gladni 220 kV D/c line	30	Planned	2029-30
15	Jammu (ISTS New) - Nagrota 220 kV D/c line	19	Planned	2029-30
16	LILO of one circuit of Kishenpur - Sarna 220 kV D/c line at Bhagthali	16	Planned	2030-31
17	Bhagthali - Samba 220 kV D/c line (Moose conductor)	90	Planned	2030-31
	Total	**929**		

132 kV level				
1	132 kV D/c lines from existing Grid Stations of Kishtwar	2.67	Under Construction	2026-27
2	Khellani - Kishtwar 132 kV D/c line	95.67	Under Construction	2026-27
3	Thathri - Bhallesa 132 kV S/c line	28.336	Under Construction	2026-27
4	LILO of Kishtwar (ISTS) - Kishtwar 132 kV D/c line at Kishtwar1	3	Under Construction	2026-27
5	LILO of Kishtwar (ISTS) - Kishtwar NHPC 132 kV S/c line at Kishtwar	2.4	Under Construction	2026-27
6	Draba - Mendhar 132 kV S/c line on D/c towers	30	Under Construction	2027-28
7	Katra (132kV) - Katra-II 132 kV D/c line	10	Under Construction	2027-28
8	Katra-II - Jhajjarkotli (132/33kV) 132 kV S/c line	20	Under Construction	2027-28
9	LILO of both ckts of Rajouri (132/33 kV) - Draba 132 kV D/c line at Rajouri-II	48	Planned	2027-28
10	Akhnoor-II (Domana) to Jourian 132 kV D/c line	50	Planned	2027-28
11	Barn - Akhnoor 132 kV D/c line	160	Planned	2029-30
12	LILO of one ckt of Ring Main (Barn - Canal) 132 D/c line at Muthi GIS	16	Planned	2029-30
13	Khellani/Doda - Bhaderwah 132 kV S/c line	18	Planned	2029-30
	Total	**484**		

Table 2.6: Details of upgradation of intra-state substation and associated transmission lines planned by JKPTCL (Jammu)

S.No.	Scheme/ Details	Line Length (in ckm)	Total MVA	Status	Timeframe
220 kV level					

1	Upgradation of 132/33 kV Jhajjhar Kotli substaion to 220 kV level with 220/132 kV, 1x160 MVA ICT		160	Planned	2030-31
2	Gladni - Jhajjhar Kotli 220 kV S/c line	25		Planned	2030-31
3	Kishenpur (PG) - Jhajjar Kotli 220 kV D/c line (HTLS)	50		Planned	2030-31
4	Udhampur - Jhajjhar Kotli 220 kV S/c line	27		Planned	2030-31
5	Upgradation of 132/33 kV Miransahib substaion to 220 kV level with 220/132 kV, 2x160 MVA ICT		320	Planned	2030-31
6	Akhnoor II - Miransahib 220 kV D/c line	20		Planned	2030-31
7	Upgradation of 132 kV Bisnah – Miransahib line to 220 kV level	-		Planned	2030-31
	Total	**122**	**480**		

Table 2.6: Reconductoring of intra-state transmission lines proposed by JKPTCL (Jammu)

S. No.	Transmission line	ckm	Status	Timeframe
220 kV level				
1	Barn - Kishenpur 220 kV D/c line with HTLS conductor	40	Planned	2027-28
2	Gladni - Salal 220 kV ckt-I with HTLS conductor	56	Planned	2028-29
3	Gladni - Salal 220 kV ckt-II with HTLS conductor	62	Planned	2028-29
4	Samba - Chowadhi 220 S/c line with HTLS conductor	52	Planned	2028-29
5	Gladni - Chowadhi 220 S/c line with HTLS conductor	13	Planned	2028-29
6	Samba – Bisnah - Miransahib 220 kV D/c line with HTLS conductor	130	Planned	2030-31
	Total	**353**		
132 kV level				
1	Gladni - Sidhra 132 kV line with HTLS conductor	5.5	Planned	2028-29
2	Sidhra - Janipur 132 kV Link with HTLS conductor	7	Planned	2028-29
3	Gladni - Akhnoor section of Gladni - Kalakot 132kV S/c by HTLS equivalent conductor	36	Planned	2029-30

4	Barn - Canal 132 kV D/c line with HTLS conductor	16	Planned	2029-30
	Total	**64.5**		

Table 2.7: Details of under implementation/planned intra-state sub-stations in Kashmir Region

S.No.	Sub-station	Total MVA	Status	Timeframe
220 kV level				
1	220/132 kV, 315 MVA (3x105 MVA + 105 MVA spare) Wahipora S/s	315	Under Bidding	2028-29
2	220/33 kV, 160 MVA (3x53.33 MVA + 53.33 MVA spare) Sallar GIS	160	Under Bidding	2028-29
3	220/33 kV, 1x50 MVA Qazigund S/s	50	Planned	2029-30
	Total	**525**		
132 kV level				
1	132/33 kV, 2x50 MVA Hajan S/s	100	Planned	2029-30
2	132/33 kV, 2x50 MVA Khrew S/s	100	Under Construction	2030-31
3	132/33 kV, 2x20 MVA Gurez (Bandipora) S/s	40	Planned	2030-31
4	132/33 kV, 1x50 MVA Lolab (Kupwara) S/s	50	Planned	2030-31
	Total	**290**		

Table 2.8: Under implementation/planned intra-state transmission lines in Kashmir Region

S. No.	Transmission line	Line Length (in ckm)	Status	Timeframe
220 kV level				
1	LILO of both circuits of Wagoora - Zainakote 220 kV line at Budgam	2.5	Under Construction	2026-27
2	Wagoora - Zainakote 220 kV D/c line	65	Under Construction	2026-27
3	Alusteng - New Wanpoh 220 kV D/c line (ZAMTL SEC-II)	154	Planned	2027-28

4	LILO of Delina - Kishanganga D/c line at Wahipora Grid Sub Station	70	Under Bidding	2028-29
5	New Wanpoh - Sallar 220 kV D/c Line	30	Under Bidding	2028-29
6	LILO of 2nd circuit of Kishenpur – MB - Pampore 220 kV D/c line at Qazigund	6	Planned	2029-30
	Total	**327.5**		
132 kV level				
1	Wahipora - Arampora 132 kV D/C line	50	Planned	2028-29
2	Lassipora (220) - Lassipora (132) interconnection	0.1	Planned	2029-30
3	Badampora - Hajan 132 kV D/c line	30	Planned	2029-30
4	Wahipora - Lolab 132 kV D/c line	100	Planned	2030-31
5	Bandipora - Gurez 132 kV D/c line	132	Planned	2030-31
6	LILO of S/c 132 kV Pampore - Awantipora line at Khrew	28	Planned	2030-31
	Total	**340.1**		

Table 2.9: ICT augmentation under implementation/planned by JKPTCL (Kashmir)

S. No.	Substation	Voltage Level (kV)	Existing Capacity (MVA)	Augmentation (MVA)	Status	Timeframe
220 kV level						
1	Alusteng	220/132	320 (2x160)	155 (1x160→1x315)	Under Implementation	2027-28
2	Zainakote	220/132	450 (3x150)	330 (2x150→2x315)	Under Implementation	2027-28
3	Pampore	220/132	450 (3x150)	330 (2x150→2x315)	Under Implementation	2028-29
4	Delina	220/132	480 (3x160)	155 (1x160→1x315)	Under Implementation	2028-29
5	Mirbazar	220/132	475	1x100	Under Implementation	2028-29

6	Lassipora	220/33	160	100 (220/132 level)	Planned	2030-31
7	Mirbazar	220/132	575 (160+315+100)	155 (1x160→1x315)	Planned	2030-31
	Total			**1325**		
132 kV level						
1	Rawalpora	132/33	140 (2x20+2x50)	60 (2x20→2x50)	Under Implementation	2028-29
2	Kangan	132/33	70 (20+50)	30 (1x20→1x50)	Under Implementation	2028-29
3	LJHP	132/33	40 (20+20)	30 (1x20→1x50)	Under Implementation	2028-29
4	Kulgam	132/33	130	1x80	Planned	2029-30
5	Lissar	132/33	100	2x50	Planned	2031-32
	Total			**300**		

Table 2.10: Reconductoring of intra-state transmission lines proposed by JKPTCL (Kashmir)

S. No.	Transmission line	Line length (ckm)	Status	Timeframe
220 kV level				
1	Reconductoring of Wagoora - Zainakote 220 kV D/c Transmission line (Ckt-II) by HTLS conductor	57.24	Planned	2029-30
2	Reconductoring of Amargarh - Zainakote 220 kV D/c line with HTLS conductor	42	Planned	2030-31
3	Reconductoring of Amargarh (ISTS) – Delina 220 kV D/c line with HTLS conductor	44	Planned	2030-31
	Total	**143.24**		
132 kV level				
1	Reconductoring of Pampore - Rawalpora 132 kV D/c line with HTLS conductor	30	Under Implementation	2026-27

2	Reconductoring of Zainakote - Wanganpora 132 kV D/c with HTLS conductor	22	Under Implementation	2026-27
3	Reconductoring of Zainakote - Bemina 132 kV D/c with HTLS conductor	13	Under Implementation	2026-27
4	Reconductoring of Mirbazar - Wanpoh 132 kV D/c with HTLS conductor	8	Planned	2028-29
	Total	**73**		

2.3 Load Flow Study Results:

Based on the load flow studies, following was observed:

(i) The existing, under construction and planned sub-stations by JKPTCL (Jammu) and JKPTCL (Kashmir) by 2030-31 would be sufficient to cater the demand in the UT of Jammu and Kashmir.

a) In addition to the already planned works, the following augmentation in the ISTS/In-STS network may be required by 2030-31 for reliable supply of power in the UT of J&K.

Sl. No.	Name of Sub-station	Voltage (kV)	MVA
ISTS			
1	Kishenpur (PG)	400/220	315 or 500
2	New Wanpoh (PG)	400/220	315 (4^{th})
Intra-state			
3	Gladni	220/132	160

Table 2.11: Transformation augmentation works by 2030-31

b) Augmentation with 2nd ICT at few sub-stations has been recommended for making the system N-1 compliant:

Table 2.11: Augmentation recommended

Sl. No.	Name of Sub-station	Voltage (kV)	MVA
1	Kathua-II (Ghatti)	220/66	160 (2^{nd} ICT)
2	IGC Samba	220/66	160 (2^{nd} ICT)
3	Chowadi	220/33	160 (2^{nd} ICT)
4	Harwan	220/33	160 (2^{nd} ICT)
5	Sallar	220/33	160 (2^{nd} ICT)

6	Wahipora	220/132	315 (2nd ICT)
7	Qazigund	220/33	50 (2nd ICT)

In addition, requirement of ICT augmentation at the sub-stations needs to be taken up based on the actual demand growth at that particular sub-station. Therefore, the actual loading at the sub-stations needs to be continuously monitored and augmentation works should be planned considering the same.

c) Transmission lines: the reconductoring of following line with HTLS conductor to be implemented (in phased manner) at the earliest for providing reliable power supply in Jammu area:

1. Barn - Kishenpur 220 kV D/c line (JKPTCL)
2. Gladni - Salal 220 kV D/c line (POWERGRID)
3. Samba - Chowadi 220 S/c line (POWERGRID)
4. Gladni - Chowadi 220 S/c line (POWERGRID)

The reconductoring of following intra-state transmission line with HTLS conductor may be required by 2030-31:

S.No.	Transmission line	Line Length (in ckm)
1	Mir Bazar - New Wanpoh 220 kV D/c line	12

(ii) **Voltage Regulation:** Low voltages have been observed during high demand scenario at intra-state sub-stations in certain areas specially during winter season in Kashmir area. Therefore, JKPTCL to keep the existing Capacitor Banks at the sub-stations at fully operative conditions and additional capacitor banks, if required based on actual voltage profile, to be implemented in the state. Presently, JKPTCL needs to suitable reactive compensation of about 800-900 MVAr in the Kashmir region.

2.4 Summary of the transmission schemes to be added under Intra-State during by 2030-31 is given below:

Transformation capacity (MVA) and transmission lines (ckm) to be added under intra-state transmission system of UT of Jammu & Kashmir during 2026-27 to 2030-31 is given below:

Table 2.12: Summary of intra-state transmission system augmentation in Kashmir Region

S.No.	Details	MVA/ckm
1	Existing Transformation Capacity at 220 kV level	2815 MVA
2	Transformation capacity (220 kV level) addition in intra-state transmission system by 2030-31	1850 MVA
	Total	**4665 MVA**
3	Existing Transmission line (220 kV level)	472.84 ckm
4	Transmission lines (220 kV level) addition under intra-state by 2030-31	327.5 ckm
	Total	**800.34 ckm**

Additionally, reconductoring of existing 220 kV intra-state transmission lines in Kashmir region (about 155 ckm) is also to be considered.

Table 2.13: Summary of intra-state transmission system augmentation in Jammu Region

S.No.	Details	MVA/ckm
1	Existing Transformation Capacity at 220 kV level	2960 MVA
2	Transformation capacity (220 kV level) addition in intra-state transmission system by 2030-31	2320 MVA
	Total	**5280 MVA**
3	Existing Transmission line (220 kV level)	828 ckm
4	Transmission lines (220 kV level) addition under intra-state by 2030-31	1051 ckm
	Total	**1879 ckm**

Additionally, reconductoring of existing 220 kV intra-state transmission lines in Jammu region (about 353 ckm) is also to be considered.

Chapter-3

Transmission System addition planned by 2035-36

3.1 Load Flow Studies for the year 2035-36:

(i) The load flow studies have been carried out for the following scenarios:

a) Peak electricity demand scenario during winter season in the month of January coinciding with low hydro generation and;

b) Peak electricity demand scenario during summer season in the month of June coinciding with high hydro generation and;

c) Off-peak electricity demand scenario during summer and winter season and;

d) Solar hour (afternoon) scenario during summer and winter seasons,

(ii) Peak electricity demand of UT of J&K in 2035-36 has been considered slightly higher than the projections of revised 20th EPS projections.

(iii) The transmission elements (new lines/reconductoring of the existing lines and new substations/ICT augmentations) planned by JKPTCL (Jammu) and JKPTCL (Kashmir) have been considered. The details are given below:

Table 3.1: Details of planned Intra-state sub-stations in Jammu Region

S.No.	Sub-station	Total MVA	Status	Timeframe
220 kV level				
1	100 MVA, 220/33 kV Udhampur-II S/s	100	Planned	2034-35
2	1x50 MVA, 220/33 kV Ramnagar S/s	50	Planned	2034-35
3	2x50 MVA, 220/33 kV Gurah Karyal S/s	100	Planned	2033-34
	Total	**250**		
132 kV level				
1	1x50 MVA, 132/33 kV Basohli S/s	50	Planned	2034-35
2	1x50 MVA, 132/33 kV Chenani S/s	50	Planned	2034-35
3	1x50 MVA, 132/33 kV Sanagaldan S/s	50	Planned	2033-34
4	1x50 MVA, 132/33 kV Paddar S/s	20	Planned	2034-35
	Total	**170**		

Table 3.2: Details of planned Intra-state transmission lines in Jammu Region

S.No.	Transmission line	Line Length (in ckm)	Status	Timeframe
220 kV level				
1	Jammu (New) - Nagrota 220 kV D/c line	50	Planned	2033-34
2	Barn - Nagrota 220 kV D/c line	30	Planned	2033-34
3	Jammu (New) - Gurah Kalyal 220 kV D/c line	130	Planned	2033-34
4	LILO of Kishenpur - Udhampur 220 kV S/c line at Udhampur-II	5	Planned	2034-35
5	LILO of Sarna - Udhampur 220 kV S/c line at Ramnagar	48	Planned	2034-35
6	Jammu (New) - Jhajjar Kotli 220 kV D/c line	60	Planned	2034-35
	Total	**323**		
132 kV level				
1	Khellani/Doda - Paddar 132 kV S/c line	28	Planned	2034-35
2	LILO of one ckt of Sewa - Mahanpur 132 kV D/c line at Basohli	10	Planned	2034-35
3	CSTL - Chenani 132 kV D/c line	10	Planned	2034-35
4	RSTL - Sangaldan 132 kV D/c line	4	Planned	2033-35
	Total	**52**		

Table 3.3: Details of planned Intra-state sub-stations in Kashmir Region

S.No.	Scheme/ Details	Voltage (kV)	Total MVA	Status	Timeframe
220 kV level					
1	Gulmarg (GIS)	220/33	50	Planned	2031-32
2	Tral	220/33	100	Planned	2031-32
3	Bandipora GIS	220/132	310	Planned	2032-33
4	Mattan	220/132	160	Planned	2032-33
5	Nillow (Kapren) Kulgam	220/132	160	Planned	2032-33
6	Mattan	220/33	160	Planned	2032-33
7	Nillow (kapran) Kulgam	220/33	160	Planned	2032-33

9	Sheeri GIS	220/33	160	Planned	2033-34
10	Khan Sahib (Beerwah)	220/33	50	Planned	2034-35
11	Rathsun Loolipora (Budgam)	220/33	100	Planned	2034-35
12	Batkote (Pahalgam)	220/33	50	Planned	2034-35
13	Pinglena (Kangan Pulwama) GIS	220/33	160	Planned	2034-35
14	Gagangeer	220/33	50	Planned	2034-35
	Total		**1670**		
132 kV level					
1	Rafiabad	132/33	50	Planned	2032-33
2	Lolab (Kupwara)	132/33	50	Planned	2032-33
	Total		**100**		

Table 3.4: Details of planned Intra-state transmission lines in Kashmir Region

S. No.	Transmission line	Line Length (in ckm)	Status	Timeframe
220 kV level				
1	LILO of one circuit of Kunzer - Sheeri 220 kV D/c line at Gulmarg	16	Planned	2031-32
2	Amargarh - Gulmarg 220 kV S/c line	25	Planned	2031-32
3	Ramban - Nillow 220 kV S/c line	55	Planned	2032-33
4	Nillow - Mirbazar 220 kV S/c line	25	Planned	2032-33
5	New Mattan (220kV) - Mattan (132kV) 220 kV D/c line	1	Planned	2032-33
6	Lolipora - Sheeri GIS 220 kV S/c line	23	Planned	2033-34
7	Gulmarg - Sheeri GIS 220 kV S/c line	24	Planned	2033-34
8	LILO of Srinagar - Leh 220 kV S/c line at Gagangeer	6	Planned	2034-35
9	Sallar - Pahalgam 220 kV D/c line	20	Planned	2034-35
10	Lassipora - Pinglena 220 kV S/c line	25	Planned	2034-35
11	Pinglena - Wagoora 220 kV S/c line	19	Planned	2034-35

12	Amargarh - Loolipora 220 kV S/c line	22	Planned	2034-35
13	Alusteng - Gagangeer/Sonamarg 220 kV S/c line	70	Planned	2034-35
	Total	**331**		
132 kV level				
1	Pampore - Khrew 132 kV S/c line	14	Planned	2032-33
2	Nillow - Shopian 132 kV D/c line	40	Planned	2032-33
3	Nilow - Kulgam 132 kV D/c line	30	Planned	2032-33
4	Vilgam - Rafiabad 132 kV S/c line	35	Planned	2032-33
5	Rafiabad - Sheeri 132 kV S/c line	30	Planned	2032-33
6	Bandipora - New Bandipora 132 kV D/c line	10	Planned	2032-33
7	Pampore - Nowbugh Chadoora 132 kV D/c line	20	Planned	2034-35
	Total	**179**		

3.2 Load Flow Study Results:

Based on the load flow studies, following has been observed:

(i) The existing, under construction and planned sub-stations for UT of J&K by 2035-36 would be required to cater the increasing demand. Further, it is recommended that new sub-stations may be planned taking into account N-1 contingency of the ICTs.

(ii) Few intra-state sub-stations may get N-1 non-complaint in certain contingency scenario; therefore, JKPTCL to monitor real time loading and plan augmentation accordingly. Requirement of ICT augmentation at 132 kV level at various substations has also been observed by 2035-36; however, the augmentation works needs to be taken up based on the actual demand growth at that particular sub-station. Therefore, the actual loading at the sub-stations needs to be continuously monitored and augmentation works should be planned considering the same

(iii) A new 400 kV Sub-station could be planned in Kashmir region to meet the increasing demand of Kashmir and Ladakh regions particularly during Winter season. The location and timeframe of the 400 kV Sub-station to be decided based on the actual demand growth in the region.

(iv) In addition to the already planned works, the following augmentation in the network may be required by 2035-36 for reliable supply of power in the UT of J&K:

Transformation augmentation works:

Sl. No.	Name of Sub-station	Voltage (kV)	MVA
ISTS			
1	Kishenpur (PG)	400/220	315 or 500
2	Alusteng/Srinagar 400 kV (New Sub-station)	400/220	2x315 or 2x500
Intra-state			
3	Bhagthali	220/66	160 (3rd)

Table 3.5: Transformation augmentation works by 2035-36

3.3 Summary of the transmission system planned to be added under Intra-State during 2030-31 to 2035-36:

Transformation capacity (MVA) and transmission lines (ckm) to be added under intra-state transmission system of UT of Jammu & Kashmir during 2030-31 to 2035-36 is given below:

Table 3.6: Summary of intra-state transmission system augmentation in Kashmir Region

S.No.	Details	MVA/ckm
1	Transformation Capacity by 2030-31 at 220 kV level	4665 MVA
2	Transformation capacity (220 kV level) addition to intra-state system during 2031-32 to 2035-36	1670 MVA
	Total	**6335 MVA**
3	Transmission line ckm by 2030-31 at 220 kV level	800.34 ckm
4	Transmission lines (220 kV) addition under intra-state system during 2031-32 to 2035-36	331 ckm
	Total	**1131.34 ckm**

Table 3.7: Summary of intra-state transmission system augmentation in Jammu Region

S.No.	Details	MVA/ckm
1	Transformation Capacity by 2030-31 at 220 kV level	5280 MVA
2	Transformation capacity (220 kV level) addition to intra-state system during 2031-32 to 2035-36	410 MVA
	Total	**5690 MVA**

3	Transmission line ckm by 2030-31 at 220 kV level	1879 ckm
4	Transmission lines (220 kV) addition under intra-state system during 2031-32 to 2035-36	323 ckm
	Total	**2202 ckm**

Chapter-4

Recommendations

1. Intra-State Transmission system augmentation proposed till 2035-36 in the UT of Jammu & Kashmir comprises of 2032.5 ckm (220 kV and above) of transmission lines and 6250 MVA of transformation capacity. In addition, reconductoring of some 220 kV lines (about 508 ckm) with HTLS conductors is also required in the same timeframe.
2. The progress in addition of intra-state transmission system in Jammu & Kashmir has been slow for the last few years resulting in the system becoming N-1 non complaint and leading to load shedding during contingency conditions and overall load restriction during peak demand periods. Therefore, significant augmentation works in the intra-state transmission system in the UT till 2030-31 needs to be taken up in Jammu & Kashmir. Further, all the planned transmission network should be timely implemented and JKPTCL should expedite the transmission elements proposed for mitigation of transmission constraints in the state. The delay in the implementation may exaggerate the network congestion and interruption in power supply.
3. Action must be initiated by JKPTCL for approval of the schemes and subsequent award well in time to ensure timely commissioning of the planned transmission schemes. Some of the planned schemes during 2030-31 to 2035-36 timeframe may be reviewed based on growth of electricity demand.
4. JKPTCL should provide appropriate space provisions for 66 kV and 33 kV bays in their 220 kV and 132 kV grid substations for supply of power to DISCOMs, and new substations should have adequate space provision for extension/augmentation to meet future load growth.
5. Projects which are planned for the time frame beyond 2030-31 and 2035-36, may be taken up earlier or later as per the evacuation plan and requirement of Discom. Accordingly, the Resource Adequacy study for transmission system in the state may be reviewed in the coming years.