

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

Government of India
Ministry of Power
Central Electricity Authority







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Executive Summary

The Electricity Department of Government of Puducherry is a deemed licensee under Section 14 of Electricity Act, 2003 and is carrying on the business of Transmission, Distribution and retail supply of Electricity in Puducherry, Karaikal, Yanam and Mahe Regions of the Union Territory of Puducherry. With all the Towns and villages electrified in as early as 1972, the Union Territory is 100% fully electrified. The business of generation of Electricity in the Union Territory of Puducherry is being carried out by the Puducherry Power Corporation Limited, an undertaking wholly owned by the Government of Puducherry.

As of May 2026, the Department has access to an aggregate power availability of approximately 1,070 MW, comprising 679 MW from conventional sources, 32 MW from gas-based generation, and 390.6 MW from renewable energy sources. To cater to future demand growth, additional power procurement arrangements totaling about 350 MW are planned through new thermal and renewable energy projects by 2029-30. In the renewable energy sector, Puducherry has achieved an installed rooftop solar capacity of 91.29 MW under various consumer categories through initiatives such as PM Surya Ghar, reflecting the Government's commitment to clean energy adoption and sustainability.

With peak demand projected to increase from 559 MW in FY 2025-26 to 635 MW by FY 2029-30, several infrastructure augmentation projects have been planned to strengthen system reliability and accommodate future load growth. Puducherry has witnessed a steady increase in electricity demand, recording an all-time peak demand of 574 MW on 08 June 2026. As a Union Territory, with rapidly growing industrial, commercial, tourism, healthcare, educational, and public service sectors, Puducherry requires a robust and reliable transmission network to ensure uninterrupted power supply, which is critical for its economic growth, public welfare and overall development.

A comprehensive system study of the transmission network of Puducherry, both ISTS and InSTS, has been carried out by CEA and Resource Adequacy (RA) plan of transmission network has been prepared in coordination with Electricity Department of Puducherry (PED), CTUIL, SRPC and Grid-India. Summary of transmission system under ISTS and InSTS to be commissioned by 2034-35 is given below:

Voltage Level	400 kV	230 kV	Total
Inter-State Transmission System (ISTS)			
Transformation Capacity (MVA)	1500	-	**1500**
Transmission Line (ckm)	-	456	**456**
Intra-State Transmission System (InSTS)			
Transformation Capacity (MVA)	-	960	**960**
Transmission line (ckm)	-	13	**13**

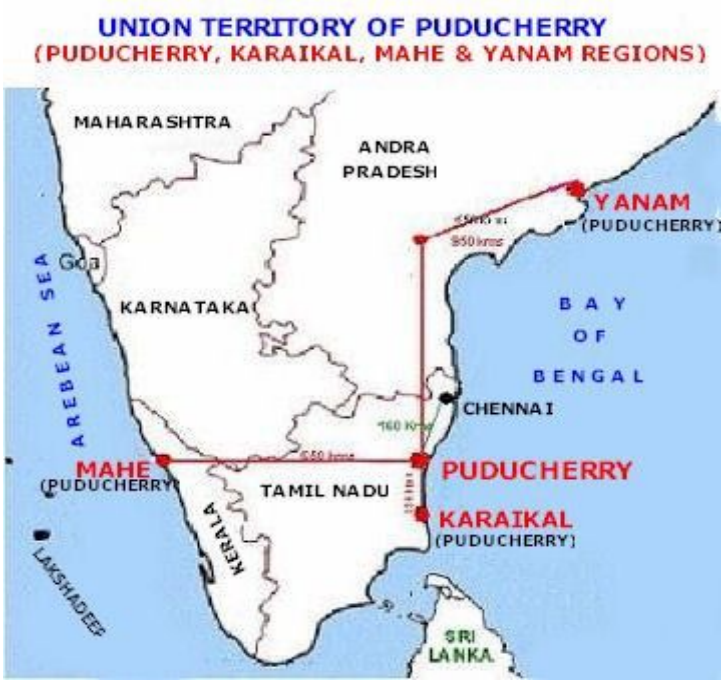
Chapter-1

Power Scenario and Existing Transmission Network in Puducherry

1.1 Background

The Union Territory of Puducherry is spread over an area of 492 sq. km and consists of four enclaves which are widely scattered in the three Southern States viz Puducherry and Karaikal enclaves in Tamil Nadu, Mahe enclave in Kerala and Yanam enclave in Andhra Pradesh. Puducherry which is the headquarters of the Union Territory is located 160 km down south of Chennai.

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With all the Towns and villages electrified in as early as 1972, the Union Territory is 100% fully electrified. The business of generation of electricity in the Union Territory of Puducherry is being carried out by the Puducherry Power Corporation Limited, an undertaking wholly owned by the Government of Puducherry.

Puducherry has witnessed a steady increase in electricity demand, recording an all-time peak demand of 574 MW on 08 June 2026, with the peak demand projected to rise to 600–800 MW over the next few years as per the past trend. At present, Puducherry has a sanctioned GNA of 540 MW, whereas the peak demand during the current summer has already reached 574 MW, indicating that the existing GNA has become inadequate to meet the growing power rcquirement of the Union Territory.

As a Union Territory with rapidly growing industrial, commercial, tourism, healthcare, educational, and public service sectors, Puducherry requires a robust and reliable transmission network to ensure uninterrupted power supply, which is critical for its economic growth, public welfare, and overall development. The Govemment of Puducherry is implemcnting several infrastructure and development projects, all of which require reliable and adequate power availability. In view of the increasing demand and the likely delay in the transmission scheme, it has become imperative to enhance the presently available GNA.

Puducherry:

Puducherry has access to relatively cheaper power from the central sector power stations of National Thermal Power Corporation (NTPC), Neyveli Lignite Corporation (NLC), and Madras Atomic Power Project (MAPP); the smallness of the Union Territory avoids the need for an extensive network of Transmission and Distribution (T&D) lines and hence minimizes the technical line losses; the ED has a higher percentage of High Tension (HT) consumption and a smaller share of agricultural consumption. There are two mother sub-stations (230/110 kV) at Villianur and Bahour to receive the electricity and later the power is distributed by several substation (110/22-11 kV) throughout Puducherry.

Karaikal:

The Electricity Department functioning under the supervision of Executive Engineer is catering the power needs of Karaikal region both industrial and domestic needs of the people. The power is being drawn from central Grid power. A separate Gas Power Plant has been set up at T.R.Pattinam with a capacity of 32.5 MW in the name of Pondicherry Power Corporation Limited. A Sub-station is also functioning at Pillaitheruvasal with a capacity of 230/110 kV.

Mahe:

Electricity Department, Mahe is the licensee for the transmission and distribution of electric power to the various consumers in Mahe area. Mahe region is having one No. of 110/11 kV Substation which commissioned in October, 1989 with 2 Nos. of 10 MVA capacity power transformer and power is supplied to the entire area through 11 kV H.T. feeders from this Substation. The power is obtained from the central pool allocation for U.T. of Puducherry.

Yanam:

The region first received the benefit of electricity in 1956. Since then, the supply and distribution of electricity in the region was looked after by the Andhra Pradesh State Electricity Board which had an office in Yanam to attend to the works. The distribution of power was taken over by this Administration with effect from 7 June 1976. Yanam has no Inter-State Sub-station or transmission line on its territory.

1.2 Present Power Scenario in Puducherry

1.2.1 Installed Generation Capacity (Intra-State)

At present, the Union Territory is predominantly dependent on power allocations from Central Generating Stations and renewable energy sources. The total allocated power available to Puducherry is 1,042.1 MW comprising 679 MW from conventional sources, 330.6 MW from renewable energy sources and 32.5 MW from the gas-based power plant operated by Puducherry Power Corporation Limited (PPCL), Karaikal. The entire power generated from this gas-based power plant is consumed within Karaikal region. However, the UT does not possess any major base-load power generation station of its own.

Total Allocated Power	Peak Demand (2025-26)	Internal Generation	GNA Limit
1042.1 MW	559 MW	32.5 MW	540 MW

Generating station wise details of power available for Puducherry is as given below:

POWER SOURCE	**ALLOCATION**
Central Generating Stations	**679 MW**
Neyveli Lignite Corporation	214 MW
National Thermal Power Corporation	298 MW
Madras Atomic Power Station	8 MW
KAIGA Atomic Power Station	37 MW

Kudankulam Atomic Power Station	66 MW
NTPC Tamilnadu Energy Company Limited (NTECL)	26 MW
NTPL (NLC Tamilnadu Power Limited)	30 MW
Gas Sources: Puducherry Power Corporation Limited	**32.5MW**
Renewables Energy (Interstate)	**330.6 MW**
SECI-WIND	180.6 MW
SECI-SOLAR	50.0 MW
NTPC-SOLAR	100.0 MW
Total	**1042.1 MW**

1.2.2 Electricity Demand of Puducherry

There is only one Discoms in UT of Puducherry covering all the four regions. In the month of July 2025, Puducherry witnessed an all-time peak demand of around 559 MW, which is about 11 MW higher than the peak demand of around 548 MW in previous year. The power demand in the Union Territory of Puducherry has been witnessing a steady increase due to urbanization, industrial growth, infrastructure expansion, and the emergence of new sectors such as electric mobility, data centres, and digital services.

The Peak demand observed in each month during the last three years is given below in Table 1.2 and depicted in Fig.1.1. Year wise peak demand is given in Fig. 1.2.

Table 1.2: Recorded Peak Demand of Puducherry

Month	**Peak electricity demand 2025-26 (MW)**	**Peak electricity demand 2024-25 (MW)**	**Peak electricity demand 2023-24 (MW)**	**Peak electricity demand 2022-23 (MW)**
April	552.1	529.6	484.9	481.4
May	556.5	**548.5**	**524.1**	492.8
June	540.1	526.9	519.6	**501.0**
July	**558.7**	512.3	507.8	478.8
August	515.0	514.5	504.8	456.6
September	506.3	*532.5*	477.9	460.0
October	487.9	500.7	483.6	427.8
November	472.2	465.4	466.5	417.5
December	435.9	453.4	431.2	400.3
January	432.8	421.7	452.6	418.1
February	464.9	449.2	465.0	421.4
March	487.9	482.8	468.5	452.6

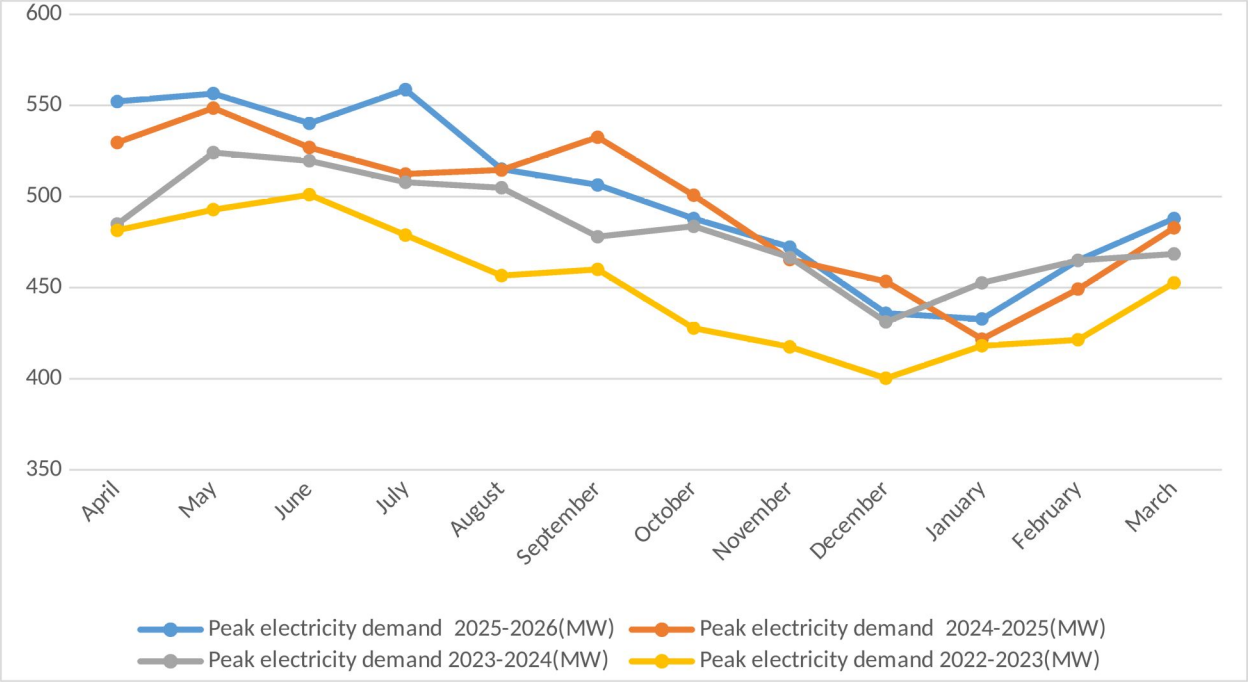


Fig. 1.1: Month wise peak electricity demand

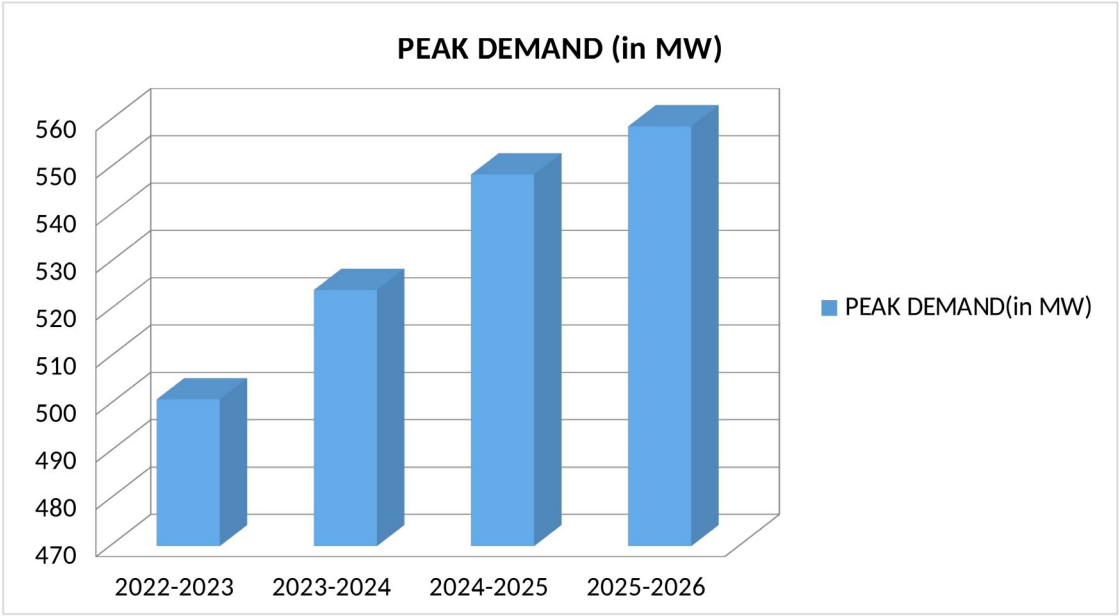


Fig. 1.2: Year wise Maximum peak electricity demand

1.2.3 Existing Transmission Network in Puducherry (as on 31.03.2026)

1.2.3.1 Intra-State Transmission System in Puducherry

Puducherry has a transmission network that includes extensive 230 kV, 132 kV and 110 kV systems. Under Intra-state transmission network, the highest voltage is 230 kV. The number of sub-stations, transformation capacity and length of transmission lines at different voltage levels in intra-state is given below.

Table 1.3: Details of Intra-State sub-stations (MVA)

S.No.	Voltage level	Existing Intra- State transmission system (Substations) (as on December 2025)		
		No of Substations	Sub-station details	MVA
1	230/110 kV		Villianur Auto SS (2x100 MVA)	200
			Bahour Auto SS (2x80 MVA)	160
			Thondamanatham Auto SS (2x100 MVA)	200
			Karaikal Auto SS (2x100 MVA)	200
	Sub-Total	**4**		**760**
2	110/22-11 kV		Marapalam SS (4*16+1*25)	89
			Kurumbapet SS (3*16+1*25)	73
			Kalapet SS (2*10 MVA)	20
			Sedarapet SS (2*16 MVA)	32
			Thethampakkam SS (2*10 MVA)	20
			Eripakkam SS (3*16 MVA)	48
			Bahour SS (3*16 MVA)	48
			Villianur SS (2*10 MVA+1*25 MVA)	45
			Korkadu SS (2*16 MVA)	32
			Venkata Nagar SS (2*31.5 MVA+1*16 MVA)	79
			Thirubuvanai SS (3*16 MVA)	48
			Thondamanatham SS (2 *25 MVA)	50
			Sorakudy SS (3*16 MVA)	48
			Pillaitheruvasal SS (2*16 MVA)	32
			Palloor SS (2*10 MVA)	20
	Sub-Total	**15**		**684**
3	132/33KV	1	Mettacur SS (2*10 MVA+1*16 MVA)	**36**
4.	33/11KV	1	Adavipolam (2*5 MVA)	**10**
	Total	**21**		**1490**

Table 1.4: Details of Intra-State Transmission Lines (ckm)

S.No.	Voltage level (kV)	Existing Intra- State transmission system (Transmission Lines including cables as on 31.03.2026)	
		Name of the line	**ckm**
1	230 kV	Neyveli –Villianur	55 (PGCIL)
2		Neyveli - Karaikal	117.74 (PGCIL)
3		Karaikal- Bahour	123.65 (PGCIL)
4		Ramanathapuram– Villianur Feeder	24.09
5		Ramanathapuram – Bahour Feeder	21
6		Ramanathapuram – Thondamanatham Feeder I	3.486
7		Ramanathapuram – Thondamanatham Feeder II	4.185
		Sub-Total	**52.761 (PED)** **296.39 (PGCIL)**
	132 kV	Kakkinada-Mettacur	42
		Sub-Total	**42**
8	110 kV	Villianur – Marapalam Feeder I & II	11
9		Villianur – Kurumbapet Feeder	6.132
10		Villianur – Sedharapet Feeder	15.0
11		Villianur – Kalapet Feeder	20.946
12		Villianur – Thirubuvanai Feeder	13.645
13		Thirubuvanai – Eripakkam Feeder	9.623
14		Bahour – Eripakkam Feeder I & II	17.161
15		Sedharapet – Thettampakkam Feeder	9.963
16		Thondmanatham – Thirubuvanai Feeder	16.893
17		Thondmanatham – Thettampakkam Feeder	7.66
18		Thondamanatham – Kurumbapet Feeder	8.705
19		Thondamanatham – Sedharapet Feeder	5.575
20		JBA Feeder EHV consumer (UG Cable)	1
21		Kurumbapet – Sumangala EHV Consumer	1.5
22		Kalapet – Chemfab EHV Consumer	1.9
23		Bahour – Inox EHV Consumer	0.381
24		Bahour – Bahour Feeder	2.273
25		Bahour – Korkadu Feeder	11.9

26		Korkadu - VASS	6.65
27		BASS –VASS Express feeder	21.486
28		MPLM -Venkatta nagar(U.G cable)	6.556
29		Sedharapet - Kalapet(Under dispute)	12.903
30		Eripakkam - MRF	0.136
31		Kurumbapet- GIS JIPMER consumer (UG cable)	2.87
32		Eripakkam- Pulkit Consumer (UG Cable)	1.5
33		P.T.Vasal to PPCL	24.343
34		P.T Vasal to Sorakodi feeder	6.14
35		Thiruvarur to Sorakodi feeder	30
36		CheemplastSunmar feeder	2.5
37		Karaikal Port feeder	2.72
38		Waaree feeder (LILO of Pillaitheruvasal to PPCL line)	0.4
39		Southern Railways feeder (UG Cable)	3.5
40		Kozhikodu to Pallour	7 Km
		Sub-Total	**289.961 (PED)**
		TOTAL	**384.722 (PED)** **296.39 (PGCIL)**

Capacitor Banks

The capacitor banks are installed on 22 kV and 11 kV voltage level. Capacitor banks with capacity of 45.60 MVAR are installed at 22 kV voltage level and capacity of 23.60 MVAR are installed at 11 kV level. The total capacity of capacitor banks installed in Puducherry network is 69.20 MVAR.

1.2.3.2 Inter-State Transmission Network in Puducherry

The details of existing Inter-State transmission network in Puducherry are given below:

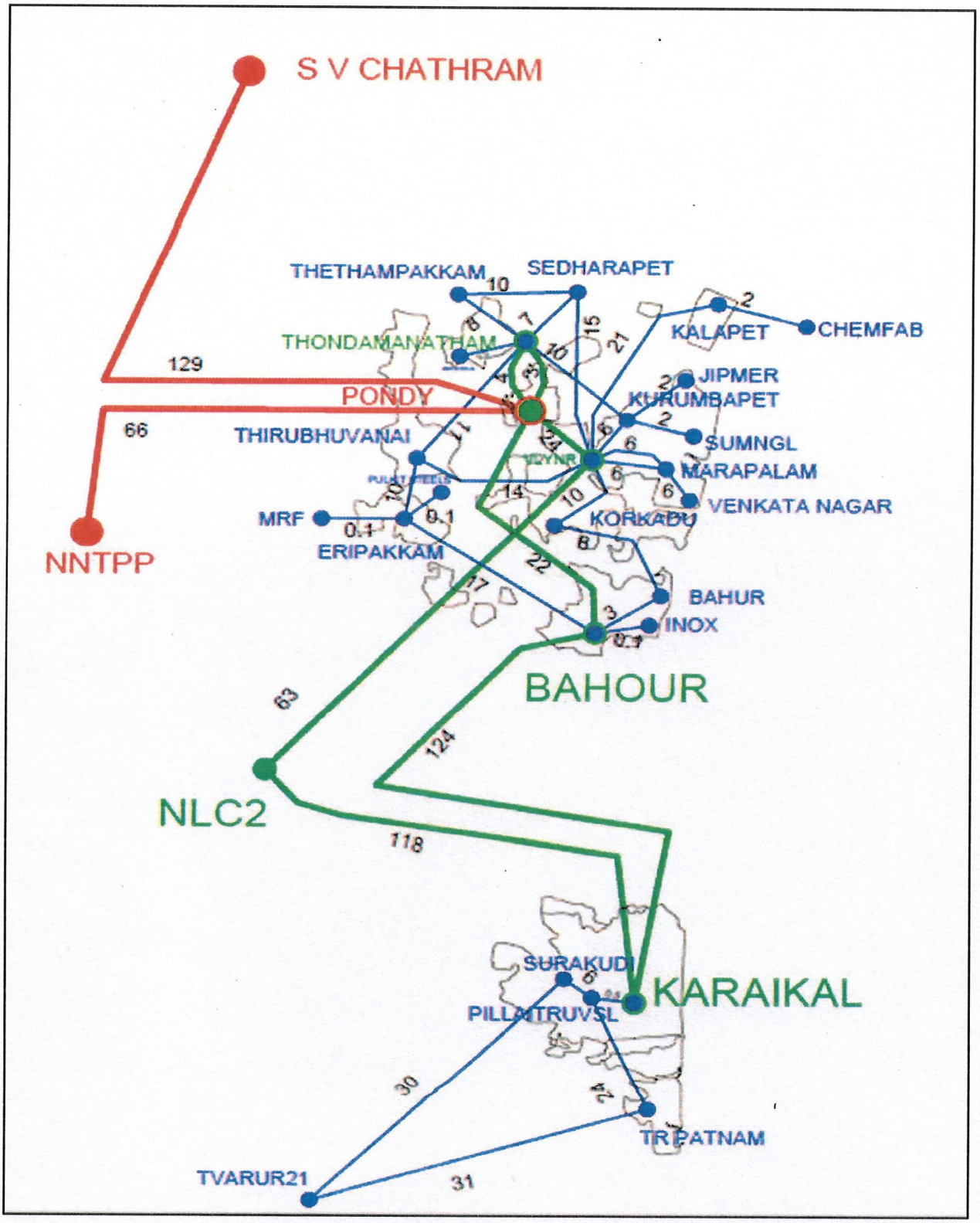
Table 1.7: Existing ISTS Substations (MVA)

S.No.	Voltage level	Existing Inter- State transmission system (Substations) (as on 31.03.2026)	
		Name of Substations	MVA
1	400/230 kV	Pondicherry	1130

Table 1.8: Existing ISTS Transmission Lines (ckm)

S.No.	Voltage level	Existing Inter- State transmission system (Transmission Lines) (as on 31.03.2026)
		(ckm)
1	400 kV	194.87
2	230 kV	235.77
	Total	**430.64**

The power map of Puducherry depicting all existing inter-state and intra-state substations and associated transmission lines (110 kV and above voltage level) is given below.


S V CHATHRAM
THETHAMPAKKAM
SEDHARAPET
THONDAMANATHAM
KALAPET
CHEMFAB
JIPMER
KURUMBAPET
SUMNGL
MARAPALAM
VENKATA NAGAR
PONDY
129
66
THIRUBHUVANAI
MRF
ERIPAKKAM
KORKADU
NNTPP
BAHUR
INOX
BAHOUR
63
124
NLC2
118
SURAKUDI
KARAIKAL
PILLAITRUVSL
30
42
TRIPATNAM
TVARUR21
31

1.3 Constraints in Transmission System in Puducherry:

1.3.1 Constraints in Intra-State Transmission System

Constraints			Remedial measure by PUDUCHERRY	Status &Time line
Sl. No	Present Constraints (Overloading of ICT/Line)	Action to be taken		
1	Overloading of PTRs at the feeding SS (Kurumbapet SS & Venkata Nagar SS)	Establishment of new SS	Establishment of new 110/22 kV GIS Sub-station with new 2x25 MVA PTR at Lawspet	MoU signed with PGCIL. Work under progress. To be completed by Sept 2027.
2	Overloading of ICTs at the feeding SS (Bahour SS & Korkadu SS)	Establishment of new SS	Establishment of new 110/22 kV AIS Sub-Station with new 2x25MVA PTR at Thavalakuppam	MoU signed with PGCIL. Work to be awarded by PGCIL. Work to be completed tentatively by FY 2027-28.
3	Line constraint - 110 kV feeding source to the proposed Thavalakuppam SS	110 kV Feeding source to be established for the proposed Thavalakuppam SS	110 kV source to proposed Thavalakuppam 110/22kV by LILO from existing 110kV Korkadu -Villianur line	-MoU to be signed with PGCIL. Work to be completed tentatively by FY 2027-28.
4	Overloading of PTRs in 110/22 kV Korkadu SS.	Augmentaion of PTR capacity	Replacement of 2x16 MVA PTR with new 2x25 MVA PTR	MoU signed with PGCIL. Work under progress. To be completed by FY 2026-27.
	Overloading of PTRs in 110/22 kV Thetampakkam SS	Augmentaion of PTR capacity	1x10 MVA to be replaced by 1x16MVA PTR, shifted from Korkadu SS	
	Overloading of PTRs in 110/22 kV Kalapet SS	Augmentaion of PTR capacity	1x10 MVA to be replaced by 1x16MVA PTR, shifted from Korkadu SS	
5	Overloading of PTRs at Thirubuvanai	Establishment of new SS	Establishment of new 110/22 kV AIS SS at Thirubuvanai in lieu	

	110/22 kV SS and all the structures / equipments are very old since the SS was commisioned in 1980.		of existing SS & Replacement of 2x16MVA PTRs by 2x25MVA(new)	MoU signed with PGCIL. Amendement to be made in the MoU for modification of works. Work to be completed by FY 2028-29
	Overloading of PTRs in Villianur, 110/22kV sub-stations	Augmentaion of PTR capacity	Replacement of 1x10MVA PTR by 1x25MVA(new)	
	Overloading of PTRs in 110/22 kV Thetampakkam SS	Augmentation of PTR capacity	1x10MVA to be replaced by 1x16MVA PTR, shifted from Thirubuvanai SS	
	Overloading of PTRs in 110/22 kV Kalapet SS	Augmentation of PTR capacity	1x10MVA to be replaced by 1x16 MVA Power Transformer, shifted from Thirubuvanai SS	
6	Overloading of ICTs at 230/110 kV Villianur Auto SS	Augmentation of PTR capacity	Replacement of 1x100 MVA PTR with a new 1x160 MVA PTR	Tender to be floated. Work to be completed by FY 2028-29.
7	Overloading of ICTs at 230/110kV Bahour Auto SS	Augmentation of SS capacity	Erection of additional 1x160 MVA PTR	Tender to be floated. Work to be completed by FY 2028-29.
8	Overloading of ICTs at PT Vasal 110/11 kV SS.	Augmentation of SS capacity	Erection of additional 1x25 MVA PTR	Tender to be floated. Timeline for completion is 10 months from award of work. Work to be completed by FY 2029-30.
9	Overloading ICTs at 230/110 kV Thondamantham Auto SS	Augmentation of SS capacity	Erection of additional 1x100 MVA PTR	Work under progress. To be completed by Aug 2027 as per award.
10	Overloading PTRs at 110/22 kV	Augmentation of PTR Capacity	Replacement of 1x16 MVA with 1x25 MVA	Tender floated. Timeline for

	Marapalam SS			completion of the works is 10 months from the award of work. Work to be completed by FY 2029-30.
	Overloading PTRs of 110/22 kV Kurumbapet SS	Augmentation of PTR capacity	Replacement of 1x16 MVA with 1x25 MVA	
11	Line constraint - Overloading of 230 kV Pondy-Villianur Line	Replacement of existing line with high capacity lines	Replacement of 230 kV Pondy-Villianur line with high capacity	Under planning. To be completed by FY 2029-30.
12	Line constraint - Overloading of 230 kV Pondy-Bahour Line	Replacement of existing line with high capacity lines	Replacement of 230 kV Pondy-Bahour line with high capacity	Under planning. To be completed by FY 2029-30.
13	Overloading of 230 kV Pondy-Thondamanatham Line	Replacement of existing line with high capacity lines	Replacement of 230 kV Pondy-Thondamantham line with high capacity	Under planning. To be completed by FY 2029-30.
14	Overloading of BASS – VASS Express feeder	Replacement of existing line with high capacity lines	Replacement of BASS – VASS Express feeder with high capacity	Under planning. To be completed by FY 2029-30.
15	Overloading of the present Thondamanatham – Kurumbapet Line for Kurumbapet 110/22 kV SS	Providing of additional circuit to Kurumbapet SS from Thondmanatham Auto SS	To be taken up	Under planning. To be completed by FY 2029-30.
16	Line constraints - No back feeding source for Mettacur 132 kV/33-11 kV SS (Yanam)	Additional circuit to Mettacur 132 KV SS (Yanam), and additional line bay	To be taken up	Work to be entrusted to APTRANSCO on receipt of estimate. Work to be completed tentatively by FY 2029-30.
17	Line constraints - To provide 110kV feeding source to the proposed Lawspet 110/22kV SS AND to provide	New 110 kV UG or OH line to be erected	Laying of 110 kV UG cable from Venkata Nagar SS to JIPMER via proposed Lawspet GIS SS	Work under progress. To be commissioned by end of September 2026.

	Redundant supply to JIPMER(Superspeciality Hospital) and Town areas			
18	Overloading of PTRs at Surakudy 110/11 kV SS. And all the structures and equipments are very old	Establishment of new SS	Establishment of new 110/11 kV AIS SS at the vacant space in the existing Surakudy 110/11kV premisis. Replacement of 2x16 MVA with new 2x25MVA	Under planning. Work to be completed tentatively by FY 2029-30.
19	Overloading ICTs at 230kV level	Establishment of new 230 kV Auto SS at Swadeshi Mill Complex	Establishment of 230/110/33-11kV, GIS Sub – Station at Swadeshi Mill Complex, Mudaliarpet, Puducherry with 2x160 MVA PTRs.	Under Planning. Work to be completed by FY 2029-30.
	Line constraints – new feeding source to proposed Auto SS	Establishment of power source to proposed Auto SS at Swadeshi Mill Complex	7 ckm (tentative) of 230kV UG Cable from Villianur Auto SS to proposed Auto SS at Swadeshi Mill Complex	Under Planning. Work to be completed by FY 2029-30.
20	Overloading ICTs at 230kV level	Establishment of new 230 kV Auto SS at Kurumbapet Sub-Station campus	Establishment of 230/110/33-11kV, Gas Insulated Switch Gear (GIS) Sub – Station at Kurumbapet Sub-Station campus, Puducherry with 2x160 MVA Power Transformers.	Under Planning. Work to be completed by FY 2029-30.
	Line constraints – new feeding source to proposed Auto SS	Establishment of power source to proposed Auto SS at Kurumbapet Sub-Station campus	6 ckm (tentative) of 230kV UG Cable from Villianur Auto SS to proposed Auto SS at Kurumbapet Sub-Station campus	Under Planning. Work to be completed by FY 2029-30.

1.3.2 Constraints in Inter-State Transmission System

Sl. No	Present Constraints (Overloading of ICT/Line)	Remedial measures	Status and Time Line
1	Outage of either the 400 kV NNTPP–Puducherry or the 400 kV Puducherry–S.V. Chatram transmission line results in low-voltage conditions across the Puducherry 230 kV network	System has been planned	Under progress 2028-29
2	230 kV Neyveli–Villianur single-circuit transmission line experiences thermal overloading under stressed operating conditions	System has been planned	Under progress 2028-29

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Chapter-2

Transmission System Requirement by 2034-35

2.1 Scope of Load flow studies:

System studies for the resource adequacy plan for Puducherry'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 load flow studies have been carried out for two scenarios i.e. solar peak electricity demand scenario and evening peak electricity demand Scenarios. The load flow studies have been carried out for the above scenarios for the time frames 2034-35 with following considerations:

(i) Puducherry's transmission network has been represented at 220 kV and above voltage levels, where loads have been considered incidental on 220 kV buses.

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

(iii) 'N-1' criterion has been considered as recommended in the Manual on Transmission Planning Criteria of CEA (2023).

(iv) Transformation capacity of the substations have been considered as per the Manual on Transmission Planning Criteria of CEA (2023).

(v) The system voltage has been considered within the following limits as per the Manual on Transmission Planning Criteria, 2023:

220 kV	Max 245 kV, Min 198 kV
400	Max 420 kV, Min 380 kV

2.2 Load Flow studies for the year 2034-35

(a) Electricity Demand by 2035:

As per revised 20th EPS, peak demand is projected to increase to 812 MW by 2034-35. The same has been considered for conducting studies.

Sl. No.	Year	Peak electricity demand (MW) as per 20th EPS	Peak electricity demand (MW) as per PED
1	2025-26 (Projection)	585	559
2	2026-27 (Projection)	617	580
3	2027-28 (Projection)	644	610
4	2028-29 (Projection)	673	640
5	2029-30 (Projection)	701	670
6	2030-31 (Projection)	723	700
7	2031-32 (Projection)	744	730
8	2032-33 (Projection)	768	750
9	2033-34 (Projection)	790	780
10	2034-35 (Projection)	812	800

(b) Generation addition under Intra-State by 2035:

The Long Term PPA under Pipeline are detailed below:

S.No.	Generating Station	Power allocated in MW	Likely date of availability
1	Kundakulam Atomic Power	9.76 MW	By December, 2026
2	Telangana	50 MW	By end of 2030
3	Talibara	100 MW	By end of 2031
4	NTPC – Farakka - Thermal	50 MW	2028-29
5	NTPC – NVVN-Hydro	17.09 MW	2028-29
6	NLC – DVC Thermal	100 MW	2029-30
4	Increased GNA 540 – 620MW	Additional GNA 80 MW	By 2028

Substation wise details of the BESS to be added under Intra-State in Puducherry by 2035 is given below:

Substation wise BESS to be added under Intra-State

S. No	Name of the Sub Station	Installed Capacity
1	Marapalam 110/22-11 KV	5 MW
2	Kalapet 110/22 KV	5 MW
3	Sedarapet 110/22 KV	5 MW
4	Thethampakkam 110/22 KV	5 MW
5	Yanam 132/11 KV	5 MW
6	Eripakkam 110/22 KV	5 MW
7	PT Vasal 110/11 KV	5 MW
8	Korkadu 110/22 KV	5 MW
9	Thondamanatham 110/22 KV	5 MW
10	Sorakudy 110/11 KV	5 MW

2.3 Transmission schemes to be added under Intra-State during 2025-26 to 2034-35:

Total 1,256 MVA transformation capacity is planned to be implemented during 2025-26 to 2034-35. Similarly, 30.6 ckm new transmission lines to be taken up for implementation.

Transformation capacity (MVA) to be added under Intra-state

Transformation Capacity (MVA)					
S.No.	**Voltage level**	**Under Construction**	**Planned**	**Under Planning**	**Total**
1	230/110KV	100	220	-	320
2	230/110/33-11KV	-	640	-	640
3	110/22	68	125	-	193
4	110/11	-	25	18	43
	Total	**150**	**1088**	**18**	**1256**

Transmission lines (ckm) to be added under Intra-state

Transmission Lines (ckm)					
S.No.	**Voltage level (kV)**	**Under Construction**	**Planned**	**Under Planning**	**Total**
1.	230	-	-	13	13
2.	110	5.2	12.4	-	17.6
	Total	**5.2**	**12.4**	**13**	**30.6**

No of substations to be added

Voltage level	No of substations
110/22 kV	2
230/110/33-11 kV	2
Total	**4**

Major transmission schemes and substations planned to be added during 2025-26 to 2034-35 are given below:

1. 110 kV supply, erection, testing and commissioning of 110 kV cable terminal bay at existing Vengata Nagar 110/11 kV Sub-Station and laying of 110 kV UG Cable from existing Vengata Nagar 110/11 kV Sub-Station to proposed GIS SS at JIPMER.
2. Establishment of 110 kV LILO line through overhead line & UG cable to the proposed 110/22 kV sub-station in Thavalakuppam from the existing 110 kV Villianur-Bahour line in Puducherry.

Reactive power requirement:

PED should install 70 MVAR of capacitor banks by December 2026, comprising installation of new capacitor banks under the RDSS Scheme as well as repair and restoration of the existing defective capacitor bants at various 110/22 kV Substations.

Reliability of power system:

An appropriate SPS shall be designed by SRLDC/SRPC to mitigate overloading of the remaining transmission line in the event of the tripping of either the 400 kV NNTPP–Puducherry line or the 400 kV SV Chatram–Puducherry line. The SPS shall be implemented by PED by December, 2026. Further, SPS split bus operation at 230 kV Bahour S/s shall be implemented.

2.4 Transmission schemes to be added under Inter-State during 2025-26 to 2034-35:

Summary of the transmission schemes to be added under Inter-State (ISTS) during 2025-26 to 2034-35 is given belowin Tables below.

Transformation Capacity (MVA) to be added under inter-state

S. No.	Voltage level (kV)	Under Construction	Planned	Total
1	400/220	-	1500	**1500**

Transmission lines (ckm) to be added under inter-state

S. No.	Voltage level (kV)	Under Construction	Planned	Total
1	230	-	456	**456**

Major transmission schemes and substations planned to be added during 2025-26 to 2034-35 are given below:

1. Establishment of 230kV level at Nagapattinam 765/400kV GIS (presently charged at 400kV) with 3x500 MVA, 400/230kV ICTs
   - Nagapattinam – Bahoor 230kV S/c high-capacity line (70 km)
   - Nagapattinam – Karaikal 230kV S/c high-capacity line (60 km)
   - Nagapattinam – Villianur 230kV S/c high-capacity line (85 km)
   - Nagapattinam – Thondamanatham 230kV S/c high-capacity line (85 km)
   - Nagapattinam – Kumbakonam 230kV S/c line (50 km)
   - Nagapattinam – Thiruvarur 230kV S/c line (70 km)
2. LILO of Kadalangudy – Neyveli TS-II 230kV S/c line (85 km) at Nagapattinam (12 km LILO length)
3. LILO of Kadalangudy – Neyveli Auto S/s 230kV S/c line (75 km) at Nagapattinam (6 km LILO length).

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Chapter-3

Recommendations

1. The transmission system under ISTS and InSTS to be added by 2034-35 is given below:

Voltage Level	400 kV	230 kV	Total
Inter-State Transmission System (ISTS)			
Transformation Capacity (MVA)	1500	-	**1500**
Transmission Line (ckm)	-	456	**456**
Intra-State Transmission System (InSTS)			
Transformation Capacity (MVA)	-	960	**960**
Transmission line (ckm)	-	13	**13**

2. Puducherry shall pursue early implementation of the approved transmission scheme comprising the establishment of the 400/230 kV Nagapattinam Pooling Station and four dedicated 230 kV high-capacity transmission lines connecting Villianur, Bahour, Thondamanatham, and Karaikal. The Department shall coordinate closely with CTUIL and Power Grid Corporation of India Limited (PGCIL) to ensure timely completion of the Scheme.
3. There are low voltage issues in the the system of PED and PED is drawing huge reactive power from the grid. To mitigate this, PED should install 50 MVAr capacitor banks each at the Bahour and Thondamanatham 230 kV Substations. PED should further install capacitor banks in their low voltage system near the load end as identified in Chapter-2 of this Plan. PED should sensitize their industrial and commercial consumers to consume power at unity power factor. All the above measures will significantly improve reactive power compensation, enhance the voltage profile, reduce reactive power drawal from the grid, and facilitate increased active power transfer through the existing transmission network. Further, Periodic voltage profile studies should be undertaken to identify additional reactive power requirements.
4. Reliability of power system of Puducherry should be increased by implemnetaion of appropriate SPS system as identified in Chapter-2 of this Plan.
5. Existing 230/110 kV auto sub-stations at Villianur, Bahour, Thondamanatham and Karaikal should be augmented to meet the projected peak demand. The proposed GIS Sub-Stations should be implemented on priority to improve system reliability and cater to urban load

growth. New transmission corridors and underground cable systems should be developed in congested urban areas to improve network resilience and reduce right-of-way constraints.

6. Rooftop solar generation should be further promoted under Government of India schemes to reduce dependency on imported power. Battery Energy Storage Systems (BESS) proposed at major substations should be implemented in a phased manner to support peak load management, renewable integration and grid stability. Future renewable energy procurement should be aligned with resource adequacy requirements and transmission availability.

Annexure A

Transmission schemes to be added in Puducherry under Intra-State during 2025-26 to 2034-35

Sl. No.	Transmission Scheme/Details	Voltage (kV)	Line Length (in ckm)	Total MVA	Status (Under Construction/ Planned)	Anticipated SCoD
1.	Establishment of 110/22KV Gas Insulated Sub – Station (GIS) at Lawspet, Saram Revenue Village Puducherry.	110/22		50MVA	Under construction	Sept 2027
2.	Establishment of 110/22KV Air Insulated Sub – Station (AIS) at Thavalakuppam, Abishegapakkam, Revenue Village Puducherry.	110/22		50MVA	Planned.Work to be awarded.	2027-28
3	Design, Manufacture, Factory Testing, Supply, Installation, Testing at site & Commissioning of 1x100 MVA, 230/110 kV additional Auto Power Transformer, 230 kV & 110 kV bay extension & bay modifications, 110 kV line re-orientation, provision of C&R Panels and allied civil works at 230/110 kV Thondamanatham Auto SS	230/110	-	New 1x100 MVA	Under construction	August 2027
4	Augmentation of Power Transformer capacity at230/110 kV Villianur Auto SS by replacement of existing 230/110 kV, 100 MVA Power Transformer with a new 230/110 kV, 160 MVA Power Transformer and allied civil and other works & Provision of new 230/110kV, 160 MVA Auto Power Transformer and allied bay extension works at 230/110 kV Bahour Auto SS and allied civil and other works.	230/110	-	1x100 MVA to 1x160 MVA	Planned. Tender to be floated shortly.	2029-30
		230/110	-	New 1x160 MVA		
5	Provision of 110KV, 2x24 Mvar capacitor bank at 230/110KV Bahour Auto SS	110	-	48Mvar	Planned	2029-30

6	Provision of 110KV, 2x24 Mvar capacitor bank at 230/110KV Thondamanatham Auto SS	110	-	48Mvar	Planned	2029-30
7	Augmentation of capacity of two numbers of Power Transformers and erection of new 110/22KV Air Insulated Sub-Station in the vacant space available at existing Thirubuvanai 110/22KV Sub-Station in lieu of the existing Sub-station and shifting of released existing 16MVA Power Transformers from Thirubuvanai 110/22KV Sub-Station, each one to Thethampakkam and Kalapet 110/22KV sub-station for replacing the existing 10MVA Power Transformer, Augmentation of one number Power Transformer capacity at existing Villianur 110/22KV Sub-station from 10MVA to 25MVA.	110/22		3*16 MVA to 2 new 25MVA +1*16 MVA(old)	Planned. Tender floated.	30 months from award. Work to be completed by FY 2029-30.
8	Augmentation of 110/22KV Korkadu Sub–Station and providing of new 110KV Bus Coupler Isolator at existing Thondamanatham 110/22KV Sub – Station and at Villianur 110/22KV Sub – Station, Puducherry	110/22		2x16 MVA to 2x25 MVA	Under construction.	2026-27
9	Design, Supply, Erection, Testing and Commissioning of two numbers of 110/22KV, 25MVA Power Transformers with required equipments and allied civil works as required at existing Kurumbapet 110/22KV Sub – Station and existing Marapalam 110/22KV Sub–Station, Puducherry	110/22		2x16 MVA to 2x25 MVA	Planned. Tender floated.	10 months from award. Work to be completed by FY 2029-30.
10	Design, Manufacturing, testing, supply, erection, and commissioning of 1 Nos of 110/11KV, 25MVA Power Transformer with allied equipment and civil works for bay extension at existing Pillai Theruvasal 110/11KV Sub-station, Karaikal, Electricity Department, Puducherry	110/11		1*25 MVA (New)	Planned. Tender to be floated.	10 months from award. Work to be completed by FY

						2029-30.
11	Supply, Erection, Testing and Commissioning of 110KV Cable terminal bay at existing Vengata Nagar 110/11KV Sub – Station and laying of 110KV UG Cable from existing Vengata Nagar 110/11KV Sub – Station to proposed GIS at JIPMER,	110	5.2 ckm		Work under progress	September 2026
12	Establishment of 110kV LILO Line through Overhead Line & UG Cable to the proposed 110/22 kV Sub – Station in Thavalakuppam from the existing 110 kV Villianur-Bahour line in Puducherry	110	6.2 ckm (Double Ckt)		Planned. MoU to be signed with PGCIL.	Work to be completed tentatively by FY 2027-28.

Annexure-B

Transmission schemes to be added in Puducherry under Inter-State during 2025-26 to 2034-35

S.No.	Scheme /details	Voltage level (kV)	Total ckm	Total MVA	Status	Anticipated SCoD
1.	Establishment of 230kV level at Nagapattinam 765/400kV GIS (presently charged at 400kV) with 3x500 MVA, 400/230kV ICTs	400		1500	Planned	2028-29
	• Nagapattinam – Bahoor 230kV S/c high-capacity line (70 km) • Nagapattinam – Karaikal 230kV S/c high-capacity line (60 km) • Nagapattinam – Villianur 230kV S/c high-capacity line (85 km) • Nagapattinam – Thondamanatham 230kV S/c high-capacity line (85 km) • Nagapattinam – Kumbakonam 230kV S/c line (50 km) • Nagapattinam – Thiruvarur 230kV S/c line (70 km) • LILO of Kadalangudy – Neyveli TS-II 230kV S/c line (85 km) at Nagapattinam (12 km LILO length) • LILO of Kadalangudy – Neyveli Auto S/s 230kV S/c line (75 km) at Nagapattinam (6 km LILO length).	230	456			