



TRANSMISSION CORPORATION OF ANDHRA PRADESH LIMITED
Vidyut Soudha, Vijayawada

NOTIFICATION

STATE ELECTRICITY PLAN

In accordance with clauses 5.1 and 5.2 (a) of the “Guidelines for Load Forecasts, Resource Plans, And Power Procurement” issued in December, 2006 by the Hon’ble Andhra Pradesh Electricity Regulatory Commission (APERC) and in pursuance of the directions at para 129 of Hon’ble APERC’s order dated 27.06.2024 on Load Forecasts, Resource Plans and Power Procurement Plan for 5th Control Period, the TRANSMISSION CORPORATION OF ANDHRA PRADESH LIMITED hereby notifies the **“STATE ELECTRICITY PLAN”** for 5th Control Period (FY2024-25 to FY2028-29) which is formulated in co-ordination with APDISCOMs and APGENCO for promotion of Generation, Transmission, Distribution and Supply of Electricity in the State of Andhra Pradesh after due Regulatory procedures such as Public hearings (on dt.19.08.2023) and approval of State Co-ordination Forum (Meeting held on dt.04.01.2025).

K.VIJAYANAND IAS
CHAIRMAN & MANAGING DIRECTOR
APTRANSCO

24-02-2025

Digitally signed by
VIJAYANAND KAVETI
Date: 24-02-2025
18:33:47

STATE ELECTRICITY PLAN

For

5th Control Period (FY2024-25 to FY2028-29)



04.01.2025

Transmission Corporation of Andhra Pradesh Limited.

Vidyut Soudha, Vijayawada
Andhra Pradesh

INDEX

S.No.	Chapter Name	Page Nos.
1	Introduction	01-23
2	Load Forecast	24-36
3	Generation Plan	37-59
4	Transmission Plan	60-69
5	Distribution Plan	70-86
6	Research & Development and Energy Efficiency Measures	87-96
7	Manpower Assessment & Trainings	97-98
8	Annexure	99-134

1. INTRODUCTION

The State Electricity Plan (SEP) for Andhra Pradesh from FY 2024-25 to FY 2028-29 consist of projections of energy & demand for the said period, the planned Transmission and Distribution expansions to meet the projected loads and evacuation of expected Generation plants as filed by AP Power utilities in their Resource Plans and final approvals by Hon'ble Commission in the Approved Resource Plan. Various factors like historical trends, growth in cities Vizag, Vijayawada, Guntur, Tirupati, Kurnool and growth due to Vizag Chennai Industrial Corridor (VCIC), Kakinada SEZ, Sri City SEZ, Vizag Tech Park, Lift Irrigation schemes, New airports & New sea ports etc. have been considered for projecting the energy demand for the state up to FY 2028-29.

The availability of generation from various sources and the addition of generation capacity of various fuel types (Coal, Gas, Hydel, Nuclear and Renewables) is considered to meet the increasing demand. Addition of 7982 MW of Renewable energy capacity and around 1190 MW of Hydel capacity, 1350 MW Pumped storage capacity are projected to be added from FY 2023-24 to FY 2028-29. No retirement of thermal stations has been considered till FY 2034. Accordingly, the SEP also considers the projected additions of substations and Transmission lines by APTRANSCO up to FY 2028-29. Around 71 Nos. of substations and 4,837.2 Ckm of Transmission lines are projected to be added from FY 2023-24 to FY 2028-29.

1.1 APERC Guidelines

The Andhra Pradesh Electricity Regulatory Commission (APERC), directed that APTRANSCO has to formulate State Electricity Plan in co-ordination with Discoms and APGENCO for the promotion of Generation, Transmission, Distribution and supply of electricity and notify the same once in the Control Period under consideration for tariff review.

Accordingly APTransco has prepared the draft State Electricity Plan and submitted to Hon'ble Commission on 05.06.2023. The Commission vide public notice dtd.07.06.2023 sought for views/suggestions/objections/comments from licensees, generating companies, the public and all stock holders.

Hon'ble Commission in the approval of Load forecast and Resource Plans for 5th Control period (FY2024-25 to FY2028-29) dated.27.06.2024 has stated that the requirement of APTransco in publishing the draft State Electricity Plan and inviting suggestions/objections thereon can be construed to be complied with as indicated supra.

Hon'ble Commission further directed that APTransco shall notify the Plan after considering the comments of the Commission and all stakeholders and obtain approval of the State Coordination Forum and shall accordingly revise the plan incorporating the directions if any, given by the State Coordination Forum.

The State Electricity Plan would be for a short-term framework of a period equal to Control Period under consideration for tariff review and shall include:

- Short-term demand forecast, with inputs from the last approved Load Forecast;
- Suggested areas/locations for capacity additions in generation and Transmission keeping in view the economics of generation and Transmission, losses in the system, load centre requirements, grid stability, security of supply, quality of power including voltage profile etc. and environmental considerations including rehabilitation and resettlement;
- Integration of such possible locations with Transmission system and development of state grid including type of Transmission systems and requirement of redundancies;
- Different technologies available for efficient generation, Transmission and Distribution;
- Fuel choices based on economy, energy security and environmental considerations.

The State Electricity Plan would be used as a reference document by all stakeholders and also assist CEA in planning the National Electricity Plan or any other Plan requiring inputs from the State.

1.2 Power for All

Andhra Pradesh is one of the state in the country selected for implementation of “Power for All”- flagship program of Govt. of India (closed by FY2020-21).

The objective of the above program is to supply 24x7 quality, reliable and affordable power supply to all domestic, commercial and industrial consumers within a fixed time frame. This program covers the entire gamut of power sector, including generation, Transmission, distribution, consumer initiatives, renewable energy, energy efficiency measures, financial health of the utilities and support required from Govt. of India to achieve the objectives of the program.

The program would be implemented jointly by Govt. of India & Govt. of Andhra Pradesh as partners. The various ministries of Central Govt. which would be involved in this program are Ministry of Power, Ministry of Coal, Ministry of Petroleum & Natural Gas, Ministry of New & Renewable Energy, Ministry of Environment & Forests and Ministry of Railways.

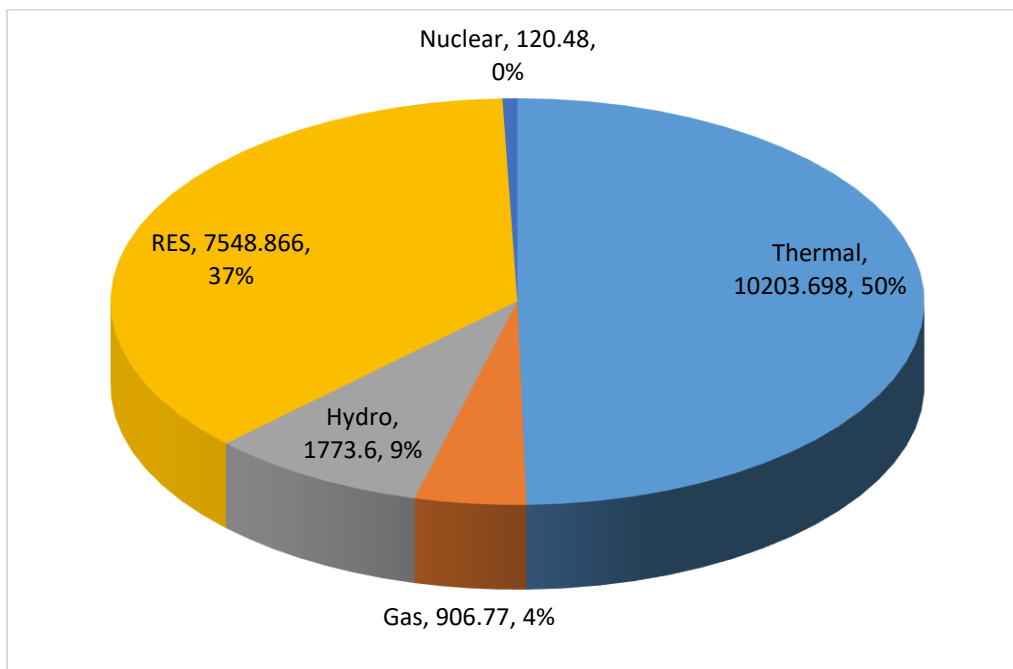
CEA would be functioning as the nodal authority for implementation & monitoring of the program. The Central PSUs namely NTPC, CIL, MCL, WCL, SCCL, PFC, REC, NHPC, NPCIL, PGCIL, BHEL, EESL, BEE, SECI, ONGC, GAIL, NVVNL along with the State PSUs APGENCO, APTRANSCO, APDISCOMS, NREDCAP and SECM would be partners in the implementation of the program.

1.3 Andhra Pradesh Power Sector at a glance

The total installed capacity of Andhra Pradesh is 20553 MW as on 31-03-2024. The total number of consumers in the state is 210.46 lakhs which includes 166.24 lakhs of domestic, 19.97 lakhs of commercial, 1.11 lakhs of industrial, 21.67 lakhs of agricultural consumers as on 31.03.2024. The total energy consumption (at utility periphery) in Andhra Pradesh during FY 2023-24 was 81290 MU and the peak demand so far occurred in May 2024 was 13712 MW. Maximum Daily grid consumption is 263 MU.

1.4 Installed Capacity

The present installed capacity as on 31-03-2024 of Andhra Pradesh is 20553 MW, comprising 10203.7 MW of thermal, 1,773.6 MW of APGenco Hydel, 906.8 MW of Gas projects, 120.5 MW Nuclear & 7548.9MW Renewables.



1.5 Position of Transmission and Distribution

The Transmission infrastructure as on 31-03-2024 consists of 17 Nos. Of 400 kV substations, 109 Nos. of 220 kV substations, 243 Nos. of 132 kV substations and 32,577.48 Ckm of EHT lines. The Transmission losses during FY 2023-24 was 2.69%

1.6 Power Supply Position

Power is being supplied to Domestic, Commercial & Industrial consumers along with Agricultural consumers in rural areas through mixed feeders. There are 706 Nos. of dedicated/express industrial feeders. 9 hours three phase power supply is being given to agricultural consumers mostly in single/two spells during day time and supply timings are rotated every 7 days.

Three phase supply to rural areas for Domestic, Commercial & Industrial consumers is along with 9 hours Agricultural supply only. Whereas, balance 17 hours supply is given to rural areas through single phase power supply. As a result, most of the consumers, other than Agricultural in rural areas on mixed feeders get 24 hours of supply every day.

Agricultural feeders have been separated from Domestic feeders in some mandals. In these mandals, domestic consumers are being extended 3 phase supply depending upon availability of power. However, there is a system in Andhra Pradesh which enables single phase supply to be extended to all domestic consumers through suitable control mechanism at the substations.

Since 2014, all rural areas have been extended 24 hours single phase/ three phase power supply to all Domestic, Commercial & Industrial consumers. The segregation of Agricultural feeders would enable extension of 24x7, reliable 3 phase supply to all domestic, commercial & industrial consumers.

1.7 Andhra Pradesh Electricity Reforms and Schemes

a) Andhra Pradesh Electricity Reforms (Before & After bifurcation)

- Pursuant to the applicable provisions of the Andhra Pradesh Electricity Reform Act, 1998, the Government of Andhra Pradesh undertook the reform and restructuring of the erstwhile Andhra Pradesh State Electricity Board ('APSEB').
- APGENCO and APTRANSCO were formed as successor entities of the erstwhile APSEB to look after Power Generation and Transmission & Distribution business of erstwhile APSEB through the First Statutory Transfer Scheme notified in the official gazette on February 1, 1999.
- Subsequently, the State Government notified the Second Transfer Scheme on March 31, 2000 ('the Second Transfer Scheme') wherein APTRANSCO retained the Transmission, SLDC and Bulk Supply business of the State with itself, while transferring the Distribution and Retail supply of the State to the four Distribution Companies formed viz., APEPDCL, APCPDCL, APSPDCL and APNPDCL, pursuant to obtaining independent licensees by the DISCOMs in December 2000. APTRANSCO relinquished its Distribution & Retail Supply License.
- Subsequently on June 7, 2005, the State Government notified the Third Transfer Scheme in its official gazette wherein the Bulk Supply business that was being dealt by APTRANSCO is vested to the DISCOMs with effect from June 9, 2005.
- **The erstwhile Andhra Pradesh state was reorganized into the Andhra Pradesh state and Telangana State w.e.f 2nd June 2014. As a result,**
 - ✓ APGENCO is presently carrying out Power Generation activity in the State.
 - ✓ APTRANSCO is presently carrying out solely Transmission business as the State Transmission Utility (STU) in the State.

- ✓ APEPDCL and APSPDCL are carrying out Distribution business in the State. And two more districts Anantapur and Kurnool were added to the APSPDCL.
- ✓ Southern Power Distribution Company was further divided into two Distribution Companies viz. APSPDCL and APCPDCL as per GO Ms No 41, Dt:-5-12-2019. With Headquarters at Tirupati to APSPDCL & at Vijayawada to APCPDCL.

b) Re-structured Accelerated Power Development & Reforms Programme (R-APDRP)

- The Restructured Accelerated Power Development and Reforms Programme (R-APDRP) started in 2008 is a revised version of the Accelerated Power Development Reforms Programme (APDRP). The APDRP scheme was initiated in 2002-03 as Additional Central Assistance to States for reducing the Aggregate Technical and Commercial (AT&C) losses in the power sector and improving the quality and reliability of power supply. This was to be achieved by strengthening and upgrading the sub-transmission and distribution system of high-density load centres like towns and industrial centres.
- The Power Finance Corporation (PFC) is the nodal agency to operationalize the scheme under the guidance of Ministry of Power. PFC will act as a single window service provider under the scheme and coordinate with the different stakeholders like Ministry of Power, APDRP Steering Committee, Central Electricity Authority, Financial Institutions, State Electricity Boards/Utilities and Consultants.
- R-APDRP is for urban areas- towns and cities with population of more than 30,000. The focus of R-APDRP is on actual, demonstrable performance in terms of sustained loss reduction.
- This is proposed to be achieved in two parts:
 - Part A of the scheme** envisages establishment of base line data which includes consumer indexing, GIS mapping and metering of distribution transformers and feeders and SCADA/DMS.
 - Part B of the scheme** is for renovation, modernization and strengthening of distribution systems.

The eligibility criteria for R-APDRP assistance are:

1. Constitution of State Electricity Regulatory Commission.
2. Reduction of AT&C losses at utility level by 3 % per year for utilities having losses above 30% and by 1.5% per year for utilities having losses below 30%.
3. Setting a time frame for introduction of measures for better accountability at all levels in project area.
4. Submitting the AT& C loss figure of the previous year of the identified project area by 30th of June. This figure is to be verified by an independent agency appointed by Ministry of Power.
5. Evolving an incentive scheme for the staff which is linked to achievement of 15% reduction in AT&C loss in the project area.

Funds under the R-APDRP scheme are released only when a quadripartite agreement is signed between State Electricity Boards/Utilities, Government of India, Power Finance Corporation and State Government.

APEPDCL:

The Ministry of Power, Govt. of India sanctioned R-APDRP scheme through the Nodal Agency M/s. Power Finance Corporation Limited (M/s. PFC Ltd.), New Delhi. These Schemes has been implemented by APEPDCL and completed and closure proposal submitted to M/s. PFC Ltd., The scheme wise Abstract and the details are shown below:

Name of the scheme	Sanctioned amount in Crs	No. of towns covered	% of Gol Loan	% of Counterpart Loan	Funds released in Crs	Status of Scheme
RAPDRP Part- A	52.56	29	100%	--	52.16	Works completed & Scheme Closed
RAPDRP Part- B	48.20	10	75%	25%	48.2	Works completed & Scheme Closed
SCADA Part- B	20.314	1	75%	25%	20.31	Works completed & Scheme Closed
SCADA Part- A	9.75	1	100%	--	8.18	Works completed & Scheme Closed
Total	130.83				128.15	

APSPDCL:

The Ministry of Power, Govt. of India sanctioned R-APDRP scheme through the Nodal Agency M/s. Power Finance Corporation Limited (M/s. PFC Ltd.), New Delhi. These Schemes has been implemented by APSPDCL and completed and closure proposal submitted to M/s. PFC Ltd., The scheme wise Abstract and the details are shown below:

S. No	Name of the scheme	Sanctioned amount in Crs	No. of towns covered	% of Gol Loan	% of Counterpart Loan	Funds released in Crs	Status of scheme
1	RAPDRP Part- A	144.26	46	100%	--	139.54	Works completed & Scheme Closed
2	RAPDRP Part- B	207.68	35	75%	25%	48.32	Works completed & Scheme Closed
3	SCADA Part- A	25.71	3	100%	--	21.21	Works completed & Scheme Closed
4	SCADA Part- B	79.51	3	100%	--	-	
	Total	130.83				128.15	

APTRANSCO SCHEMES:**II. Vizag – Chennai Industrial Corridor Scheme**

Vision & Mission Statement of Vizag - Chennai Industrial Corridor Scheme:

- The Vizag–Chennai Industrial Corridor (VCIC) is a major infrastructure initiative spanning around 800 kms of coastline, connecting key industrial nodes like Visakhapatnam, Kakinada, Machilipatnam, Chittoor, etc., and aimed at fostering industrial growth in Andhra Pradesh.
- The project focuses on enhancing the Transmission and Distribution (T&D) infrastructure to meet the energy demands of industrial hubs. It includes construction of new substations and high-capacity transmission lines to ensure stable power supply to the growing industrial areas along the corridor. The development also includes integrating smart grid technologies and reducing transmission losses to improve overall efficiency.
- This scheme is being funded by ADB Bank. Two packages under Tranche-I are awarded with an administrative sanctioned cost of Rs.694.90 Crs. Out of two packages, construction works in package I were completed, the construction works of package II are in progress.

Status of Tranche I (APTRANSCO - 03) works

The construction works of 400 kV SS Rachagunneri, 220 kV SS Naidupet and 132 kV SS Yerpedu Substations with associated lines under package -01 were completed.

220 kV Brandix – Atchutapuram DC line charged on 06.07.2024. The Balance works are under slow pace due to payment issues to the contractor from AP Government.

The construction works of 220 kV SS Chandanada & 220 kV SS Kapuluppada with associated lines under package 02 are under progress. The total expenditure incurred in package I & II is Rs 544.74 Cr out of the total contracted project cost of Rs.685.04Crs.

III. Green Energy Corridor Project

The Green Energy Corridor (GEC) is an initiative by the Government of India to facilitate the integration of renewable energy (RE) into the national grid. The Phase-1 of the project focuses on strengthening the transmission infrastructure to evacuate power generated from renewable sources (solar, wind) in RE-rich states. Key features include the construction of high-capacity transmission lines and substations to ensure reliable power transfer and reduce curtailment of renewable energy.

Key Objectives of Green Energy Corridor (GEC) are:

- Enable transmission of renewable energy from generation points to load centres.
- Reduce grid instability and improve RE integration.
- Strengthen intra-state and inter-state grid connectivity.
- Support India's RE capacity targets.

In Andhra Pradesh, the GEC (Phase-1) project has made significant progress. The state is rich in renewable energy, particularly solar and wind power. Some highlights of progress include:

- Construction of multiple intra-state transmission lines to connect RE generation sites to the state grid.
- Development of high-capacity substations to handle the increasing renewable energy load.
- Integration of transmission infrastructure for solar parks and wind energy zones.
- Ongoing work to reduce grid congestion and enhance the state's ability to evacuate renewable power efficiently.

Andhra Pradesh continues to contribute toward India's renewable energy targets by ramping up transmission infrastructure under the GEC framework.

Transmission lines have been set up to connect solar parks and wind farms located in Anantapur, Kadapa, and Kurnool districts.

Multiple 220 kV and 400 kV transmission lines have been established to transmit energy to the main grid with minimal losses.

Some of the important works covered in the scheme are 400kV Hindupur SS, 220kV Pampanurthanda SS, 220kV Penukonda SS, 220kV Bethamcherla SS etc., along with connected lines and augmentation of PTRs in the area.

Solar and Wind Energy Integration

Solar Parks: Andhra Pradesh has been a major contributor to India's solar energy generation, and the GEC project has enabled the successful integration of several large solar parks into the grid.

The Kurnool Ultra Mega Solar Park, one of the world's largest solar parks, with a capacity of 1000 MW, is now connected to the state's transmission network thanks to GEC infrastructure.

Other major solar parks, such as those in Anantapur and Kadapa, have been integrated into the grid.

Wind Energy: Andhra Pradesh's coastal and hilly areas are rich in wind energy potential. The GEC project has focused on facilitating the evacuation of wind power from regions such as Kadapa, Anantapur, and Nellore.

Grid Reliability and Capacity Enhancement

The GEC project has significantly strengthened Andhra Pradesh's grid infrastructure, enhancing grid stability and reducing power losses.

Grid congestion, particularly during high renewable energy generation periods, has been minimized, allowing better utilization of renewable energy resources.

Funding and Support

The GEC project in Andhra Pradesh has benefited from both central government and international funding.

Financial support for the project came from the National Clean Energy Fund (NCEF) as well as Germany's KfW Bank, which provided soft loans for the construction of the necessary transmission infrastructure.

The Power Grid Corporation of India and the Andhra Pradesh Power Transmission Corporation have been key implementing agencies for GEC-related activities in the state.

There are eight packages (ICB 01 to ICB 08). Out of which, six packages were completed in full shape and construction works of the balance two packages (ICB 04 & ICB 08) are under progress.

Hence, the Green Energy Corridor Scheme in Andhra Pradesh has made significant contributions to the state's renewable energy progress by creating the necessary transmission infrastructure to handle the increasing capacity of solar and wind energy. This has led to improved grid stability, reduced renewable energy curtailment, and better alignment with national renewable energy goals.

APDISCOMs Schemes:

IV. Implementation of UDAY Scheme in Andhra Pradesh

- **UDAY (Ujwal DISCOM Assurance Yojana):** The UDAY scheme aims to completely ramp up the levels of operational efficiency of DISCOMs through various technological and infrastructure upgrades, the installation of smart meters, ensuring that feeder separators are in place etc.
- UDAY Scheme has been notified by Government of India for Operational and Financial turnaround of DISCOMs on 20.11.2015. The Go AP has issued G.O.Ms.No.27, Dt.26.07.2016 and APDISCOMs have joined UDAY Scheme on 26.07.2016.

The Government of India to take the following measures:

- a. Facilitate the GOAP to take over the outstanding debt as on 30-09-2015.
- b. Facilitate the Banks/FIs not to levy any prepayment charges on the DISOCMS debt and Banks/FIs shall waive off any unpaid overdue interest and penal interest on the DISCOMs debt and refund/adjust any such over/penal interest paid since 01-10-2013.
- c. Facilitating through Ministry of Coal, increase supply of domestic coal, rationalization of coal linkages, coal swaps from inefficient plants to efficient plants, rationalizing coal prices based on Gross Calorific Value (GCV), directing Coal India to supply 100% washed coal for G10 Grade and above by 01-10-2018, correction of coal slippages, faster completion of interstate transmission lines and power purchase through transparent competitive bidding.
- d. Losses Taken over by the Government under UDAY scheme and Loans Taken over by the Government under UDAY scheme are as follows.

Losses Taken over by the Government under UDAY scheme					
Particulars		EPDCL	SPDCL	Total Rs in Crs	Remarks
I	Losses Taken over by the Government under UDAY scheme for the FY 2016-17 @ 5%	22.07	94.50	116.57	Taken over by Govt while releasing the Bonds of Rs. 4000 Cr
II	Losses Taken over by the Government under UDAY scheme for the FY 2017-18 @ 10%	0	0.70	0.70	Taken by government by issuing GO Rt No.14 dated 12.02.2020 and 17 dated 26-02-2020. Out of which an amount of Rs.430.41 Cr has been released by Govt
III	Losses Taken over by the Government under UDAY scheme for the FY 2018-19 @25%	1063.24	1920.22	2983.46	
IV	Losses Taken over by the Government under UDAY scheme for the FY 2019-20 @50%	0	0	0.00	No losses declared by DISCOMs
	Total	1085.31	2015.42	3100.73	
	Less: Taken over by Govt while releasing the Bonds of Rs. 4000 Cr	22.07	94.50	116.57	
	Less: Released by Govt on 28-02-2020	153.35	277.06	430.41	
	Balance	909.89	1643.86	2553.75	
	Received from Govt. towards APPFCL Debt servicing up to 06/2022	74.40	134.41	208.81	
	Net Balance	835.49	1509.45	2344.94	

Losses Taken over by the Government under UDAY scheme					
Particulars		EPDCL	SPDCL	Total Rs in Crs	Remarks
I	Losses Taken over by the Government under UDAY scheme for the FY 2016-17 @ 5%	22.07	94.50	116.57	Taken over by Govt while releasing the Bonds of Rs. 4000 Cr

II	Losses Taken over by the Government under UDAY scheme for the FY 2017-18 @ 10%	0	0.70	0.70	Taken by government by issuing GO Rt No.14 dated 12.02.2020 and 17 dated 26-02-2020. Out of which an amount of Rs.430.41 Cr has been released by Govt
III	Losses Taken over by the Government under UDAY scheme for the FY 2018-19 @25%	1063.24	1920.22	2983.46	
IV	Losses Taken over by the Government under UDAY scheme for the FY 2019-20 @50%	0	0	0.00	No losses declared by DISCOMs
	Total	1085.31	2015.42	3100.73	
Less: Taken over by Govt while releasing the Bonds of Rs. 4000 Cr		22.07	94.50	116.57	
Less: Released by Govt on 28-02-2020		153.35	277.06	430.41	
Balance		909.89	1643.86	2553.75	
Received from Govt. towards APPFCL Debt servicing up to 06/2022		74.40	134.41	208.81	
Net Balance		835.49	1509.45	2344.94	

Losses Taken over by the Government under UDAY scheme					
Particulars		EPDCL	SPDCL	Total Rs in Crs	Remarks
I	Losses Taken over by the Government under UDAY scheme for the FY 2016-17 @ 5%	22.07	94.50	116.57	Taken over by Govt while releasing the Bonds of Rs. 4000 Cr
II	Losses Taken over by the Government under UDAY scheme for the FY 2017-18 @ 10%	0	0.70	0.70	Taken by government by issuing GO Rt.No.14 dated 12.02.2020 and 17 dated 26-02-2020. Out of which an amount of Rs.430.41 Cr has been released by Govt
III	Losses Taken over by the Government under UDAY scheme for the FY 2018-19 @25%	1063.24	1920.22	2983.46	

Losses Taken over by the Government under UDAY scheme					
Particulars		EPDCL	SPDCL	Total Rs in Crs	Remarks
I	Losses Taken over by the Government under UDAY scheme for the FY 2016-17 @ 5%	22.07	94.50	116.57	Taken over by Govt while releasing the Bonds of Rs. 4000 Cr
II	Losses Taken over by the Government under UDAY scheme for the FY 2017-18 @ 10%	0	0.70	0.70	Taken by government by issuing GO Rt No.14 dated 12.02.2020 and 17 dated 26-02-2020. Out of which an amount of Rs.430.41 Cr has been released by Govt
III	Losses Taken over by the Government under UDAY scheme for the FY 2018-19 @25%	1063.24	1920.22	2983.46	
IV	Losses Taken over by the Government under UDAY scheme for the FY 2019-20 @50%	0	0	0.00	No losses declared by DISCOMs
	Total	1085.31	2015.42	3100.73	
Less: Taken over by Govt while releasing the Bonds of Rs. 4000 Cr		22.07	94.50	116.57	
Less: Released by Govt on 28-02-2020		153.35	277.06	430.41	
Balance		909.89	1643.86	2553.75	
Received from Govt. towards APPFCL Debt servicing up to 06/2022		74.40	134.41	208.81	
Net Balance		835.49	1509.45	2344.94	

Losses Taken over by the Government under UDAY scheme					
Particulars		EPDCL	SPDCL	Total Rs in Crs	Remarks
I	Losses Taken over by the Government under UDAY scheme for the FY 2016-17 @ 5%	22.07	94.50	116.57	Taken over by Govt while releasing the Bonds of Rs. 4000 Cr

II	Losses Taken over by the Government under UDAY scheme for the FY 2017-18 @ 10%	0	0.70	0.70	Taken by government by issuing GO Rt No.14 dated 12.02.2020 and 17 dated 26-02-2020. Out of which an amount of Rs.430.41 Cr has been released by Govt
III	Losses Taken over by the Government under UDAY scheme for the FY 2018-19 @25%	1063.24	1920.22	2983.46	
IV	Losses Taken over by the Government under UDAY scheme for the FY 2019-20 @50%	0	0	0.00	No losses declared by DISCOMs
	Total	1085.31	2015.42	3100.73	
Less: Taken over by Govt while releasing the Bonds of Rs. 4000 Cr		22.07	94.50	116.57	
Less: Released by Govt on 28-02-2020		153.35	277.06	430.41	
Balance		909.89	1643.86	2553.75	
Received from Govt. towards APPFCL Debt servicing up to 06/2022		74.40	134.41	208.81	
Net Balance		835.49	1509.45	2344.94	

Loans Taken over by the Government under UDAY scheme				
Particulars		APEPDCL	APSPDCL	Total Rs in Crs
To be taken over by Govt				
I	75% Working Capital Loans	2094.53	4251.79	6346.32
II	100% FRP Bonds	1205.95	1340.28	2546.23
	Total	3300.48	5592.07	8892.55
Taken over by Govt				
I	75% Working Capital Loans	2094.53	4251.79	6346.32
II	100% FRP Bonds	904.46	1005.23	1909.69
	Total	2998.99	5257.02	8256.01
Balance to be taken over by Govt				
I	75% Working Capital Loans	0	0	0.00
II	100% FRP Bonds	301.49	335.05	636.46
	Total	301.49	335.05	636.46

Government agreed to take over of Rs.8892.55 Crs of APDISCOMs liability i.e., of 75% of the working capital loans amounting to Rs.6346.32 Crs and 100% of FRP Bonds liability of Rs.2546.23 Crs in compliance to UDAY. Consequently, Government took over Rs.8256.01Crores leaving a balance of Rs.636.54 Crs pertaining to 25% FRP Bonds liability of APDISCOMs, in 2016-17. The bond holders are APGENCO and APGENCO P&G Trust.The bills were submitted as per the orders but the amount are yet to be released.

Further the proposals for release of interest due from H2 of FY 2016 - 17 to H2 of 2023 - 24 has also submitted from time to time to the Government, for an amount of Rs.475.10 Cr (i.e., due from 01-10-2016 to 31-03-2024), but the orders are yet to be issued.

V. Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyan (PM-JANMAN)

- **Pradhan Mantri PVTGs Development Mission** was launched to enhance the socio-economic conditions of Particularly Vulnerable Tribal Groups. An allocation of Rs.15,000 Crore has been earmarked for the next three years under the Development Action Plan for the Scheduled Tribes (DAPST) to implement this mission.
- This initiative aims to provide essential amenities such as secure housing, clean drinking water and sanitation, improved access to education, health, and nutrition, as well as enhanced road and telecom connectivity, and sustainable livelihood opportunities to PVTGs households and habitats.

The Progress of the PM JANMAN in Andhra Pradesh: Ministry of Power, GoI has communicated norms for electrification of identified Particularly Vulnerable Tribal Group (PVTG) households under RDSS.

EPDCL:

As per the norms the scheme was sanctioned on 04.01.2024 for electrification of 18620Nos PVTG HH through ON GRID for an amount of Rs.70.26Cr and GoI grant of Rs.42.16Crs under PMJANMAN funded under RDSS.

As per survey based on MoTA list and additional beneficiaries identified during execution of works, revised sanction was received from M/s.PFC Ltd on 07.06.2024 for electrification of PVTG Households through ON GRID under PMJANMAN with eligible cost of Rs.78.46Crs.

Status: No. of House Holds electrified under PMJANMAN

Name of the Discom	No. of Habitations as per DPR			No. of Un electrified House Holds as per DPR			No. of House Holds electrified		
	UE	PE	Total	UE	PE	Total	UE	PE	Total
APEPDCL	207	2607	2814	1853	21234	23807	1500	20328	21828

CPDCL:

As per the norms the scheme was sanctioned on 10.01.2024 for electrification of 1754 Nos PVTG HH through ON GRID for an amount of Rs.7.45Cr and Gol grant of Rs.4.47Cr under PMJANMAN funded under RDSS.

Status: No. of House Holds electrified under PMJANMAN.

Name of the Discom	No. of Habitations as per DPR			No. of Un electrified House Holds as per DPR			No. of House Holds electrified		
	UE	PE	Total	UE	PE	Total	UE	PE	Total
APCPDCL	0	129	129	0	1754	1754	0	624	624

SPDCL:

As per the norms the scheme was sanctioned on 10.01.2024 for electrification of 217 Nos PVTG HH through ON GRID for an amount of Rs.1.49Cr and Gol grant of Rs.0.89Cr under PMJANMAN funded under RDSS. An Amount of Rs. 0.45 Cr grant portion received on 08.02.2024.

Status: No. of House Holds electrified under PMJANMAN

Name of the Discom	No. of Habitations as per DPR			No. of Un electrified House Holds as per DPR			No. of House Holds electrified		
	UE	PE	Total	UE	PE	Total	UE	PE	Total
APSPDCL	2*	7	9	137	76	213	0	76	76

***2 Nos. UE Habitations come under deep forest area. Request sent for forest clearance and approval is awaited.**

VI. PM Surya Ghar: Muft Bijli Yojana

- The Government of India has approved the PM Surya Ghar: Muft Bijli Yojana on 29th February, 2024 to increase the share of solar rooftop capacity and empower residential households to generate their own electricity.
- The scheme has an outlay of Rs.75,021 Crore and is to be implemented till FY 2026-27. The scheme will be implemented by a National programme Implementation Agency (NPIA) at the National level and by the State Implementation Agencies (SIAs) at the state level.
- The Distribution Utility (DISCOMs or Power/Energy Departments, as the case may be shall be the State Implementation Agencies (SIA) at the State/UT level.
- The scheme provides for a subsidy of 60% of the solar unit cost for systems up to 2kW capacity and 40 percent of additional system cost for systems between 2 to 3kW capacity. The subsidy has been capped at 3kW capacity.

- At current benchmark prices, this will mean Rs 30,000 subsidy for 1kW system, Rs 60,000 for 2kW systems and Rs 78,000 for 3kW systems or higher.
- **The Benefits of the PM Surya Ghar: Muft Bijli Yojana** : The Pradhan Mantri Surya Ghar Muft Bijli Yojana brings a lot of benefits to the people of India, making life easier and more sustainable due to Lower Electricity Bills, Energy Self-Sufficiency, Economic Relief and Empowerment.

Availing Benefits of PM-Surya Ghar: Muft Bijli Yojana in Andhra Pradesh

DISCOM wise Details of PM Surya Ghar Yojana in Andhra Pradesh				
S. No	DISCOM	No of Applications registered	No of Rooftop Solar Panels installed	Capacity added(KW)
1	EPDCL	2253	1022	3833
2	CPDCL	6610	331	1160.46
3	SPDCL	7790	80	288.17
Grand Total		16653	1433	5281.63

VII. REVAMPED DISTRIBUTION SECTOR SCHEME (RDSS):

- Government of India has approved a REVAMPED DISTRIBUTION SECTOR SCHEME, a reform based and results linked scheme with the objective of improving the quality and reliability of power supply to consumers through a financial sustainable and operationally efficient Distribution Sector.
- The scheme aims to reduce the AT & C losses at pan India levels of 12-15% and ACS – ARR gap to zero by 2024-25.
- The scheme has an out lay of Rs.3,03,758 Crs with an estimated gross budgetary support of Rs. 97631 Crs from the Government of India.
- This scheme allows the states and DISCOMs flexibility to draw up their modernization plans as per the requirement and keeping in mind the local context. Pre-qualifying criteria have to be met from FY 2022-23 onwards for release of funds.

Prepaid smart metering covers Agriculture Consumers, Govt. Services, other than Agriculture DTR's, 11KV feeders, other cause including encumbrance free standardized billing modules etc.

Loss Reduction includes segregation of Agriculture. feeders, replacement of LT conductor with AB cable in the theft prone areas, Bifurcation, HVDS, UG Cabling in natural disaster-prone areas, re-conducting works, IT/OT enablement works and capacitor banks.

System strengthening and Modernization includes SCADA – DMS under group A and group B covering sub-stations, augmentation of power sub-stations, new 33 KV, 11 KV OH lines, new DTR's, replacement of old aged PTR's, DTR's, renovation of DTR structures.

The State Level Distribution Reforms Committee has approved the DPRs submitted by the three DISCOMs with an outlay of Rs 17,619 Crs under RDSS. But, M/s PFC has sanctioned financial assistance to APDISCOMs for an amount of Rs 13,250 Crs towards the following category of works: Smart metering -- Rs 4,112Crs & Infrastructure Works --- Rs 9,139.58 Crs.

Progress of RDSS Scheme in EPDCL:

(i) **Smart Metering works & LR works:** The scheme was sanctioned with an approved Project cost of Rs.3568.24Crs to APEPDCL on Dt: 17.03.2022 towards implementation of Smart metering & Distribution Loss Reduction works such Agricultural Feeder Segregation, Bifurcation of over loaded feeders, UG cabling & covered conductor works in Disaster prone areas and IT/OT works.

(ii) **UEHH under RDSS:** 15th MCM MOM approved guidelines for funding for electrification of left out Households in partially electrified and un-electrified Habitations under RDSS. As per the guidelines the scheme was sanctioned for electrification of 5577Nos HH with an amount of Rs.16.18Cr with GBS of Rs.9.70Cr.

As per revised norms approved in the 27th & 28th Monitoring Committee Meeting, revised sanction was received from M/s. PFC Ltd on 07.06.2024 for electrification left out HH under RDSS with eligible cost of Rs.48.51Crs.

Present Progress:

a) Smart Meter:

Package Description	Sanctioned Quantity	Sanctioned Cost (Rs Cr)	Award Cost (Rs Cr)	Awarded Quantity (Nos.)	DI Issued (Nos.)	Meters received (Nos.)	Meters Installed (Nos.)
AGL Consumers	2,07,920	125	612	2,58,587	1,42,715	1,28,993	43,017
AMISP Ph-I	Cons.: 7,23,729, DT : 77,244 Feeder : 3,891	628	1,045	8,04,864	0	0	0
AMISP Ph-II	3,23,591	194	244	2,72,924	0	0	0
APEPDCL Total	13,36,375	947	1,901	13,36,375	1,42,715	1,28,993	43,017

(*) Advanced Metering Infrastructure Service Provider.

b) Loss Reduction works:

Work description	Sanctioned Cost (excl. PMA) Rs. Cr	Awarded Cost Rs. Cr	Qty to be executed as per sanction	Present progress
Agricultural Feeder Segregation	1244.60	1641	922 Nos.	164Nos feeders completed
Bifurcation of over loaded feeders	153.30		388 Nos.	126Nos feeders completed
Disaster UG cabling &	1165.41	1363.44	3169.85 Ckm	Survey completed

Cov conductor works				
IT/OT works	15.55	-	-	Tender floated. Works to be awarded
Total	2578.86	3004.43		

c) UEHH - Status: No. of House Holds electrified under RDSS

Name of the Discom	No. of Habitations as per Rev DPR			No. of Un electrified House Holds as per Rev DPR			No. of House Holds electrified		
	UE	PE	Total	UE	PE	Total	UE	PE	Total
APEPDCL	121	1600	1721	2127	13348	15475	532	11270	11802

Progress of RDSS Scheme in CPDCL

(i) **Smart Metering works & LR works:** The scheme was sanctioned with an approved Project cost of Rs.3011.77Crs to APCPDCL on Dt: 17.03.2022 towards implementation of Smart metering & Distribution Loss Reduction works such Agricultural Feeder Segregation, Bifurcation of over loaded feeders, UG cabling & covered conductor works in Disaster prone areas and IT/OT works.

Present Progress:

(a) Smart Meter:

Package Description	Sanctioned Quantity	Sanctioned Cost (Rs Cr)	Award Cost (Rs Cr)	Awarded Quantity (Nos.)	DI Issued (Nos.)	Meters received (Nos.)	Meters Installed (Nos.)
AGL Consumers	443574	266.14	1182.38	5,00,000	1,26,050	1,26,050	29,983
AMISP Ph-I	Cons.: 859909 DT: 113650 Feeder: 3726	793.00	1280.72	Cons.: 859909 DT: 113650 Feeder: 3726	Consumer: 30,000 Feeder:300	Feeder: 86	Feeder: 85
AMISP Ph-II	747479	448.49	802.85	747479	-	-	-
APCPDCL Total	2168338	1507.63	3265.95	2224764.00	1,56,350	1,26,136	30,068

(*) Advanced Metering Infrastructure Service Provider.

(b) Loss Reduction works:

Work description	Sanctioned Cost(excl. PMA) (Rs. Cr)	Awarded Cost (Rs. Cr)	Qty to be executed	Present progress
Agricultural Feeder Segregation	1001.46	1920.38	907 nos.	49 Nos. feeders completed, (209 Nos. Feeders in WIP)

Bifurcation of over loaded feeders	330.06		351 nos, 2599 Ckm	28 Nos. feeders completed, (233.3 Ckm) (71 Nos. in WIP)
Replacement of old/ Frayed Conductors	100		3666 Ckm	Work in progress
IT/OT works	44.83	0	0	
Total	1476.35	1920.38		

Progress of RDSS Scheme in SPDCL

(i)**Smart Metering works & LR works:** The scheme was sanctioned with an approved Project cost of Rs.6824.52 Crs to APSPDCL on Dt: 17.03.2022 towards implementation of Smart metering & Distribution Loss Reduction works such as Agricultural Feeder Segregation, Bifurcation of over loaded feeders and IT/OT works.

AMISP under RDSS - Rollout of Smart prepaid meters for consumers and smart meters to system metering works awarded to M/s Adani, Ahmedabad (AMISP). The agency conducting detailed survey, consumer engagement plan and procurement of smart meters are under progress.

Present Progress: (a) Smart Meter:

Package Description	Sanctioned Quantity	Sanctioned Cost (Rs Cr)	Award Cost (Rs Cr)	Awarded Quantity (Nos.)	DI Issued (Nos.)	Meters received (Nos.)	Meters Installed (Nos.)
AGL Consumers	10,94,212	656.53	2601.24	11,00,000	1,96,250	1,96,250	76,481
AMISP Ph-I & II	Cons.: 4,91,305 DT : 1,02,246 Feeder : 9,741	1001.14	1794.84	13,20,419	61,310	10	10
APSPDCL Total	16,97,504	1657.67	4396.08	24,20,419	2,57,560	1,96,260	76,491

Out of 76,491 meters installed in APSPDCL, 42,546 meters data integrated to Discom Server.

(b) Loss Reduction works:

Work description	Sanctioned Cost (excl. PMA) Rs. Cr	Awarded Cost Rs. Cr	Qty to be executed as per sanction	Present progress
Agricultural Feeder Segregation & Bifurcation of 33KV Feeders	5042.92	6157.27*	3015 Nos.	258 Nos. feeders completed. 679 Nos. feeders are under progress.
IT/OT works	41.45	60.04	1	Installation Completed, integration under progress
Total	5084.37	6217.31		

* Award Cost of Loss Reduction includes cost of DTRs & VCBs procured by Department

Loss Reduction works are awarded to M/s Shirdi Sai Electricals in Kadapa, Kurnool & Anantapur and M/s Raghava Constructions in Nellore & Chittoor (Old Districts) 258 Nos. 11KV mixed agricultural feeder's segregation work was completed against approved 3015 Nos. feeders under RDSS. 679 Nos. feeder works are under progress.

VIII. The Pradhan Mantri Kisan Urja Surakshaevam Utthaan (PM-KUSUM)

- The Government of India has launched New Scheme for Farmers with 3Nos. Components, The PM-KUSUM Scheme allows inter-state transfer of quantities between Component-B and Component-C. All three components of the scheme aim to add solar capacity of about 34,800 MW by March 2026 with the total Central Financial support of ₹ 34,422Crore.

Allocation to AP State by MNRE:

- ✓ Component-A: 75MW capacity for the first year.
- ✓ Component-B: 25000nos for the first year.
- ✓ Component-C: 22000nos for the first year.
- ✓ Implementation of PM-KUSUM: MNRE has requested the consent of GoAP for extension of 30% subsidy by State Govt of AP for implementing Component-B and Component-C. No Further Allocation was received from Government of AP to APEPDCL for execution
- ✓ Feeder level solarisation (Component-C): Based on discussions held with states MNRE has decided to include feeder level solarisation under Component-C of PM-KUSUM Scheme.

Present Status: MNRE has accorded approval for 50,000 Nos. for AP State on 17.03.2021 to M/s Green Energy Corporation Ltd. M/s GEPL has entrusted to M/s NREDCAP for implementation of project. M/s NREDCAP has furnished DPR to Govt. of AP for approval. The Govt. of AP has called remarks from the CMD/APTRANSCO for taking further action.

APEPDCL, submitted proposals towards 1527 No. of 11 KV Dedicated / Mixed AGL Feeders, 2, 84,942 No. of Pumps with a solar capacity of 690.113 MW.

APSPDCL, submitted proposals towards 2349 No. of 11 KV Dedicated / Mixed AGL Feeders, 7, 13,860 No. of Pumps with a solar capacity of 1204 MW.

APCPDCL, submitted proposals towards 1507 No. of 11 KV Dedicated / Mixed AGL Feeders, 2, 10,625 No. of Pumps with a solar capacity of 362 MW.

AP Govt. Integrated Clean Energy (ICE) Policy 2024:

Government of India (GoI) has committed India's Nationally Determined Contributions (NDCs) in alignment with the global efforts to mitigate climate change. GoI has set the target of adding around 500 GW RE capacity by 2030.

Andhra Pradesh is one among the leading states in the country in adopting renewables. The total installed RE capacity in the state increased from 1.3 GW as on 2nd June 2014 to 9.5 GW as on 31st August 2024. Further, the state is blessed with solar, wind, water resources that encourage RE adoption, with solar power potential of around 38.50GW and wind power potential of 74.9 GW (at 120 m 1 As per NISE - State-wise Solar Energy Potential in India (niti.gov.in) 2 As per NIWE - India's Wind Potential Atlas at 120m agl (niwe.res.in) 16 level) and 123.34 GW (at 150 m level) and estimated PSP potential of 43.89 GW capacity for 39 sites in the state.

Govt. of AP has notified various RE Policies such as 2018 policies for Wind, Solar, Wind-Solar hybrid Policies, AP Export Power Policy 2020, AP Pumped Storage Power Policy 2022, AP Green Hydrogen and Ammonia Policy 2023.

Government of Andhra Pradesh (GoAP) is focused on creation of green economy and thriving ecosystem for Integrated Clean Energy across the value chain, through a robust framework to attract investments, thereby contributing to India's Renewable Energy growth and driving action in mitigating climate change. To achieve and lead the country's goals of net zero, Government of Andhra Pradesh has issued "Andhra Pradesh Integrated Clean Energy Policy, 2024" for attracting clean energy investments of 10 Lakhs Crores, thereby generating an estimated 160GW Renewable energy capacity and an estimated employment of 7.5Lakh direct and indirect. The policy will propel Andhra Pradesh to become a clean energy hub and contribute towards self-economic reliance.

The objectives of the Policy are as below:

- To meet power demand within the state and export surplus power outside Andhra Pradesh.
- To meet RPO, HPO, ESO, etc., as notified by the Ministry of Power, Govt. of India and APERC.
- To achieve higher EV penetration by enabling regulatory framework for creation of EV Charging Infrastructure in the State.
- To create energy storage market in the State to integrate more RE into the grid and offer grid support services, such as peak reduction, curtailment management, contribution to reliability needs, transmission deferrals, intraday and seasonal variation management, and others.
- To develop AP as a storage capital and clean energy hub in the country
- To establish a University for Green Energy & Circular Economy (UGC), Clean energy skill development center and forge partnerships with universities to establish AP as clean energy research and development hub.

- To achieve Net Zero emissions by 2047.
- To promote decentralization of renewable energy generation and develop ecosystem for distributed Solar generation, i.e., Solar Roof Top systems, Solar Pumps, etc.
- To develop Renewable Energy Parks (including hybrid parks), Renewable Energy Manufacturing Parks in the state.
- To support the development of eco-system for production of Green Hydrogen and its derivatives and make Andhra Pradesh the preferred destination for production and export of Green Hydrogen and its derivatives.
- To establish a University for Green Energy & Circular Economy (UGC), offering courses and certification programs, and encouraging entrepreneurship and skilling among youth for employment opportunities in Clean Energy Projects and RE Manufacturing Projects.
- To promote clean energy skill development centre and forge partnerships with universities to establish AP as clean energy research and development hub.

The expected capacity addition in Solar 78.50Wp, Wind 35MW, Pumped Storage 22GW and Battery storage 25GWh.

Govt. of Andhra Pradesh is focused on creation of green economy and thriving ecosystem by integrated clean Energy across the value chain by attracting investments in Clean Energy Generation as well in consumption of Clean Energy by encouraging various industries, Bulk load consumers, GOAP's Lift irrigation schemes etc.

The expected/anticipated loads/demands in the state are as below:

S.No	Description	Anticipated Load (MW)
1	GoAP's Lift irrigation schemes	2786
2	Arcelor Mittal steel near Anakapalli	625
3	Uttara Andhra Sujala Sravanthi	200
4	Adani Data center	1500
5	Google data center	250
6	BPCL refinery Ramayapatnam	200
7	Kopparti industrial parks	50
8	Orvakallu industrial parks	400
9	Additional load in Sri City SEZ	100
10	EV charging stations	400
11	Solar manufacturing (Indosol)	800
12	AXIS Green hydrogen at Ramayapatnam	2000
13	Railway Traction	1500
14	Total	10,800

Besides this APGenco is planning various Pumped Storage Plants across the state to an extent of 5200MW. APDiscoms are also planning for 1500MW BESS under central Govt's scheme for Vaibility Gap funding and 500MW BESS in another scheme. The input energy for these PSPs and BESSs are also in the scope of APDiscoms.

The expected Discom procurement shown in the policy i.e 36.7GWP solar, 15GW Wind 3GW PSP and 16GWh Battery Storage System is based on the above developments. However, the proposed manufacturing units/projects are in initial stage and firm details such as their installed capacity, required demand, commercial operation dates etc. are yet to be known to take into consideration the above loads in studies. Besides these, GOAP is focusing on attracting of investments in the Solar Panel manufacturing, Wind turbine manufacturing, Battery manufacturing, Electrolyser manufacturing, derivatives of Green hydrogen.

In addition to the GOAP ICE Policy, various Central Govt. policies such as Surya Ghar, SRTs, Feeder Level Solarization etc. are also to be taken into consideration for assessment of future Energy requirement.

Based on the developments in the State as well as in Central Govt. Policies,the review of the Resource Plan/State Electricity Plan will be taken up in FY2026-27 with due permission from the Hon'ble Commission

2. LOAD FORECAST

2.1 Sales Forecast

Sales forecast is prepared using trend method and End use method by respective Discoms, taking into consideration various economic and central/state level initiatives which affect the sales of certain categories. For projecting circle wise sales the Discoms have factored growth in economic conditions due to growth drivers such as increased penetration of decentralized renewable energy, upcoming initiatives for promoting use of electric vehicles, infrastructural requirements for meeting open access consumers coming on to the grid, weather conditions, etc.. Historically, in FY 2022-23 (Apr'22 & May'22), sudden increase in demand and lower availability on supply side compelled the Discoms to resort to R&C measures for industrial consumers. This has been considerably reduced in recent past and Discoms shall be able to supply 24 hrs.Power to non – Agricultural consumers and 9 hours to Agricultural consumers during day time with no load restriction in 5th control period.

In addition to the above, factors like PCPIR (Petroleum, Chemicals and Petrochemical Investment Region) corridor, Vizag Chennai Industrial Corridor (VCIC), Vizag tech park, Kakinada SEZ, Sri City SEZ, New airports & New sea ports are also considered while arriving the sales forecast.

There are 916 Nos. Lift irrigation projects irrigating 6, 90,183 acres in the state. New lift irrigation schemes i.e. Chintalapudi, Hiramandalam etc. will further contribute in increasing demand.

The consolidated Sales and Load forecast is prepared by aggregating the individual Discoms sales forecast.

AP Discoms have taken historical data of seven (7) years from FY 2016-17 to FY 2022-23 on Circle-wise / Category-wise sales to arrive at the load forecasts. FY 2022-23 is taken as the base year for Sales forecast exercise. Further, the impact on sales due to (a) Govt. Lift Irrigation Schemes, (b) Promotion of Electric Vehicles, and (c) Solar Roof Top Schemes are also considered (End Use approach) in Sales forecast exercise.

2.2 Solar Roof Top

The Discoms have projected that installed capacity & generation from solar roof top installations would increase at a CAGR of 10% for 5th control period. The Energy generation from solar roof top installation in MU in the 5thcontrol period is shown in the table below.

Consumer Category	Generation in MU from Roof Top Installations					
	FY24	FY25	FY26	FY27	FY28	FY29
LT I	27.958	30.73	33.73	37.01	40.6	44.56
LT II	23.549	25.93	28.43	31.16	34.17	37.48
LT III	7.604	8.38	9.19	10.08	11.05	12.11
LT IV	8.496	9.34	10.26	11.26	12.38	13.59
HT I	1.9478	2.03	2.12	2.21	2.32	2.44
HT II	64.4656	68.61	73.11	78.01	83.36	89.18
HT III	110.271	121.12	132.95	145.95	160.22	175.9
HT IV	31.7266	34.72	38.03	41.65	45.65	50.02
Total	276.02	300.86	327.82	357.33	389.75	425.28

2.3 Electric Vehicles

Gol has set an ambitious target of 100% incremental EV sales by 2040. It is estimated that the EV penetration would increase through conversion of conventional vehicles. The year wise energy required in MU by the Electric vehicles for regular charging at consumer level is tabulated below.

EV Vehicle Category	Energy required for charging the Electric Vehicles in MU							
	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	FY 29
2W	3	5	7	11	17	26	39	60
3W	1	1	2	2	3	4	6	8
4W	4	6	7	9	12	15	19	24
Goods	4	7	12	19	32	54	89	149
Buses	3	5	6	8	11	15	19	26
Total	16	23	33	50	74	113	173	267

2.4 Captive Generation Projections

AP Discoms have arrived the Energy requirement duly deducting the energy from the Captive Generation.

Discom	Captive Generation Projection (MU)				
FY	24-25	25-26	26-27	27-28	28-29
APSPDCL	765.58	810.45	857.94	908.21	961.44
APCPDCL	610.94	641.49	673.56	707.24	742.60
APEPDCL	5951.26	5973.55	5996.05	6018.76	6041.68

The Discom wise Category wise growth rates of historical and projected CAGRs for the 5th Control Period as filed in the Resource Plan are as below.

Historical and Projected CAGRs of Energy Sales for 5th CP

	APSPDCL		APCPDCL		APEPDCL	
Category	Historical	5th CP Projected	Historical	5th CP Projected	Historical	5th CP Projected
LT Category						
LT Cat-I - Domestic	5.91%	5.31%	5.75%	5.14%	6.12%	6.42%
LT Cat-II: Commercial & Others	5.08%	4.86%	4.00%	4.74%	5.98%	5.84%
LT Cat-III: Industry	2.88%	3.33%	2.31%	4.36%	2.60%	3.95%
LT Cat-IV: Institutional	11.00%	8.62%	5.90%	5.67%	6.35%	5.97%
LT Cat-V: Agricultural & Related	0.23%	5.00%	3.15%	5.75%	5.56%	8.33%
LT Total	2.95%	5.25%	4.58%	5.27%	5.80%	6.90%
HT Category						
HT Cat-I: Domestic	-9.05%	5.00%	5.54%	3.95%	-0.06%	2.78%
HT Cat-II: Commercial	3.42%	5.15%	6.06%	4.37%	7.09%	8.28%
HT Cat-III: Industrial	7.19%	5.86%	-0.29%	19.83%	12.03%	6.03%
HT Cat-IV: Institutional	12.17%	9.74%	12.01%	4.04%	7.71%	8.66%
HT Cat-V: Agricultural & Related	19.48%	22.25%	0.97%	12.60%	-16.87%	13.83%
RESCO'S	5.52%	5.52%				
HT Total	7.98%	8.08%	1.80%	16.28%	10.60%	6.49%
LT+HT Total	4.74%	6.43%	3.74%	8.96%	7.95%	6.70%

The consolidated sales forecast of the APDiscoms projected for the 5th Control period is as below:

Consumer Category		DISCOM	FY 23	FY24	FY25	FY26	FY27	FY28	FY29	CAGR (%)
			(Actuals)							
Category-I Domestic	LT	SPDCL	5196.51	5472.02	5762.27	6068.07	6390.25	6729.69	7087.35	5.31
		EPDCL	6776.07	7107	7687.05	8301.1	8785.5	9298.27	9841.08	6.42
		CPDCL	5294.85	5685.46	5951.56	6230.78	6523.81	6831.34	7154.13	5.14
		Total	17267.43	18264.48	19400.88	20599.95	21699.56	22859.3	24082.56	
	HT	SPDCL	15.91	16.71	17.55	18.42	19.34	20.31	21.33	5
		EPDCL	32.05	33.53	34.33	35.15	35.99	36.87	37.78	2.78
		CPDCL	14.18	14.58	15.18	15.81	16.48	17.17	17.89	3.95
		Total	62.14	64.82	67.06	69.38	71.81	74.35	77	
Category-II Commercial & Others	LT	SPDCL	1103.67	1157.22	1213.39	1272.31	1334.12	1398.95	1466.97	4.86
		EPDCL	1269.87	1359.26	1437.21	1519.88	1603.53	1691.73	1785.12	5.84
		CPDCL	1043.64	1120.76	1168.02	1217.29	1268.64	1322.18	1377.98	4.74
		Total	3417.18	3637.24	3818.62	4009.48	4206.29	4412.86	4630.07	
	HT	SPDCL	468.13	492	517.16	543.71	571.73	601.32	632.58	5.15
		EPDCL	885.92	1008.68	1078.97	1155.29	1238.3	1328.77	1427.55	8.28
		CPDCL	511.08	512.13	538.75	566.81	596.41	627.66	660.71	4.37
		Total	1865.13	2012.81	2134.88	2265.81	2406.44	2557.75	2720.84	
Category-III	LT	SPDCL	601.21	620.93	641.43	662.75	684.92	707.99	731.99	3.33

Industry		EPDCL	452.73	479.43	495.91	513.26	531.54	550.81	571.11	3.95
		CPDCL	476.68	523.25	540.39	558.2	576.7	595.93	615.91	4.36
		Total	1530.62	1623.61	1677.73	1734.21	1793.16	1854.73	1919.01	
	HT	SPDCL	6950.12	7354.56	7783.77	8239.33	8722.96	9236.47	9781.8	5.86
		EPDCL	10424.39	10640.37	11344.84	12108.21	12936.26	13835.46	14813.06	6.03
		CPDCL	2797.65	3025.97	3957.22	4121.59	7896.64	8083.11	8281.78	19.83
		Total	20172.16	21020.9	23085.83	24469.13	29555.86	31155.04	32876.64	
Category-IV Institutional	LT	SPDCL	823.84	894.14	970.72	1054.19	1145.19	1244.43	1352.68	8.62
		EPDCL	431.64	446.16	474.79	505.44	538.28	573.47	611.2	5.97
		CPDCL	321.52	335.67	355.43	376.41	398.71	422.4	447.58	5.67
		Total	1577	1675.97	1800.94	1936.04	2082.18	2240.3	2411.46	
	HT	SPDCL	1090.31	1151.7	1217.05	1286.68	1360.91	1440.14	1903.91	9.74
		EPDCL	1056.86	1169.43	1258.71	1357.46	1466.98	1588.74	1739.86	8.66
		CPDCL	594.18	631.88	648.07	667.11	689.63	721.29	753.36	4.04
		Total	2741.35	2953.01	3123.83	3311.25	3517.52	3750.17	4397.13	
Category-V Agricultural & Related	LT	SPDCL	6870.98	7214.52	7575.25	7954.01	8351.71	8769.3	9207.76	5
		EPDCL	4183.74	4632.53	4989.5	5377.83	5800.55	6260.99	6762.83	8.33
		CPDCL	3028.77	3300.19	3465.2	3659.07	3842.03	4034.13	4235.84	5.75
		Total	14083.49	15147.24	16029.95	16990.91	17994.29	19064.42	20206.43	
	HT	SPDCL	769.49	1533.22	2043.84	2544.79	2564.66	2566.35	2568.13	22.25
		EPDCL	83.53	116.11	148.33	155.8	163.82	172.44	181.71	13.83
		CPDCL	73.97	96.24	98.27	114.95	118.24	144.92	150.79	12.6
		Total	926.99	1745.57	2290.44	2815.54	2846.72	2883.71	2900.63	
Category-VI RESCOs	HT	SPDCL	434.6	458.57	483.86	510.55	538.71	568.43	599.78	5.52
		EPDCL	0	0	0	0	0	0	0	
		CPDCL	0	0	0	0	0	0	0	
		Total	434.6	458.57	483.86	510.55	538.71	568.43	599.78	
TOTAL	LT	SPDCL	14596.21	15358.83	16163.07	17011.33	17906.19	18850.36	19846.75	
		EPDCL	13114.05	14024.37	15084.45	16217.53	17259.41	18375.28	19571.34	
		CPDCL	10165.47	10965.33	11480.6	12041.76	12609.89	13205.98	13831.44	
		Total	37875.73	40348.53	42728.12	45270.62	47775.49	50431.62	53249.53	
	HT	SPDCL	9728.57	11006.76	12063.23	13143.48	13778.32	14433	15507.53	
		EPDCL	12482.75	12968.12	13865.18	14811.9	15841.35	16962.28	18199.97	
		CPDCL	3991.06	4280.79	5257.5	5486.27	9317.4	9594.16	9864.52	
		Total	26636.98	28255.67	31185.91	33441.65	38937.07	40989.44	43572.02	
Total	LT + HT	SPDCL	24324.78	26365.59	28226.3	30154.81	31684.51	33283.36	35354.28	
		EPDCL	25596.8	26992.49	28949.63	31029.43	33100.76	35337.56	37771.31	
		CPDCL	14156.53	15246.12	16738.1	17528.03	21927.29	22800.14	23695.96	
		Total	64078.11	68604.2	73914.03	78712.27	86712.56	91421.06	96821.55	

2.5 Energy Loss Trajectory

Transmission Losses Trajectory: (%)

Transmission losses will be reduced from present (FY2022-23) level of 2.75 % to 2.70% during 5th control period, the details are tabulated below.

FY	22-23	23-24	24-25	25-26	26-27	27-28	28-29
APTransco Transmission loss	2.75	2.75	2.75	2.75	2.70	2.70	2.70
PGCIL loss	0.80	0.80	0.80	0.90	0.95	0.95	0.95

APEPDCL Losses Trajectory:(%)

FY	23-24	24-25	25-26	26-27	27-28	28-29
Voltage						

LT	4.38	3.42	3.41	3.40	3.40	3.39
11kV	3.06	3.39	3.38	3.37	3.36	3.35
33kV	3.27	3.34	3.33	3.32	3.31	3.30

APCPDCL Losses Trajectory : (%)

FY	23-24	24-25	25-26	26-27	27-28	28-29
Voltage						
LT	3.74	3.73	3.72	3.71	3.70	3.69
11kV	3.17	3.16	3.15	3.15	3.14	3.13
33kV	3.12	3.11	3.10	3.10	3.09	3.08

APSPDCL Losses Trajectory : (%)

FY	23-24	24-25	25-26	26-27	27-28	28-29
Voltage						
LT	5.08	5.07	5.06	5.04	5.03	5.02
11kV	3.31	3.30	3.29	3.29	3.28	3.27
33kV	3.20	3.19	3.18	3.18	3.17	3.16

Energy and Demand requirement at state Level is as below:

FY	FY 23 (Actuals)	FY 24	FY 25	FY 26	FY 27	FY 28	FY 29
Energy input @ SPDCL	26231	29312	31333	33418	35119	36904	39185
Energy input @ EPDCL	27342	28863	30870	33081	35273	37641	40198
Energy input @ CPDCL	15708	16889	18463	19344	23840	24820	25836
Total Energy Requirement (Exc. OA)	71116	77487	83275	88713	97396	102700	108765
Open Access Transactions	1284	1985	2090	2211	2334	2478	2613
Total Energy Requirement at APTRANSCO periphery	72400	79472	85365	90924	99731	105179	111378
State Peak Demand (MW)	12293	13746	15226	16256	17831	18805	19913
Open Access Demand (MW)	218	343	373	395	417	443	467
State Peak Demand (MW) Excluding OA	12075	13402	14854	15861	17413	18361	19446

2.6 Commission's Analysis

Central Electricity Authority Guidelines for Medium and Long Term Power Demand Forecast:

- Demand forecasting for medium (more than 1 year and up to 5 years) and long-term (more than 5 years) should be prepared for at least three Scenarios: an optimistic, a business as usual (BAU) and a pessimistic scenarios.
- Forecasting should be worked out year-wise, at least. If granular-level data

is available, month-wise, day-wise, hour-wise, or time-block-wise forecasts should also be made.

- c. Power demand forecast should be done under the unrestricted scenario. That is when all the unserved demand is currently not served by the utilities due to various supply-side barriers such as generation and network constraints is also included.
- d. The forecasting method should analyze past consumption data, past growth trends of each category separately. The medium-term forecast should be based on assessing the impacts of specific government policies, developmental plans, and other emerging aspects to arrive future growth trends. CEA adopts the Partial End Use Method (PEUM) for carrying out Electric Power Survey (EPS) exercises.
- e. The long-term forecast should be based on further extrapolating the growth trends estimated under the medium-term horizon.
- f. The detailed power demand forecasting exercise should be undertaken every five years. However, it should also be reviewed yearly and updated if necessary.

The Forum of Regulators issued the model Regulation on Resource Adequacy Framework in June 2023.

- a. Load forecast for a customer category shall be done by adopting any of the following and/or a combination of the following methodologies: a) compounded average growth rate (CAGR); b) end use or partial end use; c) trend analysis; d) Auto-regressive integrated moving average (ARIMA); e) AI including machine learning, ANN techniques; and f) econometric (specifying the parameters used, algorithm, and source of data).
- b. Policy influences such as 24X7 supply to all customers, LED penetration, efficient use of fans/appliances, increased use of appliances for cooking/heating applications, electrification policies, distributive energy resources, storage, and policies etc.,
- c. Long-term and medium-term demand forecasts shall be done in at least three scenarios i.e. most probable, business as usual, and aggressive.

The Ministry of Power, GoI issued “GUIDELINES FOR RESOURCE ADEQUACY PLANNING FRAMEWORK FOR INDIA” in June 2023 under Rule 16 of Electricity (Amendments) Rules, 2022). These guidelines provide:

- a. The Resource Adequacy exercise shall have a planning horizon of 10 years on a rolling basis.
- b. The detailed power demand forecasting exercise should be undertaken every five years. However, it should also be reviewed yearly and updated if necessary.

- c. Spatial Granularity—Forecasts should be prepared at least at the DISCOM/State level. In addition, forecasts should be made at more granular levels, i.e., zonal, circle, district, etc.
- d. Time Granularity—The forecast should at least be worked out year-wise. If adequate granular-level data is available, month-wise, day-wise, hour-wise, or time-block-wise forecasts should also be made.
- e. The forecast should be carried out for at least three scenarios: optimistic, business as usual (BAU), and pessimistic.
- f. The method adopted for forecasting should analyze past consumption data of each consumption category separately and factor the impacts of emerging aspects to arrive at appropriate future growth trends.

The Commission issued “GUIDELINES FOR LOAD FORECASTS, RESOURCE PLANS, AND POWER PROCUREMENT” in December 2006:

These guidelines, inter alia envisage, a detailed forecast for the Control Period under consideration for tariff review purposes (5th CP) and a simple forecast for the subsequent Control Period (6th CP) shall be done by the distribution licensees based on (a) the Forecast of energy in MWh, demand in MW for each class of consumers (category-wise) supplied by the distribution licensee; (b) Forecast of energy in MWh, demand in MW for each class of consumers (category-wise) supplied by a person other than the distribution licensee of his area of supply through open access. The load forecast shall also be based on the historical consumer category-wise, slab-wise, voltage-wise data of energy in MWh, demand in MW, number of consumers for the last 5 years considering the existing and proposed Demand Side Management (DSM) programmes and their impact on energy and demand considering alternative approaches (viz. simple trend approach, behavioural approach linking with key drivers, etc.,) for the forecast during the Control Period;

The licensee's filings on load forecasts broadly comply with the Guidelines issued by the Commission and the guidelines issued by CEA, FoR, and MoP.

They have projected the load forecasts based on the last five years' trend, taking FY 2022-23 (T-2) as the base year. Hence, the Commission proposes to forecast the three scenarios based on the data furnished by the licensees.

The Commission used Compound Annual Growth Rates (CAGR) to forecast the sales of each consumer category for every Licensee, grossing up the losses accordingly to arrive at the yearly energy requirement. A time series of hourly data for the last five years is used to forecast the demand correlating with the energy requirement for the state, as the three DISCOMS have been dispatched together to optimise the power purchase cost. It forecasted the energy requirement & demand

for the three scenarios as detailed below.

(a) Optimistic Scenario:

This Scenario represents the maximum energy sales during the year for DISCOMs. It factors in extreme weather conditions, driving power demand upwards, such as lesser rainfall. It also represents high growth and a positive and favorable situation in energy sales of the DISCOMs in view of increased economic activities, industrialization, increased consumer consumption, etc.

(b) Business As Usual Scenario (BAU):

This scenario represents moderate growth, a normal increase in the DISCOMs' energy sales, and Normal weather conditions (weather parameters need not be factored in separately).

(c) Pessimistic Scenario:

This Scenario represents the minimum energy sales during the year for DISCOMs. It factors in extreme weather conditions, such as heavy rainfall, which drive power demand downward. It also represents low growth and minimal increase in the energy sales of the DISCOMs due to reduced economic activities, less industrialization, saturation in consumer consumption, etc.

After analysing the CAGRs for various categories of consumers using different methods, the Commission is inclined to adopt the CAGRs shown in the table below for each DISCOM in three scenarios.

Approved-Scenario Wise Growth rate considered for APDiscoms

Discom	APSPDCL			APCPDCL			APEPDCL		
Category	Optimistic	BAU	Pessimistic	Optimistic	BAU	Pessimistic	Optimistic	BAU	Pessimistic
LT-I: Domestic	7.75	5.98	4.09	6.20	4.52	2.36	8.00	6.34	5.05
LT-II: Commercial & Others	10.19	8.69	5.08	8.51	5.38	2.60	9.00	7.60	5.84
LT-III: Industrial	5.60	5.00	3.06	5.00	2.93	2.12	5.00	4.70	1.37
LT-IV: Institutional	11.00	10.01	9.64	5.14	3.00	3.36	6.68	5.97	5.00
LT-V: Irrigation and Agriculture	5.00	4.00	2.00	5.00	4.00	2.50	5.00	4.00	2.00
HT-I: Townships and Colonies	7.25	6.70	4.09	7.24	4.52	2.36	8.00	7.00	5.05
HT-II: Commercial & Others	12.30	10.20	3.42	11.30	8.35	3.08	12.47	9.97	5.38
HT-III: Industrial	14.10	11.60	4.92	9.00	2.59	0.54	11.81	9.03	5.98
HT-IV: Institutional	14.32	12.17	6.81	13.70	4.06	3.00	15.60	11.60	4.77
HT-IV: Agricultural &	5.00	3.75	0.61	5.00	3.75	2.50	5.00	3.75	0.61

Related									
---------	--	--	--	--	--	--	--	--	--

Accordingly, by applying the above CAGRs on base year data of FY 2022-23, the Commission's approved category-wise forecast of sales of all three Discoms for the 5th control period, Discom wise and at state level , in comparison with CEA 20th EPS and Licensees filings are shown below:

Energy Sales Approved Forecast for APSPDCL - 5th CP

Scenario	FY 25	FY 26	FY 27	FY 28	FY 29
Optimistic	29,061	31,823	34,891	38,304	42,102
Business As Usual	28,159	30,340	32,721	35,321	38,165
Pessimistic	26,281	27,330	28,429	29,582	30,791
CEA 20th EPS Report	28,017	29,967	32,119	34,344	36,684
SPDCL Filings	28,226	30,155	31,685	33,283	35,354

Energy Sales Approved Forecast for APCPDCL - 5th CP

Scenario	FY 25	FY 26	FY 27	FY 28	FY 29
Optimistic	16,246	17,413	18,673	20,034	21,503
Business As Usual	15,349	15,985	16,650	17,344	18,069
Pessimistic	14,765	15,079	15,401	15,731	16,069
CEA 20th EPS Report	17,947	19,121	20,388	21,679	23,015
CPDCL Filings	16,738	17,528	21,927	22,800	23,696

Energy Sales Approved Forecast for APEPDCL - 5th CP

Scenario	FY 25	FY 26	FY 27	FY 28	FY 29
Optimistic	30,710	33,673	36,948	40,570	44,578
Business As Usual	29,545	31,760	34,154	36,743	39,542
Pessimistic	28,166	29,555	31,018	32,560	34,184
CEA 20th EPS Report	28,619	31,427	34,509	37,825	41,382
EPDCL Filings	28,950	31,029	33,101	35,338	37,771

Energy Sales Approved Forecast at State Level (MU)

Scenario	FY 25	FY 26	FY 27	FY 28	FY 29
Optimistic	76,016	82,909	90,513	98,907	108,183
Business As Usual	73,053	78,085	83,524	89,408	95,777
Pessimistic	69,212	71,964	74,849	77,873	81,045

Scenario	FY 25	FY 26	FY 27	FY 28	FY 29
CEA 20th EPS Report	74,583	80,515	87,016	93,847	101,081
APDISCOMS' Filings	73,914	78,712	86,713	91,421	96,821

2.7 Loss Trajectory of AP Discoms& AP Transco

The Commission has examined the filings, loss levels achieved by the licensees in the 4th Control Period up to Aug-23 against the targets fixed by the Commission, capacity of the existing network, capital works in progress, the investments proposed and Loss reduction measures being followed and fixed the loss trajectory of the Licensees for the 5th control period as below.

Approved: Voltage-wise Loss Trajectory - APDiscoms

Discom	APSPDCL					APCPDCL					APEPDCL				
FY/ Voltage Level	24-25	25-26	26-27	27-28	28-29	24-25	25-26	26-27	27-28	28-29	24-25	25-26	26-27	27-28	28-29
LT %	4.13	4.12	4.11	4.10	4.09	3.73	3.72	3.71	3.70	3.69	3.42	3.41	3.40	3.40	3.39
11 kV %	3.06	3.05	3.04	3.03	3.02	3.06	3.05	3.04	3.03	3.02	3.39	3.38	3.37	3.36	3.35
33 kV %	2.99	2.98	2.97	2.96	2.95	2.99	2.98	2.97	2.96	2.95	2.74	2.73	2.72	2.71	2.70

Approved: Transmission Loss Trajectory for 5th CP

Financial Year	FY 25	FY 26	FY 27	FY 28	FY 29
APTransco Transmission loss %	2.75	2.75	2.70	2.70	2.70
PGCIL loss %	0.80	0.90	0.95	0.95	0.95
APTransco& PGCIL Losses %	3.55	3.65	3.65	3.65	3.65

The Commission has arrived at the Sales for each DISCOM in three scenarios based on CAGRs and by grossing up with approved losses with sales voltage-wise the energy requirement of each DISCOMS has been arrived.

The sum of the energy requirement of three DISCOMS is the total energy requirement for the retail consumers in the State. The yearly energy requirements for Retail consumers, each DISCOM wise and three DISCOMS together vis a vis the energy requirement projected in CEA 20th EPS and filings are shown in the tables below.

Approved: Scenario-wise Energy Requirement of three Discoms

Approved for three DISCOMs	Energy Requirement for 5th CP (MU)- Three DISCOMs				
	FY 25	FY 26	FY 27	FY 28	FY 29
Optimistic	84,247	91,871	100,175	109,335	119,443
Business As Usual	81,025	86,594	92,538	98,963	105,910
Pessimistic	76,814	79,912	83,074	86,390	89,865
CEA 20th EPS Report	83,613	90,207	97,426	104,999	113,005
APDISCOMS Filings	83,275	88,713	97,396	1,02,700	1,08,765

2.8 Load Factor

The actual load factor for FY 2022-23 is suitably modified for future projections to arrive at the peak demands by the utilities based on estimated energy requirements. After examining the load factor pattern of the past and future energy requirements, the Commission modified the load factors for APCPDCL & APTRANSCO. It adopted the same for APSPDCL & APEPDCL as per their filings. The load factors adopted by the Commission vs utilities are shown in the tables below.

Approved: Load Factors (%) of the State

Particulars	24-25	25-26	26-27	27-28	28-29
APERC Approved - State	67.84	67.25	66.56	65.95	65.36
APTransco-Filing	64.00	63.85	63.85	63.85	63.85
APERC-Approved-SPDCL	55.05	55.25	55.45	55.65	55.85
SPDCL-Filing	55.05	55.25	55.45	55.65	55.85
APERC-Approved-CPDCL	66.00	66.20	66.40	66.60	66.80
CPDCL-Filing	73.85	73.60	73.38	73.16	72.99
APERC-Approved-EPDCL	73.85	73.60	73.38	73.16	72.99
EPDCL-Filing	73.85	73.60	73.38	73.16	72.99

Peak demand based on Load Factor:

The Peak Demand for the State is estimated using two methods.

- The energy requirement at the state level /load factor for the state.
- The sum of the individual maximum demands of DISCOMs/Diversity factor

The Peak demand for the State for the BAU scenario during the 5th Control Period computed by the Commission based on the approved load factors is given in the table below,

Approved: State Peak Demand based on Load Factor

Particulars	FY 25	FY 26	FY 27	FY 28	FY 29
SPDCL	31,294	33,712	36,314	39,153	42,254
CPDCL	17,282	18,001	18,745	19,523	20,336
EPDCL	32,449	34,882	37,479	40,287	43,320
The Energy Requirement for three DISCOMS together (MU)	81,025	86,595	92,538	98,963	105,910
OA Energy (MU)	2,090	2,211	2,334	2,478	2,613
Total Energy Requirement for State (MU)	83,115	88,806	94,872	101,441	108,523
State Peak Demand (MW)	13,986	15,076	16,271	17,559	18,957

Peak Demands based on the Diversity factor

The actual diversity factor during the FY 2022-23 was 1.02, based on this diversity factor, the peak demand computed for three scenarios by the Commission for the State is shown in the table below.

State Peak Demands Excluding OA Demand based on the Diversity Factor

Scenario	FY25	FY26	FY27	FY28	FY29
Optimistic	14,795	16,118	17,556	19,142	20,888
BAU	14,237	15,205	16,236	17,350	18,552
Pessimistic	13,480	14,004	14,536	15,095	15,677

State Peak Demands, including OA Demand based on the Diversity Factor

Scenario	FY25	FY26	FY27	FY28	FY29
Optimistic	15,168	16,513	17,973	19,585	21,355
BAU	14,610	15,600	16,653	17,793	19,019
Pessimistic	13,853	14,399	14,953	15,538	16,144

Though the Commission has computed the projected peak demand based on the load factor method and the diversity factor, it proposes to approve the peak demand for the State computed based on the diversity factor method to align with the CEA guidelines issued in June 2023. The table below shows the Comparison of peak demands estimated by the Commission in BAU scenario with 20th EPS and APTRANSCO filings.

Approved - Comparison of State Peak Demands (MW) for 5th CP - Approved Vs EPS Report Vs Filings

Particulars	FY25	FY26	FY27	FY28	FY29
BAU Scenario-APERC	14,610	15,600	16,653	17,793	19,019
20th EPS	15,337	16,495	17,758	19,076	20,461
Filings of APTRANSCO	15,226	16,256	17,830	18,805	19,913

The load forecast approved in this chapter is the basis for finalising the power procurement plan in the next chapter. The Commission proposes to review the above load forecast every year to make suitable corrections.

2.9 Conclusion

AP Transco/AP Discoms are in consonance with the Commissions analysis of Load forecast for various scenarios like Optimistic, BAU and Pessimistic. However, it is felt that adopting Optimistic conditions such as extreme weather conditions, increased economic or industrial activities is superfluous and prevailing conditions are near to the BAU conditions such as normal weather conditions and sustained industrial growth. In fact, in the FY2024-25, the peak demand reached so far is nearer to Pessimistic analysis and Energy Requirement is near to BAU.

In view of the above, APTransco/AP Discoms are of the opinion to adopt the results of BAU Analysis such that, forecast is moderate and facing the other two conditions is economical. Accordingly the Peak demand and Energy requirements proposed to be adopted by APTransco /APDiscoms are as below:

Particulars	24-25	25-26	26-27	27-28	28-29
Business As Usual (Peak demand)	14610	15600	16653	17793	19019
The Energy Requirement for three DISCOMS together (MU)	83115	88806	94872	101441	108523

3. GENERATION PLAN

3.1 Generation Capacity from Various sources

This section discusses the methodology and assumptions considered for estimating the quantum of power purchase of the Licensee for the next control periods - FY 2024-25 to FY 2028-29. The installed capacities and availability from various existing and upcoming generating sources along with their expected date of Commissioning have been discussed as below:

3.1.1 APGENCO Installed capacity

The below table shows the projected capacities of the existing Thermal and Hydel generating stations of APGENCO and share in the interstate projects. The APDIS-COMs would purchase the 100% share from the existing APGENCO stations.

Source	Project Installed Capacity (MW)	Contracted Capacity - AP Share (MW)
THERMAL		
Dr. NTPPS (I, II, III)	1,260	1,260
RTPP-I	420	420
RTPP-II	420	420
RTPP- III	210	210
RTPP IV	600	600
Dr. NTPPS – IV	500	500
Dr. NTPPS – V	800	800
TOTAL THERMAL	4210	4210
HYDEL		
Interstate projects:		
Machkund, Orissa	60	60
T.B. Station, Karnataka	58	58
State projects:		
Donkarayi	25	25
Upper Sileru	240	240
Lower Sileru	460	460
Srisaillam right bank	770	770
Nagarjuna Sagar right	90	90
PABM	20	20
Mini hydro	1	1
Nagarjuna Sagar Tail	50	50
TOTAL HYDEL	1,774	1,774
TOTAL APGENCO &	5,984	5,984

3.1.2 Old APGENCO Stations

The Ministry of Power, Govt. of India vide letter dated 20.01.2023 have communicated that in pursuant to the meeting held on 06.12.2022, the Hon'ble Minister of Power & NRE instructed not to retire any thermal units till 2030 and urged for carrying out R&M for life extension and improve the flexibility and reliability of thermal units considering the expected demand scenario and availability of capacity in future. Further, APGENCO vide letter dated 11.04.2023 has requested APPCC/APDISCOMs to extend the validity of composite PPAs for a period of 10years i.e. up to FY 2033-34.

Further, the PPA with RTPP Stage II- (2*210MW) is going to expire on 28.03.2033. Dr.NTTPS Stage-V (800 MW unit) C.O.D is declared on 20-12-2023.

In view of long gestation period required for the construction of new thermal capacities and impending retirement of old inefficient thermal plants, it would be prudent to continue to operate the existing efficient thermal capacities of APGENCO.

3.1.3 APGENCO Capacity Additions

The expected capacity addition of APGENCO Thermal and Hydel stations from FY 2024-25 to FY 2028-29 are as below:

Source	Project Installed Capacity (MW)	Expected COD	APERC approval
THERMAL			
TOTAL THERMAL	0	Nil	
HYDEL			
Lower Sileru -2 units	230	FY2024-25	
Polavaram – 1 st to 7 th Units	560	FY2024-25	Approved
Polavaram – 8 th to 12 th Units	400	FY2025-26	Approved
Upper Sileru Pumped Storage 1 st to 8 th Units	1200	FY2027-28	
Upper Sileru Pumped Storage 9 th Unit	150	FY2028-29	
TOTAL HYDEL	2540		
TOTAL APGENCO	2540		

In addition to the above, APGENCO has proposed the following Capacity Addition Plans:

HYDRO POWER PROJECTS

(2x30MW=60MW) –Chitrakonda (Balimela) Dam Toe Power House,JV with OHPC

New Pumped Storage Projects:**Joint Venture with NHPC:**

- i) (4x200MW=800 MW) Rajupalem PSP
- ii) (4x250 MW =1,000 MW) Yaganti PSP
- iii) (4x240MW+ 2X120MW= 1200 MW) Gadikota PSP
- iv) (6 x 220MW =1,320MW) Aravetipalli PSP
- v) (5x150MW=750MW) Deenepalli PSP

APGENCO:

- vi) (3x238 MW + 2x118 MW =950 MW) Kamalapadu PSP

An MOU is entered with NREDCAP & OTPC for establishing RE projects (solar / floating solar/wind)

New Thermal Power Projects:

- i) (4x800MW=3200MW) Super Critical Thermal Power Project in Srikakulam District.
- ii) (4X800MW=3200 MW) coal based thermal station on tariff based competitive bidding

3.1.4 Joint sector

The installed capacity of APPDCL and AP Discom Gas is as tabulated below

APPDCL/AP Discom	Installed capacity (MW)	AP Share(MW)
SDSTPS – I	720	720
SDSTPS – II	720	720
SDSTPS – III	800	800
Godavari Power (GGPP)	216	216
Total	2456	2456

3.1.5 Central Generating Stations

APDISCOMS have been purchasing power from Central Generating Stations owned/controlled by Central Public Sector Undertakings (CPSUs) based on the long term PPAs. The list of the Stations along with the APDISCOMs' share of power from these Stations (as on 31stMarch 2023) are indicated in the following table:

S. No.	Station	Allocated Capacity (MW)
1	NTPC-(SR) Ramagundam I & II	276.26
2	NTPC-(SR) Ramagundam- III	69.461
3	NTPC-Talcher-II	176.25
4	NTPC Simhadri Stage-I	461.1000
5	NTPC Simhadri Stage-II	213.851
6	NLC TS II Stage-I	46.797
7	NLC TS II Stage-II	85.721
8	NPC-MAPS	18.136
9	NPC-Kaiga 1 & 2	55.287
10	NPC-Kaiga 3 & 4	58.977
11	Vallur (JV) NTPC with TANGEDCO	86.288
12	NLC-TNPL Tuticorin	121.449
13	NTPC-Kudigi	210.733
14	NTPC JNNSM Phase I	39.19
15	NNTPS	52.699
16	Kudankulam unit 1	1.71
17	NLC TPS I Exp	2.155
18	NLC TPS II Exp	2.565
Total CGS		1978.628

3.1.5.1 Expiry of PPAs of certain CGS

Expiry schedule of the existing CGS Stations is furnished as below.

- Ramagundam Stage-I&II – 289.17 MW expired on 31.10.2017.
- NLC TPS-II Stage-I & Stage-II 132.573 MW expired on 31.03.2021
- Kaiga 1 to 4 units – 114.264 MW & MAPS -18.136 MW are going to expire during FY2026-27.
- Simhadri Stage-I - 461.1 MW will expire during FY 2027-28.
- Ramagundam Stage-III – 72.572 MW will expire during FY2029-30
- Talcher Stage-II – 181.103 MW will expire during FY2030-31.

The Ministry of Power, Govt. of India has notified on 20th April 2023, a Scheme for Pooling of Tariff of those CGS plants whose PPAs have expired. This scheme is effective from 1st July 2023 onwards. Mainly designed for CGS stations which have completed 25 years of service. Common pool will be created with total Installed capacity with uniform F.C and V.C by de-allocating power from the original beneficiaries.

As per the scheme, the beneficiaries have to requisition power for the required quantum within 15 days from the announcement of common pool website. Priority will be given to the original beneficiaries thereafter first come first serve. Beneficiaries have to enter separate PPA'S for a minimum period of 5 years for requisitioning power from common pool after obtaining proper consent for entering PPAs and for the quantum of power.

The CGS plants after completion of 25 years will be added to the common pool subsequently. One year prior intimation will be given to the beneficiaries before completion of 5 years agreement period.

3.1.5.2 Capacity addition of Central Generating Stations

The expected Capacity addition from Central Generating Stations is tabulated below.

Source	Project Installed Capacity (MW)	Expected COD
Nuclear		
Bhavani	100	FY2024-25
THERMAL		
Telangana STPS	16	FY2023-24
Talcher	264	FY2027-28
TOTAL Thermal	280	
TOTAL CGS	380	

However the above projects were not approved by the Hon'ble APERC.

3.1.6 Gas based IPPs

The following Gas based IPPs are stranded due to unavailability of gas and are not scheduled. Hence these are not considered for 5th Control period.

Project Name	Installed Capacity (MW)	AP Share (MW)
GVK Extension	220	101.4
Gautami	464	214
Konaseema	444	204.8
GMR Vemagiri	370	170.6
Total	1,498	690.8

The existing tenure of PPAs with four Gas based IPPs is to be completed as shown below:

GVK Extns & GVK Gautami will expire in FY2024-25

Konaseema will expire in FY 2025-26

GMR Vemagiri will expire in FY2028-29

However, these plants are not considered in despatch due to shortage of Gas.

3.1.7 IPPs-Thermal

The Installed capacity of IPPs Thermal as on 31-03-2023 is as tabulated below.

S.No.	Source of Power	COD	AP Share (MW)
		DD/MM/YYYY	
1	HNPCL	03/07/2016	1040
2	M/s. SEIL-1 (SEMBCORP ENERGY INDIA LIMITED)	1/3/2013	230.55
3	M/s. SEIL -2 (SEMBCORP ENERGY INDIA LIMITED)	1/2/2023	625
Total from IPPs Thermal			1895.55

3.1.8 Non-Conventional Energy Sources (NCE)

The installed capacity of NCE projects as on 31-03-2023 is tabulated below.

S.No.	Source of Power	AP Share (MW)
1	NCE Biomass	72
2	NCE Bagasse	74
3	NCE - Industrial Waste based Power project	21.66
4	NCE - Municipal Solid Waste Projects	36.15
5	NCE- Wind	3638.95
6	NCE - Solar	3755.62
7	NCE- Mini Hydel	28.55
Total from NCE		7626.94

3.1.9 Solar Power from SECI

The Govt. of Andhra Pradesh intends to supply 9 hours day time uninterrupted power supply to the Agricultural farming consumers in the state on sustainable basis through a separate nodal agency (Andhra Pradesh Rural Agricultural Power Supply Company – APRAPSCoM).

As per the instructions of Govt. of A.P, All the three AP DISCOMs and Govt. of AP had entered into PSA(Power Sale Agreement) with SECI on dated 01.12.2021 for procurement of 7000 MW (17000 MU) from 2024 September onwards (3000 MW as on 2024, 6000 MW as on 2025 and 7000 MW as on Sept'2026).

Upon fully establishment of APRAPSCoM, the aforesaid PSA will be transferred from AP DISCOMs to APRAPSCoM for supply of power to the Agricultural consumers.

3.1.10 Other NCE Sources

Year wise Retirements and additions of Other NCE generation in MW from bagasse, co-generation, biomass etc. is as tabulated below.

FY	23-24	24-25	25-26	26-27	27-28	28-29	29-30	31-32	Total
Retirements	-78.5	-24.7	-36	-10	-2	-14.66	-20	-1.2	-187.06
Additions	1.2	20	9	0	0	0	0	0	30.2
Net Retirements	-77.3	-4.7	-27	-10	-2	-14.66	-20	-1.2	-156.86

3.2 Coal Requirement by APGENCO

The coal required by APGENCO (NTTPS & RTPP) is 23.67 MTPA to generate 30515 MU by FY 2028-29 and the details for 5th control period are tabulated below.

S.No	Description		Units	24-25	25-26	26-27	27-28	28-29
1	Coal Requirement	Dr. NTTPS	MMT PA	14.49	14.55	14.55	14.55	14.55
		RTPP	MMT PA	9.02	9.20	9.15	9.16	9.11
		Total	MMT PA	23.51	23.76	23.71	23.71	23.67
1.1	Coal based Generation	Dr. NTTPS	MU	18,612	18,679	18,679	18,679	18,679
		RTPP	MU	11836	11899	11836	11841	11836
1.2	Total coal based Generation		MU	30,448	30,578	30,515	30,520	30,515
1.3	Hydro based Generation		MU	4,755	5,718	5,968	7,576	9,496
1.4	Total Generation		MU	35,203	36,295	36,484	38,096	40,011
1.5	Coal Requirement		MMT PA	23.51	23.76	23.71	23.71	23.67
	a. Imports by plants designed on imported coal		MMT PA	0.00	0.00	0.00	0.00	0.00
	b. Domestic coal requirement		MMT PA	23.51	23.76	23.71	23.71	23.67

3.2.1 Coal Requirement by APPDCL

The coal required by APPDCL is 12 MTPA to generate 17976 MU by FY 2028-29 and the details for 5th control period is tabulated below.

S. No.	Description		Units	24-25	25-26	26-27	27-28	28-29
1	Coal Requirement	St-I RC	MMTPA	6.652	6.652	6.652	6.652	6.652
		St-I IC	MMTPA	1.802	1.802	1.802	1.802	1.802

		St-I total	MMTPA	8.454	8.454	8.454	8.454	8.454
		St-II RC	MMTPA	3.548	3.548	3.548	3.548	3.548
		St-I & St-II	MMTPA	12.002	12.002	12.002	12.002	12.002
1.1	Coal based Generation		MU	17976	17976	17976	17976	17976
1.2	Hydro based Generation		MU	***	***	***	***	***
1.3	Total Generation		MU	17976	17976	17976	17976	17976
1.4	Coal Requirement		MMTPA					
a. Imports by plants designed on imported coal			MMTPA	1.802	1.802	1.802	1.802	1.802
b. Domestic coal requirement			MMTPA	10.200	10.200	10.200	10.200	10.200

3.3 Cost of coal and GCV

(A) NTPPS

Landed cost of coal in Rs. /Mt, Gross calorific value (GCV) in kcal/kg, Fixed and variable cost of the energy generated from NTPPS for 5th control period is tabulated below.

S.No.	Description	Units		23-24	24-25	25-26	26-27	27-28	28-29
1	Coal requirement	MMTPA	Domes- tic	14.49	14.49	14.55	14.55	14.55	14.55
			Im- ported						
	Total Coal Requirement	MMTPA		14.49	14.49	14.55	14.55	14.55	14.55
2	landed cost of coal and calorific value	Rs/Mt		4,129	4,336	4,552	4,780	5,019	5,270
		GCV in Kcal/Kg		3,071	3,071	3,071	3,071	3,071	3,071
	Latest Project	Dr. NTPPS (1X800 MW) Stage-V							
3	Expected fixed and variable tariff	Fixed Cost in Rs/KWH		2.79	2.71	2.64	2.57	2.50	2.43
		Variable Cost in Rs/KWH**		3.08	3.23	3.40	3.57	3.74	3.93

(B) RTPP

Landed cost of coal in Rs/Mt, Gross calorific value (GCV) in kcal/kg, Fixed and variable cost of the energy generated from RTPP for 5th control period is tabulated below.

	Description	Units		23-24	24-25	25-26	26-27	27-28	28-29
	Coal requirement	MMTPA	Domestic	9.15	9.02	9.20	9.15	9.16	9.11
		MMTPA	Imported						

	Total Coal requirement	MMTPA		9.15	9.02	9.20	9.15	9.16	9.11
	landed cost of coal and calorific value	Rs/Mt		5,426	5,697	5,982	6,281	6,595	6,925
		GCV in Kcal/Kg		3,425	3,425	3,425	3,425	3,425	3,425

(C) SDSTPS 2*800 MW

Landed cost of coal in Rs/Mt, Gross calorific value (GCV) in kcal/kg, Fixed and variable cost of the energy generated from SDSTPS 2X800 MW for 5th control period is tabulated below.

S. No	Description	Units		23-24	24-25	25-26	26-27	27-28	28-29
1	Coal requirement Considering 70% Washed and 30% Imported coal for Stage-I	MMTPA	Do-mes-tic	6.6519	6.6519	6.6519	6.6519	6.6519	6.6519
			Im-ported	1.8017	1.8017	1.8017	1.8017	1.8017	1.8017
	Total Coal Requirement	MMTPA		8.4536	8.4536	8.4536	8.4536	8.4536	8.4536
2	landed cost of coal and calorific value	Rs/Mt		8200	8610	9041	9493	9967	10466
		GCV in Kcal/Kg		4460	4460	4460	4460	4460	4460
3	expected fixed and variable tariff for 2X800 MW-SDSTPS-Stage-I	Fixed Cost in Rs/KWH		1.73	1.73	1.73	1.73	1.73	1.73
		Variable Cost in Rs/KWH		4.60	4.83	5.07	5.33	5.59	5.87

(D) SDSTPS stage-2 1*800 MW

Landed cost of coal in Rs/Mt, Gross calorific value (GCV) in kcal/kg, Fixed and variable cost of the energy generated from SDSTPS stg-2 1X800 MW for 5th control period is tabulated below

S. No.	Description	Units		23-24	24-25	25-26	26-27	27-28	28-29
1	Coal requirement Considering 100% Washed coal	MMTPA	Do-mes-tic	3.548	3.548	3.548	3.548	3.548	3.548
2	Landed cost of coal and calorific value	Rs/Mt		5450	5723	6009	6309	6625	6956
		GCV in Kcal/Kg		4095	4095	4095	4095	4095	4095
3	Expected fixed and variable tariff for 1X800 MW-SDSTPS-Stage-II	Fixed Cost in Rs/KWH		2.76	2.76	2.76	2.76	2.76	2.76
		Variable Cost in Rs/KWH		3.08	3.23	3.40	3.57	3.74	3.93

3.4 Issues related to coal supply to power plants

1. Rigorously pursuing with coal companies (MCL & SCCL) & Railways to increase rakes allotment to meet the daily requirement and improve coal supplies to APGENCO Power plants.
2. Apprising the coal stocks from time to time to Ministry of coal & Ministry of Power, Govt. of India during Core Management Team and Sub Group Meetings and requesting to increase coal supplies to APGENCO.
3. Coal is being diverted between APGENCO and APPDCL under flexibility in utilization of domestic coal so as to build up coal stocks and run the units at their rated capacities.
4. APGENCO is procuring washed coal from M/s MCL, IB Valley Washery from 22.03.2024 for increasing generation of power plants.
5. Coal transportation of 10 Lakh MT per annum through RSR mode via Paradip & Ennore Ports to Dr.M.V.R RTPP was increased in addition to existing 40 LMT of coal per year through RSR mode from February'2024 to increase coal stocks at TPPs for achieving maximum power generation in coming summer season.
6. Due to congestion in south bound rail route coal, transportation of 30 Lakh MT per annum through RSR mode via Paradip & Kakinada Ports to Dr.NTTTPS is commenced in addition to All Rail Route so as to improve coal stocks at Dr.NTTTPS for achieving maximum power generation in coming summer season.
7. Power dues receivable from Telangana DISCOMs to APGENCO is Rs.7832.48 Crores (including late payment surcharge as on 31.08.2024 after deducting the partial payments made till 2017).
8. Pursuing with Ministry of Coal and Ministry of Power for allocation of additional quantity of High Grade coal from ECL to APPDCL from 0.95MMTPA to 1.8MMTPA.

3.5 Steps taken to mitigate emissions from intra-state thermal power stations

APGENCO is operating Dr.NTTTPS and RTPP duly complying with emission norms prescribed under Environment Protection Act 1986, Air Act 1981 and its subsequent amendments. The stations are being operated with valid consents from APPCB.

The MOEF& CC, GOI has issued stack emission norms for Thermal Power Plants vide notification Dt: 7th Dec, 2015.

The Stage - I, II, III units of Dr.NTTTPS and stage I units of Dr. MVR RTPP have served more than 30-40 years respectively and have become old. The Stack emission levels are exceeding the APPCB limits due to delay in overhauls of thermal units as they were kept in operation to meet grid demand during 2023-24.

The ambient air quality levels in and around the plants premises are well within the NAAQS.

Mitigation Measures to control SPM, SO₂

The following measures are being taken to control the SPM:

- 1) Ammonia injection is being carried out as per requirement in ESPs.
- 2) Most of the time, SPM levels are maintaining almost close to the normative Values.
- 3) Prompt preventive and breakdown maintenance works of ESPs are being carried out.
- 4) In units 1&2 of Dr.NTTSPS, parallel ESPs were already installed so as to meet the CPCB / APPCB norms. For units 3& 4 of Dr. NTTSPS, the existing ESP controllers were upgraded with EPIC3 controllers.
- 5) The APGENCO management has sanctioned Rs.28 Cr budget from EP& FF to improve the ash evacuation system and ESPs performance of Dr. NTTSPS for taking up major replacement/ repair works to the worn-out system. The APGENCO management has also sanctioned Rs.4.40 Cr budget on 12.04.2024 for CSR works through the District Collector, Greenbelt/ parks development & for conducting Medical Camps.
- 6) The APGENCO management has sanctioned Rs.32 Cr budget from EP& FF to improve the ash evacuation system and ESPs performance of Dr. MVR RTPP for taking up major replacement/ repair works to the worn-out system and also for development of green belt.
- 7) Water Sprinkling arrangements are being made to suppress the fugitive emissions.
- 8) All ash loaded Lorries are being covered with Tarpaulins.
- 9) Required Greenbelt provided in and around the Plants.

FGD Implementation to control SO₂:

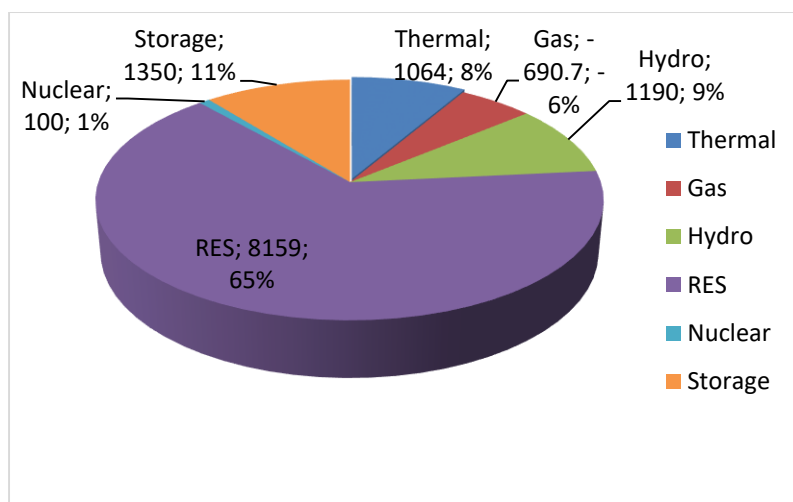
For Unit-7 (500MW) of Dr.NTTSPS and Unit-6 (600MW) of RTPP, APGENCO engaged engineering consultancy services for installation of wet lime stone based FGD for implementation of MoEF & CC norms by providing FGD system. Tender Specifications for FGD EPC tendering for Dr.NTTSPS-500MW is under preparation and for RTPP-600MW is under finalization.

For units 3, 4 and 5 of RTPP, Engaging Engineering consultancy services for pre-EPC and post- EPC consultancy services installation of wet lime stone based FGD for implementation of MOEF& CC norms by providing FGD system is under process.

For APPDCL SDSTPS Units, to meet the emission norms of Sox: FGD (Flue Gas Desulphurization) installation for Stage-I & II is under Tender preparation Stage.

3.6 Fuel Wise Capacity Addition FY 2024 – FY 2029

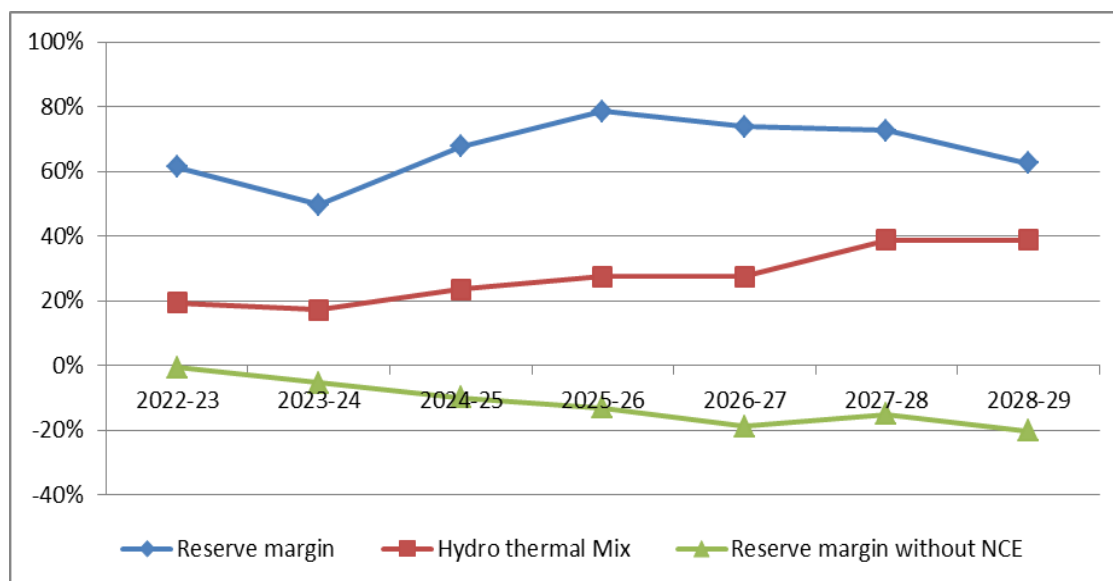
The expected total capacity addition from FY2023-24 to FY 2028-29 is 11172.3 MW which comprises of 1064 MW thermal, 1190 Hydro, 100 MW Nuclear , 1350 MW Pumped storage and 8159 MW Renewable Energy Sources.



The major chunk i.e., 65% capacity addition is from Renewable energy sources in the 5th control period.

3.7 Reserve margin and Hydro thermal mix

Reserve margin of a system is defined as the difference between the Installed Capacity and the peak load met as a percentage of the peak load met. This factor depends on a number of parameters, major ones being the mode of power generation i.e. Hydro, Thermal, Renewable and the availability of the generating stations which primarily is a function of forced and planned shutdown of the generating units, capacity of the Discoms to procure power. The Reserve margin and hydro thermal mix from FY2023-24 to FY2028-29 is tabulated below.



Hydro thermal mix increased from 19.4% in FY2022-23 to 38.9% by FY2028-29 in terms of installed capacity. However Reserve margin (Excluding NCE) decreased from -1% in FY2022-23 to -20% in FY2028-29.

3.8 Sources of Funds for implementing Capital Investment in Generation

The following projects proposed by APGENCO during the 5th control period are funded from REC and PFC as below:

- Polavaram Hydro Electric Project (12 X 80 MW) -M/s. REC Ltd
 - Additional 2 Units (2X115MW) at Lower Sileru Power House -M/s. REC Ltd
 - Upper Sileru Pumped Storage Project (9x150MW)- M/s. REC Ltd and M/s. PFC Ltd
- There are no new Projects proposed during the 5th control period in APPDCL.

3.9 Slippage of planned generation in the 4th Control Period

The following are the reasons for Slippage of planned generation during the 4th control period :

- 1) Covid impact units are kept under reserve shutdown for 7 months.
- 2) Poor Coal quality.
- 3) Major Shutdowns due to Generator Transformer works (Unit-3) and Generator Repair works (Unit-5) in Dr.NTTPS.
- 4) Major Shutdowns due to installation of GRP Panels and RLA study (Unit-1) Replacement of Boiler Tubes (Unit-2) and Replacement of Boiler Coal nozzles (Unit-6) in RTPP.
- 5) High volatile costs of Imported Coal in international markets, APGENCO & APPDCL have not procured required imported coal.
- 6) Delay in commissioning of 800MW Units at Dr.NTTPS & SDSTPS due to change in Law, Covid 2019 and Force Majeure events.
- 7) Non-receipt of timely payments from APDISCOMs, APGENCO is not able to clear the outstanding dues to coal companies.
- 8) The APGENCO Hydel plants, have not achieved the targeted generation due to meagre inflows at some Reservoirs in certain years.

3.10 Different Technologies adopted by APGENCO for efficient generation

APGENCO has adopted Super Critical technology as it offers advantages in terms of improved efficiency, reduced emissions and low operating costs. Using this technology, 3 units of 800 MW at SDSTPS stage-I & stage -2 Nellore were already commissioned. Another unit of 800 MW at Dr NTTPS Stage-V is ready for commissioning.

3.11 Fuel choice based on Economy, energy security and environmental conditions by APGENCO

Adoption of super critical Technology for reduced emissions, improved efficiency and economic generation, and use of washed coal is preferred for thermal power plants to reduce ash content.

Due to limited availability of fossil fuel fuels and promotion of use of renewable energy sources to ensure energy security, APGENCO ventured into solar power generation and commissioned 5.426 MW in west Godavari district and commissioned 500MW at Talacheruvu in Ananthapuram district.

7000 MW solar capacity addition from SECI is planned in the 5th control period which is clean energy to mitigate emissions.

3.12 R&M programs, Plans to meet new environmental norms issued by MOEF

To meet new environmental norms issued by MOEF, APGenco has taken up feasibility study on the installation of FGD for the reduction of SPM, NO_x and Mercury.

3.13 The Hon'ble Commission's comments on the addition

- The Lower Sileru two 230 MW units are primarily intended for flexible operation of the power plant to meet peak demand. After due consideration of advantages, the Commission has yet to approve them. Even if approved, there will not be any additional generation from these units. Hence, the Commission is not inclined to consider them under capacity addition.
- Regarding the Polavaram Hydro Project 960 MW (12*80 MW), no restated PPA proposal from the DISCOMS has been received yet. However, the Commission considers that capacity addition of 560 MW (7*80MW) during FY 2025-26 and 400 MW (5*80MW) during FY 2026-27 as the expected date of the Commissioning of the project got delayed.
- The Upper Sileru Pumped Storage Plant is also meant to manage grid demand, using it as a flexible storage capacity. Hence, there will not be any additional generation. The DISCOMS submitted a proposal for approval, which will be granted following the regulatory process. However, the Commission is not inclined to consider it a capacity addition.

- The following CGSs proposed by the DISCOMS under capacity addition in the supply forecast has not been considered by the Commission as there is no consent to them, uncertainty in the landed cost of the price per unit and also expected to be not helpful to optimize the power purchase cost of the DISCOMS in long term in the Commission's assessment:

NPC-KKNPP-Unit-I, NLC-TPS-I Expansion, NLC-TPS-I Expansion, NTPC Telangana-STPP-Unit I, Bhavni, Talcher.

- The Commission is also not inclined to consider power from Gas stations such as GMR Vemagiri, GVK Extn., GVK Gouthami, and Konaseema as there seems to be no possibility of the APM gas's availability in the near future, even though they are shown in the installed capacities head.
- The Commission, in its Order dated 19.04.2024, has rejected the proposal of 774.9 MW of wind power from AXIS.

M/s AXIS has approached APTEL and APTEL has remanded back to APERC.

- 400 MW of Wind-Solar hybrid Power under the Bundling, Balancing & Banking (BBB) scheme is also not considered by Commission.

APSPDCL has requested the Hon'ble Commission APERC for consideration of this scheme.

Accordingly, the capacity additions approved by Hon'ble Commission are as below:

Capacity Addition – Approved					
Source	FY25	FY26	FY27	FY28	FY29
THERMAL	-	-	-	-	-
HYDEL	-	560	400	-	-
TOTAL APGENCO & Interstate	-	560	400	-	-
Joint Sector	-	-	-	-	-
CGS Station	-	-	-	-	-
IPPs-Gas based IPPs	-315	-	-205	-	-171
IPPs-Thermal	-	-	-	-	-
Non-Conventional Energy	2,995	2,962	985	-2	-15

Sources (NCE)					
Grand Total	2,680	3,522	1,180	-2	-186

Summary of Capacities	FY25	FY26	FY27	FY28	FY29
Year Wise Capacity Addition-Filings	3,570	4,538	780	1,462	-36
Year Wise Capacity Addition Approved	2,680	3,522	1,180	-2	-186
Difference	890	1,015	-400	1,464	150

Accordingly, the approved installed capacity for 5th control period:

Approved: Installed Capacity for 5th Control Period					
Approved	FY 25	FY 26	FY 27	FY 28	FY 29
APGENCO APPDCL	6,450	6,450	6,450	6,450	6,450
APGENCO Hydel	1,774	2,334	2,734	2,734	2,734
APDISCOMs Gas	216	216	216	216	216
CGS	1,501	1,501	1,501	1,501	1,501
IPPs Gas	375	171	171	0	0
IPPS Others	1,896	1,896	1,896	1,896	1,896
NCE	10,542	13,505	14,489	14,487	14,472
Total	22,754	26,072	27,456	27,284	27,269

3.14 Supply Forecast Scenarios – Analysis by Hon’ble Commission

It may be noted that all thermal power stations in the State are non-pit head station. Therefore, their actual performance depends on the supply and quality of the coal. Railway corridor congestion issues also lead to an insufficient supply of coal. Hence, their

actual performance during the past few years is less than normative availability. Therefore, the Commission proposes to analyse the Power Supply forecast in two scenarios. (i) Supply forecast at Normative Performance of the thermal stations (ii) Supply forecast at Actual Performance of the thermal stations. The supply forecast and resource adequacy were done for three DISCOMS to optimise power purchase cost as their energy requirement was dispatched together.

- (i) Supply Forecast at Normative Performance of the thermal stations:** The supply forecast is based on the normative availability of the thermal power stations located intra-state as per the regulations and/or orders issued by the Commission from time to time.
- (ii) Supply Forecast at Actual Performance of the thermal stations:** The supply forecast is based on the actual availability of the thermal power stations located intra-state, as considered in the RST Order for FY 2023-24.

The supply forecast for the remaining thermal power stations and other sources in DISCOMS's power portfolio is the same in the two scenarios.

Base Load Supply Stations (BS)/ Other than Base Load Supply Stations (OTBS)

The Commission classified the supply sources in the forecast as Base load Supply Stations and other than Base load supply Stations. The table below shows the year-wise summary break-up of approved BS and OTBS installed capacities for the 5th CP.

Installed Capacity-Approved for 5th Control Period (MW)

Base Load Supply Stations	FY 25	FY 26	FY 27	FY 28	FY 29
AP Genco Thermal	4,210	4,210	4,210	4,210	4,210
Joint Sector	2,456	2,456	2,456	2,456	2,456
CGS Station	1,501	1,501	1,501	1,501	1,501
IPPs-Thermal	1,896	1,896	1,896	1,896	1,896
Total- Base Supply	10,063	10,063	10,063	10,063	10,063
Other than Base Load Supply Stations					
IPPs-Gas based IPPs	375	171	171	0	0
HYDEL	1,774	2,334	2,734	2,734	2,734
Non-Conventional Energy Sources (NCE)	10,542	13,505	14,489	14,487	14,472

Total - Other than Base Supply	12,692	16,009	17,394	17,221	17,206
Base Load & OTB					
Base Supply	10,063	10,063	10,063	10,063	10,063
Other than Base Supply	12,692	16,214	17,394	17,392	17,206
Total	22,754	26,072	27,456	27,284	27,269

The summary of Ex-bus BS capacity at Normative and Actual performance for 5th Control Period (MW) are as below:

Approved: Ex Bus BS Capacity at Normative Performance for 5th Control Period (MW)

Base Load Supply Stations	FY 25	FY 26	FY 27	FY 28	FY 29
APGenco Thermal	3,164	3,164	3,164	3,164	3,164
Joint Sector	1,909	1,909	1,909	1,909	1,909
CGS Station	1,171	1,171	1,171	1,171	1,171
IPPs-Thermal	1,534	1,534	1,534	1,534	1,534
Total- Base Supply	7,778	7,778	7,778	7,778	7,778

Approved: Ex BUs OTBS at Actual Performance for 5th Control Period (MW)

Base Load Supply Stations	FY 25	FY 26	FY 27	FY 28	FY 29
AP Genco Thermal	2,182	2,182	2,182	2,182	2,182
Joint Sector	1,547	1,547	1,547	1,547	1,547
CGS Station	1,171	1,171	1,171	1,171	1,171
IPPs-Thermal	1,41	1,481	1,481	1,481	1,481
Total- Base Supply	6,382	6,382	6,382	6,382	6,382

The installed capacity of base supply and difference of Normative & Actual performance are as below:

Summary of the installed capacities, capacity at ex bus at normative performance:

Base Supply (MW)	FY 25	FY 26	FY 27	FY 28	FY 29
Installed Capacity (MW)	10,063	10,063	10,063	10,063	10,063
At Normative Performance (MW)	7,778	7,778	7,778	7,778	7,778

At Actual Performance (MW)	6,382	6,382	6,382	6,382	6,382
Diff Normative & Actual (MW)	1,396	1,396	1,396	1,396	1,396

Energy Availability for 5th CP (MU): Filings by APTransco

Source	2024-25	2025-26	2026-27	2027-28	2028-29
AP Genco (APPDCL & Godavari Gas)	35,249	33,836	34,833	36,577	38,105
AP Genco-Hydel	4,482	4,563	4,563	4,563	4,563
CGS	12,643	12,074	12,476	14,839	15,533
IPPs-Thermal	12,164	11,675	11,912	12,256	12,853
Wind	7,205	9,513	9,503	9,503	9,503
Solar	9,202	16,150	21,135	22,507	22,507
NCE-Others	665	665	665	665	665
Total	81,610	88,476	95,087	100,910	103,729

Approved: Energy Availability for 5th CP (MU) -Normative Performance

Source	2024-25	2025-26	2026-27	2027-28	2028-29
AP Genco (APPDCL & Godavari Gas)	44,440	44,440	44,440	44,562	44,440
APGenco- Hydel	3,875	5,099	5,972	5,985	5,972
CGS	10,254	10,254	10,254	10,282	10,254
IPPs	13,436	13,436	13,436	13,473	13,436
Wind	6,549	6,529	6,521	6,534	6,521
Solar	10,678	17,725	22,465	23,733	23,661
NCE-Others	350	350	350	351	350
Total	89,584	97,835	103,441	104,921	104,636

Approved: Energy Availability for 5th CP (MU) -Actual Performance

Source	2024-25	2025-26	2026-27	2027-28	2028-29
AP Genco (APPDCL & Godavari Gas)	36,651	36,651	36,651	36,751	36,651
APGenco-Hydel	3,875	5,099	5,972	5,972	5,972
CGS	10,254	10,254	10,254	10,282	10,254
IPPs	11,030	11,030	11,030	11,060	11,030
Wind	6,549	6,529	6,521	6,521	6,521

Solar	10,678	17,725	22,465	23,733	23,661
NCE-Others	350	350	350	351	350
Total	79,388	87,639	93,244	94,672	94,440

Having determined the energy availability as above for the 5th control period, the Commission proposes to compare it with the energy requirement for the BAU scenario to determine the adequacy of the energy in each year. The comparative tables are shown below.

Particulars	2024-25	2025-26	2026-27	2027-28	2028-29
Energy Requirement (MU)- BAU-Business As Usual	81,025	86,596	92,538	99,276	105,910
Energy Availability -Scenario-I (MU) Normative Performance	89,584	97,835	103,441	104,921	104,636
Energy Availability -Scenario II (MU) Actual performance	79,388	87,639	93,244	94,672	94,440
Difference =Availability (MU) -Energy Requirement (MU)					
Surplus/(deficit) - Scenario-I (MU) Normative Performance	8,559	11,239	10,903	5,645	-1,274
Surplus/(deficit) - Scenario-II (MU) Actual performance	-1,637	1,043	706	-4,604	-11,470

The table below shows the PPR for the DISCOMS in Business As Usual (BAU) scenario estimated by the Commission during the 5th CP to examine RPO compliance.

FY	PPR in MUs
2024-25	81,025
2025-26	86,595
2026-27	92,538
2027-28	98,963
2028-29	105,910

The Ministry of Power vide Letter No. F.No. 09/13/2021-RCM dated 22.07.2022 issued the Renewable Power Purchase Obligation (RPPO) and the Energy Storage Obligation (ESO) Trajectory up to FY2029-30 under the National Tariff Policy 2016. The APERC has specified the RPPO trajectory up to FY 2026-27 under section 86 (1) (e) of the Electricity Act, 2003. The RPPO trajectory specified by the MoP Vis a Vis the RPO trajectory specified by the APERC is shown in the table below.

Year	<u>MoP Notification dt: 22-07-2022</u>				APERC Regulation No. 5 of 2022
	Wind RPO	Hydro RPO	Other RPO	Total RPO	
2022-23	0.81%	0.35%	23.44%	24.61%	18%
2023-24	1.60%	0.66%	24.81%	27.08%	19%
2024-25	2.46%	1.08%	26.37%	29.91%	20%
2025-26	3.36%	1.48%	28.17%	33.01%	22%
2026-27	4.29%	1.80%	29.86%	35.95%	24%
2027-28	5.23%	2.15%	31.43%	38.81%	-
2028-29	6.16%	2.51%	32.69%	41.36%	-
2029-30	6.94%	2.82%	33.57%	43.33%	-

In exercise of the powers under clauses (n) and (x) of Section 14 of the Energy Conservation Act, 2001, the Central Government by MoP notification dated 20.10.2023 has specified the minimum share of the consumption from non-fossil sources as a percentage of their total energy consumption for designated consumers up to FY2029-30. The APDiscoms being designated consumers under the Energy Conservation Act, have to comply with the same. The non-fossil trajectory specified by the MoP Vis a Vis the RPO trajectory specified by the APERC is shown in the table below:

Year	<u>MNRE Notification dt: 20-10-2023</u>					APERC Regulation No. 5 of 2022
	Wind RE	Hydro RE	Distributed RE	Other RE	Total RE	
2024-25	0.67%	0.38%	1.50%	27.35%	29.91%	20%
2025-26	1.45%	1.22%	2.10%	28.24%	33.01%	22%
2026-27	1.97%	1.34%	2.70%	29.94%	35.95%	24%
2027-28	2.45%	1.42%	3.30%	31.64%	38.81%	-
2028-29	2.95%	1.42%	3.90%	33.10%	41.36%	-
2029-30	3.48%	1.33%	4.50%	34.02%	43.33%	-

Despite the MoP trajectory on RPO under the NTP 2016, the RPO trajectory specified by the APERC under Section 86 (1) (e) of the Electricity Act, 2003 is binding on the Respondent DISCOMS. The Central Government notification under the Energy Conservation Act 2001 is also binding on the Respondent DISCOMS. The RPO trajectory specified by the APERC and the Renewable Energy Consumption (RCO)

specified by the central government will coexist and the Respondent DISCOMS have to comply with the higher of these two trajectories to comply with the law.

The total Renewable Energy (RE) projected to be available with the DISCOMS as per the Commission's estimations and the RE requirement as per the MoP Notifications under the Energy Conservation Act 2001, NTP and APERC Regulation are shown in the table below:

(MU)				
FY	Total RE Available	RE Requirement as per MoP Notification Dated 20.10.2023	RE Requirement as per MoP Notification Dated 22.07.2022	RE Requirement as per APERC Regulation
2024-25	21,452	24,229	24,229	16,719
2025-26	29,703	28,585	28,585	19,591
2026-27	35,308	33,267	33,267	23,461
2027-28	36,577	38,408	38,408	
2028-29	36,504	43,804	43,804	

As can be seen from the table above, the projected RE available with Respondent DISCOMS falls short of meeting the RCO compliance from FY 2027-28 as per the Energy Conservation Act. Hence, DISCOMS's proposed power procurement to meet the future energy requirement shall keep the above in view and shall endeavour to procure RE at the least cost.

The power requirement assessed in this chapter is subject to annual review by the Commission.

3.16 Conclusion

The commission has analyzed Resource Adequacy for multiple scenarios, however inclined to approve the BAU scenario for 80% base load and normative performance as below to minimize backing down costs:

Year/Parameter	24-25	25-26	26-27	27-28	28-29
Base load MW(80% of time)	8497	9003	9555	10151	10786
Scenario-I (Normative Performance)					
Base generation MW	7,778	7,778	7,778	7,778	7,778
Base surplus(+) /deficit(-) MW	-719	-1,226	-1,778	-2,373	-3,009

AP Transco/AP Discoms are in consonance with the Commissions analysis and proposed to adopt the 80 percent base load and normative performance of the supply stations as above. The deficit of Base Generation for FY24-25 can be met from the proposed 625 MW agreement with M/s SEIL, which is expected to be available from Jan-2025. It is also proposed to pursue with APGENCO to improve the performance

of Thermal Plants located intrastate such that they may be able to reach normative level thereby improving the availability. (There is a gap of 1396 MW between normative and actual performance). With these measures AP Discoms are expected to be able to serve the Load/Demand for FY 2024-25 and FY 2025-26 without constraints.

The expected/anticipated loads/demands in the 5th Control period from various Lift Irrigation schemes, industrial and commercial loads is around 17.7GW. Further , APGenco is planning various Pumped Storage Plants across the state to an extent of 5200MW. APDiscoms are also planning for 1500MW BESS under central Govt's scheme for Vaibility Gap funding and 500MW BESS in another scheme. The input energy for these PSPs and BESSs are also in the scope of APDiscoms. Further, GOAP is focusing on attracting of investments in the Solar Panel manufacturing, Wind turbine manufacturing, Battery manufacturing, Electrolyser manufacturing, derivatives of Green hydrogen.

The expected Discom procurement shown in the policy i.e 36.7GWP solar, 15GW Wind 3GW PSP and 16GWh Battery Storage System is based on the developments as above. However, the proposed manufacturing units/projects are in initial stage and firm details such as their installed capacity, required demand, commercial operation dates etc. are yet to be known to take into consideration in studies.

Besides GOAP ICE Policy, various Central Govt. policies such as Surya Ghar, SRTs, Feeder Level Solarization etc. are also to be taken into consideration for assessment of future Energy requirement.

The approved Resource Plan will be adopted and followed in general. APDiscoms will approach Hon'ble Commission for approval of any additional power procurement.

Based on the developments in the state due to State Govt. or Central Govt., policies, the review of the Resource Plan/State Electricity Plan will be taken up in FY2026-27 with due permission from the Hon'ble Commission.

4. TRANSMISSION PLAN

Transmission Planning is a continuous process of identification of additional Transmission system requirement and their timing. The Transmission requirement could arise generally from:

- i) Addition of Generation in the system
- ii) Increase in demand
- iii) System strengthening requirements to meet the Planning criteria or change in the field conditions

The requirement of additional Transmission is identified, studied and firmed through the Transmission planning process.

The Transmission system consists of Inter State Transmission system (ISTS) and Intra state Transmission system (Intra STS). ISTS is mainly owned by and operated by PGCIL whereas Intra-State Transmission system are mainly owned by the state.

The Intra-STs serves the following purposes.

- i) Evacuation of power from the state and private sector generating stations located in the state or having beneficiaries in the state.
- ii) Onward Transmission within the state from ISTS boundary up to the various substations of the state grid network.
- iii) Transmission within the state grid for delivery of power to the load centres within the state.

There has been a consistent increase in Transmission network and transformation capacity in the state. This increase is in consonance with increase in generation and demand of electricity in the state. The growth in demand highlights requirement of Transmission network to carry bulk power over longer distances and then at the same time optimize ROW, minimize losses and to improve grid stability.

The objective of the Transmission Planning is to develop Transmission Expansion Plan based on the load forecast and generation supply scenario based on the inputs of DISCOMs and GENCO, developed as part of the Load forecast and Resource plan for the state of Andhra Pradesh. The purpose of this report was to present a comprehensive summary of the process, assumptions, methodology, Transmission network expansion plan required to ensure the Transmission system which would be capable transmitting the planned generation to meet the forecasted loads up to FY 2028-29. The proposed Transmission system was evaluated for the load and generation conditions for FY 2028-29.

The system studies were carried out for the Peak Load Scenario and analysed the Transmission system required from FY 2024-25 to FY 2028-29.

This report envisages Transmission Resource plan from FY2024-25 to FY2028-29 based on various assumptions & standards adopted for conducting load flows. Load flow studies were conducted with contingency analysis under maximum thermal generation scenario, various generation evacuation schemes, with the peak demand

occurs and the Transmission expansion plan including 400KV, 220 KV and 132kV lines and Substations are also depicted.

4.1 Criteria for Load Flow Studies

The assumptions and standards adopted while conducting Load Flow studies are shown below.

4.1.1 Standard Transformer Sizes

Voltage	Transformer Capacity (MVA)	ONAN Rating (MVA)	OFAF/ONAF Rating (MVA)
765/400 kV	1500	900	1500
400 / 220 kV	500	300	500
400 / 220 kV	315	190	315
220 / 132 kV	160	96	160
220 / 132 kV	100	60	100

4.1.2 Standard Conductor Types

S. No	Line Voltage	Conductor Type	Configuration
1	765 kV	Quad Bersimis	ACSR Bersimis, 4/PH, 42/4.57 mm Al + 7/2.54 mm Steel
2	400 kV	Twin Moose	ACSR Moose, 2/PH, 61/3.53mm
3	400 kV	Quad Moose	ACSR Moose, 4/PH, 61/3.53mm
4	220 kV	Single Moose	ACSR Moose, 1/PH, 61/3.53mm
5	220 kV	Twin Moose	ACSR Moose, 2/PH, 61/3.53mm
6	220 kV	Single Zebra	ACSR Moose, 1/PH, 54/7/3.18mm
7	220 kV	Twin Zebra	ACSR Moose, 2/PH, 54/7/3.18mm
8	132 kV	Panther	ACSR Panther, 37/3.00mm
9	132 kV	Lynx	ACSR Lynx, 30/7/2.79mm
10	132 kV	AAAC	AAAC, 30/7/3.15mm
11	132 kV	AL59	AL59, 30/7/3.08mm

4.1.3 Operating Limits under normal conditions

S.No	Item	Operating Limit during normal conditions
1	765/400 KV 1500 MVA Transformer*	900MVA

S.No	Item	Operating Limit during normal conditions
2	400/220 kV 500 MVA Transformer	300 MVA
3	400/220 kV 315 MVA Transformer	190 MVA
4	220/132 kV 160 MVA Transformer	96 MVA
5	220/132 kV 100 MVA Transformer	60 MVA
6	765 KV Quad Bersimis Line*	2250MVA
7	400 kV Quad Moose Line	645 MVA
8	400 kV Twin Moose Line	555 MVA
9	220 kV Single Moose Line	210 MVA
10	220 kV Zebra Line	187 MVA
11	132 kV Panther Line	67 MVA

4.1.4 Thermal Limits of Transmission Lines at Rated Voltage

Thermal limit of the Transmission line shall be its thermal loading limit. The thermal loading limit of a line is determined by design parameters based on ambient temperature, maximum permissible conductor temperature, wind speed, solar radiation, absorption coefficient, emissivity coefficient etc. The maximum permissible thermal line loadings for different types of conductors are as follows:

Conductor	Ambient/Cond. Temp in Amps				
	40°C /75 °	45°C /75 °	45°C /85 °	45°C/95 °	45°C/120°
ACSR Moose	707A	614A	787A	-	-
AL59 equivalent to ACSR Moose	754A	655A	840A	985A	-
ACSS equivalent to ACSR Moose	-	-	-	957A	1209A
ACSR Zebra	626A	546A	694A	-	-
AL59 equivalent to ACSR Zebra	649A	567A	719A	840A	-
ACSS equivalent to ACSR Zebra	-	-	-	722A	905A
ACSR Panther	413 A	366 A	NA	-	-
ACSS equivalent to ACSR Panther	-	-	-	-	590A
ACSR Lynx	368A	329A	-	-	-
ACSS equivalent to ACSR Lynx	-	-	-	-	500A

Capacity of Substation

As per CEA revised planning criteria 2023, the capacity of any single substation at different voltage levels shall not normally exceed:

Voltage Level (A)	Transformation Capacity	
	Load Serving Substation (B)	Generation Pooling substations (C)
765 kV	9000 MVA	9000 MVA
400 kV	2500 MVA	5000 MVA
220 kV	1000 MVA	1000 MVA
132 kV	500 MVA	500 MVA

APTransco has adopted a maximum number of 4 transformers so far, in Uravakonda, Hindupur, Vemagiri and Manubolu 400/220KV Substations.

The Transformer augmentation in 400kV & 220 kV substations will be carried out in the studies considering minimum of 2 numbers equal capacity PTRs to meet the N-1 contingency. The additional PTR will be provided whenever the substation load reaches 50% of the PTRs capacity.

Voltage Limits

As per CEA guidelines, at the planning stage, a margin of about $\pm 2\%$ may be kept in the voltage limits and thus the voltages under load flow studies (for 'N-0' and 'N-1' steady-state conditions only) may be maintained within the limits given below:

Voltage (kV)		
Nominal	Maximum	Minimum
765	800	728
400	420	380
220	245	198
132	145	122

Power Factor of the Loads: Power factor of the loads at 220kV and 132kV voltage levels are assumed to be 0.95 lag during peak load condition and 0.98 lag during light load condition as per Transmission Planning criteria specified by CEA.

4.1.5 Contingency criteria

The system is planned to supply loads during normal conditions and the following contingency conditions without the need for rescheduling of generation and to maintain voltage and line loading criteria.

a) All the equipment in the transmission system shall remain within their normal thermal and voltage ratings after a disturbance involving loss of any one of the following elements (called single contingency or 'N-1' condition), but without load shedding / rescheduling of generation:

- Outage of a 132kV or 110kV single circuit,
- Outage of a 220kV or 230kV single circuit,
- Outage of a 400kV single circuit,
- Outage of a 400kV single circuit (with or without fixed series capacitor - FSC),
- Outage of an Inter-Connecting Transformer (ICT),
- Outage of a 765kV single circuit
- Outage of one pole of HVDC bi-pole.

b) The angular separation between adjacent buses under ('N-1') conditions shall not exceed 30 degree. (Prior to such contingency, all elements shall be considered to be in service)

Criteria for single contingency (N-1):

The Transmission planning was based on a deterministic approach using the single contingency (or N-1) criterion. This is the most common approach used world-wide, and it requires the system to be able to operate satisfactorily with one element out of service (Generator, Transmission Line or Transformer), and to survive the transition from the normal state to the contingency state without any operator intervention.

An exception to the above criteria, the network shall be planned to survive a 400kV DC line outage evacuating a power plant located in the coastal area to minimize the damage caused by cyclones.

4.2 Capacity Addition in Transmission Plan during 5th Control Period (FY 2024-25 to FY 2028-29)

Transmission expansion plan for FY 2024-25 to FY 2028-29 is prepared as per the load requirement. This includes 1238.96 CkM of 400KV lines, 1702.91 CkM of 220 kV lines, 1742.45 CkM of 132 kV lines, 7 Nos. of 400 kV substations, 23 Nos. of 220 kV substations and 42 Nos. of 132 kV substations towards transmission expansion.

4.2.1 District wise Load Forecast

Discoms have projected their circle wise Demand forecast as shown below in the Discoms Resource plan submitted to Hon'ble APERC. The individual peak demands (Non coincident) may be higher.

Circle wise Demand (MW)	2025	2026	2027	2028	2029
SRIKAKULAM	368	386	404	423	443
VIZIANAGARAM	584	627	672	721	773
VISAKHAPATNAM	1690	1804	1926	2056	2196
EAST GODAVARI	1136	1206	1279	1357	1439
WEST GODAVARI	1525	1611	1702	1798	1899
APEPDCL	5303	5632	5982	6354	6750
KRISHNA	1057	1088	1121	1155	1189
GUNTUR	833	858	884	910	937
PRAKASAM	849	874	900	927	955
APCPDCL	2738	2820	2905	2992	3082
NELLORE	923	971	1021	1074	1154
CHITTOOR	1965	2079	2201	2331	2480
KADAPA	1228	1301	1378	1461	1566
ANANTHAPUR	1687	1878	1968	2059	2180
KURNOOL	1290	1352	1419	1491	1580
APSPDCL	7093	7581	7988	8417	8960
AP Demand MW	15135	16034	16875	17764	18792

4.2.2 Year wise Capacity Addition in (FY 2024-25 to FY 2028-29)

The year wise No. of substations and length of the lines in Ckm in 400kV, 220kV and 132KV system proposed during 5th control period are shown below:

FY	Substation (Nos.)				Lines (CkM)			
	400kV	220kV	132kV	Total	400kV	220kV	132kV	Total
2024-25	1	3	6	10	320.962	337.9	302.09	960.952
2025-26	3	6	10	19	182	372.392	620.15	1174.542
2026-27	1	5	6	12	392	290.614	212.18	894.794
2027-28	0	3	6	9	320	86	100.30	506.3
2028-29	2	6	14	22	24	616	507.73	1147.73
Total	7	23	42	72	1238.96	1702.906	1742.45	4684.318

Complete details of above Transmission Expansion Plan is Annexed.

4.3 Transmission investments for 5th control period

APTransco has proposed the following Year wise investments during 5th Control Period in its Resource Plan submitted to Hon'ble Commission:

FY	400 kV	220 kV &132 kV	Augmentation of PTRs	RMI	Total (Rs.Crs)
2024-25	1699.56	1093.02	1002.71	160	3955.29
2025-26	1276	1062.9	555.51	170	3064.41
2026-27	1021.37	897.52	559.12	180	2658.01
2027-28	1320	1038.4	517.28	190	3065.68
2028-29	1320	1024.59	441.43	200	2986.02
Total	6636.93	5116.43	3076.05	900	15729.41

Hon'ble Commission APERC has approved the following investments for 5th Control Period in the approved Resource Plan.

FY	Evacuation & System Improvement	Augmentation and R&M works	Total (Rs.Crs)
2024-25	2089.19	576.53	2665.72
2025-26	1740.99	357.85	2098.84
2026-27	1392.79	377.73	177052
2027-28	1740.99	357.85	2098.84
2028-29	1740.99	318.08	2059.08
Total	8704.96	1988.03	10692.99

4.4 Green Energy Corridor (GEC) I & II Schemes and its integration through InSTS network

Intra-State Transmission Green Energy Corridor Projects in AP were proposed to evacuate RE power in Rayalaseema area of A.P. In these projects 400KV Substations at Hindupur, Uravakonda, Talaricheruvu, Jammalamadugu & Ghani along with connected 220KV network were implemented/under implementation.

Connecting further RE power to the existing 400kV substations in the Rayalaseema area will be injecting power into ISTS network instead of going into downstream network which may arise GNA issues. This is mainly due to the limited load in the RE

rich area and no intra-State 400KV link between RE Rich Rayalaseema Region (Ananthapur, Kadapa, Kurnool districts) and load centred Coastal districts. Further, the input power requirement for coming up APGENCO proposals of Pumped Hydro Storage Power plants in Rayalaseema districts will to some extent useful to overcome this situation.

4.5 Energy Storage Systems

Challenges with the integration of solar and wind power with the grid:

Major challenge is accommodating the variations in Variable Renewable Energy (VRE) generation in the order of up to 2000MW. In real time system operation, WIND generators can revise their schedule 16 times in a day and solar generators 9 times in a day. Deviation up to 15% is allowed without any commercial implication through DSM mechanism enforced through regulations. Even beyond 15% deviation, UI charges are meagre. Further must-run status / FOR guidelines are to be followed in despatching VRE generation.

Suitable remedies for this are accurate forecasting, Pumped Storage Plants (PSP) and Battery Energy Storage Systems (BESS) installations. However, PSP and BESS are not available in AP control area and some of these being under construction and some more are in planning stage. Accurate forecast tools also are not available globally.

APSLDC is dealing with variations to some extent by backing down and recalling Thermal generation and with the help of power exchange tools like Term ahead (TAH), Day ahead(DAH) and Real time Market (RTM) by purchasing and selling up to 4000MW through CTU for export and import. However, certain times Over Drawl / Under Drawl is deviating beyond Central Electricity Regulatory Commission Deviation Settlement Mechanism (CERC DSM) Deviation limits to accommodate variations. Once the ongoing and planned PSPs and BESS come into operation the situation will improve a lot.

A demand forecasting tool was developed by in house engineers for better forecasting of demand. For RE generation forecasting SLDC has to rely on REMC / QCAs.

A forecasting tool package is under customization with KPMG consultants to improve the forecasting of demand and RE generation.

4.5.1 Pumped storage Hydro Projects

Energy storage technologies like PSP (Pumped storage Hydro Projects) help in grid balancing due to diurnal variation in power generation by Renewables. Storage technologies charge during the daytime (coincident with solar generation) and discharge during the early morning and evening peak periods (4-8 hours total each day). They also help to meet steep system ramps.

In accordance with Andhra Pradesh Pumped Storage Power Promotion Policy-2022 for promotion of Pumped Storage Hydro Projects in the State APGENCO has proposed to establish the 5 Nos. new pumped storage projects in the State of Andhra Pradesh in addition to Upper Sileru 1350 MW PSP to meet the grid stability requirement as well as INDC (Intended Nationally Determined contribution) commitments of reducing carbon emissions.

- i. Yaganti PSP (1,000 MW), Nandyal Dist.,
- ii. Kamalapadu PSP (950 MW), Anantapur Dist. ,
- iii. Deenepalli PSP (750 MW), YSR Dist .
- iv. Gandikota PSP (800 MW), Annamayya Dist.
- v. Aravetipalli PSP (1,200 MW), YSR Dist .

These projects may materialize from FY2028-29 to FY2033-34 in phased manner to facilitate large scale integration of wind and solar projects in AP grid.

4.5.2 Battery Energy Storage Systems (BESS)

Battery Energy Storage Systems (BESS) is another Energy Storage Technology.

BESS help to store excess energy when generation is high and release it when demand is high/VRE Generation is low. BESS can help reduce strain on the grid and minimize spikes in electricity costs. They can also help prevent outages during extreme weather events. BESS can provide backup power in case of grid outages or emergencies. This is especially important for critical facilities like hospitals, data centers, and telecommunications infrastructure. BESS can store excess energy from the grid and supply it for EV charging stations during peak demand. They can also provide fast-charging capabilities. BESS can help communities during natural disasters by providing localized backup power. Charging storage facilities with energy generated from renewable sources can reduce greenhouse gas emissions.

A Proposal for Implementation of a Battery Energy Storage System (BESS) is under consideration of APTransco as it is helpful to accommodate variations in VRE generation, to enhance Grid Security and economic operations. A capacity of 2000MW (4000MW H) with discharge duration of two hours and two cycles a day is under consideration. Potential Location of the BESS are 400KV GHANI , 400KV HINDUPUR, 400KV Jammalamadugu, 400KV Kalikiri etc. It will be useful to meet peak hour shortfall and for storage of off-peak surplus energy also. It also necessary to comply with Hon'ble CERC issued Ancillary services regulations 2023 for integration of quick responding reserves to the Grid. BESS will be useful in Load generation balancing as it is a type of reserve for loading and generating as well.

4.6 Optimization of works

Capital works to an extent of Rs.8,704.96 Cr were approved by Hon'ble APERC for the 5th Control Period (2024-29) so far.

Out of the above, APTRANSCO has already taken up construction of 26Nos. works amounting to Rs.4289.96Cr and 13Nos. works are under Tendering stage with an Administrative value of Rs.1062.38Cr.

In spite of approval of Resource Plan for 5years, APTRANSCO generally review the requirements every year based on load flow studies and field conditions to proceed further with the approved works focusing on critical infrastructure such as Power evacuation, strengthening of fast growing areas etc.

If at all the actual Investment increases more than the approved Investment, APTRANSCO will approach Hon'ble APERC for approval of excess necessary Investment. APTransco is also obtaining project wise approvals from Hon'ble Commission.

4.7 Source of funds

The Status of Sources of Funds for implementing Capital Investment in Transmission for the 5th Control Period are as follows:

To implement the capital projects, APTRANSCO generally approach the Financial Institutions such as M/s. REC Ltd & M/s. PFC Ltd and also schedule banks. Both REC & PFC are sanctioning 90% of the project cost as a loan for implementing projects & 10% of the cost is being met from the internal funds of APTRANSCO.

At present, an amount of Rs.2631.69Cr is sanctioned by REC Ltd for implementing various Capital works during 5th control period. APTRANSCO has completed execution of documentation for the loan with M/s. REC Ltd on 31.07.2023 and till date an amount of Rs.255.71Cr was drawn from M/s. REC Ltd.

Further, proposals for an amount of Rs. 2984.31Cr are sent to M/s. REC Ltd and M/s. PFC Ltd for execution of the various Capex program for the 5th Control period. An amount of Rs. 1970.88Cr is sanctioned by REC and documentation is yet to be done for disbursement of loan.

4.8 Conclusion

APTransco proposes to review the requirements based on load flow studies and field conditions regularly focusing on critical infrastructure such as Power evacuation, strengthening of fast growing areas etc. to optimise the investment, limiting to the approved amounts of Hon'ble Commission.

5 DISTRIBUTION PLAN

5.1 Capital Expenditure Summary for 5th Control Period

In line with the network requirements based on Load forecast, compliance to the Standards of Performance (SOP) Regulation issued by the Hon'ble Commission, objective of continuously improving reliability and quality of services to the consumers, compliance to Ease of Doing Business (EODB) norms specified by the State Govt., adhering to future requirements for system strengthening etc., the DISCOM has projected annual capital expenditure for the 5th Control period. For EPDCL, historical expenditure, planning Methodology is explained. The same methodology is adopted for CPDCL & SPDCL however the future planning is described for APEPDCL, CPDCL and SPDCL.

5.2 Historical Capital Expenditure of APEPDCL

5.2.1 Historical Capital Expenditure – DISCOM Spend

Below table shows the historical capital expenditure which has been undertaken by the Licensee in last 5 years i.e. FY 2018-19 to FY 2022-23, which has been met by the Licensee through its own funds.

Historical CAPEX for New Infrastructure (Rs. Cr.)

S.No.	Item	2018-19	2019-20	2020-21	2021-22	2022-23
1	Substations (New & Augmentation)	15.49	15.78	6.39	18.20	42.09
2	Metering & Associated equipment	44.47	41.53	45.16	10.20	3.62
3	Distribution Transformer Additions	20.23	30.12	25.20	33.05	44.94
4	Lines, Cables & Network	402.95	379.25	344.26	443.59	640.38
5	Loss reduction measures	83.27	77.34	122.50	76.03	157.84
6	Technology Up gradation and R&M	0.80	0.93	0.98	0.93	0.96
7	Civil works & Others	18.65	16.14	11.98	13.29	17.03
Total		585.86	561.09	556.46	595.29	906.86

5.2.2 Capital Expenditure for on-going schemes

In addition to the capital investment shown above, the EPDCL has also undertaken investments under various ongoing schemes such as IPDS, DDUGJY, Tribal Component, SC Component, DDG, HVDS under NEF, Agriculture 9Hours 3Phase continuous power supply, Power for All (World Bank), UG cable under APDRP (World Bank), Jagananna Housing Colonies, Agricultural DBT metering and RDSS as shown below:

Historical CPAEX for New Infrastructure (Rs. Cr.) for APEPDCL

S.No	Item	FY19	FY20	FY21	FY22	FY23
1	Substations (New & Augmentation)	75.96	53.18	48.32	23.72	22.84
2	Metering & Associated equipment	0.00	0.00	0.00	0.00	10.56
3	Distribution Transformer Additions	29.13	20.97	0.00	15.37	155.66
4	Lines, Cables & Network	168.25	211.55	192.48	228.15	277.50
5	Loss reduction measures	80.13	0.00	0.00	0.00	0.00
6	Technology Upgradation and R&M	15.12	2.31	0.04	3.24	0.04
7	Civil works & Others	0.00	0.14	0.00	0.00	6.17
Total		368.58	288.15	240.84	270.48	472.76

5.3 Total Historical Capital Investment (APEPDCL)

Keeping view of the above historical capital investments, the growth in total investments made by the Licensee in last 5 years is shown below:

Total Historical Capital Investment (Rs. Cr.)

S. No.	Item	FY19	FY20	FY21	FY22	FY23	CAGR
1	Discom spend	585.86	561.09	556.46	595.29	906.86	11.54%
2	Funded under Schemes	368.58	288.15	240.84	270.48	472.76	6.42%
	Total	954.44	849.24	797.30	865.77	1379.62	9.65%

Methodology for CAPEX calculation



Below are the calculated circle wise DTR capacities for forecasted years.

Projected Circle-wise total DTR capacities (MVA)

Projection for DTR Capacity	FY 23 (Act.)	FY24	FY25	FY26	FY27	FY28	FY29
Srikakulam	846	892	966	1,042	1,123	1,203	1,288
Vizianagaram	994	1,075	1,156	1,240	1,323	1,406	1,494
Visakhapatnam	2,991	3,248	3,444	3,649	3,869	4,090	4,325
Rajamahendravaram	3,140	3,311	3,555	3,818	4,074	4,338	4,620
Eluru	4,269	4,683	5,009	5,371	5,739	6,126	6,542

5.4 System Capacity Estimation APEPDCL

Based on the Circle wise PTR and DTR capacities projected above, the incremental capacities required for each year have been determined. The system capacities (MVA) thus arrived have been used to estimate number of PTRs and DTRs assuming that each 33/11 kV substation will have one PTR with a capacity of 5 MVA and each DTR will be of 100 kVA capacity.

Below table shows the number of PTRs and DTRs for each circle:

No. of DTRs, No. of PTRs required in 5th Control Periods

Description	FY24	FY25	FY26	FY27	FY28	FY29
Srikakulam						
No of 5 MVA 33/11 kV SS (Indoor)	9	10	11	12	12	13
No of 5 MVA 33/11 kV SS (Outdoor)		1	1	1	1	1
Additional /Augmentation of PTRs	3	3	4	4	5	5
No of 100 kVA DTRs	450	740	760	810	800	850
Vizianagaram						
No of 5 MVA 33/11 kV SS (Indoor)	13	10	10	10	11	11
No of 5 MVA 33/11 kV SS (Outdoor)		1	1	1	1	1
Additional /Augmentation of PTRs	4	4	5	5	4	4
No of 100 kVA DTRs	810	810	840	820	830	880
Visakhapatnam						
No of 5 MVA 33/11 kV SS (Indoor)	34	21	22	25	25	27
No of 5 MVA 33/11 kV SS (Outdoor)	1	3	3	3	3	3
Additional /Augmentation of PTRs	5	5	4	4	5	3
No of 100 kVA DTRs	2,570	1,970	2,050	2,200	2,220	2,350
Rajahmendravaram						
No of 5 MVA 33/11 kV SS (Indoor)	26	28	30	30	30	33
No of 5 MVA 33/11 kV SS (Outdoor)		3	3	3	3	3
Additional /Augmentation of PTRs	9	8	10	8	9	9
No of 100 kVA DTRs	1,710	2,440	2,630	2,560	2,640	2,820
Eluru						
No of 5 MVA 33/11 kV SS (Indoor)	62	45	51	52	55	59
No of 5 MVA 33/11 kV SS (Outdoor)		2	2	2	2	2
Additional /Augmentation of PTRs	12	14	15	17	13	12
No of 100 kVA DTRs	4,140	3,260	3,620	3,680	3,870	4,160

RDSS: Further, the Revamped Distribution Sector Scheme (RDSS) has been launched by Ministry of Power (MoP), Govt of India (GoI) with an aim to fulfil GoI's commitment to help the DISCOMs to improve their operational efficiencies and financial sustainability by providing result-linked financial assistance to DISCOMs to strengthen supply infrastructure based on meeting pre-qualifying criteria and achieving basic minimum benchmarks.

The main objectives of the Scheme are as below:

- Improve the quality, reliability, and affordability of power supply to consumers through a financially sustainable and operationally efficient Distribution Sector.
- Reduce the AT&C losses to pan-India levels of 12-15% by 2024-25.
- Reduce the ACS-ARR gap to zero by 2024-25.

For the awarded works the awarded value is taken in to consideration. For the tender under process the total cost estimate rate / discovered rate is taken in to consideration.

5.5 System Capacity Estimation APCPDCL

Based on the circle wise PTR and DTR capacities projected, the incremental capacities required for each year have been determined. The system capacities (MVA) thus arrived have been used to estimate number of PTRs and DTRs assuming that each 33/11 kV substation will have one PTR with a capacity of 5 MVA and each DTR will be of 100 kVA capacity.

Below table shows the number of PTRs and DTRs for each circle:

No. of DTRs, No. of PTRs required in 5th Control Period

Year	FY25	FY26	FY27	FY28	FY29
Vijayawada					
No of 5 MVA 33/11 kV Substations	23	15	16	17	18
Augmentation of PTRs	23	15	16	17	18
No of 100 KVA DTRs	2,970	2,170	2,280	2,410	2,540
Guntur					
No of 5 MVA 33/11 kV Substations	18	14	15	15	17
Augmentation of PTRs	18	14	15	15	17

No of 100 KVA DTRs	1,890	1,460	1,530	1,620	1,770
Ongole					
No of 5 MVA 33/11 kV Substations	16	13	15	15	16
Augmentation of PTRs	16	13	15	15	16
No of 100 KVA DTRs	2,340	1,860	2,230	2,100	2,220

5.5.1 Line Lengths Estimation (APCPDCL)

For forecasting future additions for line lengths, the Licensee has analyzed existing infrastructure, as shown below:

Existing data for Line lengths norms

Average Lengths as on 31st March 2023	LT	11kV	33 kV
	Km per 100 kVA DTR	Km per 100 kVA DTR	Km per 5 MVA PTR
Vijayawada	0.34	0.25	4.86
Guntur	0.30	0.28	5.05
Ongole	0.23	0.36	8.35

The line length required at different voltage levels i.e. 33 kV, 11 kV and LT line have been estimated based on the assumption of maintaining HT : LT ratio of 1 during the control periods for 11 kV and LT lines whereas current standards have been assumed to be continuing in future for 33 kV lines. The assumed standards for line lengths at different voltage levels have been shown below:

Forecasted line lengths norms

Average Lengths as on 31st March 2023	LT	11kV	33kV
	Km per 100 kVA DTR	Km per 100 kVA DTR	Km per 5 MVA PTR
Vijayawada	0.29	0.29	4.86
Guntur	0.29	0.29	5.05
Ongole	0.19	0.29	8.35

Based on the above norms licensee has estimated line lengths required (in KMs) at different voltage levels for each circle in 5th control period as shown below:

Forecasted Line lengths (KMs) for 5th Control Period (APCPDCL)

Year	FY24	FY25	FY26	FY27	FY28	FY29
Vijayawada						
33 kV	224	146	156	160	170	185
11kV	866	632	664	702	740	787
LT	866	632	664	702	740	787
Guntur						
33 kV	177	136	146	151	167	172
11kV	543	420	440	466	509	523
LT	543	420	440	466	509	523
Ongole						
33 kV	267	209	250	242	267	275
11kV	690	548	658	619	655	699
LT	445	353	424	399	422	450

Further, the Revamped Distribution Sector Scheme and Results Linked Distribution Sector has been launched by Ministry of Power (MoP), Govt. of India (GoI) with an aim to fulfil GoI's commitment to provide 24X7 uninterrupted, quality, reliable, affordable power and for supporting Discoms to undertake reforms and improve their performance in a time bound manner.

5.6 System Capacity Estimation (APSPDCL)

Based on the circle wise PTR and DTR capacities projected, the incremental capacities required for each year have been determined. The system capacities (MVA) thus arrived have been used to estimate number of PTRs and DTRs assuming that each 33/11 kV substation will have one PTR with a capacity of 5 MVA and each DTR will be of 100 kVA capacity.

Below table shows the number PTRs and DTRs for each circle:

No. of DTRs, No. of PTRs required in 5th Control Period

Particulars	FY24	FY25	FY26	FY27	FY28	FY29
Nellore						

No of 5 MVA 33/11 kV SS	16	14	15	16	17	18
Augmentation of PTRs	16	14	15	16	17	18
No of 100 KVA DTRs	2,000	1,770	1,870	1,970	2,090	2,230
Tirupati						
No of 5 MVA 33/11 kV SS	30	22	23	25	26	28
Augmentation of PTRs	30	22	23	25	26	28
No of 100 KVA DTRs	3,340	2,410	2,550	2,700	2,860	3,050
Kadapa						
No of 5 MVA 33/11 kV SS	16	24	20	21	22	24
Augmentation of PTRs	16	24	20	21	22	24
No of 100 KVA DTRs	1,900	2,160	2,370	2,530	2,700	2,900
Anantapur						
No of 5 MVA 33/11 kV SS	26	20	17	19	18	20
Augmentation of PTRs	26	20	17	19	18	20
No of 100 KVA DTRs	4,200	2,300	2,670	2,750	2,970	3,140
Kurnool						
No of 5 MVA 33/11 kV SS	17	18	14	14	15	16
Augmentation of PTRs	17	18	14	14	15	16
No of 100 KVA DTRs	2,280	1,680	1,870	1,990	2,120	2,260

5.6.1 Line Lengths Estimation (APSPDCL)

For forecasting future additions for line lengths, the Licensee has analyzed existing infrastructure, as shown below:

Existing data for Line lengths norms

Average Lengths as on 31st March 2023	LT	11kV	33 kV
	Km per 100 KVA DTR	Km per 100 KVA DTR	Km per 5 MVA PTR
Nellore	0.22	0.22	5.14
Tirupati	0.21	0.21	5.01
Kadapa	0.19	0.18	4.06
Anantapur	0.21	0.21	6.09
Kurnool	0.27	0.27	6.30

The line length required at different voltage levels i.e. 33 kV, 11 kV and LT line have been estimated based on the assumption of maintaining HT : LT ratio of 1 during the control periods for 11 kV and LT lines whereas current standards have been assumed to be continuing in future for 33 kV lines. The assumed standards for line lengths at different voltage levels have been shown below:

Forecasted line lengths norms

Average Lengths as on 31st March	LT	11kV	33 kV
	Km per 100 KVA	Km per 100 KVA DTR	Km per 5 MVA PTR

2023	DTR		
Nellore	0.22	0.22	5.14
Tirupati	0.21	0.21	5.01
Kadapa	0.19	0.18	4.06
Anantapur	0.21	0.21	6.09
Kurnool	0.27	0.27	6.30

Based on above norms, licensee has estimated line lengths required (in KMs) at different voltage levels for each circle in 5th control period as shown below:

Forecasted Line lengths (KMs) for 5th Control Period

Particulars	FY24	FY25	FY26	FY27	FY28	FY29
Nellore						
33 kV	159	144	149	159	170	180
11kV	443	392	414	436	463	494
LT	443	392	414	436	463	494
Tirupati						
33 kV	301	220	230	245	261	281
11kV	691	498	527	558	591	631
LT	691	498	527	558	591	631
Kadapa						
33 kV	126	195	158	166	178	195
11kV	337	383	421	449	479	515
LT	361	410	450	481	513	551
Anantapur						
33 kV	311	244	201	225	219	237
11kV	869	476	552	569	614	650
LT	869	476	552	569	614	650
Kurnool						
33 kV	214	227	170	176	189	202
11kV	607	447	498	530	564	602
LT	607	447	498	530	564	602

Filings: The network elements required during the 5th control period

Item	Discoms	5th Control Period						
		FY24	FY25	FY26	FY27	FY28	FY29	5 th CP
33/11 kV SS Nos	SPDCL	210	196	178	190	196	212	972
	CPDCL	114	84	92	94	102	106	478

Item	Discoms	5th Control Period						
		FY24	FY25	FY26	FY27	FY28	FY29	5 th CP
	EPDCL	178	158	172	177	179	186	872
DTRs Nos	SPDCL	13720	10320	11330	11940	12740	13580	59910
	CPDCL	7200	5490	6040	6130	6530	6890	31080
	EPDCL	9680	9220	9900	10070	10360	11060	50610
33 kV Lines ckm	SPDCL	1111	1030	908	971	1017	1095	5021
	CPDCL	668	491	552	553	604	632	2832
	EPDCL	1100	959	1034	1077	1106	1185	5361
11 kV Lines ckm	SPDCL	2947	2196	2412	2542	2711	2892	12753
	CPDCL	2099	1600	1762	1787	1904	2009	9062
	EPDCL	2517	2434	2590	2651	2711	2890	13276
LT Lines ckm	SPDCL	2971	2223	2441	2574	2745	2928	12911
	CPDCL	2099	1600	1762	1787	1904	2009	9062
	EPDCL	2517	2434	2590	2651	2711	2890	13276

The summary of filings by APDiscoms for 5th Control periods under various schemes are as below :

Filings: DISCOMS wise Investments (Rs. Cr) for 5th Control Period

Item		Discoms	5th Control Period						
			FY24	FY25	FY26	FY27	FY28	FY29	5 th CP
Ongoing Schemes	A	SPDCL	3732	2716	3795	1986	429	430	9356
		CPDCL	1012	2432	1007	251	251	251	4192
		EPDCL	2249	2550	2425	300	300	300	5875
Total for three DISCOMS			6993	7698	7227	2537	980	981	19423
Substations	B	SPDCL	381	381	358	404	448	509	2100

Item		Discoms	5 th Control Period						
			FY24	FY25	FY26	FY27	FY28	FY29	5 th CP
(New & Augmentation)	EPDCL	CPDCL	211	162	190	202	233	258	1044
	SPDCL	EPDCL	372	350	397	431	461	510	2149
Distribution Transformer Additions	C	SPDCL	810	644	747	832	938	1056	4217
	EPDCL	CPDCL	387	312	362	389	437	488	1988
	SPDCL	EPDCL	567	567	639	682	737	826	3451
Lines, Cables & Network	D	SPDCL	468	366	422	468	524	588	2368
	EPDCL	CPDCL	346	274	312	332	369	406	1693
	SPDCL	EPDCL	710	692	777	839	902	1012	4222
Sub-Total	B+C+D	SPDCL	1659	1391	1527	1704	1910	2153	8685
	EPDCL	CPDCL	944	747	864	923	1039	1152	4725
	SPDCL	EPDCL	1649	1609	1813	1952	2100	2348	9822
Total for three DISCOMS			4252	3747	4204	4579	5049	5653	23232
Metering & Associated equipment	E	SPDCL	105	113	114	116	118	120	581
	SPDCL	CPDCL	0	0	0	0	0	0	0
	CPDCL	EPDCL	11	12	67	74	82	90	325
Loss reduction measures	F	SPDCL	0	0	0	0	0	0	0
	SPDCL	CPDCL	0	0	0	0	0	0	0
	CPDCL	EPDCL	106	117	128	136	150	165	696
Technology Upgradation and R&M	G	SPDCL	190	201	212	224	237	250	1124
	SPDCL	CPDCL	1760	55	61	67	73	81	336
	CPDCL	EPDCL	1	1	1	1	1	1	5
Civil Works & Others	H	SPDCL	33	45	45	45	45	45	225
	SPDCL	CPDCL	30	20	10	11	12	13	66
	CPDCL	EPDCL	21	23	26	28	31	34	143
Sub-Total	E+G+H	SPDCL	328	359	371	385	400	415	1930
	SPDCL	CPDCL	1790	75	71	78	85	94	402
	CPDCL	EPDCL	140	153	222	240	264	290	1169

Item		Discoms		5 th Control Period					
			FY24	FY25	FY26	FY27	FY28	FY29	5 th CP
Total for three DISCOMS			2258	587	663	702	749	799	3501
Grand Total		SPDCL	5719	4466	5693	4075	2739	2998	19971
		CPDCL	3746	3254	1942	1251	1376	1496	9319
		EPDCL	4037	4312	4460	2492	2664	2938	16866
Grand Total for three DISCOMS			13502	12032	12094	7818	6778	7433	46156

5.7 Commission's Analysis

As per Section 42 of the Electricity Act, 2003 read with clause 22 of Regulation 10 of 2013, it shall be the duty of the Distribution Licensee to develop and maintain an efficient, coordinated and economical distribution system in its area of supply and to supply electricity in accordance with the provisions contained in the Act.

The Distribution and Retail Supply Licence stipulate that subject to the availability of adequate generating and transmission capacity, within its area of supply, the system shall be capable of providing consumers with an adequate, safe and economical supply of electricity, having regard to quality, continuity and reliability of service.

Further, keeping in view of various Schemes formulated by the Government of India and the Government of Andhra Pradesh, the Commission examined and approved the investments under different heads as below:

AP Discoms Cost Data for various Network elements:

Description	Unit	APSPDCL	APCPDCL	APEPDCL
33/11kV SS per Unit (5 MVA PTR)	Each	185.04	185.04	185.04
5.0 MVA PTR	Each	77.44	77.44	77.44
DTR Installation per Unit (100 kVA)	Each	4.84	4.84	4.84
33 kV Line	Per Km	9.76	9.76	12.00
11 kV Line	Per Km	6.40	6.40	9.00
LT Line	Per Km	5.79	5.79	6.50

Discom wise Approved network elements for 5th CP**APSPDCL :**

S.No.	Parameter/FY	24-25	25-26	26-27	27-28	28-29	Total
1	33/11 kV SS Nos	127	114	123	128	137	629
2	DTRs Nos	6,330	7,020	6,950	7,870	8,650	36,820
3	33 kV Ckm	318	285	308	320	343	1,573
4	11kV Ckm	1,266	1,404	1,390	1,574	1,730	7,364
5	LT Ckm	1,266	1,404	1,390	1,574	1,730	7,364

APEPDCL :

S.No.	Parameter/FY	24-25	25-26	26-27	27-28	28-29	Total
1	33/11 kV SS Nos	104	113	116	119	126	577
2	DTRs Nos	6,040	6,760	6,400	7,350	7,110	33,660
3	33 kV Ckm	417	450	463	475	504	2,308
4	11kV Ckm	1,510	1,690	1,600	1,838	1,778	8,415
5	LT Ckm	1,510	1,690	1,600	1,838	1,778	8,415

APCPDCL :

S.No.	Parameter	24-25	25-26	26-27	27-28	28-29	Total
1	33/11 kV SS Nos	56	62	63	68	71	320
2	DTRs Nos	3,320	3,620	3,700	3,940	4,160	18,740
3	33 kV Ckm	140	155	158	170	178	800
4	11kV Ckm	963	1,050	1,073	1,143	1,206	5,435
5	LT Ckm	830	905	925	985	1,040	4,685

Discom wise Approved investment for On Going Schemes in Cr.**APSPDCL :**

SPDCL Scheme/FY	24-25	25-26	26-27	27-28	28-29	5th CP
Agl DBT	0	0	0	0	0	0
Jagananna Housing Colonies	212	0	0	0	0	212
Works under the RDSS scheme (Approval already granted):						
RDSS Ph-I(Loss Reduction)	2,000	2,160	0	0	0	4,160
RDSS Ph-I (Smart Meters)	106	96	96	96	96	490
Works under the RDSS scheme (to be approved):						
RDSS Ph-II (Smart Meters)	5	34	28	28	29	124
RDSS Ph-II (Modernisation)	0	1,200	1,557	0	0	2,757
Total	2,323	3,490	1,681	124	125	7,743

APEPDCL :

Scheme/FY	24-25	25-26	26-27	27-28	28-29	5th CP
Agl DBT	0	0	0	0	0	0
Jagananna Housing Colonies	0	0	0	0	0	0
AT&C Loss Reduction measures	28.1	0	0	0	0	28
RDSS Ph-I (Loss Reduction) approved	1742.09	206.09	0	0	0	1948
RDSS Ph-I (Loss Reduction) to be approved	0	0	0	0	0	0
RDSS Ph-I (Smart Meters) approved	46.17	76.11	72.06	72.06	72.06	338
RDSS Ph-II (Smart Meters) approved	4.37	32.1	22.53	22.53	22.53	104
RDSS Ph-I (Smart Meters) * to be approved	0	0	0	0	0	0
RDSS Ph-II (Smart Meters) to be approved	0	0	0	0	0	0
RDSS Ph-II (Modernisation) to be approved	599.52	882.29	0	0	0	1482
Total	2420	1197	95	95	95	3901

APCPDCL :

Scheme	24-25	25-26	26-27	27-28	28-29	5 th CP
HVDS	109	0	0	0	0	109
AGL DBT	0	0	0	0	0	0
JHC	363	0	0	0	0	363
SI under REC funding	25	0	0	0	0	25
Works under the RDSS scheme(Approval already granted):						
Agriculture Feeder Segregation RDSS	421	227	0	0	0	648
Overload feeder bifurcation	148	0	0	0	0	148
Smart metering works	161	163	107	107	107	645
Works under the RDSS scheme (to be approved):						
Overload feeder bifurcation	54	74	0	0	0	128
Replacement of old/ frayed conductor	815	496	0	0	0	1311
IT & ERP	166	108	0	0	0	274
SCADA/DMS	128	85	0	0	0	213
Total	2390	1153	107	107	107	3864

5.8 Discom Wise Scheme wise Investment Approvals for 5th Control Period

Finally, Hon'ble commission APERC has approved the following Discom wise Investments (Rs in Crores) for 5th Control Period :

APSPDCL:

S.No	Item		FY25	FY26	FY27	FY28	FY29	5 th CP
1	(a)Ongoing Schemes	A	2,323	3,490	1,681	124	125	7,743
2	Substations(New & Augmentation)	B	186	177	201	221	250	1,036
3	Distribution Transformer Additions	C	342	401	419	502	583	2,247
4	Lines, Cables & Network	D	207	235	249	294	340	1,324
	(b)Sub-Total	B+C+D	735	812	869	1,017	1,173	4,607
5	Metering & Associated equipment	E	0	0	0	0	0	0
6	Loss reduction measures	F	0	0	0	0	0	0
7	Technology Upgradation and R&M	G	20	20	20	20	20	100

8	Civil Works & Others	H	20	20	20	20	20	100
	(c)Sub-Total	E+F+G+H	40	40	40	40	40	200
	Grand Total (a)+(b)+(c)		3,098	4,342	2,590	1,181	1,338	12,550

APCPDCL:

S.No	Item		FY25	FY26	FY27	FY28	FY29	5 th CP
1	(a)Ongoing Schemes	A	2,390	1,153	107	107	107	3,864
2	Substations(New & Augmentation)	B	82	96	103	118	130	528
3	Distribution Transformer Additions	C	179	207	223	251	280	1,141
4	Lines, Cables & Network	D	138	159	172	193	215	877
	(b)Sub-Total	B+C+D	399	462	498	562	625	2,547
5	Metering & Associated equipment	E	0	0	0	0	0	0
6	Loss reduction measures	F	0	0	0	0	0	0
7	Technology Up-gradation and R&M	G	12	12	12	12	12	60
8	Civil Works & Others	H	12	12	12	12	12	60
	(c)Sub-Total	E+F+G+H	24	24	24	24	24	120
	Grand Total (a)+(b)+(c)		2,813	1,639	629	693	756	6,530

APEPDCL:

S.No	Item		FY25	FY26	FY27	FY28	FY29	5 th CP
1	(a)Ongoing Schemes	A	2,420	1,197	95	95	95	3,901
2	Substations(New & Augmentation)	B	190	217	236	256	287	1,186
3	Distribution Transformer Additions	C	326	386	386	469	479	2,046
4	Lines, Cables & Network	D	317	373	378	450	468	1,987
	(b)Sub-Total	B+C+D	834	976	1,000	1,175	1,234	5,219
5	Metering & Associated equipment	E	0	0	0	0	0	0
6	Loss reduction measures	F	0	0	0	0	0	0
7	Technology Up-gradation and R&M	G	20	20	20	20	20	100
8	Civil Works & Others	H	20	20	20	20	20	100
	(c)Sub-Total	E+F+G+H	40	40	40	40	40	200

S.No	Item		FY25	FY26	FY27	FY28	FY29	5 th CP
	Grand Total (a)+(b)+(c)		3,294	2,213	1,135	1,309	1,368	9,319

Discom wise Total Investments (Rs Crores) approved are as below.

FY	2025	2026	2027	2028	2029	Total
EPDCL	3,294	2,213	1,135	1,309	1,368	9,319
CPDCL	2,813	1,639	629	693	756	6,530
SPDCL	3,098	4,342	2,590	1,181	1,338	12,550
All Discoms	9205	8194	4354	3182	3462	28398

5.9 Sources of Funds

Capital Investments in DISCOMs will be made with 60% financial assistance from the Government of India under RDSS and the remaining 40% will be taken from Financial Institutions.

- Public sector grants and allocations, public sector undertakings (PSUs) investments, and state and central government budgets.
- Financial institutions such as banks, non-banking financial companies (NBFCs), and infrastructure finance companies also provide funding.
- International funding sources include multilateral agencies like the World Bank and Asian Development Bank (ADB), bilateral agencies like USAID and JICA, foreign direct investment (FDI), and external commercial borrowings (ECBs).
- Hybrid models like Public-Private Partnerships (PPPs), joint ventures, and Build-Own-Operate-Transfer (BOOT) models.
- However, funding faces challenges i.e., high interest rates, risk perception, regulatory uncertainty, land acquisition issues, environmental concerns, tariff and pricing issues, and currency fluctuations.

5.10 Conclusion

AP DISCOMs will review the investments based on the actual needs and approved investments in the resource plan to optimise network elements to meet load growth. This involves upgrading and reconfiguring substations, transmission lines and distribution networks. Substation optimisation includes upgrading existing infrastructure, compact designs, and automation. The DISCOMs will limit their investments to the approved investments of the Hon'ble Commission in the Resource Plan for the 5th CP. The DISCOMs will seek a Review of the Commission's Order if necessary.

6. Research & Development and Energy Efficiency Measures

6.1 Research & Development

AP Utilities are pioneers in adopting new technologies, Innovative applications, and new initiatives. The following are some of the innovations of Research & Development activities of AP Utilities:

6.1.1 Demand Forecasting by Artificial Intelligence:

APSLDC has indigenously developed electricity demand forecasting model by using sophisticated Artificial Intelligence and machine learning methods which gives demand forecast accuracy of 97% to 99%. Efficient forecasting of electricity using these advanced techniques will lead to achieved very accurate energy and power requirement to plan in advance. The model uses actual weather collected from 294 weather station from AP Planning Society and demand data from SCADA.

The objective is to effectively maintain the load-Generation balance, duly observing merit order dispatch and IEGC regulations in an efficient & cost-effective manner so as to ensure uninterrupted power supply and lowest operational disturbances in the state of Andhra Pradesh. The developed demand forecast model by APSLDC using AI is first of its kind in the power utilities across the nation. An application was developed for applying /issuing of shutdowns on various transmission elements and lines. In house IT software was also developed for energy reconciliation& development.

6.1.2 Andhra Pradesh Grid System Geo Tagging (Arc GIS):

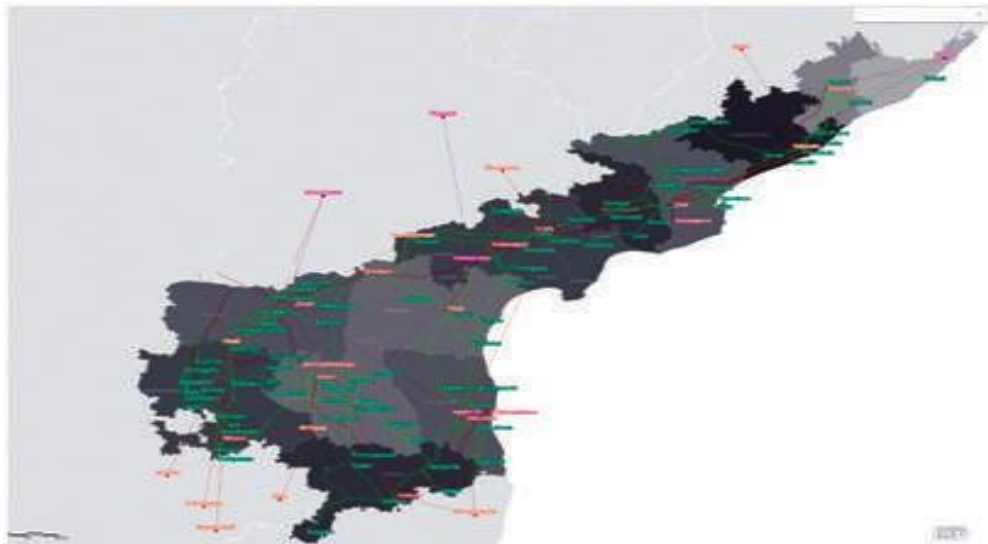
APTRANSCO has introduced a comprehensive solution for displaying the total AP Power Network on the Geo Graphical Software (GIS) ArcGIS System. The system is introduced in February-2020. It is useful for the total entire AP Grid i.e., APTRANSCO and DISCOMs network of 400kV, 220kV, 132kV, 33kV, 11kV and distribution network. A) Geo Tagging of Substations, Transmission Lines and Distribution lines were made with accurate Latitude and Longitudes in GIS system.

Benefits:

1. Creating the map of total Assets (Network and Non-Network) of all power companies of AP.
2. Creating Grid Map of entire AP network from Consumer to Generating stations.
3. Integration of these maps with SCADA for knowing the real time load flows in all feeders so as know the over loading of feeders and necessary action will be taken in due time.
4. Over loading of PTRs and DTRs can be known and replaced on prioritized

area wise.

5. Forecasting of weather and load scheduling accordingly.
6. During any natural calamities like cyclones, the effecting area can be visualised and prior action will be taken to minimise the damage and speedy restoration activities can be taken post cyclone.
7. Affected areas can be visualized and area wise prioritized restorations can be taken up.
8. SAP Integration with ongoing Projects map for monitoring financial and Physical progress by the management for quicker decisions.
9. Preliminary surveys can be taken up to avoid right of way problems to arrive best and shortest route for constructing new transmission and distribution lines.



B) **Others:** Oil Testing Module in ERP, Pensioners Self Service are significant among the applications which were developed during the FY 2019-20

6.1.3 Offline Mobile app for Billing by APEPDCL:

APEPDCL is billing all the LT services using Spot Billing Machines having IR Port scanners. A new mobile app was developed using IrDA Meter Scanners to scan 1-Phase & 3-phase Energy meters. This feature is added in the Line staff mobile app of APEPDCL, which is developed by the internal IT Team for billing the High value services from November-2021 onwards.

Now, this mobile app is further enhanced for billing all types of services (both High-value and Low-value) in Offline mode also. Presently, all the 70 lakhs LT services (both High value and Low value) are being billed using this mobile app.

6.2 Energy Efficiency Activities in Andhra Pradesh

AP State Energy Conservation Mission (AP SECM):

APSECM is a society registered under the AP Societies Act. Its take up initiatives to spread awareness regarding energy conservation measures in all sectors. SECM is responsible for monitoring and supporting the implementation of Energy Efficiency & Energy Conservation measures in Domestic & Industrial sectors and Demand Side Management (DSM) measures in Municipal & Agricultural sectors. SECM is the main coordinating body among key departments in the state for the implementation of various energy efficiency programs.

As the State Designated Agency (SDA) under the provisions of the Energy Conservation Act 2001, APSECM acts as an agency of the Bureau of Energy Efficiency (BEE), a statutory body under the Ministry of Power, GOI, to implement various central schemes such as Perform Achieve & Trade (PAT) and Energy Conservation Building Code (ECBC) at the state level. The SECM is responsible for advising the government on Policy & Strategy formulation, Coordination with key government and non-government stakeholders, Global Organizations & Companies, Bilateral/multilateral funding agencies for energy efficiency (EE) projects.

EE policy 2023-28:

- The Government has issued GO.Ms 24 Dt.06.03.2024 for adopting a dedicated Energy Conservation Energy Efficiency Policy 2023-28 that helps in identification, development, implementation, monitoring and verification of energy efficiency programmes to be undertaken in the state to tap substantial energy savings potential.

ISO Certifications:

- Andhra Pradesh State Energy Conservation Mission (APSECM) has been recognized as an International Standard Organization complying with (ISO)-50001: 2018 (Energy Management Standards (EnMS)) by taking steps to establish systems that are essential to improve energy performance, reduce wasteful consumption and sustainable development.
- Further, APSECM has also been recognized as an ISO 9001:2015, with compliance of the requirements of Quality Management System that benefits organization for continually improve their processes and save costs.

Demonstration Projects:

- APSECM has implemented energy efficiency projects under demonstration program in 130 Govt. Schools, 80 Hostels, 4 No's Govt. Institutes, 7 No's villages across 4 districts of AP. Energy efficiency demonstration was also implemented in SV University, Tirupati, Andhra Bhawan, New Delhi , TTD, Tirupati , Old and New Govt. General Hospitals and Dental Hospital in Vijayawada.

PAT Scheme:

- APSECM has implemented the Perform Achieve & Trade (PAT) scheme in 59 highly energy-intensive industries and achieved energy savings to the tune of around 1.16 million tons of oil equivalent until PAT cycle V.

Energy Efficiency in MSMEs:

- Implemented de-carbonization/EE project in 4 MSME clusters of Gold Ornaments, Imitation Jewellery, Food Processing, and Pharmaceuticals in Andhra Pradesh.

Estimated Energy savings:

- Pharma Cluster Energy: 95431 kwh/annum, Monetary savings: Rs.8.6 lakhs/Annum
- Imitation Jewellery: Energy: 14065 kwh/annum, Monetary savings: Rs.0.9 lakhs/Annum
- Gold ornaments: Energy savings: 16929 kwh/annum, Monetary savings: Rs.1.96 lakhs/Annum
- Food Processing: Energy savings: 333156 kwh/annum, Monetary savings: Rs.39 lakhs/Annum

Energy Conservation Building Code:

- Notified Energy Conservation Building Code (ECBC) in 123 Urban Local Bodies (ULBs) and 1300 No's ECBC compliant buildings are approved
- AP has come up with a policy called "Andhra Pradesh Cool Surface Policy 2023-28" aiming at creating simple solutions that can be scaled up at the state level to bring down the urban heat impact in the process

Demand Side Management:

- Conducted awareness programs categorically to farmers, equipment technicians under Agriculture Demand-Side Management (AgDSM).
- As Part of Municipal Demand Side Management (MuDSM), APSECM Conducted Investment grade energy audits in 15 municipal corporations and 28 ULBs.
- Conducted Capacity Building for 1,050 municipal officials from 28 Urban Local Bodies (ULBs) on Municipal Demand Side Management (MuDSM)

Standard and Labelling (S&L):

- APSECM has conducted 17 No's retailer training programs in major towns and cities to create awareness among more than 1700 No's of retailers on energy efficiency/star-rated appliances.
- The energy efficiency labelling programs under BEE are intended to reduce the energy consumption of appliance without limiting the services it provides to consumers.
- The scheme is covered for 34 equipment/appliances including 14 for which it is mandatory. The other appliances are presently under voluntary labelling phase.
- Strict adherence to standards of appliances available in markets is continuously checked through enforcement activities on a large scale.

LiFE Mission Activities

- The Govt. of India launched Mission LiFE which is envisioned as an India-led global mass movement that will nudge individual and collective action to protect and preserve the environment.
- Mission LiFE makes the fight against climate change, in which everyone can contribute with their respective capacities in six categories of water conservation, single use plastic, sustainable food system, swachattha actions, Healthy Lifestyles and E-waste reduction which are specific and measurable, easy to practice by individuals, communities and institutions etc.
- APSECM implemented LiFE mission activities to create awareness on energy savings to general public, students and retailers etc.
- Initiated LiFE programs in 35 No's Energy Clubs, 20 Go Electric Campaigns, 10 Retailer Training Programs, and 45 Nos. programs for Residential Welfare Associations and Households.

General Awareness Programmes for School Students:

- APSECM has established 1000 energy clubs in these educational Institutes to carry out awareness activities among the students on Energy Conservation and Energy Efficiency.

State Energy Efficiency Action Plan (SEEAP) for AP:

- APSECM in co-ordination with Confederation of Indian Industry (CII) Prepared State Energy Efficiency Action plan (SEEAP) for Andhra Pradesh that provides a roadmap for the state to achieve its energy efficiency goals. It outlines opportunities for energy savings and greenhouse gas emissions reductions across multiple sectors.
- As per the State Energy Efficiency Action Plan, the State has potential to save 3.88 Mtoe covering Buildings, Industry, Municipal, Agricultural and Transport sector of energy savings in coordination with key departments with estimated energy saving investment potential of nearly Rs. 8,000crores by the year 2031.

Action Plan of APSECM Prepared for FY 2024-25:

- Inclusion of Eco-Niwas Samhita-2018 in the building bye-laws of the state. This helps to reduce energy consumption in the residential sector and lower electricity bills for beneficiaries to some extent and thereby improving the living standards of people.
- To take steps to cause necessary orders to the Industries department for Investment-Grade Energy Audit (IGEA) of industries with a contracted maximum demand of 1000 KVA or above once in every three years.
- To ensure the mandatory use of star-rated appliances in existing government buildings by replacing/retrofitting conventional appliances and in new government buildings.
- Carrying out training and awareness workshops, demonstration projects to promote energy efficiency in the Integrated Cold Chain Sector under Agriculture Demand Side Management (AgDSM) in coordination with the AP Food Processing Society (APFPS), Department of Agriculture and Marketing.
- Implementation of Investment Grade Energy Audit (IGEA) recommendations in municipal corporations and municipalities.
- Implementation of the State Energy Efficiency Action Plan (SEEAP) recommendations, as submitted by the knowledge partner CII.
- Implementation of dedicated energy conservation policy for the state for effective implementation of EE and EC activities. This policy is intended to help in developing a roadmap for energy efficiency to achieve the state targets with a holistic approach involving key departments of the state.
- To establish Energy Conservation cells in government departments those have not yet formed them.
- Creation of awareness among Self Help Group Women on Energy Conservation. This helps in deeper penetration and wider spread of the energy conservation message to all households in the State.

Energy Efficiency Programs implemented by AP SECM

- Andhra Pradesh State Energy Conservation Mission, the State Designated Agency of Andhra Pradesh, has bagged 1st prize in the National Energy Conservation Awards in the State Designated Agency (SDA) Sector for its exemplary performance in promoting and implementing energy efficiency and conservation measures. The award is received from the President of India for two consecutive years 2022 and 2023.
- APSECM has implemented the Perform Achieve & Trade (PAT) scheme in 52 highly energy-intensive industries and achieved energy savings to the tune of around 1.16 million tons of oil equivalent until PAT cycle V.
- Notification of the Energy Conservation Building Code (ECBC) and amendments to building byelaws in 123 Urban Local Bodies (ULBs)
- More than 1000 commercial buildings are falling under the ECBC norms.
- Conducted 81 physical and online training programs on ECBC & Eco-Niwas Samhita and trained more than 3500 building sector stakeholders.
- Under Standards & Labelling Scheme, APSECM has conducted 17 retailer training programs in major towns and cities to create awareness among the retailers on energy efficiency /star-rated appliances.
- Taken up construction of the APEPDCL Training Centre (Cellar + 1 Floors), at Sagarnagar, Visakhapatnam, under Super ECBC Norms.
- Implemented energy efficiency measures in 4 MSME clusters of Gold Ornaments, Imitation Jewellery, Food Processing, and Pharmaceuticals.
- Conducted 7 No's One day program for the equipment technicians (420Nos.) under Agriculture Demand-Side Management (AgDSM) in the state of Andhra Pradesh.
- Conducted ten training and awareness programs to farmers (1920 individuals) on energy efficiency in the farming community.
- Conducted 14 one-day programs on Capacity Building for 1050 municipal officials from 28 Urban Local Bodies (ULBs) on Municipal Demand Side Management (MuDSM).
- Conducted 12 workshops for pump technicians and operators in 34 ULBs.
- Broadcasted 3 FM radio jingles on EE & EC in 4 FM channels, along with 4 short videos on EE & EC on approximately 11,000 theatre screens.
- Promotion of E-vehicles through the Go-Electric campaign.
- Organized National Energy Conservation Week 2023 from December 14th to 20th, and conducted the State Energy Conservation Award competition and a short video competition for school children.
- Implemented energy efficiency measures in Sri Venkateswara Arts College and replaced 1000 existing tube lights with LED tube lights and 400 fans with energy-efficient Brushless Direct Current (BLDC) fans. The project is expected to result in energy savings of 1.64 lakh units per year.

- Conducted Investment grade energy audits in 15 municipal corporations and 28 ULBs.
- Prepared a State Energy Efficiency Action Plan to save 3.88 Mtoe of energy savings in coordination with key departments.
- Implemented energy efficiency measures in 70 No's EHT substations of APTRANSCO by replacement of conventional lighting system with energy efficiency LED Lighting. It is expected to save 2.58 MU per annum worth Rs. 187 Lakhs.
- Replaced old appliances, such as conventional bulbs, fans, and tube lights, with energy-efficient appliances in 52 model schools and 3 major hospitals. The energy savings expected in schools are 0.84 MU per annum, and in 3 hospitals, 1.19 MU.
- Implementing energy club activities through 1000 educational institutions in the State
- Initiated LiFE programs in 20 Nos. Energy Clubs, conducted 15 GO Electric Campaigns, 10 Retailer Training Programs, and 30 Nos. programs for Residential Welfare Associations and Households.

Energy Conservation measures in APEPDCL:

- MoU entered with BEE deployed consultant M/s FICCI, to study on identification of Inefficient/High loss DTR's for replacement with 5star rated DTR's, as part of demand side management, at present study is going on.
- MoU entered with BEE deployed consultant M/s ICF, for promotion of Energy Efficient appliances to all Domestic and commercial consumers of APEPDCL, on both upfront and on-billing finance model, as part of demand side management, at present DPR's preparation and vendors finalisation is under progress.
- MoU entered with M/s EESL for sale of Energy Efficient appliances (AC's, BLDC Fans, and Inverter Bulbs etc.) to all category of consumers of APEPDCL, through APEPDCL online web portal.
- Purchase order placed for procurement of 4759nos. Energy Efficient BLDC Fans from M/s EESL in the month of 5/2024, for use them in all offices of APEPDCL as part of demand side management, Total project cost Rs 1.29Cr, material received to all district stores in may/2024, replacement of existing conventional fans with BLDC Fans is going on. The expected energy saving against will be 5,99,634 kWh for annum.
- Tenders called for selection of Charge Point Operators (CPO) for setting up of EV Charging stations in vacant sites of 9nos 33/11kv sub-stations on PPP model as a pilot project, for motivation of EV Vehicles and generation of non tariff income to APEPDCL. Work awarded to Ms VN Global ENTERPRISES/

Visakhapatnam on 29.06.2024 – Establishment of EV Charging stations work under progress.

Energy Conservation measures in APCPDCL:

APCPDCL implemented Distribution of energy efficient fans Program and Energy efficient pump sets (EEPS) scheme as a part of energy conservation.

Apart from these measures APCPDCL followed DSM measures (Demand Side Management) while releasing of new agricultural services duly enforcing for the purchase of 5 star rated pump sets with smart control panel having capacitor.

Awareness programs are organized on energy conservation throughout the year regularly apart from National Conservation week during the period from 14th December 2023 to 20th December 2023 exhibiting posters, distributing pamphlets for promoting star rated / modern appliances with the support of APSECM.

The following programs have been conducting during the energy conservation week.

- Energy conservation rallies at district headquarters
- Conducting of painting competition on significance of energy conservation
- Conducting essay writing competitions on need of energy conservation
- Erection of hoardings and Distribution of pamphlets on energy efficiency
- Energy conservation awareness programs in rural areas for spreading energy conservation messages
- Prize distribution to the meritorious students participated in the competitions.

Internet of Things (IOT) device installation in MSME sector:

Internet of Things (IOT) can aid conservation of energy and make industrial operations more energy efficient. It consists of network of smart devices connected over the internet with access to a much larger network including the sensors, smart phones, data management, report system and more. In a plant an operator receives alerts from the hardware installed and delivers live data on errors, mal functions and deviations.

Internet of Things (IOT) benefits include increase in production rate due to reduction in stoppage time, reduction in technical losses in the system and reduction in carbon emission ultimately protecting the environment.

Solar roof top scheme:

In solar rooftop scheme all consumers of APCPDCL are eligible for setting solar rooftop projects (SRP) for sale of electricity to Discom/Captive use or for self-consumption. The programme is a part of loss reduction and also reduce the day time demand on conventional sources of power generation (thermal). The services and installed capacity is encouraging with the awareness programs and the subsidy schemes.

Circle	Services	Installation Capacity in MW
GUNTUR	1029	13.704
CRDA	305	3.84
VIJAYAWADA	1971	21.578
ONGOLE	518	7.366
TOTAL	3823	46.488

Utilization of Electric Vehicles in APCPDCL:

The electric vehicles are in use by the APCPDCL executives. A total number of 69 vehicles are being operated with an average of 85000 Km run per vehicle. There by 1044 metric tons of Co2 gas is decarbonized from the atmosphere.

The APCPDCL encourage utilization of Electric vehicles as is with the policies of the Government of Andhra Pradesh.

Energy Conservation measures in APSPDCL:

APSPDCL replaced 31,301Nos. 5 HP old pump sets with Energy Efficient Submersible pump sets. Further while releasing agricultural pump sets, DSM measures such as installation of capacitor, frictionless foot valve, and HDPE or RPVC pipes at suction and or delivery and ISI marked mono-block or submersible pump sets are being insisted as a part of energy conservation.

7. Man Power Assessment and Trainings

7.1 Man Power

Regular Manpower in AP Power Utilities are tabulated below:

S.No	Name of Utility	Sanctioned	Filled
1	AP Transco	5287	1973
2	AP Genco	6422	5276
3	APEPDCL	13177	9333
4	APCPDCL	9882	7196
5	APSPDCL	16451	11486
	Total	51219	35264

As per the directions of AP Government vide Lr.No.ENE01-COOR/42/2024-OP,Dt.20.09.2024, The existing man power is being utilized in an optimum manner for providing reliable services to the consumers even after forming New Circles without any additional financial burden.

7.2 Training programs

As per the National Training Policy issued by Ministry of Power, Govt. of India, every organization in the Power Sector should have to provide annual trainings for every employee.

Accordingly, AP power utilities are organizing various Technical and Non-Technical training programs for the employees through online/Semi-Residential and Residential mode as below.

Technical	Non-Technical
Induction Training program for new Recruits	Modular Training program for new LDCs
Modular Training program for new JLMS	MS Office for Computer Operators
Training to Shift operators 33/11KV SS	Training on Higher Accountancy and Accounting Practices
Training on Maintenance of PTRs/DTRs, Testing, Commissioning and protection	Life skills, Time, stress management
Construction , MRT practices and Substation automation	SAP and HR Modular Training
Electricity Safety aspects and Disaster management	e-SR Management
Hot Lines Training and Auto-CAD Training for designs	Women Empowerment

Cyber Security	Cyber Security
Managerial Training program for Station Heads/ Functional Heads	Computer training to P&G Services, Account Staff and O&M Staff
ISO Training Program for all Technical Employees	Leadership Development and Capacity Building
Work Shops and seminars on Safety at Thermal Hydel and Gas plants, Computer training to Engineers and Simulator Training	Service matters

Annexure

New 400kV, 220kV & 132kV Substations

S. No.	District	Name of the SS	Voltage	I/C Type	Target year of Commissioning
400 kV Substations					
1	Krishna	Construction of 400/220kV Substation at Gudivada with 2*500MVA ICTs	400	S	2024-25
2	Vizianagaram	Augmentation of ICTs from 2*315 + 1*500MVA to 2*315 + 2*500 MVA at 400/220KV SS Maradam	400	-	2024-25
3	Chittoor	Augmentation of ICTs from 2*315MVA to 2*315+1*500MVA at 400/220/132/33KV SS Rachagunneri	400	-	2024-25
4	Chittoor	Augmentation of ICTs from 2*315MVA to 2*315+1*500MVA at 400/220KV SS Kalikiri	400	-	2024-25
5	Chittoor	Augmentation of ICTs from 2*315 + 1*500MVA to 2*315 + 2*500 MVA at 400/220/132/33KV SS Rachagunneri	400	-	2024-25
6	West Godavari	63MVAR Bus Reactor at 400KV SS KV Kota	400	S	2024-25
1	Visakhapatnam	Construction of 400/220KV GIS with 3*500MVA ICTs at Achuthapuram	400	S	2025-26
2	East Godavari	Construction of 400/220/132/33kV Kakinada SEZ Sub-Station with 2*500MVA ICTs	400	L	2025-26
3	East Godavari	Erection of 400/132 KV SS Ainavilli with 2*315 MVA ICT Capacity	400	L	2025-26
1	Prakasam	Construction of 400kV Ramayapatnam switching station	400	L	2026-27
1	East Godavari	Augmentation of ICTs from 2*500MVA to 3*500MVA ICTs at Kakinada SEZ with the implementation of Upper Sileru Pumped Storage Project (9*150MW)	400	-	2027-28
1	Srikakulam	Construction of 400/220kV SS with 2*500MVA ICTs duly extending the 400KV Bus at Palasa 765/400kV SS of PGCIL	400	L	2028-29
2	Kurnool	Construction of 400/220/132kV SS Aspiri with 2*500MVA ICTS and Double LILO of the existing 400KV Uravakonda-Veltoor QMDC Line	400	S	2028-29

220 kV Substations					
1	Nellore	Kothapatnam (APIIC)	220	L	2024-25
2	Chittoor	Cherivi (Racherla) with 2*160MVA PTRs	220	S	2024-25
3	Chittoor	Punganur with 2*160MVA & 2*31.5MVA PTRs	220	S	2024-25
1	Visakhapatnam	JNPC (220/33KV SS) with 2*50MVA PTRs	220	L	2025-26
2	East Godavari	Vepakayaladibba (220/33KV SS) with 2*50MVA PTRs	220	L	2025-26
3	West Godavari	Koppaka with 2*100MVA & 2*31.5MVA PTRs	220	S	2025-26
4	Krishna	Gopavaram (220/33KV) with 2*50MVA PTRs	220	L	2025-26
5	Prakasam	Chapalamadugu with 2*160MVA & 2*31.5MVA PTRs	220	S	2025-26
6	Kurnool	Banavasi with 2*160MVA & 2*31.5MVA PTRs	220	L	2025-26
1	Vizianagaram	Vizianagaram with 2*100MVA PTRs	220	S	2026-27
2	Krishna	Pedana – Upgradation of 132KV SWS Pedana as 220KV with 2*100MVA PTRs	220	S	2026-27
3	Guntur	Upgradation of 132/33KV SS Tadepalli as 220KV SS with 3*160MVA PTRs	220	S	2026-27
4	Kurnool	Gadivemula with 2*160MVA & 2*50MVA PTRs	220	L	2026-27
5	Kurnool	Mutyalapadu	220	S	2026-27
6	West Godavari	Erection of 33KV features at 400/220KV SS Guddigudem with 2*50MVA PTRs	220	L	2026-27
7	Kurnool	Erection of 132KV Features at 220KV SWS Dhone with 2*100MVA 220/132KV PTRs	220	L	206-27
1	Visakhapatnam	Upgradation of 132KV SS Nakkavanipalem as 220KV SS with 2*160MVA PTRs	220	S	2027-28
2	West Godavari	Rustumbada with 2*100MVA & 2*50MVA PTRs	220	S	2027-28
3	Chittoor	Satyavedu (220/33KV) with 2*50MVA PTRs	220	L	2027-28
1	Srikakulam	Sarubujili with 2*100MVA & 2*31.5MVA PTRs	220	S	2028-29
2	Srikakulam	Goppili with 2*100MVA & 2*31.5MVA PTRs	220	S	2028-29
3	Visakhapatnam	Bheemili with 2*100MVA PTRs	220	S	2028-29

4	West Godavari	Koyyalagudem (220/33KV SS) with 2*50MVA PTRs	220	L	2028-29
5	Chittoor	Kalahasti with 2*160MVA PTRs	220	S	2028-29
6	Chittoor	Tirupati with 2*160MVA PTRs	220	S	2028-29
7	Visakhapatnam	Erection of 132KV Features at the existing 220KV SWS Anrak with 2*100MVA PTRs	220	L	2028-29

132kV Substations programmed during FY 2024-25 to FY 2028-29

S. No	District	Name of the SS	Target year of Commissioning
1	West Godavari	Dharmajigudem with 2*31.5MVA PTRs	2024-25
2	West Godavari	Reddy Ganapavaram (LIS)	2024-25
3	West Godavari	Routhu Gudem (LIS)	2024-25
4	Chittoor	V. Kota with 2*31.5MVA PTRs	2024-25
5	Chittoor	Routhsaramala (APIIC)	2024-25
6	Anantapur	O.D. Cheruvu with 2*31.5MVA PTRs	2024-25
a	Kadapa	Existing 132KV SS/Pulivendula: Erection of 1 No. 132KV Feeder Bay to keep 2 nd Pulivendula-Pulivendula Feeder in service.	2024-25
b	Kadapa	Erection of 2 Nos. 132KV Feeder Bays at 400KV SS Jammalamadugu to facilitate to make LILO arrangements to 132KV Suzlon-Jammalamadugu DC Line duly utilising the 2 Nos. spare 132KV Feeder Bays at 400KV SS Jammalamadugu	2024-25
c	Kurnool	Erection of 2 Nos. 132KV Feeder Bays at 132KV SS/Gudur (Kurnool) to make LILO of 132KV APC-Yemmiganur at Gudur	2024-25
1	Vizianagaram	Bhogapuram SWS	2025-26
2	East Godavari	Shankavaram with 2*31.5MVA PTRs	2025-26
3	Krishna	Pedana SWS	2025-26
4	Krishna	Bantumalli with 2*31.5MVA PTRs	2025-26
5	Krishna	Gannavaram with 2*31.5MVA PTRs	2025-26
6	Krishna	Vuyyuru with 2*50MVA PTRs	2025-26

7	Prakasam	Yerrabalem (LIS)	2025-26
8	Nellore	Kadivedu with 2*31.5MVA PTRs	2025-26
9	Chittoor	Mangalam with 2*31.5MVA PTRs	2025-26
10	Chittoor	Vikruthamala (APIIC)	2025-26
1	Srikulam	Hiramandalam (LIS)	2026-27
2	Srikulam	Kothur with 2*31.5MVA PTRs	2026-27
3	Vizianagaram	Gajapathinagaram with 2*31.5MVA PTRs	2026-27
4	Vizianagaram	Kurupam with 2*31.5MVA PTRs	2026-27
5	Guntur	Kaza with 2*50MVA PTRs	2026-27
6	Prakasam	Elchur with 2*31.5MVA PTRs	2026-27
	Chittoor	Erection of 33KV Features at 220/132KV SS Thimmapuram with 2*50MVA PTRs	2026-27
1	Visakhapatnam	NSTL with 2*50MVA PTRs	2027-28
2	Visakhapatnam	Yendada with 2*50MVA PTRs	2027-28
3	West Godavari	Saripalli with 2*31.5MVA PTRs	2027-28
4	West Godavari	Kamayapalem with 2*31.5MVA PTRs	2027-28
5	Chittoor	Kakalamitta with 2*31.5MVA PTRs	2027-28
6	Kurnool	Kosigi with 2*31.5MVA PTRs	2027-28
1	Srikakulam	Sompet with 2*31.5MVA PTRs	2028-29
2	Srikakulam	Srikakulam with 2*31.5MVA PTRs	2028-29
3	Visakhapatnam	Auto Nagar with 2*50MVA PTRs	2028-29
4	Guntur	Vemuru with 2*31.5MVA PTRs	2028-29
5	Guntur	Nizampatnam with 2*31.5MVA PTRs	2028-29
6	Nellore	Buchireddypalem with 2*31.5MVA PTRs	2028-29
7	Chittoor	Ammiganipalli with 2*31.5MVA PTRs	2028-29
8	Chittoor	Kallur with 2*31.5MVA PTRs	2028-29
9	Chittoor	Thavanampalli with 2*31.5MVA PTRs	2028-29

10	Chittoor	K.G. Satram/Bangarupalem with 2*31.5MVA PTRs	2028-29
11	Kadapa	Nandalur with 2*31.5MVA PTRs	2028-29
12	Kadapa	Pendlimarri with 2*31.5MVA PTRs	2028-29
13	Anantapur	PABR with 2*31.5MVA PTRs	2028-29
14	Anantapur	Mudigubba with 2*31.5MVA PTRs	2028-29

400kV, 220 kV and 132 kV lines Programmed during FY 2024-25 to FY 2028-29

S.No.	Name of the Transmission Line	IC	Conductor Type	Ckt.	Length in Ckt. KM	Target year of Commissioning
-------	-------------------------------	----	----------------	------	-------------------	------------------------------

400 kV Lines

1	Double LILO (31km) of the 400KV Vemagiri-Sattenapalli TMDC Line at the 400KV SS Gudiwada which is under construction	S	Twin Moose	LILO	124	2024-25
2	400KV TMDC Line (98.481km) from Vemagiri to KV Kota	S	Twin Moose	D/C	196.962	2024-25

320.962 Ckm

1	LILO (3.5km) of both Circuits of 400KV Khammam-Kalapaka and Kalapaka-Asupaka TMDC Lines at the proposed 400/220KV SS at Achuthapuram	S	Twin Moose	LILO	14	2025-26
2	LILO (10km) of 400KV HNPCL-Guddigudem TMDC Line at the proposed 400/220/132/33KV SS at Kakinada SEZ	L	Twin Moose	LILO	40	2025-26
3	Single LILO (24km) of 400KV Vemagiri-KV Kota TMDC Line at Konaseema and single LILO of 400KV Vemagiri-Konaseema TMDC Line at the proposed 400/132KV SS at Ainavilli	L	Twin Moose	D/C	48	2025-26
4	Erection of 400kV TMDC line (40km) from RTPP to 400kV SS Jammalamadugu (40KM) and bays at both ends	S	Twin Moose	D/C	80	2025-26

182 Ckm

1	Erection of 400KV TMDC Line (100km) from SDSTPS (Krishnapatnam) to the	L	Twin	D/C	200	2026-27
---	--	---	------	-----	-----	---------

	proposed 400KV SWS at Ramayapatnam		Moose			
2	Erection of 400KV TMDC Line (96km) from 400KV SS Podili to the proposed 400KV SWS at Ramayapatnam	L	Twin Moose	D/C	192	2026-27

392 CkM

1	Erection of 400KV QMDC Line (160km) from proposed Upper Sileru Pumped Storage Project to the proposed 400/220/132/33KV SS at Kakinada SEZ	G	Quad Moose	D/C	320	2027-28
---	---	---	------------	-----	-----	---------

320 CkM

1	Double LILO of 400kv Uravakonda-Veltoor QMDC Line at the proposed 400/220/132KV SS at Aspiri	S	Quad Moose	LILO	24	2028-29
---	--	---	------------	------	----	---------

24 CkM**220 kV Lines**

1	Single LILO (4.5km) of 220KV Bobbili-Garividi DC Line on MC Towers at 400/220KV SS Maradam	S	SM	LILO DC on MC Towers	9	2024-25
2	LILO (19km) of 220KV Gudiwada-Akiveedu DC Line at 400KV SS Gudiwada	S	SM	LILO on MC	76	2024-25
3	Double LILO (4km) of 220KV VTS-Tadikonda Feeders at 400/220KV SS Tallayapalem	S	SM	LILO on MC	16	2024-25
4	LILO (17km) of 220KV Manubolu - SBQ DC/SC Line on MC Towers (17KM) at the proposed 220/33KV SS at Kothapatnam	L	SM	LILO on MC	34	2024-25
5	2 nd Circuit stringing (17.5+17) from Manubolu to Kothapatnam	L	SM	SC	34.5	2024-25
6	220KV DC Line (19.5km) from 220KV SS Sullurpet to the proposed 220KV SS at Chervi (Racherla)	S	SM	DC	39	2024-25
7	220KV DC Line (53.5km) from 400KV SS Rachagunneri to the proposed 220KV SS at Chervi (Racherla)	S	SM	DC	107	2024-25
8	LILO (4km) of 220KV Madanapalli-Palamaneru DC/SC Line on MC Towers at the proposed 220KV SS at Punganur	S	SM	LILO on MC	8	2024-25

9	LILO (3.2km) of 220KV Chinakampalli-Renigunta S/C Line at 220KV SS Rajampet on MC Towers	S	SM	LILO on MC	6.4	2024-25
10	LILO (4km) of 220KV Somayajulapalli-Rangapuram SC line at Bethamcherla on MC Towers	S	SM	LILO on MC	8	2024-25
					337.9	
1	LILO (0.12km) of 220KV Parawada-Anrak S/C Line at the proposed JNPC on MC Towers	L	SM	LILO on MC	0.24	2025-26
2	LILO (13.5km) of 220KV Parawada-Anrak Line and 220KV VSS-Kakinada Line at the proposed 400KV SS Achuthapuram	S	SM	LILO on MC	54	2025-26
3	220KV DC Line (2.5km) from the proposed 400KV SS at Achuthapuram to the 220KV Achuthapuram	S	UG	DC	5	2025-26
4	Making single LILO (0.4 KM approx..) of 220kv Bommuru-Bavojipet DC line at Vepakayaladibba	L	SM	LILO on DC	0.8	2025-26
5	LILO (15km) of 220KV Chandanada-Samalkot Feeder and 220KV Chandanada-Kakinada Feeder at 400/220/132/33KV SS at Kakinda SEZ on MC Towers	L	SM	LILO on MC	60	2025-26
6	Erection of 220KV DC Line (40km) from 220KV SS Ramavaram to the proposed 400/220/132/33KV SS at Kakinada SEZ	S	SM	DC	80	2025-26
7	LILO (0.5km) of 220kv Nunna-Bhimadole S/C line & LILO (0.5km) of 220kv Nuzivid-KV Kota S/C Line at the proposed 220/132/33KV SS at Koppaka	S	SM	LILO on MC	2	2025-26
8	Double LILO of 220KV DC Line from 400/220KV SS Gudivada to Akiveedu at the proposed 220/33KV SS at Gopavaram	L	SM	LILO on DC	2	2025-26
9	Double LILO (12.088km) of 220KV Srisailam-Tallapalli DC Line at the proposed 220KV SS at Chapalamadugu	S	SM	LILO on	48.352	2025-26
10	Erection of 220KV DC Line (60km) from Ragulapadu to the proposed 220KV SS at Yemmiganur	S	SM	DC	120	2025-26

					372.292	
1	Double LILO (5kM) of 220KV Maradam-Pendurthy DC Line at the proposed 220KV SS Vizianagaram	S	SM	LILO on MC	20	2026-27
2	Erection and stringing of the following on the 220KV DC Line with ACSS equivalent to Zebra a) Lower Sileru-Rampachodavaram SC line (65.6kM) b) Lower Sileru-Bavojipeta SC line (90.5kM)	G	SZ	DC	156.1	2026-27
3	Erection of 220KV DC Line from 400/220KV SS Gudivada to Pedana	L	SM	DC	60	2026-27
4	220KV DC Line from (14.2kM) 400/220KV SS Tallayapalem to Tadepalli with ACSS equivalent to SM	S	SM	DC	28.4	2026-27
5	Single LILO (8.2kM) of Jammalamadugu-Porumamilla DC line at Mydukur SS on MC Towers	S	SM	LILO on MC	16.4	2026-27
6	LILO (0.857kM) of 220KV Somayajulapalli-Srisailam S/C Line at the proposed Gadivemula SS	L	SM	2* DC/ SC	1.714	2026-27
7	LILO (4.0kM) of 220KV Mydukur-Srisailam S/C Line at the proposed Mutyalapadu SS	S	SM	DC	8	2026-27
					290.614	
1	Erection of 220KV DC Line (6.5kM) from Dairy Farm to Nakkavanipalem	S	SM+ UG	DC	13	2027-28
2	Erection of 220KV DC Line (30kM) from 220KV SS Undi to the proposed Rustumbada SS	S	SM	DC	60	2027-28
3	2nd LILO (0.5kM) 220KV of Gudivada-Undi at Akiveedu SS	S	SM	DC	1	2027-28
4	LILO (4kM) of 220KV Prathipadu (Guntur)-Ongole S/C Line at 220KV SS Parchur	S	SM	DC	8	2027-28
5	LILO (2kM) of 220KV Sullurpet-Gummidipundi S/C line at the proposed Satyavedu SS	L	SM	DC	4	2027-28

					86	
1	Erection of 220KV DC Line (70KM) from 400KV SS Maradam to the proposed 220KV SS at Sarubujili	S	SM	DC	140	2028-29
2	Single LILO (15km) of existing 220KV Garividi-Tekkali DC Line at the proposed 220/132/33KV SS at Sarubujili	S	SM	DC	30	2028-29
3	Erection of 220KV DC Line (65KM) from the proposed 220KV SS Sarubujili to the proposed 220KV SS at Goppili	S	SM	DC	130	2028-29
4	Erection of 220KV DC Line (30KM) from the proposed 220KV SS Goppili to the existing 220KV SS at Tekkali	S	SM	DC	60	2028-29
5	Double LILO (22km) of Maradam-Pendurthy DC Line at the proposed 220KV SS at Bheemili	S	SM	LILO on MC	88	2028-29
6	220KV DC Line (15km) from 400/220KV SS Guddigudem to the proposed 220/33KV SS Koyyalagudem	S	SM	DC	30	2028-29
7	Erection of 220kv DC line (20km) from 400kv SS Rachagunneru to Proposed 220kv SS Srikalahasti	S	SM	DC	40	2028-29
8	Erection of 220KV DC Line (40km) from 400KV SS Rachagunneri to the proposed 220KV SS at Tirupati	S	SM	DC	80	2028-29
9	LILO (4.5km) of 220KV Somayajulapalli-Bilakalaguduru/ Srisailam DC Line at 400KV SS Ghani	S	SM	LILO on MC	18	2028-29
					616	

132kV Lines programmed during FY 2024-25 to FY 2028-29

Sl. No.	Name of Transmission line	Length in Ckt km	Target year of Commissioning
1	Erection of 132KV DC line (28km) from 220/132KV SS Kamavarapukota to the proposed 132KV SS at Dharmajigudem	56	2024-25
2	Erection of 132KV DC line (30km) from 220/132KV SS Kamavarapukota to the proposed 132KV SS (LIS) at Reddy Ganapavaram	60	2024-25

3	Erection of 132KV DC line (5km) from the proposed 132KV SS (LIS) at Reddy Ganapavaram to the proposed 132KV SS (LIS) at Routhu Gudem	10	2024-25
4	LILO (0.5km) of 132KV Kandukur-Kavali S/C Line at 132KV SS Ulavapadu	1	2024-25
5	LILO (1.3km) of 132KV Chervi-Apollo/Linde DC Line at Racherla	5.2	2024-25
6	Erection of 132KV DC Line (4km) from the proposed 220/132KV SS Punganur to form 132KV Punganur-Punganur DC Line duly Directing the LILO of 132KV Madanapalli-Palamaneru DC/SC Line	8.0	2024-25
7	Double LILO of 132 kV Palamaneru-Shanthipuram DC line at the proposed 132KV SS at V.Kota	6	2024-25
8	LILLO (5km) of existing 132 kV Sullurpet- Greenply S/C Line at the proposed 132KV SS at Routhusuramala	10	2024-25
9	2nd circuit Stringing on the existing 132KV DC/SC Line from 220/132 kV SS Kalikiri to 132kv SS Rompicherla	30.0	2024-25
10	2nd circuit Stringing on the existing 132KV DC/SC Line from 220/132kv SS Nagari to 132kv SS Nagalapuram.	19.97	2024-25
11	2nd Circuit Stringing on the existing 132KV DC/SC LINE from 132KV Rayachoti to Sambepalli	14.13	2024-25
12	2nd Circuit stringing on existing 132 KV DC/SC line from 220/132/33 KV SS Rajampet SS to 132/33KV SS T.G. Palli	20.93	2024-25
13	Double LILO (7.14km) of 132Kv Suzlon-Jammalamadugu DC Line at 400KV SS Jammalamadugu	28.56	2024-25
14	Inter Linking 132KV SS Jammalabanda with 132KV SS Madakasira duly erecting 1.5KM DC/SC Line	19.5	2024-25
15	LILLO (3km) of 132KV Penugonda- Kadiri SC Line at OD Cheruvu	6	2024-25
16	LILLO (7km) of 132KV Puttaparthi-Kadiri S/C Line at 220KV SS Penukonda	14	2024-25
17	LILLO of 132KV AP Carbides-Yemmiganur S/C Line at 132KV SS Gudur	1.0	2024-25
a	Reconductoring from the crossing point of 132KV Kakinada-RC Puram DC Line and 220KV Samalkot-GMR Barge DC Line to 132KV SS RC Puram with ACSS equivalent to ACSR Panther and construction of 2 Nos. 132KV Feeder Bays at Samalkot to connect 220KV GMR Barge Feeders		2024-25

b	a) Formation of 2nd Circuit from 220KV SS Kakinada to 132KV SS Pratap Nagar by utilizing 220KV Samalkot-GMR Barge, 132KV Kakinada-RC Puram DC Line, 132KV Kakinada-Yanam Line and 132KV Kakinada-Gollapalem Line to form 132KV Kakinada-Yanam Line, 132KV Kakinada-Gollapalem Line. b) Converting 132KV Kakinada-Gollapalem Line as 132KV Kakinada-Pratap Nagar 2nd Line.		2024-25
c	Replacement of ACSR Panther Conductor with equivalent ACSS Conductor on 132KV Bommuru-Konda Guntur-Editha S/C Line		2024-25
		310.29	
1	Erection of 132KV DC Line (20km) from 132KV SS G. Chodvaram to the proposed 132KV SWS at Bhogapuram	40	2025-26
2	Erection of 132KV DC Line (10km) from the proposed 220KV SS Bheemili to the proposed 132KV SWS at Bhogapuram	20	2025-26
3	Erection of 132KV DC/SC line from 400/220/132/33Kv Kakinada SEZ to the proposed 132KV SS at Shankavaram	35	2025-26
4	LILO (6km) of 132KV Koruprolu-Pitapuram Feeder and 132KV Payaraopet-Pedapuram Feeder at 400/220/132/33KV SS at Kakinada SEZ on MC Towers	24	2025-26
5	a) LILO of 132KV Mummidivaram-RC Puram Feeder and 132KV Mummidivaram-Amalapuram Feeder at 400/132KV SS at Ainavalli on MC Towers	12	2025-26
6	LILO of 132KV Kothapet-RC Puram Feeder and 132KV Kothapet-Amalapuram Feeder at 400/132KV SS at Ainavalli on MC Towers	12	2025-26
7	LILO (10km) of 132KV Eluru-Vatluru RTSS DC/SC line to the proposed 220/132/33 KV Koppaka SS on MC towers duly stringing 3rd conductor from Eluru to Koppaka and also stringing of 2nd circuit (7.28+10km) on MC towers from Koppaka to Elur. Stringing the 3 rd conductor from Eluru SS to the LILO point.	37.28	2025-26
8	LILO (2km) of existing 132KV Machilipatnam-RVK line at Proposed 132 KV Switching Station, Pedana	4	2025-26
9	132KV DC Line (18km) from 132KV SWS at Pedana to the proposed 132KV SS at Bantumilli	36	2025-26

10	Erection of 132KV DC/SC Line (4kM) to RTSS, Pedana from the 132KV SWS at Pedana	4	2025-26
11	2nd Circuit stringing (7.59+4kM) from 132KV SS Machilipatnam to 132KV SWS at Pedana	11.59	2025-26
12	LILO (0.9kM) of 132 KV Gunadala-Kanumolu SC line at the proposed 132/33KV SS at Gannavaram	1.8	2025-26
13	LILO (13kM) of 132kV Kanumolu–Pammarru SC line at the proposed 132KV SS at Vuyyur	26	2025-26
14	Erection of 132KV DC line (9.4kM) from 132KV SS Yerragondapalem to the proposed 220/132/33 KV SS Chapalamadugu.	18.8	2025-26
15	Erection of 132KV DC line (20kM) from 132KV SS Anumalapalli to the proposed Yerrabalem Lift Irrigation PH	40	2025-26
16	Erection of 4 Nos. 132KV Lines (13.5kM) on MC Towers upto the crossing point of 132KV Gudur-Chendodu DC Line (which was made single LILO at Manubolu) and erection of 132KV DC Line (3kM) from the crossing point to Kadivedu to form 132KV DC Lines from Manubolu to Kadivedu, Manubolu to Chendodu and Manubolu to Gudur.	60	2025-26
17	LILO (9kM) of 132KV Adurapalli–Adurapalli RTSS at 132/33KV Rapur SS duly stringing the 3 rd conductor from Adurapalli SS to the LILO point.	18	2025-26
18	Erection of 132kV DC line (19.5kM) from 220/132kV SS Rachagunneri to the proposed 132KV SS at Mangalam	39	2025-26
19	2nd circuit stringing on 132KV Rachagunneri-Renigunta DC/SC Line	17.52	2025-26
20	Double LILO of 132KV Rachagunneri-Renigunta DC line to the proposed 132KV SS Vikruthamala with UG Cable (2kM)	8	2025-26
21	2nd circuit stringing on the 132kV Sambepalli-Gurramkonda DC/SC Line	36.9	2025-26
22	2nd circuit stringing on the 132kV Kalikiri-Gurramkonda DC/SC Line	27.57	2025-26
23	2 nd circuit stringing on the 132kV Madhanapalli-Burrakayalakota DC/SC Line	27.57	2025-26
24	2nd Circuit stringing on 132KV Tirumalayapalli-Kondapuram DC/SC Line up to the crossing point and Linking with the remaining part of 132KV Tadipatri-Kondapuram S/C Line to form 132KV Tirumalayapalli-	10.9	2025-26

	Tadipatri S/C Line		
25	Double LILO (4.3km) of the existing 132KV Yemmiganur-Adhoni DC Line at the proposed 220KV SS at Yemmiganur	17.2	2025-26
		585.13	
1	Erection of 132KV DC Line from Pathapatnam to the proposed 132KV SS at Hiramandalam	36	2026-27
2	2nd Circuit stringing on 132KV Tekkali-Pathapatnam DC/SC Line	30.67	2026-27
3	Erection of 132KV DC/SC Line from the proposed Hiramandalam LIS to the proposed 132KV SS at Kothur (duly removing the old proposal from Pathapatnam to 132KV SS at Kothur)	17	2026-27
4	132kv LILO (0.6km) of existing 132kv Garividi – Vontithadi SC line at the proposed 220kv SS Vizianagaram on MC Towers.	1.2	2026-27
5	Erection of 132KV DC Line (11km) from the LILO Point of Vontitadi to LILO point of proposed Vizianagaram SS.	11	2026-27
6	Erection of 3rd Circuit from Vizianagaram SS to LILO Point of proposed Vizianagaram SS with 132KV Feeder Bay at 220KV SS Vizianagaram	0.6	2026-27
7	Erection of 132KV UG Cable from LILO point of Vontitadi SS to Vontitadi SS with 132KV Feeder Bay at 220KV SS Vizianagaram	5.5	2026-27
8	LILO (4KM) of existing 132KV Bobbili-Komatipalli RTSS Line on MC Towers at proposed Gajapathinagaram SS duly stringing 3rd conductor from Bobbili to Gajapathinagaram SS	8	2026-27
9	Stringing of 2nd circuit from Bobbili SS to Gajapathinagaram SS.	18.86	2026-27
10	LILO (16km) of one circuit of 132kv Bobbili-Parvathi Puram DC line at the proposed 132KV SS at Kurupam	32	2026-27
11	LILO (0.4km) of 132KV Tadepalli-Guntur SC Line at the proposed 132KV SS at Kaza	0.8	2026-27
12	LILO (2km) of 132KV Guntur-Parchur SC Line at 220/132KV SS Prathipadu.	4	2026-27
13	2nd Circuit stringing on 132KV Kandukur-Ulavapadu DC/SC Line	6.452	2026-27

14	LILO (2km) of 132 KV Chilakaluripeta (Martur)-Vinukonda line at the proposed 132KV SS at Elchuru	4	2026-27
15	LILO (2.5km) of 132KV Kurnool-Dhone S/C Line at 220KV SWS Dhone	5	2026-27
16	LILO (11.22km) of 132KV Nandikotkur-Atmakur S/C Line at the proposed Gadivemula SS	22.44	2026-27
17	Erection of 132KV DC/SC Line (13.3km) from 132KV SS Allagadda to the proposed 220/132/33KV SS Mutyalapadu	13.3	2026-27
		216.822	
1	Erection of 132KV DC (OH+UG) Line from 220KV SS Simhachalam (OH-5.15 + UG-1)	12.3	2027-28
2	Single LILO (0.5km) with UG of 132KV Dairyfarim-Kapuluppada DC line (UG) at the proposed 132KV SS at Yendada	1	2027-28
3	2nd LILO (0.5KM) of 132KV Bhimavaram-Razole at 132KV Narasapuram SS	1	2027-28
4	Double LILO (4km) of 132KV Narasapuram-Razole DC Line at the proposed 220KV SS at Rustumbada	8	2027-28
5	Erection of 132KV DC Line (15km) from 220/132/33KV SS Undi to the proposed 132KV SS at Saripalli	30	2027-28
6	Double LILO (6KM) of 132KV T. Narasapuram-Aswaraopet DC Line at the proposed 132KV SS at Kamayapalem	24	2027-28
7	Erection of 132KV DC LILO (2.5km) line from 132 KV NG Palli-Palamaneru DC Line to the proposed 132KV SS Kakalamitta	10	2027-28
8	Erection of 132 kV DC/SC line (14km) from 132/33 kV Madhavaram SS to the proposed 132KV SS at Kosigi	14	2027-28
		100.3	
1	Erection of 132KV DC Line (30km) from the proposed 220/132/33KV Sarubujili SS to the existing 132/33KV SS at Ampolu	60	2028-29
2	Single LILO (10km) of existing 132KV Palasa-Tekkali DC Line at the proposed 220/132/33KV SS Goppili	20	2028-29
3	Erection of 132KV DC/SC Line from the proposed 220/132/33KV SS Goppili to the existing 132/33KV SS at Itchapuram	53	2028-29

4	Erection of 132KV DC/SC Line from the proposed 220KV SS Goppili to the proposed 132KV SS at Sompet	35	2028-29
5	Erection of 132KV DC/SC Line from the proposed 132/33KV SS at Sompet to the existing 132/33KV SS at Itchapuram	33	2028-29
6	Erection of 132KV DC Line (9km) with UG Cable from the proposed 220/132/33KV SS Goppili to the proposed 132/33KV GIS SS at Srikakulam	18	2028-29
7	LILO (0.5km) of 132kv Anandapuram–Divis line at proposed 220/132Kv SS Bheemili	1	2028-29
8	Single LILO (0.5km) of 132KV Simhachalam-Gajuwaka Feeder at the proposed 132KV Auto Nagar SS	1.0	2028-29
9	Erection of 132KV DC Line (36.5km) from Anrak to Chodavaram SS	73	2028-29
10	Erection of 132KV DC Line (15km) from Anrak to Narsipatnam SS	30	2028-29
11	LILO (7km) of 132KV Tenali–Repalle Line at proposed Vemuru SS	14	2028-29
12	Single circuit LILO (7km) of 132KV Repalle–Bapatla DC line at the proposed 132KV SS Nizampatnam	14	2028-29
13	LILO of 132KV Giddalur-Anumalapalli SC line to 132KV SS Kalasapadu in Kadapa District	66.8	2028-29
14	LILO (5KM) of 132KV Nellore-Atmakur S/C Line at Buchireddypalem	10	2028-29
15	LILO (11km) of 132 KV Palamaneru-Punganur DC/SC Line to the proposed 132KV SS at Ammiganiapalli	22	2028-29
16	Erection of 132kv DC line (30km) from 132kv SS Burrakayalakota to 132kv SS Tanakallu	60	2028-29
17	a) LILO of existing 132KV Rachagunneri-Chandragiri S/C Line both at 220KV SS/Renigunta and the proposed 220KV SS/Tirupati b) LILO of 132KV Renigunta-Tirupati SC Line at the proposed 220/132KV SS, Tirupati. c) LILO of 132KV Tirupati-K.P.Mitta SC Line at the proposed 220/132KV SS, Tirupati d) LILO of 132KV Renigunta-Chandragiri SC Line at the proposed 220/132KV SS, Tirupati	12	2028-29
18	Erection of 132KV DC (12km) line from Somala to the	24	2028-29

	proposed 132KV SS Kalluru		
19	Erection of 132KV DC line (20km) from 132KV SS NG Palli to the proposed 132KV SS Thavanampalli	40	2028-29
20	Erection of 132KV DC line (13km) from 132KV SS NG Palli to the proposed KG Sathram/Bangarupallem	26	2028-29
21	2nd Circuit stringing on the existing 132KV Rajampet-TG Palli	20.93	2028-29
22	Single LILO of 132KV Rajampet-TG Palli DC Line (9km) at the proposed 132KV SS at Nandalur	18	2028-29
23	Erection of 132KV DC/SC Line from 132KV SS Sattelite city to the proposed 132KV SS at Pendlimarri	15	2028-29
24	LILO (4km) of 132KV Taticherla-Kalyandurg SC line duly removing solid tapping to PABRHES	4	2028-29
25	Erection of 132 KV DC/SC line from 132/33 kV Y. Kothapalli to the proposed 132/33KV SS at Mudigubba	12	2028-29
		682.73	

Augmentation of PTRs District wise, Zone wise and Year wise during FY2024-25 to FY2028-29

S. No	District	Name of the substation	Augmentation of PTRs proposed from (MVA)	Augmentation PTRs proposed to (MVA)	Estimated cost Rs. Lakhs	Target year of commissioning	MVA addition
FY 2024-25							
1	Srikakulam	132KV SS Ichapuram	2*16	1*16+1*50	440	2024-25	34
2		132KV SS Pathapatnam	2*16	1*16+1*50	440	2024-25	34
3		220KV SS Tekkali	3*100+2*31.5	3*100+1*31.5+1*50	605	2024-25	18.5
4		132KV SS Srikakulam	1*16+1*31.5	1*50+1*31.5	440	2024-25	34
5		132KV SS Rajam	2*16	1*16+1*50	440	2024-25	34
6		220KV SS Pydibhimavaram	1*100+1*160 + 1*31.5	1*100+2*160 + 1*31.5+1*50	1,940	2024-25	210

7	Vizianagaram	220/132/33kV Bobbili GC SS	3*100 + 1*16+1*31.5	1*160+3*100 + 1*16+1*31.5	1,481	2024-25	160
8		220/132/33kV Garividi SS	1*160+2*100 + 2*31.5	2*160+1*100 + 2*31.5	1,460	2024-25	60
9		220/132/33kV Garividi SS	2*160+1*100 + 2*31.5	2*160+1*100 + 1*31.5+1*50	605	2024-25	18.5
10		132/33kV Parvathipuram SS	2*31.5	1*31.5+1*50	605	2024-25	18.5
11		132/33kV Salur SS	2*16	1*16+1*50	440	2024-25	34
12		132/33kV Garbham SS	1*31.5+1*15	1*31.5+1*50	440	2024-25	35
13		132/33kV Vontithadi SS	2*50	1*50+1*80	1,040	2024-25	30
14	Visakhapatnam	132KV SS Kasimkota	3*31.5	2*31.5+1*50	666	2024-25	18.5
15		132KV SS Chodavaram	2*16 + 1*31.5	1*16 + 1*31.5+1*50	484	2024-25	34
16		220/132/33 KV Pendurthi SS	2*160+1*100	3*160	1,500	2024-25	60
17		220/132/33 KV Dairyfarm SS	2*100+ 3*50	2*100+1*160+3*50	1,200	2024-25	160
18		132KV SS Anandapuram	2*31.5+1*16	2*31.5+1*50	605	2024-25	34
19		220KV SS Gangavaram	2*100+2*31.5+ 1*25+1*31.5	2*100+2*31.5+1*50 +1*31.5	300	2024-25	25
20		132KV SS Payakaraopet a	1*31.5+ 1*50	2*50	220	2024-25	18.5
21		132KV SS Narsinghbilli	2*16	1*50 + 1*16	220	2024-25	34
22	Rajamahendrav aram	220/33KVSS Chinturu	1*50	2*50	750	2024-25	50
23		132KV SS Rajanagaram	2*50	3*50	300	2024-25	50
24		132KV SS Razole	1*31.5+1*50	2*50	605	2024-25	18.5

25		132KV SS Kothapeta	1*31.5+1*50	2*50	605	2024-25	18.5
26		132KV SS Mummidivaram	2*31.5	2*31.5+1*50	750	2024-25	50
27		220KV SS Kakinada	2*160+1*100 + 1*50+1*80	2*160+1*100 + 2*50+1*80	700	2024-25	50
28		220KV SS Samalkota	3*100+2*31.5	1*100+2*160 + 2*31.5	4,500	2024-25	120
29		220KV SS Ramavaram	2*100 + 2*31.5	1*160+2*100 + 1*50+1*31.5	2,600	2024-25	178.5
30		132KV SS Pratap Nagar	2*31.5 + 1*50	1*31.5+1*50+1*80	1,000	2024-25	48.5
31		132KV SS Silk Road Sugars	1*31.5+1*25	1*31.5+1*50+1*25	700	2024-25	50
32		132KV SS Biccavolu	1*16+1*25+1*31.5	1*50+1*25+1*31.5	500	2024-25	34
33		132KV SS Prathipadu	2*31.5 + 1*16	2*31.5+1*50	500	2024-25	34
34		132KV SS Gollapalem	2*31.5	1*31.5+1*50	700	2024-25	18.5
35	Eluru	132KV SS Eluru	1*80+1*50	2*80	968	2024-25	30
36		220KV SS Bhimadole	2*160+1*100 + 2*50+1*80	3*160 + 1*50+2*80	2,468	2024-25	90
37		132KV SS PTPalli	3*50	1*80+2*50	968	2024-25	30
38		132KV SS Saggonda	2*31.5+1*16	2*31.5+1*50	605	2024-25	34
39		132KV SS Kovvuru	2*31.5	1*31.5+1*50	605	2024-25	18.5
40		220KV SS Pallantla	1*100+2*31.5	1*100+1*160+2*31.5	1,400	2024-25	160
41		132KV SS Penugonda	2*31.5	1*50+1*31.5	527	2024-25	18.5
42		220KV SS Duvva	2*100+ 2*31.5	2*100+1*50+1*31.5	527	2024-25	18.5
43		220/132KV SS	1*160+2*100	2*160+1*100	1,219	2024-25	60

		Nidadavole					
44		132/33KV SS Yernagudem	2*31.5	2*31.5+1*50	605	2024-25	50
45		220KV SS Undi	2*50+2*31.5	3*50+1*31.5	734	2024-25	50
46	400KV Circle	400/220KV SS Maradam	2*315+1*500	28315+2*500	-	2024-25	500
Total (2024-25)					40407		2884.5
FY 2025-26							
1	Srikakulam	132KV SS Palasa	2*31.5	1*31.5+1*50	605	2025-26	18.5
2		132KV SS Narasannapeta	2*31.5	1*31.5+1*50	605	2025-26	18.5
3		130KV SS Chilakapalem	1*31.5+1*50	2*50	605	2025-26	18.5
4		132KV SS Palakonda	2*31.5	1*31.5+1*50	605	2025-26	18.5
5	Vizianagaram	220/132/33kV Garividi SS	2*160+1*100+1*31.5+1*50	2*160+1*100+2*50	625	2025-26	18.5
6	Visakhapatnam	220/132KV SS SIMHACHALAM	2*100	1*160+1*100	1,500	2025-26	60
7		132 kV SS Simchalam	2*31.5+2*16	2*31.5+1*50+1*16	440	2025-26	34
8		220KV Parawada	3*100+3*50+1*80	1*160+2*100+3*50+1*80	1,500	2025-26	60
9		220KV Brandix SS	3*100+2*50+1*16	2*100+1*160+2*50+1*16	1,408	2025-26	60
10		132KV VSEZ SS	2*31.5	2*31.5+1*50	300	2025-26	18.5
11		132KV Malkapuram SS	1*31.5+1*16	1*31.5+1*50	704	2025-26	34
12		132KV SS Narsipatnam	1*16+1*31.5+1*15	1*16+1*31.5+1*50	220	2025-26	35
13			2*31.5+1*16	2*31.5+1*50	260	2025-26	34

14		132KV SS Narsinghbilli	1*31.5+1*16	1*31.5+1*50	220	2025-26	34
15	Rajamahendravaram	220KV SS Kakinada	2*160+1*100+1*50+1*80 +1*31.5	3*160+1*50+1*80+1*31.5	1,600	2025-26	60
16		220KV SS Ramavaram	1*160+2*100+1*50+1*31.5	1*100+2*160+2*50	2,300	2025-26	78.5
17		132KV SS Pithapuram	1*50+1*31.5	2*50	750	2025-26	18.5
18		132KV SS Ramchandrapuram	1*50+2*31.5	2*50+1*31.5	750	2025-26	18.5
19	Eluru	132KV SS Dwaraka Tirumala	2*31.5	1*31.5+1*50	666	2025-26	18.5
20		132KV SS Nallajerla	1*50+1*80	2*80	968	2025-26	30
21		132KV SS Narayanapuram	2*31.5	1*31.5+1*50	726	2025-26	18.5
22		132KV SS Kovvuru	1*31.5+1*50	2*50	666	2025-26	18.5
23		220KV SS Duvva	2*100+1*50+1*31.5	2*100+2*50	666	2025-26	18.5
24		132KV SS Tanuku	1*31.5+1*50+1*25	1*31.5+2*50	666	2025-26	25
25		132KV SS Bhimvaram	2*50+1*80	1*50+2*80	666	2025-26	30
26		220/33KV SS Akiveedu	1*80+1*50	2*80	968	2025-26	30
Total (2025-26)					20,989		826.5
FY 2026-27							
1	Srikakulam	132KV SS Pydibhimavaram	2*50	1*50+1*80	968	2026-27	30
2	Vizianagaram	220/132/33kv Bobbili SS	1*160+3*100+1*16+1*31.5	2*160+2*100+1*16+1*31.5	1,559	2026-27	60

3		132/33kV Bobbili SS	1*31.5+1*50	2*50	646	2026-27	18.5
4	Visakhapatnam	132KV SS Commonpoint	1*31.5+1*50	2*50	605	2026-27	18.5
5		132KV/33KV Araku SS	1*16+1*15	1*16+1*50	440	2026-27	35
6		132KV/33KV Paderu SS	1*16+1*15	1*16+1*50	440	2026-27	35
7		132KV Port SS	2*31.5	1*50+1*31.5	605	2026-27	18.5
8		220/132/33 KV Pendurthi SS	2*31.5	1*50+1*31.5	299	2026-27	18.5
9		220/132/33 KV Dairyfarm SS	3*50	1*80+2*50	315	2026-27	30
10		132KV SS Anandapuram	1*50+2*31.5	2*50+1*31.5	726	2026-27	18.5
11	Rajamahendrav aram	220KV SS Samalkota	1*100+2*160+2*31.5	1*100+2*160+1*31.5+1*50	800	2026-27	18.5
12		132KV SS Pratap Nagar	1*31.5+1*50+1*80	2*50+1*80	800	2026-27	18.5
13		132KV SS Silk Road Sugars	2*31.5+1*25	2*31.5+1*50	800	2026-27	25
14		132KV SS Peddapuram	3*31.5	2*31.5+1*50	900	2026-27	18.5
15	Eluru	132KV SS Jangareddygu dem	3*50	2*50+1*80	1,056	2026-27	30
16		132KV SS Eluru	1*80+1*50	2*80+1*50	666	2026-27	80
17		132KV SS PTPalli	1*80+2*50	2*80+1*50	968	2026-27	18.5
18		132KV SS Saggonda	2*31.5+1*50	1*31.5+2*50	726	2026-27	18.5
19		132KV SS Tanuku	1*31.5+2*50	3*50	726	2026-27	18.5
20		132KV SS Penugonda	1*50+1*31.5	2*50	726	2026-27	18.5
21		220/132KV SS	2*160+1*100	3*160	1219	2026-27	60

		Nidadavole					
22		132/33KV SS Yernagudem	3*31.5	1*50+2*31.5	734	2026-27	18.5
23		220KV SS Undi	3*50+1*31.5	4*50	734	2026-27	18.5
24	400KV Circle	400 KV SS Vemagiri	3*315+1*500	2*315+2*500	1,500	2026-27	185
Total (2026-27)					18,958		829
FY 2027-28							
1	Srikakulam	132KV SS Ichapuram	1*16+1*31.5	2*31.5	440	2027-28	15.5
2		132KV SS Pathapatnam	1*16+1*31.5	1*31.5+1*50	440	2027-28	34
3		220KV SS Tekkali	3*100+1*31.5+1*50	3*100+2*50	605	2027-28	18.5
4	Vizianagaram	220/132/33kv Bobbili SS	2*160+2*100+1*16+1*31.5	2*160+2*100+1*50+*31.5	485	2027-28	34
5	Visakhapatnam	132KV Simhachalam SS	4*31.5+1*16	4*31.5+1*50	440	2027-28	34
6	Rajamahendravaram	220KV SS Kakinada	3*160+1*50+1*80+1*31.5	3*160+2*50+1*80	900	2027-28	18.5
7		220KV SS Ramavaram	1*100+2*160 MVA+2*31.5	1*100+2*160+1*31.5+1*50	900	2027-28	18.5
8		132KV SS Biccavolu	1*31.5+1*25+1*50	1*31.5+2*50	900	2027-28	25
9		132KV SS Gollapalem	1*31.5+1*50	1*31.5+2*50	800	2027-28	50
10	Eluru	132KV SS Saggonda	1*31.5+2*50	3*50	787	2027-28	18.5
11		220KV SS Duvva	2*100+2*50	1*160+1*100+2*50	1,773	2027-28	60
12	400 KV Circle	400kv SS K.Kota	2*315	2*315+1*500	3,000	2027-28	500
13		400 KV SS Vemagiri	2*315+2*500	1*315+3*500	2,000	2027-28	18.5
Total (2027-28)					13,470		845

FY 2028-29							
1	Srikakulam	220KV SS Tekkali	3*100+2*50	2*100+1*160+2*50	1,500	2028-29	60
2		132KV SS Rajam	1*16+1*31.5	1*50+1*31.5	440	2028-29	34
3		132KV SS Palakonda	1*31.5+1*50	2*50	605	2028-29	18.5
4		220KV SS Pydibhimavaram	1*100+2*160+2*31.5	1*100+2*160+1*31.5+1*50	605	2028-29	18.5
5	Vizianagaram	132/33kV Salur SS	1*16+1*31.5	1*50+1*31.5	501	2028-29	34
6		132/33kV G.Chodavaram SS	2*31.5	1*31.5+1*50	689	2028-29	18.5
7	Visakhapatnam	132KV Port SS	1*50+1*31.5	2*50MVA	605	2028-29	18.5
8	Rajamahendravaram	132KV SS Silk Road Sugars	3*31.5	2*31.5+1*50	900	2028-29	18.5
9		132KV SS Prathipadu	3*31.5	2*31.5+1*50	900	2028-29	18.5
10	Eluru	220KV SS Pallantla	2*100+2*31.5	2*100+1*50+1*31.5	847	2028-29	18.5
11		132KV SS Narasapuram	1*80+1*50	2*80	968	2028-29	30
12	400 KV Circle	400 KV SS Vemagiri	1*315+3*500	4*500	2,000	2028-29	185
Total (2028-29)					10,560		472.5

Augmentation of Substations in Vijayawada Zone

Sl. No.	District	Name of the SS	Augmentation of PTRs from MVA	Augmentation of PTRs to MVA	Estimated cost Rs. Lakhs	Year	MVA Addition
FY 2024-25							

1	Krishna	132KV SS Bhavanipuram	1*31.5+ 1*50	2*50	567	2024-25	18.5
2		220KV SS Gunadala	1*100 +2*160	1*100 +3*160	660	2024-25	160
3		132KVSS Narasapuram	2*31.5	2*50	1,135	2024-25	18.5
4		220KVSS Nunna	1*31.5+ 2*50	2*50+ 1*80	567	2024-25	48.5
5		132KV SS Pamarru	2*50	3*50	567	2024-25	50
6		220KV SS Gudivada	2*160+ 1*100	3*160	920	2024-25	60
7.	Guntur	220KV SS Prathipadu	2*100+1*160	1*100+2*160	1000	2024-25	60
8.		220KV SS Narasaraopeta	3*31.5	2*31.5+1*50	500	2024-25	18.5
9.		220KV SS Rentachintala	3*100 + 2*16+1*15	2*100+1*160+ 2*16+1*50	1,300	2024-25	75
10.		132KV SS Bapatla	1*16+2*31.5	1*50+2*31.5	400	2024-25	34
11.		132KV SS Chakrayapalem	1*16+1*31.5	1*16+2*31.5	400	2024-25	31.5
12.		132KV SS AIIMS	1*31.5	1*50+1*31.5	400	2024-25	18.5
13.		132kv SS Macherla	2*50+1*31.5	3*50	500	2024-25	18.5
14.		132KV SS Tangeda	3*16	2*16+1*31.5	400	2024-25	15.5
15.		132KV SS Rentapalla	2*31.5+1*16	2*31.5+1*50	600	2024-25	34
16.	Prakasam	220KV SS Markapur	3*100	2*100+1*160	1289.97	2024-25	60
17.		220KV SS Kandukur	2*100	2*100+1*160	879.41	2024-25	160
18.		220KV SS Podili	2*100	2*100+1*160	879.41	2024-25	160
19.		132KV SS Yerragondapalem	2*50	3*50	367.14	2024-25	50
20.		132KV SS Kandukur	1*50+1*31.5	2*50	575.99	2024-25	18.5
21.		132KV SS Pedda Dornala	2*16	2*16+1*50	382.91	2024-25	34
22.	Nellore	220/132kv SS Atmakur	2*100	2*100+1*160	1,089.5	2024-25	160
23.		220KVSS Nellore	3*50	2*50+1*80	368.8	2024-25	30

24.		132KVSS Brahmadevam	2*31.5+1*50	1*31.5+2*50	523	2024-25	18.5
25.		132/33KV SS Venkatagiri	1*31.5+1*50	2*50	340	2024-25	18.5
26.		220KVSS Sullurpeta	3*100	2*100+1*160	748.5	2024-25	60
27.		220KV SS Naidupeta	2*100	2*100+1*160	549	2024-25	160
	Tentative Cost for Augmentation of PTRs in Vijayawada Zone during 2024-25				17909.63		1590.5
FY 2025-26							
1	Krishna	220KV SS Chillakallu	2*31.5+1*16	2*31.5+1*50	615	2025-26	34
2		220KVSS Nuzvid	1*160+ 2*100	2*160+1*100	997	2025-26	60
3		220KV SS Gudivada	3*50	1*80+2*50	691	2025-26	30
4		132KVSS Avanigadda	2*31.5	1*50+1*31.5	615	2025-26	18.5
5		132KV SS Chigurukota	3*50	1*80+ 2*50	691	2025-26	30
6	Guntur	220KV SS Narasaraopeta	2*100+1*160	1*100+2*160	900	2025-26	60
7		132KV SS Guntur	2*80+1*50	3*80	650	2025-26	30
8		132KV SS Tadepalli	2*31.5+1*50	1*31.5+2*50	600	2025-26	18.5
9		132KV SS Gujjanagundla	3*31.5	1*31.5+2*50	1200	2025-26	37
10		132KV SS Yadavalli	1*31.5+1*15	1*31.5+1*50	450	2025-26	35
11		132KV SS Karampudi	3*31.5	2*31.5+1*50	500	2025-26	18.5
12		132kv SS Macherla	3*50	2*50+1*80	600	2025-26	30
13		132KV SS Vinukonda	2*31.5+1*50	1*31.5+2*50	600	2025-26	18.5
14		132KV SS Veldurthy	2*16+1*31.5	1*16+1*31.5+1*50	600	2025-26	34
15	Prakasam	220KV SS Ongole	2*160+1*100	3*160	1332.79	2025-26	60
16		220KV SS Parchur	1*160+2*100	2*160+1*100	1332.79	2025-26	60
17		220KV SS Markapur	2*31.5	1*50+1*31.5	595.11	2025-26	18.5
18		132KV SS Chirala	3*31.5	1*50+3*31.5	702.35	2025-26	50
19		132KV SS Ongole	1*31.5+1*16	1*31.5+1*50	395.62	2025-26	34

20		132KV SS Kanigiri	1*50+1*31.5	2*50	595.11	2025-26	18.5
21		132KV SS Giddalur	2*31.5	1*50+1*31.5	595.11	2025-26	18.5
22	Nellore	132/33kv SS Udayagiri	2*16+1*50	1*16+2*50	282.6	2025-26	34
23		132 KVSS NV Gardens	3*31.5+1*50	2*31.5+2*50	560.0	2025-26	18.5
24		132KVSS Gottiprolu	2*31.5	1*31.5+1*50	523	2025-26	18.5
	Tentative Cost for Augmentation of PTRs in Vijayawada Zone during 2025-26				16623.48		784.5
FY 2026-27							
1	Krishna	132KV SS Machilipatnam	3*50	1*80+2*50	745	2026-27	30
2.	Guntur	220KV SS Prathipadu	2*160+1*100	3*160	1100	2026-27	60
3		220KV SS Narasaraopeta	2*31.5+1*50	1*31.5+2*50	500	2026-27	18.5
4		220KV SS Rentachintala	2*100+1*160+2*16+1*50	1*100+2*160+1*16+2*50	1300	2026-27	94
5		132KV SS Nallapadu	3*31.5	1*31.5 + 2*50	1400	2026-27	37
6		132KV SS Marripalem	3*31.5	1*31.5 + 2*50	1400	2026-27	37
7		132KV SS Tadepalli	1*31.5+2*50	3*50	650	2026-27	18.5
8		132kv SS Repalle	1*31.5+1*50	2*50	650	2026-27	18.5
9		132KV SS Gujjanagundla	1*31.5+2*50	3*50	650	2026-27	18.5
10		132KV SS Tangeda	2*16+1*31.5	1*16+2*31.5	400	2026-27	15.5
11		132KV SS Rentapalla	1*50+2*31.5	2*50+1*31.5	600	2026-27	18.5
12		132KV SS Veldurthy	1*16+1*31.5+1*50	1*31.5+2*50	600	2026-27	34
13	Prakasam	220KV SS Parchur	1*31.5+1*16	1*31.5+1*50	408.75	2026-27	34
14		220KV SS Markapur	1*160+2*100	2*160+1*100	1377.04	2026-27	60
15		132KV SS Medarametla	1*50+2*31.5	2*50+1*31.5	614.87	2026-27	18.5
16		132KV SS Pedda Dornala	2*16+1*50	1*16+2*50	408.75	2026-27	34

17		132KV SS Inkollu	2*16	1*50+1*16	408.75	2026-27	34
18		132KV SS Martur	1*50+2*31.5	2*50+1*31.5	614.87	2026-27	18.5
19	Nellore	132/33kV SS Vinjamur	2*31.5	1*31.5+1*50	600.3	2026-27	18.5
20		220 KV SS Racharlapadu	2*100	1*100+1*160	1019.7	2026-27	18.5
21		220 KV SS Racharlapadu	2*31.5	1*31.5+1*50	226.9	2026-27	18.5
22		132KV SS Dagadarthi	1*31.5	1*31.5+1*50	226.9	2026-27	50
23		132KVSS Allur	1*31.5+1*50	2*50	226.9	2026-27	18.5
24		132KVSS Kavali	1*31.5+2*50	3*50	226.9	2026-27	18.5
25		220KVSS Nellore	2*50+1*80	1*50+2*80	405.5	2026-27	30
26		132/33kV SS Gudur	2*31.5+1*25+1*16	2*31.5+2*50	350.0	2026-27	59
27		132/33KV SS Menakur	1*31.5+1*50	2*50	560.0	2026-27	18.5
28		132KVSS Adurupalli	2*31.5+1*16	2*31.5+1*50	226.9	2026-27	34
29		132KVSS Naidupeta	1*31.5+1*50	2*50	557.0	2026-27	18.5
	Tentative Cost for Augmentation of PTRs in Vijayawada Zone during 2026-27				18455.03		901.5
FY 2027-28							
1	Krishna	132KVSS Avanigadda	1*50+1*31.5	2*50	709	2027-28	18.5
2	Guntur	220KV SS Narasaraopeta	1*100+2*160	3*160	900	2027-28	60
3		132KV SS Chilakaluripeta	3*50	2*50 + 1*80	700	2027-28	30
4		132KV SS Nallapadu	1*31.5 + 2*50	3*50	750	2027-28	18.5
5		132KV SS Marripalem	1*31.5 + 2*50	3*50	750	2027-28	18.5
6		132KV SS Ponnur	2*31.5	2*50	1500	2027-28	37
7		132KV SS Karampudi	2*31.5+1*50	1*31.5+2*50	500	2027-28	18.5
8		132kv SS Macherla	2*50+1*80	1*50+2*80	600	2027-28	30

9		132KV SS Vinukonda	1*31.5+2*50	3*50	600	2027-28	18.5
10		132KV SS Veldurthy	1*31.5+2*50	3*50	600	2027-28	18.5
11	Prakasam	220KV SS Kandukur	2*100 +1*160	2*160+1*100	1422.76	2027-28	60
12		220KV SS Markapur	1*50+1*31.5	2*50	635.28	2027-28	18.5
13		132KV SS Tangutur	2*31.5	2*31.5+1*50	404.94	2027-28	50
14		132KV SS Kandukur	2*50	3*50	843.67	2027-28	50
15		132KV SS Giddalur	1*50+1*31.5	2*50	635.28	2027-28	18.5
16	Nellore	220/132kv SS Atmakur	2*100+1*160	1*100+2*160	1,473.1	2027-28	60
	Tentative Cost for Augmentation of PTRs in Vijayawada Zone during 2027-28				13024.03		525
FY 2028-29							
1	Krishna	220KV SS Kondapalli	2*160+ 1*100	3*160	1,227	2028-29	69
2		132KV SS Kambhampadu	1*50+ 2*31.5	2*50+1*31.5	757	2028-29	18.5
3		220KV SS Chillakallu	3*100	2*100+1*160	1,227	2028-29	60
4		132KV GIS Moghalrajpuram	2*31.5	1*50 +1*31.5	757	2028-29	18.5
5	Guntur	220KV SS Narasaraopeta	1*31.5+2*50	3*50	500	2028-29	18.5
6		220KV SS Rentachintala	1*100+2*160+1*16+2*50	3*160+ 3*50	1300	2028-29	94
7		132KV SS Chilakaluripeta	2*50 + 1*80	1*50 + 2*80	800	2028-29	30
8		132KV SS Tangeda	1*16+2*31.5	3*31.5	400	2028-29	15.5
9		132kv SS Piduguralla	2*31.5+1*50	2*31.5+1*80	800	2028-29	30
10		132KV SS Rentapalla	2*50+1*31.5	3*50	400	2028-29	18.5
11	Prakasam	132KV SS Ongole	1*31.5+1*50	2*50	418.38	2028-29	18.5
12		132KV SS Martur	2*50+1*31.5	3*50	656.37	2028-29	18.5
13		132KV SS Kesinenipalli	2*31.5+1*16	3*31.5	436.35	2028-29	15.5
14		132KV SS	1*31.5+1*16	2*31.5	436.35	2028-29	15.5

		Anumalapalli					
15		132KV SS Cumbum	2*31.5+1*16	3*31.5	436.35	2028-29	15.5
16	Nellore	132/33kV SS A.Sagaram	1*16+1*25	1*31.5+1*25	345.4	2028-29	15.5
17		220KVSS Nellore	3*160	4*160	1,133	2028-29	160
18		132/33kV SS Rapur	3*16	2*16+1*31.5	420	2028-29	15.5
	Tentative Cost for Augmentation of PTRs in Vijayawada Zone during 2028-29				12,450.20		647

AUGMENTATION OF POWER TRANSFORMERS FOR 5TH CONTROL PERIOD IN KADAPA ZONE

Sl. No	District	Name of the substation	Augmentation of PTRs proposed from (MVA)	Augmentation PTRs proposed to (MVA)	Estimated cost Rs. Lakhs	Target year of commissioning	MVA Addition
FY 2024-25							
1	Chittoor	132KV SS Nagalapuram	2*31.5	1*50+1*31.5	605.00	2024-25	18.5
2		132KV SS Pakala	1*31.5+1*50	2*50	605.00	2024-25	18.5
3		132KV SS K.P.Mitta	1*80+1*50	1*80+2*50	880.00	2024-25	50
4		132KV SS N.G.Palli	2*31.5	1*50+1*31.5	605.00	2024-25	18.5
5		132KV SS Punganur	2*50	3*50	750.00	2024-25	50
6		132KV SS Ramasamudram	1*31.5+1*16	2*31.5	440.00	2024-25	15.5
7		220KV SS Kalikiri	3*100+ 2*31.5+1*50	2*100+1*160+2*50+1*31.5	1969.00	2024-25	78.5
8		132KV SS Gurramkonda	1*50+1*31.5	2*50	605.00	2024-25	18.5
9	Kadapa	132KVSS Pulivendula	1*31.5+1*50	2*50	597.99	2024-25	18.5
10		220KVSS Tirumalayapa	2*160	2*160+2*31.5	1063.89	2024-25	63

		Ili					
11		220KVSS Kadapa	1*160+2*100+2*50	1*160+2*100+1*50+1*80	630.00	2024-25	30
12		220KVSS Kodur	2*31.5+1*50	1*31.5+2*50	595.00	2024-25	18.5
13		220KVSS Mydukur	2*31.5+1*50	1*31.5+2*50	460.00	2024-25	18.5
14		132KVSS Sambepalli	3*16	1*31.5+2*16	220.00	2024-25	15.5
15		132KVSS Kalasapadu	1*16+1*31.5	1*31.5+1*31.5	220.00	2024-25	15.5
16		132KVSS T.Sundupalli	2*16	1*31.5+1*16	220.00	2024-25	15.5
17	Anantapur	132 KVSS LEPAKSHI	2*16	2*16+1*31.5+1*31.5	1063.89	2024-25	63
18		132 KVSS Jammalabanda	1*31.5+1*50	2*50	597.99	2024-25	18.5
19		132 KVSS Amarapuram	2*16	1*16+1*31.5	531.95	2024-25	15.5
20		132 KVSS Madakasira	2*16	1*16+1*31.5	531.95	2024-25	15.5
21		220KV SS Kalyandurg	3*100+3*50 (PTR - II)	3*100+1*80+2*50	670.72	2024-25	30
22		220KV SS Anantapuram	3*100 (PTR-III)	1*160+2*100	1478.10	2024-25	60
23		220KV SS Anantapuram	1*80+2*50+1*31.5 (PTR - II)	2*80+1*50+1*31.5	670.72	2024-25	30
24		132KV SS GUNTAKAL	2*31.5	1*50+1*31.5	597.99	2024-25	18.5
25		132KV SS Uravakonda	2*31.5	1*50+1*31.5	597.99	2024-25	18.5
26	Kurnool	220KV SS Nandyal	1*160+2*100+3*50	2*160+1*100+2*50+1*80	1772.00	2024-25	90
27		132KV SS Atmakur	2*31.5	2*31.5+1*50	734.00	2024-25	50

28		132KV SS Rudravaram	2*31.5	2*31.5+1*50	734.00	2024-25	50
29		132KV SS Ankireddypalli	1*31.5+1*16	1*31.5+1*50	585.00	2024-25	34
30		132 KV SS Dhone	2*31.5	1*31.5+1*50	495.00	2024-25	18.5
31		132 KV SS Kurnool	2*31.5+1*16	2*31.5+1*50	495.00	2024-25	34
32		220 KV SS AP Carbides, Kurnool	2*160+1*100+2*31.5	3*160+1*100+2*31.5	933.00	2024-25	160
33	400Kv Circle	400KV SS Uravakonda	2*315+2*500	4*500	7000.00	2024-25	185
34		400KV SS Talaricheruvu	3*315	3* 500	12000.00	2024-25	555
35		400KV SS Rachagunner	2*315	2*315+1*500	-	2024-25	500
36		400KV SS Kalikiri	2*315	2*315+1*500	-	2024-25	500
37		400KV SS Rachagunner	2*315+1*500	2*315+2*500	-	2024-25	500
Total for FY 2024-25					41955.18		3409
FY2025-26							
1	Chittoor	220KV SS Renigunta	1*160+2*100+3*31.5	2*160+1*100+3*31.5	1,500.00	2025-26	60
2		132KV SS Srikalahasti	2*31.5+1*50	1*31.5+2*50	666.00	2025-26	18.5
3		132KV SS Tirupati	2*50	1*50+1*80	968.00	2025-26	30
4		132KV SS Chandragiri	1*31.5+1*16	2*31.5	484.00	2025-26	15.5
5		132KV SS Irala	1*31.5+1*16	1*31.5+1*50	666.00	2025-26	34
6		220KV SS Palamaneru	1*160+2*100 + 1*50+1*80	1*160+2*100 + 2*50+1*80	760.00	2025-26	50
7		220KV SS Kuppam	3*100	2*100+1*160	1,500.00	2025-26	60

8		132KV SS Kuppam	3*50	2*50+1*80	968.00	2025-26	30
9		132KV SS Madanapalli	2*50	3*50	800.00	2025-26	50
10	Kadapa	220KVSS Kondapuram	2*100+2*31.5	1*100+1*160+2*31.5	1,478.10	2025-26	60
11		220KVSS Yerraguntla	1*160+2*100+2*31.5+1*16	1*160+2*100+3*31.5	531.95	2025-26	15.5
12		220KVSS Kadapa	1*160+ 2*100 + 1*50+1*80	1*160+2*100 + 2*80	630.00	2025-26	30
13	Anantapur	132KV SS Taticherla	1*50+1*31.5	2*50	597.99	2025-26	18.5
14		220KV SS Anantapuramu	1*160+2*100 (PTR 1)	2*160+1*100	1,478.10	2025-26	60
15	Kurnool	220KV SS Nandyal	2*160+1*100 + 2*50+1*80	2*160+1*100 + 2*50+1*80+1*31.5	801.00	2025-26	31.5
16		132KV SS Allagadda	2*50	3*50	860.00	2025-26	50
17		132KV SS Rudravaram	3*31.5	2*31.5+1*50	717.00	2025-26	18.5
18		132KV SS Banaganapalli	1*31.5+2*16	2*31.5+1*16	638.00	2025-26	15.5
19		132KV SS Mudigedu	2*16	1*31.5+1*16	638.00	2025-26	15.5
20		132KV SS Cement Nagar	2*31.5	1*31.5 +1*50	717.00	2025-26	18.5
21		132 KV SS Dhone	1*31.5 +1*50	2*50	540.00	2025-26	18.5
Total for FY 2025-26					17939.14		700
FY2026-27							
1	Chittoor	220KV SS Renigunta	2*160+1*100+3*31.5	2*160+1*100+1*50 +2*31.5	726.00	2026-27	18.5
2		220KV SS Nagari	3*100 + 3*31.5	2*100+1*160 + 2*31.5+1*50	2,363.00	2026-27	78.5

3		132KV SS Nagalapuram	2*31.5	1*31.5+1*50	726.00	2026-27	18.5
4		132KV SS Pakala	1*50+1*31.5	2*50+1*31.5	900.00	2026-27	50
5		132KV SS N.G.Palli	2*31.5	1*31.5+1*50	726.00	2026-27	18.5
6		132KV SS Punganur	2*50	1*50+1*80	1,056.00	2026-27	30
7		132KV SS Santhipuram	1*50+1*80	2*50+1*80	726.00	2026-27	50
8		132KV SS Burrakayalakota	2*31.5+1*50	2*50+1*31.5	726.00	2026-27	18.5
9		220KV SS Kalikiri	3*100 + 2*31.5+1*50	2*100+1*160 + 2*50+1*31.5	2,363.00	2026-27	78.5
10		132KV SS Gurramkonda	1*50+1*31.5	2*50+1*31.5	900.00	2026-27	18.5
9	Kadapa	132KVSS Duvvur	1*16+1*31.5	2*31.5	260.00	2026-27	15.5
10		132KVSS Badvel	1*31.5 +2*16	2*31.5 + 1*16	260.00	2026-27	15.5
11		220KVSS Yerraguntla	1*160+2*100+3*31.5	1*160+2*100+2*31.5+1*50	597.99	2026-27	18.5
12	Anantapur	220KV SS Kalyandurg	3*100+1*80 + 2*50 (PTR-III)	1*160+2*100 + 1*80 + 2*50	1,478.10	2026-27	60
13		132KV SS GUNTAKAL	1*50+1*31.5	2*50	597.99	2026-27	18.5
14		132KV SS Uravakonda	1*50 + 1*31.5	2*50	597.99	2026-27	18.5
15	Kurnool	132 KV SS Gudur	2*31.5	1*31.5+1*50	495.00	2026-27	18.5
16	Chittoor	400KV SS Chittoor	3*315	2*315 + 1*500	3,000.00	2026-27	185
Total for FY 2026-27					18499.07		729.5
FY2027-28							
1	Chittoor	132KV SS Srikalahasti	2*31.5+1*50	2*50+1*31.5	787.00	2027-28	18.5

2		132KV SS Cherivi	2*50+1*31.5	3*50	787.00	2027-28	18.5
3		132KV SS Pachikapallam	2*31.5	1*50+1*31.5	787.00	2027-28	18.5
4		132KV SS Tirupati	2*50	1*50+1*80	1,144.00	2027-28	30
5		132KV SS Rompicherla	1*50+1*31.5	2*50	787.00	2027-28	18.5
6		220KV SS Chittoor	2*100+1*160 + 3*50	2*160+1*100 + 3*50	1,773.00	2027-28	60
7		132KV SS Penumur	2*31.5	1*50+1*31.5	787.00	2027-28	18.5
8		220KV SS Palamaneru	2*100+1*160 + 1*50+1*80	2*100+1*160 + 2*80	1,144.00	2027-28	30
9		132KV SS Ramasamudram	1*31.5+1*16	1*31.5+1*50	800.00	2027-28	34
10		220KV SS Madanapalli	3*100	2*100+1*160	1,773.00	2027-28	60
11	Kadapa	132KVSS Vempalli	2*31.5+1*16	3*31.5	531.95	2027-28	15.5
12		220KVSS kondapuram	1*100+1*160+2*31.5	2*160+2*31.5	1,478.10	2027-28	60
13		132KVSS Lingala	1*31.5+2*16	2*31.5+1*16	531.95	2027-28	15.5
14		132KVSS Jammalamadugu	2*31.5	2*31.5+1*50	597.99	2027-28	50
15		220KVSS Chakrayapeta	2*100+1*16+1*31.5	2*100+2*31.5	531.95	2027-28	15.5
16		220KVSS Kodur	1*31.5+ 2*50	3*50	650.00	2027-28	18.5
17		220KVSS Mydukur 220/33KV	1*31.5+2*50	1*31.5+1*50+1*80	630.00	2027-28	30
18		132KVSS Proddatur	2*31.5	3*31.5	531.95	2027-28	31.5

19	Kurnool	132KV SS Ankireddypalli	2*31.5	1*31.5+1*50	836.00	2027-28	31.5
20		132KV SS Mudigedu	1*31.5 +1*16	2*31.5	745.00	2027-28	15.5
21		220/11 KV SS Krishnagiri	3*21.5+1*50	3*21.5+2*50	600.00	2027-28	50
22	Anantapur	400KV SS Hindupur	4*315	2*315+2*500	7,000.00	2027-28	50
Total for FY 2027-28					25233.89		690
FY2028-29							
1	Chittoor	220KV SS Renigunta	1*160+2*100 + 3*31.5	2*160+1*100 + 2*31.5+1*50	2,757.00	2028-29	78.5
2		220KV SS Nagari	3*100+3*31.5	3*100 + 2*31.5+1*50	847.00	2028-29	18.5
3		132KV SS Puttur	1*50+1*31.5	1*50+2*31.5	716.00	2028-29	31.5
4		132KV SS Chandragiri	1*31.5+1*16	1*31.5+1*50	847.00	2028-29	34
5		132KV SS Alipiri	2*50+1*31.5	3*50	847.00	2028-29	18.5
6		220KV SS Palamaneru	2*100+1*160 + 1*50+1*80	2*160+1*100 + 1*50+1*80	1,910.00	2028-29	60
7		132KV SS Kuppam	3*50	2*50+1*80	1,232.00	2028-29	30
8		132KV SS Madanapalli	2*50	1*50+1*80	1,232.00	2028-29	30
9		220KV SS Kalikiri	3*100 + 2*31.5+1*50	2*100+1*160 + 2*31.5+1*80	3,142.00	2028-29	90
10		132KV SS Somala	2*31.5	1*31.5+1*50	847.00	2028-29	18.5
11	Kadapa	132KVSS Balapanur	2*31.5	1*31.5+1*50	597.99	2028-29	18.5
12		220KVSS Mydukur	1*31.5+1* 50+1*80	2*50+1*80	480.00	2028-29	18.5
13		220KVSS Yerraguntla	1*160+2*100+2*31.5+1*50	2*160+1*100+2*31.5+1*50	1,478.10	2028-29	60

14	Anantapur	220KV SS Anantapuramu	2*160+1*100	3*160	1,478.10	2028-29	60
15		220KV SS Anantapuramu	2*80+1*50+1*31.5	2*80+2*50	597.99	2028-29	18.5
16		132KV SS GUNTAKAL	2*50	3*50	597.99	2028-29	50
17	Kurnool	132KV SS Atmakur	3*31.5	2*31.5+1*50	896.00	2028-29	18.5
18		132 KV SS Madhavaram	2*31.5	1*31.5+1*50	630.00	2028-29	18.5
Total for FY 2028-29					21133.17		672