STATE ELECTRICITY PLAN

(FY 2023-24 to FY 2033-34)

May 2023

State Electricity Plan for

balance 4th Control Period (FY 2023-24),
5th Control Period (FY 2024-25 to FY 2028-29)
And
6th Control Period (FY 2029-30 to FY 2033-34)

Contents

1. INTRODUCTION

The State Electricity Plan (SEP) for Andhra Pradesh from FY 2023-24 to FY 2028-29 considers the projections of energy demand for the said period. 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 2033-34. The energy demand is projected to grow at a CAGR of about 6.64% in the said period as per the resource plan submitted by DISCOMs.

The availability of generation from various sources (long term and medium term) 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 around 1064 MW of thermal capacity, 100 MW of Nuclear, 8159 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. SEP also considers tentative plan from FY2029-30 to FY2033-34.

1.1 APERC Guidelines

The Andhra Pradesh Electricity Regulatory Commission (APERC), directs 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.

APTRANSCO, in preparing the State Electricity Plan, shall publish the draft State Electricity Plan and invite suggestions and objections thereon from licensees, generating companies, the Commission and the public within such time as may be specified by the Commission:

Provided that APTRANSCO shall:

(a) notify the plan after considering the comments of the Commission and all stakeholders, and obtaining the approval of the State Coordination Forum;

and

b) revise the plan incorporating therein the directions, if any, given by the State Coordination Forum while granting approval under (a) above.

The State Electricity Plan would be for a short-term framework of a period equal to Control Period under consideration for tariff review while giving a perspective for two (2) Control Periods (Control Period under consideration for tariff review and subsequent Control period) and shall include:

- Short-term and long-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 center 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 ; and
- 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.

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 timeframe. 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.

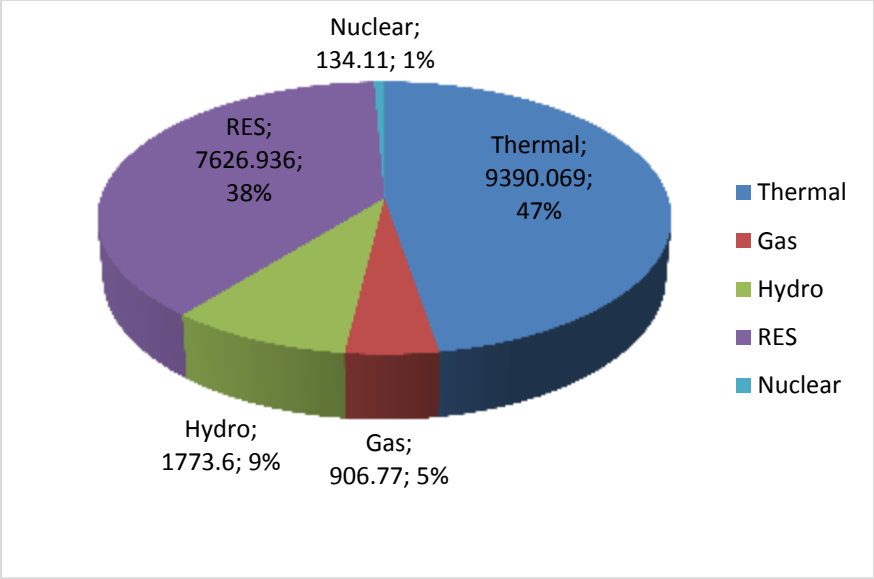
CEA would be functioning as the nodal authority for implementation & monitoring of the program. The Central PSUs namely NTPC, CIL, MCL, WCL, SCCL, PFC, REC, NHPC, NPCIL, PGCIL, BHEL, EESL, BEE, SECI, ONGC, GAIL, NVVNL along-with the State PSUs APGENCO, APTRANSCO, APDISCOMS, NREDCAP and SECM would be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

1.3 Andhra Pradesh Power Sector at a glance

The total installed capacity of Andhra Pradesh is 19832 MW as on 31-03-2023. The total number of consumers in the state is 207.18 lakhs which includes 163.17 lakhs of domestic, 19.60 lakhs of commercial, 1.40 lakhs of industrial, 19.34 lakhs of agricultural categories as on 28.02.2023. The total energy consumption (at utility periphery) in Andhra Pradesh during FY 2022-23 was 72400 MU and the peak demand so far occurred in May 2023 was 12653 MW. Maximum Daily grid consumption is 251 MU.

1.4 Installed Capacity

The present installed capacity as on 31-03-2023 of Andhra Pradhesh is 19832 MW, comprising 9390.069 MW of thermal, 1,773.6 MW of APGenco Hydel, 906.77 MW of Gas projects, 134.11 MW Nuclear & 7626.936MW Renewables.



1.5 Position of Transmission and Distribution

The Transmission infrastructure as on 31-03-2023 consists of 17 Nos. of 400 kV substations, 105 Nos. of 220 kV substations, 238 Nos. of 132 kV substations and 31,665 Ckm of EHT lines. The Transmission losses during FY 2021-22 was 2.76%.

There are 3251 Nos. of 33/11kV substations, 11,77,838 Nos. Distribution Transformers and 29,518 CkM of 33 KV lines as on 28th February 2023.

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 hrs Agricultural supply only. Whereas, balance 17 hrs 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.

2. LOAD FORECAST

Sales forecast is prepared using trend method and End use method by respective Discoms, takes into consideration various economic and central/state level initiatives which affect the forecasted sales for 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 supplying 24 hr power to non – Agricultural consumers and 9 hours to Agricultural consumers during day time with no load restriction in 5th & 6th control periods. The determinants for future sales are discussed.

The consolidated Sales and Load forecast is prepared by aggregating the Discoms sales forecast by taking into account 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.

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.

2.1 Solar Roof Top

The rooftop installations in the State have been undertaken in different consumer categories both in LT and HT. Category-wise Solar rooftop projects installed in MW have been shown below:

Consumer Category	Roof Top installation in MW						
	FY18	FY19	FY20	FY21	FY22	FY23	CAGR
LT I	10.165	16.861	29.932	39.959	56.245	79.384	50.84%
LT II	32.15	55.68	73.73	95.785	122.286	154.117	36.82%
LT III	6.053	8.696	14.047	17.045	21.472	28.271	36.11%
LT IV	13.682	25.157	63.824	71.573	78.062	87.539	44.95%
HT I	0.36	1.176	1.286	2.392	2.602	2.602	48.53%
HT II	35.776	46.086	57.382	60.936	63.377	65.468	12.85%
HT III	41.516	44.363	51.9	57.505	61.52	63.621	8.91%
HT IV	10.45	9.41	13.11	8.87	9.02	9.23	-2.45%
Total	150.152	207.429	305.211	354.065	414.584	490.232	26.70%

Historical growth in Solar rooftop installations is high due to Low base and APDiscoms expect moderation in growth in 5th and 6th control periods. The Discoms have projected that installed capacity & generation from solar roof top installations would increase at a CAGR of 10% for 5th and 6th control period. The Energy generation from Solar roof top installation in MU in the 5th and 6th control periods is shown in the table below.

Consumer Category	Generation in MU from Roof Top Installations										
	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
LT I	27.958	30.73	33.73	37.01	40.6	44.56	48.9	53.67	58.9	64.66	70.97
LT II	23.549	25.93	28.43	31.16	34.17	37.48	41.1	45.07	49.44	54.24	59.5
LT III	7.604	8.38	9.19	10.08	11.05	12.11	13.29	14.58	16	17.54	19.24
LT IV	8.496	9.34	10.26	11.26	12.38	13.59	14.94	16.41	18.03	19.8	21.77
HT I	1.9478	2.03	2.12	2.21	2.32	2.44	2.55	2.69	2.84	2.99	3.16
HT II	64.4656	68.61	73.11	78.01	83.36	89.18	95.52	102.42	109.97	118.19	127.18
HT III	110.271	121.12	132.95	145.95	160.22	175.9	193.13	212.05	232.82	255.66	280.73
HT IV	31.7266	34.72	38.03	41.65	45.65	50.02	54.84	60.12	65.93	72.32	79.33
Total	276.02	300.86	327.82	357.33	389.75	425.28	464.27	507.01	553.93	605.4	661.88

2.2 Electric Vehicles:

GoI 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 projections for Electric Vehicles in Numbers in the State are given below.

Year	No. of Electric Vehicles (Year wise)										
	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034
2W	52,334	80,386	1,23,474	1,89,658	2,91,317	4,47,468	6,87,318	7,38,550	7,93,602	8,52,757	9,16,322
3W	6,951	9,664	13,435	18,677	25,965	36,097	50,184	53,924	57,944	62,263	66,904
4W	9,318	11,845	15,056	19,138	24,327	30,923	39,307	44,269	49,858	56,153	63,242
Goods	239	397	661	1,101	1,834	3,054	5,086	5,833	6,691	7,674	8,802
Buses	133	178	238	319	427	572	766	882	1,016	1,170	1,348
Total vehicles	**68,975**	**1,02,469**	**1,52,864**	**2,28,893**	**3,43,871**	**5,18,114**	**7,82,660**	**8,43,459**	**9,09,111**	**9,80,017**	**10,56,617**

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	FY 30	FY 31	FY 32	FY 33	FY 34
2W	3	5	7	11	17	26	39	60	93	100	107	115	124
3W	1	1	2	2	3	4	6	8	11	12	13	14	15
4W	4	6	7	9	12	15	19	24	30	34	38	43	48
Goods	4	7	12	19	32	54	89	149	248	284	326	373	428
Buses	3	5	6	8	11	15	19	26	35	40	46	53	61
Total	16	23	33	50	74	113	173	267	417	470	531	599	677

2.3 Short Term load forecast from FY2023-24 to FY2028-29

The consolidated Sales and Load forecast is prepared by aggregating the Discoms sales forecast by taking into account 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.

Transmission losses will be reduced from present level of 2.75% in FY2022-23 to 2.70% by FY2028-29. T & D losses will follow downtrend from 11.5% (including PGCIL Losses of 0.8%) in FY 2023-24 to 10.98% (including PGCIL Losses of 0.95%) by FY2028-29 due to efficiency gains and measures like HVDS (High voltage distribution system) undertaken by AP Discoms.

Consumption Categories	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
Energy Consumption - MUs							
1. Domestic	17330	18329	19468	20670	21771	22933	24160
2. Commercial	5283	5650	5954	6275	6613	6971	7351
3. Public lighting	315	328	340	353	366	379	392
4. Public Water Works	1262	1348	1461	1583	1716	1861	2020
5. Irrigation	15011	16892	18320	19806	20841	21948	23107
6. LT Industries	1531	1623	1677	1734	1793	1855	1919
7. HT Industries	20173	21021	23086	24470	29556	31155	32877
8. Railway Traction	2011	2200	2347	2510	2693	2901	3524
9. Bulk Supply	1165	1212	1261	1312	1364	1417	1473
10. Others	1149	1757	1855	1961	2078	2206	2327
Total Energy Consumption	**65228**	**70361**	**75768**	**80674**	**88792**	**93626**	**99150**
T&D losses - in %	9.7%	10.7%	10.4%	10.4%	10.02%	10.0%	10.03%
Energy Requirement - MU	72236	78760	84602	90011	98678	104068	110203
Annual Load factor	67.23%	66.00%	64.00%	63.85%	63.85%	63.85%	63.85%
Peak Demand - MW	12266	13622	15090	16093	17642	18606	19703
Energy Requirement (Ex-Bus) - MU	72400	79471	85364	90924	99731	105179	111379
Peak Demand MW - Ex. Bus	12293	13746	15226	16256	17830	18805	19913

2.4 Long Term Load Forecast from FY 2029-30 to FY 2033-34

The consolidated Sales and Load forecast is prepared using trend method and End user method in view of demand expected to come up due to growth in cities Vizag, Vijayawada , Guntur ,Tirupati , Kurnool , Vizag Chennai Industrial Corridor (VCIC), Kakinada SEZ, Sri City SEZ, new airports, and new sea ports.

New lift irrigation schemes i.e Chintalapudi, & Hiramandalam, 24x7 power supply to all consumers and 9 hrs supply to agriculture consumers during day time will further contribute in increasing demand.

Transmission losses will be reduced from present level of 2.75% (FY2022-23) to 2.7% by FY2028-29 and will further come down to 2.6% by FY 2033-2034. T & D losses (including PGCIL Losses) will follow similar trends from 11.5% in FY 2023-24 to 10.98% by FY2028-29 and further come down 10.8% by FY2033-34 due to efficiency gains and measures like HVDS (High voltage distribution system) undertaken by AP Discoms.

The category wise sales forecast and state level energy and peak demand forecast from FY2029-30 to FY2033-34 as submitted in the Resource plan to APERC is as below:

Consumption Categories	**2030**	**2031**	**2032**	**2033**	**2034**
Energy Consumption -MUs					
1. Domestic	25453	26816	28255	29773	31374
2. Commercial	7756	8187	8647	9140	9669
3. Public lighting	405	418	431	445	460
4. Public Water Works	2191	2380	2584	2806	3047
5. Irrigation	24340	25656	27066	28572	30184
6. LT Industries	1986	2056	2130	2206	2286
7. HT Industries	34731	36732	38893	41226	43753
8. Railway Traction	3727	3966	4395	4730	5114
9. Bulk Supply	1531	1591	1653	1692	1733
10. Others	2476	2647	2837	3047	3280
Total Energy Consumption	**104596**	**110449**	**116890**	**123636**	**130899**
T&D losses -in %	10.0%	10.0%	10.0%	9.9%	9.9%
Energy Requirement - MU	116271	122759	129885	137292	145331
Annual Load factor	63.75%	63.65%	63.60%	63.50%	62.40%
Peak Demand - MW	20820	22017	23313	24681	26587
Energy Requirement (Ex-Bus) - MU	117512	124069	131271	138755	146880
Peak Demand MW –Ex-bus	21042	22252	23562	24944	26870

2.5 20th EPS (Electric Power Survey) by CEA

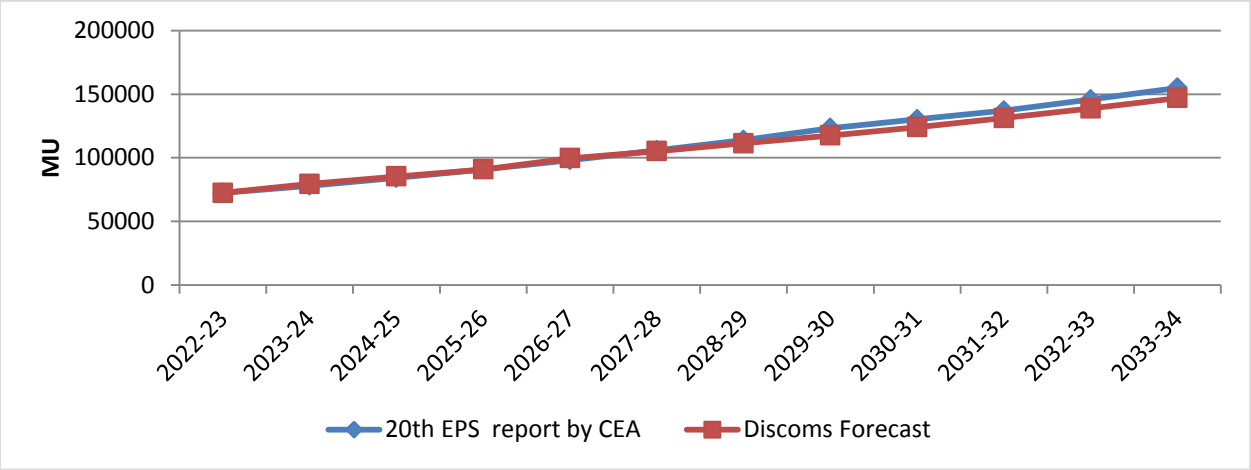
CEA prepared 20th EPS in fulfillment of CEA's obligation under section 73(a) of the electricity act 2003. The load forecast published by Central Electricity Authority (CEA) in 20th Electric Power Survey is tabulated below.

Consumption Categories	**2022-23**	**2023-24**	**2024-25**	**2025-26**	**2026-27**	**2027-28**	**2028-29**	**2029-30**	**2030-31**	**2031-32**
Energy Consumption - MUs										
1. Domestic	19858	21529	23320	25238	27290	29486	31836	34352	37055	39779
2. Commercial	5109	5468	5852	6262	6702	7176	7690	8255	8885	9518
3. Public lighting	315	328	340	353	366	379	392	405	418	431
4. Public Water Works	1051	1149	1257	1373	1501	1640	1792	1957	2138	2334
5. Irrigation	14425	15002	15598	16214	17007	17694	18400	19125	19869	20632
6. LT Industries	1588	1673	1761	1850	1939	2029	2118	2203	2283	2356
7. HT Industries	18167	19771	22033	24587	27349	30352	33525	37735	39316	40851
8. Railway Traction	1768	1859	1953	2050	2151	2254	2360	2469	2581	2696
9. Bulk Supply	730	753	777	801	825	849	873	898	923	948
10. Others	1513	1601	1692	1787	1886	1988	2094	2204	2317	2434
Total Energy Consumption	**64523**	**69133**	**74583**	**80515**	**87016**	**93847**	**101081**	**109604**	**115785**	**121978**
T&D losses -MU	7891	8414	9030	9693	10410	11152	11924	12832	13434	14016
T&D losses -in %	10.90	10.85	10.80	10.74	10.68	10.62	10.55	10.48	10.40	10.31
Energy Requirement - MU	72414	77548	83613	90207	97426	104999	113005	122436	129219	135995
Annual Load Factor - %	61.86	62.04	62.23	62.43	62.63	62.84	63.05	63.27	63.47	63.66
Peak Demand - MW	**13363**	**14269**	**15337**	**16495**	**17758**	**19076**	**20461**	**22091**	**23243**	**24387**
Energy Requirement (Ex-Bus) - MU	**72961**	**78134**	**84245**	**90889**	**98162**	**105792**	**113859**	**123361**	**130196**	**137022**
T&D losses (Ex- Bus) (%)	11.56	11.52	11.47	11.41	11.35	11.29	11.22	11.15	11.07	10.98

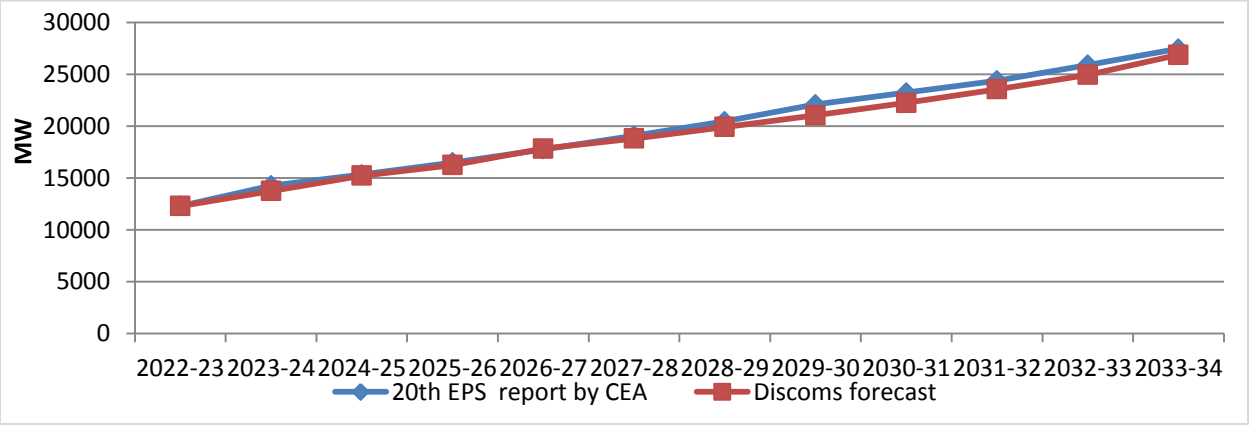
2.6 Comparison of Load Forecasts

Comparison of Energy forecast (MU) and Demand Forecast (MW) by Discoms with the 20th EPS projections by CEA are shown below in table and figure 1 and figure 2. Discoms energy forecast is almost in line with 20th EPS by CEA in 5th Control period and slightly lower in the 6th control period due to Energy efficiency initiatives like Domestic Efficient Lighting Programme (DELP), Domestic Efficient Fans Programme (DEFP) etc.

Energy Requirement (MU)	22-23	23-24	24-25	25-26	26-27	27-28	28-29	29-30	30-31	31-32	32-33	33-34	CAGR 2023-34
20th EPS report by CEA	72400	78134	84245	90889	98162	105792	113859	123361	130196	137022	145746	155026	7.17%
Discoms Forecast	72400	79471	85364	90924	99731	105179	111379	117512	124069	131271	138755	146880	6.64%



Demand (MW)	22-23	23-24	24-25	25-26	26-27	27-28	28-29	29-30	30-31	31-32	32-33	33-34	CAGR 2023-34
20th EPS report by CEA	12293	14269	15337	16495	17758	19076	20461	22091	23243	24387	25907	27461	7.58%
Discoms forecast	12293	13746	15226	16256	17830	18805	19913	21042	22252	23562	24944	26870	7.37%



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 two control periods - FY 2023-24 to FY 2028-29 and FY 2029-30 to FY 2033-34. In the following sections, the capacities and availability from various existing and upcoming generating sources along with their expected date of Commissioning have been described.

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 APDISCOMs would purchase the 100% share from the existing APGENCO stations.

Source	Project Installed Capacity (MW)	Contracted Capacity -AP Share (MW)
THERMAL		
Dr. NTTPS (I, II, III)	1,260	1,260
RTPP-I	420	420
RTPP-II	420	420
RTPP- III	210	210
RTPP IV	600	600
Dr. NTTPS – IV	500	500
TOTAL THERMAL	**3,410**	**3,410**
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
Srisailam right bank PH	770	770
Nagarjunsagar right canal PH	90	90
PABM	20	20

Mini hydro	1	1
Nagarjunsagar Tail Pond	50	50
TOTAL HYDEL	**1,774**	**1,774**
TOTAL APGENCO & Inter-state	**5,184**	**5,184**

3.1.2 Old APGENCO Stations:

The composite PPA with AP Genco which covers several old stations both in Thermal & Hydel category is expiring by the end of the present fourth control period. This PPA majorly covers the following plants.

NTTPS –Stage-I, II & III (1 to 6 units): 1260 MW
RTPP Stage- I (2 units): 420 MW
Hydel – 1723.60 MW, which covers Inter State projects such as Machkund PH, Tungabhadra PH and other State projects including USL, LSR, Donkarayi, SRBPH, NSRCPH, NSTPHES, PABM, Mini Hydro (Chettipeta).

Further, it is noted that 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. Accordingly, APDISCOMs subject to the approval of Hon'ble APERC are provisionally considering the power procurement from these plants up to FY 2033-34 up to the end of 6th control period up to which the present planning exercise is prepared.

Further, the PPA with RTPP Stage II- (2*210MW) is going to expire on 28.03.2033. This plant is also considered till the horizon of 6th control period.

ln 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 following table captures the expected capacity addition of APGENCO Thermal and Hydel stations from FY 2023-24 to FY 2028-29:

Source	Project Installed Capacity (MW)	Expected COD
THERMAL		
VTPS - V	800	01-09-2023
TOTAL THERMAL	**800**	
HYDEL		
Lower Sileru -2 units	230	FY2024-25
Polavaram – 1st to 7th Units	560	FY2024-25
Polavaram – 8th to 12th Units	400	FY2025-26
Upper Sileru Pumped Storage 1st to 8th Units	1200	FY2027-28
Upper Sileru Pumped Storage 9th Unit	150	FY2028-29
TOTAL HYDEL	**2540**	
TOTAL APGENCO	**3,340**	

An additional 3340 MW of capacity is expected to be added by APGENCO by the completion of the fifth control period.

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 31st March 2023) are indicated in the following table:

Sl. 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	NTPCSimhadri 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 sta-

tions 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.

A single Window System shall be created through which the desiring State(s)/Discoms including the existing beneficiaries shall submit their willingness for power allocation (quantum as well as period) within 15 days from the formation of Common Pool. The minimum requisition period for power from the Common Pool shall be 5 years. The States/DISCOM shall have to enter a contract (PPA) for a minimum period of 5 years from the intended date of Start of drawl of power from the Common Pool.

In accordance with the scheme APDISCOMs are expected to loose allocation from Ramagundam stage 1&2 immediately. To get power to the extent of share from Ramagundam stage 1 and 2 we have to apply in the common pool portal spontaneously at that time.

With due regard to the impact of the scheme on the beneficiaries, which is yet to be studied in depth, APDISCOMs considering the entire allocated capacity as is available now from the existing central generating stations throughout the fifth & sixth control periods.

Continuing procurement from four CGS stations which were disallowed by the APERC:

In Retail Supply Tariff Order (RSTO) FY2022-23, at Para 100, the Hon’ble Commission has mentioned that since there is no consent of the Commission for the PPA’s with CGS, there is no obligation to take power from them unless the Commission approves the same on case-to-case basis. The Commission further stated that the Ministry of Power (MoP), GoI vide its letter dated 28.08.2006 had clarified that the PPAs the DISCOMs enter into with interstate projects shall have the approval of the State Electricity Regulatory Commission

(SERC) concerned as they only have the powers to regulate electricity purchases and procurement process of distribution licensees under section 86(1)(b) of the Electricity Act, 2003 except the tariff and tariff related matters of the PPAs.

Accordingly, the Commission has disallowed the dispatch from the following four CGSs whose AP share of contracted capacity is indicated below:

NTPC-Kudgi	:	244.56 MW
NTECL –Vallur	:	86.15 MW
NTPL	:	121.33 MW
NNTPS	:	52.70 MW
Total		504.74 MW

APSLDC/APDISCOMs are of the opinion that the existing base generation capacity from Intra State & Central generating stations without these four CGS stations aggregating to about 500 MW, will not be sufficient to meet the minimum load persistent on the system for all time blocks in an year with a stringent requirement to comply to the above Hon'ble CERC Regulations. If the power procurement from these base load plants is not approved, DISCOMs have to rely on market purchases even to meet the base load, which is more susceptible to surplus availability across States, Demand conditions across Nation and Coal logistics, leaving the fulfillment of the objective of 24X7 power supply in question.

After thorough testing of adequacy of the "Base Load" thermal capacity requirement and in order to meet the Grid demand to provide uninterrupted supply to the end users, APSLDC/APDISCOMs have scheduled power from these four CGS plants to their entitlement treating this power as most viable when compared to prices in Power Markets. This is to extend 24X7 reliable, secured and cost effective power supply to the Consumers in the State. Procurement of power from these four CGS stations is continued and also proposed in the ARR Filings of APDISCOMs for the ensuing Financial Year for FY 2023-24, filed in November 2022 with the following justification.

In view of existing PPAs with the subject central generating plants, APDISCOMs cannot get away with the fixed cost obligation, even though the plants are not dispatched or procurement is not approved by the Hon'ble Commission. The annual fixed cost liability is to the tune of Rs 500 Crs. on AP DISCOMs.

The new DSM Regulations, IEGC, RE Curtailment Guidelines issued by Forum of Regulators (FOR) cast lot of responsibility on DISCOMs and are very stringent are trying to force the beneficiaries to strictly adhere to the schedule drawls / injections as the case may be.

Further APDISCOMs are seeking the approval of Hon'ble Commission for all existing PPAs with Central Generating Stations (CGS) within a short time by filing individual petitions duly justifying the need and necessity.

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		
Bhavni	100	FY2024-25
THERMAL		
Telangana STPS	16	FY2023-24
Talcher	264	FY2027-28
TOTAL Thermal	**280**	
TOTAL CGS	**380**	

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

Hence these plants are not considered for 6th Control Period

3.1.7 IPPs-Thermal

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

Sl. No.	Source of Power	COD DD/MM/YYYY	AP Share (MW)
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.

Sr. 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 hrs 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).

M/s. SECI, a GOI undertaking made an offer to AP DISCOMs in 2021 for procurement of 9000 MW Solar power from the projects being set up at Rajasthan vide Manufacturing linked scheme, with a tariff @ Rs. 2.49 per unit with a waiver of ISTS charges and losses to Andhra Pradesh.

AP DISCOMs submitted interim power procurement plan for the 5th control period to the Hon'ble APERC and sought approval for procurement of 7000 MW Solar power from SECI manufacturing linked scheme. Hon'ble APERC vide orders dt. 11.11.2021 issued consent for procurement of 7000 MW Solar Power from SECI.

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 Wind Power

There will be also an addition of 774.9 MW wind power from M/s. Axis Energy during FY2025-26.

Also, there are certain PPAs of wind power plants are going to expire viz., 2.5 MW during FY2023-24, 10.85 MW during FY2025-26, 4.5 MW during FY2026-27, 83.55 MW during FY2030-31, 34.25 MW during FY2031-32 and 28.9 MW during FY20232-33.

3.1.11 400MW of Power under BBB Scheme (Bundling, Balancing & Banking):

M/s. Axis Energy entered agreement with APSPDCL for 400 MW of power under Bundling, Balancing & Banking (BBB) scheme which comprises of 640.5 MW wind and 400MW solar which is expected to come into operation in FY2025-26.

3.1.12 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 Sector wise Capacity Addition FY 2023-24 to FY 2028-29

The below table captures the expected capacity addition of APGENCO Thermal and Hydel stations, IPPS, CGS and Renewable energy sources during FY2023-24 to FY2028-29.

Source	FY24	FY25	FY26	FY27	FY28	FY29	Total
APGENCO							
Hydro Plants							
Polavaram (12x80MW)		560	400				960
Lower Sileru (2X115MW)		230					230
Upper Sileru Pumped storage (9X150)					1200	150	1350
Thermal Plants							
Vijayawada TPS Stage V (1x800 MW)	800						800
APGENCO Total	800	790	400		1200	150	3340
CGS							
Telangana Super Thermal Power Station Phase I (Unit-1&2)	16						16
Bhavani		100					100
Talcher stg=III					264		264
Private Projects							
Wind	-2.5	0	764.5	-4.5			757.5
Solar (SECI from Rajasthan)		3000	3000	1000			7000
Solar				-1			-1
BBB Scheme (Wind & Solar)			400				400
Gas (GVK extn. Gouthami, Konaseema, Vemagiri)		-315.4		-204.8		-170.9	-691
Other NCE	-77.3	-4.7	-27	-10	-2	-14.66	-135.66
Total Capacity addition	**736.2**	**3569.9**	**4537.5**	**779.7**	**1462**	**-35.56**	**11050.74**

3.3 Coal Requirement by APGENCO

The total coal requirement of APGENCO is 23.64 MTPA to generate 29591 MU. The coal is mainly supplied by CIL and SCCL the details are tabulated below for FY 2023-24.

S.No.	Description		Units	2023-24
1	**Coal Requirement**	**Dr. NTTPS**	MMTPA	14.49
		RTPP	MMTPA	9.15
		Total	MMTPA	23.64
1.1	Coal based Generation	**Dr. NTTPS**	MU	17,762
		RTPP	MU	11,829
1.2	**Total coal based Generation**		MU	**29,591**
1.3	Hydro based Generation		MU	3,714
1.4	**Total Generation**		MU	**33,305**
1.6	**Coal Requirement**		MMTPA	**23.64**
	a. Imports by plants designed on imported coal		MMTPA	0.00
	b. Domestic coal requirement		MMTPA	**23.64**

The above details pertain to Dr. NTTPS (1,760 MW), RTPP (1,650 MW)

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

Sl. No.	Description		Units	24-25	25-26	26-27	27-28	28-29
1	**Coal Requirement**	**Dr. NTTPS**	MMTPA	14.49	14.55	14.55	14.55	14.55
		RTPP	MMTPA	9.02	9.20	9.15	9.16	9.11
		Total	MMTPA	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 Gen-eration		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**
1.6	**Coal Requirement**		MMTPA	**23.51**	**23.76**	**23.71**	**23.71**	**23.67**
a. Imports by plants de-signed on imported coal			MMTPA	0.00	0.00	0.00	0.00	0.00
b. Domestic coal requirement			MMTPA	**23.51**	**23.76**	**23.71**	**23.71**	**23.67**

3.3.1 Coal Requirement by APPDCL

The total coal requirement of APPDCL is 12.002 MTPA where 10.2 MTPA is from Domestic coal mines and the remaining 1.802 MTPA is from Imported coal to generate 17976 MU.

S.No.	Description		Units	2023-24
1	**Coal Requirement**	**St-I RC**	MMTPA	6.652
		St-I IC	MMTPA	1.802
		St-I total	MMTPA	8.454
		St-II RC	MMTPA	3.548
		St-I & St-II	MMTPA	12.002
1.1	Coal based Generation		MU	17976
1.2	Hydro based Generation		MU	***
1.3	Total Generation		MU	17976
1.6	**Coal Requirement**		MMTPA	
a. **Imports by plants designed on imported coal**			MMTPA	1.802
b. Domestic coal requirement			MMTPA	10.200

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.

Sl. 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
1.6	**Coal Requirement**		MMTPA					
a. Imports by plants de-signed 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

3.4 Cost of coal and GCV

(A) NTTPS

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

Sl No.	Description	Units		23-24	24-25	25-26	26-27	27-28	28-29
1	Coal requirement	MMTPA	Domestic	14.49	14.49	14.55	14.55	14.55	14.55
			Imported						
	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
	Future Projects	**Dr. NTTPS (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.

Sl No	Description	Units		23-24	24-25	25-26	26-27	27-28	28-29
1	Coal requirement	MMTPA	Domestic	9.15	9.02	9.20	9.15	9.16	9.11
		MMTPA	Imported						
2	Total Coal requirement	MMTPA		9.15	9.02	9.20	9.15	9.16	9.11
3	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.

SN	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	**Domestic**	6.6519	6.6519	6.6519	6.6519	6.6519	6.6519
			Imported	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

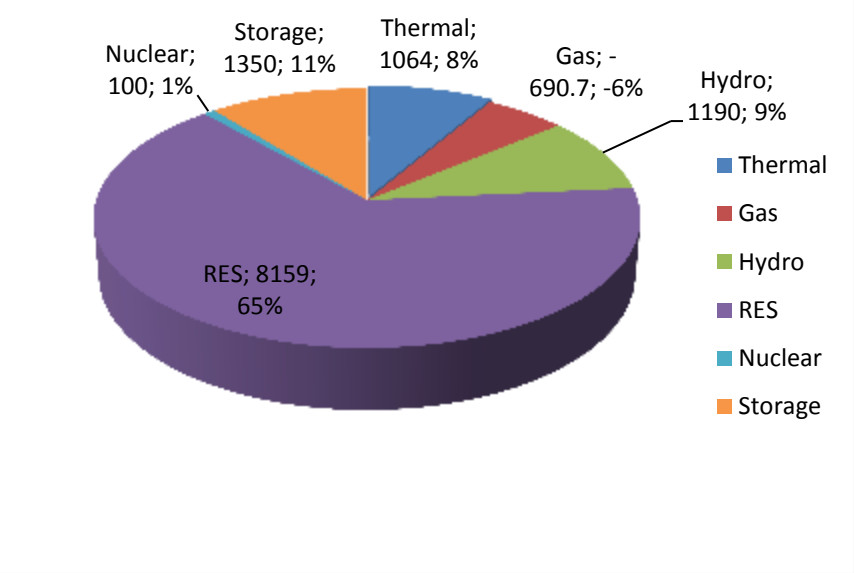
(D) SDSTPS stage-2 1*800 MW

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

Sl No.	Description	Units		23-24	24-25	25-26	26-27	27-28	28-29
1	Coal requirement Considering 100% Washed coal	MMTPA	Domestic	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

3.5 Fuel Wise Capacity Addition FY 2024 – FY 2029

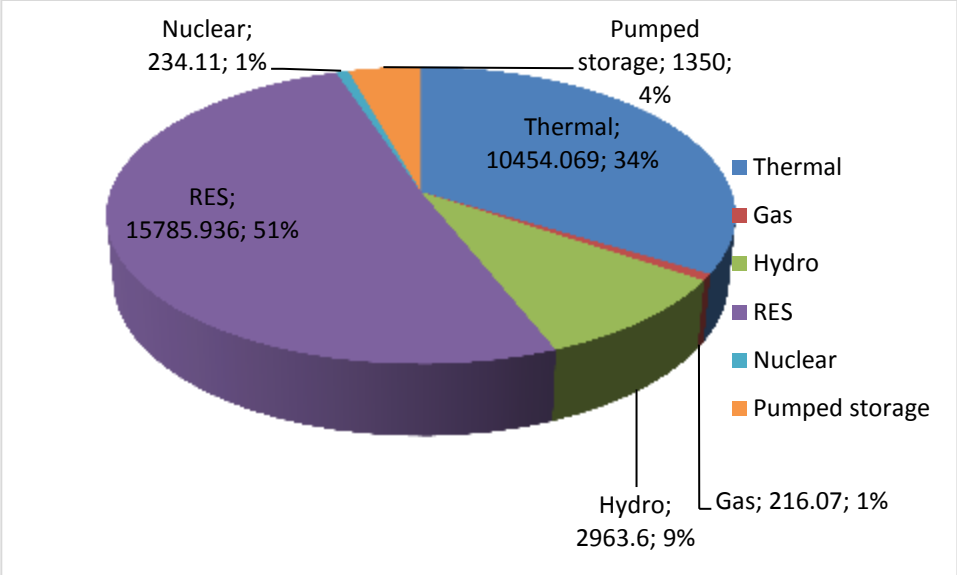
The expected total capacity addition from FY2023-24 to FY 2028-29 is 11172.3 MW which comprises of 1064 MW thermal, 1190 Hydro, 100 MW Nuclear , 1350 MW Pumped storage and 8159 MW Renewable Energy Sources.



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

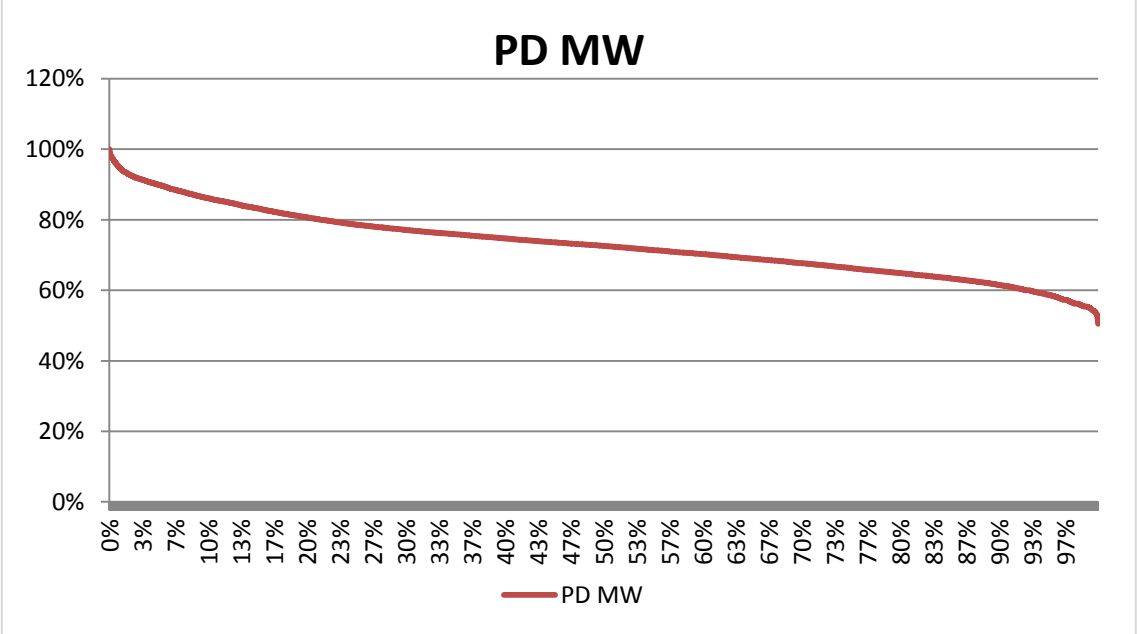
3.6 Expected Installed Capacity by 31st March 2029

The expected installed capacity by 31st March 2029 would be 31004 MW comprises of 10454 MW thermal, 216 MW gas, 2964 MW Hydro, 234 MW Nuclear, 1350 MW Pumped storage and 15786 MW Renewable Energy Sources.



3.7 Load duration curve & Demand analysis

The graph between Demand (MW) and %hours in the year is Load Duration Curve.



Hourly Load and supply analysis has been carried out for from FY2023-24 to FY2028-29 with the existing capacity and expected future capacity. The % of hours Demand is met by Supply for 5th control period with the capacity addition proposed in the 5th control period is tabulated below

Financial Year	2024	2025	2026	2027	2028	2029
System Demand (MW) (excl Open access)	**13402**	**14854**	**15861**	**17413**	**18361**	**19446**
% Hours of LDC Met	**81.43%**	**69.27%**	**76.61%**	**66.23%**	**63.37%**	**46.18%**

Source wise energy despatch in MU for 5th control period is tabulated below

Station	FY24	FY25	FY26	FY27	FY28	FY29
APGenco/ APPDCL	32358	34500	33087	34084	35828	37356
CGS	11780	12643	12074	12476	14839	15533
IPPs-T	11416	12164	11675	11912	12256	12853
Gas	749	749	749	749	749	749
Wind	7211	7205	9513	9503	9503	9503
Solar	6007	6007	6007	6007	6007	6007
Others	665	665	665	665	665	665
Hydel	4482	4482	4563	4563	4563	4563
Rajasthan Solar	579	3195	10143	15128	16500	16500
Despatch	**75246**	**81610**	**88476**	**95086**	**100910**	**103729**

The Energy Deficit for 5th Control period is tabulated below.

Year	FY24	FY25	FY26	FY27	FY28	FY29
Energy Requirement (MUs)	77,487	83,275	88,713	97,396	102,700	108,765
Energy Despatch (MUs)	75,246	81,610	88,476	95,086	100,910	103,729
Surplus/(Deficit) (MUs)	-2,241	-1,665	-237	-2,310	-1,790	-5,036

Peak Energy Deficit will be met either by purchasing power from Power Exchange or power procurement through bidding.

3.8 Sector wise capacity addition from FY 2029-30 to FY 2033-34

The state will be in deficit in the 6th control period as there is no significant capacity addition. The expected energy despatch from various sources in 6th control period is tabulated below.

Station	FY30	FY31	FY32	FY33	FY34
APGenco/ APPDCL	38398	39164	39576	36489	36489
CGS	16006	16354	16541	15140	15140
IPPs-T	13281	13491	13699	13607	13607
Gas	749	749	749	749	749
Wind	9503	9503	9503	9503	9503
Solar	6007	6007	6007	6007	6007
Others	665	665	665	665	665
Hydel	4563	4563	4563	4563	4563
Rajasthan Solar	16500	16500	16500	16500	16500
Despatch	**105673**	**106995**	**107802**	**103223**	**103223**

The Surplus/Deficit in MU for 6th control period is tabulated below.

FY	FY30	FY31	FY32	FY33	FY34
Energy (MU)	114730	121095	128085	135336	143200
Energy Despatch	105673	106995	107802	103223	103223
Deficit MU (-)	-9057	-14100	-20283	-32113	-39977

3.9 Coal Requirement by APGENCO in 6th control period

23.76 MTPA (Million tons per annum) of coal is required by APGENCO thermal plants by FY 2033-34 to generate 30,578 MU and the details are tabulated below for 6th control period.

Sl. No.	Description		Units	29-30	30-31	31-32	32-33	33-34
1	**Coal Requirement**	**Dr.NTTPS**	MMTPA	14.49	14.55	14.55	14.55	14.55
		RTPP	MMTPA	9.15	9.20	9.23	9.20	9.20
		Total	MMTPA	23.65	23.76	23.79	23.76	23.76
1.1	Coal based Generation	**Dr.NTTPS**	MU	18,679	18,679	18,679	18,679	18,679
		RTPP	MU	11836	11899	11936	11899	11899
1.2	**Total coal based Generation**		MU	**30,515**	**30,578**	**30,615**	**30,578**	**30,578**

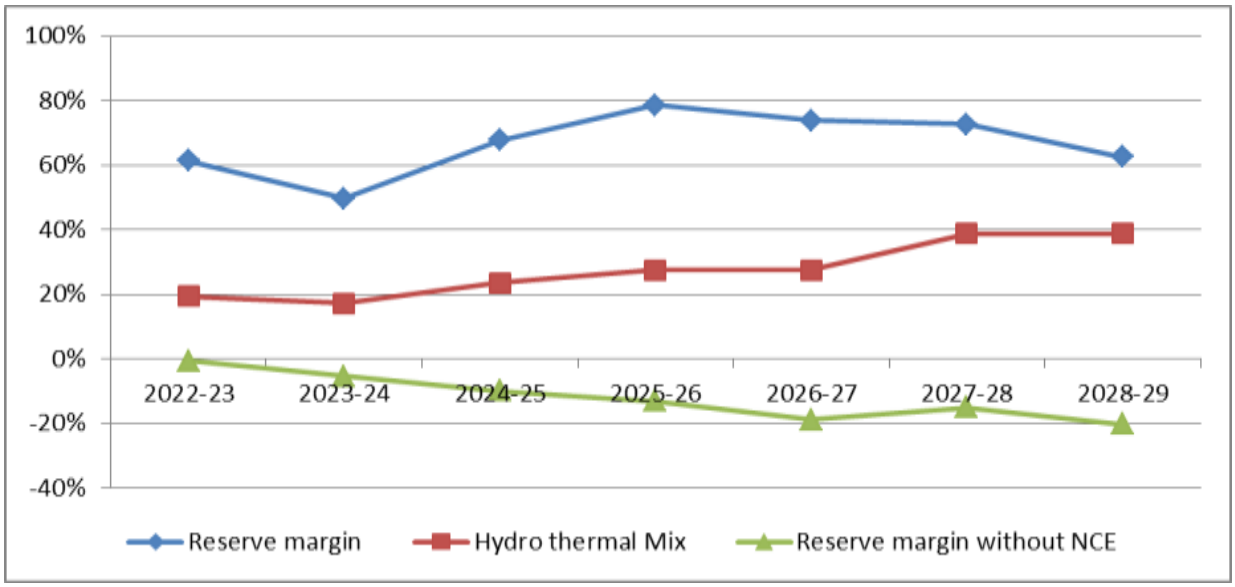
1.3	Hydro based Generation		MU	9,598	9,558	9,489	9,423	9,319
1.4	**Total Generation**		MU	**40,113**	**40,135**	**40,104**	**40,001**	**39,897**
1.6	**Coal Requirement**		MMTPA	**23.65**	**23.76**	**23.79**	**23.76**	**23.76**
a. Imports by plants designed on imported coal			MMTPA	0.00	0.00	0.00	0.00	0.00
b. Domestic coal requirement			MMTPA	**23.65**	**23.76**	**23.79**	**23.76**	**23.76**

12 MTPA (Million tons per annum) of coal is required by APPDCL thermal plants by FY 2033-34 to generate 17976 MU and the details are tabulated below for 6th control period.

Sl. No.	**Description**		**Units**	**29-30**	**30-31**	**31-32**	**32-33**	**33-34**
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
1.6	**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

3.10 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.

3.11 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.

3.12 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 Talaricheruvu in Ananthapuram district.

8159 MW capacity addition is planned from Renewable energy sources 7000MW solar from SECI and 760 MW wind and 400 MW BBB scheme com-

prises of wind and solar from private developers which is clean energy in the 5th control period to mitigate emissions.

3.13 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, NOx and Mercury.

3.14 Retirement of old units.

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. APGenco assumed that all the APGenco units continue up to horizon year FY2033-34 without retirement.

4. TRANSMISSION PLAN

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

i) Addition of Generation in the system
ii) Increase in demand
iii) System strengthening

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

The Transmission requirement are 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 which is also Central Transmission Unit 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 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 centers 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. This as part of growth in Transmission highlights requirements 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 developed as part of the Load forecast and Resource plan for the state of Andhra Pradesh with the inputs of DISCOMs and GENCO. 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 forecast loads up to FY 2028-29. The proposed Transmission system was evaluated for the load and generation conditions for FY 2029.

The system studies were carried out for the Peak Load Scenario and analyzed the Transmission system required from FY 2024-25 to FY 2028-29 which comes under short term plan. The tentative Transmission expansion plan for the period FY 2029-30 to FY 2033-34 is also presented based on the load requirement which comes under Long term plan.

This report envisages the various assumptions & standards adopted for conducting load flows followed for preparation of Transmission Resource plan from FY2024-25 to FY2028-29. After conducting load flow studies and contingency analysis under maximum thermal generation scenario as the peak demand occurs in March various generation evacuation schemes at 765KV, 400KV are depicted. The Transmission expansion plan which includes 400KV and 220 KV lines and Substations are also depicted. Sub Transmission plan comprises of 132KV network is also prepared and 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	ONAN Rating (MVA)	OFAF/ONAF Rating (MVA)
765/400 kV	900	1500
400 / 220 kV	300	500
400 / 220 kV	190	315
220 / 132 kV	96	160
220 / 132 kV	60	100

4.1.2 Standard Conductor Types:

Sl. 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, 61/3.18mm
7	220 kV	Twin Zebra	ACSR Moose, 2/PH, 61/3.18mm
8	132 kV	Panther	ACSR Panther, 37/3.00mm

4.1.3 Operating Limits under normal conditions:

Sl. No	Item	Operating Limit during normal conditions
1	765/400 KV 1500 MVA Transformer*	900MVA
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/Zebra Line	178 MVA
10	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

(A) Number of Power Transformers in 765/400KV, 400/220kV and 220/132kV Sub-Stations: Based on the standard transformer sizes adopted, transformer loading limits adopted and the CEA specified sub-station loading limits, the utility has adopted the maximum number of transformers as 4. In Uravakonda, Hindupur, Vemagiri and Manubolu 400/220KV Substations, maximum number of Transformers adopted are four.

(B) The Transformer augmentation in 220/132kV substations will be carried out in the long term planning 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.

(C) 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
66 kV	160 MVA	160 MVA

(D) Voltage Limits

As per CEA guidelines, at the planning stage, a margin of about ± 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_{rms}) (after planning margins)		
Nominal	**Maximum**	**Minimum**
765	785 (1.03 pu)	745 (0.97 pu)
400	412 (1.03 pu)	388 (0.97 pu)
220	240 (1.09 pu)	203 (0.92 pu)
132	142 (1.08 pu)	125 (0.95 pu)
110	119 (1.08 pu)	102(0.93 pu)

(E) 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 bipole.

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, is that the system shall survive a 400kV DC line outage evacuating a power plant located in the coastal area, because damage caused by cyclones are of great concern to APTRANSCO.

4.2 Transmission Plan for FY 2023-24 (Balance Control Period in 4th CP)

The total energy consumption (at utility periphery) in Andhra Pradesh during FY 2022-23 was 72,400 MU and the peak demand occurred in May 2023 was 12653 MW. This is likely to increase to **111378** MU of energy & **19913** MW of peak demand by FY 2028-29. To meet this demand, robust & reliable Transmission network is required for Transmission (inter-state & intra state) of required energy.

CTU informed that the present Available Transfer Capability (ATC) for import of SR from NEW grid is 18,900 MW. The ATC is expected to be enhanced to about 23,700 MW with the commissioning of additional Inter-Regional AC links for import of power into Southern Region i.e. Warora-Warangal and Chilakaluripeta - Hyderabad - Kurnool 765 kV link (expected schedule by March'23) and Narendra-Pune 765kV D/c line (expected schedule by Jul'24)

District wise Load Forecast:

Discoms have projected their circle wise Demand forecast and submitted to Honorable APERC in Discoms Resource plan. District wise demand forecast for FY 2022-23 & FY 2023-24 is shown in the below table. The individual peak demands (Non coincident) may be higher.

Circle wise Demand (MW)	FY 2022-23	FY 2023-24
SRIKAKULAM	336	352
VIZIANAGARAM	508	545
VISAKHAPATNAM	1482	1582
EAST GODAVARI	1010	1071
WEST GODAVARI	1366	1443
APEPDCL	**4702**	**4993**
KRISHNA	996	1026
GUNTUR	785	809
PRAKASAM	800	824
APCPDCL	**2581**	**2658**
NELLORE	813	878
CHITTOOR	1566	1858
KADAPA	1114	1069
ANANTHAPUR	1624	1594
KURNOOL	976	1214
APSPDCL	**6093**	**6612**
AP Demand MW	**13376**	**14264**

4.2.1 Capacity Addition in Transmission for Load

Due to increase in the district wise load during FY 2024 the load scheduling is being done and Transmission expansion programme is prepared. The following plan is the abstract of the lines and Substations proposed to meet the additional load in the FY 2023-24.

4.2.2 Capacity Addition for Generation Evacuation

For evacuation of power from Power projects Transmission system is to be planned which includes lines and Substations. The abstract of generation evacuation plan programmed FY2023-24 which includes lines and Substation are shown below:

4.2.3 Capacity Addition for System Improvements:

In case of overloading of the existing line/substation, new system is to be proposed for next higher voltage. This also includes re-conductoring of existing Transmission system with higher ampacity conductors. These are categorized under system improvement for strengthening the system**.**

Capacity Addition in Transmission system during FY2023-24

S.No	Substations			Lines			Type
	(Nos.)			Ckm			
	400	220	132	400	220	132	
1	0	2	0	0	134.78	0	S
2.	0	2	0	7.4	282	0	G
3.	1	2	11	6	94.77	586.67	L
Total	**1**	**6**	**11**	**13.4**	**511.55**	**586.67**	

Details of Transmission Expansion Plan in the balance 4th Control Period (FY 2023-24)

4.2.4 New Substations:

Sl. No.	District	Name of the SS	Voltage	Type
1	Guntur	Tallayapalem with 2*500MVA ICTs and Bus Reactor	400KV	**L**
1	Visakhapatnam	Achuthapuram with 2*100MVA & 2*80+1*50MVA PTRs	220KV	**L**
2	Visakhapatnam	Chandanada with 4*100MVA * 4*80MVA PTRs	220KV	**L**
3	Krishna	Tiruvur with 3*100MVA & 2*31.5MVA PTRs	220KV	**S**
4	Guntur	Piduguralla with 2*160MVA PTRs	220KV	**S**
5	Anantapur	Penukonda with 2*160MVA PTRs	220KV	**G**
6	Anantapur	Pampanurtanda with 2*160MVA PTRs	220KV	**G**
1	Visakhapatnam	Kapuluppada with 2*80+1*50MVA PTRs	132/33	**L**
2	East Godavari	Hamsavaram 2X31MVA	132/33	**L**
3	West Godavari	T. Narasapuram with 2*31.5MVA PTRs	132/33	**L**
4	Krishna	Ramanakkapet with 2*31.5MVA PTRs	132/33	**L**
5	Krishna	Mylavaram with 2*31.5MVA PTRs	132/33	**L**
6	Prakasam	Chinnarikatla with 2*31.5MVA PTRs	132/33	**L**
7	Prakasam	Ulavapadu with 2*31.5MVA PTRs	132/33	**L**

8	Prakasam	East Gangavaram with 2*31.5MVA PTRs	132/33	**L**
9	Prakasam	Kothapatnam with 2*31.5MVA PTRs	132/33	**L**
10	Nellore	Korutur with 1*31.5+1*16MVA PTRs	132/33	**L**
11	YSR Kadapa	Galiveedu with 2*31.5MVA PTRs	132/33	**L**

Incorporation of 132KV and 33KV Features at the existing Substations and inter linking of Buses:

Sl. No.	District	Name of the SS	Voltage	Type
1	West Godavari	132KV & 33KV Features at Pallantla with 2*100MVA & 2*31.5MVA PTRs	220KV	**S**
2	West Godavari	33KV Features at Pattiseema SWS with 2*50MVA PTRs	220KV	**L**
3	Vizianagaram	Erection of 33KV Features at 220KV SWS at B.D. Palem with 2*50MVA PTRs	220KV	**L**
4	Anantapur	Inter Linking of 220KV Bus at Ragulapadu with Vajrakarur	220KV	**S**
5	Kurnool	132KV Features at 220KV SWS Somayajulapalli with 2*100MVA PTRs	220KV	**S**
6	Anantapur	33KV Features at 220/132KV SS Penukonda with 2*31.5MVA PTRs	132/33	**L**

Note:

Augmentation of ICTs and installation of Bus Reactors are in progress at the following Substations.

a) Augmentation of ICTs from 3*315MVA to 3*315+1*500MVA at 400/220KV SS Kalpaka

b) Augmentation of ICTs from 2*315MVA to 2*315+1*500MVA at 400/220KV SS Narnoor

c) 420KV 125MVAR Bus Reactor at 400KV SS Uravakonda

d) 420KV 125MVAR Bus Reactor at 400KV SS Hindupur

4.2.5 Lines programmed during FY 2023-24 (400kV, 220kV & 132kV).

400kV Lines:

Sl. No.	Name of the Transmission Line	IC	Conductor Type	Ckt.	Length in Ckt. KM
1	LILO of 400kV VTS-Sattenapalli TMDC line to Thallayapalem	L	Twin Moose	LILO on MC	6
2	Single LILO (3.7kM) of 400KV Krishnapatnam- Manubolu QMDC Line at SEMBCORP	G	Quad Moose	LILO on D/C	7.4
				Total Circuit kM	13.4

220kV Lines:

Sl. No.	Name of the Transmission Line	IC	Conductor Type	Ckt.	Length in Ckt KM
1	220KV DC Line (3.387kM) from 220KV SS Brandix to the proposed 220KV SS at Atchutapuram	L	Single Moose	D/C	6.774
2	LILO (13kM) of 220KVAnrak-SSS Line and 220KV VSS-Kakinada Line at the proposed 220KV SS at Chandanada	L	Single Moose	LILO on M/C	52
3	LILO (3.15kM) of 220KV KTS-Nunna S/C Line at the proposed 220KV SS at Tiruvur	S	Single Moose	LILO on D/C	6.3
4	Double LILO (1.3KM) of 220KV VTS-Tallapalli-3&4 Feeders at Piduguralla	S	Single Moose	LILO on M/C	5.2
5	220KV DC Line for LILO (1.4KM) of 220KV VTS-Tallapalli-1 Feeder at 220KV SS Rentachintala	S	Single Moose	LILO on D/C	2.8
6	220KV DC Line for LILO (3.5kM) of 220KV Ongole-Racherlapadu S/C Line at 220KV SS/Kandukur	S	Single Moose	LILO on D/C	7.0
7	220KV TMDC Line (26kM) from 400KV SS Hindupur to Gollapuram	G	Twin Moose	D/C	52

8	220KV DC Line (35kM) from 400KV SS Hindupur to the proposed 220KV SS Penukonda	G	Single Moose	D/C	70
9	220KV TMDC Line (80kM) from 400KV SS Hindupur to Pampanur Tanda	G	Twin Moose	D/C	160
10	220KV DC Line (28kM) from 220KV SS AP Carbides to 220KV SS Settipalli	S	Single Moose	D/C	56
11	2nd Circuit stringing on 220KV Settipalli-Krishnagiri DC/SC Line	S	Single Moose	S/C	10.48
12	220KV DC/SC Line (25kM) from 220KV SS Nansurala to 220KV SS Krishnagiri	S	Single Moose	S/C	25
13	220kV DC Line for LILO of existing one circuit of 220kV VTS–Kamavarapukota at 400/220kV SS Kamavarapukota	S	Single Moose	LILO on D/C	8
14	220kV DC line from 220kV SS Gunadala to 220kV SS Nunna in the same corridor of existing SC line with Mono-poles	S	Single Moose	D/C	14
15	220kV DC line from 400/220 kV Guddigudem to proposed 220/11 kV Thadipudi SS	L	Single Moose	D/C	36
				Total Circuit kM	511.554

132kV Lines:

Sl. No.	**Name of Transmission line**	**Length in Ckt kM**
1	132 kV DC Line with XLPE UG Cable (16kM) from 220 kV Diary Farm to the proposed 132 kV GIS SS at Kapuluppada.	32
2	LILO (0.5kM) of 132KV Pitapuram-Koruprolu Line at the proposed 132KV SS Hamsavaram	1
3	a) LILO of 132KV Nidadhavole-Nallajarla Line at Pallantla b) Inter Linking 220KV SS Pallantla with 132KV SS Yernagudem	4.466
4	Double LILO (5.40kM) of 132KV KV Kota-Aswaraoper-1&2 Feeders at the proposed 132KV SS at T. Narasapuram	21.6
5	a) LILO (0.15kM) of 132KV Khambampadu-Kondapalli Line at the proposed 220KV SS at Tiruvur b) LILO (0.113kM) of 132KV Khambampadu-Nuzivid Line at the proposed 220KV SS at Tiruvur 132KV DC Line (17.698kM) from proposed 220KV SS Tiruvur to 132KV SS Narasapuram	35.964
6	Double LILO (2kM) of 132KV Nuzivid-Narasapuram DC Line at the proposed 132KV SS Ramankkapet	8
7	LILO (0.388kM) of 132KV 132KV Khambampadu-Kondapalli/Nuzivid Lines at the proposed 132KV SS at Mylavaram	1.554

8	2nd Circuit stringing on 132KV Pamarru-Avanigadda DC/SC Line	35.53
9	2nd Circuit stringing on 132KV Chillakallu-Nandigama DC/SC Line	24.57
10	132KV DC Line for LILO (0.318kM) of 132KV Tadikonda-Marripalem S/C Line at 132KV SS Gujjanagundla	0.636
11	2nd Circuit stringing on 132KV Repalle-Bapatla DC/SC Line	49.23
12	132KV Line stringing from Repalle to Chakrayapalem	36.69
13	a) 2nd circuit stinging on 132KV Martur-Yadavalli DC/SC Line (16.79kM) b) Erection of 132KV DC Line (5.144kM) for Inter linking 132KV Martur-Yadavalli Line with 132KV Chilakaluripet-Vinukonda Line	27.078
14	132KV DC (27.049kM) Line from 220KV SS Podili to the proposed 132KV SS Chinnarikatla	54.098
15	132KV DC/SC Line from 220KV SS Kandukur to the proposed 132KV SS Ulavapadu	6.452
16	132KV DC Line (18.564kM) from 220KV SS Podili to the proposed 132KV SS East Gangavaram	37.128
17	132KV DC/SC Line to Ramayapatnam Port from Kandukur	27.5
18	a) 2nd Circuit stringing on 132KV DC/SC Line (18.3kM) from 220KV SS Ongole to Tangutur b) Single LILO (14.836kM) of 132KV Ongole-Tanguturu DC Line at the proposed 132KV SS Kothapatnam	47.972
19	132KV DC Line (30.2kM) from 132KV SS/Kallurupalli to the proposed 132KV SS Korutur	60.4
20	132KV DC Line (28.4kM) from 220KV SS Chakrayapet to the proposed 132KV SS Galiveedu	56.8
21	LILO (5kM) of 132KV Guntakal-Uravakonda DC/SC Line on Multi Circuit Towers at 220/132KV SS Vajrakarur.	10
22	132KV DC Line with ACSS conductor for LILO (4kM) of 132 AP Carbides-Cement Nagar S/C Line at Somayajulapalli SS	8
23	132KV Feeder Bays both at 132KV SS Chandragiri & 132KV SS Tirumala for keeping the 2nd Circuit in service	
	Total Circuit kM	586.67

4.3 Capacity Addition in Transmission Plan Short Term (FY 2024-25 to FY 2028-29) i.e. in 5th Control Period

Transmission expansion plan for the short term i.e. from FY 2024-25 to FY

2028-29 is also prepared as per the load requirement. This includes 1238.96 CkM of 400KV lines, 1702.91 CkM of 220 kV lines, 1895.292 CkM of 132 kV lines, 7 Nos. of 400 kV substations, 23 Nos. of 220 kV substations and 41 Nos. of 132 kV substations towards transmission expansion.

4.3.1 District wise Load Forecast:

Discoms have projected their circle wise Demand forecast and submitted to honorable APERC in Discoms Resource plan. District wise demand forecast from FY 2025 to FY 2029 is shown in the below table. 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**

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

The year wise No. of substations and lines in Ckm required for 400kV, 220kV and 132KV system arrived 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	310.29	969.152

2025-26	3	6	9	18	182	372.392	585.15	1139.542
2026-27	1	5	6	12	392	290.614	216.822	899.436
2027-28	0	3	6	9	320	86	100.3	506.3
2028-29	2	6	14	22	24	616	682.73	1322.73
Total	**7**	**23**	**41**	**71**	1238.96	1702.906	1895.292	4837.16

Details of Transmission Expansion Plan for Short Term i.e. FY 2024-25 to FY2028-29

4.3.3 New 400kV, 220kV & 132kV Substations

Sl. 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 Goda-vari	63MVAR Bus Reactor at 400KV SS KV Kota	400	S	2024-25
1	Visakhapat-nam	Construction of 400/220KV GIS with 3*500MVA ICTs at Achuthapuram	400	S	2025-26
2	East Goda-vari	Construction of 400/220/132/33kV Ka-kinada SEZ Sub-Station with 2*500MVA ICTs	400	L	2025-26
3	East Goda-vari	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 Goda-vari	Augmentation of ICTs from 2*500MVA to 3*500MVA ICTs at Kakinada SEZ with the im-plementation 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	Visakhapat-nam	JNPC (220/33KV SS) with 2*50MVA PTRs	220	L	2025-26
2	East Goda-vari	Vepakayaladibba (220/33KV SS) with 2*50MVA PTRs	220	L	2025-26
3	West Goda-vari	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	Viziana-garam	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 Goda-vari	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	Visakhapat-nam	Upgradation of 132KV SS Nakkavanipalem as 220KV SS with 2*160MVA PTRs	220	S	2027-28
2	West Goda-vari	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	Visakhapat-nam	Bheemili with 2*100MVA PTRs	220	S	2028-29

4	West Goda-vari	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	Visakhapat-nam	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

Sl. 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 2nd Pulivendu-la-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	Srikaulam	Hiramandalam (LIS)	2026-27
2	Srikaulam	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

4.3.4 400kV, 220 kV and 132 kV lines Programmed during FY 2024-25 to FY 2028-29

Sl. No.	Name of the Transmission Line	IC	Conductor Type	Ckt.	Length in Ckt. KM	Target year of Commis-sioning
	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 Achuthapu-ram	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 Ko-naseema 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 Jammalamadu-gu (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 proposed 400KV SWS at Ramayapat-nam	L	Twin Moose	D/C	200	2026-27
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	2nd 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 Rajam-pet 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 pro-posed 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 Chandana-da-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	LILO (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	LILO (3kM) of 132KV Penugonda- Kadiri SC Line at OD Cheruvu	6	2024-25
16	LILO (7kM) of 132KV Puttaparthi-Kadiri S/C Line at 220KV SS Penukonda	14	2024-25
17	LILO of 132KV AP Carbides-Yemmiganur S/C Line at 132KV SS Gudur	1.0	2024-25
a	Re conductoring from the crossing point of 132KV Ka-kinada-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 equiva-lent ACSS Conductor on 132KV Bommuru-Konda Gun-tur-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 3rd 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 3rd conductor from Adurupalli 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	2nd 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-Tadipatri S/C Line	10.9	2025-26
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 Kan-dukur-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 Mutya-lapadu	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 Ka-mayapalem	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 art 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 proposed 132KV SS Kalluru	24	2028-29
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 Pallli 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	

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

Sl. No	District	Name of the substation	Augmentation of PTRs proposed from (MVA)	Augmentation PTRs proposed to (MVA)	Esti-mated cost Rs. Lakhs	Target year of commis-sioning	MVA addi-ton
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 Pydibhimava-ram	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 Par-vathipuram 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	1*31.5+ 1*50	2*50	220	2024-25	18.5

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21		132KV SS Narsinghbilli	2*16	1*50 + 1*16	220	2024-25	34
22	Rajamahen-dravaram	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 Mummidi-varam	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 Nidadavole	1*160+2*100	2*160+1*100	1,219	2024-25	60
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 Narasan-napeta	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		220/132KV SS SIMHACHA-LAM	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 Para-wada	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	Visakhapatnam	132KV VSEZ SS	2*31.5	2*31.5+1*50	300	2025-26	18.5
11		132KV Malka-puram 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	Rajamahen-dravaram	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 Ramchandra-puram	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 Narayanapu-ram	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 Pydibhimava-ram	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	Rajamahen-dravaram	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 Jangareddy-gudem	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 Nidadavole	2*160+1*100	3*160	1219	2026-27	60
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 Sim-hachalam SS	4*31.5+1*16	4*31.5+1*50	440	2027-28	34
6	Rajamahen-dravaram	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 Pydibhimava-ram	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	Rajamahen-dravaram	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	Estimat-ed cost Rs. Lakhs	Year	MVA Addi-tion
FY 2024-25							
1	Krish-na	132KV SS Bha-vanipuram	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 Narasapu-ram	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 Na-rasaraopeta	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 Chakra-yapalem	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.	Prakas am	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 Yerra-gondapalem	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 At-makur	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 Brahmad-evam	2*31.5+1*50	1*31.5+2*50	523	2024-25	18.5
25.		132/33KV SS Venka-tagiri	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	Krish-na	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 Avanigad-da	2*31.5	1*50+1*31.5	615	2025-26	18.5
5		132KV SS Chi-gurukota	3*50	1*80+ 2*50	691	2025-26	30
6	Guntur	220KV SS Na-rasaraopeta	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 Gujjana-gundla	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 Karampu-di	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	Prakas am	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 Udaya-giri	2*16+1*50	1*16+2*50	282.6	2025-26	34
23		132 KVSS NV Gar-dens	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	Krish-na	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 Na-rasaraopeta	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 Marripa-lem	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 Gujjana-gundla	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 Vin-jamur	2*31.5	1*31.5+1*50	600.3	2026-27	18.5
20		220 KV SS Rachar-lapadu	2*100	1*100+1*160	1019.7	2026-27	18.5
21		220 KV SS Rachar-lapadu	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	Krish-na	132KVSS Avanigad-da	1*50+1*31.5	2*50	709	2027-28	18.5
2	Guntur	220KV SS Na-rasaraopeta	1*100+2*160	3*160	900	2027-28	60
3		132KV SS Chilakalu-ripeta	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 Marripa-lem	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	Prakas am	220KV SS Kandukur	2*100 +1*160	2*160+1*100	1422.7 6	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 At-makur	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	Krish-na	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 Na-rasaraopeta	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 Chilakalu-ripeta	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 Pi-duguralla	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 Kesineni-palli	2*31.5+1*16	3*31.5	436.35	2028-29	15.5
14		132KV SS Anumala-palli	1*31.5+1*16	2*31.5	436.35	2028-29	15.5
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)	Esti-mated cost Rs. Lakhs	Target year of commis-sioning	MVA Addi-tion
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 Tirumalayapalli	2*160	2*160+2*31.5	1063.89	2024-25	63
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 Anantapuramu	3*100 (PTR-III)	1*160+2*100	1478.10	2024-25	60
23		220KV SS Anantapuramu	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 Burrakaya-lakota	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 Ramasam-udram	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 Jammalama-dugu	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**

4.4 Capacity Addition in Transmission Plan Long Term (FY 2028-29 to FY2033-34)

Tentative Transmission expansion plan for the long term i.e. from FY 2028-29 to FY 2033-34 is also done as per the load requirement. This includes 600 ckm of 765 kV, 254 ckm of 400 kV, 2253 ckm of 220 kV lines and 2278 ckm of 132 kV lines, 2 Nos. 765 KV Substations 6 Nos. of 400 kV substations, 37 Nos. of 220 kV substations and 43 Nos. of 132kV substations towards transmission expansion.

4.4.1 Year wise Capacity Addition (FY 2029-30 to FY2033-34). (400kV, 220kV & 132kV).

FY	2029-30	2030-31	2031-32	2032-33	2033-34	Total
No. of 765 SS	**1**	**1**	**0**	**0**	**0**	**2**
765kV Lines CkM		600				**600**
No. of 400 kV Substations	1	2	1	1	1	**6**
400 kV Lines in CkM	40	32	102	40	40	**254**
No of 220 kV Substations	8	7	6	6	10	**37**
220 kV Lines in CkM	254	632	345	522	500	**2253**
No of 132 kV Substations	11	11	10	5	6	**43**
132 kV Lines in CkM	650	554	550	214	310	**2278**

Details of Transmission Expansion Plan for Long Term i.e. FY 2028-29 to 2033-34

4.4.2 List of 765KV, 400kV, 220kV & 132kV Substations programmed during FY 2028-29 to 2033-34

A. List of 765 KV Substations & Lines proposed for 6th CP from FY2029-30 to FY2033-34

Sl. No	District	Name of the SS	Volt-age	No. of Transform-ers	MVA	Estimated cost Rs. Lakhs	Target year of Commission-ing
1	Kadapa	M. Kambaladinne	765	2	3000	40000	2029-30
2	**Prakasam**	Ramayapatnam	765	2	3000	40000	2030-31
TOTAL				**4**	**6000**	**80000**	

Sl. No.	Name of the Transmission Line	IC	Conductor Type	Ckt	Length in Ckt. KM	Estimated Cost Rs. Lakhs	Target year of Commissioning	Present status of implementa-tion
1	**765 KV D/C line from M. Kamba-ladinne to Ramayapat-nam**	L	Hexa zeb-ra	D/C	600	300000	2030-31	System studies to be done
				TOTAL	**600**	**300000**		

B. LIST of 400 KV, 220 KV and 132 KV substations from FY2029-30 to FY 2033-34

Sl. No.	District	Name of the SS	Volt-age	No. of ICTs	MVA	Estimated cost Rs. Lakhs	Target year of Commissioning
400 kV Substations							
1	Visakhapatnam	Vizag - 2 SS	400	2	1000	20000	2029-30
2	Visakhapatnam	Gangavaram Port	400	2	1000	20000	2030-31
3	East Godavari	GVK Bus extension for 400/220 KV SS	400	4	2000	20000	2030-31
4	Anantapur	Rayadurgam	400	2	1000	20000	2031-32
5	Krishna	Machilipatnam	400	3	1500	20000	2032-33
6	Nellore	Nellore - 2	400	2	1000	20000	2033-34
			TOTAL	**15**	**7500**	**120000**	
220 kV Substations							
Sl. No.	District	SS Name	KV	No. PTRs	MVA	Estimated Cost in Rs. Lakhs	Target year of Commissioning
1	Vizianagaram	T B Vara	220	2	320	4500	2029-30
2	Kurnool	Nandikotkur	220	2	320	4500	2029-30
3	Srikakulam	Srikakulam	220	2	320	4500	2029-30
4	YSR Kadapa	Proddatur	220	2	320	4500	2029-30
5	Guntur	Nagarjuna University	220	2	320	4500	2029-30
6	Kurnool	Banaganapalli	220	2	320	4500	2029-30
7	Krishna	Gunadala Extn.	220	2	320	4500	2029-30
8	Guntur	Sakhamuru (220/33KV)	220	3	240	4500	2029-30
					2480	**36000**	
1	Kurnool	Atmakur (KNL)	220	2	320	4500	2030-31
2	Anantapur	Guntakal	220	2	320	4500	2030-31

3	Chittoor	Gurramkonda	220	2	320	4000	2030-31
4	Kadapa	Sambepalli	220	2	320	4500	2030-31
5	Guntur	Mandadam (220/33kV)	220	3	240	4500	2030-31
6	Srikakulam	Palakonda	220	2	320	4500	2030-31
7	Guntur	Bapatla	220	2	320	4500	2030-31
					2160	**31500**	
1	Chittoor	Srikalahasti	220	2	320	4500	2031-32
2	Guntur	Nowluru (220/33kV)	220	3	240	4500	2031-32
3	Guntur	Venkatapalem (220/33kV)	220	3	240	4500	2031-32
4	Guntur	Kuragallu (220/33kV)	220	3	240	4500	2031-32
5	Nellore	Kavali	220	2	320	4500	2031-32
6	Prakasam	Giddalur	220	2	320	4500	2031-32
					1680	**27000**	
1	West Godavari	P T Palli	220	2	320	4500	2032-33
2	Krishna	Kanumolu	220	2	320	4500	2032-33
3	East Godavari	Upgradation of 132kV Kothapet to 220 kV	220	2	320	4500	2032-33
4	Guntur	Thallayapalem (220/33kV)	220	3	240	4500	2032-33
5	Visakhapatnam	Papayyapalem	220	2	200	4500	2032-33
6	Guntur	Uddandrayuni-Palem (220/33KV)	220	3	240	4500	2032-33
					1640	**27000**	

LIST OF 132KV Substations proposed during FY2029-30 to FY 2033-34						
Sl. No.	**District**	**SS Name**	No. PTRs	MVA	Estimated Cost in Rs. Lakhs	Target Year of commissioning
1	Anantapur	Yadiki	2	100	2500	2029-30
2	Chittoor	Ramakuppam	2	100	2500	2029-30
3	East Godavari	Eleswaram	2	100	2500	2029-30
4	Guntur	Durgi	2	100	2500	2029-30
5	Krishna	Kollipara	2	100	2500	2029-30
6	Kurnool	Nandipadu	2	100	2500	2029-30
7	Nellore	Pellakuru	2	100	2500	2029-30
8	Prakasam	Ardaveedu	2	100	2500	2029-30
9	Srikakulam	Kasibugga	2	100	2500	2029-30
10	Visakhapatnam	Rayavaram	2	100	2500	2029-30
11	Vizianagaram	Duggeru	2	100	2500	2029-30

				1100	**27500**	
1	Anantapur	Singanamala	2	100	2500	2030-31
2	Chittoor	Putala Pattu	2	100	2500	2030-31
3	East Godavari	Rajavommangi	2	100	2500	2030-31
4	Guntur	Ipuru	2	100	2500	2030-31
5	Krishna	Kanchikacherla	2	100	2500	2030-31
6	Kurnool	Uyyalavada	2	100	2500	2030-31
7	Nellore	Chintaladevi	2	100	2500	2030-31
8	Prakasam	Chundi	2	100	2500	2030-31
9	Srikakulam	Srikurmam	2	100	2500	2030-31
10	Visakhapatnam	Tallapalem	2	100	2500	2030-31
11	Vizianagaram	Naguru	2	100	2500	2030-31
				1100	**27500**	
1	Anantapur	Garladinne	2	100	2500	2031-32
2	Chittoor	Vadamala	2	100	2500	2031-32
3	East Godavari	Gokavaram	2	100	2500	2031-32
4	Guntur	Achampeta	2	100	2500	2031-32
5	Krishna	Janardanavaram	2	100	2500	2031-32
6	Kurnool	Devanakonda	2	100	2500	2031-32
7	Nellore	Dugarajapatnam	2	100	2500	2031-32
8	Prakasam	Pedda alvalapadu	2	100	2500	2031-32
9	Srikakulam	Chatram	2	100	2500	2031-32
10	Visakhapatnam	Kottakota	2	100	2500	2031-32
				1000	**25000**	
1	West Godavari	Guntupalli	2	100	2500	2032-33
2	West Godavari	Dwaraka Tirumala	2	100	2500	2032-33
3	Vizianagaram	Bhogapuram	2	100	2500	2032-33
4	Guntur	Nagulavaram	2	100	2500	2032-33
5	Krishna	Challapalle	2	100	2500	2032-33
				500	**12500**	
1	YSR Kadapa	Payalakunta	2	100	2500	2033-34
2	YSR Kadapa	Mogilipenta	2	100	2500	2033-34
3	YSR Kadapa	Obalam	2	100	2500	2033-34
4	Nellore	Bitragunta	2	100	2500	2033-34
5	Prakasam	Kommalapadu	2	100	2500	2033-34
6	West Godavari	Gopalapuram	2	100	2500	2033-34
				600	**15000**	

4.5 Transmission investments for 5th and 6th control periods

Year wise investments for 5th Control Period :

The Total Transmission investments (Rs. Crores) for New Substations, Lines and Augmentation of Existing substations for 5th control period is as tabulated below:

FY	400 kV	220 kV &132 kV	Augmenta-tion 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**

Year wise investments for 6th Control Period :

The Total Transmission investments (Rs. Crores) for New Substations, Lines and Augmentation of Existing substations for 6th control period is as tabulated below:

FY	**765 kV**	400 kV	220 kV	132 kV	Total (Rs crs)
2029-30	400	392	614	763	2168.5
2030-31	3400	553.6	947	691	5591.1
2031-32	0	689.6	615	663	1967.1
2032-33	0	392	792	286	1469.5
2033-34	0	392	950	383	1724.5
Total	**3800**	**2419.2**	**3918**	**2783.5**	**12920.7**

5 DISTRIBUTION PLANNING

5.1 Capital Expenditure Summary for 5th and 6th 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 & 6th Control periods. For EPDCL, historical expenditure, planning Methodology is explained 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.)

Sl. 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 Upgradation 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, Agl. 9Hrs 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

Sl. 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.)

Sl. 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%**

The Licensee has been able to improve quality and reliability of power supply in past years on sustainable basis leveraging through above mentioned capital investments.

CAPEX Scheme Projections APEPDCL

Sl. No	Item	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33
1	Substations (New & Augmentation)	141.88	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	Metering & Associated equipment	769.94	140.86	300.43	300.43	300.43	300.43	300.43	300.43	282.46	228.68
3	Distribution Transformer Additions	175.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Lines, Cables & Network	713.48	864.92	606.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	Loss reduction measures	342.89	910.38	624.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Technology Upgradation and R&M	0.78	586.42	884.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	Civil works & Others	105.32	16.99	8.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		**2249.33**	**2549.57**	**2424.83**	**300.43**	**300.43**	**300.43**	**300.43**	**300.43**	**282.46**	**228.68**

It is evident from the above table, that capital investment from ongoing schemes such as Jagananna Housing Colonies, Agricultural DBT metering and RDSS for network strengthening, loss reduction, improving quality and reliability with a reduced CAPEX substantially in 5th and 6th control periods.

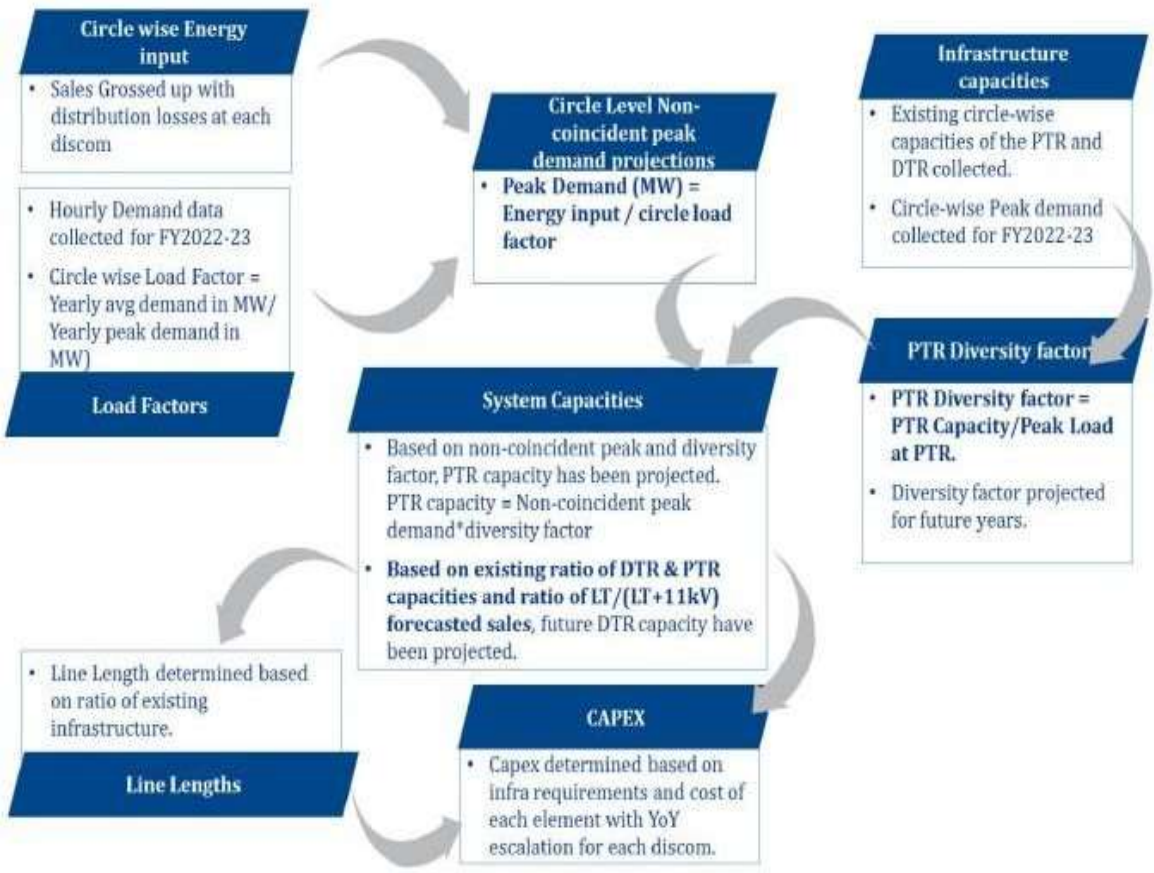
5.4 Capital Expenditure Projections for 5th and 6th Control Periods for APEPDCL

As stated earlier, the flagship schemes for network strengthening, load enhancement, loss reduction and sustaining quality & reliability of power supply are mostly getting expired within 5th and 6th control periods. Therefore, to meet capital expenditure requirements, spending in different areas such as AT&C

Loss reduction measures, Renovation & Modernization, System improvement works in Distribution, Technology upgradation etc. have been projected by the Licensee for both the control periods.

The projections for future capital investments have been estimated by using year on year growth in forecasted non-coincident peak demand at Discom periphery i.e. LV side of EHT (33/11 kV Substation). These peaks are converted into PTR capacity requirements and subsequently the PTR capacity requirements thus arrived have been used for projecting requirements for other network elements such as 33 kV lines, 11 kV lines, DTR capacity and LT lines along with metering and other infrastructural requirements. The detailed methodology for the same has been shown below:

Methodology for CPAEX 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	FY30	FY31	FY32	FY33	FY34
Srikakulam	846	892	966	1,042	1,123	1,203	1,288	1,380	1,479	1,585	1,699	1,822
Vizianagaram	994	1,075	1,156	1,240	1,323	1,406	1,494	1,588	1,688	1,794	1,906	2,026
Visakhapatnam	2,991	3,248	3,444	3,649	3,869	4,090	4,325	4,575	4,841	5,123	5,424	5,744
Rajamahendra varam	3,140	3,311	3,555	3,818	4,074	4,338	4,620	4,923	5,247	5,597	5,972	6,376
Eluru	4,269	4,683	5,009	5,371	5,739	6,126	6,542	6,991	7,474	7,997	8,561	9,172

5.4.1 System Capacity Estimation EPDCL

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 PTRs and DTRs for each circle:

No. of DTRs, No. of PTRs required in 5th and 6th Control Period

Description	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
Srikakulam											
No of 5 MVA 33/11 kV SS (Indoor)	9	10	11	12	12	13	14	15	16	18	19
No of 5 MVA 33/11 kV SS (Outdoor)		1	1	1	1	1	1	1	1	1	1
Additional /Augmentation of PTRs	3	3	4	4	5	5	4	4	5	5	4
No of 100 kVA DTRs	450	740	760	810	800	850	920	990	1,060	1,140	1,230
Vizianagaram											
No of 5 MVA 33/11 kV SS (Indoor)	13	10	10	10	11	11	12	13	14	15	16
No of 5 MVA 33/11 kV SS (Outdoor)		1	1	1	1	1	1	1	1	1	1
Additional /Augmentation of PTRs of PTRs	4	4	5	5	4	4	5	3	3	4	4
No of 100 kVA DTRs	810	810	840	820	830	880	940	1,000	1,060	1,120	1,190

Total Forecasted CAPEX under APEPDCL spend for 5th and 6th Control period

S N	Item	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
1	Substations (New & Augmentation)	372.31	349.68	397.32	430.68	461.07	509.98	565.75	637.67	713.86	802.20	895.94
2	Metering & Associated equipment	11.14	12.25	67.38	74.14	81.54	89.69	98.65	108.52	119.37	131.30	144.44
3	Distribution Transformer Additions	566.71	566.77	639.00	682.47	737.23	826.40	932.05	1,047.03	1,182.42	1,332.36	1,502.92
4	Lines, Cables & Network	709.81	692.95	777.96	839.25	902.29	1,011.77	1,141.18	1,283.12	1,445.90	1,631.31	1,839.44
5	Loss reduction measures	106.47	116.71	127.98	136.38	150.02	165.02	181.52	199.68	219.64	241.61	265.77
6	Technology Upgradation and R&M	0.74	0.82	0.90	0.99	1.09	1.20	1.32	1.45	1.59	1.75	1.93
7	Civil works & Others	21.25	23.38	25.71	28.29	31.12	34.23	37.65	41.41	45.56	50.11	55.12
Total		**1,788.43**	**1,762.56**	**2,036.26**	**2,192.19**	**2,364.35**	**2,638.29**	**2,958.12**	**3,318.87**	**3,728.34**	**4,190.64**	**4,705.56**

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.

Final Abstract CAPEX of APEPDCL for 5th and 6th Control period

S.N	Item	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
1	CAPEX under ongoing Schemes	2,249.33	2,549.57	2,424.83	300.43	300.43	300.43	300.43	300.43	282.46	228.68	0.00
2	**Capital Expenditure for infrastructure towards new loads (Base Capex)**	1,788.43	1,762.56	2,036.26	2,192.19	2,364.35	2,638.29	2,958.12	3,318.87	3,728.34	4,190.64	4,705.56
Total (Rs. Cr.)		**4,037.76**	**4,312.12**	**4,461.08**	**2,492.62**	**2,664.78**	**2,938.72**	**3,258.55**	**3,619.30**	**4,010.80**	**4,419.32**	**4,705.56**

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 PTRs and DTRs for each circle:

No. of DTRs No. of PTRs required in 5th and 6t Control Period APCPDCL

Year	FY2 4	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
Vijayawada											
No of 5 MVA 33/11 kV Substations		23	15	16	17	18	19	20	21	22	23
Augmentation of PTRs		23	15	16	17	18	19	20	21	22	23
No of 100 KVA DTRs		2,970	2,170	2,280	2,410	2,540	2,700	2,870	2,930	3,080	3,240
Guntur											
No of 5 MVA 33/11 kV Substations		18	14	15	15	17	17	19	19	21	22
Augmentation of PTRs		18	14	15	15	17	17	19	19	21	22
No of 100 KVA DTRs		1,890	1,460	1,530	1,620	1,770	1,820	1,960	1,99 0	2,110	2,250
Ongole											
No of 5 MVA 33/11 kV Substations		16	13	15	15	16	17	18	18	19	20
Augmentation of PTRs		16	13	15	15	16	17	18	18	19	20
No of 100 KVA DTRs		2,340	1,860	2,230	2,100	2,220	2,370	2,530	2,610	2,750	2,910

5.5.1 Line Lengths Estimation (CPDCL)

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 5^{th} control period & 6^{th} control period, as shown below:

Forecasted Line lengths (KMs) for 5th and 6th Control Period (CPDCL)

	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
Vijayawada											
33 kV	224	146	156	160	170	185	194	199	209	224	233
11kV	866	632	664	702	740	787	836	854	898	944	991
LT	866	632	664	702	740	787	836	854	898	944	991
Guntur											
33 kV	177	136	146	151	167	172	187	192	207	222	242
11kV	543	420	440	466	509	523	563	572	606	647	687
LT	543	420	440	466	509	523	563	572	606	647	687
Ongole											
33 kV	267	209	250	242	267	275	292	300	317	334	359
11kV	690	548	658	619	655	699	746	770	811	858	905
LT	445	353	424	399	422	450	481	496	523	553	583

Total Forecasted CAPEX under APCPDCL spend for 5th and 6th Control periods

S. N.	Item	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
1	**Substations (New)**	150	115	135	144	165	183	207	224	252	283	320
2	**Power Transformer Augmentation**	61	47	55	59	67	75	84	91	102	115	130
3	**Distribution Transformer Additions**	387	312	362	389	437	488	550	595	663	741	826
4	**Lines, Cables & Network**	346	274	312	332	369	406	452	483	532	589	650
Total (Rs. Cr.)*		**944**	**747**	**864**	**923**	**1039**	**1152**	**1294**	**1394**	**1549**	**1728**	**1926**

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.

The above expenditure is proposed to be incurred as given in the following table:

S. N.	Item	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
1	RDSS Scheme	1,680	1,562	863	107	107	107	107	107	107	0	0
2	DISCOM contribution towards schemes to be announced by GoI/ Infrastructure requirement due to unexpected load growth in Aqua / Industries	50	55	61	67	73	81	89	97	107	118	130
3	Civil infrastructure development & others	30	20	10	11	12	13	15	16	18	19	21
Total		**1760**	**1637**	**934**	**184**	**192**	**200**	**210**	**220**	**231**	**137**	**151**

Final Abstract of Total CAPEX for APCPDCL

S. N.	Item	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
1	CAPEX under ongoing Schemes	1,012	870	144	144	144	144	144	144	144	144	0
2	Capital Expenditure for infrastructure towards new loads (Base Capex)	944	747	864	923	1,039	1,152	1,294	1,394	1,549	1,728	1,926
3	Technology up gradation & Others	1760	1637	934	184	192	200	210	220	231	137	151
Total (Rs. Cr.)		**3715**	**3254**	**1942**	**1251**	**1375**	**1496**	**1647**	**1757**	**1924**	**2009**	**2077**

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 and 6th Control Period

Particulars	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
Nellore											
No of 5 MVA 33/11 kV SS	16	14	15	16	17	18	19	19	20	22	23
Augmentation of PTRs	16	14	15	16	17	18	19	19	20	22	23
No of 100 KVA DTRs	2,000	1,770	1,870	1,970	2,090	2,230	2,380	2,440	2,570	2,710	2,860
Tirupati											
No of 5 MVA 33/11 kV SS	30	22	23	25	26	28	30	31	33	35	37
Augmentation of PTRs	30	22	23	25	26	28	30	31	33	35	37
No of 100 KVA DTRs	3,340	2,410	2,550	2,700	2,860	3,050	3,260	3,350	3,540	3,740	3,950
Kadapa											
No of 5 MVA 33/11 kV SS	16	24	20	21	22	24	26	27	29	31	33
Augmentation of PTRs	16	24	20	21	22	24	26	27	29	31	33
No of 100 KVA DTRs	1,900	2,160	2,370	2,530	2,700	2,900	3,130	3,250	3,470	3,700	3,950
Anantapur											
No of 5 MVA 33/11 kV SS	26	20	17	19	18	20	21	21	22	23	25
Augmentation of PTRs	26	20	17	19	18	20	21	21	22	23	25
No of 100 KVA DTRs	4,200	2,300	2,670	2,750	2,970	3,140	3,340	3,400	3,560	3,740	3,920
Kurnool											
No of 5 MVA 33/11 kV SS	17	18	14	14	15	16	18	18	19	20	21
Augmentation of PTRs	17	18	14	14	15	16	18	18	19	20	21
No of 100 KVA DTRs	2,280	1,680	1,870	1,990	2,120	2,260	2,430	2,480	2,630	2,780	2,940

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 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

Based on above norms, licensee has estimated line lengths required (in KMs) at different voltage levels for each circle in 5th control period & 6th control period, as shown below:

Forecasted Line lengths (KMs) for 5th and 6th Control Period

Particulars	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
Nellore											
33 kV	159	144	149	159	170	180	190	195	206	221	231
11kV	443	392	414	436	463	494	527	540	569	600	633
LT	443	392	414	436	463	494	527	540	569	600	633
Tirupati											
33 kV	301	220	230	245	261	281	301	311	331	351	371
11kV	691	498	527	558	591	631	674	693	732	773	817
LT	691	498	527	558	591	631	674	693	732	773	817
Kadapa											
33 kV	126	195	158	166	178	195	211	219	235	251	268
11kV	337	383	421	449	479	515	556	577	616	657	701
LT	361	410	450	481	513	551	595	618	659	703	751
Anantapur											
33 kV	311	244	201	225	219	237	250	256	268	280	298
11kV	869	476	552	569	614	650	691	703	736	774	811

Particulars	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
LT	869	476	552	569	614	650	691	703	736	774	811
Kurnool											
33 kV	214	227	170	176	189	202	220	220	239	252	264
11kV	607	447	498	530	564	602	647	660	700	740	783
LT	607	447	498	530	564	602	647	660	700	740	783

Forecasted CAPEX under APSPDCL spend for 5th and 6th Control period

Item	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
Substations	267	268	251	284	314	357	405	439	494	554	619
Augmentation of PTRs	114	114	107	120	133	152	172	187	210	235	263
Distribution Transformer Additions	810	644	747	832	938	1,056	1,195	1,296	1,447	1,617	1,806
Lines, Cables & Network	468	366	422	468	524	588	661	713	792	879	977
Total (Rs. Cr.)	**1,659**	**1,392**	**1,526**	**1,704**	**1,910**	**2,153**	**2,433**	**2,634**	**2,943**	**3,285**	**3,665**

The amounts proposed under base capex against substations and augmentation of PTRs can be reduced to the extent of approval (yet to be approved) by MoP, Govt. of India under RDSS Phase-II – Modernization in future.

It is proposed to install Smart Meters for new consumers also. Hence the expenditure is projected based on per unit meter cost of Rs.6000/- per unit and the same is escalated by 5.67% in order to account for the effect of inflation.

It is proposed to incur expenditure for replacement of aged conductor, DTRs etc., in order to improve safety profile under the head of Renovation & Modernization.

It is proposed to incur expenditure towards civil infrastructure to an extend of Rs.25 Crs. per annum from FY 25 and also Rs.20 Crs. towards calamities and others.

The above expenditure is proposed to be incurred as given in the following table :

Investment Particulars	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
Metering & Associated Equipment	105	113	114	116	118	120	122	125	127	129	132
Renovation & Modernisation.	190	201	212	224	237	250	265	280	295	312	330
Civil Infrastructure Development & Others	33	45	45	45	45	45	45	45	45	45	45
Total Capex	**328**	**358**	**372**	**386**	**400**	**416**	**432**	**449**	**467**	**486**	**507**

5.7 Final Abstract of APSPDCL for 5th and 6th control period

Final Abstract of capex (in Crs.) for APSPDCL for 5th and 6th control period is tabulated below

Investment Particulars	FY24	5th Control Period						6th Control period					
		FY25	FY26	FY27	FY28	FY29	Total	FY30	FY31	FY32	FY33	FY34	Total
Ongoing Schemes	3732	2716	3795	1986	429	430	9356	430	428	119	0	0	977
Capex towards Substations	267	268	251	284	314	357	1474	405	439	494	554	619	2511
Capex towards augmentation of PTRs	114	114	107	120	133	152	626	172	187	210	235	263	1067
Capex towards DTRs	810	644	747	832	938	1056	4217	1195	1296	1447	1617	1806	7361
Capex towards lines	468	366	422	468	524	588	2368	661	713	792	879	977	4022
Metering and Associated Equipment	105	113	114	116	118	120	582	122	125	127	129	132	635
Renovation and Modernisation	190	201	212	224	237	250	1124	265	280	295	312	330	1481
Civil Infrastructure Development and others	33	45	45	45	45	45	225	45	45	45	45	45	225
Total Capex	5719	4466	5693	4075	2739	2999	19972	3295	3511	3529	3772	4171	18279

5.8 Total Distribution investments for 5th and 6th control periods

The total Distribution investment in Rs Crs for all Discoms for 5th and 6th control period is tabulated below

FY	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
EPDCL	4,038	4,312	4,461	2,493	2,665	2,939	3,259	3,619	4,011	4,419	4,706
CPDCL	3,715	3,254	1,942	1,251	1,375	1,496	1,647	1,757	1,924	2,009	2,077
SPDCL	5,719	4,466	5,693	4,075	2,739	2,999	3,295	3,511	3,529	3,772	4,171
All Discoms	**13,472**	**12,032**	**12,096**	**7,819**	**6,779**	**7,434**	**8,201**	**8,887**	**9,464**	**10,200**	**10,954**

TRASMISSION CORPORATION OF ANDHRA PRADESH LIMITED
VIDYUT SOUDHA :: VIJAYAWADA

From
Chief General Manager
Commercial & Legal,
APTRANSCO,
VidyutSoudha,
Vijayawada - 520004.

To
The Secretary,
A.P.E.R.C.,
11-4-660, 4th floor,
Singareni Bhavan, Red Hills,
Lakdi-ka-pool, Hyderabad -4

Lr.No.CGM/Comml.&L/GM/Comml./RAC/F.RP/D.No. 96 /23 Dt. 31.05.23.

Sir,

Sub:- APTRANSCO – State Electricity Plan for 5th Control period i.e., FY 2024-25 to FY 2028-29 and 6th Control period i.e., FY 2029-30 to FY 2033-34 – Submission- Reg.

Ref:- 1. APERC Regulation 5 of 2005.
2. APERC Guidelines on Resource Plans – December 2006.
3. Lr.No.CGM/Com.&L/GM/Com./RAC/F.RP/D.No.83/23,dt:02.05.23.

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As per Chapter (V) of APERC guidelines for Resource Plans, APTRANSCO shall formulate a State Electricity Plan in co-ordination with others 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.

In this regard, i am directed to submit the approved draft State Electricity Plan for 5th Control period i.e., FY 2024-25 to FY 2028-29 and 6th control period i.e., FY 2029-30 to FY 2033-34 in pursuant to the Regulation 05 of 2005 and APERC Resource Plan Guidelines 2006 for approval of the Hon'ble APERC,.

Yours faithfully,

31.5.23

Chief General Manager
Commercial & Legal