



International Journal of Engineering, Business and Enterprise Applications (IJEBA)

(Open Access, Double Blind Peer-reviewed, Refereed and Indexed Journal)

www.iasir.net

Operational Status of Power Distribution Companies in Andhra Pradesh

G.Damodhar¹, Dr. B. Ramachandra Reddy²

¹Ph.D Research Scholar, ²Professor

^{1,2} Department of Commerce, Sri Venkateswara University, Tirupati-517502,
Andhra Pradesh, India.

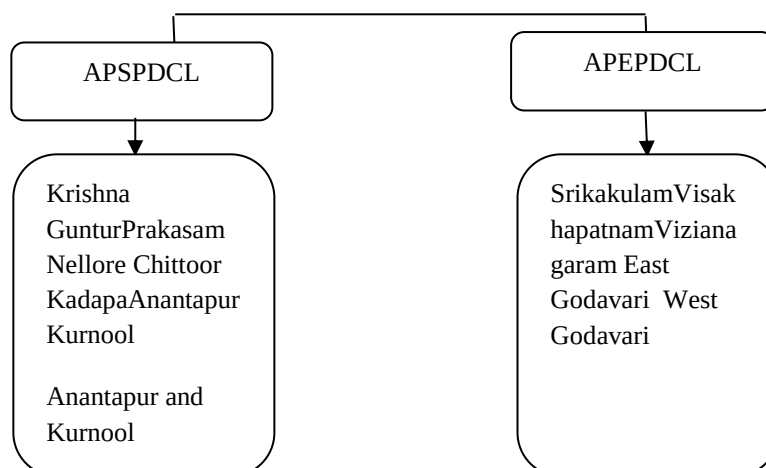
1. INTRODUCTION

Andhra Pradesh is regarded as one of the most progressive states of the India. The state of Andhra Pradesh has been witnessed for the great development of agricultural sector, agro-based industrial sector, manufacturing sector, servicing sector, urbanization and the IT sector is also acting as a growth engine during the last two decades. The state has merited visits of world leaders for its impressive achievements in IT and other allied sectors. The state of Andhra Pradesh is known as the rice bowl of the south India and the state has an excellent conducive climate for growing food and non food crops. Paddy, pulses, oilseeds, millets are major food crops while tobaccos, cotton, chillies, vegetables, fruits, are other commercial and horticulture crops. The major cities of the state like Vishakhapatnam, Tirupati, Guntur, Rajahmundry, Nellore, and Anantapur are now attracting investment in manufacturing and IT sector at significant rate. Foreign Direct investments have been pouring. The state ranks fourth in attracting FDI in the country. Many multinational companies are rushing to the state of Andhra Pradesh to invest in all the major sectors of the economy and it is important to place on record the services sector in the state contribute about 22 per cent to the state's GDP. For all the development of the state of Andhra Pradesh in different spheres the power sector plays a key role in all the 13 districts in two regions. (i.e. Rayalaseema and Coastal regions).

As a part of the restructuring process of power sector in the state the erstwhile Andhra Pradesh State Electricity Board (APSEB) was unbundled into the Andhra Pradesh Power Generation Corporation Limited (APGENCO) & Transmission Corporation of Andhra Pradesh Limited (APTRANSCO) and came into existence on 01.02.1999. Further the Transmission Corporation of Andhra Pradesh Limited (APTRANSCO) restructured on Friday 31st March 2000 by establishing Four Distribution Companies (DISCOMS) viz., APSPDCL, APEPDCL, APCPDCL and APNPDCL started functioning from 01-04-2000.

After the bifurcation of the erstwhile Andhra Pradesh into the two new states of Andhra Pradesh and Telangana w.e.f 2nd June, 2014 presently two Distribution Companies (DISCOMS) viz., APSPDCL and APEPDCL are functioning in the state of Andhra Pradesh which are shown below.

Power Distribution Companies



APSPDCL

Southern Power Distribution Company of Andhra Pradesh Limited (APSPDCL) was formed on April 1st, 2000 to serve Krishna, Guntur, Prakasam, Nellore, Chittoor and Kadapa districts. After the bifurcation of the erstwhile Andhra Pradesh additional two districts were added namely Anantapur and Kurnool. The distribution network of APSPDCL is spread across 118119 sq. Km representing 439 Mandals and 114 assembly

constituencies. The Corporate Office and Headquarters of APSPDCL situated at Tirupati.

APEPDCL

Eastern Power Distribution Company of Andhra Pradesh Limited (APEPDCL) was formed on 31st of March, 2000. The APEPDCL, Visakhapatnam is the leading Indian power utility serving a consumer base of over 4.97 million spread across five districts namely Srikakulam, Visakhapatnam, Vizianagaram, East and West Godavari districts and 20 Divisions of Coastal Andhra Pradesh. The Corporate Office and Headquarters of APEPDCL situated at Visakhapatnam.

II. OPERATIONAL STATUS OF POWER DISTRIBUTION COMPANIES

The power distribution companies viz. APSPDCL, APEPDCL serving the millions of consumers of different categories of the state of Andhra Pradesh in all the 13 districts since its inception from 1st April, 2000. In this paper an attempt has been made to explain the status and growth trend of substations, length of lines in various capacity, number of distribution transformers, number of LT and HT consumers purchases and sales and distribution losses of two power distributions companies functioning in Andhra Pradesh. The period of study is 2007-08 to 2016-17.

A. 33/11 KV Substations

The number of 33/11 kV substations in the state of Andhra Pradesh registered a compound annual growth rate of 9.62 per cent during the study period of 10 years. The number of substations under the 129 control of APSPDCL increased from 843 to 2,045 and registered a growth rate of 11.18 per cent. The growth in the number of substations under the APEPDCL is 5.96 per cent and the number of stations ranged from 418 to 732 during the study period. In all the 13 districts of the state of Andhra Pradesh, the number of 33/11 kV substations significantly increased from 1,261 to 2,787 to cater the needs of increasing number of consumers and demand.

B. Length of 33 kV Lines

The length of 33kV lines increasing significantly in two power distribution companies during the study period. The APSPDCL length of 33kV lines increased from 10,273 KM to 18,799 KM with a growth rate of 7.49 per cent. In APEPDCL the length of lines ranged from 5,123 KM to 6,003 KM during the study period and registered a growth rate of 1.76 per cent. The APSPDCL has greater length of lines of all the other distribution companies, Whereas the total length of 33kV lines in the state was 15,396 KM during 2007-08 and increased to 24,802 KM during 2016-17 with a growth rate of 5.85 per cent.

C. Length of 11 kV Lines

The length of 11kV lines in the state of Andhra Pradesh increasing significantly. All the two distribution companies' 11kV lines length registered a growth rate of 7.54 per cent during the study period of 10 years. The length of lines of APSPDCL was increased to 1,73,283 KM during 2016-17 from 75,012 KM of the year 2007-08 and registered a growth rate of 8.87 per cent. The length of 11kV lines of APEPDCL increased to 38,438 KM from 44,416 KM with a growth rate of 3.68 per cent during the study period. It is interesting to note that the length of 11kV line in the state of Andhra Pradesh increased to 2,17,699 KM from 1,07,516 KM during study period.

D. Length of LT Lines

The length of LT lines grown at a rate of 5.30 per cent in the state. The length of LT lines in APSPDCL was 1,32,689 KM during 2007-08 and increased to 2,40,136 KM during 2016-17 with a growth rate of 6.67 per cent. In APEPDCL the length of LT lines ranged from 80,432 KM to 67,559 KM with a growth rate of 2.09 per cent between 2007-08 and 2016-17.

E. Distribution Transformers

The total number of distribution transformers in Andhra Pradesh increased to 7,17,831 from 2,72,539 with a growth rate of 10.87 per cent during the study period of 2007-17. The number of distribution transformers of APSPDCL increased to 5,44,505 from 1,84,972 with a growth rate of 12.08 per cent. Under the jurisdiction of APEPDCL, there were 87,567 transformers during 2007-08 and reached to 1,73,326 during 2016-17 with a growth rate of 7.76 per cent.

F. Power Transformers

Total number of power transformers in the state is increased to 3,680 from 1,746 during the study period with a growth rate of 9.17 per cent. The number of power transformer in the area of APSPDCL is ranged from 1,147 to 2,625 with a growth rate of 10.66 per cent. In the operational area of APEPDCL the number of power transformers was increased to 1,186 from 599 with a growth rate 6.04 per cent.

G. Low Tension Consumers

The power distribution companies supplies Low Tension power in 415 Volts for three-phase connection and 240 Volts for single-phase connection. Most small consumers of electricity like individual houses, shops, small offices and smaller manufacturing units get their electricity on LT connection. LT power supplied to different categories of consumers viz., domestic, non-domestic, agricultural Commercial, Industrial & Cottage industries and public lightings, etc. The number of LT services held by the power distribution companies of Andhra Pradesh during the study period. The total LT services were increased significantly during the study period and registered a growth rate of 6.84 per cent. The number of LT services were 92,21,371 during 2007-08

and increased to 1,69,72,065 during the year 2016-17. The number of LT services in APSPDCL increased to 1,13,74,582 from 52,85,513 with a growth rate of 8.63 per cent. In APEPDCL the number of LT consumers increased by 5.90 per cent during the study period and it is ranged from 39,35,858 to 55,97,483 during the study period.

In the areas of APSPDCL the domestic (household) services was 41,16,227 during 2007-08 but increased to 90,31,644 with a growth rate of 8.56 per cent. Non-domestic services in the area was increased to 7,43,613 from 3,97,310 with a growth rate of 8.48 per cent. Industrial & Cottage Industries registered a growth rate of 5.26 per cent and these services were increased to 1,37,372 from 86,701. It is very interesting to note that the agricultural connections are very important in India and increasing at a significant rate 9.84 per cent during the study period in the operational area of APSPDCL and it was ranged from 6,07,029 to 13,26,565 connections. Other category of LT services includes public lighting, temporary connections, etc., and these services in the area of APSPDCL were 78,246 during 2007-08 and increased to 1,35,388 with a growth rate of 7.34 per cent during the study period. The total LT category of services was grown at the rate of 8.62 per cent during the study period.

In the areas of APEPDCL the domestic (household) services were 34,23,157 during 2007-08 but increased to 48,00,740 with a growth rate of 3.71 per cent. Non-domestic services in the area was increased to 2,83,895 from 4,55,778 with a growth rate of 4.75 per cent. Industrial & Cottage Industries services registered a growth rate of 4.38 per cent, these services were increased to 35,419 from 24,959. The agricultural connections are increasing at a significant rate of 5.25 per cent during the study period in the operational area of APEPDCL and it was ranged from 1,43,813 to 2,05,012 services. Other category of LT services includes public lighting, temporary connections, etc., and these services in the area of APEPDCL were 60,034 during 2007-08 and increased to 90,469 with a growth rate of 4.64 per cent during the study period. Finally, the total LT services in the area of APEPDCL registered a growth rate of 3.89 per cent during the study period.

H. High Tension Consumers

The total HT services were increased significantly during the study period and registered a growth rate of 13.28 per cent. The total HT connections were 3,068 during 2007-08 and increased to 9,035 during the year 2016-17. The number of HT services of APSPDCL increased to 5,334 from 1,677 with a highest growth rate of 15.03 per cent. A growth rate of 9.84 per cent registered in APEPDCL regarding the number of HT services during the study period and it is ranged from 1,391 to 3,292 during the present study period of 10 years.

The APSPDCL industrial segregated HT connections were increased to 3,325 from 911 with a growth rate of 17.25 per cent. The industrial non-segregated connections were 523 during 2007-08 and increased to 1,447 with a growth rate 12.51 per cent. Irrigation and Agricultural HT connections of APSPDCL recorded a growth rate of 11.09 per cent, these services were 198 during 2007-08 and increased to 461 during 2016-17. The Railway Traction HT services were increased to 19 from 14 with a growth rate of 4.01 per cent during the study period. Other category of HT connections includes Electricity co-operative society supply, colony lighting, etc., and these services in the area of APSPDCL were 31 during 2007-08 and decreased to 44 with a growth rate of 3.12 per cent during the study period. Finally, the total HT services in the operational area of APSPDCL registered a growth rate of 15.03 per cent during the study period.

The APEPDCL industrial segregated HT connections were 806 during 2007-08 and increased to 1,983 during the year 2016-17 with a growth rate of 10.75 per cent. The industrial non-segregated connections were increased to 1,462 from 479 with a growth rate 11.22 per cent. Irrigation and Agricultural HT connections of APEPDCL were recorded a growth rate of 15.09 per cent. These services were 58 during 2007-08 and increased to 195 during 2016-17. The Railway Traction HT services were increased to 17 from 15 with a growth rate of 1.46 per cent during the study period. Other category of HT connections includes Electricity co-operative society supply, colony lighting, etc. and these services in the area of APEPDCL were 33 during 2007-08 and increased to 44 with a growth rate of 2.60 per cent during the study period. The total HT services in the operational area of APEPDCL were increased to 3,701 from 1,391 and registered a growth rate of 10.92 per cent during the study period.

I. Purchases and Sales

The purchases and sales of power by the two distribution companies in the state of Andhra Pradesh varying significantly based on the different categories of connections and the demand and supply of power during the study period of 2007-08 to 2016-17. The following tables presents in detail about the purchases and sales in terms of Million Units and rupees of two power distribution companies in the state of Andhra Pradesh.

Table No.1:Purchase and Sales of energy in APSPDCL

Year	Purchases		Sales	
	MU	Rs. in Crore	MU	Rs. in Crore
2007-2008	12,663.01	3012.16	10,797.99	2999.87
2008-2009	13,805.48	4228.55	11,938.50	3170.88
2009-2010	15,741.05	4592.51	13,697.28	3759.12
2010-2011	16,449.08	5061.12	14,441.24	4888.18
2011-2012	18,474.87	6339.00	16,388.21	5972.36
2012-2013	18,417.74	7902.72	16,444.84	6535.12
2013-2014	20,179.12	8083.16	18,024.46	7327.45
2014-2015	29,398.24	13016.49	26,361.61	10923.88
2015-2016	33,268.56	14976.07	28,709.57	11910.76
2016-2017	34,826.98	15137.13	30,734.43	12731.28
MEAN	12,322.41	8234.89	18,753.81	7021.89
S.D	8127.77	4550.25	7194.91	3641.45
CV	65.95	55.25	38.36	51.85
CGR (%)	12.20	20.09	12.54	19.15

Source: Annual Reports of Power Distribution Companies

The purchases and sales of power of APSPDCL are presented in the table no. 1. The purchases of electricity of APSPDCL ranged from 12,663.01 MU to 34,826.98 MU with an average of 12,322.41 MU during the study period and registered a growth rate of 12.20 per cent but in terms of rupees the purchases were Rs. 3012.16 crore during 2007-08 and increased to Rs 15137.13 crore during 2016-17 with a growth rate of 20.09 per cent during the study period. The electricity sale of APSPDCL is increasing significantly during the study period. The sales in Million Units were 10,797.99 during 2007-08 but it was 30,734.43 MU during the last year of the study with a growth rate of 12.54 per cent. The sales in rupees increased to Rs. 12731.28 crore from Rs. 2999.87 crore during the study period of 10 years with a growth rate of 19.15 per cent and the average sales were Rs. 7021.89 crore.

Table No.2: Purchase and Sales of energy in APEPDCL

Year	Purchases		Sales	
	MU	Rs. in Crore	MU	Rs. in Crore
2007-2008	9,250.677	2,252.46	8,058.705	2,568.84
2008-2009	9,889.058	2,953.09	8,692.209	2,735.75
2009-2010	11,260.69	3,305.67	9,868.551	2,982.74
2010-2011	12,518.74	3,589.41	10,366.38	3,472.08
2011-2012	13,472.07	4,537.43	11,725.82	3,982.80
2012-2013	13,862.02	4,956.53	11,903.93	5,309.67
2013-2014	14,253.36	5,565.35	12,900.32	6,818.03
2014-2015	15,553.96	6,253.25	14,155.76	7,049.08
2015-2016	16,853.25	7,586.29	15,185.99	7,630.79
2016-2017	18,356.67	8,658.37	16,443.36	8,177.25
MEAN	11278.25	4965.78	11930.10	5077.70
S.D	2921.48	2075.42	2770.37	2186.80
CV	25.90	41.79	23.22	43.06
CGR (%)	7.50	15.18	8.06	15.81

Source: Annual Reports of Power Distribution Companies

The purchases and sales of power of APEPDCL are presented in the table no.2. The purchases of electricity of APEPDCL ranged from 9,250.677 MU to 18,356.67 MU with an average of 11278.25 MU during the study period and registered a growth rate of 7.50 per cent but in terms of rupees the purchases were Rs. 2,252.46 crore during 2007-08 and increased to Rs. 16,443.36 crore during 2016-17 with a growth rate of 15.18 per cent with an average of Rs. 4965.78 crore during the study period. The electricity sale of APEPDCL is increasing significantly during the study period. The sales Million Units were 8,058.705 during 2007-08 but it

was 16,443.36 MU during 2016-17 with a growth rate of 8.06 per cent. The sales in rupees increased to Rs.2,568.84 crore from Rs. 8,177.25 crore during the study period of 10 years with a growth rate of 15.81 per cent and the average sales were Rs. 5077.70 crore.

J. Distribution Losses

The power distribution companies in the state of Andhra Pradesh experiencing high distribution losses since the beginning of the power sector. The same kind of scenario continues till now in the distribution companies of the state. In the present study, the APSPDCL and APEPDCL are facing distribution losses at different stages of distribution of power.

Table No.3: Distribution Losses of Power Distribution Companies in Andhra Pradesh (per cent)

Year	APSPDCL	APEPDCL
2007-2008	14.73	9.01
2008-2009	13.52	8.29
2009-2010	12.98	7.90
2010-2011	12.75	7.00
2011-2012	11.29	6.90
2012-2013	10.71	6.46
2013-2014	10.68	6.33
2014-2015	10.33	6.32
2015-2016	13.70	5.48
2016-2017	11.75	4.99
MEAN	12.24	6.86
CGR	-2.19	-5.71

Source: Annual Reports of Power Distribution Companies

It is evident from the table that the distribution losses in APSPDCL varying between 14.73 per cent and 11.75 per cent with an average of 12.24 per cent. In APEPDCL the power distribution losses during the study period was varying between 4.99 per cent and 9.01 per cent with an average of 6.86 per cent. The calculated for a growth rate two distribution companies is naivities values.

III. CONCLUSION

The profile and status of power distribution companies of APSPDCL and APEPDCL are more or less similar in all respects. The numbers of LT and HT consumers are higher in APSPDCL than the other distribution companies in Andhra Pradesh. The power distribution companies are serving different categories of consumers in the state. It is noteworthy that all the power distribution companies distributing in all the 13 districts of the state is at a satisfactory level.

REFERENCES

- <https://www.apspdcl.in/>
- <https://www.apecentralpower.com/>
- www.aptransco.gov.in/
- <https://apgenco.gov.in/>