MEASURES TO MITIGATE POWER CRISIS IN ANDHRA PRADESH

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***Abstract*: Power sector plays a predominant role in the progress of country's economy where automation is the key to its economy and business. The demand for electricity in the country has been growing at a rapid rate and is expected to grow further in the years to come. In order to meet the increasing demand of electricity, industrializing the power generation and electricity supply becomes a key government priority for the socio-economic development of the country. In spite of the overall development that has taken place, still the power supply industry has been under constant pressure to bridge gap between supply and demand. Adequate and reliable supply of electricity is an important pre-requisite for not only for economic development but also attracting both domestic and foreign investment.**

***Keywords*: Power Generation, Electricity Supply, Industrialization, Economic Development, Power Crisis, Private Investment, APGENCO & APTRANSCO**

INTRODUCTION

The Power Industry plays a critical role in the socio-economic progress of the country and has to be emphasized. The government has given top priority to development of the sector considering its importance in the overall development of the country. The government has set the goal of providing electricity to all citizens by 2021. Adequate and reliable supply of electricity is an important pre-requisite for attracting both domestic and foreign investment. The power sector has registered significant progress since the process of planned development of the economy began in 1950. Hydro power and coal based thermal power have been the main sources of generating electricity.

In spite of the overall development that has taken place, the power supply industry has been under constant pressure to bridge gap between supply and demand. The demand for electricity in the country has been growing at a rapid rate and is expected to grow further in the years to come. In order to meet the increasing requirement of electricity, massive addition to the installed generating capacity in the country is required. While planning the capacity addition programme, the overall objective of sustainable development has been kept in mind.

Andhra Pradesh is progressing through a phase of development where automation is the key to its economy and business. As the state continues to industrialize the importance of power generation and electricity supply becomes a key government priority. Electricity is a key ingredient for the socio-economic development of the country. The government has given top priority to development of the sector considering its importance in the overall development of the country. Adequate and reliable supply of electricity is an important pre-requisite for attracting both domestic and foreign investment.

The Andhra Pradesh State Electricity Board (APSEB) was formed on 01 April 1959. Until its unbundling in February 1999, APSEB was responsible for electricity generation, transmission, distribution and supply in the state. It functioned under the overall guidance of the state government, interacting with the central power agencies for planning and co-ordination. The APSEB's performance on generation side was far better compared to other State Electricity Boards but performance on distribution and financial aspects was poor. By the late nineties the state was facing both energy and peak shortages and the quality of power supply had deteriorated; the power utility's financial losses had grown to Rs 39 billion and new investments were not finance able. The power subsidies had increased to 1.6 percent of the Gross State Domestic Product (GSDP). Power sector reforms became imminent as in their absence the need for subsidies from the government's budget would have continued to grow and crowd out social sector investments.

NEED FOR THE PRESENT STUDY

The Power Sector in the State is under constant stress with the growing demand of about 300 Million Units per day in the State. The peak demand has touched 11000 Mw during this season. At present, the State is having a Millions of Units shortfall per day. Power cuts are affected to the limited hours in towns and 15 hours for agriculture in villages. The normal activities are affected resulting in hardship to common man. Hence, the present study is taken up to analyse the power scenario and to identify the reasons to mitigate the problem.

OBJECTIVES

In order to tide over the power crisis, the following objectives are considered for the study.

i. To analyze the power crisis in the state on various sectors.

ii. To explore the potential alternative sources of energy in the state for meeting growing demand in future.
iii. To suggest measures for mitigating the impact of the crisis on a short-term basis.

METHODOLOGY

The study is based on the significance of power sector in Andhra Pradesh. The present study highlights how to tide over the Power Crisis in the State of Andhra Pradesh. In order to collect required information a qualitative approach i.e. both primary such as discussions with officials of power sector and secondary data sources such as periodicals, journals and websites has been used to draw the inferences.

REFORMS

In the background of the deteriorating situation on the power front and the new initiatives by the Government of India to attract private investment, the then State Government of Andhra Pradesh contemplated to restructure the power sector. Reforms in power sector were brought about in multiple steps.

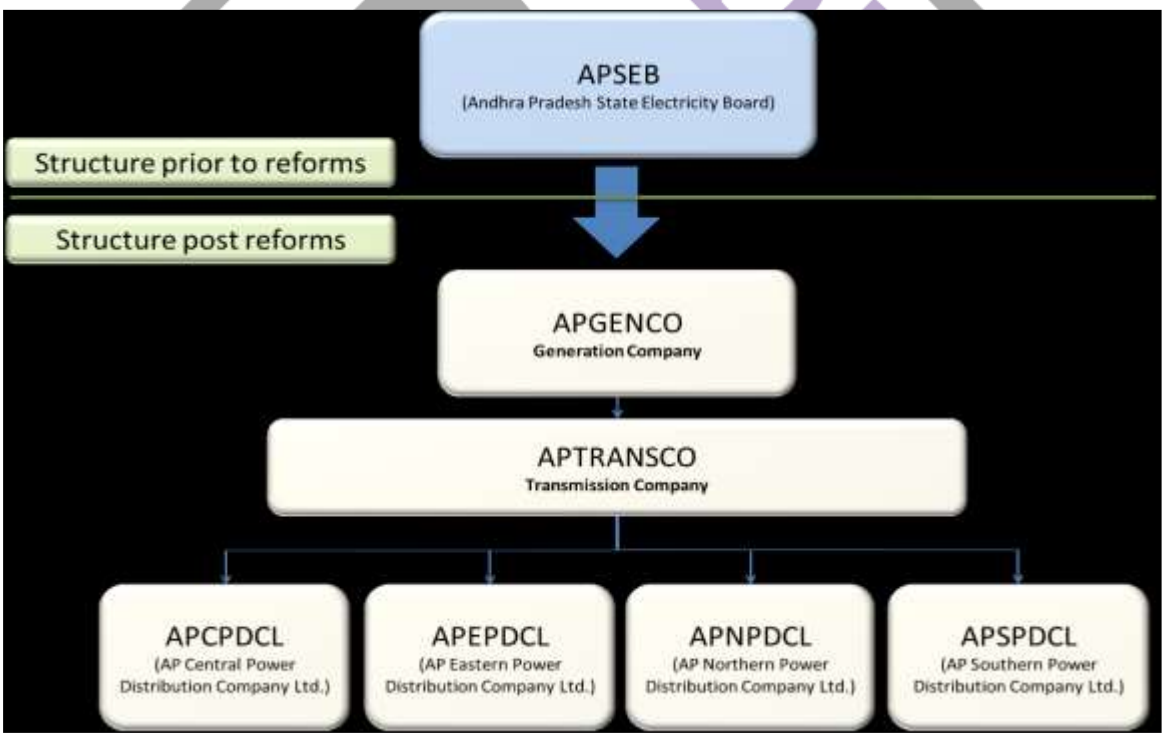
Power Sector Restructuring

In the year 1995, Government of Andhra Pradesh approached the World Bank for a structural adjustment loan to tide over the fiscal crisis that engulfed the State Government. In response, the World Bank brought out a comprehensive report 'A.P-Agenda for Economic Reforms', in January 1997, outlining its approach to reforms including power sector.

Bank suggested comprehensive reforms in the power sector are:

1999 January	World Bank's PAD on AP Power sector Reforms Programme (APPSRP)
1999 February	AP Electricity Reforms Act 1998 comes into force
1999 February	APSEB unbundled into APGENCO and APTRANSCO
1999 April	AP Electricity Regulatory Commission starts functioning
1999 April	AP Electricity Regulatory Commission starts functioning
2000 March	APTRANSCO further unbundled into APTRANSCO and four DISCOMs
2003 June	Enactment of Electricity Act, 2003.

Power Sector: Structure pre and post reforms



The APSEB was unbundled into APGENCO and APTRANSCO in February 1999. The Electricity Reform Act provided for the constitution of Andhra Pradesh Electricity Regulatory Commission (APERC). Actual unbundling took place in year 2000. It has been more than 8 years since the power sector has been unbundled in AP. During this tenure AP has seen a change of regime which also brought a change in the way Power distribution reforms in Andhra Pradesh reforms were pursued in AP. At the time of unbundling of APSEB reforms were driven by guidelines given by World Bank and minimization of cross subsidization and privatization of DISCOMS were considered as eventual outcome of reforms. Andhra Pradesh started power sector reforms much earlier than most of other states in the country. However, pace of reforms in AP slowed down by year 2004. The signs of slowdown in reforms were visible in suspension of the World Bank loan after stage-I itself and no attempt to privatize distribution.

INITIATIVES TAKEN DURING REFORM PROCESS

Power distribution sector reforms in Andhra Pradesh were concentrated on reducing losses and improving commercial viability through improved infrastructure, better auditing and usage of IT systems. The initiatives taken during the reform process are:

- *Theft control*
- *Energy audit and metering*
- *Consumer analysis tool*
- *monitoring and tracking system*
- *Investment in infrastructure*
- *Transformer information management system*
- *Book consolidation module*

Sources to generate power

Sources for power generation range from commercial and conventional sources like,

- Coal,
- Lignite,
- Natural gas,
- Oil,
- Hydro and
- Nuclear power

Other viable non-conventional sources like,

- Wind,
- Solar and
- Agriculture and
- Domestic waste.

MEASURES TO MITIGATE POWER CRISIS

To overcome the power crisis the following measures are taken in to be considered.

1. Industrial Load

- The average Industrial consumption is around 35% of the total consumption in the State. The instantaneous demand is of the order of 3500 MW. Most of the Industries (other then Processing Industries) are observing holiday on only Sunday. The consumption of these Industries is of the order of 2000 MW with about 1500MW being consumed by the Processing Industries operating continuously 7 days in a week. So the Industrial load will fall down from the peak on Sunday. These different Industries based on their load and geographical location shall have to categorized into groups (preferably 7) and observe holidays in different days in a week.
- There are a number of Central and State Public Undertakings like Bharat Heavy Electrical, Electronic Corporation of India, Singareni Collieries Ltd who can be requested to observe weekly holidays on different days in a week. Then there shall be reduction in load every day (2000 MW/7=around 300 MW) spread over the entire Week instead of only on Sunday where there is total fall in the load of about 2000MW as some processing industries may also be operating on Sundays.
- This approach has been tried in Anantapur District during 2009-10 where the Industrialists of Guntakal, Tadipatri, Anantapur and Hindupur volunteered to have holidays on different days in a week. This resulted in load reduction of about 15-20 MW per day.
- In the State of Maharashtra, the staggering of Industrial load is in operation for many years. The industries in Mumbai, Nagpur, Pune, Sholapur, and Aurangabad are observing holidays on different days in a week thereby staggering the demand.
- The possible limitations may be the absence of dedicated feeders for Industries and reluctance of workmen to observe holidays other than the Sunday. The above limitations can be overcome by giving wide publicity of the day holiday being observed by the Industries in the particular area so that the Industries will be forced to observe holiday on the designated day and also closely monitoring the daily consumption. The second limitation can be overcome by educating the workmen of the Public interest and also impressing on them that this methodology ensures quality power.

2. Markets and Malls

- In major cities like Hyderabad, Visakhapatnam, Vijaywada, Guntur, Kurnool, Warangal there are large number of Complexes, Shopping Malls and most of them being air-conditioned and consume large amount of Power. It is suggested to stagger this consumption in these cities by having holidays on different days in a week for different areas in these cities instead of only Sunday. For instance in Hyderabad city we can have holidays for commercial establishment for Ameerpet on one day, Secundrabad area on another day etc. Similarly it can also be done in different localities in other major cities so that load will be distributed on different days in the week.
- In Delhi, different markets have different holidays in a Week. Karolbagh and Connoughout place observe different weekly holidays. This not only reduces the peak consumption but also offers Citizens with possibility to market everyday in a week.

➢ A meeting of all Political Parties can be called before introducing the above proposal for their co-operation as the state is now reeling under severe power crisis.

➢ **The above measures can reduce the load of about 400 MW on 6 days in a week without incurring any cost** thus saving about 9.6 million units per day. The savings in power expenditure will be of the order of Rs 3 Crores per day (for 6 days in a week) taking the unit cost at Rs 3/- with increase in additional expenditure of Rs 3 Crores on Sundays.
➢ The Staggering of load is already being followed successfully in the State in the **Agricultural Sector**. There are about 27 lakh agricultural Pumpsets in the State and power is supplied to about 9 lakh pumpsets at any point of time (except 6 PM to 9 PM). The agriculture pumpsets are supplied power 7 hrs continuously or in two shifts of 4 and 3 hrs respectively.
➢ The Government has to take the initiative to **extend this concept** to the Industrial and Commercial Sectors by persuading the Industrial Fraternity, Federation of Chambers of Commerce, Public Representatives and Resident Associations for implementation of the above measures. This approach of "**Staggering of load**" if adopted in the entire Country, will reduce the demand by about 3000-3500 Mw.

3. Other Power Saving measures
➢ The Government may issue orders to make it mandatory to use solar energy water heaters for all new constructions in Municipal Corporations where the extent of land involved is more than 150 sq yards. In areas less than 150 sq yards, it may be made optional. Further in all apartment constructions, solar street lights for internal street lights to be made mandatory and common solar heating system.
➢ This shall ensure reduction in the demand for conventional energy and propagate the use of alternative sources of energy and thereby reduce the load on the grid. Based on this experience, it may be scaled up to all other Municipalities. The Government may have a dialogue with the manufacturers of Solar heater and Solar light manufacturers to ensure that the citizens get the equipment at a reasonable price.
➢ In all the districts, many of the drinking water sources do not have power capacitors resulting in low power factor. The fixing up power capacitors on a campaign mode to all these sources shall ensure saving of power to an extent of about 10%. In the entire state, this shall reduce the demand by about 150 MW.
➢ The State Government shall also take up a campaign for fixing of capacitors to the agriculture pumpsets of farmers. At present there are about 28 lakh pumpsets in the State. The earlier campaign met with a limited success.

CONCLUSION
In addition to the above measure taken to tide over the power crisis, the State Government may adopt "**Staggering of Load**" to reduce **daily demand/peak demand** and thereby reduce the power purchase cost at the time when there is maximum demand. The average unit cost is around Rs 3/-per unit when the power is drawn at normal frequency (50 cycles /sec) and around Rs 10/-per unit when the power is drawn at low frequencies (less than 50 cycles /sec) i.e when the demand is high. However, by staggering, the load shall reduce on 6 days in a week but increases on only Sunday. As the power sector is a capital-intensive industry, huge investments are required in order to generate addition to the capacity. Competing demands on the government resources and declining levels of external assistance from multilateral and bilateral donor agencies constrained the potential for public investment in the power sector.

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