

# DISTRIBUTION SIDE REFORM- AN OVERVIEW

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**Abstract:** The Indian power sector has been facing serious functional problems during the past few decades. In order to revitalize the sector and to improve its techno-economic performances, Government of India has initiated restructuring process in 1991. This paper reviews the overall background of Power Sector reform, particularly Distribution Side reform and performance of the Maharashtra State and the future scope.

**Keywords:** Power sector reform; MSEDCL; DCL Loss; Performance index

## I. INTRODUCTION

Electricity plays a vital role in achieving economic, social and environmental Objectives of sustainable human development. Development of different sectors of economy is not possible without matching development of the electricity sector. In fact it has become essential ingredient for improving standard of living and its absence is usually associated with poverty and poor quality of life. This paper is organized as follows- Section I gives introduction and the importance of electricity for improving standard of living. Section II gives background of reform and objectives of reform. Section III gives Power scenario in Maharashtra. Section IV explains reform experiences of other states and the last Section V concludes the paper followed by the references.

## II. NEED FOR REFORM

The first reform phase began in 1991 with the introduction of Independent Power Producers (IPP) paradigm. Government initiated reform process due to the following reasons:

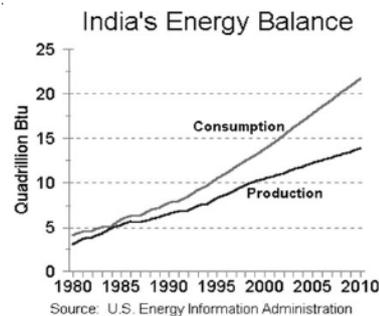
- the ever-widening gap between the demand and availability of electricity,
- the poor technical and financial performance of the State Electricity Boards
- Inability of the Central and State Governments to finance and mobilize
- Resources for generation capacity expansion projects, making third party investment in power sector imperative. Till mid 1980s, the Indian Power Sector developed satisfactorily to fulfill the increasing demand with much achievement to its credit. But by late 1980s, the state owned power utilities in India (mainly SEBs) developed signs of negative growth in every field may it be technical, financial or governance.
- At the time of Independence  
Installed Capacity - 1362 MW
- Present Scenario  
Installed Capacity - 14,000 MW  
Peak Demand - 86,000 MW  
Peak Availability - 79,500 MW [8]

Commencing with a meagre installed capacity of 1300 MW during the year of national independence in 1947, the Indian power sector has made substantial growth over decades. By the year 1990 the installed capacity grew to the tune of 75000 MW and the total electricity sale was about 289,440 million units. Major portion of the transactions related to the trading of electricity in the country, including generation, transmission and distribution, power delivery and revenue realisation have been carried out at State level by 19 State owned Electricity Boards (SEBs) and also six Electricity Departments of the Governments in a few States. The T&D losses recorded during the year 1991 was about 22.90%. Thermal power stations were operating at very low efficiency and with average Plant Load Factor (PLF) of only 53.90%. The generating capacity additions were totally inadequate to meet the growing

demand requirements and consequently the deficits in electrical energy and peak-power requirement experienced during the year 1990–91 were 7.7% and 18.8%, respectively.

Table 4 Demand and supply forecasts for power in India (GW)

	2001/02	2006/07	2011/12
Peak load	95.76	130.94	176.65
Installed capacity	126.04	181.1	242
Peaking capability <sup>a</sup>	88.92	129.82	146.67



#### A. OBJECTIVES OF REFORM

The various objectives to be achieved by carrying out reform programme is as under-

To promote the development of an efficient, commercially viable and competitive power sector.

- To provide reliable quality and uninterrupted supply, at reasonable prices, to all consumer categories.
- To ensure that the social and environmental aspects are fully taken into consideration.

#### B. THE ELECTRICITY ACT, 2003

Recognizing the need for the Reform process covering the entire facets of the electricity sector comprising generation, transmission and distribution to the consumers, a comprehensive Electricity Bill was drafted in 2000 following a wide consultative process. After a number of amendments, the bill finally sailed through the legislative process and was enacted on 10 June, 2003. It replaces the three existing legislations governing the power sector, namely Indian Electricity Act, 1910, the Electricity (Supply) Act, 1948 and the Electricity Regulatory Commissions Act, 1998. The Electricity Act, 2003 mandates that Regulatory Commissions shall regulate tariff and issue of licenses and that State Electricity Boards (SEBs) will no longer exist in the existing form and will be restructured into separate generation, transmission and distribution entities. Regulatory function has been taken away from the purview of the government. The Electricity Act, 2003 mandates licensee-free thermal generation, non-discriminatory open access of the transmission system and gradual implementation of open access in the distribution system which will pave way for creation of power market in India.

The main provisions of the act are:

- Mandatory metering of all electricity supplies,
- Adoption of multi-year tariff principles,
- Provision for cross-subsidy surcharge on direct sale to consumers,
- Power Trading recognized as a distinct activity with ceilings on trading margins to be fixed by the Regulatory Commissions,
- Upfront payment of subsidies by the States and,
- Setting up of an Appellate Tribunal to hear appeals against the decisions of the CERC and the SERCs.[13]

### III. POWER SCENARIO IN MAHARASHTRA STATE

The total load demand of Maharashtra state can be broadly divided into-

(i) Mumbai and its suburbs

(ii) the rest of Maharashtra. Generation, transmission and distribution of power for Mumbai and its suburbs are fulfilled by utilities such as TATA Power Company (TPC), Reliance Energy Limited (REL) and Brihan Mumbai Electric Supply and Transport Undertaking (BEST). These were private companies prior to the early 1990s, when the Indian power

sector was opened to the reforms. Over the years, they have supplied the most reliable power without any load shedding to Mumbai and its suburbs. The scenario in Maharashtra state is discussed below considering the regulatory affairs of MERC, the power situation and the structure of the distribution company.

#### A. Maharashtra Electricity Regulatory Commission (MERC)

- The Maharashtra Electricity Regulatory Commission was established on August 5, 1999, under the Electricity Regulatory Commission Act of 1998. MERC promotes competition, efficiency and economy in the power sector and is mandated to regulate tariffs on power generation, transmission and distribution
- De-licensing of thermal generation and captive generation (to generate electricity primarily for his own use and includes any co-operative society or association of persons for generating electricity primarily for use of members of such cooperative society or association),
- Open access in distribution to be introduced in phases,
- Provision for license-free generation and distribution in rural areas and provision for management of rural distribution by Panchayats, Cooperative Societies, non-government organizations, franchisees, etc,
- Non-discriminatory open access in transmission,
- Multiple licensing in distribution, companies within the state, facilitates intra-state transmission of electricity.

The new entities formed were:

- MSEB Holding Company
- Maharashtra State Generation Company
- Maharashtra State Transmission Company
- Maharashtra State Electricity Distribution Company [7]

#### B. Maharashtra State Electric Distribution Company Ltd (MSEDCL)

Maharashtra State Electric Distribution Company Ltd is a separate distribution company created after the reform of MSEB on June 6, 2005. Recently MSEDCL supplies electricity to a staggering 1.93 crore consumers across the categories all over Maharashtra excluding the island city of Mumbai. There are about 1.43 crore residential, 31.70 lakh agricultural, 13.79 lakh commercial and 3.63 lakh industrial consumers in MSEDCL Area which fetch annual revenue of about Rs. 34,000 crore. In terms of infrastructure, MSEDCL operates a vast far flung network comprising of 33 KV, 22 KV & 11 KV lines, sub-stations and distribution transformers spread over 3.08 lakh sq.kms.

Geographical area of Maharashtra covers 41,095 villages and 457 towns. It has 34,151 substations (33 KV) with 55,218 MVA of transformation capacity, 10334 HV feeders, and several thousand circuit kms of HT and LT lines. At present, MSEDCL has an average estimated distribution loss of 16.03% for the year 2011-12.

#### C. Performance of MSEDCL after reform

Problems faced by MSEDCL

Consumer-related problems: When MSEDCL came into existence, a number of problems existed on the consumer front:

- No separate consumer care centres
- No call centre for complaints
- No system to give feedback to consumers
- Delay in supply restoration against complaints
- No system for tracking status of consumer complaints

Due to high level of consumer dissatisfaction caused by low quality of supply and high losses, MSEDCL decided to undertake a number of initiatives

Initiatives taken Post reform-

MSEDCL decided to undertake a number of initiatives to bring about important changes in the distribution business and

power scenario in the state. These initiatives were combined under what is called as a "ten-point programme".

The programme is as follows:

- i. Preventive maintenance
- ii. Distribution network planning

- iii. Consumer grievances redressal systems
- iv. Distribution system loss reduction
- v. Improvement in collection efficiency
- vi. Circles to act as profit centres
- vii. Efficient use of technology
- viii. Improved services to ag. Consumers
- ix. Improving working conditions of employees
- x. Demand side management

It can be seen from the ten-point programme that the initiatives taken by MSEDCL

Focused on three broad areas:

- Initiatives to improve Quality of Supply (QoS)
- Initiatives to minimize AT&C losses
- Customer-centric initiatives

General steps towards consumers benefits-

- HT consumers are the main source of revenue for MSEDCL. Improvement in Power Factor in the system reduces losses and system loading. Hence HT consumers are encouraged to improve the power factor by offering incentives in their electrical bills which creates positive response from the consumers.
- A prompt payment discount of 1% on the monthly energy bill, excluding taxes and duty, is offered to all consumers if their bill is paid within a period of seven days from the date of issue. This measure has encouraged the consumers to pay their bills on time, and an increase in the amount of the discount to consumers for timely payment has been observed
- Bills are computerized and the billing period has been reduced from two months to one month. Bills are consumer friendly as they provide the consumption of the previous six months and a photo of the meter reading and are written in the local language. These features were added over a period of one year and resulted in an increased cost of billing.
- MSEDCL has implemented a mass media campaign on “Anti- Power Theft Provision and Corruption”. The success of the campaign over a year is evident in reduced power theft, increased revenue and an increase in consumer meter connections. A separate team of officers called the Flying Squad deals with theft of electricity.
- A separate guideline was issued for load shedding known as the “Load Shedding Protocol” in which predominantly agricultural areas have a maximum load shedding period of 11 h. Hence, there is frequent agitation and protests against MSEDCL, due to which expenditures on security features have increased.
- Now Load shedding program are carried out according to the DCL group i.e. Distribution and Commercial Loss, of 11 KV Feeders. The DCL loss is depend upon the line loss and the collection efficiency of the feeder. The line losses can be controlled by Engineers but the collection efficiency is totally in a control of consumers. The DCL group are classified into 8 groups (A,B,C,D,E,F,G1,G2,G3) according to the DCL loss level and the area that covered under the feeder i.e. Ag dominated region or Other region.
- The collection efficiency is poor for agricultural billed consumers, agricultural unbilled consumers and the domestic consumer category. Improvement of the collection efficiency depends on recovery of current bills and pending arrears. Increased distribution loss occurs on the account of theft, illegal connections and inaccurate bills for faulty meters, old meters and fixed billing of un-metered agricultural consumers. A significant capital investment and implementation of administrative measures will be required to reduce the distribution loss. [6]

## I. REFORM EXPERIENCES OF OTHER STATES.

The state utility has benefited from the experiences of the past reforms of the Orissa and Delhi electricity boards. The power sector reform processes in all three states (Orissa, Delhi and Maharashtra) were initiated due to the poor financial condition of their SEBs caused by reduced revenues and mounting technical and commercial losses. The reform processes in Orissa and Delhi began prior to the introduction of EA 2003, in 1995 and 2002, respectively, whereas in Maharashtra the reform was initiated in 2005. The First phase of Power Sector reform was slightly inclined towards generation side which makes improvement in generation but totally neglected towards distribution side. In that phase the capacity addition of generating plant were taken but totally avoided the increased losses taken place due to negligence towards distribution. That was overcome in the second phase. The load patterns in Orissa and Maharashtra are of mixed type, with urban, rural and agricultural loads scattered over a wide area. In Delhi, most of the load is high-density urban type. In Orissa and Delhi, private sector involvement has increased since the unbundling of SEBs. Both Delhi and Orissa allowed private sector participation in their three distribution companies. In Maharashtra, there is only one distribution company with a ‘Franchise Based Distribution Model’ in selected areas only. The Orissa state government withdrew its financial support of SEB after the reform, but in Delhi and Maharashtra, the

government has shared all of the previous liabilities of SEB and continued to support it during the transition period. In terms of the success of the reforms, the Orissa model failed in almost all aspects, with no improvement in services to the consumers, poor billing rate and collection efficiency, increased distribution losses and rampant thefts and an average 15.5% rise in tariffs. Also, one of the distribution companies failed to pay its dues to a transmission company named GRIDCO and later could not pay its employees' salaries (Rajan, 2000; Kanungo Committee, 2001; Dixit et al., 1998). In Delhi, all three distribution companies have shown good results, with an average 10.63% reduction in losses in the first three years. In fact, one of the three distribution companies was able to reduce its losses beyond the set target and hence reduced the tariff. Also, there was an improvement in billing and collection efficiency and a reduction in theft cases, with a marginal hike in tariff of 7.16% over a period of three years with respect to the tariff of 2002–2003 (Prayas Energy Group, 2006). In Maharashtra, the reform process is steadily progressing toward success. There has been an improvement in billing and collection efficiency of 6%, reduced theft cases; a slow but steady decrease in distribution losses of 16.03%. [12]

#### IV. CONCLUSION

In this paper, a detailed about the power sector reform are discussed the power sector reform restructuring process were initiated during 1991 has not succeeded in improving technical efficiency or in improving financial position of the power sector. The first phase was inclined toward generation side and hence totally neglected the improvement in distribution, causes increased T&D loss. Special attention is given now a day's towards distribution side for improving the losses. Energy Audits of all feeders and replacement of old energy meters will help to reduce technical and commercial loss. The state utility has learned from the reform experiences of other states and hence adopted a franchise-based distribution model that allows not only a public–private partnership, but also better control on the performance of the franchise. This model can be further extended to those divisions where the distribution loss is very high and collection efficiency is poor. Considering the socio-economic aspects of electricity, alternate energy can be use for rural area for cheap power. New ideas are to be implementing for better service and consumer's satisfaction leads to better collection efficiency and load-shedding free Maharashtra.

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