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ELECTRICITY REFORMS: EXPLORING INSTITUTIONAL ALTERNATIVES IN MAHARASHTRA, (INDIA).

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To my beloved wife Ms. Rekha for her moral support and who accompanied me during my period of study at the Hague, the Netherlands,
and
my two children Amit and Pranav who suffered for our absence from them during the period of study.

TABLE OF CONTENTS

ACRONYMS

ABSTRACT

LIST OF ACRONYMS

AT&C	Aggregate Technical and Commercial
BSES	Bombay Suburban Electric Supply
BEST	Bombay Electricity Supply and Transport
Ckt	Circuit
DF	Distribution Franchise
EHV	Extra High Voltage
GoM	Government of Maharashtra
GoI	Government of India
HT	High Tension
HVDC	High Voltage Direct Current
KWH	Kilo Watt per Hour
LT	Low Tension
MERC	Maharashtra Electricity Regulatory Commission
MNCs	Multi National Companies
MSEB	Maharashtra State Electricity Board
MSEDCL	Maharashtra State Electricity Distribution Company Limited
MSETCL	Maharashtra State Electricity Transmission Company Limited
MSPGCL	Maharashtra State Power Generation Company Limited
MUs	Million Units
MVA	Mega Volt Ampere
NPM	New Public Management
O&M	Operation and Maintenance
PSIRU	Public Services International Research Unit
PPP	Public Private Partnership
SEB	State Electricity Board
T&C	Technical and Commercial
T&D	Transmission and Distribution
TPL	Torrent Power Limited
TPC	Tata Power Company
WB	World Bank

ABSTRACT

The study explores the institutional alternatives in power sector reforms in Maharashtra (India), by using combination of actor-based analysis, principal-agent theory, actor-network theory and concept of embedded autonomy. The paper looks at institutional alternatives to increase positive autonomy and reducing negative interference at the same time, so that the conflicting objectives of economy and efficiency in electricity supply could be achieved simultaneously. So, there is a trade off between control and autonomy where complete privatization leads to, too much autonomy and too little control while traditional state administration leads to, too much control and too little autonomy. Both being extreme cases, are unsatisfactory to achieve the objectives of efficiency, economy and quality at the same time. Therefore, the hybrid arrangements like *Bhiwandi* model of franchising of electricity distribution in Maharashtra can be the solution to reduce the negative interference through control over setting the right or desired policies, and increasing the positive autonomy through execution of these policies transparently and efficiently.

CHAPTER ONE: INTRODUCTION

This paper pertains to power sector reforms in the state of Maharashtra in India. Specifically, it deals with the issue of efficiency enhancement in the distribution sector through the system of franchise. Given the fact that electricity is the essential commodity for every day human activity, its adequate and reliable supply is essential for economic growth of any country. The demand for electricity is increased manifold due to technological advancement and rapid urbanization, where state owned electricity monopolies are finding it difficult to provide adequate and reliable electricity to its consumers. This is primarily because of operational inefficiency and lack of capital for investment. The low level of efficiency in public sector undertakings is due to diffused accountability, poor incentive structure, information asymmetry and lack of funds for improvement.

Until recently most electricity industries were vertically integrated monopolies owned by national, state, or municipal governments (Joskow 2003a) 'which operated facilities for all three stages of electricity service: generation, transmission, and distribution. When private ownership was present, the companies nonetheless operated as monopolies in designated franchise areas regulated by governments that set rates and oversaw investments' (Patterson 1999). To address the problems of inefficiency and paucity of funds for expansion of the electricity systems, restructuring through unbundling and private participation was seen as a viable alternative in many countries where different countries adopted different reform approaches such as corporatization, privatization, contracting out, etc.

In developing countries like India, power sector reforms have been along the line of restructuring and unbundling of previously vertically integrated system into three main components looking after generation, transmission and distribution. In India, the power as a subject find place in the concurrent list of the Constitution. This implies that both the central government as well as state governments have got concurrent powers to legislate and regulate this subject. Traditionally, the state enjoyed monopoly over generation, transmission and distribution of power barring few exceptions like Tata Power Company (TPC) which is private Independent Power Producer (IPP).

Pursuant to Electricity (Supply) Act 1948, each state in India has an independent State Electricity Board (SEB) which had a monopoly over generation, supply and distribution of electricity to its citizens. Electricity Act 2003 enabled restructuring of these SEBs which opened new avenues for bringing in private participation in the distribution sector in the country.

Maharashtra a second most populous state in India has succeeded in achieving high levels of industrialization, particularly in Information Technology (IT) sector. 'Up to the 1990s, the State experienced a high growth rate; however, the State has seen a decline in growth rates during 1995-2000. The average annual economic growth has declined sharply from 7.8% between 1985-86 and 1994-95 to 5.3% during 1995-96 to 1999-00' (White Paper, GoM, 2003). The growth rates for the year 2002-03, 2003-04, 2004-05 and 2005-06 has been 8.3%, 7.9%, 8.3% and 8.6% respectively as against 8% targeted for 10^{th} plan period.

It is not the issue of supplying power alone but related issue like its quality, reliability and competitive pricing which has become extremely relevant in a highly

liberalized and competitive economy. Therefore, it is in this context that the power sector reform assumes a very high degree of importance for the very survival of the country as a prosperous entity.

Traditionally, a monopolistic regime was necessary for a nascent and underdeveloped economy, to the evolution of a highly inefficient apparatus which was generally regulated by a cost plus approach. In the long run monopolization and state ownership failed to provide for efficient and satisfactory services. The reform process must include, besides the traditional components and the steps initiated world wide over, a series of innovative and non-conventional methods.

Thus, the focus of this research is to explore, analyze and evaluate why the management methods employed by the private organizations contribute to greater operational efficiency and quality service delivery in power sector with specific reference to Maharashtra (India). In particular the paper will focus on the socio-political networking of different actors and stakeholders involved by taking 'Bhiwandi Distribution Franchise' as a case study.

1.1 Context and Background

Traditionally, it was considered by the policy planners and scholars that New Public Management (NPM) methods like privatization of public sector undertakings are the solutions for improving efficiency and providing better quality of service. "NPM emphasizes on efficiency, performance and quality service tested empirically by better service to citizens treated as customers" (Rouse, 1999). However, research shows that blind application of these methods in different countries did not yield the same results as that of in some of the developed nations. And there are several instances such as privatization initiatives in Brazil, California, etc are the examples of failed experiment (Tankha, 2008; Joskow, 2003).

It was in the context of acute financial crunch being faced by most of the SEBs in India, forced them to choose the path of reforms. Accordingly, the state of Maharashtra set up Rajyadhkshya committee which after due deliberations came out with a comprehensive reform package in the energy sector. The state government accepted majority of its recommendations. At the same time Government of India (GoI) was seized with the task of framing and adopting a new policy through enactment of Electricity Act, 2003 which also motivated a number of states to undertake the reforms. It will be pertinent to mention here that, the State Government was reluctant to undertake any reforms as such facing some kind of political backlash as majority of trade unions having vested interests in the status-quo were totally opposed to reform. However, the compulsions of prevailing circumstances compelled the state government to undertake the reform process. These compulsions were namely the mounting financial loss incurred by the board (MSEB) and non availability of huge funds required for capital investment, and also to meet the subsidy commitments declared by the state government from time to time. Under such a situation, even the World Bank decided to suspend the financial assistance to one of the power projects namely *Khaparkheda*, and declared the commitment to resume the same if or as and when the state government decides to undertake the reform process restructuring forward.

Power sector reform in India, in the first place involved unbundling of the gigantic State Electricity Boards (SEBs) into activities based corporations, namely generation,

distribution and transmission. The power sector reforms also involved setting up of regulatory body to fix the tariff, regulate the subsidy, resolve the disputes between different power companies, to address the public grievances and redress the same, and finally to scrutinize and approve the power purchase agreements between the various power companies. Thus, in one stroke the regulatory work was taken away from the government which is more of a political entity and handed over to an autonomous and independent body comprising of subject specialists.

It would not be out of place to mention here that this country is on the growth trajectory with a consistent annual growth rate of 8.5 to 9 % of GDP for the last decade. To sustain this growth rate, it poses the real challenge in terms of infrastructure requirements and energy being one of the most important one. A policy of regulated economy for the period of four decades bred a very high degree of inefficiency in power sector in India. And therefore, initialization of liberal economy regime posed a real challenge to bring the power sector into the main focus of the reform process as we all know that energy is the real engine of growth. Rapid industrialization, increase in the purchasing capacity of the middle class, ever swelling middle-class population in the country and mechanization of agriculture sector are some of the factors which are pushing the energy demand almost vertically and the gap between the demand and supply is ever increasing. Consequently even a developed state like Maharashtra despite being highly industrialized and well administered is facing acute power shortage leading to very rampant load shedding and continuous outrages.

Demand-Supply Scenario in Maharashtra *(Source: MSPGCL)*

Demand, Availability and Shortfall (Peak Demand)							
	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
	MW	MW	MW	MW	MW	MW	MW
Peak Demand	11425	11357	12749	14061	14749	15689	14791
Availability	9004	9315	9704	9856	9700	10412	110607
Shortfall	2421	2042	3045	4205	5049	5277	4184

This paper tries to examine the suitability of various methods and practices that are more successful in achieving the efficiency and customer satisfaction in the delivery of electricity distribution. The analysis is based on different principles and concepts namely, NPM, Public Sector Reforms, Embedded Autonomy, Principal-Agent Theory and Actor networking in public utilities.

1.2 Problem Identification and Background

There are instances where shifting from the model of absolute control to a private entity has not resulted into desired outcomes. ‘Numerous failures in restructuring power industry in countries such as Brazil, California (US), Ontario (Canada), and many others had attempted the restructuring the electricity industry resulting in to creation of

monopolies by private Multinational Corporations'(Thomas, 2006). Though it is worth analyzing the root causes of these failures, it will not be fair to attribute the failures to the policy of reforms as such, as there are several other socio-economic and political reasons that might have failed the reforms.

Therefore, 'in a long-run development perspective, full-scale privatization of power sectors in developing countries involves significant risks, and therefore a flexible policy approach is preferable to a rigid commitment to extensive liberalization' (Gabriele, 2004). A policy of full-scale privatization and liberalization in the power sector as undertaken in most of the developed countries may not be desirable option in a developing country like India which has got an entirely different socio-economic compulsions and cultural diversity*.

The power sector in India faces severe technical and commercial [1] (T&C) losses amounting to nearly 50% (Source: CEA), which apart from imposing a heavy fiscal burden on the state governments are also deterring much needed investments in the sector, and adversely affecting the quality of service to the consumers. "Empirically it can be seen that, most of the public sector electricity service utilities account for heavy losses of electricity from transmission networks due to poor maintenance and bad grid management, where as, distribution losses may occur due to poor maintenance of distribution networks, thefts, faulty meters, illegal connections, etc. A major factor that determines the level of commercial loss is the differential pricing policy" [2] (Kannan, 2002).

Several initiatives have been introduced by various power distribution utilities across the country to further reforms in the sector. It is increasingly being recognized by the policy makers and planners that models like Public Private Partnership (PPP) should be experimented to bring 'private sector expertise and investments required in electricity business to improve the quality and reliability of service and to reduce the financial burden of the state governments in India', (Banks, Bowman, Gross and Guy, 1998).

Maharashtra is served for electricity by Maharashtra State Electricity Board (MSEB) created in 1960 as per provisions laid down in Electricity (Supply) Act 1948, as a monopoly provider for the state, performing all three functions of generation, transmission and distribution excluding Mumbai. Mumbai is served by three power utilities namely Tata Power Company (TPC), erstwhile Bombay Suburban Electricity Supply (BSES) now Reliance Power both private sector companies, and Bombay Electric Supply and Transport (BEST) an undertaking of Mumbai Municipal Corporation. One of the suburbs of Mumbai namely *Mulund* is served by MSEB.

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1. Technical losses attribute to loss of electricity in the conductors and equipments used in the system for transmission and distribution of power; and commercial losses are mainly due to losses on account of metering inefficiency including defective meters, billing inefficiency, poor collection of revenue and theft & pilferage.
2. Differential pricing policy implies having different rates for different categories of consumers owing to socio-political and economic considerations in terms of awarding subsidies to special categories like agricultural consumers. It does make a negative impact on the efficiency and performance of electricity system.

   * India inherits a society that is culturally very diverse in terms of its caste system, multiple languages and varied socio-economic factors.

Although, there was a separate board of directors to take all major decisions like capital investment, tariff fixation, resolution of disputes, subsidy, etc were taken first informally at the level of state government. It goes without saying that the decisions of the state government generally implied the decision of Energy Minister and the Chief Minister, which resulted in most of these decisions being highly populist in nature because of socio-political considerations. Subsequent ratification of all these decisions at the level of MSEB's board of directors used to be a foregone conclusion. Overwhelming influence of politicians both at formal as well as informal level used to affect the entire decision making process and ultimately the decision itself. There was no element of corporate decision making, although never gave up the façade of the same. This resulted in immense damage to finances of MSEB. This had an impact particularly on tariff regulation through declaration of subsidy in tariff rates for special categories like agriculture and power loom consumers.

Electricity Act, 2003 prompted the state governments to restructure the electricity boards. The main objective of the reforms was to develop an efficient, commercially viable and competitive supply at reasonable prices to all categories of consumers without compromising the social and environmental aspects. GoM chose to take a cue from the central Electricity Act of 2003 and embarked on the path of reforms. Since the enactment of Electricity Act 2003, out of total 28 states in India, about 12 have completed the restructuring exercise including the financial restructuring where they have directly or indirectly addressed two primary concerns, viz. to provide clean balance sheets to the newly formed companies and to ensure that there is no impact on the tariff due to financial re-engineering. One of the major components and ingredients of the reform process was the trifurcation of SEBs, which it was presumed would become viable corporate entities.

Taking in to account the continuous increasing demand for new connections due to increase in economic activities in Maharashtra, and very high transmission (6%) and distribution losses (31.72%) {Source: MSEB, 2005} coupled with financial constraints; GoM decided to go for restructuring of MSEB in 2005 through corporatization and unbundling into three separate segments for generation, transmission and distribution. Prior to this trifurcation, the MSEB was having series of financial liabilities, but unbundling resulted into complete restructuring and re-engineering of this finance and consequently, these liabilities are absorbed by the state government where the newly formed three corporate entities were allowed to start afresh with no financial liabilities as such.

Although the reform package was adopted more out of compulsion and expediency, the state government was not in favour of giving any shock therapy to the existing system. In democratic dispensation to ensure the sustainability of any reform package, it is always desirable to build consensus. The MSEB was plagued by mushrooming trade union activities which in a democracy like India work as a pressure group. From the very beginning, most of these trade unions failed to see the reason behind these reforms and consequently were always opposed to it with a fear that they will loose their identity and interests. State government's efforts to build consensus proved futile, and therefore, the government decided to administer the pills of reforms in a gradual manner. At the government level, perhaps the leadership was weary of full-scale reforms, as the same would have resulted in a complete shift of power and authority.

We can also presume that the issue of reforms in a developing country like India, with its pluralistic character, was completely un-traded path; and therefore, the policy makers were quite apprehensive of the final outcome. What works in a developed country might not work in a developing country because of the differing socio-economic conditions.

Thus, approaches like introduction of Public-Private Partnership (PPP) and franchising endeavors in recovery, network up-gradation and improved grievance redressal system to win over thefts and illegal connections thereby ensuring better service, were seen as a viable alternative. '*Bhiwandi'* with its population of about one million is traditionally a major textile hub of India having about 600,000 power looms , almost 33% of all India. About 34% of the total electricity consumed by the town is utilized by these power-looms, but historically these consumers are notorious in terms of non-payment of electric charges and thefts. These power loom owners having similar interests for getting cheap electricity form a strong pressure group to influence the local politicians in their support and thereby try to put pressure on state level politicians to influence the decision making.

Considering the autonomy aspect of private sector, Maharashtra State Electricity Distribution Company Limited (MSEDCL) came with a novel idea to appoint 'Distribution Franchise' as a type of PPP model as an alternative to deal with the multidimensional problems in providing reliable and adequate electricity to the citizens and improve operational efficiency. The whole idea of appointing a DF smacked out of the general PPP model adopted by the government of Maharashtra to undertake series of infrastructural projects in the state. The capital intensive infrastructural projects like construction of Mumbai- Pune expressway undertaken by the state government through PPP and at the same time the state of Maharashtra had witnessed the advantages of electricity distribution work undertaken by private companies such as BEST and Reliance (BSES) in the city of Mumbai which has got remarkably low level of T&D losses, almost comparable with the best in the world. The success of PPP model as mentioned above and the successful case history of private distribution company prompted the decision makers particularly the Managing Director of MSEDCL to come out with the idea of private distribution franchise. The success of Bhiwandi model created a general consensus at political level which motivated the MSEDCL to replicate the same model in other major cities like Nagpur, Aurangabad, etc.

In this scenario, it will be highly interesting and significant to know how the private company deals with all these complex problems and win over the situation which could be an example which can be repeated in other such situations.

1.3 Relevance and Purpose of Research

Adequate, reliable and un-interrupted supply of electricity to the consumers at reasonable prices has always been the challenge for the public sector utilities. This is generally due to the conflicting objectives of coverage and efficiency. Lot of experimentation is done in the power sector around world and in India as well, tending to focus on restructuring of vertically integrated electricity monopoly system to deal with the problem of low operational efficiency and high technical and commercial losses. 'Politicized pricing and subsidization, managerial inefficiency, and politicized unions are hallmarks of retail electricity supply in the developing countries' (Dossani 2004).

However, to the best of author's knowledge and opinion, no ideal solution has been found to tackle these problems and this is because of the context specificity of the problems which needs solutions specific to that particular context. NPM methods propagated by its champions since 1980s are well contested for its relevance and usefulness, and its universal application more particularly to developing countries. The main objective of the reforms is to improve governmental performance by emphasizing customer service, decentralization, market mechanisms, cross-functional collaboration and accountability for results. Therefore, "privatization of electricity distribution initiatives is receiving an increasing amount of attention, owing to the rapidly deteriorating status of distribution infrastructure" in the developing countries (John, Banks, Bowman, Thomas and Guy, 1998). However, research shows that there are numerous instances of failures of complete privatization of electricity system such as in case of Brazil, Orissa (India), etc.

Therefore, a clear cut assessment is important given the crisis with electricity reforms in United States, and the recent black outs in Europe (Bialek 2004), and 'the challenges facing electricity systems in most of the developing countries. Though, privatization of electricity services is portrayed as means of improving efficiency and bringing in private investment, there are instances that there is no significant difference in efficiency between public and private electricity utilities; and the utilities are in the hands of powerful Multinational Companies' (PSIRU Reports, 2002). On this background, there is an upward trend for PPP in providing public services in the developing world where the responsibilities and risks are shared so that chances of failures could be minimized. Though, 'the initial driver for reforms in India was the paucity of funds with SEBs' (Dossani, 2004), utilization of private expertise and management methods was the other important pushing force for the reforms.

The distribution being the most critical activity in the electricity business due to high T&D losses and low collection efficiency, several innovative options are being experimented to achieve the objectives of efficiency and customer satisfaction. 'While privatization may deliver in the short term by reducing leakages and providing more effective billing, the long term implications are less clear. In the process, possibly inefficient public sector enterprises may be replaced with powerful private sector companies without having any democratic responsibility and accountability' (PSIRU 2001). Annual Report (2005) of Ministry of Power, GoI reads that 'due to lack of adequate investments on T&D work, the T&D losses presently range from 18 to 62 % in various states of India'. Considering the vast spread of electricity distribution networks in the Indian states, 'objectives of coverage and efficiency may conflict, that economically efficient organization may be politically unachievable and that the small, municipally owned firm may be the best compromise' (Dossani, 2004) to address the problems in distribution. And hence, Distribution Franchise is being seen as one of the type of PPP, preferred over other options for retail distribution of electricity. However, there is no enough research to understand how DF operates and why the methods employed by them are successful in achieving operational efficiency in electricity distribution. This paper contributes to fill this gap. The paper try to present insights on the internal working of DF based on the empirical study of *Bhiwandi model* of DF.

The author is interested in analyzing the *Bhiwandi* model of PPP in terms of why the methods employed by private sector are more successful in achieving the better

results than public sector in the delivery of public services such as electricity supply; Why and how the private sector was more successful in managing the electricity distribution?; what the private sector do exactly that was different from the public sector and basically how was it able to overcome the political resistance?; It is also of great interest for the author to know how the different institutions like State Government, MSEB, newly formed companies and private companies interact within themselves under new arrangement. Does corporatization brings full autonomy to these institutions and how sharing of responsibilities and risks lead to evolution of workable framework in operation? How the public and private interests which are conflicting are dealt with within these institutions? And finally, the focus or the study will be on identifying the individual and institutional interests and motivations of the different actors involved in the electricity distribution.

1.4 Objective of Research and the Question

Objective of the study is to look at the institutional alternatives to increase positive autonomy and reduce negative interference. The focus of the research is to assess the impact of power sector reform in the broad framework of PPP with the ultimate goal to achieve high degree of profitability through efficiency enhancement.

The research question's main thrust is on to evaluate and explore, how the stated goal of efficiency improvement envisioned in the power sector reform be achieved through the methodology of PPP through a case study of *Bhiwandi* town. The paper tries to provide the analysis of the research question under following sub-questions.

1.4.1 Research Sub-Questions

- How restructuring of Maharashtra State Electricity Board improved the efficiency of electricity services in terms of T&D, commercial losses, distribution and up-gradation of network, and quality service delivery?
- How sharing of responsibilities and risks lead to evolution of workable framework in operation?
- How public-private partnership through franchising of services is successful in reduction of thefts, technical, distribution and commercial losses, and increased recovery of bills?
- What are the incentives for improved performance in terms of quality service and redressal of consumer grievances through franchising?
- Why the electricity bills are not paid and how outsourcing of bill collection leads to increased recovery?

1.5 Scope of Study

In general, this research paper aims to deliberate on power sector reforms in India with a very specific reference to MSEB. And in particular it underlines the importance of reforms in distribution sector to achieve an acceptable level of efficiency and profitability. The research covers a small geographical area of Bhiwandi town in India, with its unique socio-economic and political characteristics where electricity distribution is franchised to

a private operator for the period of 10 years. The broader perspective is narrowed down to analyze and evaluate 'Distribution Franchise' (DF) in Bhiwandi circle of the state of Maharashtra as a type of viable PPP model.

The primary data is collected from the MSEB and newly formed independent segment companies of erstwhile MSEB viz. Maharashtra State Power Generation Company Limited (MSPGCL), Maharashtra State Electricity Transmission Company Limited (MSETCL) and MSEDCL. Primary data was also gathered from the DF Torrent Power Limited which is appointed for Bhiwandi circle in the state of Maharashtra. Thus, the scope of study was narrowed down to the pilot project of Bhiwandi franchise against the background of a larger canvass of power sector reforms. It would have been difficult to deal with the entire gamut of power sector reforms either in India or the state of Maharashtra and hence this study is limited to a pilot project. Therefore, the research broadly explores MSEB and it's restructuring, and focuses on one PPP model in which appointment of DF for electricity distribution as a unique experiment. Primary data is supported by the secondary data from academic work, researchers in the same field as well as documents from MSEB.

1.6 Research Methodology:

Since the research is based on observations, interviews and information from key informants and analysis by use of existing literature, it was presumed that the qualitative method of research is relevant and appropriate to this study. For qualitative analysis and assessment and also to evaluate existing ideas and concepts, this exploratory research work is undertaken which I am confident could generate new insights and ideas. The primary data was generated and collected through open-ended personal interviews and questionnaires with the whole range of officials from MSEB companies as well as interviews with different type of consumers and the officials of the Distribution Franchise. Personal interviews of 18 officials from MSEB, 6 officials from Torrent power, 2 officials from Maharashtra Electricity Regulatory Commission (MERC) and 12 interviews of other actors were conducted. About 24 Surveys and interviews conducted with different type of consumers allowed the author to subjectively evaluate the performance of MSEB before and after restructuring, strategies used to enhance performance, collection efficiency, customer satisfaction, etc.

Interviews were focused on plight of power sector in Maharashtra; causes of inefficiency of the Board in quality performance and service delivery; factors contributing to improved efficiency after PPP, capital investment for renovation and up-gradation of network, distribution and asset maintenance, collection of dues, issuing new connections, ensure power supply, attending consumer grievances, incentive structure, management of subsidy and sharing risks and responsibilities, and challenges and prospects of PPP in quality service. Personal interviews with the whole range of stakeholders enabled the author to gather information based on personal experiences of interactions and inter-relationships with different stakeholders and interactions of different actors within each organization. The officers were selected who are working in the concerned organizations for a long time with an aim to understand and uncover the intricacies involved in inter and the intra-institutional relations and interests of the institutions involved in the process of electricity supply in the state of Maharashtra. The

author relied upon the officials of newly formed three electricity companies' viz. MSETCL, MSEDCL and MSPGCL for obtaining required secondary data and information. Analysis of experiences of other countries and other states of India, in terms of reforms and restructuring of electricity industry through privatization, corporatization, etc was also used as a source of secondary data for the study.

1.7 Limitations of Paper:

One of the major limitations that this research paper faced was the absence of adequate studies and data regarding the franchise model of PPP in electricity distribution. Within the country, this was the first of its kind and outside instances of such experimentations are very few and far between. Secondly, this pilot project in Bhiwandi itself is in nascent stage and is yet to mature; and therefore both the primary as well as secondary data with regard to this experimentation is limited in nature as well as availability. A total period of less than two years of the experimentation being very short itself is one of the limitations for the research.

1.8 Structure of Paper:

This paper is organized in five chapters. Following the introductory chapter which also comprises of research methodology, the second chapter presents conceptual and analytical framework based on embedded autonomy, principal agent theory, actor-based analysis and actor network theory. Chapter three presents the findings of the research regarding exploring institutional alternatives in power sector in Maharashtra (India) including a case study of Bhiwandi model of franchising. Fourth Chapter analyses the impact of positive autonomy and negative interference in public institutions where the hybrid arrangements can be a solution to deal with these aspects. The final chapter is the conclusion of the study.

CHAPTER TWO: CONCEPTUAL AND ANALYTICAL FRAMEWORK

2.1 Concepts

2.1.1 Power sector reforms: Different Dimensions of Restructuring

The ultimate objective of power sector reforms [3] is to reduce the cost of electricity through increased operational efficiency and make it competitive without sacrificing adequacy, reliability and quality. 'Among four basic power sector reform models that have existed in the power sector worldwide, single buyer, wholesale competition and retail competition models have been promoted over the last 20 years in developed countries. In developing countries where prices are often below the level of full cost recovery, the focus is on introducing commercial principles that will attract investment and improve the reliability, quality and coverage of service' (WB/USAID Policy Paper, 2004).

The reforms opened the door for private sector to enter into distribution business as well, through PPP rather than complete privatization [4]. Privatization is one of the methods of NPM and includes divestiture, management, concession, PPP and contracting out. Franchising falls under PPP [5]. 'Though the success stories with PPP in power sector were limited, there are models promoting private participation to achieve performance and coverage on the basis of limited private investment supplemented by public sector. Performance and quality management which 'involves simultaneous achievement of economy, efficiency and effectiveness- (Value for Money), (Rouse, 1999) are the most important aspects that make private sector score over the public sector. The benefit of the private sector's role in these projects is that it enables the utility to increase its revenue collection and thus its ability to finance future investments. By extracting the maximum amount of investment out of the sector through improving efficiency and collections, and through tariff increases, these PPPs lead to greater financial sustainability of the power sector through enhancing the utility's self-financing capacity' (WB /USAID Policy Paper, 2003).

2.1.2 New Public Management (NPM):

The NPM premise is that public sector organizations should run like private organizations to maximize their efficiency. 'The public service organizations are characterized by a complex array of stakeholders- current and potential users, voter-citizens, elected members, professionals and other employees- each with a different set of values and ideas about good performance and quality service experience'(Rouse, 1999).

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3. The power sector reforms refers to unbundling of vertically integrated system into three independent and autonomous systems for generation, transmission, and distribution, and establishing a regulatory authority to set up a multi-buyer, multi-seller competitive power market.
4. Privatization refers either to complete sale-out of public sector assets to private entity or transferring some government functions partially or completely to a private entity.
5. Public-Private Partnership is defined as "cooperation between public and private actors with a durable character in which actors develop mutual products and/or services and in which risk, costs, and benefits are shared" (Osborne, 2000). PPP refers to a joint venture by the public sector (Government) and one or more private sector companies in public service delivery through joint investment and operation.

The NPM methods like Privatization, Corporatization, Contracting Out and Agencification were used and tested in developed countries in isolation or in combination to manage the complex public services like electricity supply, water supply, telecommunication, sewage, road transport, gas supply etc. Electricity distribution is one such important service where adequate, reliable and competitively priced supply is crucial. Therefore, the method which will allow achieving economy, efficiency and effectiveness simultaneously needs lot of skill, innovation and experimentation.

'In order to promote genuine public private partnerships, the failures of the private sector need to be viewed also as a public sector problem. In promoting a real partnership, public sector policies could better mitigate excessive volatility by applying a better understanding of how to manage risk and rewards and incentives private investors to achieve economic efficiency' (WB / USAID policy paper, 2004).

2.2 Conceptual Framework:

The paper looks at institutional alternatives in power sector in Maharashtra where the MSEB a public sector undertaking was having monopoly over generation, transmission and distribution of electricity in the state. A legacy of increasing inefficiency, and inadequate and unreliable power supply in the state created by MSEB was mainly due to complete control of the state in policy making as well as its implementation. In case of complete control, there are more chances for negative interference by the state or the policy makers in making and implementation of policies due to socio-political, economic compulsions some times coupled with vested interests leading to rent-seeking, inefficiency and underperformance by public sector institutions like MSEB. The other important reason for this inefficiency and underperformance is diffused relations between principals and agents in public sector due to information asymmetry, unclear responsibilities and diffused accountability. At the same time, there are more chances that state may loose complete control of these institutions, in case of complete privatization ultimately leading to undesirable outcomes. Therefore, in either of the extreme case, the objectives of efficiency and economy being conflicting can not be achieved simultaneously. And hence, the paper looks at institutional alternatives where the positive autonomy of the institutions is increased through partial control of the state in terms of policy making and negative interference be reduced through functional autonomy.

The conceptual framework of the study is based on the institutional analysis of different institutions like state government, MSEB, newly formed companies and private sector entities. The analysis tries to explain how the experiments like franchising as a model of PPP leads to increase in positive autonomy and reducing negative interference. It also examines how these different institutions interact with each other as stakeholders as well as how the different actors in each institution interact among each other within a particular institution. The study has tried to analyze and find out inter-relationship of these stakeholders in terms of their interests, responsibilities, incentives and powers.

2.2.1 Embedded relationship:

Though, each of newly formed institutions are autonomous and theoretically they are expected to work independent of political masters, in practical working, these

companies are not completely insulated from socio-political considerations. In a scenario where it looks like that institutional membranes are more porous in the sense that they have both public and private interests within the institutions. The socio-political interests' embedded in these institutions do not allow the policy makers to give complete autonomy to these public institutions. There fore, there is a need to understand, why this form was chosen? How it was negotiated and how it works? How the rights and responsibilities have been negotiated and allocated? The study tried to analyze the experimentation of Bhiwandi model franchising, its results in comparison with conventional methods of electricity distribution as well.

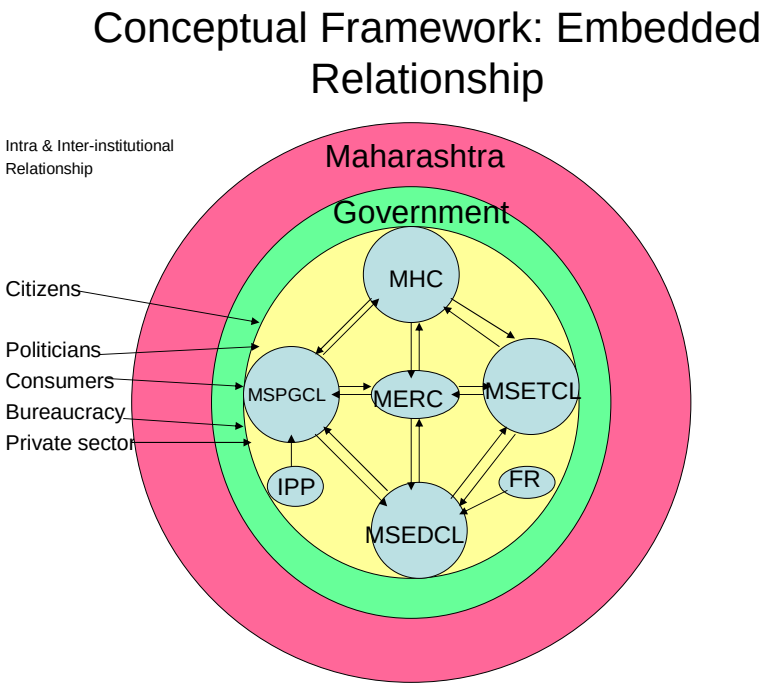

Fig. 1: Embedded Relationship

2.2.2 Principal-agent Theory: In a public sector undertaking, citizens being considered as the owners of the public assets are the principals whereas politicians and the employees as their agents. Though the citizens are principals, they have very little direct control over the politicians and employees (agents) due to diffused accountability and information asymmetry. Politicians as principals at other level as ministers do not have effective control over the bureaucracy and employees (agents) due to lack of regular information flow and colluding vested interests. "The relationships among public, government and utility in the light of a three-tier hierarchical model of principal-agent problem which consists in the default and breach of trust (i.e. moral hazard and adverse selection, Arrow 1985), likely on account of the conflicting objectives of self-interest maximization of the concerned parties and the uncertainty or information asymmetry involved in the relationship. In its simple version, it is assumed that in a regulatory governance structure, the principal's (i.e. the public's) objective is to maximize some measure of social welfare, while the agent (the government as supervisor) and the sub-

agent (utility) aim to maximize the returns of their respective rent-seeking pursuits. In a complex structure of relationships, the principal may be viewed as composite set of sectional interests against the background of the general welfare objective; each class in this composite set, such as the contractors, construction workers, bureaucracy, politicians and others, follow its own designs of predatory rent-seeking that dominate, in a particular context, the common objective" (Kannan, 2002). This has a negative impact on performance and efficiency of public undertakings which creates a vicious circle of inefficiency, underperformance and poor service delivery. Therefore, to break this cycle, it is imperative to think of alternatives which will clearly define the principal-agent relationship with clear accountability and responsibilities with emphasis on the performance based incentive structure in terms of quality service delivery.

NPM methods with its reliance on performance based incentive structure focus on clear accountability of agents towards principle as well as clearly defined responsibilities of principle and agents. Bhiwandi model of electricity distribution franchise is types of PPP where the responsibilities and risks involved in carrying the business are shared by private and public sector thereby minimize the possibility of failure due to shared risks. Complete privatization of public services creates a possibility where all the risks in the business are covered by the private sector, at the same time risk of non-performance by private organization poses a great risk for government for non-provision of services in case of failure. Franchising ensures clearly defined responsibilities and accountability where the employees of private company can either fired or rewarded by the owner being recruited on contract basis.

2.2.3 Actor-based Analysis:

Every citizen being the consumer of the electricity is the main actor in this activity. Politicians and policy makers, domestic, commercial and industrial consumers, private players having financial interest in the activity and agriculturists are the other important actors. Some of the actors like governments, electricity boards and companies, MERC, World Bank are the institutional actors. The interests of these actors being diverse and conflicting to one another's interests, they act and behave differently often against the interests of one another. Their functioning is affected by their own interest as an actor and their inter-relationship, where the type and nature of their intervention decides the priorities. Every citizen as a consumer have an interest in adequate and uninterrupted electric supply at the cheapest rates whereas, the politicians may be interested in their survival in a problematic and complex situations. The politicians are interested in cheap and subsidized electricity on one hand, and have other interest as policy makers to survive over the difficult situations on limitations for policy making due to lack of resources and poor management. The politicians among themselves as local politicians and as policy makers at state level have different and conflicting interests. Private players associated with electricity industry have profit motives where as, the public sector bureaucracy and its employees are interested in maintaining their monopoly in the electricity industry as well as to safeguard their vested interests.

State government as one of the actors in the electricity sector, is interested in providing adequate, reliable and reasonably priced electricity to all categories of consumers where welfare of public in general and a growth of sustained development being the main objective. The concerned Minister have a motivation for better

performance which will be rewarded by increase in his popularity for the better work he has done as well as job satisfaction being other important aspect. State government's interests for industrial growth, efficiency and cheap electricity for some categories on the basis of socio-economic criteria, though conflicting, it tries to find a workable solution so that both of these interests are protected. The newly formed companies as institutions have a motivation for serving the consumers by providing adequate and uninterrupted electricity. At the same time, since these institutions are supposed to work on the basis of corporate governance principles have a profit motive at its individual level. The bureaucracy and other employees working in these institutions have motivation of getting rewards for their better performance. The labor unions have interest in furthering interests of their members as well as ensuring their survival. MERC is interested in settling the disputes amicably as well as setting prices which are affordable and acceptable to all. On the other hand it is interested in maintaining its independent and autonomous identity. The private company involved in electricity business is interested in profit making with better service as its one of the other objective.

2.2.4 Actor-Network Theory

As there are different actors with either conflicting or complementary interests, they tend to form alliances and networks to appropriate their interests. Any simple analysis at the micro level may not be adequate to comprehend the complexities and intricacies of the kind of interactions that take place at local level. In fact it may prove to be an exercise in futility. Response at the micro level is the function of the peculiar socio-economic dynamics prevailing there both in terms of the time and space besides the political overtones. It will not be out of place to mention here that more often than not it is this micro level response that moulds and shapes the response at the macro level.

If we analyze the situation in Bhiwandi, it can be noticed that the consumers were interested in getting electricity at minimum cost, it doesn't matter for them whether it is being consumed legally or illegally. At the same time the interests of middlemen, private wiremen were towards making money by illegal business, where as the local politicians and social workers were interested in making the hey when sun shines i.e. to en-cash their socio-political gains. Therefore, though the interests of all these actors are not same, they are complimentary to each other's interests that make them to form network and come together for collective action for putting pressure at macro level.

Therefore, it is observed that, there is a trade off between autonomy and control, autonomy and interference while governing the public services like electricity supply. The control and interference element making these institutions embedded with the socio-political interests negatively affecting quality of service. A situation of more control and negative interference leads to diffused relationship between the principal and agents which does negatively influence the actions of different actors. In the end different actors having similar or complimentary interests, form alliances and networks to pursue their interests irrespective of its results, whether positive or negative to the system. Therefore, it is important that proper equilibrium needs to be achieved between autonomy and interference so that desired outcomes could be achieved. *Bhiwandi* model franchising is such one effort to achieve both these objectives of positive autonomy in terms of autonomy in implementation of policies due to partial privatization through PPP and reduced interference i.e. only limited to policy making and minimum interference in

implementation. Franchising ensures clearly defined relationship between principal and agents due clear accountability based on performance and clear responsibilities of the agents. It also eliminates the possibility for unscrupulous actors to form networks for pursuing their vested interests.

CHAPTER THREE: PRESENTATION AND FINDINGS

3.1 Power Sector Reforms in India:

The SEBs in India was supposed to function independent of state governments; in practice governments used these boards to indirectly serve the socio-economic policies. This resulted into low capital investment in the sector and inefficiency at administrative, technical, operational and financial levels. The increasing deficits in the state's annual outlay made it difficult for state governments to continue the required financial aid necessary for expansion by SEBs coupled with high levels of inefficiencies gave impetus for the necessity of reforms in the country. The Electricity Act 2003 facilitated the restructuring of vertically integrated single power utilities through unbundling into three different segments for generation, transmission and distribution which created the scope for private sector investment as well as their expertise to be utilized in distribution of electricity. 'The Electricity Act 2003 is in part a response to the poor financial conditions of SEBs, whose losses make expansion of the electricity sector virtually impossible' (Reinberg H.H. 2005).

3.2 Power Sector Reforms in Maharashtra:

Maharashtra is one of the most progressive and industrialized states of India with 42.4% of its population living in urban areas as against 27.8% of all India average (2001 census). Mumbai, the financial capital of the country is the capital of the state. MSEB was the largest SEB in the country with an installed capacity of 9711 MW (6425 MW coal, 2440 MW hydro and 852 MW gas). It had a well developed transmission network including a HVDC (High Voltage Direct Current) system. The board had a consumer base of 13.6 million and accumulated losses of Rs. 1593 crores. Though, MSEB was a better performing SEB in the country in terms of efficiency parameters such as availability (85.57%), Plant Load Factor (PLF) (76.62%), largest transmission and distribution (T&D) network in country (34,630 ckt kms), and aggregated Technical and Commercial Losses (AT&C) 35.7% during 2004-05; it faced financial crunch for its expansion and capital investment owing to increasing demand. This made the board unable to provide adequate, reliable and reasonably priced electricity to its citizens. The total requirement of funds for investment in the state for expansion on generation, transmission and distribution of electricity was estimated to the tune of Rs.30, 475 crores* in 2003 over next 10 year period *(Source: White Paper, GoM 2003).* GoM facing problems with low economic growth rate during 1999-2003 was unable to maintain the flow of assistance to MSEB as per requirement and reduced the quantum of financial aid from the level of 38% in 1992-93 to 13% of its total annual budget in 2001-2003 (source: MSEB). The big gap between the expenditure and actual revenue realization adversely affected the operational efficiency of the Board. T&D losses increased to the tune of 39.4% in 2003 (source: MSEB). The gap between the supply (15092 MW), and demand (20369 MW) *(source: MSPGCL)* of electricity in the state is mainly because of the low efficiency in terms of AT&C losses and lack of capital for expansion.

The electricity in Maharashtra excluding the city of Mumbai is supplied by MSEB. The Mumbai area is served by power utilities like Tata Power Company (TPC), Bombay Suburban Electric Supply (BSES: now Reliance Energy) both private companies and Bombay Electricity Supply and Transport (BEST).

* one dollar = 47 Rs (Indian Rupees)

The load shedding in the state ranges from 3 to 15 hours a day varying from rural areas, towns and cities excluding the city of Mumbai. There is no load shedding in Mumbai city and is served by an autonomous organization namely BEST, an undertaking of Municipal Corporation of Mumbai. The electricity required by BEST is supplied by an Independent Power Producer (IPP) TPC. Mumbai sub-urban area excluding suburb of *Mulund* is served for generation and distribution by another private utility Reliance Power*. *Mulund* is served by MSEB. It is interesting to observe that, there is a load shedding only in area being served by MSEB even within Greater Mumbai. The state government more particularly the MSEB was strained with the financial capital required for expansion and improvements due to higher electricity losses owing to thefts, low recovery of dues, dilapidated network, poor maintenance, mismanagement of subsidy and bad grievance redressal.

Installed Generation capacity of Maharashtra state in 2005 (MW)

	MSEB	Tata P.C.	BSES	NPC	DPC	NTPC	TOTAL
Installed Capacity (MW)	9711	1774	500	190	728	2189	15092

(Source: MSEB website)

The gradual approach of corporatization [6] of MSEB for providing better electricity services with an objective of quality service delivery was seen by the policy makers as the most viable alternative to avoid political backlash and stiff resistance from trade unions. The state which was characterized by the conditions such as high T&C losses, skewed or distorted tariffs, inadequate and unreliable electric supply, worsening financial position of MSEB due to increasing financial losses leading to inability of MSEB to cater to the increasing demand, pushed the need for electricity reforms in the state (White Paper, GoM 2002). The underlying assumption was that the state facing with the severe financial crunch, the public sector organization like MSEB could not have expanded the coverage and improved the quality service delivery without financial and technical inputs from the outside sources like financial institutes and private sector, etc.

Thus, Restructuring of the board took place with effect from 6.6.2005. The MSEB was restructured into four companies:

1. MSEB Holding Company Ltd. (MSEB HCL)
2. Maharashtra State Power Generation Company Limited (MSPGCL)
3. Maharashtra State Transmission Company Limited (MSETCL)
4. Maharashtra State Transmission Company Limited (MSEDCL)

6. Corporatization refers to 'converting government departments into limited liability corporations which vie for contracts in competition with privately owned companies both within and outside the government apparatus' (Donge, 2002).

*Bombay Suburban Electricity Supply (BSES) a private sector company since its inception is an independent power producer and distributor of electricity in Mumbai Suburban area. This company is taken over by Reliance Group which changed its name to Reliance Power since 1997.

A residual board of MSEB was retained to deal with DPC related matters and to park the earlier liabilities of the board so that the newly formed companies will be given with clean balance sheets. MSEB Holding Company Limited was formed to facilitate the transfer of assets and funds as per the transfer scheme approved by the government to these newly formed companies. Maharashtra Electricity Regulatory Commission (MERC) was created as independent regulator to regulate the prices as well as to settle the disputes and consumer grievances.

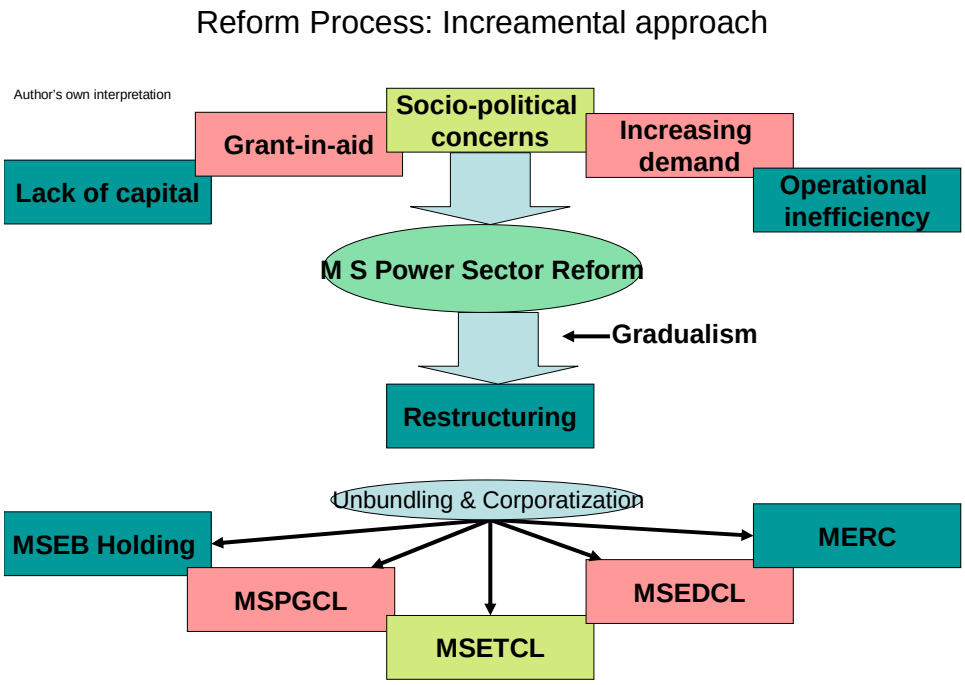

Fig.2: Reform Process: Author' own interpretation

In 2005, the assets were transferred to the respective companies from MSEB as per the transfer scheme in which, initially total assets and liabilities on a nominated date are vested in to the state government and then government redistributed these assets and liabilities to respective companies. The transfer scheme determined the assets, their fair value, accounting value, reassessed value on a nominated date and efforts were made to give clean balance sheets to these three companies viz. MSPGCL, MSETCL and MSEDCL. GoM being owner is responsible for making policies to be implemented by these companies, to provide financial assistance as per requirement depending on the availability of funds and to compensate the amount of subsidies to the distribution company through budgetary provision in the annual plan.

All appointments to the boards of directors of three companies as well as the chairman and other members of MERC are done by Energy Minister in consultation with Chief Minister (GoM). The board of directors of MSEB Holding Company constituted of Energy Minister, GoM as its ex-officio chairman, with Managing Directors (MD) of respective companies along with one financial director as its directors. The required

funds for these companies are transferred by GoM through MSEB Holding Company Limited. The private companies involved in generation work in consultation with MSPGCL where as the companies working in distribution sector work as agents of MSEDCL. End users of all these activities are the consumers of the state who are also the citizens and there by the voters.

The determination of tariff is calculated on the basis of Annual Revenue Requirement (ARR) of each company where company is estimated to earn 14 to 16 % return on total equity. This requirement of each company is examined by MERC after a formal hearing of the concerned parties. This is how the rates are determined by MERC for sale of power by generation company to distribution company and then by distribution company to various categories of consumers in the state. Amount of subsidy declared by government to particular categories like agriculture is compensated to MSEDCL by GoM. Prior to restructuring, tariff rates were determined where the MSEB was allowed to earn a total profit of 3 to 3.5 % over gross assets and the deficit was used to be compensated by the state government. All the disputes arising in the electricity business in the state are settled by MERC through a well defined judicial process. Now, for new projects in generation, state government allocate funds in the form of direct equity while for distribution company, particularly in case of special programs like rural electrification, financial aid is given in the form of loan or grants.

These institutional actors in the electricity business act in close association with each other where they interact in a situation of embedded autonomy. Although the investment decisions are made by the respective company, the major decisions are influenced by the government as it being the sole share holder.

The funds for new investments and expansion are allocated or raised through assistance from GoM in the form of equity, debt funding or through internal surplus available in the company. The other options for funding like loan from WB and other financial institutions are also open, but in a present scenario where there is a improvement in the domestic financial market owing to good economic growth in the country, and secondly due to number of conditionalities like GoI counter guarantee, etc and cumbersome procedure for getting loan from WB, this option is not being explored by these companies. As per the Transfer Scheme, MSEDCL was designated as the Distribution Licensee for the state. MSEDCL, in an endeavor to improve operational efficiencies and quality of services provided to its consumers seeks to bring in management expertise through public-private participation in the distribution of electricity' (MSEDCL, 2005). Accordingly, MSEDCL appointed Torrent Power Limited (TPL) as a Distribution Franchise for *Bhiwandi* Circle through competitive bidding. This was the first experiment of its kind by MSEDCL for entering into PPP through appointment of DF for retail distribution of electricity in the state.

The equity of GoM in the board at the time of corporatization was Rs. 3464.6 crores, the loan component from GoM Rs. 2,763.19 crores, interest on the Government loan Rs. 1,246.64 crores and receivables from sale of power over Rs. 7,700 crores in addition to delayed payment cases (DPC) related litigation. The impact of power sector reforms in Maharashtra can be seen in terms of focused efforts to improve efficiency, service delivery, profitability and planning; to plan for capacity addition in generation, transmission and distribution. The analysis of profit/loss of all three companies show that there is a turnaround in MSPGCL and MSETCL in the first year of its creation, where as

MSEDCL is turned around in 2007-08 with a profit of Rs. 82 crores. MSPGCL and MSETCL turned around with a profit of Rs. 350 crores and Rs. 260 crores by 2008 respectively. The increase in the profits is due to improved efficiency in terms of reduced losses and increased collection efficiency.

3.1.1 Performance parameters before and after restructuring:

The comparative figures before and after restructuring are given below:

Performance parameters of MSEB:

Sr. No.	Particulars	Before restructuring (2005)	2008
1	Installed capacity	9711	9996
2	PLF %	76.62	76.99
3	Availability (%)	85.57	87.58
4	CKT (KM)	34630.27	36286
5	Transmission capacity (MVA)	54485	61530
6	Transmission loss (%)	6.01	4.67
7	AT and C loss (%)	35.7	24.09
8	Number of Consumers (in millions)	13.6	15.6
9	Revenue from sale (Rs. In crores)	14170	20214

(Source: MSEB Holding Company)

Performance after restructuring of MSPGCL and MSETCL shows that there is marginal improvement of performance by MSPGCL while the performance of MSETCL is comparatively good in terms of reduction of transmission loss from 6.01% to 4.67%. The performance of MSEDCL shows very good improvement in terms of reduced AT&C losses, increase in consumer base and collection efficiency as shown below. MSEDCL has shown increase in its consumer base to the tune of 15% from 13.6 to 15.6 millions while the revenue collection from sale of power has gone up by staggering 43% from Rs. 14,170 crores to Rs. 20, 214 crores during the period from 2005 to 2008. The tremendous increase in the revenue from sale of power is on account of increase in consumer base, better collection of current dues as well as arrears.

Financial Performance after restructuring of MSEB: Profit/Loss

Sr. No.	Company (in crores)	2004-05	2005-06	2006-07	2007-08
1	MSEB	- 768	NA	NA	NA
2	MSPGCL	NA	112.93	233.52	350.00
3	MSETCL	NA	308.12	168.86	260.47
4	MSEDCL	NA	-303.41	-133.89	82.00

(Source: MSEB Holding Company)

The return on investment in MSEDCL was negative during initial period of two years from 2005 to 2007, but during 2008 the company made a profit of about 2%.

Performance after Restructuring

MSPGCL			MSETCL			MSEDCL		
Particulars	2004-05	2007-08	*Particulars*	2004-05	2007-08	*Particulars*	2004-05	2007-08
Installed Capacity (MW)	9,711	9,996	Ckt (kms)	34,630	36,286	AT&C losses (%)	35.7	24.09
PLF (%)	76.62	76.99	Transmission Capacity (MVA)	54,485	61,530	Consumer Base (millions)	13.6	15.6
Availability (%)	85.57	87.58	Transmission Loss (%)	6.01	4.67	Revenue collected	14,170	20,214

3.3 The Franchise:

Franchising the distribution areas, to private sector is one of the PPP models being considered by the power distribution utilities to allow greater management flexibility for efficiency improvement measures and to introduce more effective operational practices. In a scenario, where it is difficult to bring private participation in electricity distribution business owing to variety of risks involved such as political, law and order, credit, regulatory risks, and subsidy payment risks, MSEDCL considered that 'Distribution Franchisee' may provide a flexible option.

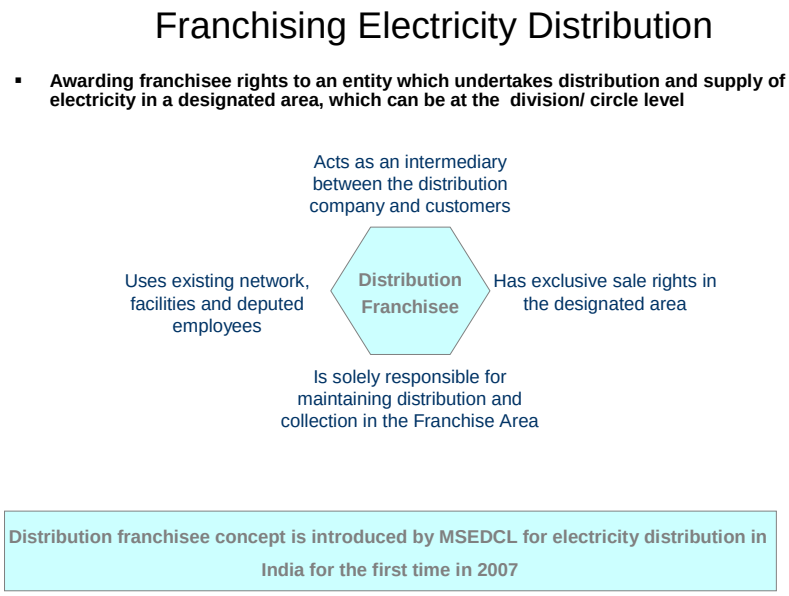

Figure3: Franchising Electricity Distribution

'Distribution Franchise agreement allows a producer of goods or services ('The Franchisor') to transfer to another entity (The Franchisee') in return of a fee, the communication of such products under the Franchisor's trademarks and distribution signs, in conformity with its uniform business methods and upon the provision, by the Franchisor to the Franchisee, the technical know how and regular assistance. The main idea behind such type of agreements is to allow the Franchisor to expand its business without investing its own capital' (PLMJ, World Services Group, 2006, www.hg.org). This way it was considered appropriate that the private sector management expertise may bring efficiency, improved performance in the business and thereby passing on the benefits to the consumers.

3.3.1 What is Distribution Franchise (DF)?

For the purposes of our study franchising refers to a method of public-private partnership for provision of electricity service where the private partner is suppose to use the existing public assets, invest on network maintenance and expansion and use its own methods of management for better service delivery and effective grievance redressal. The public sector partner is supposed to allow the private entity to use existing assets and supply of electricity. As per MSEDCL, Distribution Franchise means a successful Bidder appointed by MSEDCL to act as an agent of MSEDCL to distribute electricity in the 'Franchisee Area' where all the rights, powers and authorities available to MSEDCL as a distribution licensee necessary to fulfill the obligations and responsibilities as contemplated under the Agreement are granted and which can be conferred upon the DF under the Act.

3.3.2 Why to go for distribution franchise?

Although, MSEB and its newly formed MSEDCL administrative machinery had a longstanding experience and legacy of electricity distribution, it was thought appropriate by the policy makers to appoint a franchise for distribution of electricity in the state particularly in the areas having high T&D losses and low collection efficiency. This was because of mainly two reasons, one the management problems with MSEDCL due to vastness of distribution network spread over the state, making it difficult to concentrate its efforts in the areas which are traditionally difficult to handle in terms of collection efficiency and thefts. The Second reason is, the requirement of capital investment in these loss making areas on expansion and network maintenance.

3.3.3 Selection Criteria for Designated Areas

It is the area identified by MSEDCL for which a distribution franchise shall be appointed for distribution of electricity. The selection criteria fixed by MSEDCL for identification of the designated area depends on the percentage of loss of electricity and quantum of electricity supplied to that particular area. These two factors are co-related in such a way that there are no economies of scale and the proposal will look attractive for private sector to invest. While selecting these areas, preference is given to urban centers as the quantum of un-metered sale is very high in rural areas there by making franchise economically unsustainable. This is because of two reasons; one being the very wide spread geographical area of distribution in the state, and second reason being the distribution of un-metered electricity to agricultural consumers. The third criterion for

selecting a designated area is the quantum of input energy needed for economic viability of the scheme. The geographical contiguity is also ensured while identifying the designated franchise area so that it will be convenient for the DF to operate. The last criterion is the willingness of the consumers to pay. The distribution franchise is awarded by open biding process.

3.3.4 Types of Franchise

There can be different types of franchise depending upon the type of responsibilities entrusted and the risks shared in the franchise business.

A) *Collection based franchise*: refers to a franchise responsible for billing, revenue collection, grievance redressal, to facilitate issuing new connections and vigilance. The Risks involved are less in such kind of franchise.

B) *Input based franchise*: The designated area is handed over to the franchise for fixed period where all operations of distribution, maintenance, up-gradation and collection of dues are done by franchise; and the bills are raised by the franchisor on the basis of input energy. All the existing assets of franchisor are handed over to franchise for the use during franchise period and input energy is supplied by the franchisor. Though the risks involved in such kind of franchise are little higher, the additional advantage as compared to collection franchisee is that the franchisee is partner in terms of loss reduction and capital investment.

C) *Electricity co-operative*: A franchise in which the co-operative society formed by the consumers of a particular area can operate as a franchise for that area in which all operations of supply and maintenance are performed by the franchisor except collection of dues from the members. The co-operative can purchase additional electricity required from outside sources to meet the shortages and to avoid load shedding.

D) *Operation and Maintenance franchise*: Only the operation and maintenance of distribution network is franchised where as collection, capital investments, etc are looked after by the franchisor.

E) *Rural Electric co-operative franchise*: The electric co-operative society organized, owned and operated by its members where the society owns distribution utility assets and performs all utility functions including operations and maintenance, metering, billing and collections, accounting and finance, procurement, system planning and expansion.

3.4 Bhiwandi Distribution Franchise: A case study

The first 'Distribution Franchisee Arrangement' has been instituted by the MSEDCL at *Bhiwandi*, as one of the circle, out of its 40 circles and the selected franchisee – M/s Torrent Power Limited (TPL) took over the Power Distribution Operations in the area since 26th January 2007.

Despite of different strategies used by the MSEB to cope up with the notorious attitude of consumers in *Bhiwandi* circle, no success could be achieved. A series of steps undertaken by MSEB to bring down T&D losses to a manageable limit in *Bhiwandi* yielded no results because of a variety of reasons. Firstly, there was a general feeling that, the cost of power supplied to the power looms was very high and therefore, unaffordable as the same was levied initially at industrial rate. To ensure viability of these power looms which was the main earning source of these people, they started pilfering power to reduce the cost on power and make the industry viable. At the same time the apathy of MSEB staff towards providing quality service and network maintenance complemented in developing the attitude of consumers towards pilferage. This trend continued for quite

some time and became a part and parcel of life in the town. Even though the GoM took a very conscious decision to offer them power at subsidized rates, the basic attitude to pilfer the electricity with a view to maximize profit continued. However, subsequently the State amended the necessary Act and made the theft and pilferage a cognizable offence. It is also pertinent to note that the T&D loss (45%) in *Bhiwandi* town hovered at a higher level largely because of the unholy nexus between the consumers, illegal wiremen, middleman, consumer activists and the local officials of the MSEB. And this never resulted in any fruitful stringent action against the defaulters.

MSEDCL's objective of appointing a DF in the *Bhiwandi* circle was to increase operational efficiency [7], minimize aggregate technical and commercial (AT&C) losses, bring improvement in metering, billing and revenue collection, minimize current assets on account of arrears and enhance customer satisfaction level by improving 'quality of service' [8].

Bhiwandi circle is part of Thane District situated at around 48 km North-East of Mumbai. It is spread over an area of 721 Sq. Km and consumer base of 1, 74,000. It is a major textile hub of the country having about 600,000 power looms (almost 33% of all India). The area, in all, contains 46 feeders from its five Extra High Voltage (EHV) substations and one EHV substation of Tata Power. These substations form the 'Input Points' for injection of electricity in the circle. *Bhiwandi* Circle is mainly dominated with theft prone areas with high distribution loss are due to very high pilferage of energy and increased deterioration of system network.

The *Bhiwandi* model is the 'input based' distribution franchise appointed for a period of 10 years for a designated area of *Bhiwandi* circle. The term of the franchise period can be extended by MSETCL at its discretion. Thus, DF will be the exclusive agent of MSEDCL for distribution of electricity in the designated area. As per the terms and conditions agreed between MSEDCL and TPL, MSEDCL will supply the power at 'Input Points' as per its aggregated power supply and load shedding schedule planned periodically based on the directives issued by MERC. DF can procure power from other sources if MSEDCL is not able to supply the power as per satisfaction of TPL. The existing assets of MSEDCL will be handed over to DF for franchise period on "right to use basis" and MSEDCL will be the sole owner of all assets including those procured or created by DF.

It is also agreed that DF will make capital investment as per the plan (see Annexure IV) in order to ensure quality of supply and reduction of T&D losses. DF is responsible for all sorts of technical activities within the franchise area so as to ensure adequate, reliable and quality supply.

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7. Efficiency, in simple terms refers to ratio of output to input, higher the output than input, higher is the efficiency. Efficiency relates to how well a system is performing, in generating the maximum output for given inputs. Efficiency for the purpose of this study means operational efficiency to maximize outcome in terms of adequacy, reliability and quality of electrical service delivery to the customers through increased manpower planning efficiency for minimizing T&D losses, thefts; and effective grievance redressal (dealing with complaints and grievances of consumers).
8. Quality service delivery is the process that defines the relationship between the inputs used by an organization, the activities it undertakes to perform these inputs into delivered outputs and ultimately to the outcomes achieved, where the later can be interpreted as the value placed by society on the public service (Rouse, 1999).

The consumer mix of Bhiwandi franchise area in comparison with that of Maharashtra state is given in the below:

Consumers	Residential	Power-looms	Commercial	Industrial	Agricu-ltural	Other
Bhiwandi %	49	30	16	4	-	1
Maharashtra (%)	73.23	NA	7.44	2.07	16.53	0.73

The performance of the *Bhiwandi* circle for past five years prior to handing over the area to franchise was pathetic, in terms of distribution loss (66.8% to 44.5%), collection efficiency (66.8 to 78.6%) and AT&C (73% to 56.4%) during the period from 2001-02 to 2005-06 as is shown in Annexure VI&VII .

In addition to this situation, Bhiwandi circle had following basic problems: mandatory load shedding of more than 12 to 15 hours, deficit of 300 Mega Volt Ampere (MVA) in Extra High Voltage (EHV) in Network, overstressed distribution network, over-loading, breakdown/ tripping, distribution transformer failure rate of 44 % per year, poor reliability of supply, faulty meters and unauthorized consumers and about 45 to 50% un-metered consumers. Distribution loss and collection Efficiency levels in 2005 in Bhiwandi were 44.5% and 66.19 % respectively (see Annexure X).

3.4.1 Salient Features of Franchisee Scheme:

1. Responsibilities of DF includes purchase of power from MSEDCL at MSETCL's EHV substations, network analysis and improvement planning, make capital investment for renovation/ up-gradation of network, distribution asset maintenance, metering, meter reading, billing at MERC approved retail tariff, collection of current revenues and arrears, issue new connections, adherence to all relevant regulations of MERC including supply code and SOPs, ensuring supply of power, attending consumer grievances. DF is responsible for weekly payments to MSEDCL against the input energy on the basis of weekly joint meter reading. In case of power procured from outside wheeling charges of 7% are applicable for MSEDCL to be paid by DF. MSEDCL is providing credit to DF towards supply of power to subsidized consumers in the franchise area.

2. Responsibilities of MSEDCL involves supply of energy as per the pre-determined schedule of supply applicable to all circles of MSEDCL on a non discriminatory basis subject to MERC prescribed load shedding schedule, operation of arrears settlement mechanism in the circle for the arrears prior to appointment of DF, minimum capital investment in the Franchise Area. (Rs. 12 Cr. / Year) for first 5 Years; payment to DF upon expiry / termination for assets created during the agreement term at depreciated value, for closing inventory arrears for last one month; Grant of Right to use of distribution assets in the circle, network assets in field from the start of outgoing 22 KV feeders of EHV s/s, assets in stores as opening inventory.

3. Deputation of willing employees to DF: Existing MSEDCL Deputation rules/ deputation package of DF is applicable for those employees who have opted for deputation to TPL. The employees on deputation will get a deputation allowance up to

60% for Group I, 50% for Group II and 35% for Group III&IV employees of their basic salary in addition to their regular pay. This deputation allowance was in a sense an incentive for those employees opting for deputation. The term of deputation is three years for initial period with facility for extension of the period. Torrent did not specify any criteria for selection of the employees on deputation in their agreement. The net financial benefit for the employees on deputation is around 25 to 30 % of their total salary. The cost of employee's deputation is being borne by DF.

4. Commercial Terms: includes payment by DF against charges for input energy, arrears collected, security deposit for new connections and electricity duty. Payment by MSEDCL will involve incentive on recovery of arrears, GOM subsidy for power loom consumers and specified payments upon termination / expiry.

5. Pursuant to the bidding process, M/s. Torrent Power AEC Ltd. was selected as the successful bidder.

6. Incentives on arrear collection: 10% for live consumers beyond three months and 20% for Permanently Disconnected Consumers

7. Performance Parameters of DF are: System reliability, Consumer grievance Redressal and MSEDCL to retain rights for periodic inspection for verification of data generated.

8. Targeted benefits of DF scheme were visualized as reduction in technical & commercial losses and theft; improvement in metering, billing and revenue collection; innovative approaches to improve collection of arrears; capital investments in up-gradation of the network and enhancement in customer service quality.

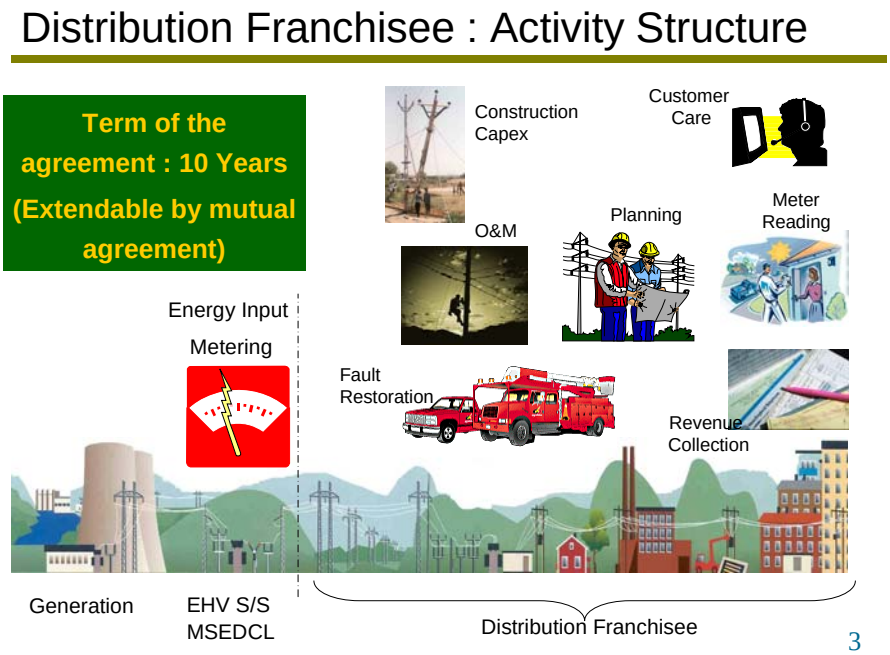

Figure 4: Activity Structure for Distribution Franchise

Targeted projections set for reduction of AT&C Losses and collection efficiency (fig. in %) by the franchisee in *Bhiwandi* Circle during 10 years as follows: *(Source: MSEDCL)*

Year	1	2	3	4	5	6	7	8	9	10
Dist. Loss	40.00	35.00	30.00	27.00	24.00	21.00	18.00	17.00	16.00	15.00
Coll. Efficiency	72.00	76.00	80.00	83.00	86.00	89.00	92.00	95.00	98.00	100.00
AT&C Loss	56.80	50.60	44.00	39.41	34.64	29.69	24.56	21.15	17.68	15.00

Joint Audit Teams for audit of various parameters had been constituted and the verification work was completed. The Existing MSEDCL employees at Bhiwandi were absorbed in nearby circles against vacant posts. About 108 MSEDCL employees of various categories are on deputation with M/s Torrent Power Ltd which has 850 employees in all for *Bhiwandi* franchise area.

3.4.2 Sharing Risks and Responsibilities

Before the era of power sector reforms, the power sector in developing countries was characterized by state owned vertically integrated power utilities responsible for generation, transmission and distribution of electricity to consumers. Thus, all the risks involved in power sector business such as political, legal, regulatory, contractual, credit, economic and commercial risks were absorbed by the state sector. The political risks include risks on account of nationalization, transferability, war and civil disobedience and terrorism. Risks on account of changes in law, breach of contract, non-payment, regulatory and obstruction of arbitrator etc are covered by government. Economic and credit risks such as inflation and foreign exchange should be dealt with by the government where as commercial risks like project construction, operation and technology should be absorbed by the private sector. In developing countries the power distribution faces greater risks because of socio-political considerations which overpower the commercial aspect. These risks are due to inherent socio-politically sensitive problems for increasing tariff, metering, billing and disconnection on non-payment by consumers.

In India, initially the focus of policy was on project finance by private sector for construction of power projects by IPPs that sold power to a state owned single buyer. This consideration of power sector reform movement for commercial viability of privatization proved ineffective as in case of Enron Corporation. These types of instances made policy makers to think differently where the risks and responsibilities can be shared by public and private sector both. This thinking in the policy process led to evolution of concepts like PPP in which responsibilities such as generation is carried out by private and/or public sector; transmission is carried out by the public sector where as responsibility of distribution is entrusted to private sector. Electricity distribution franchise is one of these PPP endeavors.

In addition to the above mentioned risks in electricity sector, it was found during the study that there are other important risks which the DF is facing in *Bhiwandi* case are as follows:

1. Unavailability of reliable data: Availability of correct and reliable data about assets and liabilities provided by MSEDCL is always a great risk as it allows DF to plan the expenditure to be done on investment and expansion, to estimate returns on the basis of this information. In case of Bhiwandi, it is claimed by TPL that estimated capital expenditure was planned to the tune of Rs. 100 crores in initial two years but it went up to Rs. 250 crores.
2. Law and order is always a great risk in areas like Bhiwandi which is highly sensitive to communal riots and where there is general tendency of the people for not obeying any rules and regulations. This risk can be very well reduced to substantial extent with good support from police and the state government.
3. Tariff regulation by MERC is the other risk where MERC set lower rates about half of the normal rates for power looms having spindle units below 27 HP. This led to developing a tendency within power loom consumers to theoretically split the units so that they will be charged at lower rates. Secondly, DF can not approach directly to MERC for any grievance and it has to go through MSEDCL, but at the same time all conditions of MERC are applicable to DF.
4. Increased expectations from consumers: The consumers have great expectations from the changed management from public sector to private sector for better service and delivery of quality.
5. Political interference and political pressure in case of strict action against the defaulters. Default rates went down due reduced interference by local politicians due to improved performance by DF and providing a proper platform to absorb these elements by creating Consumer Grievance Forum which receives complaints and thereby gives suggestions to the DF leading to no generation of political backlash.

3.4.3 The Philosophy of success: Bhiwandi Model DF (Before/ after analysis):

Bhiwandi, a historically communally sensitive town, known for tendency of the people to defy the public laws; and theft and pilferage of power happened to be just an offshoot of this tendency. Apathy of MSEB in *Bhiwandi* towards consumer care, lead to a situation where, the consumers themselves started maintaining the distribution network in case of failure by engaging the private linemen and wiremen illegally. This proves to be a nemesis of the MSEB as year after year the unholy nexus between grass-root officials of MSEB and unscrupulous elements ruled the roost. In such a scenario, the private linemen in collusion with local politicians, social workers and other elements like middleman and agents started maintaining the services in exchange of money from the consumers illegally in the area of their control. In case of any action against theft and pilferage against these defaulters, local politicians and workers used to protect the illegal wireman and the middleman there by developing a tendency for putting pressure on the authorities through collective action as the interests of all these actors were complementary to each other's. So a situation prevailed where the consumers were in any case paying some amount for the electricity usage with very low quality service to some one other than MSEB with no hope for any improvement in foreseeable future.

Consequently, the system became absolutely defunct and started eating into the revenue generated by the board in other areas. It led to low capital investment in the area further deteriorating the system in terms of high T&D losses, low billing and collection

efficiency. This difficult situation called for a unique solution because the prevailing system which was in hand-in-gloves with local power broker was totally incapable of providing any remedial solution. The Distribution Franchise (TPL) identified and analyzed these complexities and intricacies in the existing system which took series of *remedial measures* which includes strengthening and up gradation of sub-transmission and distribution network, metering to all consumers/feeders/cross-over points, 24 hour control room, call center, customer care center, on line collection, securitization of network, extensive vigil and effective disconnection of defaulters, slum electrification program, fault attendance center, user friendly electricity bills, etc. *Safety measures* undertaken by the DF includes safety training to the staff, system of work permit and use of safety PPE being strictly observed, earthing on each HV/LV pole by installing MSP/LT distribution box, replacement of deteriorated conductors, poles and insulators; appropriate plinth height and fencing of DTC, sectionalisation of LT line, installation of fuses & spacers on LT conductors, pre-monsoon DTC and line maintenance.

Each of these measures being important to ensure reducing the incidences of system failure, improved efficiency and availability of quality power where customer care was at top of their priorities, with a philosophy that if customer is satisfied with the service, he will pay for the use of electricity. Clearly defined responsibilities and increased accountability coupled with performance based rewarding mechanism resulted into proper maintenance and upkeep of system network. Managerial effectiveness increased due to proper planning related to network up-gradation, its timely maintenance, customer care and grievance redressal, and its implementation as per the plan. The nexus and dirty network of defaulters, middleman, private lineman, local politicians and social workers was broken by isolating one element at a time from the chain.

System improvement resulted into confidence building and reliability of DF which automatically isolated some defaulting consumers and their agents. Even the DF recruited some of the private illegal linemen and agents in the new system by offering them the job. Private sector has got its own methods of rewards and recognition for performance versus non-performance which is different from public undertaking. Motivations like fast track promotions on performance criteria make wonders in private organization. TPL tried to develop a strong organizational culture through rewards, incentives, motivation and by providing good and hygienic housing and recreational facilities at the expenses of TPL. Decision making is fast, clear and profit oriented. Strict action against the defaulters irrespective of party affiliations and firmness in decisions was one of the actions complemented for breaking the nexus in Bhiwandi. The nexus started with private illegal wiremen who use to get illegal connections for defaulting consumers. And it was important to break this network by breaking the business of these illegal wiremen through reliable and prompt action for reconnection and electric supply for which no extra charges are being levied by the franchise now. On the contrary company exploited these unutilized expertise of these wiremen by recruiting them in the company for the same job. DF in its endeavor to achieve these results got required support from MSEDCL and the government. DF faced strongest resistance from power loom lobby and this was expected as power loom owners were the main defaulters and beneficiaries of earlier mismanagement.

Strong information network, whistle blow policy, and strict vigil are the key factors in the success of franchise in Bhiwandi. Number of illegal connections reduced from

10% to 1% *(Source: TPL).* DF started "*Saral Vidyut-Jyot Yojna*"* in which the special camps are organized in different areas to sanction new connections on the spot, instead of calling people to the office. Forms are printed in their local language to facilitate the consumers. Help of local municipal councilors is being taken by developing links with them to organize and educate people in this respect. Previously the procedure for getting new connection was very complicated and centralized in which there was a scope for agents and middlemen to get active in illegal business.

Total No. of Consumers billed and billed units for Jan 2007 (%) in Bhiwandi before Franchising:

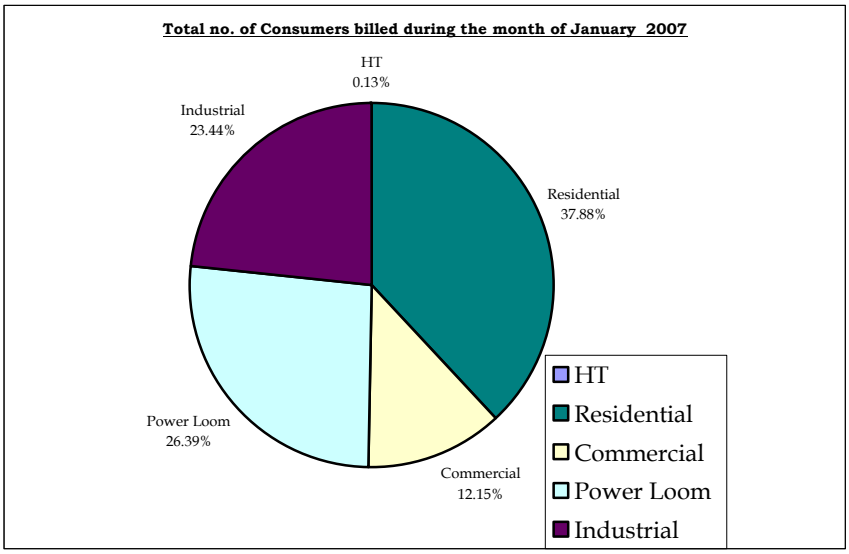

Figure 5: Consumers billed in Bhiwandi during January 2007

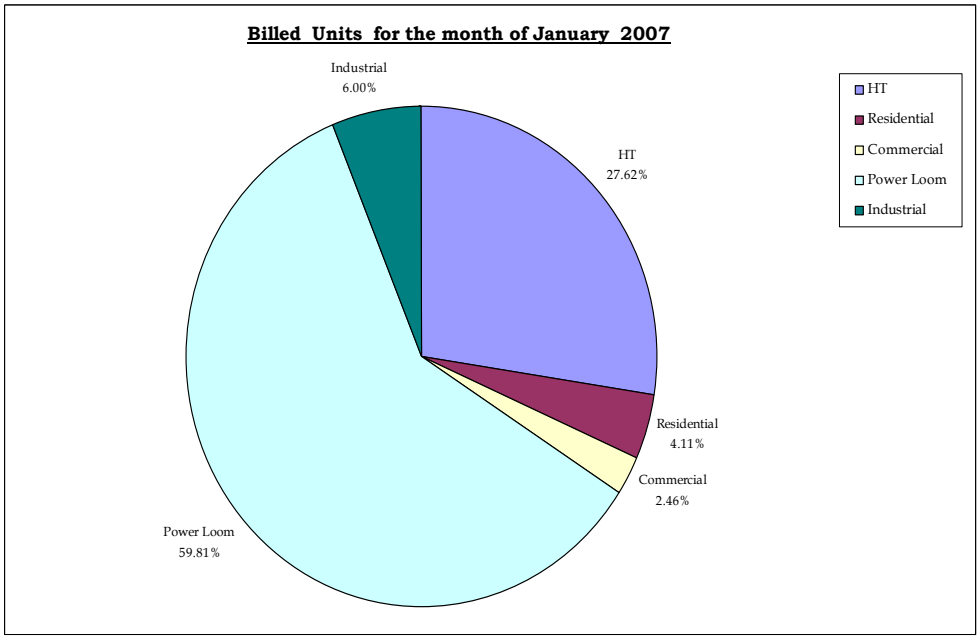

Figure 6: Billed units in Bhiwandi in January 2007

3.4.4 Torrent's Strategy for Bhiwandi:

Torrent's strategy in Bhiwandi for improvements in efficiencies and reduction in AT&C losses focused on augmenting system infrastructure, strengthening distribution network, optimized equipment loading, appropriate network mix, appropriate metering and enhanced vigilance. Required investment on up-gradation, expansion and maintenance of distribution network on sustainable basis is the key for success of DF. DF's strategy mainly involved improvement in customer services such as simplification in procedures for reconnection and new connections, easy accessibility for consumers through multiple means of communication like helpline, customer service center etc, faster new connections and load extensions, quicker resolution of 'no power' complaints, establishment of 'grievance redressal forum', multiple options for bill payments and 'on-site services' to customers. Torrent's strategy for enhancement in availability and quality of power includes appropriate network configuration, relieving overloaded feeders and transformers through augmentation of network; revamping of service apparatus including meter, service cable, LT overhead lines; consumer indexing for better energy accounting and load management; and safe & secure system operation.

Torrent's efforts focused on efficiency improvements and quality service by a systematic approach for improvements in all aspects of operations namely administrative, technical and commercial as discussed below.

a) Administrative aspects: Consumer Citizen Forum to receive suggestions from the citizens and Customer Care Center to receive complaints of all kinds at one place is created which helped in eliminating the middleman, unscrupulous elements and agents completely from the system. The complaints about system failure are immediately processed and forwarded to the concerned segment of operation which attends these complaints within 2 hours of complaint made. DF has formed an Internal Consumer Grievance Committee to deal with any disputes regarding billing etc. Customers unsatisfied with the committee can approach to Consumer Grievance Redressal Forum constituted by MSEDCL. This forum is headed by a retired judge as chairman, and Executive Engineer from MSEDCL and a social worker as its members. Further, the customer can go into appeal to MERC and then to the High Court. Previously, people used to bypass all this platforms and directly approach the concerned minister for any disputes arisen. Special camps are organized in the different localities within the franchise area through the campaign namely '*Ujwal Bhiwandi Abhiyan'** launched by TPL to educate the people to apply and register for new connection thereby motivating and facilitating the consumers in all respect to get new legal connection.

** Ujwal Bhiwandi Abhiyan: Progressive Bhiwandi campaign*

** Saral Vidyut-Jyot Yojna: Strait Electricity Connection Scheme*

Torrent's strategy for Bhiwandi: Improvements in Efficiencies:

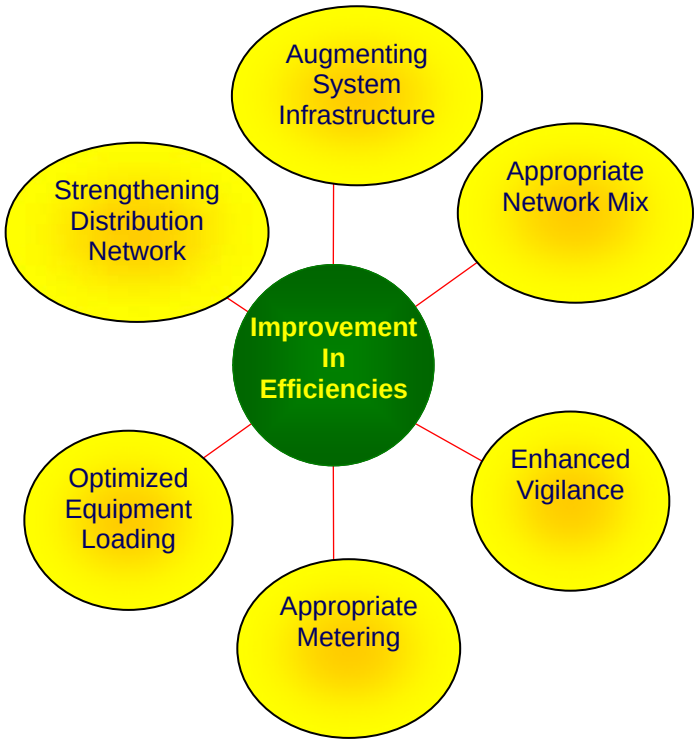

Figure 7: Torrent's Strategy for Performance Improvement

b) Technical aspects: TPL is authorized to exploit all technical assets owned by the MSEDCL in the franchise area. TPL responsible for operation, maintenance and expansion of network have taken series of steps to upgrade, maintain and expand the existing network which includes replacement of more than 720 transformers, revamping of 1250 distribution transformer centers(DTC), installation of 84 distribution pillars, revamping of 55 km LT line, appropriate protection systems through HRC Fuses provided at DT to isolate faulty LT feeders, replacement of bare conductors and single and three phase meters, replacement and relocation of more than 1, 25,000 meters with new digital tamperproof meters, addition of 260 km HT and 44 km LT lines, complete revamping of existing switching stations, addition of 64 distribution transformers, complete revamping of existing switching stations, added 64 DTC replaced more than 1000 DTS, revamped more than 22000 DTS, installed more than 100 MVAR and commissioning of 29 new feeders . Number of developments that have been brought into the area by TPL which includes ***network up-gradation*** of worth Rs. 1500 million within 18 months, 24X7 control room, Customer care center, customer advisory committee including various other projects under capital expenditure which are in progress. Transformer failure rate has brought down to 9% from 44% within 18 months. The distribution loss has reduced from 45% in January 2007 to 13.3% in June 2008 (*Source MSEDCL)*.

c) Commercial aspects: The 'input energy', received in the designated franchise area is jointly metered and recorded at the energy input points, to raise the bills to be paid by DF on weekly basis. Here ends the responsibility of MSEDCL. Then, it is the responsibility of DF to distribute this energy efficiently and effectively in the franchise area. The returns from the electricity distributed depends on how efficiently DF recovers the dues, minimize *transmission and distribution losses* [9] through proper maintenance and up-gradation of network. Low AT&C losses and high *collection efficiency* [10] is the key to the success of DF. Due to large gap between the demand and production of electricity, load shedding is unavoidable as shortfall in the energy required is to be adjusted within the state. In franchised area load shedding can be avoided by reducing T&D losses and by way of purchasing additional energy from outside sources in consultation with MSEDCL.

The load shedding hours has come down to 5 to 6 hours a day from 12 to 15 hours after franchising in *Bhiwandi*. The percentage of un-metered consumers has been reduced to 10% from 45-50%, while the percentage of billed consumers has increased from 46% to 87%. Around 29000 new connections have been issued within 18 months. Unlike earlier arrangement, regular and increased vigilance coupled with constant checking of meters and distribution lines, made as a regular practice by DF. Thefts are being reported police cases registered immediately due to efficient and effective information network developed by DF. More than 4000 cases of theft and illegal connections were detected and were registered with local police since 2007. Multiple billing-cum-collection centers have been opened to timely raise bills and collection.

3.5 The status of Bhiwandi Area after Franchising:

Analysis and Comparison: The data for performance parameters as shown in the table below shows tremendous improvement in the efficiency after the area is franchised to private operator M/s. TPL. The Distribution losses have comedown from 39.58% in the month of February 2007 to 13.33% in June 2008. Collection efficiency is increased from 66.19% to 89% while the AT&C losses have come down from 54.39% to 13.33% during the period of April 2007 June 2008.

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9. Distribution losses means the difference between energy supplied at the Input Points and energy billed to consumers in percentage terms for a particular period.
10. Collection Efficiency refers to the ratio of revenue actually realized from consumers (excluding the subsidy amount, if any) and energy billed to Consumers (excluding the subsidy amount, if any), in percentage terms for a particular period.

Month-wise Distribution Loss Before and After Franchising in Bhiwandi

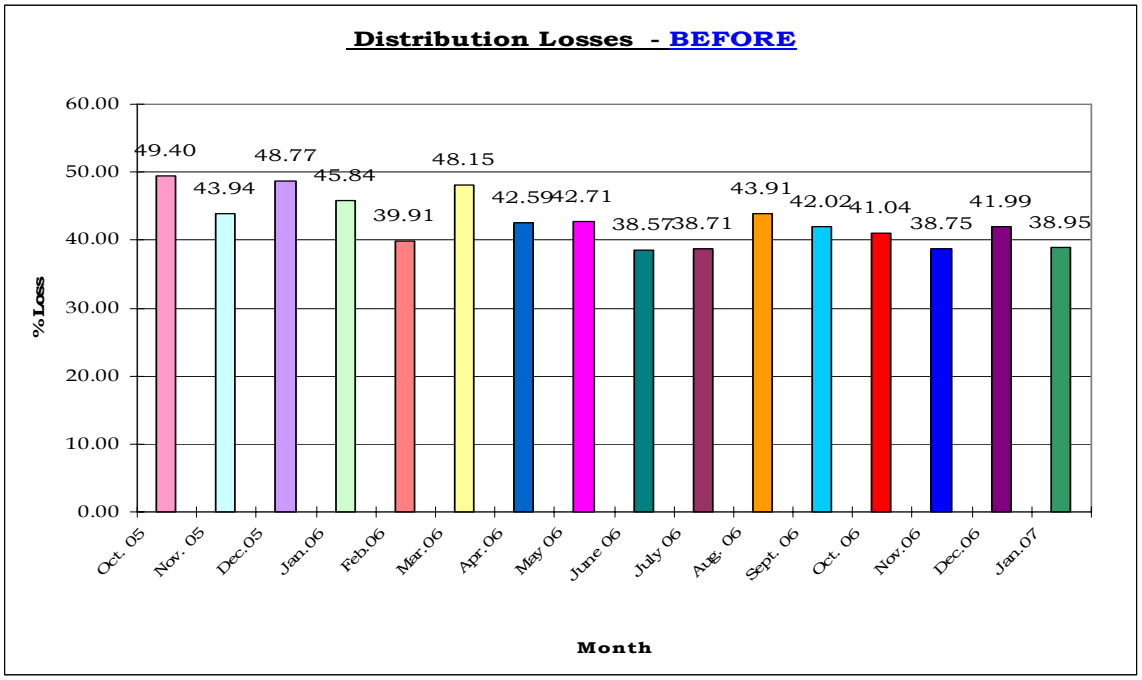

Figure 8: Distribution Loss per month in Bhiwandi before Franchising (Annual average 42.83%)

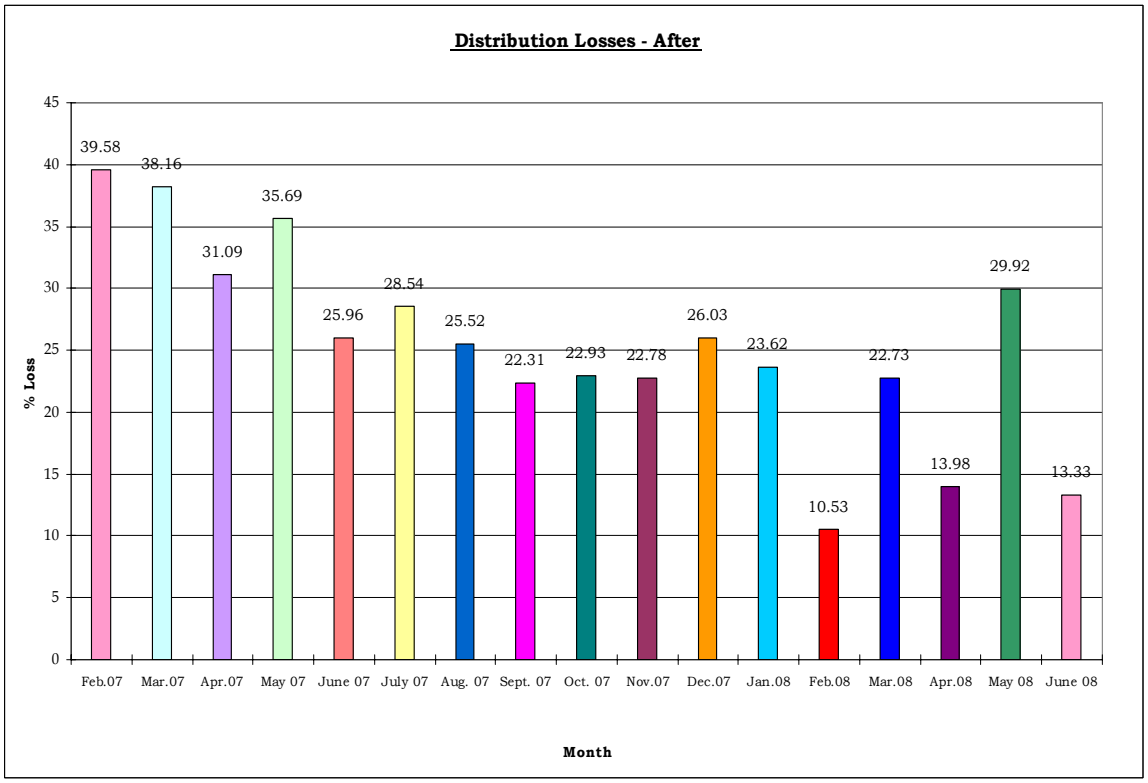

Figure 9: Distribution Loss per month after Franchising (Annual average 19%)

Month-wise Revenue Collection in Bhiwandi Before and After Franchising:

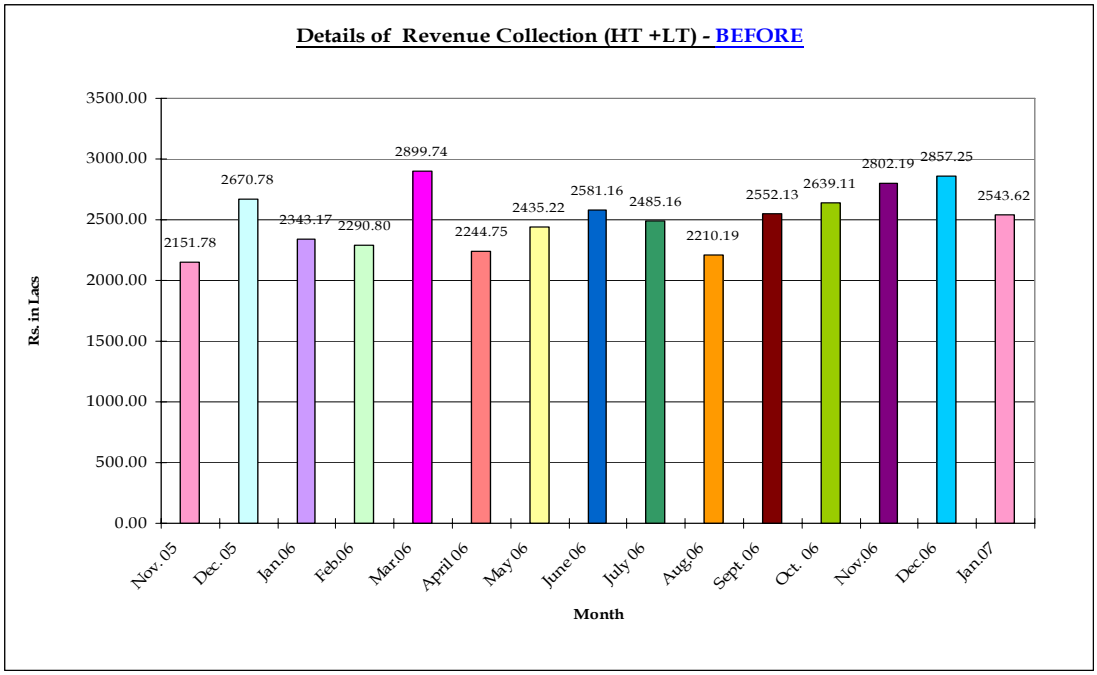

Figure 10: Average Revenue Collection per month in Bhiwandi before Franchising (Rs.2513Lakhs)

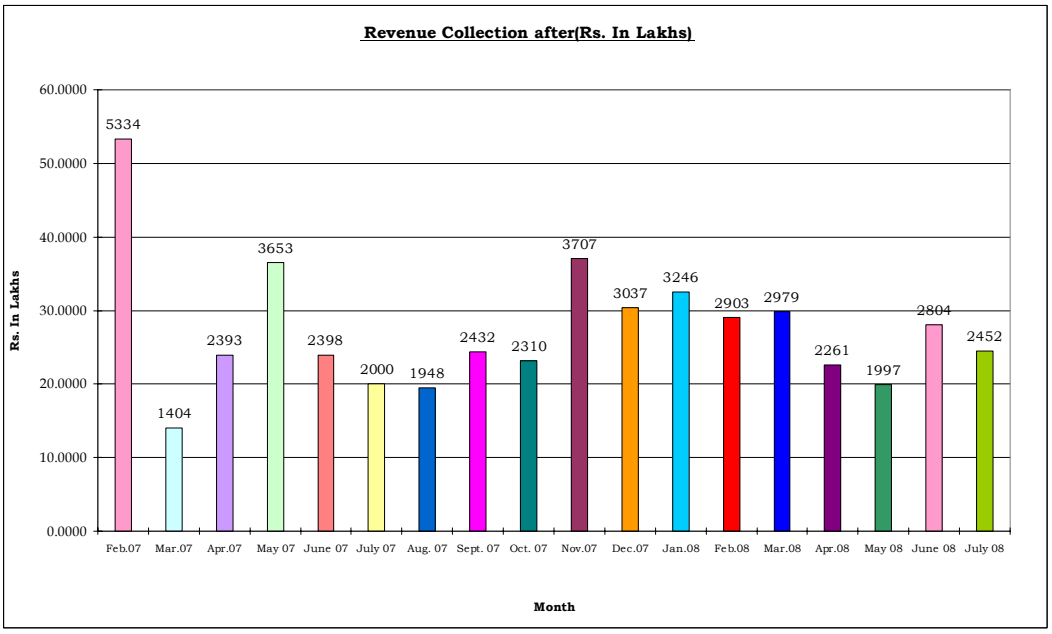

Figure 11: Average Revenue Collection per month after Franchising (Rs. 2737Lakhs)

Annual average distribution loss of electricity has come down to 19% in 2008 from 42% in 2006; on the other hand average annual collection efficiency has gone up from 60% in 2006 to 90% in 2008. *Kalwa* is the other circle which has very similar socio-political and economic characteristics with that of *Bhiwandi*. *Kalwa* circle is being served by MSEDCL where distribution losses have reduced from 46.57% in 2006 to merely 42.39% in 2008.

The average monthly collection per month by MSEDCL in the year 2006 was Rs 25.81 Crores, after handing over to DF; it has increased to Rs 29.58 Crores per month. In addition MSEDCL has saved expenses to the tune of Rs 2.5 Crores per month which would have been incurred in O&M establishment expenses and it generated extra revenue of Rs.6.29 crores per month for MSEDCL in this transaction. Thus, Bhiwandi model of franchising endeavors is to bring about a mutually beneficial process of improvement in the operations through the evolution of a workable framework on sharing of responsibilities and risks. Apart from the gains, the model generates valuable learning for the utility on best practices in distribution, which can be replicated in other areas to improve operations. In a scenario where it is difficult to bring private participation in electricity distribution business owing to variety of risks involved such as regulatory risks, subsidy payment risks, etc, DF provides a flexible approach to bring in private sector management expertise to improve performance in the business thereby passing on the benefits to the consumers as reduction in tariffs, improvement in financial health of utility and ensuring better service to consumers.

Month-wise performance of Bhiwandi circle after franchising from February 2007 to June 2008 as shown in Annexure IX in terms of percentage distribution loss, collection efficiency and AT&C losses in % shows highly encouraging results. The distribution loss is reduced from 39.58% in February 2007 to 13.33% in June 2008; collection efficiency shows a rise of 88.93% in June 2008 from 66.19% in April 2007.

3.6 Input based Distribution Franchise: A win-win situation

The research of Bhiwandi model of franchise for retail distribution of electricity revealed that such type of input based distribution franchise leads to the win-win situation for all the stakeholders involved in the sector. Distribution company is getting due returns as planned, franchise is making profit and the consumers are getting adequate and reliable power supply at the rates fixed by the independent regulator. Even the unscrupulous elements like middlemen and private wiremen are benefited through their employment by the franchise as their employees. Since, the distribution sector is improved tremendously; the local as well as state level politicians are benefited due to customer satisfaction under new arrangement. The employees of Distribution Company are deputed on the franchise company as their employees for a fixed period, and these employees are also benefited in terms of deputation allowance in addition to their salary. Thus, it creates a win-win situation for all the actors and stakeholders involved.

The levels of availability indices in Bhiwandi after franchising show very good improvement trends. System Average Interruption Frequency Index (SAIFI) for frequency of interruption of power supply to each consumer is showing downward trend where it is reduced from 52.9 times to 10.31 times within one year. System Average Interruption Duration Index (SAIDI) is reduced from 22.44 to 3.45 while Consumer

Average Interruption Duration Index (CAIDI) is showing downward trend with 0.86 to 0.3 which means quantum of sustained interruption in terms of hours has reduced.

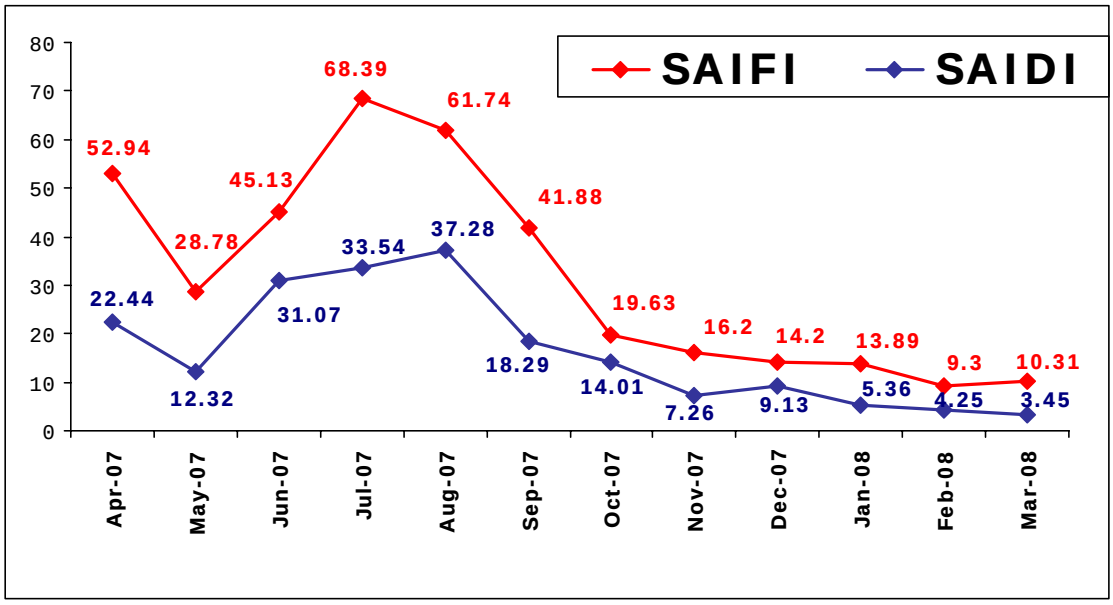

Figure 12: Levels of availability indices in Bhiwandi SAIFI AND SAIDI

An important point to be noted in this case is that the assets were transferred to Torrent at no cost. At the same time, MERC sets tariffs based on value of assets. Therefore, Torrent gets a large implicit subsidy, because its investment is limited to the additional assets it creates through the life of its contract. Secondly, it is also important to note here that MSEB was making loss on Bhiwandi circle before it was transferred. There is no revenue sharing arrangement between MSEDCL and Torrent on the profits made by TPL, and only payments towards input energy are made to the MSEDCL.

CHAPTER FOUR: EMBEDDED AUTONOMY AND HYBRID INSTITUTIONS

4.1 Institutions with Embedded Autonomy:

There can be different perspectives for looking to the role of state as an agent of social change and as an instrument of development. 'The state can be, on one hand a champion of comprehensive development, an enabler or a parasite or a predator; or it may be an intermediary as a combination of both depending on the degree of economic growth and development it brings, and its actions that lead to creation of unproductive rent-seeking and failure to provide collective goods' (Migdal, 2001). The negative interference both in policy making and its implementation in the power sector in India since beginning was due to socio-political, cultural and economic considerations. The decisions particularly pertaining to price setting, declaration of subsidies in tariff rates to certain categories of consumers such as agriculture, power looms; arbitration and dispute settlement were generally influenced by socio-political and other considerations. This invariably had a negative impact on the implementation of these policies as well as on the efficiency and performance aspects of power sector utilities in the country, where the commercial and quality aspects were compromised and overshadowed by these socio-political and economic compulsions. One of the goals of reforms is creation of autonomous institutions independent of political interference so that the objectives of coverage and efficiency are achieved. Although, the reform process leads to evolution of autonomous institutions, the socio-political interests are embedded in these institutions.

In India the power sector reform, in the first place involved unbundling of the gigantic electricity boards in to activities based corporations, namely generation, distribution and transmission. The whole idea was to create managerial entity with full accountability and making it as independent profit center. Naturally, this would ensure there is no cross subsidization in terms of either the capital investment or the working capital expenditure. In Maharashtra, all the basic principles of corporate governance namely trifurcation of SEB, governance through board of directors, removal of cross subsidy in a phased manner, fixation of efficiency based tariff mechanism and making each entity as an independent revenue generation center were introduced to bring about efficiency and to avoid day to day political interference from the government. However, under this reformed entity, the government is free to offer subsidy to any category of consumers but the same is required to be paid upfront through direct budgetary provision and release of funds to the distribution company.

This new dispensation is totally opposed to the earlier one where the subsidy amount though needed to be reimbursed by the state government was very rarely compensated within the stipulated time or some times it was never compensated at all. This obviously resulted in huge cash loss for the board rendering it totally unviable to run its day to day activities. It was in this context, the board (MSEB) was finding it extremely difficult to undertake any major projects pertaining to generation, transmission or distribution. Existing infrastructure for want of regular maintenance and upkeep were getting deteriorated resulting in reduced capacity to optimally utilize the existing infrastructure. It was expected that the state government would come forward to bridge the gap for any major infrastructure projects undertaken by the board. However, the state government was also finding it difficult to provide any finance for this purpose. More often than not, the declaration of subsidies and fixation of tariffs were not based on the

rational considerations but on the basis of pure and simple political expediency. And hence, they were popular in nature, but in the process it was the MSEB which had to bear the financial brunt. The power sector reform also involved setting up of regulatory body to fix the tariff, to regulate the subsidy, to resolve the disputes between different power companies, to address the public grievances and redress the same and finally to scrutinize and approve the power purchase agreements between the various power companies. Out of three major activities of power sector, it is the distribution of power which has got very intimate public interface. The pricing of power, quality, timely billing and recovery of dues from the consumers are some of the issues which the distribution company is generally seized with. These issues which lead to public outcry and grievances directly affect the political class in any state. How to evolve a tariff mechanism which will ensure the efficiency of the system and affordability of the consumers is the main task before the policy planners and its implementers. Convergence of these two diverse interests poses the real challenge to the distribution company, and constitutes the focal point of any reform process in the power sector.

Since the socio-political and economic interests are embedded into these newly formed electricity companies as well, the reforms in the sector tried to ensure functional autonomy. However, at the same time government have an effective control over these institutions through appointments and allocation of funds. Thus, reforms in the state, is an attempt to increase positive autonomy and reduce negative interference in these institutions. MERC as an independent regulator complimented this element of independence as now the mechanism of price setting and dispute settlement is very well defined with highest degree of transparency and no interference in its working from political quarters. GoM being 100% shareholder in these companies, the decisions such as investment, expansion, appointments, etc are bound to be influenced by political interests, where they function in state of embedded autonomy. The networks of stakeholders and various actors in the electricity industry are thus continued to be dominated by the politicians, both as owner (government) and potential beneficiaries or losers of votes tied to electricity supply.

'Efficacy of embedded autonomy depends on nature of the surrounding socio-political structure as well as on the internal character of the state where state capacity as an important factor in policy choice and outcomes and helps clarify the structures and processes that underlies capacity; this analysis challenges the tendency to equate capacity with insulation. It suggests instead that transformative capacity requires a combination of internal coherence and external connectedness that can be called embedded autonomy' (Evans, 1992). In nutshell it can be concluded that all these institutions are working within the big sphere of state government and the state government is working within the bigger sphere of Maharashtra state and where the interests of all these actors are embedded within these institutions.

In such a scenario where the interests are embedded in these institutions, the models like Franchising in *Bhiwandi* proves to be good as it results into increasing the positive autonomy of the institutions and reducing the negative interference in the implementation of the policies. Franchisee being a private entity is not prone for political interference and it works only as per the terms and conditions agreed upon by it. Thus, it significantly reduces the possibility for interference in all its internal decisions. At the same time, franchisee ensures quality of service at competitive prices and better

performance in terms of reduced losses, and increased collection efficiency. Franchising in Bhiwandi thus is perceived as a very successful model by all the actors including the consumers. On the other hand, this model is being shown as a deterrent for MSEDCL employees working in the state to improve their efficiency and performance thereby ensuring public-private competition for providing better quality of service as the activity can be franchised at other places where the MSEDCL employees do not perform and deliver as expected. Franchising also ensures control of state on the activity in terms of policy making and positive autonomy in terms of no interference in its implementation by the franchisee.

4.2 Evolution of Hybrid Institutions: Bhiwandi Model of Franchise

Bhiwandi DF is an input based distribution franchise appointed in the Bhiwandi circle of Thane district in Maharashtra. It is a type of PPP where the business of electricity distribution is being carried out jointly with public and private partnership. The MSEDCL is the public partner responsible for supply of power on input basis to the franchise which is a private company namely TPL. All assets belonging to MSEDCL are handed over to the DF for use and exploitation during the franchise period of 10 years. TPL is responsible for network up-gradation, its maintenance, and investment on expansion of network, retail distribution of electricity to the consumers and collection of revenue. Around 108 MSEDCL employees from all pay groups are working with the private franchise on deputation as per the terms and conditions agreed upon by both the parties. Applications were invited by the franchise from all the employees of MSEDCL where, the employees to be deputed on TPL are selected by conducting interviews by the TPL staff. This is how, I perceive this type of PPP as different from other forms of PPP and this is a case of evolving 'Hybrid Institutions' where private and public employees are working together on a private organization.

Thus, there is a trade off between control in terms of setting the right or desired policy and autonomy in terms of executing the policy transparently and efficiently. Complete privatization leads to too much autonomy with too little control, where as, traditional state administration leads to too much control with too little autonomy. Both being the extreme cases, both are proved unsatisfactory and therefore, it needs hybrid arrangements to achieve the objectives of economy and efficiency at the same time. Franchising model in Bhiwandi is one such kind of hybrid institution which will go a long way in providing better quality of service on sustained basis as it eliminates negative interference and increases positive autonomy.

CHAPTER FIVE: CONCLUSIONS

Though these newly formed companies have been made autonomous in all respect, there is a lurking fear about some kind of breach of autonomy on part of the government as it has been fully controlling the initial paid up capital of these companies. Although these companies are at liberty to take their own investment decisions, more often than not they get influenced by the policies of the government. At the same time, even under the reformed dispensation the government is empowered to give directions to these companies on certain subjects as detailed out in the Act. Autonomous for the sake of administrative purpose, the investment decisions are taken in consultation with the minister in charge of Energy Department of GoM. Therefore, these decisions are often influenced by socio-political considerations as the interests of policy makers are also embedded in these institutions.

In the changed dispensation, the company (MSEDCL) is expected to improve its efficiency by reducing T&D loss, and the same is reflected in their revenue receipt by the regulator while calculating their tariff. Thus, the inefficiency of the Board does not get automatically loaded on the tariff structure. This task calls for more reforms in the company like cutting the over flapped size of the company, putting meaningful investment in system and infrastructure development and professionally managing its finance. A lot has been achieved but at the same time a lot needs to be achieved. It is in this context the job of assigning distribution and collection works through franchise assumes extra-ordinary significance.

Bhiwandi model is different from conventional PPP as commonly understood, because the MSEDCL staff in all categories is also working as employees of the franchise on the basis of terms and conditions agreed upon. This form of DF was chosen because of the multiplicity of the problems in *Bhiwandi* area including socio-political issues which can not be dealt with by public organization. The strategies like network up-gradation, system upkeep, and effective consumer redressal and strong organizational culture are the key factors that make private sector more successful in managing the electricity distribution in Bhiwandi. Political interference reduced due to improved performance by DF and providing a proper platform to absorb these elements by creating Consumer Grievance Forum which receives complaints and thereby gives suggestions to the DF leading to no generation of political backlash.

The rational for Distribution Franchising in retail distribution of electricity is that it enables increased positive autonomy and reduced negative interference and control in the institutions. It also ensures greater private participation in terms of capital investment and its managerial expertise. Lot of experimentation is done in public sector which tended to focus on few policy choices, however empirical experience suggest that, public sector reforms many times do not work because they are not politically feasible and process being complex lot of attention is to be paid to networks within the system. The corporatization of MSEB is a case of gradualism in the reforms and introduction of distribution franchisee as a *'Bhiwandi model'* can be seen as a case of developing hybrid institutions. There are public and private interests involved. This is an example of evolving an appropriate model which balances the trade off between efficiency, equity, political acceptability, etc. Organizational boundaries are much more blurred and inter-penetrable; through this model government retains influence in operational decisions,

albeit from a distance. This type of reform does not ignore the issue of improving state capacity, which is a something privatization-based reform ignored. This model also reflects very emphatically that the same set of people working in a highly inefficient system began to deliver in the changed situation at a very high level of efficiency and accountability. So there is a lesson to be learnt namely, it is not the people who are inefficient but the system which promotes and tolerates inefficiency.

In this paper I have tried to find out how the different institutional alternatives could be found out and developed to achieve economy and efficiency at the same time through increased positive autonomy and reduced negative interference where the evolution of hybrid institutions can be the solution to deal with these aspects on the sustained basis in power sector in Maharashtra.

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ANNEXURES

Annexure I

Total Installed Capacity of India

Sector	MW	%age	Fuel	MW	%age
State Sector	75870.93	52.5	Thermal	93114.64	64.6
Central Sector	48470.99	34.0	Hydro	36158.76	24.7
Private Sector	21246.05	13.5	Nuclear	4120.00	2.9
Total	145, 587.97		RES (MNRE)	12194.57	7.7

(Source: Ministry of Power, GoI, 2008)

Annexure II

Debt: Equity for three new companies in Maharashtra as on 5.6.2005 (Fig. in crores)

Company	Debt	Equity	Debt: Equity Ratio
MSPGCL	1694.52	2523.61	40:60
MSETCL	2049.54	2642.72	44:56
MSEDCL	1766.53	3956.65	31:69

Table showing investment in infrastructure by the three newly formed companies

Sr. No.	Company (Rs. in crores)	2005-06	2006-07	2007-08	Total
1	MSPGCL	612.50	932.16	1749.92	3294.58
2	MSETCL	405.00	488.00	1111.00	2004.00
3	MSEDCL	1495.00	2469.00	2520.00	6484.00
Total		2512.50	3889.16	5380.92	11782.58

(Source: MSEB Holding Company)

Annexure III

MSEDCL's Loss Reduction after Restructuring

Year	2005-06	2006-07	20007-08
AT & C Loss Reduction %	34.71	33.69	25.77
Distribution loss Reduction %	31.72	29.50	24.09
Collection Efficiency %	95.62	94.07	97.79

(Source: MSEDCL)

Annexure IV

Minimum Capital Expenditure Plan for Franchise Area in Bhiwandi

Sr.No.	Particulars	Rate (Lakh)	1		2		3		4		5	
			Qnt	Amt	Qnt	Amt	Qnt	Amt	Qnt	Amt	Qnt	Amt
1	22 KV switching station	1000	-	-	1	1000	1	1000	1	1000	1	1000
2	Overhead 22 KV line (km)	6.7	60	400	-	-	20	133	20	133	20	133
3	Underground Cable (km)	18.6	10	186	-	-	-	-	-	-	-	-
4	New DTC	6.5	50	325	30	195	10	65	10	65	10	65
5	Overhead 3 Phase LT line (km)	3.0	15	45	-	-	-	-	-	-	-	-
6	Replacement of Conductor (km)	3.0	50	150	10	30	5	15	5	15	5	15
7	LT cable (km)	3.6	15	98	5	32	-	-	-	-	-	-
Total			1204		1257		1213		1213		1213	

Annexure V *(Source: MSEDCL)*

Circle-wise Percentage Distribution Loss of electricity for MSEDCL in Maharashtra

Sr. No.	Circle	% Distribution Loss		
		2005-06	2006-07	2007-08
1	Akola	45.10%	42.55%	38.92%
2	Amrawati	40.48%	40.23%	28.02%
3	Buldhana	34.58%	35.95%	22.59%
4	Yeotmal	49.34%	48.89%	37.93%
5	Aurangabad (U)	30.93%	30.28%	28.73%
6	Aurangabad [R]	48.54%	40.53%	39.80%
7	Jalana	35.94%	33.36%	38.87%
8	Parbhani	66.76%	60.71%	46.10%
9	Bhiwandi	44.49%	40.27%	27.17%
10	Thane	21.17%	21.33%	19.65%
11	Washi	7.88%	9.77%	8.94%
12	Kalyan-I (U)	25.02%	26.08%	19.56%
13	Kalyan-II [R)	31.47%	25.68%	21.60%
14	Pen	9.40%	6.38%	6.29%
15	Vasai	17.05%	16.73%	15.06%
16	Ratnagiri	16.92%	18.08%	16.69%
17	Sindhudurg	29.46%	30.57%	26.29%
18	Kolhapur	17.08%	16.68%	14.07%
19	Sangli	25.91%	24.34%	31.33%
20	Satara	24.58%	22.33%	28.28%
21	Solapur	49.67%	46.21%	28.75%
22	Beed	65.38%	59.78%	65.89%
23	Latur	60.42%	55.72%	50.06%
24	Nanded	63.00%	52.79%	40.36%
25	Osmanabad	55.84%	55.08%	56.21%
26	Nagpur (R)	21.23%	19.45%	15.08%
27	Nagpur (U)	31.14%	28.53%	25.52%
28	Bhandara	31.20%	26.61%	18.54%
29	Chandrapur	12.47%	11.26%	9.40%
30	Gadchiroli	37.67%	32.44%	29.63%
31	Gondia	49.22%	49.37%	41.39%
32	Wardha	11.54%	10.35%	9.21%
33	Ahmednagar	50.26%	47.51%	30.48%
34	Dhule	49.23%	47.94%	31.82%
35	Jalgaon	46.71%	44.89%	27.27%
36	Nashik (U)	18.63%	17.64%	11.10%
37	Nashik (R)	44.81%	40.42%	22.99%
38	Ganeshkhind	12.25%	11.21%	11.58%
39	Pune (R)	24.20%	22.83%	24.46%
40	Rasta Peth	16.66%	17.16%	14.45%
	MSEDCL	31.72%	29.50%	24.09%

Annexure VI

Loss and Collection efficiency levels for Bhiwandi for five years prior to Franchising

Year	Input in MUs.	Sale in MUs.	Loss in %	Collection Eff.in %	AT & C loss in %
2001-02	2190	859	66.8%	68.8 %	73%
2002-03	2220	1009	54.5%	73.4%	66.6%
2003-04	2116	1152	45.5%	69.9%	61.9%
2004-05	2301	1432	37.8%	75.9%	52.7%
2005-06	2427	1346	44.5%	78.6%	56.4%

(Source: MSEDCL)

Annexure VII

Performance Parameters for Bhiwandi prior to Franchising

Year	2001-02	2002-03	2003-04	2004-05	2005-06
Energy Input (MU)	2190	2220.22	2115.6	2301.11	2426.99
Sales (MU)	859	1009.34	1152.53	1432.09	1346.26
Distribution Losses	60.80%	54.50%	45.50%	37.80%	44.50%
Demand (Rs Crores)	385	365	425.15	353.27	320.78
Collection (Rs Crores)	246	248	242.35	221.87	218.76
Subsidey (Rs Crores)	61.18	74.61	182.5	192.93	155.19
Collection Efficiency (Overall)	68.80%	73.40%	69.90%	75.90%	78.60%
Collection Eff on Demand	63.90%	67.90%	57.00%	62.80%	68.20%

Annexure VIII

Zone-wise distribution losses in Maharashtra state

Sr. No.	Zone	% Distribution Loss		
		2005-06	2006-07	2007-08
1	Amrawati	42.34%	41.86%	32.03%
2	Aurangabad	45.45%	41.07%	38.36%
3	Bhandup	24.09%	23.26%	18.13%
4	Kalyan	17.35%	14.88%	12.94%
5	Kokan	19.78%	20.75%	18.80%
6	Kolhapur	31.95%	29.67%	24.60%
7	Latur	61.62%	55.95%	53.17%
8	Nagpur (U)	25.83%	23.55%	19.81%
9	Nagpur	20.78%	19.12%	15.63%
10	Nashik	44.57%	41.86%	25.85%
11	Pune	18.89%	17.99%	18.19%
	MSEDCL	31.72%	29.50%	24.09%
1	Bhiwandi circle	44.49%	40.27%	27.17%
2	**Kalwa Division	46.57%	49.22%	42.39%

(Source: MSEDCL)

Annexure IX

Month-wise Performance of Bhiwandi after Franchising

Month	Energy Input in Mus.	Receipt of Amount in Rs.Cr.	Percentage Distribution loss	Collection Efficiency in %	% AT & C loss
Feb.07	235	53.34	39.58%	*	*
Mar.07	205	14.05	38.16%	*	*
Apr.07	197	23.93	31.09%	66.19%	54.39%
May.07	219	36.54	35.69%	70.36%	54.75%
Jun.07	199	23.98	25.96%	70.19%	48.02%
Jul.07	216	20.00	28.54%	64.33%	54.03%
Aug.07	223	19.48	25.52%	62.41%	53.51%
Sept.07	232	24.33	22.31%	79.22%	38.45%
Oct.07	226	23.11	22.93%	77.71%	40.11%
Nov.07	221	36.51	22.77%	79.38%	22.78%
Dec.07	236	30.41	26.03%	67.57%	26.03%
Jan.08	224	32.46	23.62%	85.13%	23.62%
Feb.08	210	29.03	10.53%	85.08%	10.53%
Mar.08	230	29.62	22.73%	91.86%	22.73%
Apr.08	217	22.61	13.98%	89.95%	13.98%
May.08	235	19.97	29.92%	99.81%	29.92%
June.08	219	28.04	13.33%	88.93%	13.33%

*Not available being Transit Period *(Source: MSEDCL)*

Annexure X

Distribution Losses and Collection Efficiency for 2006-2008 in Bhiwandi

Month	Distribution Loss in 2006	Distribution Loss in 2007	Distribution Loss in 2008	Collection Efficiency in 2006	Collection Efficiency in 2007	Collection Efficiency in 2008
January	*	*	23.62	*	*	85.13
February	39.41%	39.58%	10.53	71.13	*	85.08
March	48.15%	38.16%	22.73	74.62	*	91.86
April	42.59%	31.09%	13.98	47.82	66.19	89.95
May	42.71%	35.69%	29.92	44.61	70.36	99.81
June	38.57%	25.96%	13.33	47.41	70.19	88.93
July	38.71%	28.54%	*	48.32	64.33	*
August	43.91%	25.52%	*	42.93	62.41	*
September	42.02%	22.31%	*	86.73	79.22	*
October	41.04%	22.93%	*	79.86	77.71	*
November	*	22.37%	*	*	79.38	*
December	*	26.03%	*	*	67.57	*
Average/yr	41.90%	28.92%	19.01	60.38	70.81	90.12%

(Source: MSEDCL)

Annexure XI

Financial Accounts of MSEDCL *(Source: MSEDCL)*

(Rs. in Crores)

SR.NO	PARTICUALARS	2005-06 (10 Months) (Audited)	2006-07 (Audited)	01.04.07 to 31.03.08 (Provisional and under audit)
	INCOME			
1	Revenue from Sale of Power	**13628**	**18864**	**20214**
2	Other Income	**623**	**887**	**1062**
	TOTAL INCOME	**14251**	**19751**	**21276**
	EXPENDITURE			
3	Purchase of Power	**11950**	**16277**	**16971**
4	Repairs and Maintenance	**215**	**416**	**442**
5	Employee Costs	**1272**	**1922**	**1799**
6	Administration and General Expenses	**94**	**148**	**216**
7	Depreciation	**416**	**502**	**543**
8	Interest and Finance Charges	**319**	**572**	**718**
	Sub Total A	**14267**	**19837**	**20690**
9	Other Debits	**83**	**237**	**0**
	Sub Total B	**83**	**237**	**0**
	TOTAL (A+B)	**14350**	**20075**	**20690**
10	Provision for Doubtful Debts etc.	**204**	**283**	**303**
11	Prior Period Charges	**0**	**-473**	**201**
	TOTAL EXPENDITURE	**14555**	**19885**	**21194**
	SURPLUS/(DEFICIT)	**-303**	**-134**	**82**
14	Contingency Reserve	**0**	**50**	**50**
	SURPLUS/(DEFICIT) after appropriation	**-303**	**-184**	**32**