REGULATORY SYSTEM IN ELECTRICAL POWER DISTRIBUTION SEGMENT: A STUDY IN THE COMBINED STATE OF ANDHRA PRADESH WITH FOCUS ON SMALL SCALE INDUSTRY

A thesis submitted to the University of Hyderabad in partial fulfillment
for the award of the degree of

DOCTOR OF PHILOSOPHY

In

MANAGEMENT

By

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JUNE, 2016

DECLARATION

I, VAVILALA VENKATA RAMANA PRASAD, here by declare that the thesis titled, "REGULATORY SECTOR IN ELECTRICAL POWER DISTRIBUTION SEGMENT: A STUDY IN THE COMBINED STATE OF ANDHRA PRADESH WITH FOCUS ON SMALL SCALE INDUSTRY", submitted by me under the supervision of Dr. S. MALLIKHARJUNA RAO Associate Professor, is a bonafide research work, which is also free from plagiarism. I also declare that, it has not been submitted previously in part or infull to this University or any other University or Institution for the award of any degree or diploma.

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This is to certify that the thesis entitled, "REGULATORY SECTOR IN ELECTRICAL POWER DISTRIBUTION SEGMENT: A STUDY IN THE COMBINED STATE OF ANDHRA PRADESH WITH FOCUS ON SMALL SCALE INDUSTRY", submitted by Research Scholar VAVILALA VENKATA RAMANA PRASAD, bearing Regd.No. 08MBPH03 in partial fulfillment for the award of Doctor of Philosophy in Management is a bonafide work carried out by him under my supervision and guidance, which is a plagiarism free thesis.

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Research Supervisor
(Dr. S. Mallikharjuna Rao)

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Dean

ACKNOWLEDGEMENTS

I wish to express my sincere and heartfull gratitude to my research supervisor Dr. S. Mallikarjun Rao for his scientific guidance and excellent direction provided to me during the course of this study. My study would not have been completed without his continuous guidance and supervision.

I wish to thank the doctoral committee members Prof. V. Jyothi, Prof. GVRK. Acharyulu for their valuable suggestions during the different stages of the research work.

I wish to express my sincere thanks to the present Dean School of Management studies Prof. B. Raja Sekhar, SMS, U.O.H., for his valuable advises regarding analytical insights.

Every research scholar owes a great deal to others, and I am no exception. I wish to thank my senior colleague Sri.k.Shekar for providing continuous support and enrichment of my study. I also thank fellow research scholar Mr. Raghavan for his help.

I profusely thank all the faculty members' school of management who have been constantly inspiring and giving constant support.

I wish to thank Sri. Jagannatha Sharma, Divisional Engineer of A.P. Electricity Regulatory commission for his help throughout this study.

I wish to acknowledge the unstinted cooperation of my elder son and daughter-in-law V. Sai Kishore & Mathuri and my 2nd son and daughter-in-law V.Sudhir Vyas and Alaka for their valuable help.

Vavilala Venkata Ramana Prasad

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ABBREVIATIONS

DC	Direct Current
AC	Alternating Current
AELTD	Ahmedabad Electricity supply co Ltd
ANNEEL	AgenciaNacional de EnergiaElectrica Ltd
APERC	Andhra Pradesh Electricity Regulatory Commission
ARR	Aggregate Revenue requirement
APDRP	Andhra Pradesh
APGENCO	Andhra Pradesh Generation Company
APTRANCO	Andhra Pradesh Transmission Company
AT&C	Aggregate Transmission and Commercial
BEST	Bombay Electric SupplyTransport Co
BIAC	Bussiness&IndustryAdvisry Committee
CAMMESA	Cornpafila Administratedora del Mercado Mayoristra
CAPEX	Capital Expenditure
CERC	Central Electricity Regulatory Commission
CEA	Central Electricity Authority
CPSU	Central Public Sector Undertaking
CPDCL	Central Power Distribution Company Limited
DC	Direct Current
DPA	Doctor of Public Adminsration
DERC	Delhi Electricity RugulatoryComission
DGES	Directorate General of Electricity Supplies
DGFT	Directorate General of fair Trading
DISCOM	Distribution Company
EPDCL	Easter Power Distribution Company Limited
EBRD	European Bank for Recunstrction&Devolpment
EA	Electricity Act
ERC	Electricity Regulatory Commission
FERC	Federal Elecricity Regulatory Commission
FDI	Foreign Direct Investment
FTC	Federal Trust Commission
GDP	GrossDomestic Product
GEP	Gross Environmental Product
HVDC	High Voltage Direct Current
HERC	Haryana ElecricityRegulaory Commission
HT	High Tension
IMF	International Moneatary Fund
IEA	Indian Electricity Authority
IRA	Independent Regulatory Agency
KW	Kilo Watt
KPMG	Klynveld Peat MarvickGovrdelarGroup
KERC	Kerala ElectricityRegulotoryComission
LDC	Load Dispatch Centre

LT	Low Tension
MPERC	Madhya Pradesh Electricity Regulatory Commission
MSME	Ministry Of Small & Medium Enterprises
MW	Mega Watt
MYT	Multi Year Tariff
MFG	Manufacturing
NGO	Non-Government Organization
NTPC	National Thermal Power Cooperation
NHPC	National Hydro Power Cooperation
NISIET	National Institute Of Small Industry Extension Training
NPDCL	Northern Power Distribution Company Limited
NEC	National Electricity Cooperation
NERA	National Economic Research Associate
NERA	National Regulatory Electric Entity
OERC	Orissa Electricty Regulatory Cmmission
OECD	Organisation for Economic Cooperation &Development
OFFER	Office of the Electricity Regulator
OFGEM	Office of the Gas & Electricity Manager
O&M	Operation & Maintenance
ONS	Operador National do Sislama
OPEX	Organisation
PPA	Power Purchase Agreement
PBR	Performance Based Regulation
PCR	Price Controlled Regulation
ROR	Rate Of Return
SERC	State Electricity Regulatory Commission
SSI	Small Scale Industry
SME	Small Medium Enterprise
T&D	Transmission & Distribution
USB	Universal Service Obligation

CHAPTER – I

1.0 Introduction

The Indian Electricity Sector has been witnessing a number of challenges with reference to implementation from the private sector.

The vertically incorporated Power Production in public sector has remained fragmented into Generation, Transmission, distribution plus Regulatory partitions. The power sector is released up to the Overseas Companies. Power sector in most of the countries of the world has been undergoing Reforms since two decades. Administratively speaking they are vertically integrated in countries like USA, UK, Argentina, Philippines, Chile, Canada, New Zealand, Australia, Spain, Germany, Portugal and Netherlands. India too has initiated reforms process two decades ago (Hithen Bhaya Committee 1995).

1.1 The Electricity Energy Sector

Electricity is an essential portion of current social life and economic life. A dependable and effectual Electricity source is critical for financial growth and sustainability. The Electricity subdivision is a system encompassing of separate but inter-related actions with numerous actors whose fabrication besides consumption designs impact the processes of the entire system.

The electricity section contains of generation, transmission, distribution, and supply (or trade) events. Generation includes manufacture and adaptation of electric power. Transmission includes long-distance transport of power at high voltage. Supply is transport of low voltage electricity over local systems containing over-headlines, cables, switchgears, transformers, control systems, and meters to transmit electricity from the broadcast organization to customer's buildings. The supply purpose contains metering, promoting, and sale of power to end-utilizers. The generation usually observed as possibly competitive, although the transmission and distribution systems are characterized as natural dominations.

The network individualities of the industry besides the finances of co-ordination amongst

the dissimilar actions led to formation of vertically combined constructions in numerous electricity units. Simultaneously the end-utilizers are varied comprising residential, commercial, besides industrial customers through dissimilar usage designs and dissimilar economic standards devoted to their consumptions. Furthermore, the planned prominence of the sector combined with its elementary environment of being an indispensable service became a defensible public possession.

Electricity is precisely a standardized service as well as a non-storable product. System dependability needs that supply and demand are coordinated instantaneously. At the similar time, the electricity division is extremely capital intensive through much of the possessions flattering sunk prices upon speculation. As the prevailing possessions in place need to be converted with the requests incessantly growing, the sector can experience speculation sequence. Simultaneously the possessions have long financial lives with long-term implications for the arrangement of the subdivision. The electricity reorganizations have usually observed that the generation besides supply accomplishments as possibly reasonable, while thetransmission and distribution networks are normal control actions that need to be controlled.

1.2 Electricity Distribution

Electricity distribution and retail supply is the third phase of electricity supply series. Commencing through the generation of energy in a commercial scale, the subsequent phase is the transmission of electricity i.e., removal of produced substantial amount of electricity from the generation stations to the load centers for delivery and retail supply to numerous groups of customers.

1.3 Pre Liberalization Scenario

Pre-independence electricity subdivision was dispersed. Electricity remained produced besides supplied locally by private businesspersons. The **Tata Hydro Electric Project** in Khandala delivered power to Bombay whereas the **Mettur Dam** on Cauvery provided power to Madras residency. Though the importance was on source to large urban applications then there was little co-ordination plus co-operation amongst diverse suppliers.

Later in 1948 the Electricity Act was approved to enable the creation of provincial co-ordination in the growth of electricity. It delivered the justification of manufacture and source of electricity besides allowing the formation of State Electrical board's (SEBs). It endorsed **coordinated expansion** of generation, supply as well as delivery in the provinces of other parts of the republic.

Industrial strategy 1956 set aside generation besides circulation of electricity practically completely for the states, permitting prevailing power licenses to endure.

Alterations in 1976 permit generation corporations to be established up by Central then State Governments subsequent to the formation of NTPC, NHPC, NEEPC etc. By modifications in 1991, generation was opened up to isolated speculation comprising foreign reserves. Regional load dispatch centers were also recognized at the similar time to function the power schemes in a area, ensure provincial grid security, integrate through power schemes of other areas as well as powers.

Additional amendments in 1998 opened transmission to private players subject to the endorsement of dominant broadcast efficacy. No self-governing private speculation has taken place in inter or regional transmissions.

1.4 History

During independence in 1947, India was capable of generating power capacity of 1,362 MW. Power was not obtainable in communities or rural areas, besides merely a few urban centers consumed electricity. Production and dissemination of power remained approved out principally by isolated utility corporations. Subsequent to independence of our country, electricity remained completely as a topic of simultaneous authority of the state and central governments, though parliament has the complete authority exercising pre-emptive power. The electricity (source) act, 1948 of India shaped the recognized framework underneath which the engineering was industrialized. In the mid 1970s, it was documented that trusting exclusively on the SEBs for power expansion was important to power scarcities besides huge inter-state discriminations, principally in light of the rough circulation of coal besides hydroelectric possessions through the country. To complement the determinations of the conditions, the central government augmented its character in the generation and broadcast of power. NTPC and National Hydro Power Corporation, Ltd. (NHPC) were formed in 1975

by the central government to found thermal in addition to hydro generating plants to install related interregional broadcast schemes. In the identical year, the Central Electricity Authority (CEA) was recognized in its current procedure to grow a uniform nationwide power strategy. Additional power generating corporations were recognized later.

The Electricity Act 1948 was passed to offer path to the growth of the power industry besides giving rise to the formation of the central electricity authority for supervising the growth. The electricity act, particularly its importance on state beyond the industry continued unchallenged till the 1980s, owing to a mixture of an ideological assurance to social democracy and the appearance of interest groups, particularly the receivers of huge power subventions, who were mainly part of a politician-bureaucrat-industrialist-rich farmer nexus.

The initial signs of alteration in the policy system concerning the power sector arose in the primary 1980s, under the leadership of Indira Gandhi. The consequence was the recognition that private sector contribution would have to be stimulated if India was to protect from a grave power crunch that not only diminished India‘s growth predictions, but in fact threatened to cripple the economy. This procedure of liberalization added additional force in the mid-1980s beneath the headship of Rajiv Gandhi, whose dream for India‘s growth was indomitable by quick integration of modern expertise, which required the dismantling of managerial controls over the economy, extensively observed as outdated. It is not predominantly well identified that in India, reorganizations in the power sector were essentially originated before those in the telecom sector. If development in the succeeding application of power sector improvements has not been as smooth as with telecom, it is mainly for details debated above. The supreme noticeable appearance of the novel liberalized environment throughout the 1980s was the incitement to foreign power manufacturers (called self-governing power manufacturers –IPP–) to set up power plants in the country. The prearrangement was for the IPPs to trade power to the State Electricity Boards (SEBs) at a unit rate accustomed for cost of capital and interchange rate risks, especially since much of the fuel utilized was to be introduced (Anantaram, 2010).

1.5 Post Liberalization period

The State Governments, the SEBs also their inheritors have politicized power tariffs inside the states to such a degree that power is estimated well below the cost of delivery to farmers in addition to domestic customers in all states, manufacturing and commercial formations are completely charged to make up for the fatalities. The drive to supply electricity to all rural locations has led to over loading of low tension lines, zero to poor metering, misutilization of electricity, thefts, over staffing has become common. Keeping in view the constraints and immediate tasks ahead of SEBs it has become absolutely necessary to make structural changes and radical changes in the disintegrated power sector.

Government of India has promulgated in 1998 establishment of electricity regulation commissions at central and state levels.

Validation of power tariff, transparent strategies concerning grants, elevation of well-organized and ecologically benign strategies and substances associated there with. Consequently reorganizations were presented in the conditions of Orissa, Haryana and AP states in the first phase.

- India has now around 60 Electricity Regulators in the CERC and SERCs. Eight in TRAI and three in Tariff authority for major ports. Many more are to come in oil and gas insurance and coal sectors shortly.

In the wake of globalization, a notable trend is the abutilize of market by monopoly of power sector. In order to deal with this especially abutilize by private producers, it has become imperative to establish independent regulators.

Essential difference in India between old and new style of regulation is that the former involves decision making by bureaucrats and ministers in a closed environment through selected consultations, whereas the new style is expected to be open, fully consultative and transparent.

The Need of the Hour for the power Sector is **CREDIT**

C– Customer Focus, Capacity Addition, Conservation of Energy, Collection of dues, Co-ordination, Co-operation.

R– Reality of the situation, resource management, right action, restructuring, regulation.

E– Efficiency, economy, equity, ecology, energy utilize

D – Demand Management, development, direction, decision

I – Initiative, innovation, image, investment, improvisation

T – Tariff, Timing, Transmission, Transportation, Transparency, truthfulness, trust

Source: IPE journal 1998 vol: 21 Author M. Gopala Krishna IAS

The establishment of regulatory framework mainly focusing:-

- Correcting or mitigating the failures of competitive markets
- Ensuring level playing field and
- Introducing competition

Through the co-existence of deviating private besides government benefits in the electricity subdivision the formation of a neutral controller, which was at arm`s distance from the government, power companies besides customers became indispensable. As a consequence, The Central and State Electricity Supervisory Commissions were shaped.

Shortage of private admission into this sector suggests that struggle for competition has not attained in maximum parts of the sector. The sector is not even near to accomplishing opposition in the circulation segment. Unfinished reorganization in fuel arcades has similarly blocked opposition in generation besides a cap in values on comprehensive trading has killed opposition in the interchange section.

The incompleteness of organizational changes besides supervisory reorganizations suggests that the inacceptable presentation of the Indian electricity sector lasts. The running of the sector is still categorized by foremost complications like – high technical plus commercial damages such as theft of power due to unethical organization unsustainable actions to fund one sector at the expenditure of additional (cross subsidization) and meagerness in delivery networks leading to reduced worth of supply. There are enormous inter-regional differences in admittance to organization electricity. There is similarly a rural-urban split with 56.6 percent of rural families and 12 percentage of urban homes not consuming admittance to electricity supply.

The Indian electricity segment has perceived major variations with respect to operation of directive, competition and the superficial character of private subdivision. Likewise further countries, reorganizations were presented in power sector due to impracticable state power boards and inefficient operation of SEBs.

Absence of commercial awareness, insufficiency in distribution networks foremost to poor excellence of power source, high practical and profitable losses, unmaintainable procedures to promote one sector section at the expenditure of the additional sector (cross subsidization), have entirely led to unstable tariffs amongst dissimilar customer sections.

Indian Electricity Act 2003 – which associate the laws involving to generation, transmission, distribution, trading and utilization of electricity also normally for captivating events favorable to expansion of electricity business, endorsing competition within, keeping interest of customers also supply of power to all parts, justification of electricity tariff, preservation transparent strategies concerning aids, promotion of well-organized and ecologically benign policies, composition of Central Electricity Authority, Supervisory. Commissions in addition formation of Appellate Tribunal and for substances associated therewith or accompanying thereto.

An Appellate Committee has been formed for removal of petitions in contradiction of the verdict of the CERC as well as State Electricity Regulatory Commissions so that there is quick clearance of such matters. The State Electricity Regulatory Commission is a compulsory condition.

Necessities connecting to theft of power have a revenue focus.

REFORMS IN POWER SECTOR

Goals and Objectives

The purposes set for the power reforms programed to increase productivity, transparency, competition in addition to attraction of private investment. The objectives of the reorganization procedure are to guarantee that power is abounding under the well-organized circumstances in terms of cost plus quality to sustain commercial expansion, and that the power sector reaches self-sufficiency besides becoming a heavy load on the state's budget.

The Key Components of reforms program are:

- Unbundle state-owned vertical monopoly into generation, transmission and distribution entities.
- Corporatizing each entity.
- Strengthening the entities institutional capabilities.

- Establishing an independent regulatory framework.
- Establishing the optimal number of distribution enterprises.
- Privatization/promotion of joint ventures / franchisee agreement for distribution companies.

Year	REFORM MILESTONES
Feb'97	Government policy statement issued
Apr'98	Andhra Pradesh Reform Bill passed in Assembly
Feb'99	Reforms Act became effective
Feb'99	Andhra Pradesh State Electricity Board unbundled into AP Transco/ AP Genco
Mar'99	Andhra Pradesh Electricity Regulatory Commission established
Apr'00	APTRANSCO unbundled into Transmission and 4 Distribution Companies
Jul'00	Enactment of Special Act for Power Theft
Apr'01	Regular license to Discoms
Apr'02	Administrative and Operational autonomy to Discoms, Citizens Charter introduced
Oct'02	Employees allocated to all companies through options
Nov'02	Monitoring of Performance based on Key Performance Indicators for Discoms and Transco
Mar'03	Additional financial autonomy to Discoms
Jun'05	Bulk supply and trading activities vested with Discoms as per Electricity Act 2003

Dec'05	7th ARR and Tariff filing made as per Electricity Act 2003
Mar'06	Multiyear tariff for 1st control period 2006-07 to 2008-09 issued by APERC
Nov'06	8th ARR and tariff filing for SLDC made
Mar'06	8th Tariff Order issued by APERC

Table No:1.1- Reforms Milestones In Andhra Pradesh

1.6 REFORM STATUS: KEY DEVELOPMENTS

1. In 1991, to complement public sector investment, the government allowed 100 percentage foreign possession of power producing possessions besides providing assured revenues, a five-year tax holiday, low parity necessities, besides for some private producers, counter-guarantees in contradiction of non-payment of subscriptions by SEBs. As a consequence, since 1991, an entire capability of about 7400 MW from 37 private power plants has so far remained ordered. Added capacity of about 5000 MW from 12 more schemes is testified to be under production.

2. Though, these transformations still did not discourse the poor monetary health of the SEBs, besides power scarcities continued. Transmission and distribution ("TandD") losses, projected to be 32.9 percentages on an average for the country in fiscal 2001, were particularly high, due to insufficient metering, out-dated equipment, and theft.

3. In 2001, the government familiarised the accelerated power development and reforms programme ("APDRP") to bring down TandD losses to 10 percentage through several central, state besides local level creativities and to advance the performance of producing positions through restoration and transformation.

4. In command to advance the monetary health of the SEBs, the government realized the scheme for one time clearance of unsettled dues, which developed the outstanding dues of the SEBs billed to the Central Public Sector unit(CPSUs), besides set up a system to simplify the full compensation of successive billings.

5. Most lately, the EA 2003 was approved, which combined all current laws prevailing the industry, produced a program for rearrangement of the SEBs, and presented greater competition and admission into assured sections of the industry.

6. The department of power has also indicated a goal _Mission 2012: power for all‘ to attain the aim of pröviding dependable, quality power at optimal cost that is commercially feasible to attain a GDP growth rate of 8 percent.

7. There has been a 35 percent discount in SEB losses since FY01, generation corporations are currently recovering 100 percent of their payments and capacity accumulation throughout the tenth plan is predictable to be 92 percent of target.

8. The government has proclaimed main policy enterprises like national electricity programme then draft nation-wide tariff policy.

In the reform scenario some important enactments in power sector are given below.

- The Orissa Electricity Reform Act, 1995 (Orissa Act no. 2 of 1996)
- The Haryana Electricity Reform Act, 1997 (Haryana Act no. 10 of 1998)
- The Andhra Pradesh Electricity Reform Act, 1998 (Andhra Pradesh Act no. 30 of 1998)
- The Uttar Pradesh Electricity Reform Act, 1999 (Uttar Pradesh Act no. 24 of 1999)
- The Karnataka Electricity Reform Act, 1999 (Karnataka Act no. 25 of 1999)
- The Rajasthan Electricity Reform Act, 1999 (Rajasthan Act no. 23 of 1999)
- The Delhi Electricity Reforms Act, 2000 (Delhi Act No.2 of 2001)
- The Madhya Pradesh Vidyut Sudhar Adhiniyam, 2000 (Madhya Pradesh Act No. 4 of 2001)

1.7 Regulation: Natural Monopoly

The sharing of electricity or the wire business, being a Natural Monopoly, has to be controlled for exploiting the competence of process besides gaining scale advantage to the society. The possessions of the civilization can be appropriately applied through an officially created structured object.

The economists have been in disagreement in favor of regulating the natural monopoly in public helpful services. They have recognized the financial rationale for such guidelines in the literature of finances.

All the way through the economic literature the necessity for the guideline of natural monopoly is well highlighted besides recognized. In agreement with the necessity for regulation, economists have placed forward a widespread set of ideologies for regulating natural domination dealers. In numerous nations everywhere the world, controlling organizations have originated with regulatory enterprises to overcome the difficulties carried about by the presence of natural monopolies. These regulations can be categorized into two main groups. On individual side, there are heavy-handed guidelines, preserving that the controlling consultant has a robust controller over the ordinary monopoly besides profits with sturdier controlling investigation.

Throughout the customary stream in financial literature, heavy-handed regulation discovers the diverse ways over which controlling establishments accept a hands-on method, interfere in natural monopoly's manufacturing processes.

Consequently there are light handed rules which hold that genuine regulation is directed only if the natural control is indomitable to have exercised its market power or activated some kind of market disappointment like in California Disaster. Also, in order to avoid the natural monopoly from ill-treating the market control, dissimilar kinds of risk can be engaged in light handed directive. Consequently, light-handed rule is also seen as threat based regulation. Thus there is a severe conceptual variance among these two schools of thought. On one hand, heavy-handed regulation indirectly accepts that the natural monopoly will not act publicly effective unless it has been controlled by a supervisory body accepting a hands-on method. On the other hand, light-handed regulation accepts that complete transparency besides credible supervisory or other threats, an ordinary monopoly will act competitively.

Tariff is left to the preview of an autonomous regulatory body.

1.7.1 Electricity Distribution Regulation in India

Directive for distribution trade in India ages back to the pre-independence era. The Indian electricity act – 1910 which was revoked by the electricity act – 2003 largely apportioned

with the funding of licenses and licensees power for opening and breaking of streets, railways, etc., placing overhead lines, duties of energy to the customers, etc. The Ahmedabad Electricity Supply Company (AEL Limited), The Bombay Electric Supply and Transport Limited (BEST), The Calcutta Electricity Supply Company (CESC) and the Surat Electricity Company (SEC) were operational as distribution licensees. The Power to control these licenses were restored with the corresponding state governments.

1.8 Significance of the study

- We repeatedly listen to grievances from customers that Regulatory schemes are unsuccessful to either guard them in contradiction of the monopoly guard of new private organization amenities or to deliver assured improvements and growth of facilities.
- Government of India has promulgated in 1998 establishment of Central Electricity regulation commission and state electricity regulation commission and thus initiated an independent, transparent, accountable electricity regulatory frame work in the country.

In this context a study on the Regulatory frame work and basic content of Regulatory governance and Regulatory substance, the role and responsibilities of Central Electricity regulatory Commission. Experience and influence / impact of the state electricity regulatory commission on the utilities in refining the presentation of the power sector in the state of A.P. Further an investigation of the presentation of the power sector in the combind state of Andhra Pradesh.and challenges ahead are also presented.

1.8.1 Scope of the study

The present study "Regulatory system in power sector a study of its performance in AP state power distribution" is made by considering various factors. The scope of the study includes only the functional characteristics and functions related to performance and efficiencies of AP state Electricity Regulatory Commission in the area of power sector distribution segment. In the state the introduction of independent regulatory bodies have created a new institutional space bringing in a major alteration since the completely non

transparent fastened judgment creation procedure under the pre-reforms regime. The study focussed on the functioning of state regulatory commissions and Discoms and their contributions and roles in providing better quality power at reasonable cost to the consumers and LT Industries (SSI) in particular.

The study mainly focussed on most important constructs and factors such as Regulatory policies and Restructuring, Price regulation, Universal service obligation, Transparency, Accountability, Frequency of interaction with stake holders, Customer focus, Regulatory effectiveness etc.

The literature obtained from a study of international practices and inter country comparisons in electricity regulatory bodies is helpful in understanding the principles of good regulation and the impact of regulator on the power sector reforms.

The small scale industries sector being the most vibrant partner in the developmental process of the economy of our country and its contribution to the growth of the GDP, the impact of power distribution on the performance of SSI sector is also evaluated.

1.8.2 Getting started with research

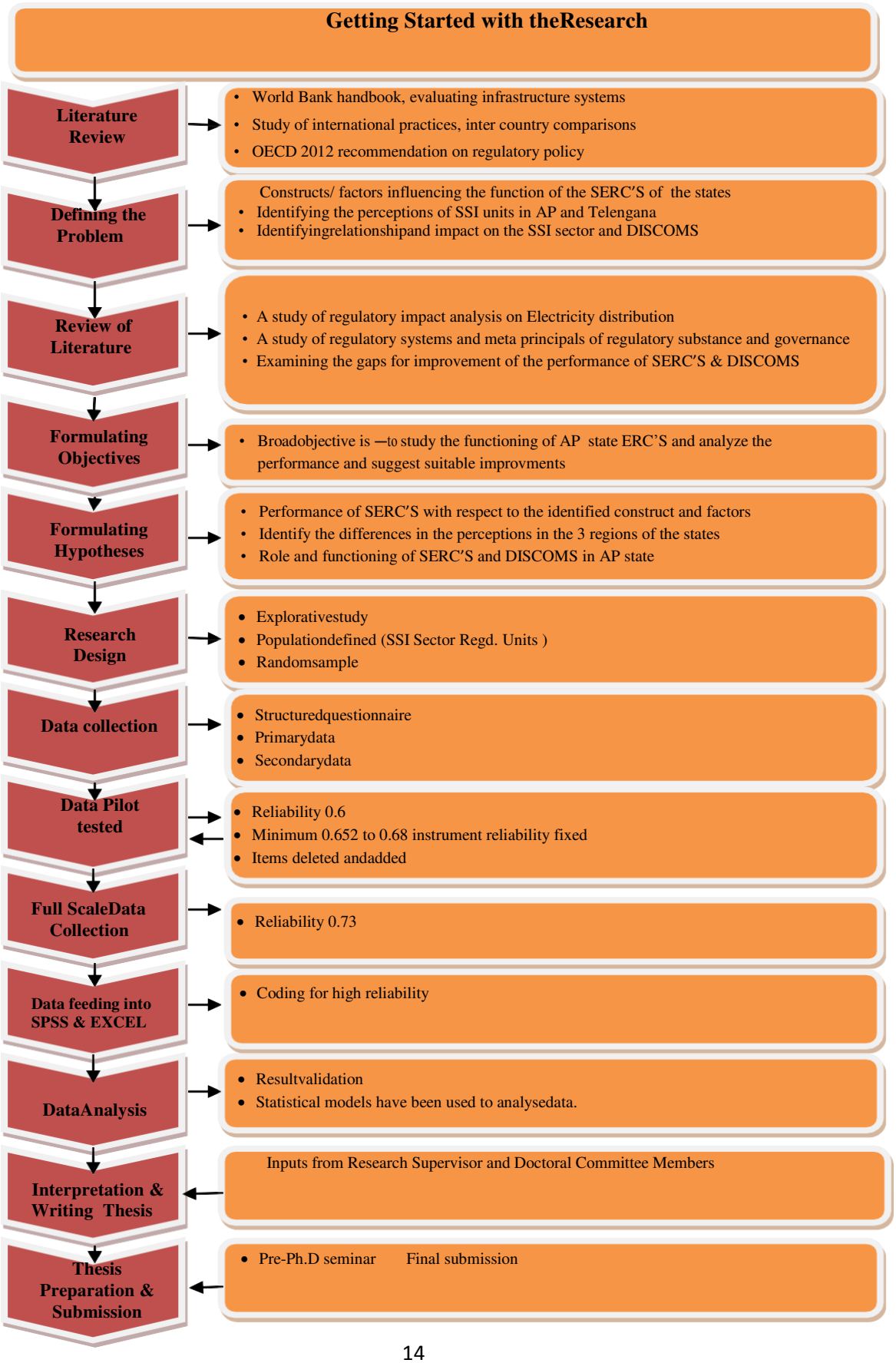


Fig No.1.1: Research Flow Chart

1.8.3 Research Methodology

The study is "descriptive in nature". The data is collected from both the primary and secondary sources. A study of the perceptions of the SSI Industry segment regarding various identified constucts and factors that indicate the power sector performance and the contribution of SERC in providing quality power at reasonable cost to this sector and meet the objectives power reforms. The study consists of a set of questionnaire to the selected sample LT Industries (SSI) and the data is analysed. The difference in the perceptions of respondents in various regions on the identified constructs and factors indicate the overall performance, efficiency and the gaps in the working of DISCOMS and State Electricity Regulatory Commissions. The study will draw inferences from both qualitative and quantitative inputs.

According to the purpose of the study the data is composed together from the primary and secondary sources. The data is collected in the combined state of Andhra Pradesh before the state is divided into two states namely Telangana and Andhra Pradesh. Hence the study pertains to erstwhile state of Andhra Pradesh.

Primary Sources:

- Investors, power producers (public and private)
- AP Genco, AP Transco and State Regulatory Comission
- Providers: Four Distribution Companies

Consumers: LT industries, Small Scale industries

Secondary Sources:

Published documents (Govt. of A.P., Govt. of India) Annual returns and annual reports etc.MSME Data,MSME CENSUS Survey,SERC`"s Annual Tariff order booksand Notifications Public Hearings and Specific Meetings of SERCs World Bank Reports regarding Regulatory Affairs, Various press cuttings in daily News papers, Electricity Journals, Minstry of Power Reports and Publications, Regulatory commission journals, periodicals etc.,

The data will be collected through a structured questionnaire. The data of all the respondents will be analysed for the purpose of study. Appropriate questionnaire in the form of open ended, closed ended and multiple choice questions will be utilized to collect the required data.

The suitable statistical tests are utilized to analyse the collected data with the help of appropriate software tools.

Outcomes of the study:-

- Evaluating development in realizing regulatory policies.
- Emphasizing precedence zones for additional action.
- Augmenting the legality and responsibility of the controlling systems.
- Suggestion for improving the management of the regulatory system in power sector and provide better support to small scale industry in the state

1.8.4 Research Gaps

From the review of literature (including theoretical besides empirical studies) the study has recognized many issues affecting to the functions of regulatory commissions and DISCOMS, such as Regulatory policies and restructuring, Price regulations, Transparency, Accountability, U.S.B, Public Private participation, controlling of scheduled and unscheduled power cuts, frequency of interaction with stake holders etc.

The significant difference of these issues in various identified regions in the AP state, (Coastal Andhra, Telangana and Rayalseema regions) have gained lot of importance. These issues have gained focus and importance on the improvement of power sector distribution and in meeting the objectives of Power reforms in providing quality power at reasonable cost. This is the first study that has attempted to analyse these issues on the SSI sector (LT Industries) and draw inferences both quantitative and qualitative factors for improving the performance and functioning of SERC and DISCOMS in the AP and Telengana state power distribution segment.

1.8.5 Research Questions

The study has chosen to utilize some Hypotheses. To formulate the hypothesis (to be tested) certain research questions were developed. These questions have been formulated from the review of literature and upon the gaps found on the Effectiveness and Performance of State Electricity Regulatory Commission in AP power distribution segment.

- Does the assessment of performance and effectiveness of SERCs help in identifying the area of improvement of power sector distribution?
- What are the major constructs related to factors/ functions that contribute to the performance of SERCs regarding power distribution to the consumer in particular to the LT small scale industries?
- Are there any significant differences between the regions of Telengana, Costal Andhra and Rayalaseema regarding major identified constructs and critical influence factors?
- Is the SSI sector being neglected, does not get its due share of quality electric power and does it get the value/ services for the charges they pay in the State?
- Is the scope of consumers and stake holders participation significant/sufficient in the management of power distribution in the state?
- How far the functions and measures of SERCs are meeting the expectations of the stake holders?
- Is the representation from SSI sector in SERC'S (Public hearings and meetings) is sufficient in getting the due share of Quality Electric Power?
- Is Untimely revision of Tariffs and collection of Arrears regarding FSI heavily taxing the SSI segments?
- Are the regulatory agencies accountable for Loss of Revenue, Loss of Production in SSI Industries due to frequent power failures, power fluctuations, power cuts, power holidays, penalties?
- Are SERC'S change agents OR just nominal bodies?
- Do the SERCs act as better platforms for improving the performance and services of DISCOMS?
- Do ERCs provide protection to consumer/ LT Industrial Sector from Monopoly practices and provide Infrastructure facilities and promised improvement in services?

1.9 Objectives

1. To study the functioning of the regulatory system in power sector in A.P state power distribution region wise (Costal Andhra, Telangana, Rayalaseema).
2. To study the evolution and development of Regulation and related issues of the Regulatory system in A.P state power distribution sector.
3. To study the perceptions of MSME(SSI) sector with respect to the functioning of the regulatory sector in state power distribution sector (region wise).
4. To study the perceptions of MSME(SSI) sector of the state with respect to the statutory parameters of the regulatory sector in the combined state) öf A.P power distribution segment (region wise).
5. To identify the factors that influence the regulatory effectiveness in the combined state ofA.P power distribution segment.
6. To examine the relationship between the customer satisfaction and the regulatory performance indices/measures.
7. To advice a suitable system, structure and process for the regulatory system in A.P state power distribution sector.

1.10 Hypothesis

A. There is a significant difference in the perceptions / responses of the SSI sector in the three regions with respect to the following constructs

H1.With respect to regulatory policy and restructuring

H2.With respect to price regulation

H3.With respect to universal service obligation

H4.With respect to transparency

H5.With respect to performance

H6.With respect to accountability

B. There is a significant difference in the perceptions of the MSME sector region wise.(Telengana,Costal Andhra and Rayalseema)

H7.With respect to the frequency of interactions with stakeholders

H8.With respect to consultancy process prior to regulatory decisions

H9.With respect to power cuts per day

H10. With respect to scheduled powercuts per day

C. There is no substantial variation in the perceptions of MSME sector in the three regions

H11. With respect to power holidays

H12. With respect to controlling unscheduled powercuts

H13. With respect to percentage increase of tariff for LT industries

D. H14. USB has a significant relation / impact with regulatory measures

1.11 Target Population

The Target population of the study consists of all working SSI sector Industries under MSME in Coastal Andhra, Rayalseema and Telengana regions working with LT power input. The industries in operation only are considered for study. It may be noted a that a number of SSI units (including Micro Industries) are closed and under closure for various reasons such as lack of market/ demand, workers problems, lack of working capital, loss of revenue due to production loss, becautilize of power supply problems, lack of financial resources etc. Nonworking/ closed SSI Industries are not taken up for the study. Some of the industries are operating for only one shift and some are operating on three shifts depending upon the nature of the process and the production process. The SSI industries that are operating as on the Day/Month/Year of the study in the area of Costal Andhra, Telengana and Rayalaseema are taken as target population.

1.12 Sample Size

Sample Size

The sample size taken up for the study consists of the industries (SSI) located in the three regions of Costal Andhra, Telengana and Rayalaseema dependent on Electricity for their operations and production process.

The study also considered “Krejcie and Morgan” (1970) method of determining the needed sample size to represent total population. To calculate the representative sample size the following formula has been given

S = X2NP(1-P) + d2(N-1)+X2p(1-p)

Where, S = essential sample size

X2 = the table value of chi-square for 1 degree of freedom at the anticipated confidence level

N = The population size

P = The population quantity presumed to be 0.50 since this would provide the supreme sample size

D = The degree of accuracy expressed as a proportion (0.05)

Based on this formula they have developed a table which includes a total population (N) and the representative sample size S (See Annexure1 .) According to that table for the total population of 3000 the representative sample is 341 however the study has taken a sample of 402 as the size of the representative sample.

1.13 Sample Technique

The study has chosen the purposive sampling technique to select the representative sample size. Through this method the sample has been selected from the 3 regions of Costal Andhra, Rayalseema and Telengana.

The details are given below. Total MSME units registered were 46000 in AP as on 31-03-2012 (2011-2012).

Table 1.2: MSME Units Registered in A.P

Micro	Small	Medium
43029	2949	22

Manufacturing units: 39285

Service units: 1292

Repair units: 2490

Closed units: 2243

Non traceable units: 690

Total: 46000

Source "*MSME survey 2006 and 2007 and updated details from comissionarate of Industries department hyderabad as on 31-03-2012"*

The total no. of **small scale units** indicated as above are 2949 units working and registered in AP as on 31-03-2012.

The percentage of the units working/ dependent on electricity is given as follows

Micro sector: 66.44%

Small scale sector: 89.9% say 90%

Medium sector: 100%

Accordingly the total no. of working registered units in SSI sectors dependent on electricity works out to 2949*90% that is 2949*0.9 = 2655 the total population of SSI units registered and working dependent on electricity as on 31-03-2012 works out to 2655 units.Accordingly the total sample size taken up for study are 402 SSI units in all the 3 regions of AP and Telengana and Rayalaseema

Source "*MSME survey 2006 and 2007 and updated details from AP Industries department as on 31-03-2012"*

Details updated till 31-08-2015 are also given below

Later on no. of SSI units operating have been closed mainly due to Electric/power supply situation and power problems and works out to average 10% per year in the

year of 2012 and 2013 , 2013 - 2014.

Closed SSI units during the above year's works out to 2949*0.2=589.8 say 590

However from the year 2014 -2015 there is an average increase 20% in the number of units in Costal Andhra, Rayalaseema and Hyderabad of Telenagana regions that again works out to 2949/ 2950 total working units as on 31-08-2015 in Coastal Andhra, telangana and rayalaseema regions.

1.14 Geographical Distribution of the Population

The study covers Andhra Pradesh State now divided into AP and Telenagana States. Andhra Pradesh consists of Costal Andhra and Rayalaseema Regions 13Districts. Telengana consists of total 9 Districts of the region. The three regions are covered in the present studies as undivided Andhra Pradesh state covering all the three Regions. The small scale industries situated in the above three regions which are operating on LT power supplied by the concerned DISCOMS under State Electricity Regulation Commissions are taken up for study.

1.15 Characteristics of the Sample

In the State about 90% Small scale industries operate on LT Electric power supply. The other industries operate on other fuels, labour oriented conventional methods without using electric supply.

The distribution of the main source of power is given below

No power needed	:	24.72%
Eletricity	:	66.44% (Micro sector)
		89.9% (SSI Sector)
Coal	:	1.58%
Oil	:	3.48%
LPG/CNG	:	0.42%
Nonconventional Energy	:	0.19%
Traditional Energy/Firewood	:	1.52%
Others	:	1.65%

Source: 4th All India census of MSME Enterprises Government of India

1.16 Sampling and Data Collection Methods

The study has chosen the purposive sampling method to collect the data from the respondants. After identifying the targeted population of the working industries (SSI) the study carefully planned the data collection. Questionnaire survey has been the main way of collecting the data. In setting the questionnaire some of the main factors and constructs are taken from the work earlier done by the world bank in foreign countries from handbook for "Evaluating Infrastructure regulatory system a publication of world-bank Washington DC USA ". Apart from this the data was collected from the various interactions with APERC officials, various participation meetings conducted by SERC and yearly tariff books. The set of questionnaire' is framed after attending various public hearings and meetings conducted by SERC at various locations in the regions of Coastal Andhra, Rayalseema states and Telengana.

1.17 Reliability (Cronbach's Alpha)

In consistency investigation (Bohrnstedt 1977, Norusis 1997; Ch.6, 13) the functional parameters were first used to determine the degree to which these items are related to each other. This is for getting the overall index of the interior constancy of the scale as a whole and to identify items for exclusion. The dependent and Independent variables are the main critical factors. Firstly a pilot study is conducted in Telengana region that is Hyderabad and Secunderabad. The small scale industries situated at Bala Nagar, Sanath Nagar, Kushaiguda, Cheralapalli, Patancheru Etc. The reliability status of the pilot study are given below.

Table No 1.3: Pilot Study (Reliability analysis)

Cronbach's Alpha	No. of Items
0.60	70

Later on the questionnaire was modified keeping in view the results of the pilot study. A few items were added and a number of items were deleted after the interaction with various stake holders.

Table No 2.9: Final Study (Reliability analysis)

Cronbach's Alpha	No. of Items
0.73	49

1.17.1 Reliability of the Instrument and Constructs

The study is descripitive in nature for drawing inferences from the analysis it requires demographic information and other working details from the proprietor/ partner of the industrial establishment to get their opinion on various issues/problems faced due to power situation and discoms treatments and regulatory councils actions in dealing with the problems for supplying quality power and interruption less power. A research instrument (questionnaire) to elicit their opinions have been designed and executed. Here the reliability of the instrument is tested and executed at two points of time

- After completion of pilot survey the reliability was tested
- After completion of entire survey the reliability was tested

Reliability means that a quantity must dependably reproduce the concept that it is calculating. In numerical terms the normal way to look at the dependability is based on the idea that specific items must harvest results constant with overall survey. According to Nunnally (1978) an alpha score larger than 0.6 is generally acceptable. Kline (1999) records that though the usually acknowledged value 0.8 is suitable for reasoning test such as intelligent test for capability test a cut- off point of 0.65 to 0.68 is more or less appropriate

1.17.2 Cronbach's Alpha of each construct

Table No 1.5: Case Processing Summary

Cases	N	%
Valid	402	100.0
Excluded[a]	0	0.0
Total	402	100.0

a. List wise deletion based on all variables in the procedure.

Table No 1.6: Reliability Statistics

S.No	Name of construct	No. of Items	Cronbach's Alpha
1	Regulatory Policy	3	0.688
2	Price Reguation	8	0.701
3	Universal Service Obligation	7	0.734
4	Transparency	4	0.784
5	Performance	3	0.674
6	Accountability	2	0.801

1.17.3 Anova: Analysis of Variance

Anova or Analysis of variance is utilized to compare the means of more than 2 populations. It uncovers the foremost besides the interaction effects of arrangements or independent variables on more or more dependent variables.

Anova Analysis exploits the F- statistic which examines if the means of the group moulded by the independent variable or a amalgamation of independent variables are suggestively dissimilar. It is based on the assessment of two approximations of variance. The F- stat, computes the ratio between alteration due to difference amid groups and error variance.

F = Variance due to difference between groups/ Error variance.

The greater the F ratio the more is the difference amongst the groups as associated to within group alterations. An F – Ratio equal to or less than one designates that there is no noteworthy alteration between groups and the null theory is precise. If the null hypothesis (that the groups means do not vary considerably) is correct, then we can determine that the independent variables did not have a result on the dependent variable. However if the F test shows the null hypothesis to be incorrect numerous comparison tests are exploited to additionally discover the stipulations among dissimilar groups.

An Anova design can be labelled by stipulating three things

Number of factors involved in the design

Number of levels of each of the factors

Whether the factor is a amid – or within topics factors

In- between group design, the level of factor (s) varies between the subjects of different groups so that the subject of each group will be exposed to only one level of the factors. Then the design is conceptually similar to the independent sample design of t- test.

In within the group design the level of factors vary within the subject, whether there are together between groups as well as inside group's factors contemporary in a design, it is mentioned as mixed design. One way Anova is simplification of t- test for self-governing samples in circumstances more than two groups. For any given instance the value to be paid consideration to are the F- ratio, df (the degree of freedom) and P- value (the value of implication)

1.17.4 Chi- Square Models

Chi- Square is one of the prevalent approaches for testing hypothesis of discrete data and the Chi- Square test of Independence is exploited to test the hypothesis that twö categorical variables are self-governing of each other.The technique includes connecting the experimental Cell Regularities with the expectable Cell Frequencies. The foundation of the test is the dissimilarity among the detected frequency and the predictable frequency of the each cell of the contingency table. The Pearson Chi- Square statistic is a test to determine two variables are autonomous or not. If the consequence worth is small enough (conservatively implication must be less than 0.05) then the null theory is disallowed and we accomplish that there is some important association amid the two variables. Thus the variables are autonomous in addition to increased assurance in the hypothesis that we are in some way connected. The P- value is the possibility of detecting a sample statistic as extreme as the test measurement

1.17.5 Correlation Analysis

It gives a measure of relationship of two variables. In each Cell of the correlation matrix we get Pearson correlation co-efficient, P- value for two tailed test of significance and the sample size. Originally correlation analysis was conceptualized for utilizing when the variables between correlation to be established are equal interval or ratio scaled in their level of measurements.

1.17.6 Regression Analysis

It is employed to evaluate the relationship amid one dependent (DV) and several independent variables (IV).

Regression co-efficient: This is a degree of in what way oddly each IV (also known as predictor variables) predicts the DV. There are two categories of regression co-efficient unstandardized co-efficient and standardized co-efficient also known as beta value (β). The unstandardized co-efficient can be utilized in the calculation as co-efficiency of dissimilar IV's along using a continuous term to forecast the value of DV. The homogenous co-efficient (β) is unhurried in standard deviations.

Examples: A β-value of 2 associated with a particular IV indicates that a change of 1 standard deviation in that particular IV will result in 2 standard deviations.

R value represents the correlation between the observed values and the predicted values of the DV.

R-square is the square of R and gives the proportion of the variants in the dependent

Variable accounted by the set of IV's selected by the replicas besides provides how well the IV's are able to forecast the DV. Though the R Square inclines to be exaggerated when the quantity of IV's are supplementary or when the number of belongings are large. Though the adjusted R – square takes into explanation of these things in addition gives more info about the appropriateness of the model and in what way the IV's in the model can forecast the variations in the DV(Dependent variable)

1.17.7 Modus Operandi

The study pursues small scale industries dependent on LT Power supply. The targeted respondents are mainly owners/partners of the establishments who are managing the operations day in and day out. Many of the respondents are partners of the establishments dealing with DISCOMS, attending the public hearings conducted by the state regulatory commissions. The problems due to power holidays, power fluctuations, the tariffs, the penalties for exceeding the maximum demand limits are some of the major factors worrying them. Many personal visits/ calls were made to get in touch with the respondents and some times telephonic talks were also done with the respondents. In many cases the questions were also answered by them during my personal visit/contact.

Secondary data for this study was obtained through interaction with organization with NISIET(National Institute Of Small Industry Extension Training) a central government Institution situated at Yosuf Guda Hyderabad, State Industrial development department and small scale industry development institute. I also attended various public hearing meeting conducted by state regulatory commissions at various location in Costal Andhra, Telengana and Rayalaseema. These visits helped to collecting the data related with LT power supply to SSI Sector, the impact on these organization due to power problems like loss of production and revenue penalties payment etc.

All India MSME census 2006 - 2007 was also referred. This survey report has given elaborate information and data related with small scale industry.

1.17.8 Data Analysis

The data collected was first sorted out and checked for any missing information/gaps. Then the descriptive and inferential statistics were utilized to analyse the data and draw Valuable inferences.

For this purpose *"SPSS 17.0 Statistical software"* was utilized. It is an advanced statistical software package to analyse the data. It enables the researcher to do complete statistical analysis and it is the most utilizeful tool for analysing research studies and provides very accurate comparative analysis and other analytical inferences of the constructs regarding the relationship between various responses regarding identified constructs and critical influencing factors. These results enable the researcher to draw very effective inferencesand

conclusions and most practical business solutions.

To prove the study hypothesis various statistical technical tools have been utilized such as descriptive statistics, frequencies, comparing means with t-test etc. Chi-square distribution, one way Anova test and co-relation analysis along with simple regression analysis. These are very utilizeful tools to test the research hypothesis framed for the study. The significant differences in the three areas of Costal Andhra, Telengana and Rayalaseema with respect to the identified constructs and critical infuencing factors are observed. The data utilized for this analysis is scaled on "*Likert Scale*" and the responses of the targeted SSI industries in all the three regions is measured and all the above mentioned statistical analysis is done.

1.18 Limitations of the Study

The study focussed on the power distribution regulation in the combined state of Andhra pradesh. The study does not deal with power generation and transmission or any other related aspects.

The study could not cover many of the consumer segments as the population/range is very huge and wide and not feasible to be included.

However the survey is focusing on the small scale units as they are important source of innovation and having large contribution to the GDP growth of our country. The small scale units that are registered with MSME in the combined state of Andhra Pradesh are considered. The unregistered sector being very huge and highly scattered not accessible is not covered.

The scope of the study is wide, and time and financial resources became major constraints. Most of the respondents are not aware of the role and function of the regulatory commission.

1.19 Chapterization

Chapter 1:

This chapter discusses the introduction of power sector, pre liberalization scenario and post liberalization scenario in our country. This chapter also discusses the Electricity industry in general, the utilizes of electricity and the electricity distribution. The regulation Vs natural monopoly, and the electricity distribution regulation in our country ,pöwer reforms and the power reforms milestones in Andhra Pradesh state. This chapter also discusses the impact of power regulator and the functions of the DISCOMS on the survival and performances of

small scale industries. The significance of the study, research gaps, research questions, objectives of the study, research hypothesis framed, target population, the reliability of the study, Cronbach- alpha the sampling techniques, modus operandi and data collection along with limitations of the study.

Chapter 2:

This chapter discusses the scenario of small scale industry in our country and its role and importance in our country and its share in GDP growth of our country. MSME ACT 2006 and the definition of Micro, Small scale and Medium sector Industries as per MSME ACT. The SME's in developing countries and SME's in Indian perspective are also compared.

Chapter 3:

This chapter discusses the principles of good regulation, need for good regulation, the power sector restructuring in India, regulatory impact analysis the observation of the world bank (2001) and OECD recommendations on regulatory agencies, multi - year tariffs etc. It also brings out a study on International practices and inter country comparisions of regulatory bodies

Chapter 4:

This chapter describes the conceptual frameworks, the regulatory sector evolution and development, economist classification regarding regulation, economic reforms in India, the present regulatory regime, meta principles of regulatory governance, the major features of electricity act 2003, central electricity regulatory commission, state electricity regulatory commission, performance appraisal of new regulatory arrangement.

Chapter 5:

This chapter describes the role and functioning of ERC in the combine state of A.P' its chronology and establishments, its working, its role as change agent.

Chapter 6:

This chapter contains 3 sections

Section-1 describes the major constructs and the critical influencing factors. The reliability and cronbach alpha of each construct, the descriptive statistics and demographic analysis, the frequencies in all the three regions.

Section-2 deals with chi-square distribution and comparative analysis of the significant differences observed in the three regions.

Section-3 deals with one way Anova and compares the means of the various factors in the three regions. The correlation analysis and regression analysis are also considered here.

Chapter 7:

This chapter deals with Findings and Suggestions and the summary, contribution to economic research and its contribution to power sector distribution in the combined state of Andhra Pradesh in meeting the objectives of this study. This chapter also describes the existing situation of SSI's with regard to power problems and improvements for making this sector sustainable, achieve growth rate and contribute to the GDP growth of our country effectively.

Chapter 8:

This chapter deals with the conclusions in dealing with the problems in practice and a practical approach to deal with the situation and decrease the power loss, power failure and improve the overall productivity and performance of the enterprises(SSI), creditability and the accountability of the regulatory bodies and DISCOMS in the combined state of AP

Chapter 9:Bibliography and References

Chapter 2

Overview: SSI sectors

2.0 Introduction

Small Scale industries occupy a principal role in almost all the economies (developed and emerging) in determining their manufacturing purpose and it is the pathway of the economic development. They have been helping as nursery for development of commercial talent attached with advanced stages of service groups besides industrial expansion. The strength of financial super authority in Germany, UK, France, and Switzerland lies in their minor economic components like cottage industries, beverage industry, leather industry, besides light engineering goods.

2.1 Small Scale Industry (MSME) in India

In the Indian context, the small scale insustry (SSI) sector has remained as an individual place in addition, it plays a critical role in the development of financial development by Value adding, employment generation, reasonable distribution of nationwide income, elimination of local differences, wide dispersion of businesses, enlistment of capital, upgradation of entreprenurial services, and considerable influence by way of transfer incomes.

The SSI sector has arisen as extremely effervescent and dynamic sector of the Indian economy. Today the MSME sector accounts for 90% of the industrial units, contributes about 40% of the value supplementary engineering and 35% of the national export. This sector produces employment to around 300 Lakh persons and produces more than 8000 items and offer the largest employment after agriculture in our country. Apart from its contribution to the growth of GDP, the SSI sector plays a significant role in reducing regional imbalances across the country as well as within the state in as much as these units because of their limited requirement of capital can be set up even at relatively smaller cities/towns.

Remarkably, the extraordinary presentation of SME's in Europe was winessed in customary estates, the leather merchandises, knitware, furniture, tiles and processed foods. In a traditional business like shoes. The SME divisions were competent to enlarge manufacture and exports at a time when huge initiatives in UK and Germany were on the decline.

Many of the SME clusters are located in India. There is a cluster of metal-working and textile industry in Ludhiana, the cotton knitware cluster of Tripur, the diamond industry of Surat, the engineering and electronic cluster of Bangalore, sports goods and surgical equipment cluster in Sahilkot, cutlery cluster in Wazirabad, etc. Some of the major items of exports are textiles, leathers, diamonds, gem and jewellery, Software, drugs and Pharmaceutical, handicrafts, etc.

2.1.1 MSME Act 2006 and its provisions

In agreement through the provisions of micro, small and medium enterprises development (MSME) act – 2006, the MSME sector is categorized into the following classes.

A. Manufacturing enterprises : The initiatives involved in the production or manufacture of goods relating to any industry quantified in the 1st programme to the manufacturing Expansion and Guidelines act – 1951, or retaining plant and equipment in the procedure of value adding to the final produce consuming a separate name or charisma of use. The manufacturing enterprises are defined in terms of plant and machinery.
B. Service Enterprises : Initiative affianced in providing or rendering of services are demarcated in terms of investment in apparatus/equipment.

The limits for asset in plant and equipment/apparatus for industrial/service enterprises are informed wide SO 1642 (E) date 29/09/2006 are as under

Manufacturing Sector

Enterprises	Investment in Plant and M/C
Micro	Does not exceed Rs. 25 Lakh
Small Scale	More than Rs 25 Lakh, but less than Rs. 5.0 Crores
Medium	More than Rs. 5.0 Crore but less than Rs. 10 Crore

Service Sector

Micro	Not more than Rs. 10 Lakh

Small Scale	More than Rs 10Lakh, but less than Rs. 2.0 Crores
Medium	More than Rs. 2.0 Crore but less than Rs. 5 Crore

2.1.2 SME's in developing Countries

Although minor businesses might not make as much money as large companies, they are a critical constituents besides major sponsors to the power of emerging nations. Small businesses present new employment prospects besides, aid as the construction blocks of the biggest establishments of the emerging economies like India, Indonesia, Turkey, Brazil, and Pakistan etc.

Appreciative of the physical characteristics of involvement of small productions at local level and its effect on whole economic growth is a critical feature. The duration of SME initiated in the world of Economists, signifying a secure characterized on the foundation of a set of standards counting employees size plus the worth of their assets. The size arrangement differs confined within areas besides across nations relative to the size of the economy besides its benefactions. It is significant to note that there is a minimum and a maximum size for SMEs.

Small and Medium Enterprises (SMEs) compose a major part in welfare of the economy and also contributes towards the growing economy of various developing countries. According to a survey report by the Economist Intelligence Unit Survey economic development (averaging 4.6% yearly) has mainly existed due to the SMEs. Though there can be an extended list of welfares the SMEs offer, the heaviest is measured to be the liberty a minor business proposals to the businessperson to research in addition to plan as well as take risks. It therefore creates entrepreneurial enthusiasm plus an aspiration for personal accomplishment which inspires small investors also professionals. In accordance to the above mentioned Economist survey report, nearly half of those measured got into industries for personal contentment.

This desire for contentment then covers the method for the achievement of these minor and average businesses which in turn deliver boost to the complete growth engine of any economy.

The aids of SMEs are not limited to the emerging world only but are mainly visible in the industrialized world as well. Small in addition to Medium Businesses and small business

community are the backbone of Europe's economy. There are additional than 23 million SMEs in the European Union, which characterizes 99% of European happenings and are accountable for 60% of Europe's GDP. They are also Europe's foremost job inventers as their employment is over 100 million individuals.

For any economy, SMEs through high income as well as flexibility play a foremost role in dropping sector disparities in that budget. Additionally, informal entry in addition/ withdrawal of SMEs brands economies are more supple as well as more modest. Due to this affluence of admission besides the subsequent upsurge in the amount of small besides medium industries, a modest market density is formed which weakens controls and helps to upsurge excellence of yields and facilities.

Remarkably, majority of the existing enterprises have their source in minor and medium enterprises nevertheless rationalizing and downscaling, layoffs besides fusions have reduced jobs in huge companies additionally they are dangerous besides less striking to employees. The recipients of this remain the lesser businesses as additional imaginative aptitude is typically keen to juncture lesser outfits where it can have an improved occasion to utilize and discover its possible outcomes.

Smaller trades also incline to have better customer relations besides meeting the customer requirements more efficiently besides punctually. Smaller productions also having better location to their proprietors can take swift choices on revolution, assessing in addition other commercial approaches which concentrate beneficial inexpensive benefit.

SMEs incline to service poor as well as low-income employees and are occasionally the lone source of occupation in poor rural areas. They are typically wide ranging can spread out to a massive population of a nation even in distant regions.

This role of SMEs is predominantly vital in the evolving countries where the economic stability is unavailable and poverty exists as a major issue.

Pakistan is one such country whose economy has been boosted majorly due to SMEs. Conferring to the Small plus Medium Enterprises Development Authority (SMEDA), Ministry of Industry report, SMEs are composed of nearly 90% of entirely the initiatives in Pakistan, employment 80% of the non-agricultural labor force besides their share in the yearly GDP is 40%, roughly. Through these figures, it will not be unfair to say that SMEs are the back bone of Pakistan's economy too. Ministry of industry Government of Pakistan has

assisted the source of SMEs to a boundless amount yet there are problematic zones which necessitate constant consideration of the Government.

Funding is one of the difficulties the smaller businesses go through. For SMEs, monetary resources are frequently inadequate which often force the businesses to select resolutions which look as if to be cheap primarily but later the concealed costs surface throughout numerous phases of performance subsequently in financial crunches. Higher costs of RandD (Research and Development) besides training are subjects where SMEs find problems particularly in the expression of limited competence of growth and manufacture.

Owing to their small size, SMEs typically lack of higher volumes of volumes besides their capability to accessas well as analyze information is predominantly weak. They cannot manage to pay for expensive support facilities like monetary, human resource, legal as well as training etc. At an additional calculated level, SMEs do not have the volume to encourage the complete business atmosphere in their favor as bigger companies possess. In totaling to aid funded by SMEDA, SMEs themselves consume to take actions to address the difficulties. They essentially improve strong organization teams besides embracing a culture of knowledge and division of knowledge through other SMEs. For monetary aid, SMEs have to depend on banks besides they have to discover ways to overawed banks' introversion to finance smaller trades.

Numerous studies have been led throughout the last 2 decades on the topic of SMEs Role in National growth. All showed that Character of SMEs besides their role in National Development, Employ group and removing the poverty is undisputable.

2.1.3 Advantages of SMEs to developing economies

A. Contributions

A small business is distinct as a business (corporation, Limited Liability Company or proprietorship) by way of 500 employees or less. Rendering to the U.S. Small Business Administration (SBA), small businesses signify 99.7 percent of all company firms in emerging countries. Subsequently 1995, minor businesses have produced 64 percent of new jobs, besides paid 44 percent of the total emerging economies' private payroll, according to the SBA.

B. Economic Growth

Minor businesses subsidize to emerging nations by bringing growth besides modernization to the public in which the business is recognized. Small trades similarly help motivate monetary development by providing service openings to persons who may not be employable by larger establishments. Small trades tend to appeal talent who create new merchandises or implement new resolutions for currently present ideas. Bigger businesses correspondingly frequently benefit from small businesses contained by the similar local community, as numerous enormous corporations be governed by on small businesses for the conclusion of numerous business purposes through subcontracting.

C. Adaptability to Changing Climates

Numerous minor businesses similarly own the capability to retort plus adapt rapidly to varying economic environments. This is owing to the detail that minor businesses are frequently very customer-oriented. Many indigenous consumers will stay faithful to their preferred small businesses in the middle of a monetary crisis. This faithfulness towards these resources that small industries are often gifted to stay inundated through tough times, which can promote to reinforce developing nations. Small businesses also amass less income than superior corporations, meaning they might have less to misplace in times of financial disaster

D. Schools and Local Government Offices

When customers utilize local small trades, they are fundamentally providing monetary refund back to their native community. A flourishing local occupation will produce high levels of income, which resources that the commercial will pay greater taxes, comprising local taxes. This currency is then utilized for local police besides fire sections as well as schools.

E. Future Growth

Small trades don't remain small forever.major corporations such as Nike and Ben and Jerry's, in progress as minor businesses that raised to develop major companies in the nationwide also global marketplace. Numerous computer-industry front-runners initiated as "tinkerers," employed on hand-assembled machineries out of their garages. Microsoft is a major instance of in what way a minor commercial idea can revolutionize the world. Small companies that nurture into huge businesses often continue in the community in which the business was initially started and recognized. Consuming a large company headquartered in a community can additionally help deliver employment and motivate the local economy.

2.1.4 Globalization and its impact on small businesses

Globalization is best understood as global village, which connotes a borderless and integrated world economy. All the countries are expected to open the gates of their economies and allow free flow and transfer of resources such as financial, technical knowledge and other factors. The consumers in the entire world will enjoy the fruits of knowledge revolution and fastest innovation by the way of high value added quality and cost efficient products/services.

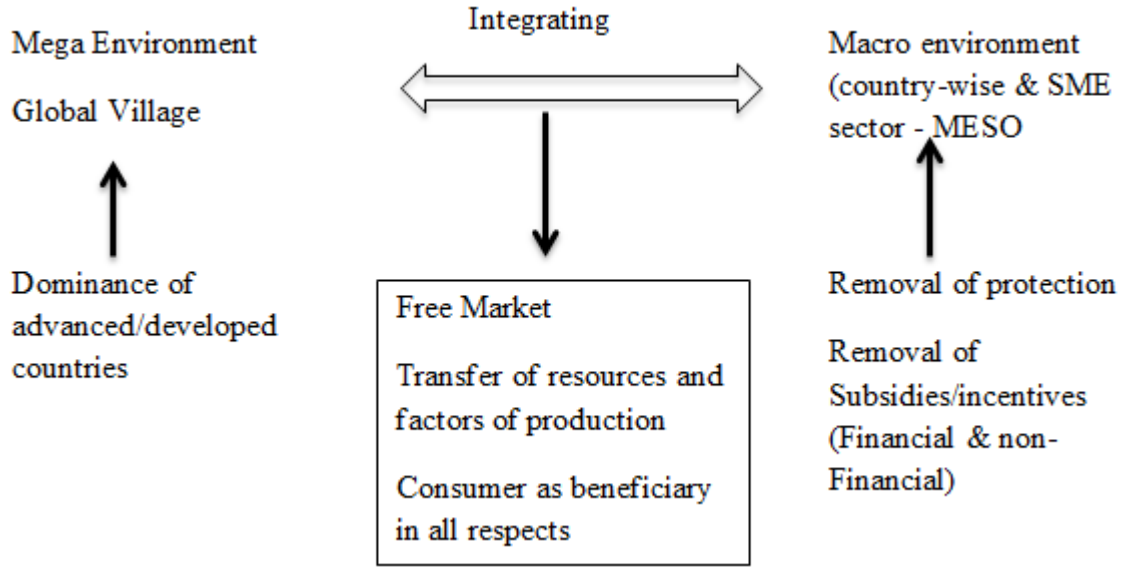


Fig 2.1: Globalization and Mega Environment

All the countries are witnessing the impact of re-structuring and integrations and reforms in the world economy. Each country is in race with others in re-structuring and integrating its individual economy within the framework of its social and economic conditions. So, the countries are to redisgn their policies and programs to be compatible wit globalization, WTO, and world order and transform the present setup into a highly competetive and vibrant economy in the context of globalization.

2.1.5 Impact of Globalization and Liberalization in Small Business

- Technology, Team and Tradework is also a major challenge.
- Louis Gerstner (Chairman of IBM) said “Every now and then, a technology originates along that is so profound, so universal, that its impact will change everything. It will transform every institution in the world, it will create winners and losers. It will

change the way we do business, the way we teach our children, the way we communicate and interact as individuals."

- In 1970, Robert Solow of MIT showed that Technology and not labor, capital, and inventory was responsible for 80% of the growth, since Technology has become the dynamo of economic growth.
- Today the technology changes at warp speed and the products become smaller, more potent. These fast changes create faster learning curves, more rapid access to best practices and increasingly sophisticated competitive knowledge.

The rapid changes in technology have their flip side.

a) It makes the human skill outdated very fast, calling for upgrading of skills constantly
b) It de-stabilizes organizations. As "Peter Drucker said in the, "age of discontinuity", new trades can unexpectedly spring as well as can have far reaching influences and society in general
c) It affects reduction in employment

2.1.6 SSI (MSME) Sector in the combined state of AP State and their overall growth

Table.2.1: Overall Growth of Micro, Small and Medium Enterprises in Andhra Pradesh

(1995-2012) (cumulative picture for the year ending March)

Particulars	1995	2000	2006	2008	2009	2010	2011	2012	CAGR (1995-2012) %
1	2	3	4	5	6	7	8	9	10
Number of MSMEs	114,140	136,993	146,766	153,470	158,173	165,911	1,75,076	1,90,895	3.1
Fixed investment (Rs.crore)	1,639	3,425	4,963	7,899	10,504	14,448	16,807	20,909	16.2
Employment(in lakhs)	9.87	11.95	13.26	14.40	15.32	16.63	18.02	20.42	4.4

Source: Commissionerate of Industries, Andhra Pradesh, Hyderabad.

Table 2.2: CAGRs and Annual Growth Rates of MSMEs of combined Andhra Pradesh state

(in %)

	CAGR			Annual Growth				
Particulars	1995-2000	2000-06	2006-12	2007-08	2008-09	2009-10	2010-11	2011-12
1	2	3	4	5	6	7	8	9
Number of MSMEs	3.7	1.2	4.5	2.9	3.1	4.9	5.5	9.0
Fixed investment	15.9	6.4	27.1	35.0	33.0	37.5	16.3	24.4
Employment	3.9	1.8	7.5	5.7	6.4	8.6	8.4	13.3

The advancement of the State in reverence of number of originalities works out to a development rate of 3.1% completed round 1995-2012. The equivalent development rate for static investment is 16.2%, then for service 4.4% (Table No-2.1). Growth rates for precise phases as specified in Table-2.2 disclose differences, through 2000-06 recording the lowermost rates, retrieval observed from 2006, in addition to the best results documented in the current five years from 2008

Table-2.2 grants the accumulative image for MSMEs for the State; Table 2.3 springs year-wise registering of MSMEs for the State whereas Table 2.5 presents the tendencies grounded on the aggregate picture at the finale of FY 2006 and FY 2012 at the district in addition to regional levels.

Table 2.3: Registered Micro, Small and Medium Enterprises in A.P

Table: Registered Micro, Small and Medium Enterprises in Andhra Pradesh

(1956-2012) (cumulative picture for the year ending March)

Year ending March	No. of Units	Fixed investment (Rs. crore)	Employment
1	2	3	4
(a) Units with fixed investment above Rs. 5 lakh			
Up to 1956	38	5.0	3,521
1956-1974	200	22.1	12,764
1974-1996	5,305	756.5	113,375
Cumulative March 1996	5,543	783.6	129,660
(b) Units with fixed investment up to Rs. 5 lakh March 1996 (cumulative)	112,728	1,046.4	890,776
(c) Total registered MSEs (March 1996)	**118,271**	**1,830**	**10,20,436**
1995	1,14,148 (4.0)	1,639 (12.7)	9,86,600 (4.3)
1996	1,18,271 (3.6)	1,830 (11.7)	10,20,436 (3.4)
1997	1,22,790 (3.8)	2,038 (11.4)	10,47,193 (2.6)
1998	1,27,725 (4.0)	2,335 (14.6)	10,97,192 (4.8)
1999	1,32,722 (3.9)	2,887 (23.6)	11,55,445 (5.3)
2000	1,36,993 (3.2)	3,426 (18.7)	11,95,109 (3.4)
2001	1,39,041 (1.5)	3,752 (9.5)	12,20,542 (2.1)
2002	1,40,653 (1.2)	4,013 (6.9)	12,39,753 (1.6)
2003	1.42,294 (1.2)	4,248 (5.8)	12,64,046 (2.0)
2004	1,43,867 (1.1)	4,452 (4.8)	12,85,995 (1.7)
2005	1,45,499 (1.1)	4,718 (6.0)	13,10,071 (1.9)
2006	1,46,766 (0.9)	4,963 (5.2)	13,25,903 (1.2)
2007	1,49,206 (1.7)	5,850 (17.9)	13,61,922 (2.7)
2008	1,53,470 (2.9)	7,899 (35.0)	14,39,786 (5.7)
2009	1,58,173 (3.1)	10,504 (33.0)	15,32,015 (6.4)
2010	1,65,911 (4.9)	14,448 (37.5)	16,63,118 (8.6)
2011	1,75,076(5.5)	16,807(16.3)	18,02,337(8.4)
2012	**1,90,895(9.0)**	**20,909(24.4)**	**20,42,288(13.3)**

Notes: 1. Figures within parentheses indicate percentage growth over the previous year.
2. Data presented in the table relate to micro and small enterprises up to 2005-06. From 2006-07, in addition, data regarding the newly registered medium enterprises are also included.

Source: Commissionerate of Industries, Andhra Pradesh, Hyderabad.

Table 2.4: Year wise Growth of Registered MSMEs in A.P

Table: Year-wise Growth of Registered MSMEs in Andhra Pradesh (1995-2012)

Year	No. of Units	Fixed investment (Rs. crore)	Employment
1	2	3	4
Cumulative-March 1995	**114,148**	**1,639**	**9,86,600**
1995-96	4,123	191	33,836
1996-97	4,970	211	37,900
1997-98	4,935	297	49,999
1998-99	4,997	552	58,253
1999-00	4,195	539	39,664
2000-01	2,124	327	25,433
2001-02	1,612	261	19,211
2002-03	1,641	235	24,293
2003-04	1,573	200	21,949
2004-05	1,632	266	24,076
2005-06	1,267	245	15,832
2006-07	2,440	887	36,019
2007-08	4,264	2,049	77,864
2008-09	4,703	2,605	92,229
2009-10	7,738	3,944	131, 103
2010-11	9,165	2,359	139,219
2011-12	15,819	4,102	239,951
Cumulative-March 2012	**1,90,895**	**20,909**	**20,42,288**

Note: Data presented in the table relate to micro and small enterprises up to 2005-06. From 2006-07, in addition, data regarding the newly registered medium enterprises are also included.

Source: Commissionerate of Industries, Andhra Pradesh, Hyderabad.

2.1.7 SMEs - Trends at Regional and District Level

The analysis attempted is for three limitations – quantity of initiatives, permanent investment besides employment, for the period 1995-2012 (18 years). Disaccumulated image of the State total obtainable is for three provinces – Telangana, Coastal Andhra, and Rayalaseema. The leading two larger regions of the State have remained more fragmented down to two sub-regions every – specifically, Hyderabad sub-region (4 districts), rest of Telangana (6 districts), North Coastal Andhra (5 districts), and South Coastal Andhra (4 districts).

In totality the three strictures, noticeable location of Telangana region is obviously observed in respect of micro in addition to small initiatives. This is together owing to high development rates besides high shares, mainly pushed by high levels of presentation of the Hyderabad area.

Table 2.5: Registered Micro, Small and Medium Enterprises in A.P

Table: Growth of MSMEs in Andhra Pradesh – District-wise and Region-wise

(2006 and 2012) (cumulative picture for the year ending March)

Sl. No.	District / sub-region / region	No. of enterprises			Fixed investment (Rs. crore)			Employment (persons)		
		2006	2012	CAGR (%)	2006	2012	CAGR (%)	2006	2012	CAGR (%)
1	2	3	4	5	6	7	8	9	10	11
1	Medak	4589	7187	7.8	344.6	2118.6	35.3	51603	116608	14.6
2	Hyderabad	14412	18623	4.4	235.4	659.6	18.7	110484	180076	8.5
3	Rangareddy	18091	31053	9.4	1119.5	6257.8	33.2	169456	392600	15.0
4	Mahabubnagar	3268	4900	7.0	113.1	688.1	35.1	28915	50306	9.7
(A)	**Hyderabad region**	**40360**	**61763**	**7.3**	**1812.6**	**9724.2**	**32.3**	**360458**	**739590**	**12.7**
5	Adilabad	1816	2252	3.7	51.7	113.0	13.9	18943	23484	3.6
6	Nizamabad	3899	4701	3.2	75.1	230.4	20.5	35432	42145	2.9
7	Karimnagar	4915	5507	1.9	145.7	309.2	13.4	45612	53447	2.7
8	Nalgonda	7446	8940	3.1	218.1	1067.2	30.3	72390	100180	5.6
9	Warangal	6224	7185	2.4	98.4	347.5	23.4	49809	58371	2.7
10	Khammam	4494	5871	4.6	146.4	519.8	23.5	40706	54034	4.8
(B)	**Rest of Telangana**	**28794**	**34456**	**3.0**	**735.4**	**2587.0**	**23.3**	**262892**	**331661**	**3.9**
(C)	**Telangana**	**69154**	**96219**	**5.7**	**2548.1**	**12311.1**	**30.0**	**623350**	**1071251**	**9.4**
11	Srikakulam	4731	5086	1.2	104.7	329.1	21.0	40751	51618	5.6
12	Vizianagaram	3490	3918	1.9	80.9	265.4	21.9	30868	37859	3.5
13	Visakhapatnam	10231	13644	4.9	295.6	1226.9	26.8	81163	144365	10.1
14	East Godavari	8151	11329	5.6	266.2	1484.2	33.2	73315	114478	7.7
15	West Godavari	6897	7671	1.8	247.0	633.2	17.0	61471	73859	3.1
(D)	**North Coastal Andhra**	**33500**	**41648**	**3.7**	**994.4**	**3938.8**	**25.8**	**287568**	**422179**	**6.6**
16	Krishna	8583	10604	3.6	336.9	1083.4	21.5	80458	112923	5.8
17	Guntur	7168	8454	2.8	314.2	831.7	17.6	71882	90630	3.9
18	Prakasam	5290	6636	3.9	171.2	662.6	25.3	51652	71326	5.5
19	Nellore	6130	6651	1.4	106.8	345.8	21.6	60042	67624	2.0
(E)	**South Coastal Andhra**	**27171**	**32345**	**3.0**	**929.0**	**2923.4**	**21.1**	**264034**	**342503**	**4.4**
(F)	**Coastal Andhra**	**60671**	**73993**	**3.4**	**1923.4**	**6862.2**	**23.6**	**551602**	**764682**	**5.6**
20	Kadapa	3829	4950	4.4	77.7	423.2	32.6	33629	47332	5.9
21	Kurnool	4337	4912	2.1	133.4	274.7	12.8	38026	44986	2.8
22	Ananthapur	4696	5581	2.9	122.5	431.4	23.3	40281	49784	3.6
23	Chittoor	4079	5240	4.3	157.9	607.1	25.2	39015	64253	8.7
(G)	**Rayalaseema**	**16941**	**20683**	**3.4**	**491.5**	**1736.4**	**23.4**	**150951**	**206355**	**5.3**
(H)	**Andhra Pradesh**	**146766**	**190895**	**4.5**	**4963**	**20909.3**	**27.1**	**1325903**	**2042288**	**7.5**

Note: Data presented in the table relate to micro and small enterprises up to 2005-06. From 2006-07, in addition, data regarding the newly registered medium enterprises are also included.

Source: Commissionerate of Industries, Andhra Pradesh, Hyderabad.

Presentation of the rest of Telangana depicts decent but moderate performance. Telangana region has, thus, reaped the benefits of industrialisation in the small and medium enterprise sector, much better compared to Coastal Andhra and Rayalaseema regions, which presented inferior level of presentation, besides are below the state averages. Rest of Telangana's moderate progress is also noteworthy. CAGR analysis for 2006-12 district-wise and region-wise reveals as follows. For number of enterprises, as against AP's position of 4.5%, Hyderabad region recorded 7.3%, Rayalaseema 3.4%, Coastal Andhra 3.4%, and rest of Telangana 3.0%. For fixed investment, as against AP's position of 27.1%, Hyderabad region recorded 32.3%, rest of Telangana 23.3%, Rayalaseema 23.4%, and Coastal Andhra 23.6%, with North Coastal Andhra recording 25.8%, and South Coastal Andhra 21.1%. For employment, as against AP's position of 7.5%, Hyderabad region recorded 12.7%, rest of Telangana 3.9%, Rayaleseema 5.3%, and Coastal Andhra 5.6%.

During the 18-year period (1995-2012), performance during the recent five years from 2007-08 has been the best in all aspects. Telangana and Hyderabad regions have shown outstanding performance. Hyderabad area has similarly documented respectable, but reasonable presentation in periods of recession, 2000-06. Growth of fixed investment in 2007-08, 2008-09, and 2009-10 has been 50.6%, 41.9%, and 28.2% for Hyderabad region, while the corresponding figures for Telangana were 44.8%, 38.3%, and 33%, and for the rest of Telangana were 30.4%, 28%, and 48.4%, The corresponding State figures were 35%, 33% and 37.5%. For Coastal Andhra, the figures were low at 25.6%, 26.0%, and 38.3%, respectively. Similarly, in reverence of service also, Telangana and Hyderabad regions scored the highest levels with Coastal Andhra and Rayalaseema lagging behind. In respect of the share of each region to the State total, for fixed investment, Telangana's position has been consistently above 50%, going up to 59%, with Hyderabad region recording 36% to 47%. In the share of employment, Telangana region has been in the range of 46% Hyderabad region recording 27% to 36%. The shares of Coastal Andhra andRayalaseema steadily declined to around 38% and 11%, respectively.

Source:commissioner of industries Hyderabad, MSME survey 2006-07

2.1.8 MSME SECTOR IN A.P and TELANGANA Census Survey 2006-07

Table 2.6: Detailed Analysis of Survey

Micro	Small	Medium	Total
23,489	1381	22	24892

Characteristics	Registered	Share
Number of Working Enterprises	24892	57.50%
Number of Enterprises – closed	13370	30.64%
Number of Enterprises – Non Traceable	5373	12.31%

Manufacturing	22188	89.14%
Services	2704	10.86%

Sector	Share
Manufacturing	67.10%
RandM	16.13%
Services	16.78%
Electricity Dependent	67.00%

Source:MSME Survey 2006=07 page 94and316

2.2 Look Ahead – SSIs in Coastal Andhra, Rayalseema and Telangana

Among the strategies to be pursued for accelerating growth of SMEs, a few prominent ones are presented in this section. Cluster development, export potential, and promoting complementary between small, and medium and large units can be the directions for fostering speedy growth. Another dimension is focusing on emerging and high value added product lines to create wealth. A few emerging areas indicated for the State are: drugs, pharmaceuticals, information technology (IT and IT enabled services and business process outsourcing – BPO), bio-technology, nanotechnology, leather, textiles, garments, electronic hardware and telecommunication equipment, agro and food processing, and mineral-based product lines, gems and jewellery, apparel parks, etc.

Cluster approach for modernisation, and overall planning for a group of enterprises in product lines which have the potential for development is being practised in many locations in the State, on the pattern being followed in other parts of the country. This will also result in greater degree of dispersal of industries in smaller towns, apart from growth centres which are reasonably well developed in earlier years. A few product lines in this category for cluster approach in the State are: cashew processing, mango jelly, fruit canning, biscuits and confectionery, marine foods, brass metal works, cast brass hardware, aluminium utensils, steel furniture, automobile industry, agricultural implements, ceiling fans, distribution transformers, wooden toys, steel rolling mills, wooden furniture, etc.

The Vision 2020 document for Andhra Pradesh1 envisages a growth rate of 10.3 per cent per annum total state domestic product (GSDP), and a nine-fold increase in per capita income over a period of 25 years (1995-2020). The share of industry in GSDP is envisaged to upsurge from 18 per cent in 1995-96 to 21 per cent in 2020-21. Though this target appears to be modest, it implies a 13 fold increase in 25 years, and an annual growth rate of 11 per cent for industry. It envisages an speculation of Rs.11,65,000 crore over a period of 25 years. The capital-output ratio works out to 6.85, and the industry sector is expected to absorb 18 million workers by 2020 from a low base of 3.5 million workers in 1995. The elasticity of employment with respect to value added in industry comes to 0.25, These directions need to be kept in view, while pursuing investments, domestic as well as foreign. SME sector has an eminent role to play in the emerging scenario.

The key challenge in future years for the SME sector is remaining competitive while continuing to ensure employment intensity of operations. While there is need to devise appropriate strategies for the sector as a whole, there is greater recognition of the need for

sector-specific policies and interventions. Innovation, research and development, quality assurance, aggressive marketing strategies, and export-led growth in labour intensive product lines, reflect the demands of future periods.

Chapter 3

REVIEW OF LITERATURE

3.0 Introduction

Electricity is a major powerhouse of economic development and the extension. Indian Economy mainly be governed by the obtainability of substructure amenities comprising Electricity. The Growth of Power Sector improves the economic growth of the nation.

The Indian Power division has observed important variations since early 1990's. Sustained power shortages, poor operative presentations, hazardous monetary condition of State Electricity Boards encouraged number of policy as well as supervisory changes. The Indian Electricity Sector has seen main variations with respect to application of Regulation, opposition and supposed role of private sector. As in the case of other nations, reforms were familiarized in power sector due to impracticable State Electricity Boards.

Successful regulation and regulatory reforms improves the capability of the sector to endorse public interests and improve credibility and effectiveness. It is necessary to use regulatory powers, apply instructions, clearly use market inducements, goal grounded guideline and regulatory impact assessments for improving effectiveness and achieving reduced costs and brining in competitiveness.

- Government of India has promulgated in 1998 establishment of Central Electricity regulation commission and state electricity regulation commission and thus initiated an independent, transparent, accountable electricity regulatory frame work in the country.
- In this context a study on the Regulatory frame work and basic content of Regulatory governance and Regulatory substance, the role and responsibilities of Central Electricity regulatory Commission, Experience and influence / impact of the state electricity regulatory commission on the utilities in refining the presentation of the power sector in A.P is essential.

Literature pertaining to the topic "regulation and reforms in power sector" plays a very important role for tapping more information vividly, relatively and elaborately. Therefore the study of literature is very much essential for any research work of any area to a research scholar. This literature study gives more inputs to bring in creativity and offers more scope to

study the opted topics in depth so that outcomes of the results would be more fruitful and useful both for the researcher and to the power sector. This dissertation aims to identify, analyze and examine the performance indices of independent regulatory agency and related issues of independent regulatory system. Further examine the impact of regulatory system and effectiveness on MSME Industrial sector in the state and improve the sector outcome.

3.1 PRINCIPLES OF GOOD REGULATION

Good regulation should serve;

1) Evidently recognized policy objectives also be effective in attaining those goals,

2) Has a comprehensive legal foundation,

3) Produces profits that validate costs, bearing in mind the delivery belongings across society,

4) Minimalize budgets and market misrepresentations,

5) Endorse invention through market inducements and goal based tactics,

6) Be clear, modest and useful for user,

7) Be consistence with regulation and policies,

8) Be well-matched as far as conceivable with effectiveness, trade and speculation facilitating, principles at domestic and global levels,

9) Create real and trustworthy mechanisms.

Regulatory reforms, reviews and regulatory impact analysis are essential to assess the aids, charges besides distributive influences of directive, substitute methods and suggestions for supervisory improvements. SSI's are important source of innovation, new jobs and flexible source to superior companies. Regulatory reforms reduces business burdens and Increases the transparency, support entrepreneur ship and market entry.

This part of the dissertation provides the basic dimensions of regulation (power sector) Meta Principles of regulation, Bench marks for regulatory governance and substance, the performance indices, the institutional requirements distinctive features, guiding principles of regulatory commissions and the past experiences and their research contribution. It highlighted the research gaps and research questions.

3.1.1 POWER SECTOR RESTRUCTURING IN INDIA

SA Khaparde, IIT Bombay "Power sector restructuring in India" says that power sector through the world is experiencing a lot of rearrangement. India is no exemption. The entire of the power production in India is experiencing a state of flax. The necessity for rearrangement the power sector was sensed owing to shortage of monetary possessions obtainable with Central and State Governments besides requirement of refining the Technical and commercial competence. In certain states of India there are numerous secluded services which are theoretically as well as financially in a point to come into the stage of a competitive electricity market. Hence in 1998 the Regulatory Commissions were made under the electricity regulatory commission act 1998 (Central Law) encourage competition, effectiveness and economy in the actions of Electricity Industry. Central electricity regulatory commission (CERC) has important role in justifying tariff of Generating corporations possessed or measured by the Central Government. Ministry of Power has assumed faster power development besides reforms programmed (APDRP) from the year 2000-2001 with the like purposes of financial improvement in electric circulation and improvement in superiority of supply. Electricity Act 2003 has come into force from June 2003. As this act allows third party sales, it presents the idea of dealing bulk electricity. This act also offers open admission to transmission as well as distribution of Electricity.

Though the problematic power sector with reverence to obtainability of quality power at realistic worth is still a dream in numerous states. In this situation it is essential to scrutinize the role and accountability of the supervisory sector / commissions in addressing, resolving and development of the presentation of the power sector in India. Number of studies have been directed in the area power modifications, but the consequence and impact of regulatory bodies after founding of independent regulatory outline in AP State is not precisely detected in the previous studies.

Evaluation of literature in progress with the objective of examining the consequence and impression of supervisory agencies in electricity sector in AP State besides study the presentation related matters of the regulatory system in AP.

The Indian government made a step for restructuring the sector and formulated important electricity acts such as: the Indian Electricity Act, 1910, the Electricity (supply) act, 1948 and

the Electricity Regulatory Commissions Act, 1998. The Electricity Act 2003, enacted by the parliament of India. The main features of the Electricity Act 2003 are: private transmission licensees, distribution licensees would be permitted to commence generation, transmission at the central and state level. Generation is being delicensed and captive generation is freely permitted. This leads to the involvement of private sector into the power projects to increase the investment (GOI, 2005b).

Regarding the investment the International Energy Agency (IEA) assessments show that India would need US $665 billion as reserves in the power sector through the period 2001-2030. Nevertheless, the power sector has been at distress from severe problems which remained acknowledged as much as ten years ago. Nonetheless a number of remedial procedures have been taken, they have yet to yield the anticipated results. The main obstacle for the fast development of the subdivision is that no state power board is improving the full cost of power delivered with the result that makes incessant losses on their total operations. These losses cannot be made good from state budgets, which are themselves under severe monetary strains, and the consequence is that the SEB‘s are famished of funds to fund expansion and characteristically end up even abandoning essential preservation. The annual losses of SEB‘s at the end of ninth plan are assessed at Rs 24,000 crores.

According to the National Electricity Policy, total village electrification is to be made by 2010. Peak demand at the end of Eleventh Plan and Twelfth Plan is projected as 1, 57,107 MW and 2, 12,759 MW respectively. The government has reserved an enterprise for enabling the expansion of few ultra mega power projects of about 4000 MW capacity each under tariff based competitive bidding route using super critical technology and also merchant power plants. More than 80,000 MW of new power capacity is currently under construction in India. Most of this capacity addition will see the light of day in the 12th five-year plan beginning April 2013. The 12th Plan envisages a total capacity addition of nearly 1,00,000 MW. At present, the installed power capacity from all sources of power is a little over 2,00,000 MW.

3.1.2 REGULATORY EVALUATION

An appropriately tailored regulatory assessment process is of great importance in Electricity Sector for identifying the gaps and increasing the sector performance and sector outcome.

Ashely C. Brown, Jon Stern, Bernard Tenembaum with Defence Gracer of World Bank Washington DC have indicated the process of conducting regulatory evaluation, providing

real-world supervision on scheming and applying transitional regulatory system. The supervision is typed to real world problem, that have remained experimental in World Bank client Countries, while still endorsing the serious meta philosophies of reliability, legitimacy and transparency. This hand book deliberates the assessment approaches in detail besides delivering a set of assessment tools. These tools include surveys, interviews besides model terms of orientations. It says that any assessment of regulatory efficiency must inspect the complete regulatory system, not just the features and actions. The two basic magnitudes i.e., Regulatory supremacy and Regulatory material are to be dispensed in detail. Regulatory governance is the law of regulation. It includes the conclusions about the liberation and answerability of regulator, the relationship amongst the policy maker, policy assembly. The transparency of decision making and the predictability of the decision making are critical.

Regulatory substance is the content of the regulation. It involves decision about tariff levels, structure, and quality of service standard, automotive and non-automotive cost passthrough mechanism, public participation, network access condition implementation, periodic report requirement.

3.1.3 REGULATORY SUBSTANCE AND GOVERENANCE

Two important dimensions of regulation (power sector)

1) Governance - How of regulation ?

2) Substance - What of Regulation ?

Governance Involves:

- Liberation and responsibility of the Regulator.
- Association concerning the Regulator and the policy maker.

a) Autonomy

b) Process: Formal or Informal

c) Transparency

d) Predictability

e) Accessibility

Substance involves:

a) Tariff Levels

b) Tariff Structures

c) Automatic and non -automatic cost pass through mechanism.

d) Quality of service values

e) Handling of customer grievances

f) Investment or connection responsibility and reviews.

g) Network access circumstances for new and existing customer.

h) Accounting organizations

i) Periodic reporting necessities.

j) Social obligations.

3.2 OECD RECOMMENDATIONS

The OECD "2012 Recommendations of the council on regulatory policy and governance.

Angel Gurria Secretary General of the OECD said in Foreword that the new OECD recommendation represents the insight acknowledgement and these recommendations were developed over a 12 month period through extensive engagement with civil society, TDAC, BIAC, OECD countries for implementing systematic regulatory reforms.

Gory Bank AO Chair Regulatory policy committee OECD that these recommendations will facilitate the development of bench marking practices and provide a frame work for better regulatory governance when capacity is currently low.

Recommendations of the council on Regulatory Policy and Governance:

1. Obligate at the maximum political level to an obvious whole-of-government policy for regulatory superiority. The policy must have strong purposes and frameworks for application to ensure that, if directive is used, the monetary, and social besides environmental welfares justify the costs, distributional belongings are measured and the net welfares are exploited.

   Regulatory policy must comprise an inclination for presentation based regulation, besides ought to facilitate the effectual functioning of the market.

2. Follow to ideologies of open government, counting transparency and contribution in the supervisory procedure to guarantee that regulation helps the public attention and is knowledgeable by the genuine needs of those involved in and affected by directive. This comprises providing expressive occasions (including online) for the public to subsidize to the procedure of preparing draft regulatory suggestions and to the class of the supporting analysis. Governments should guarantee that guidelines are understandable and clear and that parties can easily comprehend their rights besides responsibilities. Present regular presentation calculations of guidelines and regulatory systems, captivating into account, amongst other things, the influences on affected parties and how they are observed. Communicate the consequences of these valuations to the public.

   All rules should be effortlessly available by the public. A comprehensive and up-to-date jurisdictive then regulatory database must be freely obtainable to the public in a searchable arrangement through a user-friendly interface over the internet.

3. Create apparatuses besides institutions to vigorously deliver oversight of regulatory policy actions and goals, sustenance and implement regulatory policy and thus foster regulatory superiority.

4. Regulatory effect Analysis must as far as likely be made publicly obtainable along with regulatory applications. The examination should be arranged in a appropriate method and contained by adequate time to gain input from stakeholders and contribution political conclusion making. Good exercise would include using the Regulatory impression Analysis as part of the discussion process. When resounding out a valuation, administrators should, assess the impact on small to intermediate sized enterprises besides demonstrate how managerial, administrative and compliance costs are minimized.

5. Conduct methodical programmed appraisals of the stock of important directive in contradiction of clearly defined policy goals, counting consideration of costs and welfares, to ensure that guidelines remain up to date, cost –justified, economical and dependable and delivers the envisioned policy purposes.

6. Frequently publish reports on the presentation of regulatory strategy and reform programmers besides the public establishments applying the regulations. Such reports would contain information how regulatory tools such as Regulatory impact Assessment (RIA), public discussion performs and evaluations of existing regulations

are effective in practice.

3.2.1 REGULATORY IMPACT ANALYSIS

Regulatory reforms, reviews and regulatory impact analysis are essential to evaluate welfares prices besides distributive influences of regulation, substitute tactics and proposals for regulatory reorganizations. SSI's are important source of innovation, new jobs and flexible supply to larger firms. Regulatory reforms that decreases occupational burdens besides upsurging the transparency, provision for aggressive entrepreneur ship and market entry.

What is desperately needed in the Indian Electricity Sector is an independent, objective and fully informed analysis of existing regulatory system and then develops a second generation regulatory reforms that practically advises on how to develop recommendations for improving the system. Another important thing is to review the regulatory sector against the Principles of decent regulation after the opinion of the user section rather than that of the regulator.

3.2.2 PERFORMANCE OF REGULATORY REFORMS

Reforms are aimed to reduce business burdens and increase the transparency of the regulatory regimes, supports entrepreneur ships, market entrance, financial growth and endorse public interest.

SME's are significant source of innovation, new jobs and flexible supply to greater organizations in today's surroundings. Yet increasing supervisory complexity and costs disproportionality inhibit SME's start up and expansion. Regulation restricting competition and trade effects the enterprises (SME's). To add structure, rigour, transparency of the regulatory commission, regulatory impact analysis (RIA) is essential.

However the regulatory variations have fetched some degree of transparency to the

tariffs making process. Public hearing have been able to give some voice to the consumers. The umbilical association of the power segment with administration have raised anxieties about the individuality of the supervisory system. Concealing besides window dressing of the income gap by the ERCs only carryon the gaps to the future years. Lack of appropriate and verifiable data creates ample problems for regulators as well as industries. But the APDRT programs act as a inducement to Induce favorable expansion. The long term sustainability of the sector / reforms would depend upon the political will to cut umbilical card of politics concerned with power sector.

3.2.3 PRAYAS ENERGY GROUP COMMENTS

A study of prayas a leading Indian NGO (2003) Indicates that new regulatory commissions have suffered from inadequate funding, inadequate resources problem with appointment and continuity difficulties in enforcing compliance. Also transparency and public participation are not adequate. The following are bottom line of any regulatory system:

Capital Investment, Price Levels, Service Quality, Customer Satisfaction, Productivity gain, expansion of basic services and subsidies reaching the poor. If the new autonomous regulatory organization does not subsidize to good consequences particularly from the customer perception the reform package and its controlling mechanisms will be unsustainable.

3.2.4 ENERGY AND MINING SECTOR BOARD DISCUSSION PAPER COMMENTS

Ranjit Lameck AND Kajin Saeed (2003) "Energy and Mining Sector Board discussion paper 6 World Bank Washing ton D.C. P.10. In many developing and former socialistic republics the decrease of theft besides defaulting on power circulation organization is a Major Apprehension. For instance in India where theft, non-billing besides non- gatherings have been widespread, it has remained assessed that in some situations only 1 Kilowatt Hour (1 Kwh) essentially is composed from Paying consumers for every 2 KWH produced by Generators. The same is true in Nigeria.

3.2.5 PVT SECTOR IN POWER INFRASTRUCTURE

A.Kampurira E Root, D and Sharkantu.S some new factors which determine Private Sector involvement in infrastructure are the development status of the enabling legal and regulatory environment. Project risks involve legal risk for investment in the country generally and with respect to specific infrastructure.

Though the power transmission section has released to private speculation in1998,there has been only a partial success in appealing private asset (An official assessment rendering to the planning commission this year GOI 2010 3.327.

3.2.6 REGULATORY PRIORITIES

Jaskow (1998b) in "Regulating Priorities for reforming infrastructure World Bank Conference 1998; The key attribute of good regulatory institution and the basic requirements when designing the independent regulatory commission or independence, transparency, accountability, expertise, credibility, efficiency and performance. The Independent regulatory system however brought some amount of transparency in the functioning of regulatory commission which was absent in the previous system.

Sankar and Ramachandra (2000) in Regulation of Indian Power Sector in ASCI Journal of Management 29 (2) articulates that the significant lacuna in the recognized arrangement that carries about modifiable construction are the independence, financial dependence of supervisory bodies on the Government, Influences to assign or influence the employment of members of supervisory establishments and "missing teeth" to recuperate those who endure to evade regulatory orders. Scheming and window covering or revenue gap by some of the state commissions have default tariff hikes for the consumer over machineries like regulatory asset and deferred funding. They carry onward the revenue gap to a upcoming year to be completed good either by competence advances or is additional to forthcoming revenue necessities. These two elements serve as regulatory tool to bail out Government by vending tariff heights to the customers.

Jaskow P.L. 1998 (A) says in the Electricity Act 2003 scenario, large customers who would have prospective to tap cheap electricity out of the Organization of State utilities would endure to contribute in the direction of a cross sponsorship supplement till this is eradicated from the organization in a time bound method.

3.2.7 OBSERVATIONS IN WORLD-BANK (2001) REPORTS

Powell and Starker (2000) in World Bank reports (2001) have observed that metropolitan poor view a great change of profiting from power sector improvements. For the rural poor off grid explanations are mandatory. World Bank studies have discovered the readiness to pay for excellence power. This increases misgivings about enduring with sponsored values for all customers in agricultural besides certain categories and propose better directing of power funding to needy customers (SSI Sector) only and effective monitoring.

Dubash and Rajan (2002): World resources institute Washington DC. PP11-30 they articulated anxiety about the letdown of market led power sector improvements process in Emerging countries to take into about the social and ecological concerns.

Pollit (1997) Kwoko (1996); journal of energy literature III 2, P 31 in "performance based regulation" says prices are not meaningfully low in private electrical conveniences as associated with their public counter parts.

Me Berry (2000); Privatization and regularization of Network utilities; European Economic review 41 P 357 to 383 says concerning wholesale electricity market that modest bulk electricity marketplace seems to be a essential step for improving competence and transporting such gains to customers.

Barron D.P and Myerson R.B (1982), Alexander and Harris have highlighted the info problems, in perfect evidence posed noteworthy regulatory risk in setting T and D losses, inducement instruments built with multiyear tariff is useful in addressing the regulatory risks.

Little child SC (2000) talks about competition and De Regulation. They say that Regulation is necessary but temporary measures until effective D regulation concerning modest primate firms can remain presented.

3.3 NERA OBSERVATIONS

NERA (National Economic Research Associate 2004); observed that Regulatory Impact Assessments (RIAS) are characteristically achieved beforehand the directive is accepted by the Government Activity accountable for the precise regulatory action. In dissimilarity the regulatory assessment are intended to control whether a current regulatory organization encompassing its supremacy preparations are actual substantive choices could be better-quality to find better sectorial presentation.

3.3.1 EBRD (2004) COMMENTS

EBRD (2004) PP 37 to 43 observed that only 50% of infrastructure regulators in evolution economies essentially continue in workplace for their fully allocated terms. At least a number of of them left for the reason that of political pressures. 30% of decisions made by regulators were over turned by Government.

3.3.2 ELECTRICITY TARIFF IN INDIA AND THE CONCERN

Kaur Sachin "Cautious Optimism "The Indian Power Sector IP of December (2005), observed that Biased Tariffs in India continue to be a apprehension as they do an indefensibly extraordinary cross funding which does not shelter cost of facility establishment. Indeed low tariffs infrequently benefit India's poor, greatest of who lack admission to provide power to predominantly in rural areas.

3.3.3 SL RAO'S OBSERVATIONS AND INSTITUTIONAL REQUIREMENT'S

S.L. Rao (2001) institutional requirements required for regulatory commissions are:

- Independence
- Accessibility
- Transparency
- Professional Expertise
- Timely and quick disposal

Major objectives of Regulatory systems are:-

- Create and nurture conditions under which all consumers would be provided electricity of the appropriate quality at the most competitive cost.
- Create conditions under which the investor both public and private would be encouraged to invest in power sector.
- Protect Consumers from any Monopoly market powers.
- Lay down operational and safety standards in power supply.

The Electricity Act, 2003, introduces many new initiatives since it frees generation capacity creation from regulation' introduces such a loose definition of 'captive generation' that it is now possible for many users to part of a captive generator and enjoy open access surcharge

and wheeling and no permissions required as would have been the case for third-party sales; mandates open access to transmission; recognizes electricity trading as a distinct activity; and ensures coordination in generation and transmission tariffs among a host of initiatives that should help add to capacity and its utilization. Over five years of independent central electricity regulation, the CERC has introduced many new initiatives.

Electricity Reforms have followed three main variants as with Australia which were regarded as a variant of the US model.

3.4 FRAMEWORK FOR ASSESSING REFORMS AND REGULATIONS

Frame work for Assessing Reforms and Regulations:

In current years substructure in emerging besides changeover markets three related problems.

- Chronic under investment – instigating noteworthy decline in service quality and extremely undermining providing aptitude to reply to new burdens, besides enlarge service. As a result big potion of Rural and Urban populations lack admission to basic facilities.
- Under Pricing –through together the level besides construction of values contradictory with commands of financial effectiveness and questionably with social impartiality as well.
- Extra-ordinarily low functioning and financial presentation – with incompetent public efficacies demanding state Budget, distracting capitals from other essential facilities (such as health and education) and imminent domestic financial development and global competitiveness.

  Dissimilar sectors demands dissimilar improvements. One model does not fit all.
- Electricity Rearrangement besides Denationalizations are more difficult in emerging and changeover economies.

  Comprehensive opposition has functioned well in industrial markets because of additional volume, uncertain demand growth besides the obtainability of gas that permitted the entry of gas filed plants at modest scale and comparatively low cost.
- In comparison electricity markets in numerous emerging and transition economies surface capacity shortage, additional response and periodic black out. The current

familiarity in the US state of California demonstrations, how market liberalization under circumstances of light request can generate serious problems-market accusing prices are diplomatically intolerable and will probable derail efforts at radical liberalization.

- In maximum emerging as well as evolution economies electricity values have traditionally been low and their rearrangement with underling costs have been prohibited by representatives (in numerous emerging countries efforts to raise tariffs all through severe power scarcities have led to riots) private applicants facing noteworthy sunk costs would unsurprisingly request credible promises that upcoming charges would deliver satisfactory income. But most of these nations have not realized the supervisory mechanism to deliver such commitments.

3.5 THE EVOLUTION AND ELEMENTS OF EFFECTIVE REGULATION

The evolution and elements of effective regulation:

- Dependable, stable directive is compulsory to accomplish the assistances of privatizing and slackening substructure.

Example: Electricity Regulation in the pricing of transmission services in Argentina – Repeating U.S. mistakes

Elements:

- Coherence
- Independence
- Accountability
- Transparency
- Predictability
- Capacity

Source

World Bank Reports (Reforming Infrastructure) Privatization, Regulation and competition

3.6 REGULATORY IMPACT ASSESSMENTS

Author: Ioannes and N. Kesssides

Irwin and Yennamoto concluded that biggest improvement in the state possessed creativities are additional expected to originate from variations in the business Governance system than in the regulatory organization some possibilities for cultivating the supremacy of state owned electricity utilities (RIAs) Regulatory Impact Assessments.

Reference: UK Cabinet Office (2003) and Kirk Patrick, Parker and Zhary (2004)

3.7 TARIFF TO AGRICULTURAL CONSUMERS "COMMENTS OF MADHAV GODBOLE"

Madhav Godbole (1998) in Private Generation – un resolved issues economic and political weekly February 7-13 Volume 33 PP 255-256. In his article argues that serious efforts should be made for reforming the power sector. He vehemently criticizes the lower tariff to agricultural consumers, and the consequent cross subsidization.

He says that it desires logic to hear the union power minister making statements time and again that even after the regulatory commissions are set up by the State Governments, they will be free to charge lower tariff to agricultural consumers by providing explicit subsidy from the state budget. In spite of setting regulatory commissions to harp on the point that the state Governments could continue to subsidies the tariffs to certain sections to say the obvious and negate the very basis setting regulatory commissions.

3.7.1 MULTI YEAR TARIFF

T.L. Shankar (2003) discusses the issue of cross subsidy and surcharge in his research study. A multiyear tariff was requested by every new prospective investor in power generation and distribution, as investors were discouraged by different ERC's which fix the tariffs each year and sometimes by the commission which adopted different principles in different years. The problem has been referred to as "Regulatory risk and regulatory uncertainty. This can be remedied by giving a multiyear tariff. It is argued that multiyear tariff should fix the tariff detail in one year and indicate certain levels of norms to be adopted to determine the required revenue in subsequent years say for five years.

But discoms are unable to present a well-documented T and D report; the regulator is forced

to fix the same loss for the tariff year in an adhoc manner.

3.7.2 INFORMATION ASSEMERY- TARIFF SETTING

Ranganadan (2004) in his study discusses the difficulty faced by the Regulators in setting the tariffs due to information asymmetry which is a serious handicap for the regulator to set up the tariff. The regulators do not have the full list of consumers of all agricultural connections that are unmetered and therefore their consumption has to be estimated. In big cities like Delhi some 10-20% of consumers is illegally connected and are not as the books of SEB and some 30-40% of the meters in urban area are either defective or unread. This information asymmetry between regulator and utilities creates a situation of bargaining and negotiation without a data base.

(Ranganadan V "Electricity Act 2003-Moving to a competitive environment" economic and political weekly may 15-21 2004 Vol 39 PP 2001-2005.

3.7.3 MISSING LINK BETWEEN WHOLE SALE PRICES AND RETAIL PRICES "CALIFORNIA CRISIS"

"Blun Sack Seth, (2005) while giving an account of US Electricity reforms, discusses about the missing link between wholesale and retail market prices, by giving the example of California. In California retail prices remain fixed while wholesale prices were allowed to fluctuate. The result was the bankruptcy of California as two largest utilities and also rolling block outs when the California ISO was faced with shortages.

In San Diego in the after math of power crisis in summer of 2000 customers bills skyrocketed and politicians forced San diego Gas and Electricity Companies to reinstate the ole regulated rates. Much of the Massachusetts is about to embark on a bold experiment in real time pricing, with its default retail prices no longer regulated, and few if any alternatives suppliers willing to serve the Massachusetts Markets.

"Blun sack Seth, APTJ, Lave Lester B" a Cautionary Tale – US Electricity Sector Reforms economics and Political weekly December 10-16 2005 Vol-40 PP 5279-5289.

3.7.4 EFFECT OF POLITICIANS PRESSURE ON TARIFF : TN THAKUR

T.N. Thakur Chairman Power Trading Corporation says that "often political pressures make it difficult for Regulator to adjust tariffs. This affects projects financial viability despite raising cost. CERC's Chairman says in 1991-92 the gap between the average realization /unit and cost of supply was around 20 Paisa. By 2006-2007 it had gone up by nearly 50 Paisa and in 2009 was close to 80 Paisa/Unit which means not only the situation worsened the pace of deterioration has quickened. The tariff were not increased for many years, to keep the promise to voters but the loss of state utilities have sky rocketed from Rs. 500 Corers in 2009 they are expected to increase to 1.5 Lakh crores by 2012.

Going by the regulators grievance in April 2011 conference, meeting power sector reforms have been a dismal failure.

(Business out look July 23rd 2011).

3.8 A STUDY OF INTERNATIONAL PRACTICES AND INTER COUNTRY COMPARISONS

3.8.1 MAJOR VARIANTS/VARIABLES

Major Variants / Variables:

- Nature of partnerships
- Accountability and control over the regulation
- Competition regulation
- Effectiveness
- Role of Governments and Regulatory commissions in tariff issues.
- Price Regulation
- Distribution
- Structure and composition of REC's

3.8.2 U.S MODEL

The US Model:

In this prototypical, private-investor-owned conveniences control electricity generation and other downstream actions. Though, regulatory interference Public Utility Regulatory Strategies Act, in the case of the US) has led to opposition in comprehensive as well as retail marketplaces and moderated this dominance. The main features of this model are listed below.

- The production and T and D (transmission and distribution) of electricity are vertically incorporated.
- There is an recognized existence of autonomous power producers in addition to trading in electricity.
- The manifestation of federal besides state-government –owned services is minuscule (Grey 1996).
- The federal nature of the US rules this model. The states set their own development policies. The state utility commissions establish entry rules and incentives to bring in more competition and lower consumer prices.
- At the federal level, the FERC (Federal Electricity Regulatory Commission) sets prices in the US for interconnected transmission services.
- Transmission capacity in the US is inadequate, as are inter-state connections.
- There are instances of regulatory laxity and confusion as in California in 2000, and with the FERC in regulating inter-state trading or pushing for inter –state transmission connections, etc.,
- Independent LDCs Load despatch centres) in the US are owned by members of the system but inter regional regulation is weak.

Australia,

1. Introduced in Australia in the mid-1990s, electricity improvements have happened at individually the state and national levels. The national government has played a more activist role done over the founding of a national grid and a national pool. (A pool for electricity raises to the corresponding of a stock exchange in financial markets.

2. Since electricity is not recognizable like the script of a company, all electrical energy abounding besides required is pooled composed and the LDC keeps track of who provided how much and who drew how much.) The national governing regime is light-handed and a form of price directive has been applied to the measured sectors (Baijal 1999). The national

electricity code creates the supervisory besides operational framework of the new Australian electricity market in addition to binds all contributors in the wholesale power group market to specified rules. The code addresses market rules, grid connection and access,
Metering, network pricing, system security, and measures for code administration.

3.8.3 U.K MODEL

The UK model

The UK has three distinct and contrarily organized electricity markets in

1. England and Wales,
2. Scotland, and
3. Northern Ireland (with no physical connection to Great Britain and without having achieved a market opening yet).

The Electricity Act (1990) shaped the market organization of England, Wales, and Scotland. Before improvements, the Central Electricity Producing Board held the monopoly for generation and transmission.

Area boards had comparable monopolies for circulation. Competition was presented by sorting out generation, transmission, and delivery and by adding intermediate systems that allowable the cheapest producer to produce more by existence able to vend more to the network and by agreements between generators and large customers. The achievement of the UK model is credited to a well-structured and sequenced regulatory and unbundled scheme and the maturity of the rationalized machineries that improved depositor confidence in their potential effectiveness, thus cumulative speculation in the sector. This led to more competition and, subsequently, better efficiency.

3.8.4 LATIN AMERICAN MODEL

Chile

Chile and Argentina are further or less undistinguishable as far as electricity directive is worried. There are four stages into which the reorganizations in Chile can be divided.

- Phase I contained of recurring nationalized corporations to their original owners.
- Phase II tangled selling the nationalized corporations for generation of incomes for the government.
- Phase III was the maintenance phase.
- Phase IV initiated the power sector reforms (Baijal 1999).

While, previous to the reorganizations, the sector was mostly vertically integrated, it is now vertically separated through competition in generation and supply. The rearrangement allowable open entry to contribution in the generation area, but deprived of any source or purchase responsibilities. New producers had to depend on the market for sale of their power. The LDC dispatches the organization rendering to an economic value order and controls SRMC (short-run marginal cost) of the organization. During the early years, broadcast continued a monopoly. Producers had right of admittance to the line if capability was obtainable, matter to payment of wheeling custodies to be strong-minded by the regulator. Distribution essential a license that was decided under an inexpensive bidding system.

3.8.5 VALUE OF PARTNERSHIP

Discussion of the three models Nature of partnership

Is the electricity sector in each of these reform models vested in the public or the private or the public-private realm? What is the functional relationship amongst these?

The US model In the US,

- 80% of the electricity is supplied by private investor- owned utilities,
- 10% is supplied by federal-government-owned utilities, and
- 10% is supplied by state or local government facilities and cooperatives.

The UK model

All the electricity companies including the transmission company (that cannot have generation interests) are privately owned. The separation (unbundling) of entities can be seen in England, Wales, and Northern Ireland but in Scotland the utilities are vertically integrated.

The Argentina model

In Argentina, the state utilities were vertically separated and privatized by dividing them into generation, transmission, and distribution utilities.

Nature of regulation

What is the nature of regulation amongst different countries in terms of the directions to the IRAs (independent regulatory agencies) and the federal-state division of powers?

The US model

The main regulating entities are the FERC at the federal level and the state public service commissions or public utilities commissions at the state level. Thus, depending upon the nature of activity (inter- or intra-state), it may fall under the purview of the federal or state-level body.

Another aspect of this model is that wide-ranging powers are conferred upon the federal and state' independent regulatory commissions. For example, the FERC is vested with wide-ranging powers to regulate inter-state oil and natural gas pipelines along with bulk sales of electricity and inter-state transmission service. Most state public utilities have jurisdiction over natural gas, water, sewage, and telecommunication and transport. The members are appointed on the basis of political affiliations and the majority is decided in relation to which party heads the administration. It can, therefore, be supposed that they are accountable to the political interests that appoint them.

The UK model

In the UK, the OFFER (Office of the Electricity Regulator) has now been replaced by the OFGEM (Office of the Gas and Electricity Manager). However, we shall refer to it as OFFER. It is an agency of the state (and the regulator reports to the minister concerned) but" is not directly responsible to any government department; it is a non-departmental agency. This reflects the intention that it should operate at a distance from the government on a day-to-day basis. This does not mean that the government will not seek to influence the regulator (indeed,

the government formally shares all the main regulatory powers with OFFER) but it does mean that OFFER does not take political 'orders' from the government, and has sometimes acted in ways that conflict with the immediate desires of the government of the day.

If OFFER is not really responsible to the government, to whom or what is it accountable? There is no clear answer here. Parliamentary scrutiny is limited. Although select committees of the House of Commons may require regulators to appear before them, there is no regular annual review of their activities, and consumers have no independent voice before it."

The DGES (Director-General of Electricity Supplies) is a one-member electricity regulatory agency known by its acronym OFFER (now integrated into the OFGEM). The Electricity Act certainly gives the OFFER (and OFGEM) sole powers to implement the details of regulation (e.g. amendment of the licenses that all electricity companies must obtain) but on all major issues the responsibility is held jointly with the government rather than being vested solely in OFFER. However, the OFGEM is a multi-member body. OFFER's primary regulatory responsibilities are to guarantee that sensible stresses for electricity are content to license contractors of electricity and ensure that they are monetarily viable besides to endorse competition anywhere possible. Consumer protection does not figure directly in this list of primary duties though it does constitute a secondary responsibility. Consumer protection has indeed been the dominant rationale for regulation. But it has been assumed that a competitive market in generation and supply is the best guarantee of consumer protection. (In practice, OFFER publishes every year the results of an independent survey of consumer concerns and the extent to which they are satisfied - or not satisfied.

The Latin American model

The Chile/Argentina model

In Chile, the economics ministry and the NEC (National Energy Commission) and Electricity and Fuels Superintendence (both decentralized agencies that work with the government through the Secretary of Economy) are the main regulating entities. As far as regulating agencies are concerned, Argentina has a different structure. The ENRE (National Regulating Electric Entity) and CAMMESA (Cornpafiia Administratdora del Mercado Mayorista Electrico SA) are the main regulating entities. The ENRE is a sector-specific, autonomous, decentralized organization dependent on the Secretariat of Energy and Mines in the Ministry of Economy and Public Works and Services. CAMMESA was a body created in 1992 to separate the state's role as a regulator (ENRE) from its business role in the market.

3.9 ACCOUNTABILITY AND CONTROL

The regulatory arrangement exists at two levels. On the issue of control through review and appeals, courts interpret laws and determine whether commissions followed the legislative intent and constitutional spirit. Thus the independent judiciary is responsible for judicial control over regulatory entities.

The control from the legislature can operate through legislative intervention, which would lead to a change in laws that define the scope of the commission's operation. Investor rights are ensured by established principles of law as to procedural fairness, due process, and rules of evidence. Consumer rights are ensured by state and federal rules of procedures, which usually permit participation by interested parties in quasi-judicial regulatory proceedings. Many states have public counsels or official consumer advocates who participate in hearings. Large customers are also represented before commissions. Potential entrants may also participate. Legislative hearings provide another forum for discussion of the issues.

The UK model

In the UK, the Monopolies and Mergers Commission is vested with powers to hear appeals from the DGES in certain cases. The DGES has been vested with the power to resolve disputes between companies and customers. It is permitted to make certain decisions against which there is no right of appeal to ensure compliance with license through provisional and final orders enforced through the courts. The DGES is less independent of the executive than regulators of telecommunications, water, or gas (though gas is now joined with electricity in the OFGEM that replaced OFFER).

The Secretary of State has the power to veto any license amendment proposed by the DGES, including price caps. OFFER is accountable to the Parliament, with financial and operational oversight by the National Audit Office and Public Accounts Committee of the House of Commons. The House of Commons Select Committees have no legislative powers but have investigative powers. The DGES must make public certain aspects (for example, all proposals to modify licenses) and is also mandated to invite proposals within a particular time frame. Interested parties can get involved in the consultation process by responding to consultation papers. Consumer groups may participate in the consultation processes. There are 14 consumer committees representing domestic, commercial, and industrial customers within areas supplied by each PES (Public Electricity Supply) in Great Britain. The UK regulations do not provide for

public hearing of matters.

The Latin American model The Chile/Argentina model

There is no federal-state problem in Chile; regulation is carried out by the national government. In Argentina, however, the ENRE regulates transmission at the national level and distribution in Greater Buenos Aires region but, generally, provincial governments regulate provincial distribution. In Argentina, any private individual/corporation whose rights are affected by non-compliance regarding duties of the entity has the right to present legal actions to order the ENRE and/or members of the board to comply with obligations imposed by law. The ENRE is subject to external control pursuant-to the framework established by public controller regarding the ENRE's supervision.

3.9.1 COMPETITION AND REGULATION

Competition regulation

The US model

The Anti-Trust Act regulated by the FTC (Federal Trust Commission) is responsible for enforcing competition. However, competition in electricity is regulated by the FERC at the national level. The FTC might express support as it has done recently in the instance of the FERC order to create a national grid.

The UK model

In the UK, the DGES is the only regulator whose primary duty is to promote competition. The DGES licenses new entrants into supply and generation markets to promote competition. Activities of major generators are monitored to try to prevent anti-competitive practices.

An agreement between the DGES and the DGFT (Director-General of Fair Trading) establishes arrangements for concurrent powers of two regulators regarding competition policy. The Secretary of State creates exemptions case by case after consultation with the DGES and the DGFT. Besides, legislative exemptions are provided under the Restrictive Trade Practices Act.

The Latin American model The Chile/Argentina model

In Argentina, the Ministry of Energy and Mines supervises compliance with laws, regulations,

concessions, and all other aspects related to services rendered by the Electrical Public Service. In Chile, the Anti-trust Commission oversees competition in all sectors of the economy.

Effectiveness

What is the extent of achievement of goals and the future of the commissions in the changing context?

The US model

The utilities in this model are moving towards higher vertical disintegration and increased open access to inter- state transmission systems, which would allow distant utilities or wholesale customers to buy and sell power over transmission lines owned by others.

The same tariffs for transmission and allied services will be charged amongst utilities that would have to apply the same rates to their own wholesale transactions. Utilities are beingFlowed to recover stranded costs of past investments in power plants PPAs (power purchase agreements) and other obligations that would become uneconomic if customer switched suppliers. Another goal towards which the utilities under this model are moving is higher Independence in trading of power and freedom to customers to choose their supplier. The FERC's power to integrate the system through a national transmission grid in expanding; greater FERC control over the grid, and hence over trading and markets, is imminent in coming years.

The UK model

English regulators have been grappling with the criticism of the laxity of the regulatory regime, especially in price control. The regulators are moving towards goals like establishment of a national grid, more choice of suppliers for customers, and increased merger and acquisition activity in the sector due to gradual decrease in the government's golden share in electricity companies.;

The Latin American model The Chile/Argentina model

In Chile, preceding to reorganizations, there were heavy evasions in expenditures by customers, suppliers, etc. and the system was untrustworthy.

There existed heavy losses besides disorganizations. Quick expenditures amplified efficiency/ competition besides transported the tariffs despondent for customers. In Argentina also, the impression of power reorganizations has been very imposing. Previous, the electricity market remained immersed in ongoing technical and financial crises besides unmet request resulted from inadequate supply. Currently, Argentina has excess power, which is being distributed to

neighboring nations. The speediness with which the system was privatized has left some grave problems, which are now being spoke: A feebleness of the supervisory system is that it be influenced by upon rivalry in generation to set prices and fines on operators of TandD to assure facility quality. There have been belongings of disappointment in TandD systems. The price cap guideline does not permit for the assistances of efficiency improvements to be approved on to the rest of the economy through price discounts in the short term (five years). Grid development can only take place if the investment standards of the private sector proprietors are defensible and the recipients are willing to pay. This often leads to under-investment in the sector and, therefore, to a sub-optimal grid.

3.9.2 PRICE REGULATION

Argentina

Price regulations

The ENRE controls the foundation for and favors tariffs for the sector's transmission and bulk of the delivery business.

Its territory contains of (1) the wholesale market, (2) the interconnection network at national level, and the delivery network in the Metropolitan Area of Buenos Aires. Several regional regulatory bodies control the provincial delivery market. The energy ministry is in charge of administering competitive behavior in the wholesale market composed with the market administrator (CAMMESA).

Distribution

The ENRE creates a tariff for circulation efficacies, which integrates presentation criteria rendering to efficiently-run model originalities of comparable zone and vice topographies. Retail tariffs are recognized by indexed re formulae in their business contracts for five-year periods. These are set to cover the cost of acquired power, circulation system operational costs, taxes, and repayment. The tariffs also include a rate-of-return to inspire the competence of the initiative. Large customers are allowable to contribute directly in the extensive market, paying a controlled transport fee to the distribution corporations.

Transmission

Taxes are applied for wheeling amenities and, along with producers' system assembly charges, they cover the transmission classification costs not encompassed in the transmission rates. A

rate-of-return is permissible for the transmission initiative, but may diverge rendering to its competence and cost-reducing achievement.

Corporations have to wage consequences if they do not meet facility excellence criteria. Generation/bulk power advertising in the market, irrespective of possession, must abide by market functioning and assessing rules. The extensive administrator (CAMMESA) uses the prices and obtainability professed by participants to achieve a central load dispatch and to guesstimate hourly spot prices. The CAMMESA analyzes the system short-run bordering price, based on the mutable costs of the plants and the hourly mandate on the system.

3.9.3 ROLE OF REGULATION IN TARIFF POLICY

Role of regulator in tariff policy and determination of rates

The regulator, ENRE, describes the technical security besides Functioning values and controls the foundation for and supports fares for initiatives. The regulator is put in place by the law approved in 1992, and the panel of directors encompasses legislatures of the energy ministry: The CAMMESA is a company in charge of the management and synchronized process of the bulk energy market rendering to established strategies.

Part of the government in fare policy preparation The electricity sector in Argentina is practically absolutely unbundled with a huge number of generation, circulation, and transmission corporations opposing for the dissimilar markets. Maximum of the businesses are in secluded hands, through incomplete contribution of the federal administration in the generation sector.The federal government has limited its contribution in the electricity market to directive, oversight, and policy- making.

Distribution corporations preserve a domination franchise within a definite geographical area. The positions of circulation additional value that leads to tariffs is undoubtedly distinct in the franchise contracts. There is no government character outside the concession contracts.

Brazil

Price regulations

A charge for obtainable volume in the system's VAD (value-added distribution) tariffs is calculated occasionally inside an inducement rate-making framework (alike to the RPI-X system

intended in the UK). Energy gaining costs are passed from end to end. Generation of power has been privatized and is exposed to competition. T and D has also been privatized then regulated. Sponsorships or special reduced tariffs apply for low-income domestic customers plus for rural electricity collectives. The government licenses topographical cross-subsidies across the same concession area to match tariffs in both urban and also rural areas.

In the circumstance of delivery charges, practices comprise structure charges for each voltage level equivalent to long-run average incremental cost, founded on a model system intended to reflect the system features. To deliver incentives in convinced areas, managers use average charges as the basis of cost recovery, as well as other inducement fundamentals to remuneration or discourage good or bad presentation. The practice for setting transmission responsibilities comprises a version of long-run marginal costing in which charges are founded on the prices of new venture needed to encounter incremental use of the system. The system operative describes a set of available charges for the use of the broadcast network on each organized system.

Role of the regulator in tariff policy and determination of rates

The regulator ANEEL (Agencia Nacional de Energia Eletrica) was shaped officially in 1996 to assurance the fairness of charges, monitor excellence, adjudicate conflicts, endorse fair competition, besides ensure that the rights of operators are appreciated. The regulator is accountable for placing in place the preliminary formula for all concessionaires; though, the appraisals desirable at the end of each price switch period are anticipated to be vicarious to state regulators.

The ONS (Operador Nacional do Sistema), Brazil's autonomous system operator, was recognized in 1998. As operator, the ONS is accountable for the processes coordination and regulator of electric power generation and broadcast facilities. The AOS, a non-profit association, is accountable for planning, observing, message, and investment choices in transmission.

Character of the government in tariff strategy preparation after the denationalization of distribution, the government has minute or no character in tariff policy preparation. Brazil confronted severe electricity scarcity and was under limiting in 2001/02, a crisis that occasioned mainly due to the nonappearance of nationwide energy preparation and energy policy strategies. The Brazilian government is demanding to precise this besides is framing policies in this respect. Though, this is additional to do with energy safety than tariffs alone.

Chile

Price regulations

Chile fee parameter shadows the organization of all energy and broadcast charges being fully conceded over. In the case of prices for circulation, Chile shadows a hybrid system that comprises cost plus but with a cap on prices.

Transmission

The transmission initiatives receive profits that cover the long-run, annualized average costs for economically modified system processes. For unregulated power sales, broadcast service tariffs in the consistent systems cover working, conservation, and speculation costs' and a return. Transmission service custodies include controlled association and entry and exit fees in a generator's defined zone of influence.

Generation/bulk power market

Extensive prices are controlled and agreed by the NEC every six months, founded on the utilities' bordering costs for the following 48 months besides make up 40%-50% of a retail consumer's final electricity bill.

Role of the regulator in tariff policy and determination of rates

Role of the government in tariff policy formulation restructuring in Chile was complete in two stages, over 1974-79 and 1979-90. In the first stage, prices were adjusted to permit public efficacies to attain self-financing and make for upcoming private sector input. The besides stage started with the departure of generation of TandD. Legislation meaning out the foremost rules for, distribution, and safety was familiarized in 1982.

Since the founding of market constructions and policy outline, there is no straight price directive or tariff policy preparation. Though, as stated, the regulatory bodies are not 'independent' besides through them the government has a continuing role.

United Kingdom Price regulations

Generation, transmission, and distribution are disintegrated and TandD is controlled by a price cap formula. The regulatory lag is four years for broadcast and five years for supply. The price

appraisal is based on CAPEX and OPEX standards recognized in contrast with corporations functioning under comparable conditions. Generation and distribution are matter to competition. Energy costs are fully approved over to customers; retail competition is fully developed. Under the New Electricity Trading Arrangements, most of the UK's electricity is traded done bilateral contracts ahead of time. Electricity is also merchandized on forward and futures markets and through power connections.

Role of the regulator in tariff policy and determination of rates

In the principal stage of improvements in England and Wales, the regulator played a very significant part in decisive the competence levels wanted and the capital spending payments. The period afterwards price assessment saw one-off efficiency development necessities in adding to ongoing efficiency development necessities. The level of controlling discretion throughout the control period is low but very high at the beginning. A pool for comprehensive exchange was recognized, substituted by new electricity transaction measures in 2000. The regulator presently does not set prices but monitors market power and quality of supply.

Character of the government in price policy preparation. Three main bodies are complicated in the inaccuracy of the regulator: the Rivalry Commission, parliamentary select commissions, and the courts. There is no direct: role of the government in tariff policy formulation.

USA

Price regulations

Competition has been presented in generation. Merchandizing competition is in place in certain states, not in others. TandD have remained conventionally controlled on a cost-plus basis. The regulator typically caps allowable income at a level just adequate to cover costs. Prices have conventionally been founded on a mix of postage stamp and cost-based practices, with an increasing reliance on such methodologies, which may afford better distribution signals. The use of CPI-X incentive mechanisms is common.

Role of the regulator in tariff policy and determination of rates

Though in the US, electricity conveniences consume continuously remained in private hands, they used to be vertically joint. The first step near administrative reform was in 1992 when competition was presented. As a result, TandD were compulsory to deliver open admittance, fair

tariffs, then independent network mistake. Though, the reform policies vary by state, there are dissimilar models of marketplace structure practical to each state. The general difference among federal and state regulators is that the FERC - the national regulator - regulates wholesale markets while the state regulators have jurisdiction over retail markets.

Role of the government in tariff strategy preparation There is slight role of the government in continuing sector processes. The exclusion has been California where, meanwhile the energy catastrophe, the government has transformed market constructions and devices and national part of the industry. Though, as mentioned, California is an exclusion. The national controller, the FERC, is officially prearranged as a part of the Department of Energy. Though, it enjoys a high degree of self-sufficiency in its functioning and policy formulation on operations of power markets is in its area. Structure, arrangement, etc., of electricity regulatory commands in different countries and India'

A comparison of IRAs in some European countries with Australia, Canada, the US, and the UK shows that in almost every country, electricity and gas are regulated by the same agency. The number of members varies from one (in Italy) to nine (in Canada), with the median number being five to seven. The length of appointment is for five to seven years (four in Denmark) with the possibility of renewal in all countries except Italy where a single term is seven years. The sources of funding vary from state budgets, annual fees from regulated companies, tax on utilities, or surcharges on transmission tariffs. Almost all regulate networks and markets, with end-use tariffs being regulated presumably when there are no markets.

Indian legislation has narrow role definitions. Though the regulation of electricity tariffs involves looking at costs, the major cost in thermal is of fuel (coal, oil, or gas) and this does not come within the purview of the electricity regulator. Other regulatory commissions are to be appointed for the purpose-a case of regulatory proliferation! The number of members varies from three in state electricity regulatory commissions (Delhi and Uttaranchal are one-member commissions and the proposed commission for Goa is also likely to have one member) to five in the CERC (Central Electricity Regulatory Commission) of which one member is the chairman of the Central Electricity Authority and hence is non-functional in the CERC. The length of appointment in India is a maximum of five years with no renewal. However, the upper age limit is the qualifier and has led to much shorter terms as is shown by the Prayas survey (PEG 2003). The source of funding is not a major issue and the new Act is a step forward, with a mix of grants, fees, and budgetary provisions. The primary tasks are tariff regulation or determination, reviewing PPAs, and licensing. The Indian legislation does not provide for adequate continuity

and the proliferation of commissions between areas and states is likely to cause considerable coordination problems.

3.9.4 Lessons for India from other countries

The federal structure of the Indian state and the power Hector are very similar to the structure as it existed in pre-reformed US, Australia, and Argentina. However, state ownership is dominant in India. It is clear that even in the US, with powerful defenders of states' rights; the move is towards increasing central control. It is a pity that in India electricity was made a concurrent subject under the Constitution; this has led to state governments coming under considerable pressure from consumers and In the sector's commercial unavailability. Trading seems to have been a priority in most countries in reforming the actor and it seems to have facilitated better utilization of available capacity. In that process, transmission had to undergo changes in capacity, regulation, open access, etc. The creation of wholesale power markets has not been an unqualified success and even the UK - that concered with the creation of electricity markets - has considerably modified them.

The Electricity Act, 2003, introduces many new initiatives since it frees generation capacity creation from regulation; introduces such a loose definition of 'captive generation' that it is now possible for many users to part of a captive generator and enjoy open access surcharage and wheeling and no permissions required as would have been the case for third-party sales; mandates open access to transmission; recognizes electricity trading as a distinct activity; and ensures coordination in generation and transmission tariffs among a host of initiatives that should help add to capacity and its utilization. Over five years of independent central electricity regulation, the CERC has introduced many new initiatives.

- Issuance of the availability-based tariff notification, leading to merit order dispatch, disciplined operation of the grid and stable frequency conditions, enabling trading and setting up of inter-regional grids.
- Issuance of a grid code, which sets out rules for participants in the system to follow and creates the basis for market-like conditions in centrally administered inter-state and inter-regional power markets.
- Direct contracts between generators / distant distributors and large consumers, especially in small hydro projects.

- The law enables the CERC to regulate state-owned transmission lines, whenever central electricity passes through these lines, thus engaging the creation of a national transmission grid.

  Source: “SLRAO Governing Power 2004”

CHAPTER 4

CONCEPTUAL FRAMEWORK

4.1 REGULATORY SECTOR- EVOLUTION AND DEVELOPMENT

Regulatory Sector : Evolution and Development

The dissemination of electricity otherwise the wire business, being a natural monopoly, has to be controlled for exploiting the competence of process and economics of scale advantage to the civilization. The possessions of the civilization can be properly used through a lawfully generated regulated entity.

The economists have been in conflict in favor of adapting the natural dominations in public utility facilities. They have recognized the economic rationale for such guidelines in the literature of economics.

During the course of the economic literature the need for the directive of natural control is well said and recognized. In agreement with the necessity for regulation, economists have put onward besides widespread set of ideologies for modifiable natural monopoly contractors. In several countries everywhere the world, governing bodies have originated up with regulatory plans to overcome the difficulties transported about by the existence of usual monopolies. These rules can be categorized with two main titles. On one side, there are heavy-handed guidelines, preserving that the regulatory authority has a resilient control over the natural monopoly besides proceeds through stronger regulatory investigation.

Throughout the customary stream in commercial literature, heavy-handed regulation discovers the dissimilar ways finished which regulatory establishments adopt a hands-on method, interfere in natural monopoly's manufacturing operations.

Similarly there are light handed regulations which grip that real regulation is led only if the natural monopoly is indomitable to have exerted its market power or activated some kind of market letdown like in California Crisis. Besides, in directive to avoid the normal monopoly from mistreating the market power, diverse types of danger can be employed in light handed regulation. Consequently, light-handed directive is also seen as threat grounded regulation. Consequently there is a sharp philosophical difference among these two schools of thought. On the one hand, heavy-handed guideline indirectly undertakes that the natural control will not act informally well-organized except it has been structured by a governing body adopting a hands-

on approach. On the other hand, light-handed regulation accepts that over transparency besides credible regulatory or other threats, a natural monopoly will behave competitively.

In most nations of the world, the electricity supply was employed as a government controlled object awaiting the recent improvements and rearrangement of 1990's took home at the behest of the World Bank. The legal rationale behind delivery regulation was focused en route for disciplining the monopolistic network companies under strict enactment of laws, rules and regulations under which the monopolistic behavior of such network corporations can be trained in such a method that the self-governing regulator pledges the behavior of market circumstances and executes such circumstances so as to attain results of pricing for customers similar to modest markets without founding any "monopolistic competition".

Regulation

Starting from a financial point of view, the objective of electricity reorganization in overall sector besides regulation of nets in particular is to deliver efficacies with incentives to recover their functioning and investment competence and to guarantee that customers profit from the gain. Shilecfier (1985) proposes that directive can impersonate the conclusion of the markets by setting an exterior presentation standard that characterizes some regular industry performance eliminating the firm in question.

Fundamentally, the requisite for impressive worth and additional directive in Industries where suppliers are believed to have natural control features emerges from the fact that

(a) Manufacturing industries consuming natural monopoly features will perform below par in a number of financial aspects.
(b) It is achievable in theory in addition practice for establishments to execute entry and associated regulations in such traditions that would progress the natural monopolies' presentation associated to the economic presentation that would else be associated with the unregulated case (Joskow 2007:34)

In maximum number of nations of the world, the electricity supply was employed as a government controlled entity till the fresh reforms besides rearrangement of 1990's took place at the command of the World Bank. The lawful rationale behind circulation parameter was engaged towards imprisoning the monopolistic system companies under strict enactment of laws, rules besides regulations below which the monopolistic performance of such network corporations can be habituated in such a way that the independent controller pledgees the behavior of market conditions besides executes such circumstances so as to attain results of

assessing for customers comparable to modest markets deprived of founding any “monopolistic competition”.

4.1.1 ECONOMIC LITERATURE REGARDING REGULATION and ECONOMISTS CLASSIFICATION

All through the economic literature the necessity for the regulation of usual monopoly is well thought and recognized. In agreement with the essential for directive, economists have put frontward in addition extensive set of ideologies for modifiable natural monopoly dealers. In numerous countries about the world, controlling bodies have originated up with regulatory enterprises to overcome the glitches brought about by the presence of natural monopolies. These guidelines can be categorized with two foremost titles. On one side, there are heavy-handed guidelines, upholding that the controlling ability has a robust control over the normal monopoly besides incomes with stronger regulatory observation.

Throughout the customary stream in economic literature, heavy-handed regulation discovers the dissimilar habits over which regulatory establishments accept a hands-on method, interfere in natural monopoly’s manufacturing processes.

Similarly there are light handed regulations which grip that real regulation is led only if the natural monopoly is indomitable to have exerted its market power or activated some kind of market letdown like in California Crisis. Besides, in directive to avoid the normal monopoly from mistreating the market power, diverse types of danger can be employed in light handed regulation. Consequently, light-handed directive is also seen as threat grounded regulation. Consequently there is a sharp philosophical difference among these two schools of thought. On the one hand, heavy-handed guideline indirectly undertakes that the natural control will not act informally well-organized except it has been structured by a governing body adopting a hands-on approach. On the other hand, light-handed regulation accepts that over transparency besides credible regulatory or other threats, a natural monopoly will behave competitively.

4.1.2 THE ELECTRICITY ACT 2003

A rule to combine the laws connecting to generation, transmission, distribution, trading and usage of electricity besides generally for captivating actions favorable for the growth of electricity industry, endorsing rivalry therein, defensive interest of customers besides supply of electricity to all spaces, explanation of electricity tariff, certifying transparent strategies

regarding subventions, elevation of efficient and ecologically benevolent policies, constitution of central electricity authority, regulatory commissions besides formation of appellate committee and for matters associated therewith or incidental thereto (Ministry of Law and Justice, the Electricity Act, 2003). The Electricity Act 2003 (EA 2003) was permitted by the Indian assembly in May 2003 and informed with consequence from June 2003. The EA 2003 is a central united legislation besides seeks to substitute the numerous legislations that ruled the Indian electricity sector. The EA 2003 combines all the present legislations besides delivers for additional quantifiable modifications in the sector. The utmost important reform inventiveness under the EA 2003 is the change towards a multi buyer, multi seller scheme as contrasting to the current construction which permits only a solitary buyer to secure power from generators. In addition, under the EA 2003, the regulatory command is more stretchy, has a multiyear method and permits regulatory command‘s greater liberty in defining tariffs, without being constrained by rate-of-return guidelines. Under the EA 2003, the penal necessities for deceitful use of power have been constricted and special courts have been envisioned for speedy grant of justice. The foremost objective of this act is to familiarize scuffle, protect consumer's comforts.

The act delivers for national electricity policy, rural electrification, and vulnerable access in broadcast phased open access in supply, compulsory SERCs, license free generation and distribution, power trading, mandatory metering and severe consequences for theft of electricity. It is a complete legislature substituting Electricity Act 1910, electricity source act 1948 and electricity regulatory commission act 1998. The objective is to push the sector onto a route of sound profitable growth and to permit the states and the centre to move in harmony and coordination.

The Electricity Act 2003 took a optimistic effect on the whole sector, comprising generation. General, this lawmaking has relaxed generation and freed it from licensing. The prerequisite of techno financial authorization has been detached. In addition, the newly proclaimed nationwide tariff policy types it mandatory that all upcoming necessities of power must be shaped through a modest bidding mechanism as an alternative of cost-plus route. (www.indiainbusiness.nic).

4.1.3 THE SALIENT FEATURES OF THE ELECTRICITY ACT

1. Unbundling‘the generation, distribution and transmission of power sector.

2. Comprehensive liberalisation of the generation subdivision to allow private sector contribution.

3. Elimination of FDI restrictions on generating businesses besides capital equipment engineering companies, with the effect that 100 percent equity contribution is allowable.

4. Permitting _open access‘whereby customers beyond 1 MW of power can select their own suppliers and power producers were permitted to sell beyond regional markets in an effort to generate a nation-wide market for power.

5. Permitting _merchant sales‘whereby power manufacturers may possibly sell extra power over also above what was constricted to SEBs, at market determined rates.

6. Legalising the supply chain, particularly for coal, whereby thermal power manufacturers might enter into obligatory long term preparations with domestic coal manufacturers. Import of fuel and feedstock were also liberalised as were foreign exchange guidelines for domestic power manufacturers seeking to enlarge materials by acquiring coal mines or privileges in oil and gas fields overseas.

Responses to the electricity performance have existed varied with detractors arguing that the legislature did not go far sufficient, especially in ratifying the fundamental improvement that was desirable to pull the Indian power sector out of its low growth rate trap that had hopped it for the past five decades. On the other hand, its exponents claimed that any reorganization in a sector as delicate as the power sector in India can only be incremental and point to the tremendous problems that power sector reorganization has had to face, even 12 years after sweeping improvements were passed in the rest of the economy.

4.1.4 ECONOMICS REFORMS IN INDIA AND THE NEED FOR NEW REGULATION

Nevertheless financial liberalization in INDIA can be outlined back to the late 1970’s, monetary reforms initiated in earnest only in July 1991. A balance of expenditures crisis at the time unlocked the way for an international Monetary Fund (IMF) package that led to the implementation of a major reorganization package. Nevertheless the foreign interchange reserve recovered quickly and ended successfully, the momentary clout of the IMF and World Bank reforms sustained in stop-go fashion.

Nowadays, the private subdivision has developed very dynamic in the Telecommunications Sector besides the telephones are provided on demand now. The provision of cellular mobile as well as secure service is now completely open to the private sector comprising foreign depositors. As a result, the Telecommunications sector in INDIA is growing.

The electricity subdivision improvements then rearrangement also taking place in the 1990's. The Government of INDIA took enterprises and notified policies for the private sector contribution in the electricity sector. Numerous private corporate objects of INDIA besides foreign origin articulated interests for impartiality speculation in producing stations, particularly recognized by dissimilar state administrations under the policy guidelines of Ministry of Power, government of India.

In numerous cases, multinational power majors, signed memo of understandings with state administrations besides state electricity panels to set up autonomous power projects (IPPs). These corporations originate that profitable feasibility of SEBs were very poor. They advanced the World Bank to take up the subject with Government of India. At the example of the World Bank, a session of all Chief Ministers was held in Jaipur in October 1991. The representatives of MNCs and the representatives of the World Bank made performances in the recent progresses in the electricity subdivisions of UK, USA, Russia and the electricity market modifications already presented there.

The then Prime Minister of India, Late Shri P.V.Narasimha Rao and the then Finance minister, Dr. Manmohan Singh addressed the session and put importance on stage to

Introduce a complete reorganizations program in the electricity sector of India.

The then Chief minister of Orissa, Late Mr. Biju Patnaik, at the request of the then Prime Minister decided to familiarize such inclusive reforms in the power sector of the state. A group of four groups of International counsellors, finance and strategic management (KPMG, UK), legal (McKenna and Company, UK), engineering (AGRA Monenco, Canada), economics and pricing (Nera INc, USA) were selected.

The Orissa electricity reforms act was passed in the state assembly in 1995. Other states like Haryana, Andhra Pradesh, Uttar Pradesh, Karnataka, Rajasthan, Delhi, Madhya Pradesh and Gujarat enacted their respective states reforms acts between 1998 and 2003. In the mean time, Govt of India enacted the electricity regulation act-1998 and the electricity act-2003 repealing the Indian Electricity act 1910, the electricity supply act – 1948.

4.1.5 PURPOSE OF REGULATORY SYSTEM AS ENUNCIATED IN THE ACT

The commission will deal with all issues pertaining to the power sector i.e., technical, financial, economic managerial and legal aspects, the commission while working out the tariffs based on economic factors should take into consideration the capacities of various categories of consumers to pay and provide certain cross subsidization in fixation of tariffs.The committee will recognize and ensure that consumers pay only fair and reasonable prices.

The functions of the CERC and SERCs under this Act(2003) are different from those under the 1998 Act. Here are the relevant extracts of the three distinct roles that ERCs have to play.

1 **Core role**: This role comprises tariff directive, nursing quality of service,

Adjudicating disputes, imposing licensing conditions, observing compliance, and redressing grievances.

2 **Recommendatory role**: If endorsement (of licenses, for example) does not originate under its authority, the ERC can give its references to the concerned authorities.

3 **Advisory role**: In this role, the ERC delivers to the government, on demand, information and information on matters of importance to the sector.

The commission will deal with all issues pertaining to the power sector i.e., technical, financial, economic, managerial, legal aspects. The commission while working out the tariffs based on economic factors should take into consideration the capacities of various categories of consumers to pay and provide certain cross subsidization in fixation of tariffs.

The committee also to recognize and **ensure that consumers pay only fair and reasonable price.** Also to enable the enterprise to earn not only an adequate profit. But also to provide reasonable return to stake holders and enable it to attract required capital.

(S.L. Rao Governing Power 2004 issue)

4.2 ELECTRICITY REGULATION IN INDIA

This section suggests the growth of regulation of electricity in India, opening with the necessities of the Indian Electricity Act, 1910; the Electricity (Supply) Act, 1948; besides the Industrial Policy Resolution of the Government of India in 1948. They gave right to central and state Governments to regulate electricity in all its aspects: Licensing, safety, tariffs, and other matters. In 1948, the SEBs (state electricity boards) were given the exclusive power (except for then existing licensees) to distribute power in their states. Every procurement of power by a consumer or sale or owe by any other producer (created earlier) compulsory the authorization of the SEB alarmed. After central-government-owned producing positions came into being, the central government took powers to regulate their tariffs and also inter-state transmission tariffs when the power Grid Establishment of India was set up for the determination. In 1998, the Electricity Regulatory Commission Act came into force and central and state regulatory directives were shaped to take the tariff powers of the individual administrations besides certain certifying powers as well. However, no establishment was made to enable organization amid central and state directives on any substance. This was modified in the omnibus Indian Electricity Act. 2003.

Regulatory Framework:

- Regulation means Government enforced controls on precise structures of the occupational activity.
- Everywhere the world Governments accomplishes three core functions.
  They tax, they spend, they regulate and of these functions, regulation is least under stood.

  One frequently hears of grievances from customers that the Regulatory organizations have been unsuccessful to either guard them in contradiction of the monopoly defense of new private infrastructural amenities or to deliver promised developments and growth of facilities.

  Regulation exists within ever changing economic and social conditions and therefore it must be both adoptable and predictable at the same time- a difficult challenge.

  What is desperately needed is independent, objective, and fully informed analysis of existing regulatory systems and then develop a second generation regulatory reforms that practical advice on how to develop recommendation for improving the system.

4.2.1 OLD STYLE VS NEW REGULATORY REGULATION

Regulation is not new to infrastructure industries, Governments have always controlled the various infrastructures. The difference is that old style regulation was usually done by a line ministry and is relatively opaque way (often described as Co-coordinating, review or oversight). It often involved adhoc controls.

With the growth of the private participation from 1990's a new style of regulation has emerged, that is creation of a separate regulatory entities with some degree of independent decision making authority, whether final or advisory.

4.3 REGULATORY GOVERNANCE

Governance Involves:

- Independence and accountability of the Regulator.
- Relationship between the Regulator and the policy maker.

a) Autonomy

b) Process: Formal or Informal

c) Transparency

d) Predictability

e) Accessibility

4.3.1 REGULATORY SUBSTANCE

Substance involves:

a Tariff Levels

b) Tariff Structures

c) Automatic and non automatic cost pass through mechanism.

d) Quality of service standards

e) Handling of consumer complaints

f) Investment or connection obligation and reviews.

g) Network access conditions for new and existing customer.

h) Accounting systems

i) Periodic reporting requirements.

j) Social obligations.

4.3.2 META PRINCIPLES OF REGULATORY GOVERNANCE

Meta Principles for Regulatory Governance:

1) Credibility

2) Legitimacy

3) Transparency

The good, the bad and the uncertain regulations:

Some elements of regulatory systems are good. Some are clearly bad and other are difficult to asses.

A good element produces good sector out comes and there is no obvious change required. It will produce better out comes.

A bad element produces bad sector out comes, and it can be clearly changed to produced better sector out comes.

An uncertain element is an element whose effect on sector out comes is difficult to assess.

4.4 CENTRAL ELECTRICITY REGULATORY COMMISSION

The Mandate

As assigned by the Electricity Act, 2003 the Commission has to carry forward the below mentioned actions.

(i) To standardize the tariff of power generating companies possessed or controlled by the Central Government;

(ii) To standardize the tariff of power generating companies that are not functioning under the

jurisdiction of central government (a), in certain exceptional cased of power generation corporations go into into or else have a compound arrangement for generation as well as trade of electricity in more than one state;

(iii) To monitor the exchange of power between states and provinces.

(iv) To decide specific tariff rates for power transmission between states and provinces.

(v) To issue licenses to people to undertake the function as a transmission licensee besides electricity dealer in accordance to their inter-state operations;

(vi) To arbitrate the disputes and other deals between the power generation companies and the distribution licensees with respect to the above mentioned clauses(a) to (d) above and to refer any dispute for arbitration;

(vii) To impose tolls for the resolutions of the Act;

(viii) To stipulate the standards and codes of the grid

(ix) To maintain quality continuity and the standard and reliability of the product to the customers

(x) In order to maintain a fixed tariff for inter and intra state power transmission.

(xi) For emancipation of additional purposes as might be allocated under the Act.

(xii) To counsel the Central Government on:

a. Making of National Electricity Policy and Tariff Policy;

b. Advancement of competition, effectiveness besides economy in the actions of the electricity manufacturing industry.

c. Elevation of speculation in electricity manufacturing industry.

d. To work based on the guidance of Central Commission by the Central Government.

4.4.1 MISSION STATEMENT AND GUIDING PRINCIPLES

Mission Statement

The Commission aims to endorse the efficiency and bulk production of power of these units that are not only competitive in nature but are also best in form of quality and supply quantity.in order to increase the investments in this field the government has removed institutional barriers and other obstacles coming in the way of consumer interests. These regulations also follow the below mentioned

- improves the overall operations and the management of power distribution systems over IEGC, Availability Based Tariff (ABT), etc.
- Articulates an effectual tariff setting method that ensures fast levies of tariffs and also disposal of petitions. This not only increases the competition in the production market but also increases the efficiency and economic conditions. These methods are also cost effective and have great range of transmission services.
  - Eases an open and free admittance in inter-state transmission.
  - encourages trade between neighboring states
  - Encourages growth of the power production market.
  - Recovers admission to evidence for all stakeholders.
- enables technical besides institutional variations compulsory for the growth of competitive markets in bulk power then transmission services.
- It also recommends on elimination of entry/exit financial management alsong with environmental and safety concerns that along with existing also creates certain new regulations in the market.

Guiding principles

To follow the mission testimonial the commission functions based on below mentioned testimonials.

- Safeguard the importance of the general public **comprising** producer and consumer interest and also having a fair and neutral hold on pricing and stakeholders.
- Continue to function as reasonable in guidelines followed through a set of applications subsequently given that adequate then equal chance to participants to be perceived.
- in order to maintain a standard set of guidelines that are to be followed and should also be

open to accepting changes in accordance to the evolving producer consumer demands.

● Accept a investor discussion also participative procedure in the preparation of its guidelines to guarantee that they qualify the set of expectations.

● Guarantees optimum apportionment of resources using the guidelines and market scenarios.

● Encourage maintainable expansion and growth by endorsing reusable power sources such as solar and hydro-electricity.

4.4.2 CHRONOLOGY AND ESTABLISHMENT OF SERCs

Table No.4.1 Chronology and Establishment of Major ERCs

Name of ERC's	Year of Establishment
OERC	Aug'96
CERC	Jul'98
MPERC	Aug'98
HERC	Aug'98
UPERC	Sep'98
GERC	Nov'98
APERC	Mar'99
DERC	Mar'99
WBERC	Mar'99
MERC	Aug'99
KERC	Aug'99
RERC	Dec'99
HPERC	Dec'00

4.5 National Electricity Policy and Salient Features of The Electricity Act 2003

The National Electricity Policy also regulation of distribution business, as notified by the Ministry of Power, Govt of India dated 12th February 2005 is explained in the following points

- Distribution of generated power is major challenge in power sector
  Efficient management of distribution sector can ensure sustainability and profit.
-
- In order to have monetary stability the state governments rearrange the accountabilities of the state electricity boards to make sure the producing industries are not burdened and creates a clear roadmap foe efficient improvement. This transition not only improves the overall efficiency nonetheless also has significant improvements financial stability in the government sectors. These suitable transitional business environments are modelled based on improved efficiency and improving business investments. Multiyear tariff (MYT) framework is a significant organizational inducement to exploit perils for conveniences also customers, endorse efficiency besides rapid drop of system damages. Also serves public welfares over economic competence besides upgraded service excellence. It would similarly bring in better certainty to customer tariffs by limiting tariff duties to recognized indicators such as power acquisition rates besides increasing indices. Privatization of power sector must be encouraged as they improve the quality of service and also reduces the distribution losses.

The electricity act – 2003 permits challenging the power production companies to licenses to sell electricity to customers following the regulations set by the electricity commission. The SERC also enables an open access to power distribution in accordance to section 42 and sub-section 2 which provides open access allowance to consumers who utilize power greater than 1 Megawatt Although creating guidelines for open access, the SERC's will also govern wheeling duties and cross-subsidy supplement as mandatory under Section 42 of the act.

The reduction in attenuation losses and also the ATandC losses account in favor of improving the government. The quality and reliability of power supply recover the lossy lines based on international losses. These mandatory power distribution guidelines are to be corrected within stipulated period of time. The SERC's also encourages usage of pre-paid meters. The TOD meters for bulky customers with minimum load of 1MVA. Encouragement and support to these power plants in form of information and technology are through accelerated power development reform program (APDRP).

In order to reduce the reduction of losses and preventing large scale power theft and alo in providing an enhanced power and customer service an high voltage distribution system is generated keeping in consideration the LT/HT ratio and also technological and economic conditions. A phase assured package for application of SCADA and data organizations remain compulsory for well-organized functioning of circulation and distribution system. The act has delivered strict trials against theft of electricity. The state governments to set up special codes as envisaged in Section 153 of the act.

4.6 Frame Work For Revenue Requirement And Cost Of Cross Subsidy Surcharge

- Altogether power procurement costs need are considered genuine except it is recognized merit order principle has not been followed or the power purchases are occurring at not so reasonable prices.
- The decrease of collective technical as well as commercial losses have to be reduced and this has to be done without denying incomes obligatory for power acquisitions for 24 hours supply besides essential sensible OandM besides speculation for structure up gradation.
- Customers, predominantly the regular users who pay tariffs efficiently have the right to get un-interrupted 24 hour supply source of quality power. Consider excess purchase of energy from power generation plant that is generated even at event of scanty rainfall and fuel surcharge alterations as per the SERC strategies.
- Superior transparency also development of customer assemblies would be effacious.
- The SERC's may also reassure appropriate local area grounded encouragements and dis-incentive structures for the staff of the values related to reduction in ATandC losses.
- The SERC will assume valuation of standard data for numerous limits for every delivery circle of the licensee.

Cross-Subsidy Surcharge and Additional Surcharges

Surcharge Formula

$S = T - \{C (1+ L/100) + D\}$

Where;

S is the surcharge

T is the tariff to be paid by the applicable group of customers

C is the subjective average cost of power acquisition of top 5% at the margin eliminating liquid fuel founded generation and transmission of power

D is the Wheeling charges

L is the system losses for the applicable voltage level expressed as percentage.

The cross subsidy surcharge to be is reduced to a margin of a linear rate to a maximum of 20% of its opening level by 2015-2016.

Amount of subsidy for various class of customers can be certain by the state governments ownership in interpretation numerous appropriate features. But, delivery of free electricity is not necessary as it inspires wasteful intake of electricity also dropping the water table, fast increase in demand of electricity. Hence the subsides for farmers and other classes must have a marginal tariff and fixed level of consumption.

Metering of power supply to farming/rural consumers is functioned in pleasant method besides with participation of panchayat organizations, operators associations, co-operative societies, farmer bodies, etc.

Usage of self-closing load limiters might be encouraged as price effective choices for metering in case of limited use customers who are qualified for subsidized group.

4.7 Type Of Regulation And Rate Making Approach

4.7.1 Rate Of Return Regulation (ROR)

This regulation is a method of regulating the power prices which is decided based on the fair price that is determined by the government monopoly. ROR regulation secures the customers from surge pricing that exists due to monopoly in power distribution systems that generates fair profits for its owners

ROR regulation is the utmost sort after guideline followed by various nations as these prices are determined based on tariff regulations that are determined by the authorities. These regulation tariffs are calculated as follows

- Immovable assets at the commencement of the year
- Average prices of incremental fixed possessions added throughout the year

- Average operational capital necessities for the year less accumulated devaluation charges for the year

ROR was prevailing in the USA for several years. Nevertheless other republics have presented control regulation, frequently following the privatization of national production industries and regularly accepted additional organizations such as price-cap regulation besides revenue-cap regulation, that provide efficient incentive properties. Nevertheless it is claimed that all systems of regulation congregate to ROR regulation in the long run.

4.7.2 Performance Based Regulation (PBR)

Performance can be able to be combined into the task and also accomplishments of the supervisory agencies in four principal ways. Precisely, a regulated system that is performance centered uses performance as a factor

1. The foundation for the legal guidelines originate in regulatory standards
2. A conditions for assigning enforcement and compliance resources
3. A initiative for the presentation of distinguished (or tiered) supervisory standards
4. A foundation for assessing regulatory program as well as agencies

4.7.3 Price Cap Regulation (PCR)

This regulation is designed in the 1980's by UK treasury economist Stephen Littlechild. PCR adjusts the operator prices according to the price index that reflects the following

1. Overall rate of inflation in the economy
2. The ability of the operator to gain efficiencies relative to the average firm in the ecomomy
3. The inflation in the operators' input prices relative to the average firm in the economy.

Revenue Cap Regulation endeavors to ensure similar guidelines but for revenue rather than prices. PCR is occasionally known as "CPI-X". (In the United Kingdom "RPI-X" as per basic employment formula set price caps). This takes the rate of inflation measured by the consumer price index (UK: Retail Price Index (RPI)) besides deducts predictable competence saving "X". This scheme is envisioned to deliver incentives for productivity investments as any investments above the predicted rate "X" be able to be passed on to the stake holders. An important part of the system is that "X" is founded not only a firm's

previous presentation, but also on the performance of other firms in the industry. 'X' is intended to be a proxy for competitive market in industries which are natural monopolies.

In majority of power distribution industries in United Kingdom the calculation of the efficiency of local supply domination and also calculation of overall production. Telecommunication is mainly dependent on international investors and distributers.

4.8 Consumer Rights And Obligations

4.8.1 Consumer rights and obligations

- Maintain standard of quality of service standards consumer are entitled to expect.
- Schedules for achieving service connections.
- Outage guidelines
- Response time to complaints
- Customer communication
- Billing accuracy
- Meter quality and reading frequencies
- Voltage quality
- Line Maintenance
- Service expansion
- Customer privacy
- Public safety.

The establishment of regulatory frame work mainly focusing:-

- To correct or mitigate the failures of competitive markets
- To ensure level playing field
- To introduce competition

4.9 Distinctive Features Regulatory Commission

- Separation of control and regulatory functions from the Government.
- To Provide equal opportunity to SEBS and level playing role in our development.
- Creation of an atmosphere for functional specialization with expert guidance.
- Estimation of Future needs and chalking plans for implementation.
- Meeting the consumer aspirations and expectations.

The institutional requirements required for regulatory commissions are:-

- Independence
- Accessibility
- Transparency
- Professional Expertise
- Timely and quick disposal

Regulatory commissions have to regulate / rationalized in the areas relating to:-

- Investment
- Tariffs
- Operational and safety standards
- Consumer Interest

Major Objectives of Regulatory system are:-

- Create and nurture conditions under which all customers would be provided electricity of the appropriate quality at the most competitive cost.
- Create conditions under which the investor both public and private would be encouraged to invest in power sector.
- Protect Customers from any Monopoly market powers.
- Lay down operational and safety standards in power supply.

SOURCE; S.L. RAO, Governing Power 2004 Issue

4.9.1 Indicators For Regulatory Management System

Indicators for regulatory management systems (direct and indirect approaches):-

1. Regulation is defined as the appropriate response to the detected problem and is the minimum and basic requirement to achieve aims and purposes with minimum burden.
   - **Accountability**
   - **Transparency**
   - **Efficiency / Effectiveness**
   - **Responsiveness**
   - **Forward Vision**
2. It achieves the goals at minimum cost.
3. Flexible besides not overly rigid and continuously updated and enhanced.
4. Transparent and available.
5. Respects legal and constitutional requirements.
6. Appropriately targeted and enforceable.
7. Regulation process provides a culture of sincerity and responsibility comprising responsiveness to stake holders input.
8. New regulation is consistent with existing regulations.

4.9.2 Performance Appraisal Of New Regulatory Arrangements

Hypothetically, the composition of such impartial plus clear supervisory forms must be of boundless assistance in attaining the purposes cited above plus creating the private sector a significant partner in additional electrification of this nation. However, many difficulties in execution occur.

The chairman of the commission and also additional members are generally retired officials. Experts, particularly engineers, economists, accountants, lawyers, etc who support and maintain the commission are also appointed from the government. Thus, the assumed arm's length association of the SERCs with the government may not exist in practice. The exercise of consuming staff on delegation beginning from the government suggests that there is no availability for long term core-competence. Though, there are massive alterations in the

demonstration of material, which types benchmarking besides assessment hard. While records on instructions besides techniques are sufficiently accessible no report on tendencies in price is existing scenario. The depiction concerning developments has to be mended together from discrete tariff orders.

The tariff regulations is concerned, volumes designate that SERCs have been tremendously active. In the transitory period of their presence (1996-2006) SERCS have distributed **765 tariff orders and 1586** other guidelines and principles but have approved the **cost plus method** for the resolution of tariff regulation.

4.9.3 Limits Of Regulation

Regulations and guidelines by itself don't serve solutions to any problems:

1) For instance, the electricity regulation commission can regulate prices for bulk power purchases that is a decision that is based on governments' jurisdiction and it is purely decision of regulatory counsel to permit the market prices and thus support competition in the market.

2) Correspondingly a controller remains powerless, if he is demanding to control the merchandizing prices indicted by a state possessed effectiveness that was compulsory to purchase a high valued power from an Self-governing autonomous Power produced under the orders of an ineffectual or corrupt minister.

3) Regulatory engagements to decrease methodological and non-technical damages and losses. The objectives are fixed by the regulator to generate incentives to decrease thefts and recover assortments. Though, the supervisory action by themself will achieve very little, if the government is reluctant to deliver actual policies and Legal backup to fund the distribution business in cutting of service to individuals that are stealing electricity.

In all the above cases the bad sector outcomes are not caused by flawed regulations.

CHAPTER 5

Electricity Regulatory commission of combined AP state

5.0 Role And Function Of Electricity Regulatory Commission Of AP State

5.1 Chronology And Establishment Of State Regulatory Commission

The following table provides an insight into the chronology of reforms in power sector initiated in the AP state since 1995.

Table No.5.1Chronology And Establishment Of SERCs

June, 1995	Hiten Bhaya Committee Report
September, 1996	World Bank's Agenda for Economic Reforms in A.P.
March, 1997	GoAP's policy statement on Power Sector Reforms
April, 1998	Passing of AP Electricity reform in the State Legislative Assembly
May 14, 1998	Chief Minister's letter to the World Bank's President reiterating the state government's reform policy.
May, 1998	World bank's PAD on AP Economic restructuring Project
January, 1999	World Bank's PAD on AP power sector Reforms programme (APPSRP)
February, 1999	AP Electricity Reforms Act, 1998 comes into force
February, 1999	APSEB unbundled AP GENCO and AP TRANSCO
February, 1999	Agreement between world Bank and GoAP on APPSRP
March, 1999	Agreement between world Bank and GoAP on APERP signed
April, 1999	AP Electricity Regulatory Commission starts functioning
November, 1999	First Public hearing conducted by the APERC on Tariff Policy
March, 2000	AP Transco further unbundled into AP Transco and four distribution Companies (DISCOMS)

May 27, 2000	First Tariff Order by APERC
May 28, 2000	People's movement against tariff hike starts
August 28, 2000	Police firing on demonstrators in the centre of Hyderabad
October, 2000	High Court Judgement upholding the APERC order on tariff hike
March 24, 2001	Second Tariff order by APERC
April 1, 2001	Regular licenses to DISOMS
March 24, 2002	Third Tariff order by APERC
April 1, 2002	Financial autonomy to DISCOMs
August 17, 2002	Employee division (option process) among AP Genco AP Transco and DISCOMs
Nov' 02	Monitoring of Performance based on Key Performance Indicators for Discoms and Transco
Mar' 03	Additional Financial autonomy to Discoms
June' 05	Bulk supply and trading activities vested with DISCOMs as per the Electricity Act 2003.
Dec' 05	7th ARR and Tariff filling made as per Electricity Act 2003.
Mar' 06	Multi Year tariff for 1st control period 2006-07 to 2008-09 issued by APERC.
Nov' 06	8th ARR and tariff filing for SLDC made
Mar' 07	8th Tariff order issued by APERC

5.2 Distribution Of Electricity- Critical Segment

The part of the national electricity policy Government of Indian dated 12th February 2005 relevant to the distribution business is extracted and reproduced as below.

- Distribution is the for the most part significant section of the electrical energy business revolution. The real challenge of the reform in power division lies in well-organized administration of the distribution division.

5.3 Electricity Distribution Regulation in INDIA

Parameter of allotment production in India is dated back to the pre-independence period. The Indian electricity act – 1910 that was revoked by the electrical energy act – 2003 primarily deals through the allowance of license in addition to licensees authority intended for opening along with infringement of streets, railways, etc., arranging overhead lines, charge of energy to the customers, etc. The Ahmedabad Electricity Supply company (AEL Limited), The Bombay electric supply and transport limited (BEST), The Calcutta Electricity Supply Company (CESC) also the Surat Electricity Company (SEC) be operational as allocation licensees. The authority to control these license was rested by means of the individual state governments.

5.4 The Electricity Act- State Electricity Regulatory Commissions

Section 82 to 89 of the act makes available for self-determining as well as apparent dictatorial mechanism in addition to consistency in narrow approach to reduce regulatory hazard for investors along with huge customers of electrical energy.

- establishment of SERC
- Power tax fixation, functioning of licensee, presentation principles etc to SERC additional restructuring of SEB's be incorporated under section 131 of the act.
- Transco as a descendant body single purchaser in addition to multi consumer model.
- Open admission to the broadcast to be made available to distribution licensee (section 38-40) which inturn produces aggressive pressures in addition to guiding to better cost cutback.

- allocation shall be approved by SERC's, distribution licensee is free to obtain the production plus generating business is free to take up distribution license.
- This usually make easy private sector contribution with no government security/ escrow (section 7, 12)
- Retail trade tariff to be resolute by regulatory commission (section 62)
- Metering was induced as compulsory (section 55)
- stipulation for postponement/ revocation (section 19, 24)
- Open admission in allocation to be allowable by SERC in segments (section 42)
- In totaling to wheeling expenses stipulation for supplement if open access is allowable to handle
  (a) Current stage of cross financial support (section 42)
  (b) Latency compulsion to provide(section 42)

This entire process provides an insight to the consumers on the tariff cuttings.

5.5 Working Of State ERC (Andhra Pradesh State)

When Regulatory Commission was appointed, it had faced legitimacy crisis among the people. Politicization of the reforms has given a negative impression about the regulatory mechanism.' It was seen as an institution imposed by the international lending agencies like World Bank' and IMF. While holding public hearings in Warangal recently, the officials had faced the wrath of the people. But slowly, different stakeholders started participating in the public hearings. A.P.E.R.C too started holding public hearings In places other than head quarters of the respective distribution companies.

Tariff order consists of the transmission charges to be levied by the AP Transco for a financial year. The tariff order is prepared for a financial year. Tariff framework is formulated in accordance with the National Electricity Policy. According to this Act, the tariff has' to be notified by the Central Government. Then the commission will determine Transmission tariffs for each year based on the filings of AP Transco. The commission will call for a public hearing before a tariff order is prepared. All the stakeholders are invited to voice their views on the proposed tariff order. In the public hearings the civil society organizations and consumers will raise their objection. The AP Transco is supposed to clarify all the doubts on the tariff order. The commission prepares a tariff order by taking in to several factors such as transmission losses, Aggregated Revenue Requirement (ARR), and estimated expenditure etc.

*T.N. Thakur Chairman Power Trading Corporation says that "often political pressures makes it difficult for Regulator to adjust tariffs. This effects projects financial viability despite raising cost. CERC's Chairman says in 1991-92 the gap between the average realization /unit and cost of supply was around 20 Paise. By 2006-2007 it had gone up by nearly 50 Paise and in 2009 was close to 80 Paise/Unit which means not only the situation worsened the pace of deterioration has quickened. The tariff were not increased for many year, to keep the promise to voters but the loss of state utilities have sky rocketed from Rs. 500 Crores in 2009 they are expected to increase to 1.5 Lakh crores by 2012.Going by the regulators grievance in April 2011 conference, power sector reforms have been a dismal failure.

5.6 Organizational Structure of Electricity Operations in AP State

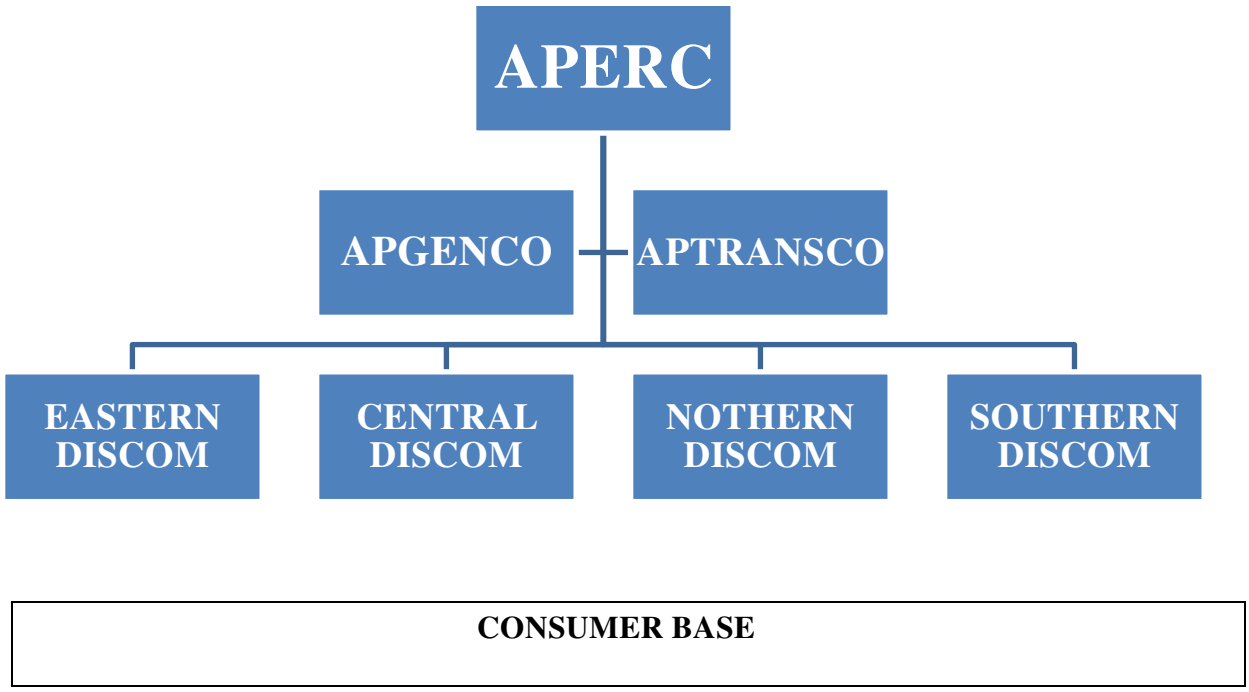


Fig 5.1: Organizational Structure of Electricity Operations in AP State

Soon after AP Electricity Reforms Act, 1998 (APERA 1998) became effective from

1st Feburary 1999, the erstwhile APSEB was disintegrated into APGENCO in addition to APTRANSCO. In April 2000 APTRANSCO was more divided into APTRANSCO plus DISCOMs.

On establishment of AP Electricity Regulatory Comission on March 1999 with three members,

one Chairman Member and Two Member Technical and Member Finance, the Sate Government ceased to be an operator and APERC has become the regulator and tariff fixer in power utilites in the state, over the years objectives of the reform process agreed to in the Chief Ministers conference in 1996 that the power subdivision reaches self adequacy, stops to be burden on the state budget plus carries out it industrial operation in consonance by means of directives of the AP Electricity Regulatory Commission.

5.6.1 Organization Network

APGENCO a wholly Government owned generation company, staterd functioning w.e.f 1st Feburary 1999. It has a board consisting of a Managing Director and fulll time Directors incharge of Hydel, Thermal, Finance, Commercial and Technical functions. All power generated is being sold to APTRANSCO in terms of an annual power purchase agreement approved by APERC.

APTRANSCO is a wholly owned Government company formed in Feburary 1999 after the unbundling of the sector. It is accomplished by a board of Chairman and Managing Director, two fulll time Joint Managing Directors, one incharge of HRD, Commercial, Regulatory Affairs, Reforms and IT. The other JMD is incharge of Vigilance and Securtiy and three Directors incharge of Finance, Projects, Coordination and Grid Operation. APTRANSCO works as a transmission company transmits power from generator to Discoms and also allowing for open access in consonance with the directives of the APERC.

The four distribution companies namely APEPDCL, APSPDCL, APCPDCL and APNPDCL which were formed in April 2000, are wholly owned subsideries of APTRANSCO undertaking Retail Distrubition supply. The board consists of CMD and Directors incharge of Finance, Operation, Commercial and Projects for each DISCOM.

5.7 APERC: A change Agent

APERC is playing a significant role since the year it was formed. As an independent regulator it has the onerous responsibility of performing a fine balancing Act to protect the Interest of the various stake holders. Various decisions taken by the commissions shows that it is striving to be a change agent that is probable to contain a deep crash on the electricity division of the state.

Interactions with various stake holders, with regard to ARR / Tariff suggestions in reverence

of their retail trade of electricity for FY2011-12, the frequency of interactions, the time and space and the public hearings held during FY 2011-12 by APERC are briefed below.

The publication of the duty suggestion a huge numeral of opposition / proposition has been acknowledged by the commission. The commission organized a schedule of public hearings as per the program given below:

Table No.5.2: schedule of public hearings

Date	Place	Venue	Licensee	Time
26.02.2011	Kadapa	Zilla Praja Parishad Meeting Hall, Kadapa	APSPDCL	10:30 am to 1:30 pm and 02:30 pm to 05:00 pm
28.02.2011	Hyderabad	Institute of Engineers, KHairathabad, Hyderabad	APCPDCL	
01.03.2011	Hyderabad	APERC Court Hall, Singareni Bhavan, Red Hills, Hyderabad	APNPDCL	
04.03.2011	Srikakulam	New Meeting Hall, Zilla Praja Parishad, Srikakulam	APEPDCL	

(Tariff order of APERC for 2011-2012 dt: 30.03.2011)

Table No.5.3: Number of Objections / Suggestions Received

Licensee	No of registered objectors who filed objections (within due date)	No of registered objectors who attended Hearing	No. of un-registered Objectors (who did not file any objections in advance)
APCPDCL	26	12	6
APNPDCL	20	5	3
APEPDCL	33	15	12
APSPDCL	60	10	6
Total	139	42	27
*Includes 18 NOs of objectors, who filed objections against ARR fillings of all Licensees			

(Tariff order of APERC for 2011-2012 dt: 30.03.2011)

Treatment of objections / suggestions received

It is understood that greatest of the oppositions are branded as to be falling into one of these wide-ranging groups.

GROUP-I: Opinions articulated in addition to oppositions elevated by the customers through Orientation to the tariff plus ARR suggestions gathered by the Licensees.

GROUP-II: Exact requirements of separate organizations / customers / collections for classification / recategorization form second group.

GROUP-III: Propositions also the interpretations articulating apprehension completed the monetary health of Discoms, the power acquisition prices besides other macro matters.

GROUP-IV: Concerns connecting to agrarian consumers counting subjects like supply hours to formers, supply to boost irrigation arrangements besides accident recompense issues.

GROUP-V: Subjects like source in rural parts, presentation of discoms, security concerns, energy preservation events besides standards of presentation etc.

GROUP-VI Additional assorted subjects raised up by precise customers, for the sake of suitability are distributed at one habitation. The conclusion under the instructions of the directive, the individual licensees have answered on the subjects elevated by the violators throughout the hearing. The particulars of the stake owner collections that consume occupied time besides made propositions are assumed below. The public hearings and were responded by the licencees in FY2011-2012 regarding ARR/Tariff proposals.

Table No.5.4:Groups and their Number of Objections/Suggestions

Groups	Number of objections / suggestions
NGOs	11
Industries	18
Farmer Bodies	24
Commercial Groups	10
Railways	03
Houtilize Hold	12
Consumer Organization	08

It is seen that the public hearings on ARRs / Tariff filings is done on 4 times at 4 places. However apart from that depending upon number of disputes / petitions / issues commission receives, conduct hearings in court hall at APERC Singareni Bhavan, Red Hills, Hyderabad. The dates and venues shall be intimated by public notices in newspapers. In addition the notification shall be kept in websites.

APERC Apart from giving an impetus in to public participation in tariff setting process, the commission needs to be appreciated for accepting or rejecting the demands of various stake holders depending upon whether the demand is in the interest of the power sector of the state.

Some of the interesting directives / decisions depending earlier in this regard for various demands of the stake holders / consumer groups are mentioned below:-

1) It was represented by the civic employees plus workers union that as the municipalities of helping public by providing numerous indispensable facilities that tariff charged after them must be condensed. The Commission did not admit this, additional lessening of tariff would mean that funding to be providing by the Administration besides also cross funding burden on the sponsoring groups has an consequence. This grouping also funded.

2) There was a plea to include private educational institutions in LT-VII like the Government Educational Institutions. The commission resisted the move and felt that it is right to include the private educational institutions in the existing category only.

3) Commission has accepted the fact that conditions of competition need to be established. The Commission appreciate the fact development of spot markets, wholesale power markets are necessary. Thus the Commission has decided to speed up “open access and power trading”.

4) Sri Kommidi Narsimha Reddy recommended that manufacturing industries that utilize power a lesser amount of than 5 HP may be preserved as cottage industries.

Replies of Licensees: The LT Category IV (A) is relevant merely to Dhobighats besides minor cottage industries precisely power looms, wood working, black smithy, kanchari, Gold smithy, shilpi besides pottery partaking associated load not above 5 HP. The classification of customers is prepared through the nature of industry besides their operation. Henceforth the businesses by means of less than 5 HP may not be considered as a cottage industry. Omission has approved.

As per the present Merchant Power Plant policy the private power plants in a state are required to provide 25% of their capacity in their respective states as per the rate prescribed by the state ERC or CERC, the balance 75% percent can be sold in open

market. In return the State Government is likely to allot the necessary infrastructure facility to the companies.

AP State has further decided not to agree for long term PPAs as it is observed that lot

of discrepancies and complications are forth coming due to PPAs. However the additional power required can be purchased from Merchant Power Companies at mutually agreed rates (higher) from Merchant Power Companies under Open access facility.

However the power requirement of the state shall be procured from AP GENCO. But the reality is that the budget of Rs.6184/- Crores set for APGENCO, 3,500 Crores Taken away for Electricity subsidies and the balance allotted for power purchase. A.P. GENCO is left with not even a single paisa. AP GENCO finally can neither generate extra power as PPA's agreement is not agreed nor produce. Therefore the future has to depend upon Merchant Power plants.This needs to be reviewed by the commission.

It is almost 16 years that the Electricity Regulatory Commissions are established. Still one frequently receives of grievances from customers that the regulatory systems are not successful so far in creating and nurturing conditions under which electricity of the appropriate quality at the most competitive cost is provided to all consumers.

It is felt that an self-governing, impartial besides fully knowledgeable analysis of current Regulatory system and its impact is needed to develop a second generation regulatory reforms that provide a real-world guidance on in what way to progress commendations for improving the construction, system and presentation.

CHAPTER 6

Analysis and Interpretations

6.0 Data Analysis and Data Interpretations

DATA ANALYSIS

Table No. 6.1: Demographic Analysis of SSI Units (Region, Process and Electrical Loads)

		Frequency	Percent	Valid Percent	Cumulative Percent
Region	Telangana	201	50.0	50.0	50.0
	Costal Andhra	89	22.1	22.1	72.1
	Rayala Seema	112	27.9	27.9	100.0
	Total	**402**	**100.0**	**100.0**	
Nature / Process of Industry	Mfg	354	88.1	88.1	88.1
	Fabrications	29	7.2	7.2	95.3
	Forging	11	2.7	2.7	98.0
	Casting	8	2.0	2.0	100.0
	Total	**402**	**100.0**	**100.0**	
Electrical Load Category	Low Tension	398	99.0	99.0	99.0
	High Tension	4	1.0	1.0	100.0
	Total	**402**	**100.0**	**100.0**	

Table No. 6.2: Demographic Analysis of SSI Units (Voltage Level, Electrical Loads and Nature of Loading)

		Frequency	Percent	Valid Percent	Cumulative Percent
Incoming Voltage Level / Category	440V	398	99.0	99.0	99.0
	33KV	4	1.0	1.0	100.0
	Total	**402**	**100.0**	**100.0**	
Electrical Loading Pattern	Continuous	149	37.1	37.1	37.1
	Shift Wise	246	61.2	61.2	98.3
	Intermittent	7	1.7	1.7	100.0
	Total	**402**	**100.0**	**100.0**	
Nature of Loading	Inductive	49	12.2	12.2	12.2
	Normal	353	87.8	87.8	100.0
	Total	**402**	**100.0**	**100.0**	

Table No. 6.3: Demographic Analysis of SSI Units (Contracted Load and Maximum Contracted Load)

		Frequency	Percent	Valid Percent	Cumulative Percent
Contracted Load	0-30 KW	228	56.7	56.7	56.7
	31-60 KW	76	18.9	18.9	75.6
	61-90 KW	84	20.9	20.9	96.5
	91-120 KW	9	2.2	2.2	98.8
	121-150 KW	5	1.2	1.2	100.0
	Total	**402**	**100.0**	**100.0**	
Maximum Contracted Demand	0-30 KW	237	59.0	59.0	59.0
	31-60 KW	91	22.6	22.6	81.6
	61-90 KW	64	15.9	15.9	97.5
	91-120 KW	6	1.5	1.5	99.0
	121-150 KW	4	1.0	1.0	100.0
	Total	**402**	**100.0**	**100.0**	

Table No. 6.4: Demographic Analysis of SSI Units (Equipment having Highest Motor Rating)

		Frequency	Percent	Valid Percent	Cumulative Percent
Equipment having highest Motor rating	0-2 KW	25	6.2	6.3	6.3
	2-4 KW	69	17.2	17.4	23.7
	4-6 KW	76	18.9	19.1	42.8
	6-8 KW	151	37.6	38.0	80.9
	8-10 KW	76	18.9	19.1	100.0
	Total	**397**	**98.8**	**100.0**	
Missing Ratings	System	5	1.2		
	Total	**402**	**100.0**		

Table No. 6.5:Demographic Analysis of SSI Units (Average Consumptions in Units and INR)

		Frequency	Percent	Valid Percent	Cumulative Percent
Average Consumption (in Units)	0-1000	226	56.2	56.2	56.2
	1000-5000	152	37.8	37.8	94.0
	5000-10000	18	4.5	4.5	98.5
	10000-15000	3	0.7	0.7	99.3
	15000-20000	3	0.7	0.7	100.0
	Total	**402**	**100.0**	**100.0**	
Average Consumption (in Rs.)	0-5000	264	65.7	65.7	65.7
	5000-25000	105	26.1	26.1	91.8
	25000-45000	26	6.5	6.5	98.3
	45000-65000	2	0.5	0.5	98.8
	Above 65000	5	1.2	1.2	100.0
	Total	**402**	**100.0**	**100.0**	

Table No.6.6: Discriptive Analysis of Interactions with Stake holders

How frequently the interactions with various stake holders are conducted in a year

	Frequency	Percent	Valid Percent	Cumulative Percent
Never	38	9.5	9.5	9.5
Occasionally	183	45.5	45.5	55
Less Frequently	152	37.8	37.8	92.8
Frequently	28	7	7	99.8
Very Frequently	1	0.2	0.2	100
Total	**402**	**100**	**100**	

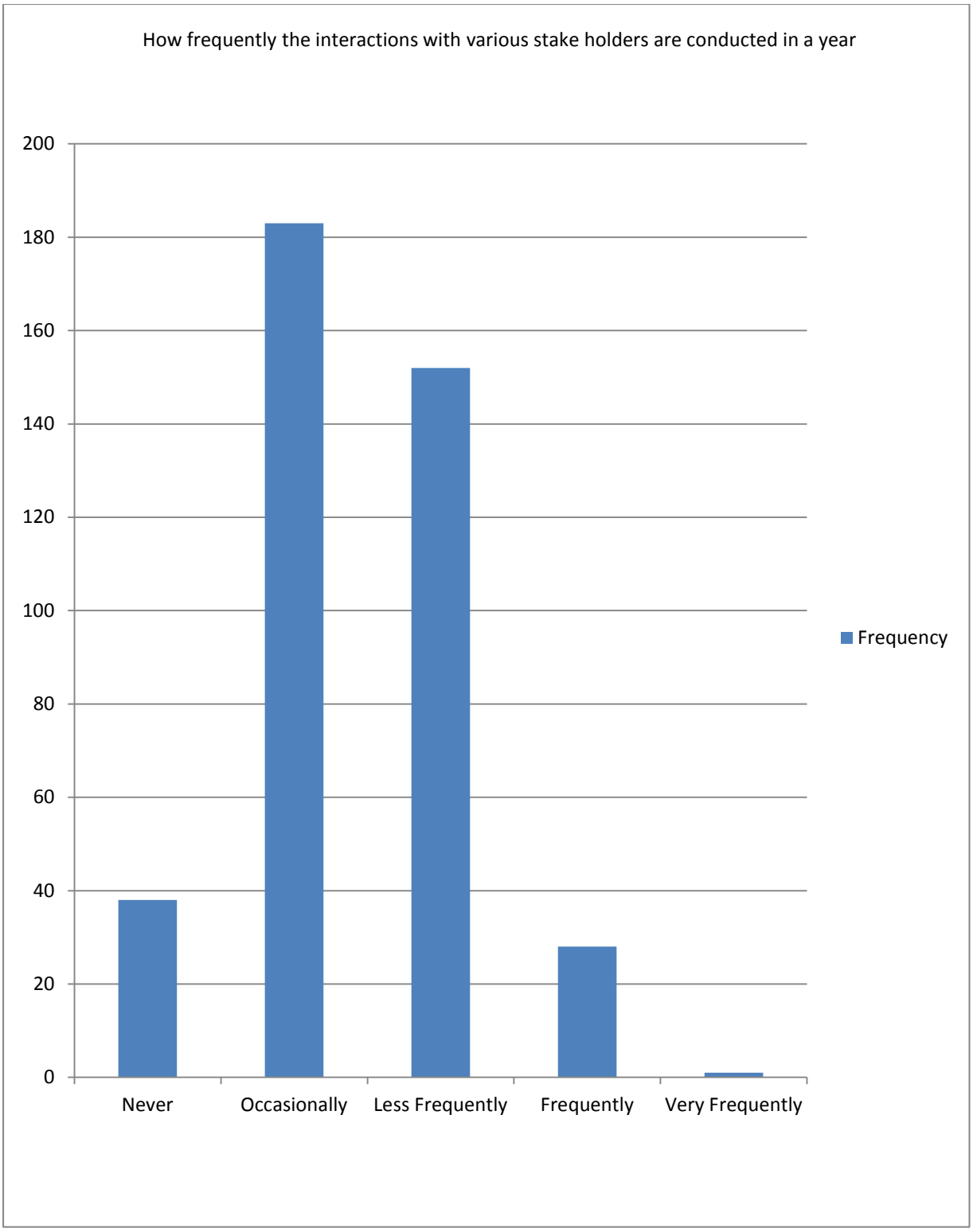


Fig No6.1 Graphical Analysis of Interactions

Table No.6.7: Region wise Analysis of Interactions with Stake holders

How frequently the interactions with various stake holders are conducted in a year (Region wise)

		Region Cross Tabulation			Total
		Telangana	**Coastal Andhra**	**Rayala Seema**	
Never	Frequency	0	1	37	38
	Percentage	0%	2.6%	97.4%	100.0%
Occasionally	Frequency	103	20	60	183
	Percentage	56.3%	10.9%	32.8%	100%
Less Frequently	Frequency	87	59	6	152
	Percentage	57.2%	38.8%	3.9%	100%
Frequently	Frequency	10	9	9	28
	Percentage	35.7%	32.1%	32.1%	100%
Very Frequently	Frequency	1	0	0	1
	Percentage	100%	0%	0%	100%
Total		**201**	**89**	**112**	**402**
		50%	**22.1%**	**27.9%**	**100%**

Table No.6.8: Descriptive Analysis of consultancy process

What type of consultancy process prior to Regulatory decisions is done normally?

	Frequency	Percent	Valid Percent	Cumulative Percent
Meetings	3	0.7	0.7	0.7
Hearings	231	57.5	57.5	58.2
Specific Issue Meetings	19	4.7	4.7	62.9
None	147	36.6	36.6	99.5
All the Above	2	0.5	0.5	100
Total	**402**	**100**	**100**	

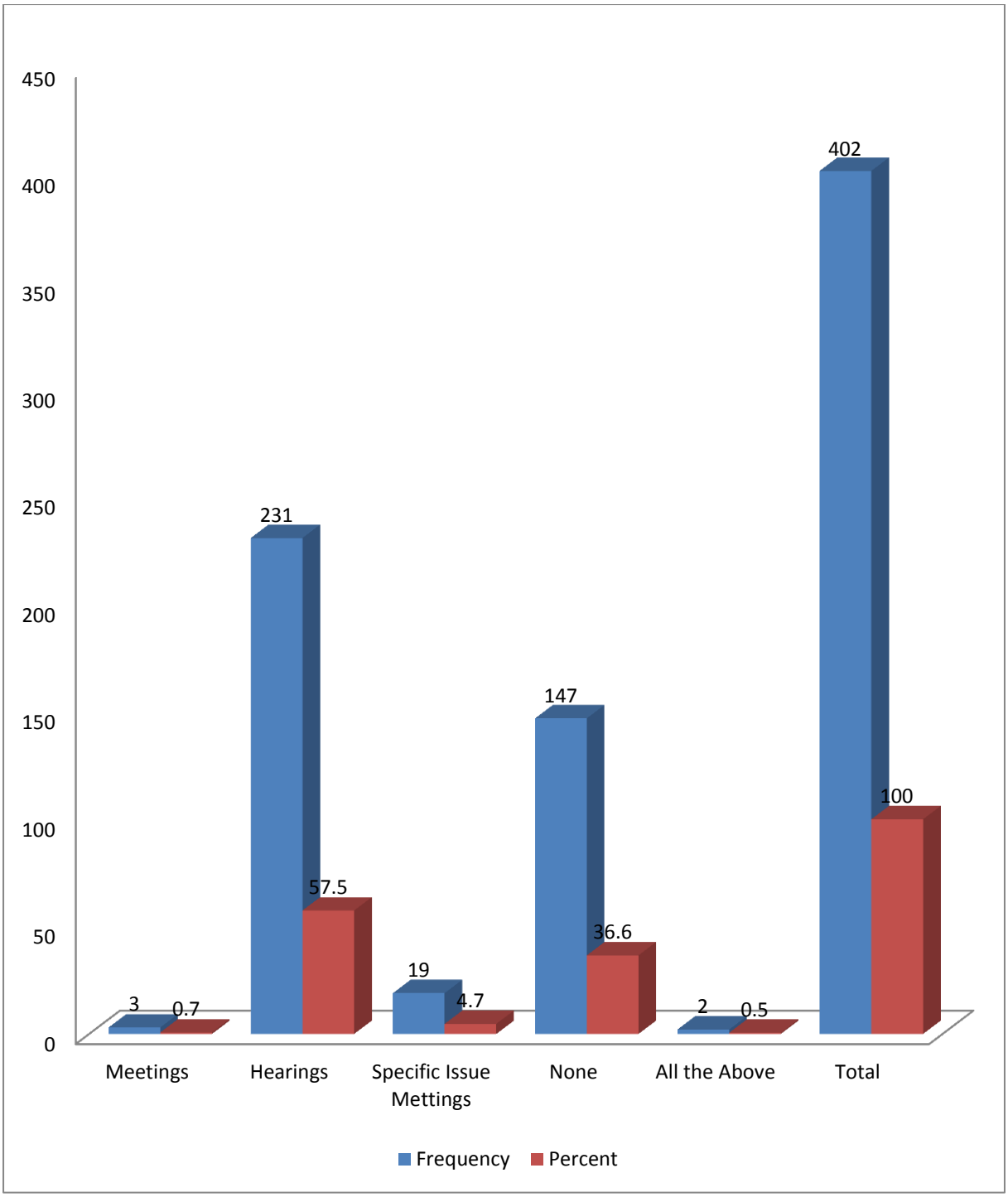


Fig No6.2 Graphical Analysis of Consultancy Process

Table No.6.9: Region wise Analysis of consultancy process

What type of consultation process prior to Regulatory decisions is done normally? (Region wise)

		Region Cross Tabulation			Total
		Telangana	Costal Andhra	Rayala Seema	
Meetings	Frequency	2	0	1	3
	Percentage	66.7%	.0%	33.3%	100.0%
Hearings	Frequency	89	83	59	231
	Percentage	38.5%	35.9%	25.5%	100.0%
Specific Issue Meetings	Frequency	19	0	0	19
	Percentage	100.0%	.0%	.0%	100.0%
None	Frequency	90	6	51	147
	Percentage	61.2%	4.1%	34.7%	100.0%
All the Above	Frequency	1	0	1	2
	Percentage	50.0%	.0%	50.0%	100.0%
	Frequency	201	89	112	402
	Percentage	50.0%	22.1%	27.9%	100.0%

Table No.6.10: Descriptive Analysis of increase in tariff

The percentage increase in tariff for LT industry category from 2009 to 2012

	Frequency	Percent	Valid Percent	Cumulative Percent
20-40%	14	3.5	3.5	3.5
40-60%	11	2.7	2.7	6.2
60-80%	336	83.6	83.6	89.8
80-100%	41	10.2	10.2	100
Total	402	100	100	

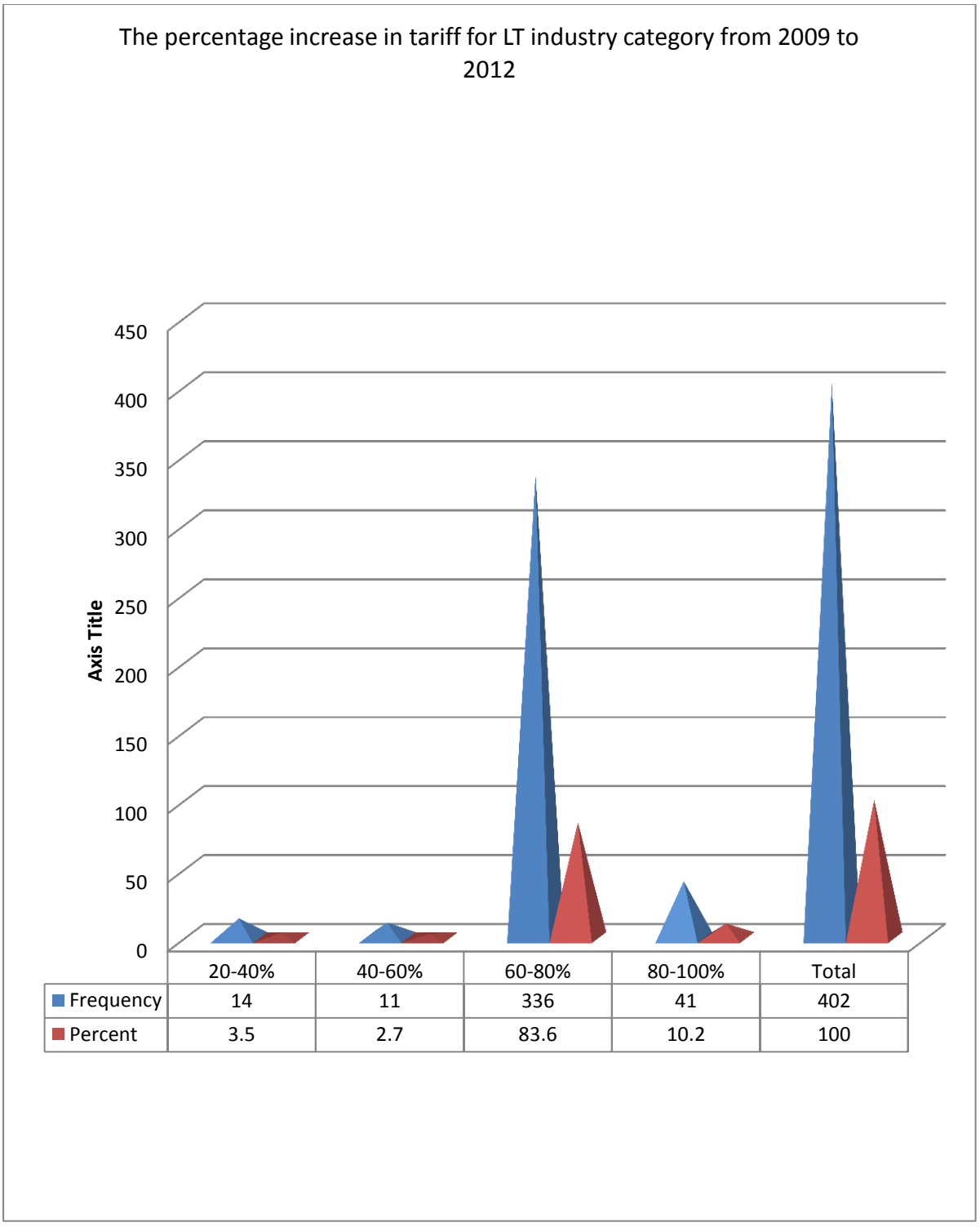


Fig No6.3 Graphical Analysis of Tariff Increase

Table No.6.11: Region wise Analysis of percentage increase in tariff

The percentage increase in tariff for LT industry category from 2009 to 2012 (Region wise)

	Region Cross Tabulation			Total
	Telangana	Costal Andhra	Rayala Seema	
20-40%	2	5	7	14
	14.3%	35.7%	50.0%	100.0%
40-60%	10	0	1	11
	90.9%	.0%	9.1%	100.0%
60-80%	169	65	102	336
	50.3%	19.3%	30.4%	100.0%
80-100%	20	19	2	41
	48.8%	46.3%	4.9%	100.0%
Total	**201**	**89**	**112**	**402**
	50.0%	**22.1%**	**27.9%**	**100.0%**

Table No.6.12: Discriptive Analysis of Power cuts per day

How many hours of Power cuts per day happen in present situation?

	Frequency	Percent	Valid Percent	Cumulative Percent
0-2 Hours	4	1	1	1
2-4 Hours	23	5.7	5.7	6.7
4-6 Hours	338	84.1	84.1	90.8
6-8 Hours	23	5.7	5.7	96.5
More than 8 hours	14	3.5	3.5	100
Total	**402**	**100**	**100**	

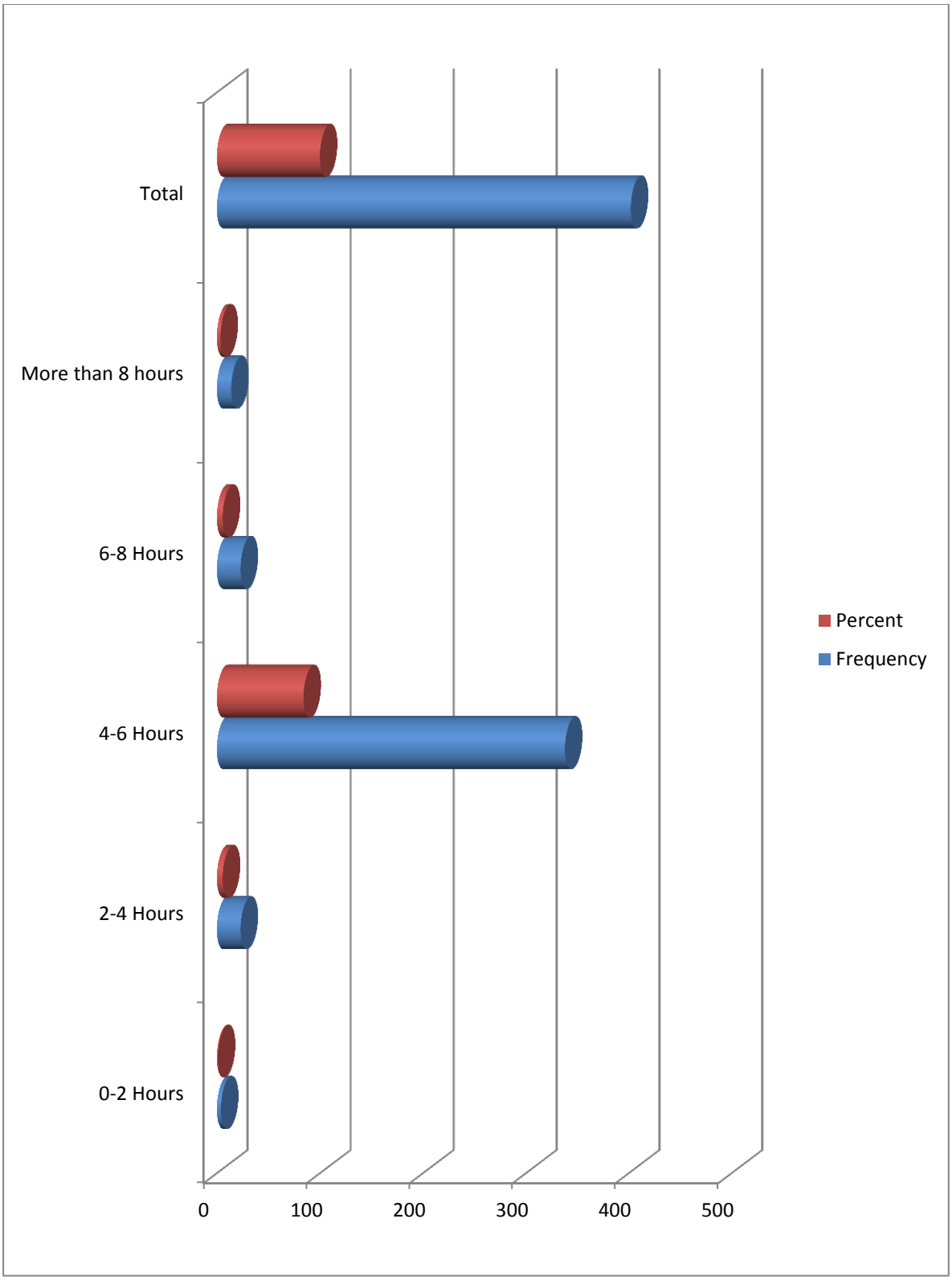


Fig No6.4 Graphical Analysis of Power cuts per day

Table No.6.13: Region wise Analysis of Power cuts per day

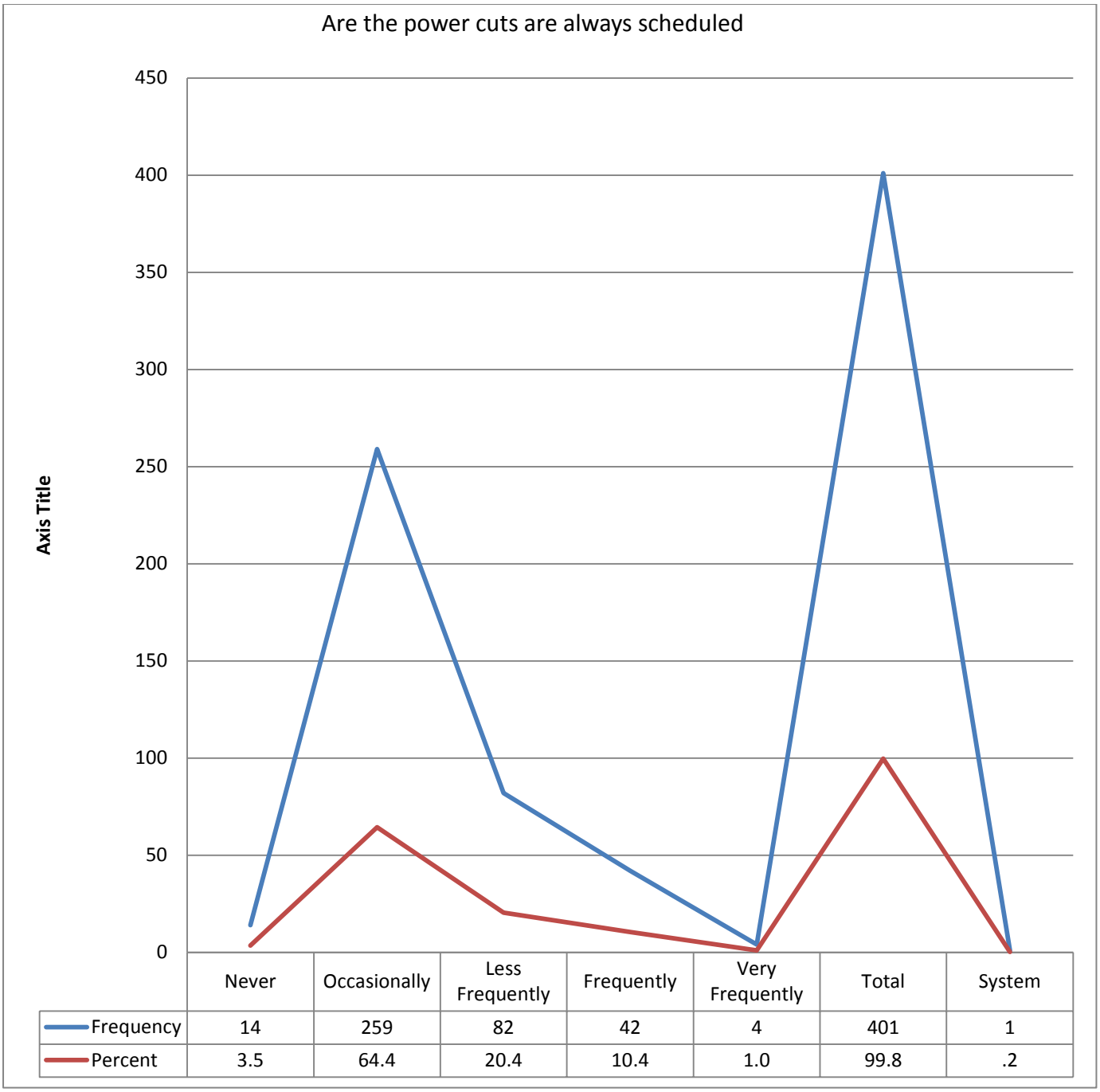
How many hours of Power cuts per day happen in present situation? (Region wise)

	Region Cross Tabulation			Total
	Telangana	Coastal Andhra	Rayala Seema	
0-2 Hours	2	0	2	4
	50.0%	0%	50.0%	100.0%
2-4 Hours	23	0	0	23
	100.0%	0%	0%	100.0%
4-6 Hours	164	87	87	338
	48.5%	25.7%	25.7%	100.0%
6-8 Hours	2	0	21	23
	8.7%	0%	91.3%	100.0%
More than 8 hours	10	2	2	14
	71.4%	14.3%	14.3%	100.0%
Total	**201**	**89**	**112**	**402**
	50.0%	**22.1%**	**27.9%**	**100.0%**

Table No.6.14: Descriptive Analysis of scheduled Power cuts

Are the power cuts are always scheduled?

	Frequency	Percent	Valid Percent	Cumulative Percent
Never	14	3.5	3.5	3.5
Occasionally	259	64.4	64.6	68.1
Less Frequently	82	20.4	20.4	88.5
Frequently	42	10.4	10.5	99.0
Very Frequently	4	1.0	1.0	100.0
Total	**401**	**99.8**	**100.0**	
System	1	0.2		
Grand Total	**402**	**100.0**		



	Never	Occasionally	Less Frequently	Frequently	Very Frequently	Total	System
Frequency	14	259	82	42	4	401	1
Percent	3.5	64.4	20.4	10.4	1.0	99.8	.2

Fig No6.5 Graphical Analysis of Scheduled Power cuts

Table No.6.15: Region wise Analysis of scheduled Power cuts

Are the power cuts are always scheduled? (Region wise)

	Region Cross Tabulation			Total
	Telangana	Coastal Andhra	Rayala Seema	
Never	5	0	9	14
	35.7%	0%	64.3%	100.0%
Occasionally	104	86	69	259
	40.2%	33.2%	26.6%	100.0%
Less Frequently	51	2	29	82
	62.2%	2.4%	35.4%	100.0%
Frequently	37	1	4	42
	88.1%	2.4%	9.5%	100.0%
Very Frequently	4	0	0	4
	100.0%	.0%	.0%	100.0%
Total	201	89	111	401
	50.1%	22.2%	27.7%	100.0%

Table No.6.16: Descriptive Analysis of Power holidays per week

How many Power holidays per week in the present situation

	Frequency	Percent	Valid Percent	Cumulative Percent
One day	90	22.4	22.4	22.4
Two days	229	57	57	79.4
Three days	76	18.9	18.9	98.3
Four days	6	1.5	1.5	99.8
More than four days	1	0.2	0.2	100
Total	**402**	**100**	**100**	

How many Power holidays per week in the present situation

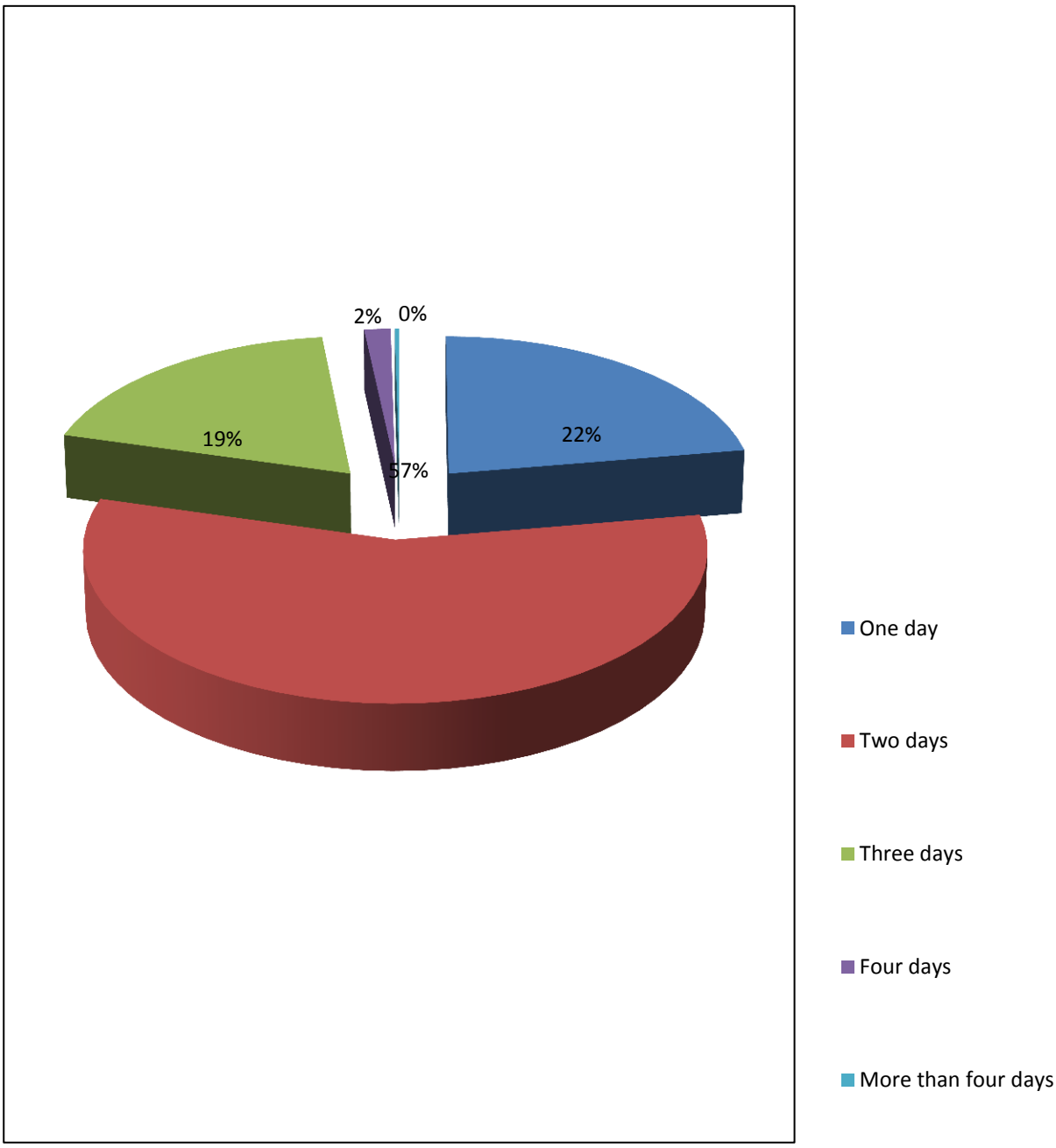


Fig No6.6 Graphical Analysis of Power holidays

Table No.6.17: Region wise Analysis of Power holidays per week

How many Power holidays per week in the present situation? (Region wise)

	Region Cross Tabulation			Total
	Telangana	**Coastal Andhra**	**Rayala Seema**	
One day	51	37	2	90
	56.7%	41.1%	2.2%	100.0%
Two days	78	52	99	229
	34.1%	22.7%	43.2%	100.0%
Three days	66	0	10	76
	86.8%	0%	13.2%	100.0%
Four days	5	0	1	6
	83.3%	0%	16.7%	100.0%
More than four days	1	0	0	1
	100.0%	0%	0%	100.0%
Total	**201**	**89**	**112**	**402**
	50.0%	**22.1%**	**27.9%**	**100.0%**

Table No.6.18: Descriptive Analysis of Tariff Reviews

How long is the period in terms of years between Prices/ Tariff reviews? (Region wise)

	Frequency	Percent	Valid Percent	Cumulative Percent
One Year	111	27.6	27.6	27.6
Two Years	274	68.2	68.2	95.8
Three Years	4	1	1	96.8
Four Years	13	3.2	3.2	100
Total	**402**	**100**	**100**	

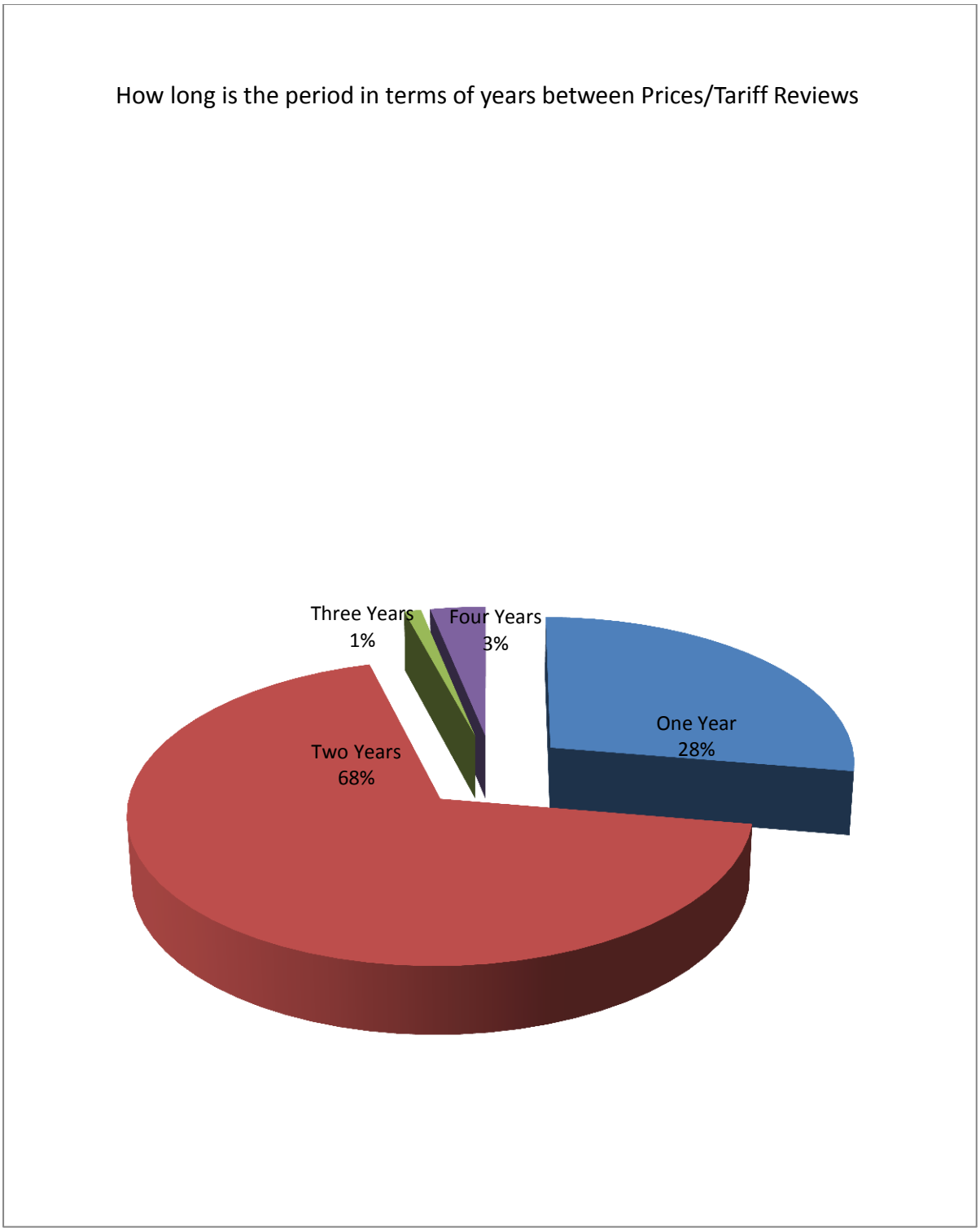


Fig No6.7 Graphical Analysis of Tariff Reviews

Table No. 6.19: Region wise Analysis of Tariff Reviews

How long is the period in terms of years between Prices/Tariff reviews? (Region wise)

	Region Cross Tabulation			Total
	Telangana	Coastal Andhra	Rayala Seema	
One Year	15	38	58	111
	13.5%	34.2%	52.3%	100.0%
Two Years	174	47	53	274
	63.5%	17.2%	19.3%	100.0%
Three Years	1	3	0	4
	25.0%	75.0%	.0%	100.0%
Four Years	11	1	1	13
	84.6%	7.7%	7.7%	100.0%
Total	201	89	112	402
	50.0%	22.1%	27.9%	100.0%

6.1 Data Interpretations

SECTION 1

SECTION A

Descriptive Statistics / Demographic statistics

The total number/frequencies of the responses of the units of the survey (questioner) are given below.

Table No. 6.20: Responses region wise

		Frequency	Percent
Region	Telangana	201	50.0
	Coastal Andhra	89	22.1
	Rayala Seema	112	27.9
	Total	**402**	**100.0**

Table No. 6.21: Classification/process of industries

		Frequency	Percent
Nature / Process of Industry	Mfg	354	88.1
	Fabrications	29	7.2
	Forging	11	2.7
	Casting	8	2.0
	Total	**402**	**100.0**

Note: The maximum number of units belong to manufacturing category/ process involving various processes/ activity on continues shift or intermediate shifts

Table No. 6.22: Electrical load

		Frequency	Percent
Electrical Load Category	Low Tension	398	99.0
	High Tension	4	1.0
	Total	**402**	**100.0**

Maximum 99% of the units taken up for study are working with low tension power supply therefore the maximum consumers/units belong to low tension category and the problems faced by the LT (low tension) consumers are given maximum focus for this study.

Table No. 6.23: Incoming voltage level of the units

		Frequency	Percent
Incoming Voltage Level/ Category	440V	398	99.0
	33KV	4	1.0
	Total	**402**	**100.0**

149 units that is 37.1% are operating on continues shift basis that is 3 shifts 24 hours. The process of these units belonging to melting/ forging many a times they need to work on 24 hours due to uninterruptable process and they need interruption free power supply. Any interruption during the course shall cautilize production loss and revenue loss.

246 units that is 61.2% are operating on shift wise basis depending upon the orders the carter to. The interruption in power supply cautilizes less production loss and revenue loss compare to units working on continues shift basis.

Table No. 6.24: Nature of loading

		Frequency	Percent
Nature of Loading	Inductive	49	12.2
	Normal	353	87.8
	Total	**402**	**100.0**

The units having inductive load generally belong to welding activity as we all aware that the inductive load cautilizes negative effect on the incoming power supply and neighbour units are also get affected. The power factor of the incoming supply is affected and the quality of the power supply becomes less due to inductive loads. However these units may be given a separate zone for doing there activity regulatory council is advised to take care of them so that they are not penalised heavily. The introduction of the compositors of suitable category may be supplied so that the power factors get compensated.

Table No. 6.25: Contracted Demand

		Frequency	Percent
Contracted Demand	0-30 KW	237	59.0
	61-90 KW	64	15.9

Many a times the units are required to exceed the maximum contracted demand in order to full fill there committed delivery schedules with their customers some of the orders being seasonal. The discoms penalized these units heavily (6 – 7 times) the normal charges for having exceeded maximum contracted demand. These situations have to be considered sympathetically by SERC's and the penalties are to be reduced to very low level or the categories are to be increased to higher levels of maximum contracted demand so as to enable them to survive and grow. Many of these units contribute to the productivity of the nation and to the GDP growth of the country.

Table No. 6.26: Average consumptions per month

		Frequency	Percent
Average Consumption (in Rs.)	0-5000	264	65.7
	5000-45000	131	32.6
	Above 45000	7	1.7

264 units pay an regular bill of Rs.4000 per month and 131 units pay an average bill of Rs.30000 nearly per month and 7 amounts of units pay an average bill of Rs.60000 per month.

Section B

Descriptive Statistics 2 (Survey Results)

Table No. 6.27: Frequencies of interaction with stake holders region wise

How frequently the interaction happen region wise in an year

		Region Cross Tabulation			Total
		Telangana	Coastal Andhra	Rayala Seema	
Never	Frequency	0	1	37	38
	Percentage	0%	2.6%	97.4%	100.0%
Occasionally	Frequency	103	20	60	183
	Percentage	56.3%	10.9%	32.8%	100%
Less Frequently	Frequency	87	59	6	152
	Percentage	57.2%	38.8%	3.9%	100%
Frequently	Frequency	10	9	9	28
	Percentage	35.7%	32.1%	32.1%	100%
Very Frequently	Frequency	1	0	0	1
	Percentage	100%	0%	0%	100%
Total		**201**	**89**	**112**	**402**
		50%	**22.1%**	**27.9%**	**100%**

The maximum number responded for occasional nature of hearing/meetings in their regions. Very frequently response is almost nil in almost all the three regions. This situation clearly indicates that the existing frequency of interaction with stakeholders/ consumer goods

associations and SSI groups is very less and needs to be reviewed. It is necessary to conduct monthly/ bi monthly meetings/ hearings in all the three regions. The DISCOMS need to make arrangements accordingly in three regions. TheERC is required to give necessaryinstructions for better public participation, interaction and obtain greater customer focus and customer satisfaction in the functioning and activities of SERC's.

Table No. 6.28: Type of consultancy process prior to regulatory decisions.

		Region Cross Tabulation			Total
		Telangana	**Costal Andhra**	**Rayala Seema**	
Meetings	Frequency	2	0	1	**3**
	Percentage	66.7%	.0%	33.3%	**100.0%**
Hearings	Frequency	89	83	59	**231**
	Percentage	38.5%	35.9%	25.5%	**100.0%**
Specific Issue Mettings	Frequency	19	0	0	**19**
	Percentage	100.0%	.0%	.0%	**100.0%**
None	Frequency	90	6	51	**147**
	Percentage	61.2%	4.1%	34.7%	**100.0%**
All the Above	Frequency	1	0	1	**2**
	Percentage	50.0%	.0%	50.0%	**100.0%**
Total	Frequency	201	89	112	**402**
	Percentage	50.0%	22.1%	27.9%	**100.0%**

The maximum number responded that the normal process of consultancy is public hearings. There is hardly any specific meetings conducted in Rayalaseema and Costal Andhra Regions it is therefore felt that the public hearings may be increased and made at least quarterly in all the three regions. Specific issue meetings may be conducted with farmer bodies, SSI associations, spinning mills and other groups depending upon the issues and representation in the relevant districts by SERC in consultation with relevant DISCOMS. This shall facilitate closer interaction with the concernd groups and gain good customer focus and customer satisfaction. This shall also ease out the problem of SSIs and working of these units can be scheduled as per the discussions/ decisions in these specific issue meetings.

1. The percentage increase in tariff for LT industry category.

The maximum responses in all the three regions have indicated as 60 – 80% and further study indicates that many of the units/ customers have agreed upon for this increase.

2. The number of hours of power cuts.

The survey responses indicated that on an average 4 – 6 hours of power cut per day in Telengana region and 0-2 hours in costal Andhra and Rayalaseema regions. the power cuts are more in Telengana region compare to Andhra and Rayalaseema. The situation should be given highest priority in Telengana area. Suitable measures at high level may be taken up for increasing the power supply, decreasing the power cuts and action to be taken for better generation capacity to encounter this serious situation.

3. Hours of power holidays per week.

Maximum survey responses indicated that two days (2) power holidays and three days (3) in certain regions of Telengana region.

In Rayalaseema the responses indicated that two days (2) power holidays are happening however of late the power holidays are reduced to 1 per week. In costal Andhra there is only one day (1) power holiday per week in some areas and there is no power holiday in some other areas.

The situation in Telengana is serious and to be improved.

4. The period in terms of years between price/tariff reviews region wise in LT category.

The maximum responses of the survey have indicated that two year (2) is the time period between the tariff review in all the three regions.

6.2 Statistical Analysis

Section 2

Chi-square

6.2.1 One Way Anova Studies

Chi-squared tests were conducted to test the research hypotheses framed for this part of the study. The results of the hypotheses are

H1: There is a major variation in the perceptions /responses of the SSI sector in between the three regions in the performance of State Regulatory Council.

H1.1: There is a major variation in the perceptions /responses of the SSI Sector in the Regulatory Policy and Restructuring.

Table No.6.29 ANOVA for Regulatory Policy and Restructuring

		Sum of Squares	df	Mean Square	F	Sig.
3.1 Utilities can appeal if they disagree with regulatory decisions	Between Groups	30.475	2	15.238	83.284	0.000
	Within Groups	73.000	399	0.183		
	Total	103.475	401			
3.2 Are regulatory decisions publicly available	Between Groups	0.058	2	0.029	0.698	0.498
	Within Groups	16.522	399	0.041		
	Total	16.580	401			
3.3 Do you feel that the functioning of the regulatory commission and functioning of ERC is adequate to meet the expectations of the stake holders	Between Groups	0.421	2	0.211	1.599	0.203
	Within Groups	52.584	399	0.132		
	Total	53.005	401			

Hypotheses (H1): There exists a significant difference in the perception/responses of the SSI sector in the Regulatory policy and restructuring in between the three areas

H1a: Utilities can appeal if they disagree with regulatory decisions. The P value obtained (0.000) is lower than the P value at the level of significance at 5% (0.005) and so the H1a hypotheses is accepted. This means that there exists a significant difference in respect of utilities appealing in between Telangana, Andhra Pradesh and Rayalaseema areas in respect of regulatory policy and restructuring.

H1b: Regulatory decisions are publicly available. The P value (0.408) obtained is higher than the P value at the level of significance at 5% (0.005) and therefore the hypotheses H1b may be rejected. This means that there is not much significant difference in between the areas of Telangana, Andhra Pradesh and Rayalaseema in respect of Public availability of Regulatory decisions and this indicates that the decisions are many a time not publicly available for a wider range of stake holders.

H1c: The functioning of ERC is adequate to meet the expectations of the stake holders. The P value obtained (0.203) is higher than the P value at the 5% level of significance (0.005) and therefore the hypotheses H1c may be rejected. This means that the functioning of State Electricity regulation commission is not adequate to meet the expectations of the stake holders in Andhra Pradesh, Telangana and Rayalaseema.

6.2.2 The summary of Hypothesis of identified constructs

Table No. 6.30 Summary of Hypothesis (Regulatory policy and restructuring)

Hypothesis	Construct/Critical influencing factors	P-value	Result
H1a	Utilities can appeal if they disagree with SERC	0.00 (P<0.05)	Accept
H1b	Regulatory decisions are publically available to all	0.498 (P>0.05)	Reject
H1c	SERC functioning adequate to meet the expectation	0.203 (P>0.05)	Reject

It is suggested that a separate committee/body is formed in the SERCs and quarterly meetings are conducted exclusively with stake holders/associations who do not agree with the regulatory decisions to resolve the issue.

H2: There is a major variation in the perceptions /responses of the SSI Sector in the price regulation in between the three areas

Table No.6.31 ANOVA for Price Regulation

		Sum of Squares	df	Mean Square	F	Sig.
3.4 Can you represent regarding frequent loss of production and revenue due to power cuts and voltage variations to regulator directly	Between Groups	34.371	2	17.185	95.791	0.000
	Within Groups	71.582	399	0.179		
	Total	105.953	401			
3.5 Can LT industries purchase power on short term basis from other than DISCOM for their requirement under open access	Between Groups	80.097	2	40.048	666.283	0.000
	Within Groups	23.983	399	0.060		
	Total	104.080	401			
3.6 1% discount for bill payment in advance is provided	Between Groups	.195	2	0.097	1.535	0.217
	Within Groups	25.318	399	0.063		
	Total	25.512	401			
4.1 Do you feel that the role of the regulatory commission in maintaining the supply of power at reasonable cost and good quality is achieved in the state	Between Groups	16.085	2	8.043	23.437	0.000
	Within Groups	136.920	399	0.343		

	Total	153.005	401			
4.2 The response of the regulatory commission regarding cross subsidy fixation for LT industries in the present situation is justified	Between Groups	26.979	2	13.490	109.238	0.000
	Within Groups	49.272	399	0.123		
	Total	76.251	401			
4.3 Are you made clear by the regulatory commission on the method of calculation of FSA charges(2012-13) and do you feel ok	Between Groups	.040	2	0.020	0.677	0.509
	Within Groups	11.801	399	0.030		
	Total	11.841	401			
4.4 The response of the regulatory commission regarding controlling un scheduled power cuts is effective	Between Groups	.016	2	0.008	0.317	0.728
	Within Groups	9.944	399	0.025		
	Total	9.960	401			
5.2 Is the increase in Tariff for LT industries is acceptable in view of frequent power cuts	Between Groups	15.683	2	7.841	30.153	0.000
	Within Groups	103.762	399	0.260		
	Total	119.445	401			

There is a major variation in the perception/responses of the SSI sector in the three regions of Telangana, Coastal Andhra and Rayalaseema in the price regulation.

H2a: Representing regarding frequent loss of production and revenue due to power cuts and voltage variations to regulator by SSI sector can be done.

The P value obtained (0.00) is lower than the P value at the 5% level of significance (0.005) and therefore, this hypotheses may be accepted. This means that the SSI sector can represent to regulator directly regarding frequent loss of production and revenues.

H2b: LT industries (below 1MW) cannot purchase power on short term basis from other than DISCOMs under open access. The P value obtained (0.000) is lower than the P value at the 5% level of significance (0.005) and therefore the hypotheses may be accepted. This means that LT industries (below MW) in the regions of Telangana, Andhra, and Rayalaseema cannot purchase power from other than DISCOMs under the open access.

H2c: The role of the regulatory commission in maintaining the supply of power at reasonable cost and good quality is not achieved. The P value obtained (0.000) is lower than the P value at 5% level of significance (0.005) and therefore the hypotheses may be accepted. This means that the regulatory commission is not totally successful in maintaining the supply of power at reasonable cost and good quality.

H2d: In the Cross subsidy fixation for LT industries, the response of the regulatory commission is not justified. The P value obtained (0.000) is lower than the P value at 5% level of significance (0.005) and therefore the hypotheses may be accepted. This means that, the response of the regulatory commission regarding cross subsidy fixation for LT industries has to be improved.

H2e: The method of calculation of FSA charges is made clear by DISCOMs and regulatory commission response is good. The P value obtained (0.509) is higher than the P value at 5% level of significance (0.005) and therefore the hypotheses may be rejected. This means that the regulatory commission's response is poor.

H2f: Controlling un-scheduled power cuts are not totally effective and the response of the SERC in the three regions is effective. The P value obtained (0.728) is higher than the P value at 5% level of significance (0.005) and therefore the hypotheses may be rejected. This means that the control is not effective in all the three regions.

H2g: Tariff increase in LT SSI units with frequent power cuts is also ok. The P value obtained (0.000) is lower than the P value at 5% level of significance (0.005) and therefore the hypotheses may be accepted. This means that the units are ready to pay provided there is continous power supply for their opertions.

Table No. 6.32 Summary of Hypothesis (PRICE REGULATION)

Hypothesis	Construct/Critical influencing factors	P-value	Result
H2a	Frequent loss of production and revenue by SSI units	0.00 (P<0.05)	Accept
H2b	LT units below 1MW cannot draw power other than DISCOMS	0.00 (P<0.05)	Accept
H2c	Quality power supply at reasonable cost not available	0.00 (P<0.05)	Accept
H2d	Cross subsidy fixation not justified	0.00 (P<0.05)	Accept
H2e	Method of calculation FSA is clear	0.509 (P>0.05)	Reject
H2f	Controlling unscheduled power	0.728 (P>0.05)	Reject
H2g	The Traiff Increase with frequent power cuts	0.00 (P<0.05)	Accept

In view of the above observations the SERC's may look into and consider below factors

- ✓ Provision of compensation for frequent loss of production and revenue by SSI's in the states due to power cuts and voltage variations. SERC's may consider and provide interruption free power supply after studying the process/activity of the unit and DISCOM's may exempt that zone from power cut till the processes is finished.

- ✓ Providing short term provision for open access for units less than 1 MW also case by case and applying the additional wheeling charges and other Sir charges.
- ✓ Cross subsidy fixation for LT industries need to be reviewed.
- ✓ Controlling unscheduled power cuts and provide incentives/suitable compensation for the duration of the unscheduled power cut to the effected units.

H3: There is a major variation in the perceptions /responses of the SSI Sector in the universal service obligation in between the three regions

Table No.6.33 ANOVA for Universal Service Obligation

		Sum of Squares	df	Mean Square	F	Sig.
4.6 Do you feel that the effort of the regulatory commission in pressurizing government to release subsidies in time to eligible categories is inadequate	Between Groups	1.105	2	.552	5.065	0.007
	Within Groups	43.505	399	0.109		
	Total	44.609	401			
4.5 The response of the regulatory Agency for noncompliance of Citizens charter by DISCOMS many a times is satisfactory	Between Groups	.006	2	0.003	.117	0.890
	Within Groups	10.991	399	0.028		
	Total	10.998	401			
5.4 The delay in ARR submissions by few Discoms has considerable impact for revising tariff in time	Between Groups	0.266	2	0.133	2.831	0.040
	Within Groups	18.732	399	0.047		
	Total	18.998	401			

There is a major variation in the perception/responses of the SSI sector in the universal service/obligation in the three regions of Telangana, Andhra and Rayalaseema.

H3a: Releasing subsidies in time to eligible categories is inadequate. The P value obtained (0.007) is higher than the P value at 5% level of significance (0.05) and therefore the hypotheses may be accepted. This means that, the effort of the regulatory commission to release subsidies in time is inadequate in all the three regions Telangana, Andhra and Rayalaseema.

H3b: The response of the regulatory Agency for noncompliance of Citizens charter by DISCOMS many a times is satisfactory.The P value obtained (0.890) is higher than the P value at 5% level of

significance (0.05) and therefore the hypotheses may be rejected.

This means that, compliance of Citizens charter is not satisfactory.

H3c: The delay in ARR submissions by few Discoms has considerable impact for revising tariff in time. The P value obtained (0.040) is lower than the P value at 5% level of significance (0.05) and therefore the hypotheses may be accepted.

This means that, Control of SERC on DISCOMsin controlling thedelay in submissions ARR is inadequate in all the three regions Telangana, Andhra and Rayalaseema.

Table No. 6.34 Summary of Hypothesis (UNIVERSAL SERVICE OBLIGATION)

Hypothesis	Construct/Critical influencing factors	P-value	Result
H3a	Lack of Effort of SERC to release the subsidy's in time	0.007 (P<0.05)	Accept
H3b	Response of the ERC for Non-compliance of citizen's charter	0.89 (P>0.05)	Reject
H3c	The delay in ARR submissions for revising tariff in time	0.04 (P<0.05)	Accept

SERCs are needed to put extra effort and take up the case with state government for releasing subsidy's in time/in advance to eligible categories.

The DISCOM's are to be cautioned and punishments/ rewards may be instituted for attending/ not attending the functions (ARR submissions) in time/activities and responses as per the citizen charter strictly.

H4: There is a major variation in the perceptions /responses of the SSI Sector in the transparency in between the three regions.

Table No.6.35 ANOVA for Transparency

		Sum of Squares	df	Mean Square	F	Sig.
5.5 Is the cross subsidy loading ranging from 25%-70% for LT industries in tariff fixing for 2012-13 is acceptable in view of the frequent power cuts and quality/ service level problems	Between Groups	23.952	2	11.976	55.460	.000
	Within Groups	86.160	399	.216		
	Total	110.112	401			
5.6 The regulatory commission approval for charging FSA for the year 2011-12 and 2012-13 is acceptable	Between Groups	6.642	2	3.321	13.629	0.000
	Within Groups	97.222	399	0.244		
	Total	103.863	401			
5.7 Do you feel that this type of surcharges are to be totally borne by utilities	Between Groups	1.604	2	.802	2.038	.132
	Within Groups	156.976	399	.393		
	Total	158.580	401			
5.8 Is billing on KVAH basis is agreeable (due to need for PF to be near unity)	Between Groups	2.638	2	1.319	3.776	.024
	Within Groups	139.392	399	.349		
	Total	142.030	401			
5.3 Do you feel that regulatory Commission is transparent	Between Groups	84.526	2	42.263	196.190	0.000
	Within Groups	85.952	399	0.215		
	Total	170.478	401			

There is a major variation in the perception / responses of the SSI sector in the transparency of the regulatory commission's functioning in the three regions of Telangana, Andhra and Rayalaseema.

H4a: The transparency of the regulatory commission in interacting with the stake holders is ineffective. The P value obtained (0.000) is lower than the P value at 5% level of significance (0.005) and therefore the hypotheses may be accepted. This means that, the transparency has to be improved.

H4b: Billing on KVAH basis for the LT industrial sector is agreeable in the three regions. The P value obtained (0.0254) is higher than the P value at 5% level of significance (0.005) and therefore the hypotheses may be rejected. This means that, billing on KVAH basis is not agreeable by many of the stake holders.

H4c: Cross subsidy loading of 25% to 75% for tarrif fixing is ok provided there is un interuptable power supply.The P value at 5% level of significance (0.005) and therefore the hypotheses may be accepted.

H4d: The surcharges are to be totally borne by utilities is not justified.P value obtained (0.132) is higher than the P value at 5% level of significance (0.005) and therefore the hypotheses may be rejected.

H4e: The approval of the regulatory commission for charging FSA for the year 2011-12 and 2012-13 is Transperant.The P value obtained (0.000) is lower than the P value at 5% level of significance (0.005) and therefore the hypotheses may be accepted.

Table No. 6.36 Summary of Hypothesis (TRANSPARENCY)

Hypothesis	Construct/Critical influencing factors	P-value	Result
H4a	The regulatory commission is not adequately transparent in practice	0.00 (P<0.05)	Accept
H4b	Billing on KVAH basis	0.254 (P>0.05)	Reject
H4c	Cross Subsidy loading of 25% to 75% Tariff fixing is acceptable	0.00 (P<0.05)	Accept
H4d	This type of surcharges are totally borne by utilities	0.132 (P>0.05)	Reject
H4e	The regulatory commission approval for charging FSA for the year 2011-12 and 2012-13	0.00 (P<0.05)	Accept

The SERCs are required to be truly transparent and be clear to all the stake holders consumers and SSI industries in particular. The regulatory decisions are to be conveyed giving the highlights of each activity/ decisions to all the consumers through publications/websites/media.

H5: There is a major variation in the perceptions /responses of the SSI sector in the efficiency in between the three regions.

Table No.6.37 Anova For Efficency

		Sum of Squares	df	Mean Square	F	Sig.
5.9 The approval of regulating agency for 80% of the minimum billing demand for LT industries in view of frequent power cuts/ holidays, incurring less consumption is justifiable	Between Groups	2.307	2	1.154	4.371	0.06
	Within Groups	105.317	399	0.264		
	Total	107.624	401			
5.10 The TOD tariff for peak hour of the day is acceptable in view of frequent power cuts	Between Groups	6.049	2	3.024	12.716	0.000
	Within Groups	94.899	399	.238		
	Total	100.948	401			
5.11 The approval of the Regulatory agency regarding peak hour tariff charging and heavy penalties for exceeding (5-6 times more than normal) is not ok	Between Groups	9.674	2	4.837	14.006	0.000
	Within Groups	137.801	399	0.345		
	Total	147.475	401			

H5: There is a major variation in the perception/responses of the SSI sector in efficient functioning of SERC in all the three regions.

H5a: 80% of the minimum billing demand condition and its approval by the regulatory commission is not justifiable in all the three regions. The P value obtained (0.013) is higher than the P value at 5% level of significance (0.05) and therefore the hypotheses may be rejected. This means that, this clautilize is not acceptable my many in all the three regions and the response of the regulatory commission is not effective.

H5b: The TOD tariff for peak hour of the day is justifiable in all the three regions. The P value obtained (0.000) is lower than the P value at 5% level of significance (0.005) and therefore the hypotheses may be accepted. This means that, the TOD tariff is acceptable and effective in all the three regions by the LT Industrial sector.

H5c: The heavy penalties for exceeding the maximum demand limit for LT sector is not justifiable in view of the frequent power cuts. The P value obtained (0.000) is lower than the P value at 5% level of significance (0.005) and therefore the hypotheses may be accepted. This means that, charging heavy penalties (5 to 6 times more than normal) is not justifiable and not acceptable in all the three regions by the LT Industrial sector in the existing situation of frequent power cuts and poor quality of power supply.

Table No. 6.38 Summary of Hypothesis (Efficency)

Hypothesis	Construct/Critical influencing factors	P-value	Result
H5a	80% minimum billing demand for LT Industries	0.06 (P>0.05)	Reject
H5b	TOD Tariff	0.00 (P<0.05)	Accept
H5c	Heavy penalties for exceeding MDL unacceptable	0.000 (P<0.05)	Accept

SSI's need to be given all support and incentive for survival therefore SERC's to ensure that these units are not charged with 80% minimum billing conditions since many of the units are not consuming minimum consumption due to shortage of orders.

H6: There is a major variation in the perceptions /responses of the SSI sector in the accountability.

Table No.6.39 Anova For Accountability

		Sum of Squares	df	Mean Square	F	Sig.
6.1 Regulatory agency have made significant impact in improving the performance of power sector in the state so far	Between Groups	64.700	2	32.350	117.018	.000
	Within Groups	110.305	399	.276		
	Total	175.005	401			
6.2 There is quality and service level improvement after independent regulatory agency is formed	Between Groups	.026	2	.013	1.769	.172
	Within Groups	2.971	399	.007		
	Total	2.998	401			
6.3 Regulatory commission has made any significant contribution in bringing in competition and market development in the state power sector so far	Between Groups	.153	2	.076	3.099	.046
	Within Groups	9.837	399	.025		
	Total	9.990	401			
5.1 Accountability of the regulatory commission and functioning of ERC is inadequate to meet the expectations of the stake holders	Between Groups	127.098	2	63.549	86.357	0.000
	Within Groups	293.618	399	0.736		
	Total	420.716	401			

There is a major variation in the perception/responses of the SSI sector regarding the accountability of State regulatory commissions of Telangana and Andhra Pradesh

H6a: The State Regulatory agencies have not made significant impact in improving the performance of the power sector in the states of Telangana and Andhra Pradesh. The P value obtained (0.000) is lower than the P value at 5% level of significance (0.05) and therefore the hypotheses may be accepted. This means that, the state regulatory agency in the state have not yet

made significant impact.

H6b: The quality and service level improvement is adequate in both the states after the independent regulatory agency is formed. The P value obtained (0.172) is higher than the P value at 5% level of significance (0.05) and therefore the hypotheses may be rejected. This means that, the quality and service level improvement is inadequate so far in both the states.

H6c: The state regulatory agency made significant contribution aimed at fetching in rivalry in addition marketplace expansion in the state power sector. The P value obtained (0.046) is higher than the P value at 5% level of significance (0.05) and therefore the hypotheses may be rejected. This means that, the contribution of the state regulatory agency is not significant and needs improvement in bringing competition and market development.

H6d: Accountability of the regulatory commission is inadequate to meet the expectations of the stake holders in the three regions of Telangana, Coastal Andhra and Rayalaseema. The P value obtained (0.000) is lower than the P value at 5% level of significance (0.05) and therefore the hypotheses may be accepted.

This means that, the accountability of the commission in all the three regions in meeting the expectations of the stake holders in inadequate.

Table No. 6.40 Summary of Hypothesis (ACCOUNTABILITY)

Hypothesis	Construct/Critical influencing factors	P-value	Result
H6a	Significant impact in improvement of performance not there	0.00 (P<0.05)	Accept
H6b	Quality and service level improvement	0.172 (P>0.05)	Reject
H6c	Significant contribution in competition and market development	0.46 (P>0.05)	Reject
H6d	Accountablity and functioning of ERC is inadequate	0.00 (P<0.05)	Accept

The credibility and accountability appear to be very poor. The independent regulatory commission of the states may take initiatives and be proactive with the consumers segments and be responsible in all the actions and commitments.

H7: There is a major variation in the perceptions MSME industrial sector region wise with respect to frequency of interaction with stake holders in between the three regions

2.1 How frequently the interactions with various stake holders are conducted in a year

Table No.6.41 Anova for frequency of interactions

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	52.157	2	26.078	56.430	.000
Within Groups	184.393	399	.462		
Total	236.550	401			

There is a major variation in perception/responses of the MSME industrial sector region wise w.r.t frequency of interaction with stake holders. The P value obtained (0.000) is lower than the P value at 5% level of significance (0.005) and therefore the hypotheses may be accepted. This means that, there are certain differences in the regions of Telangana, Rayalaseema andCoastal Andhra in the perception/responses of the MSME industrial sector. The level of interactions with stake holders are differing region wise and the regions in which there are poor levels, need to be improved by conducting monthly meetings in those regions covering wider spectrum of stake holders.

H8: there is a major variation in the perceptions MSME industrial sector region wise with respect to of consultancy process prior to regulatory decisions.

2.2 What type of consultancy process prior to Regulatory decisions is done normally

Table No.6.42 Anova for consultancy process

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	48.796	2	24.398	29.428	.000
Within Groups	330.806	399	.829		
Total	379.602	401			

There is a major variation in the perception/responses of the MSME industrial sector w.r.t consultancy process prior to regulatory decisions. The P value obtained (0.000) is lower than the P value at 5% level of significance (0.05) and therefore the hypotheses may be accepted. This funds that, there exits substantial variance in the consultancy process prior to regulatory decisions between the different regions. However, the consultancy process itself needs to be more elaborate and more transparent in all the three regions.

H9: There is a major variation in the perceptions MSME industrial sector region wise with respect to Power cuts per day.

2.4 How many hours of Power cuts per day happen in present situation

Table No.6.43 Anova for hours of power cuts

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.247	2	1.623	5.694	.004
Within Groups	113.758	399	.285		
Total	117.005	401			

There is a major variation in the perception/responses of the MSME Industrial sector w.r.t .total power cuts per day. The P value obtained (0.004) is lower than the P value at 5% level of significance (0.005) and therefore the hypotheses may be accepted. This means that, the power cuts per day differ between the three regions. However, it may be noted that the power cuts range between 2-6 hours per day and more in Telangana

region compared to the other two regions. So, the focus should be on decreasing the power cuts in Telangana region.

H10: there is a major variation in the perceptions MSME industrial sector region wise with respect to power cuts is always scheduled.

2.5 Are the power cuts are always scheduled

Table No.6.44 Anova for scheduled power cuts

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	26.857	2	13.429	25.936	.000
Within Groups	206.071	398	.518		
Total	232.928	400			

There is a major variation in the perception/responses of the MSME Industrial sector w.r.t. scheduled power cuts per day. The P value obtained (0.000) is lower than the P value at 5% level of significance (0.005) and therefore the hypotheses may be accepted. This means that, the scheduled power cuts differ between the three regions. However, it is observed that power cuts are möre unscheduled in the regions of Telangana and Rayalaseema and needs to be improved.

H11: there is a major variation in the perceptions MSME industrial sector region wise with respect to Power holidays per week in the present situationin between the three regions

2.6 How many Power holidays per week in the present situation

Table No.6.45 Anova for power holidays

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	20.173	2	10.086	22.505	.000
Within Groups	178.825	399	.448		
Total	198.998	401			

There is substantial variance in the observation/responses of the MSME Industrial sector w.r.t. power holidays per week in the present situation in between the three regions. The P value obtained (0.000) is lower than the P value at 5% level of consequence (0.005) and therefore the hypotheses may be accepted. This means that, there is important alteration in the amount of power holidays per week between the three regions. However, it is observed that the power holidays per week range from 1-2 days in coastal Andhra region and in the regions of Telangana and Rayalaseema range from 2-3 days. the pow ThereforePowerholidays need to be decreased in these two regions.

H12: The response of SERCs regarding controlling unscheduled power cuts is effective

4.4 The response of the regulatory commission regarding controlling un scheduled power cuts is effective

Table No.6.46 Anova for controlling unscheduled power cuts

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.016	2	0.008	0.317	0.728
Within Groups	9.944	399	0.025		
Total	9.960	401			

The response of SERCregarding controlling unscheduled power cuts is effective the P value obtained is 0.728 and is higher than the P value at 5% level of significance (0.05) and therefore the hypothesis may be rejected. This means that the response of the SERC of the state is not effective. Therefore it is necessary that SERC take more responsibility and accountability and advice the DISCOMS to reduce the unscheduled power cuts. Also inform the SSI units/ customers in advance to schedule thier operataions accordingly.

H13: The tariff increase for L.T industries inpite of frequent powercuts is o.k

5.2 Is the increase in Tariff for LT industries is acceptable in view of frequent power cuts

Table No.6.47 Anova for increase in tariff

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	15.683	2	7.841	30.153	0.000
Within Groups	103.762	399	0.260		
Total	119.445	401			

The Tariff increase for LT industries in spite of frequent power cuts and there is no significant difference in between the three regions in the responses of SSI units. The P value obtained is 0.00 lower than the P value at 5% level of significance and the hypothesis may be accepted. Therefore it can be inferred that the tariff increase for the LT industries for this period is ok and acceptable.

H14: USB has a significant impact with regulatory measures.

Table No.6.48USB vs Regulatory measures (Relationship)

		5.8 Is billing on KVAH basis is agreeable (due to need for PF to be near unity)					Total
		Strongly Disagree	Disagree	Neither/Nor	Agree	Strongly Agree	
4.6 Do you feel that the effort of the regulatory commission in pressurizing government to release subsidies in time to eligible categories is adequate	Strongly Disagree	0	0	3	1	0	4
	Disagree	2	244	106	11	3	366
	Neither/Nor	1	18	11	0	0	30
	Agree	0	1	0	0	0	1
	Strongly Agree	0	1	0	0	0	1
Total		3	264	120	12	3	402

Table No.6.49Chi-Square Tests (USB vs Regulatory measures)

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	17.757[a]	16	0.338
Likelihood Ratio	16.121	16	0.445
Linear-by-Linear Association	2.730	1	0.099
N of Valid Cases	402		

a. 20 cells (80.0%) have expected count less than 5. The minimum expected count is 0.01.

Universal service obligation has significant impact with the regulator measures taken so far in the three regions. The P value obtained is 0.338 and higher than the P value at 5% significance level and therefore the hypothesis may be rejected. This means that the regulatory measures so far taken have not really affected the USB and there is no significant effect on USB. This implies that the

regulatory measures are inadequate to cater to the Universal Service Obligation Requirements. The following are the some of the details observed.

Universal Service Obligation (USB) has a significant impact with the regulatory measures.

The effort of the regulatory commission in pressurizing government to release subsidies in time to eligible categories is adequate.

a. 366 respondents have indicated that they disagree and this means that the effort is not adequate in this aspect and the functioning of the regulatory commission is to be radically improved.
b. Billing on KVH basis instead of KW basis
    a. 366 respondents out of 402 have disagreed and this means that charging on KVAH basis is not popular and therefore not acceptable.

The USB's impact on the functioning of the regulatory commission: One time annova study is done and the results are as follows. The Pearson chi square asymp Significance (two sided) indicates 0.338. The likelihood ratio 0.445 and the linear/linear association 0.099 in the total number of valid cases of 402 and this means that the USB is one of the major parts and has significant impact with the regulatory measures and in the present functioning of regulatory commissions the focus of USB appears to be very poor.

Section 3

6.2.3 Chi-square Analysis

1. Measuring relationship between Accountability of the regulatory commission and functioning of ERC is adequate to meet the expectations of the stake holders and how frequently the interactions with various stake holders are conducted in a year.

Table No.6.50Accountability vs frequency of interactions (Relationship)

		5.1 Accountability of the regulatory commission and functioning of ERC is adequate to meet the expectations of the stake holders					Total
		Strongly Disagree	Disagree	Neither/Nor	Agree	Strongly Agree	
2.1 How frequently the interactions with various stake holders are conducted in a year	Never	0	1	4	33	0	38
	Occasionally	23	63	27	70	0	183
	Less Frequently	19	116	10	4	3	152
	Frequently	1	11	13	3	0	28
	Very Frequently	0	1	0	0	0	1
Total		**43**	**192**	**54**	**110**	**3**	**402**

Table No.6.51Chi-Square Tests (Accountability vs frequency of interactions)

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	184.221[a]	16	0.000
Likelihood Ratio	195.688	16	0.000
Linear-by-Linear Association	67.347	1	0.000
No. of Valid Cases	402		

1 Measuring relationship between the responses of the regulatory commission regarding controlling un scheduled power cuts is effective and Are the power cuts are always scheduled.

Table No.6.52 Responsiblity of SERCvs Un-scheduledpower cuts (Relationship)

		4.4 The response of the regulatory commission regarding controlling un scheduled power cuts is effective			Total
		Strongly Disagree	Disagree	Neither/Nor	
2.5 Are the power cuts are always scheduled	Never	4	8	2	14
	Occasionally	1	257	1	259
	Less Frequently	2	80	0	82
	Frequently	0	42	0	42
	Very Frequently	0	4	0	4
Total		**7**	**391**	**3**	**401**

Table No.6.53 Chi-Square Tests (Responsiblity of SERCvs Un-scheduledpower cuts)

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	99.639[a]	8	0.000
Likelihood Ratio	34.017	8	0.000
Linear-by-Linear Association	0.461	1	0.497
No. of Valid Cases	401		

2 Measuring relationship between the regulatory commission approval for charging FSA for the year 2011-12 and 2012-13 is acceptable and Are you made clear by the regulatory commission on the method of calculation of FSA charges (2012-13) and do you feel ok.

Table No.6.54 Approval for charging FSA vs method of calculation (Relationship)

		5.6 The regulatory commission approval for charging FSA for the year 2011-12 and 2012-13 is acceptable					Total
		Strongly Disagree	Disagree	Neither/ Nor	Agree	Strongly Agree	
4.3 Are you made clear by the regulatory commission on the method of calculation of FSA charges(2012-13) and do you feel ok	Strongly Disagree	4	5	0	0	1	10
	Disagree	5	300	81	3	1	390
	Neither/ Nor	1	1	0	0	0	2
Total		**10**	**306**	**81**	**3**	**2**	**402**

Table No.6.55 Chi-Square Tests (Approval for charging FSA vs method of calculation)

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	99.306[a]	8	0.000
Likelihood Ratio	32.619	8	0.000
Linear-by-Linear Association	0.890	1	0.346
No. of Valid Cases	402		

3 Measuring relationship between the cross subsidy loading ranging from 25%-70% for LT industries in tariff fixing for 2012-13 is acceptable in view of the frequent power cuts and quality/ service level problems and The response of the regulatory commission regarding cross subsidy fixation for LT industries in the present situation is justified.

Table No.6.56 Cross subsidy vs Responsibility of SERC(Relationship)

		5.5 Is the cross subsidy loading ranging from 25%-70% for LT industries in tariff fixing for 2012-13 is acceptable in view of the frequent power cuts and quality/ service level problems				Total
		Strongly Disagree	Disagree	Neither/ Nor	Agree	
4.2The response of the regulatory commission regarding cross subsidy fixation for LT industries in the present situation is justified	Strongly Disagree	4	2	1	0	7
	Disagree	2	144	164	1	311
	Neither/ Nor	0	2	82	0	84
Total		**6**	**148**	**247**	**1**	**402**

Table No.6.57Chi-Square Tests (Cross subsidy vs Responsibility of SERC)

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	207.348[a]	6	0.000
Likelihood Ratio	103.235	6	0.000
Linear-by-Linear Association	70.627	1	0.000
No. of Valid Cases	402		

5. Measuring relationship between Is the increase in Tariff for LT industries is acceptable in view of frequent power cuts and Are the power cuts are always scheduled

Table No.6.58Increase of Tariff vs scheduled power cuts (Relationship)

		5.2 Is the increase in Tariff for LT industries is acceptable in view of frequent power cuts					Total
		Strongly Disagree	Disagree	Neither/ Nor	Agree	Strongly Agree	
2.5 Are the power cuts are always scheduled	Never	2	5	7	0	0	14
	Occasionally	9	197	50	2	1	259
	Less Frequently	0	64	17	1	0	82
	Frequently	1	9	30	2	0	42
	Very Frequently	0	0	4	0	0	4
Total		**12**	**275**	**108**	**5**	**1**	**401**

Table No.6.59Chi-Square Tests (Increase of Tariff vs scheduled power cuts)

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	84.284[a]	16	0.000
Likelihood Ratio	78.141	16	0.000
Linear-by-Linear Association	32.351	1	0.000
No. of Valid Cases	401		

6. Measuring relationship between do you feel that regulatory Commission is transparent and the response of the regulatory Agency for noncompliance of Citizens charter by DISCOMS many a times is satisfactory?

Table No.6.60 Transperency vs Non-Compliance of citizens charter (Relationship)

		5.3 Do you feel that regulatory Commission is transparent					Total
		Strongly Disagree	Disagree	Neither/ Nor	Agree	Strongly Agree	
4.5 The response of the regulatory Agency for noncompliance of Citizens charter by DISCOMS many a times is satisfactory	Strongly Disagree	0	0	3	0	2	5
	Disagree	19	170	194	7	1	391
	Neither/ Nor	0	3	3	0	0	6
Total		**19**	**173**	**200**	**7**	**3**	**402**

Table No.6.61Chi-Square Tests (Transparency vs Non-Compliance of citizens charter)

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	107.618[a]	8	0.000
Likelihood Ratio	19.713	8	0.011
Linear-by-Linear Association	9.057	1	0.003
No. of Valid Cases	402		

6.3 Relationship Analysis (Chi-square)

The Chi square analysis indicates and measures relationship between two variables. The P value obtained 0.00 being lower than the P value at 5% level of importance in the subsequent identified critical variables, it can be inferred that there is a reasonable and positive relation between the following.

- Accountability of the SERC's of both the states and the frequency of interaction with various stake holders.
- Responsibilities of SERC's and controlling of unscheduled power cuts.
- SERC;s approval for charging FSA for the years 2011 – 2012 and 2012 – 2013 and the clarity on the method of actions.
- Fixation of cross subsidy (25% to 75%) for LT industries and the responsibilities of SERC's.
- Increase of tariff for LT industries and scheduled power cuts.
- Transparency of SERC's and noncompliance of citizens charter

6.4 Regression Analysis

Table No.6.62 Anova Model Summary

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	84.291	15	5.619	25.167	0.000[a]
Residual	86.186	386	0.223		
Total	170.478	401			

a. Predictors: (Constant), 6.2 There is quality and service level improvement after independent regulatory agency is formed, 5.7 Do you feel that this type of surcharges are to be totally borne by utilities, 3.4 Can you represent regarding frequent loss of production and revenue due to power cuts and voltage variations to regulator directly, 5.5 Is the cross subsidy loading ranging from 25%-70% for LT industries in tariff fixing for 2012-13 is acceptable in view of the frequent power cuts and quality/ service level problems, 3.2 Are regulatory decisions publicly available, 5.10 The TOD tariff for peak hour of the day is acceptable in view of frequent power cuts, 3.1 Utilities can appeal if they disagree with regulatory decisions, 3.3 Do you feel that the functioning of the regulatory commission and functioning of ERC is adequate to meet the expectations of the stake holders, 5.9 The approval of regulating agency for 80% of the minimum billing demand for LT industries in view of frequent power cuts/ holidays, incurring less consumption is justifiable, 4.3 Are you made clear by the regulatory commission on the method of calculation of FSA charges(2012-13) and do you feel ok, 5.8 Is billing on KVAH basis is agreeable (due to need for PF to be near unity), 5.11 The approval of the Regulatory agency regarding peak hour tariff charging and heavy penalties for exceeding (5-6 times more than normal) is ok, 4.1 Do you feel that the role of the regulatory commission in maintaining the supply of power at reasonable cost and good quality is achieved in the state, 5.6 The regulatory commission approval for charging FSA for the year 2011-12 and 2012-13 is acceptable, 6.1 Regulatory agency have made significant impact in improving the performance of power sector in the state so far

b. Dependent Variable: 5.3 Do you feel that regulatory Commission is transparent

Table No.6.63 Model Summary (Regression)

Mode	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.703[a]	0.494	0.475	0.473

Table No.6.64 Regression Co-efficient Model

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.861	0.670		2.777	0.006
	3.1 Utilities can appeal if they disagree with regulatory decisions	0.246	0.061	0.191	3.993	0.000
	3.2 Are regulatory decisions publicly available	-0.709	0.145	-0.221	-4.885	0.000
	3.3 Do you feel that the functioning of the regulatory commission and functioning of ERC is adequate to meet the expectations of the stake holders	0.312	0.076	0.174	4.107	0.000
	3.4 Can you represent regarding frequent loss of production and revenue due to power cuts and voltage variations to regulator directly	-0.033	0.057	-0.026	-0.574	0.566
	4.1 Do you feel that the role of the regulatory commission in maintaining the supply of power at reasonable cost and good quality is achieved in the state	-0.027	0.052	-0.026	-0.528	0.598

4.3 Are you made clear by the regulatory commission on the method of calculation of FSA charges(2012-13) and do you feel ok	-0.146	0.170	-0.038	-0.858	0.391
5.5 Is the cross subsidy loading ranging from 25%-70% for LT industries in tariff fixing for 2012-13 is acceptable in view of the frequent power cuts and quality/ service level problems	0.218	0.062	0.175	3.507	0.001
5.6 The regulatory commission approval for charging FSA for the year 2011-12 and 2012-13 is acceptable	-0.151	0.064	-0.118	-2.360	0.019
5.7 Do you feel that this type of surcharges are to be totally borne by utilities	0.119	0.051	0.115	2.316	0.021
5.8 Is billing on KVAH basis is agreeable (due to need for PF to be near unity)	0.081	0.052	0.074	1.555	0.121
5.9 The approval of regulating agency for 80% of the minimum billing demand for LT industries in view of frequent power cuts/ holidays, incurring less consumption is justifiable	0.065	0.057	0.052	1.155	0.249

5.10 The TOD tariff for peak hour of the day is acceptable in view of frequent power cuts	-0.135	0.059	-0.104	-2.306	0.022
5.11 The approval of the Regulatory agency regarding peak hour tariff charging and heavy penalties for exceeding (5-6 times more than normal) is ok	-0.218	0.053	-0.203	-4.135	0.000
6.1 Regulatory agency have made significant impact in improving the performance of power sector in the state so far	0.387	0.050	0.392	7.718	0.000
6.2 There is quality and service level improvement after independent regulatory agency is formed	0.491	0.295	0.065	1.666	0.096

a. Dependent Variable: 5.3 Do you feel that regulatory Commission is transparent

6.5 Simple Standard Multiple Regression Model

The observed model summary indicates the Transparency of the SERC's of the two states as the Dependent variable (DV) and number of various independent variables (IV's)

The observed adjusted R square value is 0.475 in this model. It indicates that various independent variables considered in the mtrix (IV's) can predict 47.5% the variants of the dependent variable that is transparency of the SERCs. Also it indicates that this model is reasonable and a good fit model.

In this model it is observed that the majority of IV's has a P value lower than the P value at 5% of significance and it indicates that around is a sensible in addition positively qualified amongst the Self-governing variables besides the reliant on variable transparency.

CHAPTER 7

Findings and Suggestions

7.1 Findings

As in the case of other countries, reforms were introduced in the power sector of our country due to unviable state Electricity boards and inefficient functioning of SEB's. Successful regulation and regulating reforms enhances the capacity of the power sector to promote private investment and improve credibility and effectiveness. It is necessary to utilize market incentives, goal based regulations and regulatory impact assessment for improving performance and effectiveness of the sector. It helps in achieving reduced costs and in bringing competitiveness. However the problem of power sector wjth respect to the availability of quality power at reasonable price is still a dream in many states of India. Regulatory reforms, reviews and regulatory impact analysis are essential to evaluate profit costs besides distributive influence of directive, substitute methods besides suggestions for supervisory improvements. SSI's are significant foundation of invention, novel jobs besides flexible source to superior firms. Regulatory reorganizations besides regulatory impact valuation that decrease occupational problems in addition to increasing the transparency of the regulatory council, provision for entrepreneurship besides market entry are maximum indispensable for GDP development of our country.

The findings in this thesis are presented by identifying the most important constructs and the factors for assessing the functioning of Andhra Pradesh (combined state) electricity regulatory commission.

- **Regulatory policy and Restructuring**
- **Price Regulation**
- **Universal service obligation**
- **Accountability**
- **Transperancy**
- **Efficiency**
- **Frequency of interaction with stake holders**
- **Customer focus**
- **Regulatory Effectiveness**

There is enormous amount of literature related to regulation, regulatory policy and

restructuring, power sector reforms but however these studies have not addressed the role of functioning of SERCs. The significant differences in issues such as public participation, the impact of regulatory commissions on the presentation of the Discoms in refining power sector distribution in meeting the reforms objective, controlling the scheduled and unscheduled power cuts, untimely tariff revisions etc..and evaluate the impact of these issues on small scale industries in the state. This study focutilized on the performance of the state electricity regulatory commission with particular reference to small scale industrial sector in the state. An appropriately tailored regulatory assessment process is of great importance in Electricity sector for identifying the gaps and increasing the performance of power sector distribution.

- Out of402 units surveyed 201 units that is 45% belong to Telangana region, 112 units that is 27.9% are in Rayalseema region and 89 units that is 22.1% are in Coastal Andhra region.
- Out of these 354 units that is 88.1% are manufacturing units, 29 units that is 7.2% are Fabricating units, 11 units that is 2.7% are forging units 8 units that is 2% are casting units.

The maximum units belong to the manufacturing category process involving various process activity such as machining, heat treatment, assembly etc..

- 398 units that is 99% units taken for study are working with LT power supply and 4 units that is 2% are working with HT Power supply.
- 149 units that is 37% are operating on continuous shift basis that is three shifts(24 hours). The process of these units are melting, forging, casting, heat treatment etc..Many a times they need to work for 24 hours a day due to uninterruptable process and they need uninterruptable power supply. Any interruption during the process in between shall cautilize production loss and revenue loss.
- 264 units that is 61.2% are operating on one shift/two shifts depending upon the orders they cater to. In these units interruption of power supply cautilizes less production and less revenue loss.

- Nature of Loading:

49 units that is 12.2 % are having inductive load. 353 units that is 87.8% are having normal load. The units having inductive load generally belong to welding activity. The inductive load cautilizes negative effect on the incoming power supply and neighbouring units also get affected. The introduction of the Capacitors of suitable grade may be supplied so that the lagging power factor gets compensated. Regulatory council is advised that these units may be

given a separate zone for carrying out their activity.

- Maximum contracted Demand:

237 units that is 59% have a contracted demand of 0 – 30KW. 64 units that is 91 units that is 22.6% are having 31 – 60KW, 64 units that is 15.9% are having 61 – 90KW, 6units that is 1.5% are having 91 – 120KW and 4 Units that is 1% are having 121 – 150 KW. It is observed that many a times these units are required to exceed the maximum contract demand in order to fulfil their committed delivery schedules with the costumers, some of them being seasonal.

- Contracted Load:

228 units that is 56.7% are having 0 – 30 KW, 76 units that is 18.9% are having 31 – 60KW, 84 units that is 30.9% are having 61 – 90KW, 9 units that is 2.2% are having 91 – 120KW and 5 units that is 1.2% are having 121 – 150KW.

- 25 units that is 6.2% are having equipment with highest motor rating between 0 – 2KW, 69 units that is 17.2% are having equipment with highest motor rating between 2 – 4KW, 76 UNITS THAT IS 18.9% are having equipment with highest motor rating in between 4 – 6KW, 151 UNITS THAT IS 37.6% are having equipment with highest motor rating in between 6 – 8KW, 76 units that is 18.9% are having equipment with highest motor rating in between 8 – 10KW.
- Average Consumption in units/ month:

226 units that is 56.2% having average consumption in between 0 – 1000 units.
152 units that is 37.8% are having average consumption in between 1000 – 5000 units
18 units that is 4.5% are having average consumption in between 5000 – 10000 units
3 units that is 0.7% are having average consumption in between 15000 – 20000 units

- Average payment of power consumption bills in rupees/month :

264 units that is 65.7% are having average billing in between 0 – 5000 rupees
105 units that is 26.1% are having average billing in between 5000 – 25000 rupees
26 units that is 6.5 % are having average billing of 25000 – 45000 rupees.
2 units that is 0.5% are having average billing of rupees 45000 – 65000 rupees.
5 units that is 1.2% are having average billing of above rupees 65000

- Frequency of Interaction with Stake holders by SERC:

38 units that is 9.5% have reported nill interaction
183 units that is 45.5% have reported occasional interaction
152 units, ie,37.8% have reported less frequent interactions
28 units, 7% have reported frequent interaction.
1 unit that is 0,2% has reported very frequent interations.

- Frequency of Interaction with stake holder by SERC (regionwise)

Out of the 37 units reported nill interaction 37units that is 97.4% belong to Rayalseema region. 1unit that is 2.6% belong to Coastal Andhra region, nill from Telangana.

Out of 183units reported as having occasional interaction 103units that is 56.3% belong to Telangana region, 20units that is 10.9% belong to Coastal Andhra, 60 units that is 32.8% belong to Rayalseema.

Out of 152 units reported as having less frequent interaction 87 units that is 57.2% are from Telangana, 59 units that is 38.8% are from Coastal Andhra region, 6 units that is 3.9% are from Rayalseema region.

Out of 28 units reported as having frequent interaction 10 units that is 35.7% belong to Telangana region, 9 units that is 32.1% belong to Coastal Andhra region, 9 units that is 32.1% belong to Rayalseema region.

Only 1 unit reported as having very frequent interaction belong to Telangana region.

- Consultation process prior to Regulatory descions:

  3 units that is 0.7% have reported as Meetings, 231 units that is 57.5% have reported as Public Hearings, 19 units that is 4.7% have reported as specific issue meetings, 147 units that is 36.6% have reported Nil consultancy, 2 units that is 0.5% have reported as all the above .

  It is observed that maximum have reported as Public hearings.

- Consultation process prior to Regulatory descions (Region wise):

Meetings:

2 units out of 3 units that is 66.7% are from Telangana region, nil from Coastal Andhra and 1 unit that is 33.3% is from Rayalseema region.

Public Hearings:

89 units out of 231 units that is 38.5% are from Telangana region, 83 units that is 35.9% are from Coastal Andhra, 59 units that is 25.5% are from Rayalseema region.

Specific Issue leadings:

19 units out of 19 units that is 100% are from Telangana region, nil from other two regions.

All the above Consultation processes:

One out of two units that is 50% from Telangana and the other one 50% from Rayalseema.

Nil Consultation process:

90 units out of 147 units that is 61.2% are from Telangana, 51 units that is 34.7% are from Rayalseema, 6 units that is 4% are from Coastal Andhra region.

- Percentage increase in Tariff from 2009 to 2012:

14 units that is 3.5% of the units surveyed have reported as 20 – 40%, 11 units that is 2.7% have reported as 40 – 60%, 336 units that is 83.6% have reported as 60 – 80%, 41 units that is 10 .2% have reported as 80 – 100%.

It is observed that the maximum units have reported the tariff increase during 2009 – 2012 as 60 – 80%.

- Percentage increase in Tariff from 2009 to 2012 (Region wise):

20 – 40% : 2 units out of 14 units that is 14.3% are from Telangana

5 units that is 35.7% are from Coastal Andhra, 7 units that is 50% are from Rayalseema.

40 – 60%: 10 units out of 11 units that is 90.9% are from Telangana, 1 unit that is 9.1% is from Coastal Andhra.

60 – 80% : 169 units out of 336 units that is 50 .3% are from Telangana, 65 is 19.3% are from Coastal Andhra, 102 units that is 30.4% are from Rayalseema.

80 – 100%: 20 units out of 41 units that is 48.8% are from Telangana, 19 units ie., 46.3% are from Coastal Andhra, 2 units that is 4.9% are from Rayalseema.

Maximum number of units reported the Tariff increase in between 60 – 80% during 2009 – 2012.

Number of hours of Power cuts/ day:

4 units that is 1% of the units survey reported as 0 – 2 hours, 23 units ie, 5.7% reported as 2 – 4 hours, 338 units that is 84.1% reported as 4 – 6hours, 23 units that is 5.7% reported as 6 – 8 hours, 14 units that is 3.5% reported as 6 – 8 hours, 14 units that is 3.5% reported as more than 8 hours.

This indicates maximum units reported as 4 – 6hours power cuts/ day during 2009 – 2012.

- Number of hours of Power cuts/ day (Region wise):

  0 – 2 hours: 2 units or 4 units that is 50% are from Telangana, 2 units that is 50% are from Rayalseema and nil from Coastal Andhra.

  2 – 4hours: 23 units out of 23 units that is 100% are from Telangana and nil from Rayalseema and Coastal Andhra.

  4 – 6hours: 164 out of 338 units that is 87.5% are from Telangana, 87 units that is 25.7% are from Coastal Andhra and 87 units that is 25.7% are from Rayalseema.

  6 – 8hours: 2 units out of 23 units that is 8.7% are from Telangana, nil from Coastal Andhra, 21 units that is 91.3% are from Rayalseema.

  More than 8 hours: 10 units out of 14 units that is 71.4% are from Telangana, 2 units that is 14.3% are from Coastal Andhra and 2 units that is 14.3% are from Rayalseema.

- Scheduled Power cuts: 14 units that is 3.5% have indicated that their power cuts are never scheduled, 259 units that is 64.4% have indicated that their power cuts are occassionaly scheduled, 82 units that is 20.4% have indicated that their power cuts are less frequently scheduled, 42 units that is 10.4% have indicated that their power cuts are frequently scheduled, 4 units that is 1% have indicated that their power cuts are very frequently scheduled.

  indicated that their power cuts are frequently scheduled, 4 units that is 1% have indicated that their power cuts are very frequently scheduled.

- Scheduled Power cuts (Region wise):

Never: 5 out of 14 that is 35.7% are from Telangana region, Nil from Coastal Andhra. This means that the power cuts are always scheduled in this region, 9 units that is 64.3% belong to Rayalseema region.

Ocassionally: 104 units out of 259units belong to Telangana, 86 units that is 32.2% belong to Coastal Andhra, 69 units that is 26.6% belong to Rayalseema.

Less frequently: 51 units out of 82 units that is 62.2% are from Telangana, 2 units that is 2.4% are from Coastal Andhra, 29 units that is 35.4% are from Rayalseema.

Frequently: 37 units out of 42 units that is 88.1% belong to Telangana, 1 unit that is 2.4% belong to Coastal Andhra, 4 units that is 9.5% belong to Rayalseema.

Very frequently: 4 out of 4 that is 100% belong to Telangana, Nil from Rayalseema and Coastal Andhra.

The survey responses indicated that on an average 4 to 6 hours of Power cut/ day in Telangana region, 0 – 2 hours in Coastal Andhra and Rayalseema regions during 2009 – 2012. The situation needs to be given highest priority in Telangana region Immediate action to be taken by DISCOM's and SERC for decreasing the power cuts.

- Power Holidays / week:

90 units that is 22.4% have reported as having 1 day power cut, 229 units that is 575 have reported as having 2 days power cut, 76 units that is 18.9% have reported as having 3 days power cut, 6days that is 1.5% have reported as having 4 days power cuts.

- Power Holidays / week (Region wise):

1 day/ week: 51 units out of 90 units that is 56.7% belong to Telangana, 37 units that is 41.1% belong to Coastal Andhra, 2 units that is 2.2% belong to Rayalseema.

2days/ week:

78 units out of 229 units are from Telangana region, 52 units that is 22.7% are from Coastal

Andhra region, 99 units that is 43.2% are from Rayalseema region.

3days/ week:

66 out of 76 units that is 86.85% belong to Telangana region, Nil from Coastal Andhra, 10 units that is 13.2% belong to Rayalseema region.

4days/week:

5 out of 6 units that is 83.3% are from Telangana region, nil from Coastal Andhra, 1 unit that is 16.7% is from Rayalseema.

The survey responses indicated that 2 days power holidays and 3days in certain areas of Telangana. In Rayalseema the responses indicated that 2 days power holidays are happening however of late it is observed that power holidays are reduced to one day/ week. In coastal Andhra there is only one day power holiday/week and there is no power holiday in some ares of Coastal Andhra during 2009 – 2012. The situation in Telangana is serious and needs to be improved.

- Tariff revision(period in terms of years):

111 units out of 402 survey that is27.6% have reported as having tariff review every one year 274 units that is 68.2% have indicated that they are having a tariff review every 2 years, 4 units that is 1% have reported as having every 3 years, 13 units that is 3.2% have reported as having every 4 years.

- Tariff revision(period in terms of years) Region wise:

1 year: 15 units out of 111 units, that is 13.5% belong to Telangana, 38 units that is 34.2% belong to Coastal Andhra 58 units that is 52.3% belong to Rayalseema.

2 years: 174 units out of 274 units that is 63.5% are from Telangana, 47 units that is 17.2% are from Coastal Andhra, 53 units that is 19.3% are from Rayalseema.

3 years: 1 out of 4 units that is 25% belong to Telangana, 3 units that is 75% belong to Coastal Andhra, Nil from Rayalseema.

4 years: 11 out of 13 units that is 84.6% are from Telangana, 1 unit that is 7.7% is from Coastal Andhra, 1 unit 7.7% from Rayalseema.

The maximum responses of survey have indicated that 2 year is the time period for tariff revision during 2009 – 2012 in all the three region.

- Findings of the Anova studies:
  - Significant differences in between the 3 regions of Telangana, Coastal Andhra and Rayalseema in the following constructs and critically influencing factors are indicated in the Annova studies.

    The results are given below:

There is no significant difference in between 3 regions regarding

The results are given below:

There is no significant difference in between 3 regions regarding

- Utilities appealing if they disagree with SERC decisions.
- Regulatory decisions available to all.
- SERC functioning is not adequate to meet the expectations of Stake holders.
- Controlling unscheduled power cuts to SSI sector.
- Representing regarding frequent loss of production and revenue by many SSI units due to power cut/ voltage fluctuations to SERC.
- 80 Industries below 1MW cannot purchase power from sources other than DISCOM's.
- Lack of adequate effort of SERC in ensuring release of Cross subsidy's to the affected sector.
- The response of SERC in non – compliance of Citizen's chapter by DISCOMS thus affecting many SSI units is not adequate.

- Some more findings regarding certain critically influencing factors:
  - The transparency of SERC in interacting with stake holders ineffective in all the three regions.
  - Heavy penalties for exceeding contracted demand are unacceptable in all the three regions.
  - Billing on KVAH basis is not agreeable in all the three regions.
  - As regards power holidays/week, it is observed that situation in Coastal Andhra is Okay But in Telangana and Rayalseema regions need to be improved.
  - The effort of SERC in controlling unscheduled power cuts is not effective and not adequate in all the three regions

    -However TOD Tariff is acceptable in all the three regions , tariff increase and review period is OK in all the three regions.

    - USB 366 respondents have indicated that effort of SERC is inadequate to cater to the requirements of USB.

    ➢ Findings of the Chi – square (Relationship Analysis):

It is observed that in the relationship analysis test that there is a sensible as well as optimistic association between the variables.

- Accountability of SERC and frequency of interaction with various stake holders.
- Responsibility of SERC and controlling of unscheduled power cuts.

- SERC's approval for charging FSA for the years 2011 – 2012 and 2012 – 2013 and clarity on the method of calculations.
- Fixation of cross subsidy (25% - 75%) for LT industries and responsibilities of SERC.
- Increase of tariff for LT industries and scheduled power cuts.
- Transparency of SERC and non – compliance of citizen's chapter.

  - Regression Analysis findings:

    The model is reasonable and good fit model and indicates positive co- relation between dependent variable (transparency) of SERC and various independent variables such as regulatory policy and restructuring, frequent loss of production and revenue by SSI's, cross subsidy loading, ERC's approval for charging FSA's, billing on KVAH basis etc..

7.2 Suggestions

7.2.1 Section A: Suggestion at policy level (Regulator)

Regulatory policy and Restructuring

- It is necessary to obligate at maximum party-political level to a clear whole – of – government rule for controlling superiority. The policy must partake strong purposes besides frame works for application to guarantee that, if instruction is utilized the financial, societal and ecological aids validate the costs, distributional belongings are measured in addition the net assistances are maximized. In addition it is obligatory to announce reports frequently (monthly/ bi monthly) on the presentation of the supervisory policy besides the reorganization agendas, public discussion procedure etc.
- The umbilical relationship of the SERC and the AP power subdivision by means of the state government has elevated apprehensions around the individuality of the controlling scheme. Concealing in addition to window dressing of the income gap by the SERC only carries the gap to the future years. Absence of suitable besides demonstrable data produces sufficient difficulties. The existing situation indicates that the regulatory decisions are many a time not publically available for wider range of

stake holders in both the states. There is a outstanding deficiency of available information about the accomplishments of supervisory assembly of the states.

- It is essential to advance a suitable communication strategy and adopt suitable channel (Media) to ensure more public availability of regulatory decisions. It may be made mandatory for DISCOMS to publish the regulatory decisions and activities to all the relevant sectorial groups in time either district wise or panchayath wise.
- The chairman of the commission in addition to other participants is commonly retired civil servant plus notably engineers. Consequently the hypothesized arm's distance association of the SERCs through the government may not occur in preparation. The memberships besides the Head of the self-governing controlling assembly would be chosen for immovable period by the department besides be detached/ transported solitary in extraordinary conditions so that their involvement might be quantifiable besides operative.
- The difference resolve besides appraisal mechanism has to be clear and be accelerated. Looking into technical nature of the disputes the resolution process need to be handled by specialist arbitration panels**.**

Small scale sectors and small consumers (LT)

- SSIs are not represented adequately in the regulation process and dispute resolution process. Therefore it is necessary to give more priority for industrial consumers and establish a formal cell in the SERC to handle the day to day power problems of these units.
- In the present situation the supervisory staff conveys slight information of monitoring performs let alone new tendencies in the association of power such as overview of rivalry besides marketplaces. In view of this situation it is suggested that important staff with regulatory back ground and good economics knowledge with managerial background to be employed if necessary with better pay scales and remunerations. Therefore it is advised to consider taking management graduates with engineering/ economics backgrounds from reputed management schools. The preparation of exhausting staff on delegation from the government suggests that there is no phase to shape up long period core competences.
- The SERCs frequently requires evidence about income, principal base capital, working cost, devaluation besides energy losses. It is observed that there exists an enormous alteration in the demonstration of info which brands bench marking besides

contrasts challenging. Although transcripts on instructions in addition to actions are sufficiently obtainable no report on “trends in prices” is contemporary so distant. The depiction concerning tendencies has to be patched composed after specific tariffs instructions. SERCs are likewise numerous a times behind agenda in making their yearly reports.

Tariff determination:

- Procedure includes public hearing besides the looking for of specialist’s and stake holder’s opinions. The delay in ARR (Anual Revenue Requirements) by some DISCOMS has considerable impacts for revising tariffs in time. Therefore it may be necessary to replace the existing systems to a system where offers for charges are required after private corporations besides bestowed to the lowest purchaser. This might consume a smaller amount time, inspire competence besides the assistances of which can be accepted on to the customers.

- Most of SERCs are supposedly encouraging customer authorization besides likewise enchanting phases to upsurge transparency nonetheless far additional requirements to be completed to endorse customer appointment besides to safeguard that extraordinary excellence evidence is publicly obtainable. It is to be prominent that although unbundling has advanced fairly well on paper definite parting in addition to utilizeful individuality of the utilities is significantly fewer than it seems.

The transparency of state electricity regulatory body (SERC) and its over sights needs to be improved.

- In practice they have not operationalized full transparency, as a result the public participation, frequency of interaction with stake holders, consumer bodies, SSI associations etc. is limited solitary to the public ranges.

Accountability

- The instructions distributed by SERC is not satisfactorily inclusive besides self-

sufficient. This marks it problematic to recognize the rationale for the choices and accordingly weakens the answerability of the SERC's of the state. For example billing on KVAH basis is not agreeable to many of the SSI units. The method calculations of FSA charges/ arrears was not clear to many of the SSI units/ consumers in the years of 2012-2013 and 2013- 2014. However their after removal of FSA charges has eased out the situation and the consumers have welcomed it. In many cases the FSA arrears were charged based on the consumption of earlier years and in many cases the present owner is asked to pay the arrears, although he was not the owner/ consumer in that period. However this lacuna was later rectified and now FSA charges were removed.

- The representation of SSI units regarding frequent loss of **production and revenue** to be taken up seriously by SERC and ensures required interruption free power supply for those units as special cases depending upon their production/process.

- **The cross subsidy loading** for LT industry ranging from 25% to 75 % is not justify. SSI being important source of production and its contribution is important to the GDP growth of our country the cross subsidy loading issue may be taken up for deeper review for decreasing and averaging. It is suggested that SERC discuss with SSI associations and come to an agreement prior to cross subsidy loading fixation.

- **"Open access"** for SSI units consuming below 1 MW and working on continuous shifts may be considered. However wheeling charges and other surcharges shall be applicable.

- **Unscheduled power cuts** the control of SERCs on the DISCOMs appear to be not effective in this connection it may be noted that recently TRAI (Telecom Regulatory Authority Of India) has recently considered the call drop issue by the telecom service providers and ensured that the relevant service operators provide special offer to the consumers such as 3 to 4 free calls for every call drop.

- Many a times **releasing subsidies** to eligible categories appear to be inadequate and the efforts of SERCs are not adequate in this issue The accountability of the SERC need immediate improvement.

- **The minimum billing demand** of 80% requirement for the SSI units is disputed many units orders being seasonal. Many does not consume minimum demand prescribed due to poor order book position. These units are suffering because of this condition ERC may look into these on case to case basis.

- **Heavy penalties** for exceeding maximum demand (5-6 normal charges) may be considered sympathetically as number of units does not make break even unless they complete their orders and delivery schedule in time. All efforts to be made by DISCOMS in ensuring less power cuts and ideally interruption free power supply and gain the cross subsidies rather than penalizing the SSI units and the consumers for more consumption and exceeding their limits**.**

The frequency of interaction with stake holders

- It is observed that there is a major variation in between the 3 regions that is Costal Andhra, Telengana, Rayalaseema. It is suggested that to conduct public hearings in all district headquarters and specific issue meetings with trade bodies, SSI associations and gain significant customer involvement, customer focus prior to regulatory decisions.
- The policy for 24/7 power resource supply essentially includes widespread usage of customer level besides DTC level metering. The SERCS must command application of DTC metering through progressive metering organization.
- Appropriate compensation of subventions by state government besides adequacy, in addition to orderliness of the tariff amendment by the SERC are indispensable for safeguarding monetary strength of DISCOMS.

7.3 Section B: Suggestions for implementation levels (DISCOMS)

- It is noted that AP government has drawn a road map to bring transmission and distribution loses (TandD) to single digit that is 9% by 2016- 2017 from the present average loss of 13% and save 1500 crores every year. As per KPMG report in 2015-2016 the estimated loss of energy due to TandD loses would be around 7700 Million units worth RS 5300 crores. This includes the pilferage and theft of electricity worth RS 540 crores every year.
- It is requested that the SERC of the State suggest the DISCOMS the following in this connection.

- To install interstate metering devices to estimate and figure out the exact losses at 400 Kv and 220 Kv lines.
- Install higher capacity conductors and step up transformers to reduce transmission loses.
- Non MRI high accuracy meters to replace defective meters

- As per KPMG report DISCOMS in the State are losing a cross subsidy of RS 17.50 per hundred hours of interruption of power. If SERCs insists and ensure interruption free power supply, the states shall be in a position to attract energy intensive industries such as Aluminium, Steel, Cement, Pharma and gain in tax and non-tax revenues, employment etc. which the states presently are not able to achieve so far.
- In view of the formation of separate Telengana State Electricity Regulatory Commission it may be necessary to formulate more (1 or 2) distribution companies/ licenses in addition to the existing DISCOMS to ensure better Communication. customer engagement and customer service. Distribution franchise model may also be worth considering provided SEBs cooperate.
- Provision of compensation for frequent loss of production and revenue by SSIss in the states due to power cuts and voltage variations. DISCOMS may consider and provide interruption free power supply after studying the process/activity of the unit and DISCOM's may exempt that zone from power cut till the processes is finished.
- Controlling unscheduled power cuts and DISCOMS may provide incentives/suitable compensation for the duration of the unscheduled power cut to the effected units.
- The DISCOMS are to be sustained in support the circulation systems by accepting

High voltage distribution system (HVDS) besides by civilizing the metering structure.

7.3.1 Late Billing

- The meter reading for many of the consumers in the existing situation is taken as per the continence of the meter reader/contracted generally on 10th/ 15th date of the month. It is required to be taken in the 1st or 2nd day of the month. Due to delay of the meter reader there is an effect on the consumers. Now that the system is made non telescopic the slab gets changed and the consumer is likely to get higher billing. Therefore it is suggested that the late billing is to be avoided. The **SERCs** of the states are requested to note of this and advice the DISCOMS to correct the situation. The late billing is done because of the various reasons such as technical problems, strikes of the staff, health issue of the out sourced staff etc. SERCs has to take immediate action and avoid this late billing problem and save the consumers from additional burden.

CHAPTER 8

CONCLUSION

Conclusion

The installed generation capability in the country as on 31/8/2014 existed around 253 Gw. Though the nation possibly will encounter a peek demand of 130 Gw. By way of per the Nationwide Electricity Strategy the generation volume Publication by 2018 – 2019 is 3,72,140 Mw, besides the energy obligation aimed at the year 2018 – 2019 is predictable to be 1552 billion units (B.U)

It is almost 16 years that the Electricity Regulatory Commissions are established. Still one frequently receives of grievances after customers that the supervisory systems are not successful so far in creating and nurturing conditions under which electricity of the appropriate quality at the most competitive cost is provided to all consumers.

It is felt that an self-governing, impartial besides fully knowledgeable analysis of existing Regulatory system and its impact is needed to develop a second generation regulatory reforms that provide a real-world information on in what way to progress references for civilizing the construction, organization besides presentation.

Power is "a concurrent" topic underneath India's constitution, which spaces it underneath mutually central administration besides state administration controller. In 1948, the subdivision remained prearranged about state level, openly possessed besides measured State Electricity Boards (SEBs) SEBs remained fashioned in the receptacle of post-freedom India, besides powerfully moulded by the knowledge that electricity remained a perceptible instrument in addition to becoming profit achievable instrument that the state might establish to its countries as an improvement after attaining unconventionality in specific. SEBs had a double nature as profitable objects as well as tools of expansion policy.

Meanwhile the SEBs efficiently functioned as extensions of the state power ministries and they became victims to a variety of garden-variety nonetheless crippling difficulties of government in India. These distance the whole things from interior marketplaces after staff elevation besides placements, to implant for non-payment of bills to amalgamation hooked on the selection backing device. Eventually, the politically aware responsibility lines in the subdivision have glazed about three subjects.

- Farmers hanging on to mainstream subsidizations

- Manufacturers protesting in contradiction of the greater prices needed to sustenance those subsidizations
- Effluent urban customers trying for enhanced amenities

Temporarily, finance departments at state plus central ranks, supported through global contributors partake specified announcement that financial subventions to the sector come to an end. State level autonomous power governing directives have remained positioned in the undesirable condition of unravelling these loops.

- With respect to frequency of interaction with stake holders with SERC it is observed that
- The maximum number responded for occasional nature of hearing/meetings in their regions. Very frequently response is almost nil in almost all the three regions. This situation clearly indicates that the existing frequency of interaction with stakeholders/ consumer goods associations and SSI groups is very less and needs to be reviewed. It is necessary to conduct monthly/ bi monthly meetings/ hearings in all the three regions. The DISCOMS need to make arrangements accordingly in three regions. The ERC is required to give necessary instructions for better public participation, interaction and obtain greater customer focus and customer satisfaction in the functioning and activities of SERC's.
- With respect to type of Consultation process by SERC prior to regulatory descions. It is observed that
- The maximum number responded that the normal process of consultancy is public hearings. There is hardly any specific meetings conducted in Rayalaseema and Costal Andhra Regions it is therefore felt that the public hearings may be increased and made at least quarterly in all the three regions. Specific issue meetings may be conducted with farmer bodies, SSI associations, spinning mills and other groups depending upon the issues and representation in the relevant districts by SERC in consultation with relevant DISCOMS. This shall facilitate closer interaction with the concernd groups and gain good customer focus and customer satisfaction. This shall also ease out the problem of SSIs and working of these units can be scheduled as per the discussions/ decisions in these specific issue meetings.
- With respect to number of hours of power cuts/day

  The power cuts are more in Telengana region compare to Andhra and Rayalaseema. The situation should be given highest priority in Telengana area. Suitable measures at high level may be taken up for increasing the power supply, decreasing the power cuts

and action to be taken for better generation capacity to encounter this serious situation.

- ✓ Providing short term provision for open access for units less than 1 MW also case by case and applying the additional wheeling charges and other Sir charges.
- ✓ Cross subsidy fixation for LT industries need to be reviewed.
    - ➢ With respect to 80% of the minimum billing demand condition and its approval by regulatory commission is not justifiable. The SERC may please ensure that these units are not charged with 80% minimum billing conditions since many of the units are not consuming minimum consumption due to shortage of orders.
    - ➢ With respect to heavy penalties for exceeding the maximum demand limit for SSI units is not justifiable in view of frequent power cuts and poor quality of power supply.
    - ➢ With respect to controlling the unscheduled power cuts it is necessary that SERC takes more responsibility, accountability and advice the concerned DISCOMS to reduce unscheduled power cuts and inform the SSI units in advance to schedule their operations accordingly.
    - ➢ The TOD tariff for peak hour of the day is acceptable in all the three regions.
    - ➢ SSI,s need to be given all support and interruption free power supply for their survival and growth as they are the source of invention, novel jobs besides flexible source to greater organizations and they are most essential for GDP growth of our country.

In A.P the introduction of an independent regulatory body has created a new institutional space for engagement by a broad range interests in the regulatory process. All of these procedural changes constitute a sea change from the entirely non-transparent closed decision making process under the pre-reform regime. Regulatory procedures on information and participation have expanded the regulatory space in A.P to include labour groups, political parties, consumer groups, small scale industry associations, farmer bodies and other public bodies. The broadening of regulatory space to include consumers of all sorts, public interest groups and media may yet be the most far reaching change to be brought about by independent regulation. While regulatory governance is at an early stage the A.P experience suggests that future developments will be worth exploring.

CHAPTER 9

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Annexure 1

TABLE FOR DETERMINING SAMPLE SIZE FROM A GIVEN POPULATION

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	246
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	351
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	181	1200	291	6000	361
45	40	180	118	400	196	1300	297	7000	364
50	44	190	123	420	201	1400	302	8000	367
55	48	200	127	440	205	1500	306	9000	368
60	52	210	132	460	210	1600	310	10000	373
65	56	220	136	480	214	1700	313	15000	375
70	59	230	140	500	217	1800	317	20000	377
75	63	240	144	550	225	1900	320	30000	379
80	66	250	148	600	234	2000	322	40000	380
85	70	260	152	650	242	2200	327	50000	381
90	73	270	155	700	248	2400	331	75000	382
95	76	270	159	750	256	2600	335	100000	384

Note: "N" is population size
"S" is sample size.

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Annexure-2

Table for Standards of performance

Service area	**Overall standard of performance**
Normal fuse-off calls	At least 99% calls received should be rectified with in prescribed limits in both Cities and Towns and in Rural areas
Line Breakdowns	At Least 95% of cases resolved within time limit in both cities and Towns and in Rural areas
Distribution Transformer Failure	At Least 95% of DTRs to be replaced within prescribed time limit in both Cities and Towns and in Rural areas
Period Schedule outage	
Maximum duration in a single stretch	At least 90% cases should be completed within prescribed time limits
Replacement of fused/defective unit	
Street Light Faults	
SAIFI	To be laid down later by the commission
SAIDI	
MAIFI	
Continuity indices	
Frequency variations	To maintain supply frequency within 49-50.5Hz as per IEGC.
Voltage Unbalance	Maximum of 3% at point of commencement of supply
% billing mistakes	Not exceeding 0.1%
% faulty meters	Not exceeding 3%

The summery of overall performance standards of SERC

Reliability/ outage Indices prescribed by IEEE
SAIFI: System Average Interruption Frequency Index
SAIDI: System Average Interruption Duration Index
MAIFI: Momentary Average Interruption Index

Annexure-3

Table of State wise distribution of micro, small and medium enterprises

Sl No.	State Names	No. of working Enterprises			
		Micro	**Small**	**Medium**	**Total**
1	Jammu and Kashmir	14122	394	18	14534
2	Himachal Pradesh	11531	372	33	11936
3	Punjab	47248	2747	117	50112
4	Chandigarh	972	28	1	1001
5	Uttaranchal	23347	384	35	23766
6	Hariayana	31306	2378	99	33783
7	Delhi	623	102	3	728
8	Raajasthan	52459	2518	130	55107
9	Uttar Pradesh	184242	3055	226	187523
10	Bihar	52007	164	17	52188
11	Sikhm	110	14	0	124
12	Arunachal Pradesh	431	18	2	451
13	Nagaland	1297	33	1	1331
14	Manipur	4497	13	1	4511
15	Misoram	3661	52	1	3714
16	Tripura	1212	36	5	1253
17	Meghalaya	3024	38	1	3063
18	Assam	18175	482	14	18671
19	West Bengal	40808	1720	106	42634
20	Jarkand	17710	457	33	18200

21	Orrissa	18819	734	33	19586
22	Chattisgargh	25898	327	9	26234
23	Madhya Pradesh	107768	959	76	108803
24	Gujarat	196872	31695	1263	229830
25	Daman and Diu	413	164	18	595
26	Dadra and nagar haveli	1670	45	1	1716
27	Maharasrstra	75062	11290	268	86635
28	**Andhra Pradesh**	**23489**	**1381**	**22**	**24892**
29	Karnataka	136928	2577	136	139641
30	Goa	2861	243	33	3137
31	Lakshadweep	89	0	0	89
32	Kerala	148152	1603	91	149846
33	Tamilnadu	226256	7337	404	233997
34	Paduchari	886	207	16	2109
35	Andaman and Nikobar	736	14	2	752
All India		**1475681**	**73581**	**3230**	**1552492**

State wise distribution of micro, small and medium enterprises (Regd.) as per quick results fourth all India Census 2006 - 2007

Annexure-4

Table of summary for Micro, Small and Medium Enterprises

MICRO, SMALL & MEDIUM ENTERPRISES
सूक्ष्म, लघु एवं मध्यम उद्यम

Summary Results of Fourth All-India Census of Micro, Small & Medium Enterprises with reference year of 2006-07

ANDHRA PRADESH

Parameters		Distribution			Percentage distribution		
		Regd.	Unregd.	Total	Regd.	Unregd.	Total
1.	**Total number of working enterprises**						
	Manufacturing	22188	579756	601944	89.14%	29.28%	30.02%
	Services	2704	1400396	1403100	10.86%	70.72%	69.98%
	Total	**24892**	**1980152**	**2005044**	**100.00%**	**100.00%**	**100.00%**
2.	**Number of rural enterprises**	13687	1159352	1173039	54.99%	58.55%	58.50%
3.	**Number of woman enterprises**	2649	161543	164192	10.64%	8.16%	8.19%
4.	**Number of enterprises managed by woman**	1260	N. A.	1260	5.06%	N. A.	N. A.
5.	**Number of enterprises running perennially**	22704	1814703	**1837407**	91.21%	91.64%	91.64%
6.	**Employment** (Person)						
	Manufacturing	178534	2015234	2193768	94.38%	35.02%	36.91%
	Services	10641	3738834	3749475	5.62%	64.98%	63.09%
	Total	**189175**	**5754068**	**5943243**	**100.00%**	**100.00%**	**100.00%**

Annexure-5

Table of summary for Characterstics and Parameters of Registered MSME Sector- AP

Registered MSME Sector

ANDHRA PRADESH

	Characteristics		Registered	% Share
1	Number of working enterprises		24892	57.05%
	Number of enterprises found permanently closed		13370	30.64%
	Number of enterprises found non-traceable		5373	12.31%
	Total Number of enterprises surveyed		**43635**	**100%**
2	Number of Working Enterprises			
		Manufacturing	22188	89.14%
		Services	2704	10.86%
		Total	**24892**	**100%**
3	Employment (Person)			
		Manufacturing	178534	94.38%
		Services	10641	5.62%
		Total	**189175**	**100%**
4	Per unit employment (Person)			
		Manufacturing	8.05	
		Services	3.94	
		Total	**7.60**	
5	Original value of Plant & Machinery/Equipment (Rs. Crore)			
		Manufacturing	1803.13	96.22%
		Services	70.74	3.78%
		Total	**1873.87**	**100%**
6	Per unit original value of Plant & Machinery/Equipment (Rs. Lakh)			
		Manufacturing	8.13	
		Services	2.62	
		Total	**7.53**	
7	Market value of Fixed Investment (Rs. Crore)			
		Manufacturing	6391.12	97.23%
		Services	181.90	2.77%
		Total	**6573.02**	**100%**
8	Per unit market value of Fixed Investment (Rs. Lakh)			
		Manufacturing	28.80	
		Services	6.73	
		Total	**26.41**	
9	Value of Net Worth (Rs. Crore)			
		Manufacturing	8500.29	97.72%
		Services	198.40	2.28%
		Total	**8698.69**	**100%**

	Parameters	Distribution			Percentage distribution		
		Regd.	Unregd.	Total	Regd.	Unregd.	Total
10	**Enterprises by main source of power**						
	No power needed	1675	1281383	1283058	6.73%	64.71%	63.99%
	Coal	204	54062	54266	0.82%	2.73%	2.71%
	Oil	117	26239	26356	0.47%	1.33%	1.31%
	LPG/CNG	111	27346	27457	0.45%	1.38%	1.37%
	Electricity	22415	307788	330203	90.05%	15.54%	16.47%
	Others	370	283334	283704	1.49%	14.31%	14.15%
	Total	**24892**	**1980152**	**2005044**	**100.00%**	**100.00%**	**100.00%**
11.	**Enterprises by source of finance**						
	No Finance/Self Finance	20558	1804714	1825272	82.59%	91.14%	91.03%
	Finance through Institutional Sources	3904	106170	110074	15.68%	5.36%	5.49%
	Finance through Non-Institutional Sources	430	69268	69698	1.73%	3.50%	3.48%
	Total	**24892**	**1980152**	**2005044**	**100.00%**	**100.00%**	**100.00%**

Annexure-6

Table of summary for Characterstics of Registered MSME Sector- All India

Registered MSME Sector

ALL-INDIA

	Characteristics		Registered	% Share
1	Number of working enterprises		1552492	70.19%
	Number of enterprises found permanently closed		480946	21.74%
	Number of enterprises found non-traceable		178522	8.07%
	Total Number of enterprises surveyed		**2211960**	**100%**
2	Number of Working Enterprises			
		Manufacturing	1035102	66.67%
		Services	517390	33.33%
		Total	**1552492**	**100%**
3	Employment (Person)			
		Manufacturing	7984321	86.75%
		Services	1219343	13.25%
		Total	**9203664**	**100%**
4	Per unit employment (Person)			
		Manufacturing	7.71	
		Services	2.36	
		Total	**5.93**	
5	Original value of Plant & Machinery/Equipment (Rs. Crore)			
		Manufacturing	110310.31	90.94%
		Services	10987.97	9.06%
		Total	**121298.28**	**100%**
6	Per unit original value of Plant & Machinery/Equipment (Rs. Lakh)			
		Manufacturing	10.66	
		Services	2.12	
		Total	**7.81**	
7	Market value of Fixed Investment (Rs. Crore)			
		Manufacturing	440493.68	87.97%
		Services	60264.68	12.03%
		Total	**500758.36**	**100%**
8	Per unit market value of Fixed Investment (Rs. Lakh)			
		Manufacturing	42.56	
		Services	11.65	
		Total	**32.26**	
9	Value of Net Worth (Rs. Crore)			
		Manufacturing	415554.75	93.06%
		Services	30996.47	6.94%
		Total	**446551.22**	**100%**

Appendix A : QUESTIONNAIRE

Topic- REGULATORY SECTOR IN ELECTRICAL POWER DISTRIBUTION SEGMENT

(A Study of it's performance in A.P.)w.r.t MSME (SSI) Ind.Sector

1.1 Name of the Respondent :

1.2 Designation :

1.3 Organization / Industry :

1.4 Address

1.5 Region

1.6 Nature / Process of Industry :
Mfg/Fabrication/HT/Forging/Casting/……

1.7 Electrical Load Category / Classification : L.T / H.T / ……..

1.8 Incoming Voltage Level / Category : 440V/3.3KV/…….

1..9 Electrical Loading Pattern : Continuous / Shift wise Intermittent

1.10 Nature of Loading : Inductive / Normal

1.11 Contracted Load :

1.12 Max. Contracted Demand :

1.13 Average Consumption per day/week / month :

1.14 Equipment having highest rating :

a) Furnace KW/HP
b) Motor KW/HP
c) Pumps KW/HP
d) Others KW/HP

1.15 Average billing charges per month :

QUESTIONNAIRE

Topic- Regulatory System in Power Sector

(A study of Its performance in A.P state) w.r.t MSME Ind.Sector

Indicate your option with a tick mark (✓) or write your option in the brackets

2.1) How frequently the interactions with various stake holders are conducted in a year ( )

a) Never b) Occasionally c) less frequently d) frequently e) Very frequently

2.2) What type of consultancy process prior to Regulatory decisions is done normally ( )

a) Meetings b) Hearings c) Specific Issue meetings d) None e) All of the above

2.3) the percentage increase in tariff for LT industry category from 2009 to 2012 ( )

a) 0-20% b) 20-40% c) 40-60% d) 60-80% e) above 80%

2.4) How many hours of Power cuts per day happen in present situation ( )

a) 0-2 hours b) 3-4Hours c) 4 to 5 Hours d) 6 to 8 Hours e) More than 8 Hours

2.5.) Are the power cuts are always scheduled ( )

a) Never b) Occasionally) Less frequently d)Frequently e)Very frequently

2.6) How many Power holidays per week in the present situation ( )

a)One day b) Two days c) Three days d) four days e) More than four days

2.7) How long is the period in terms of years between Prices/ Tariff reviews ( )

a) 1 Year b) 2 Years c) 3 Years d) 4 Years e) 5 Years

Indicate your opinion with a tick mark (✓) in the option table

Table-1

Sn.No	STATEMENT	1 Strongly dis Agree	2 Dis Agree	3 Neither/nor	4 Agree	5 Strongly Agree
3.1	Utilities can appeal if they disagree with regulatory decisions					
3.2	Are regulatory decisions publicly available					
3.3	The functioning of the regulatory commission and functioning of ERC is adequate to meet the expectations of the stake holders					

3.4	Can you represent regarding frequent loss of production and revenue due to power cuts and voltage variations to regulator directly					
3.5	Can LT industries purchase power on short term basis from other than DISCOM for their requirement under open access					
3.6	1% discount for bill payment in advance is provided					

Indicate your opinion with a tick mark (✓) in the option table

Table-2

Sr.NO	Statement	1 Strongly dis Agree	2 Dis Agree	3 Neither/ nor	4 Agree	5 Strongly Agree
4.1	Role of the regulatory commission in maintaining the supply of power at reasonable cost and good quality is achieved in the state					
4.2	The response of the regulatory commission regarding cross subsidy fixation for LT industries in the present situation is Reasonable					
4.3	Are you made clear by the regulatory commission on the method of calculation of FSA charges(2012-13)					
4.4	The response of the regulatory commission regarding controlling un scheduled power cuts reasonably good					

4.5	The response of the regulatory Agency for noncompliance of Citizens charter by DISCOMS many a times					
4.6	The effort of the regulatory commission in pressurizing government to release subsidies in time to eligible categories is adequate					

Indicate your opinion with a tick mark (✓)in the option table

Table-3

S.No	Statement	1 Strongly dis Agree	2 Dis Agree	3 Neither /nor	4 Agree	5 Strongly Agree
5.1	Accountability of the regulatory commission and functioning of ERC is inadequate to meet the expectations of the stake holders					
5.2	Is the increase in Tariff for LT industries is acceptable in view of frequent power cuts					
5.3	Do you feel that regulatory Commission is transparent					
5.4	The delay in ARR submissions by few Discoms has considerable impact for revising tariff in time					
5.5	Is the cross subsidy loading ranging from 25%-70% for LT industries in tariff fixing for 2012-13 is acceptable in view of the frequent power cuts and quality/ service level problems					
5.6	The regulatory commission approval for charging FSA for the year 2011-12 and 2012-13 is acceptable					
5.7	Do you feel that this type of surcharges are to be totally borne by utilities					
5.8	Is billing on KVAH basis is agreeable (due to need for PF to be near unity)					
5.9	The approval of regulating agency for 80% of the minimum billing demand for LT industries in view of frequent power cuts/ holidays, incurring less consumption is justifiable					
5.10	The TOD tariff for peak hour of the day is acceptable in view of frequent power cuts					
5.11	The approval of the Regulatory agency regarding peak hour tariff charging and heavy penalties for exceeding (5-6 times more than normal) is not ok					

5.12	In view of the poor power situation of Generation and TandD , Do you feel that enough positive initiatives and total reshuffle of the commission's role are taken to improve the power sector in the state as per the original plan					

Indicate your opinion with a tick mark (✓) in the option table

Table-4

SR.NO	Statement	1 Strongly dis Agree	2 Dis Agree	3 Neither/nor	4 Agree	5 Strongly Agree
6.1	Regulatory agency have made a significant impact in improving the performance of power sector in state so far					
6.2	There is quality and service level improvement after independent regulatory agency is formed					
6.3	Regulatory commission has made a significant contribution in bringing in competition and market development in the state power sector so far					