Forum of Regulators

Study on "Performance of Distribution Utilities"

Assisted By:

EY
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2. List of Tables

3. List of Abbreviations

APCPDCL	Andhra Pradesh Central Power Distribution Company Ltd.
APEPDCL	Andhra Pradesh Eastern Power Distribution Company Ltd.
APNPDCL	Andhra Pradesh Northern Power Distribution Company Ltd.
APSPDCL	Andhra Pradesh Southern Power Distribution Company Ltd.
AVVNL	Ajmer Vidyut Vitran Nigam Ltd.
APDCL	Assam Power Distribution Company Ltd.
BESCOM	Bangalore Electricity Supply Company Ltd.
BSEB	Bihar State Electricity Board
CESU	Central Electricity Supply Utility of Orissa
CHESCOM	Chamundeshwari Electricity Supply Company Ltd.
CSPDCL	Chhatisgarh State Power Distribution Co. Ltd.
DE Ratio	Debt Equity Ratio
DGVCL	Dakshin Gujarat Vij. Co. Ltd.
DHBVNL	Dakshin Haryana Bijli Vitran Nigam Ltd.
Distribution utilities	Distribution Company
DVVNL	Dakshinanchal Vidyut Vitran Nigam Ltd.
DSCR	Debt Service Coverage Ratio
ED/ PD	Electricity Department/ Power Department
GSECL	Gujarat State Electricity Corporation Ltd.
GESCOM	Gulbarga Electricity Supply Company Ltd.
HESCOM	Hubli Electricity Supply Company Ltd.
HPSEB Ltd.	Himachal Pradesh Electricity Board Ltd.
JDVVNL	Jodhpur Vidyut Vitran Nigam Ltd.
JSEB	Jharkhand State Electricity Board
JVVNL	Jaipur Vidyut Vitran Nigam Ltd.
J&K PDD	Jammu and Kashmir Power Development Department
KSEB	Kerala State Electricity Board
KESCO	Kanpur Electricity Supply Co.Ltd.
MESCOM	Mangalore Electricity Supply Company Ltd.
MGVCL	Madhya Gujarat Vij Co. Ltd.
MP Madhya Kshetra VVCL	MP Madhya Kshetra Vidyut Vitran Co. Ltd.
MP Paschim Kshetra VVCL	MP Paschim Kshetra Vidyut Vitran Co. Ltd.
MP Purv Kshetra VVCL	MP Purv Kshetra Vidyut Vitran Co. Ltd.
MSEDCL	Maharashtra State Electricity Distribution Co. Ltd.
MeSEB MeECL MePDCL	Meghalaya State Electricity Board Meghalaya Energy Corporation Ltd. Meghalaya Power Distribution Co. Ltd.
MVVNL	Madhyanchal Vidyut Vitran Nigam Ltd.
MW	Megawatt
MU	Million Units (Kilowatt hours)
MoP	Ministry of Power
NESCO	Northern Electricity Supply Company of Orissa Ltd.
NBPDCL	North Bihar Power Distribution Company Ltd.
PGVCL	Paschim Gujarat Vij Co. Ltd.
PSEB	Punjab State Electricity Board
PSPCL	Punjab State Power Corporation Ltd.

Poorv VVNL	Poorvanchal Vidyut Vitran Nigam Ltd.
Pash VVNL	Pashchimanchal Vidyut Vitran Nigam Ltd.
ROCE	Return on Capital Employed
ROE	Return on Equity
RONW	Return on net worth
RP	Resource Plan
R&M	Renovation and Modernization
SBPDCL	South Bihar Power Distribution Company Ltd.
SEB	State Electricity Board
SERC	State Electricity Regulatory Commission
SESCO	Southern Electricity Supply Company of Orissa Ltd.
TNEB	Tamil Nadu Electricity Board
TANGEDCO	Tamil Nadu Generation and Distribution Corporation Ltd.
TPDDL/NDPL	Tata Power Delhi Distribution Ltd/ North Delhi Power Limited
UGVCL	Uttar Gujarat Vij Co. Ltd.
UHBVNL	Uttar Haryana Bijli Vitran Nigam Ltd.
UJVNL	Uttrakhand Jal Vidyut Nigam Limited
UPRVUNL	Uttar Pradesh Rajya Vidyut Utpadan Nigam Ltd.
UPJVNL	Uttar Pradesh Jal Vidyut Nigam Ltd.
UtPCL	Uttrakhand Power Corporation Ltd.
UT	Union Territory
WBSEDCL	West Bengal State Electricity Distribution Co. Ltd.
WESCO	Western Electricity Supply Company of Orissa Ltd.

4. Executive Summary

Electricity is one of the most critical components of infrastructure affecting economic growth and well-being of nations. The Indian power sector is one of the most diversified in the world. The Government of India has identified the power sector as a key sector of focus to promote sustained industrial growth.

The viability of the entire power sector depends upon the financial health and the operational efficiency of the distribution utilities. Distribution function is a crucial link in the electricity chain as it provides the last mile connectivity in the Electricity Sector. Therefore, it is necessary to focus on improving their performance, especially the performance of the Government owned utilities. A radical reduction in the AT&C losses and a reorientation of the operational procedures of these utilities is crucial to the country for achieving the goal of adequate power supply to all its citizens.

Restoration of health of the distribution sector remains critical to the success of reforms in the power sector, and therefore, The Forum of Regulator (FOR), constituted in terms of Section 166 (2) of the Electricity Act, 2003 and consisting of the Chairperson of the Central Commission and the Chairpersons of the State Commissions, has decided that a study be carried on the performance of distribution utilities and an analysis of the impact of various policy/regulatory decisions on the performance of these utilities. FOR has appointed EYLLP for conducting a study on "Performance of Distribution utilities".

Revenues originate with the customer at distribution, so subpar performance there hurts the entire value chain. Utilities in several states have taken on significant commercial debt to finance their operation, which has led to concerns about poor power sector performance spilling over into the financial sector and broader economy. State electricity boards and distribution utilities also continue to require government support to stay in business. The purpose of this report is to study the performance of distribution utilities, while analysing the impact of various policy/ regulatory decisions on their performance. In this report, various financial and operational Key Performance Indicators (KPIs)/Parameters of the distribution utilities have been identified and a comprehensive assessment on the performance of the distribution companies has been conducted. Data from FY2010 to FY2013 have been collected from annual audited accounts or Report on "The Performance of State Power Utilities for the period of 2010-11 to 2012-13" by Power Finance Corporation or from respective SERCs.

Distribution utilities under consideration were compared against each other and grouped into five categories based on the 4 constructs and related 12 parameters. The constructs are Profitability, Channel efficiency, Solvency and Techno-commercial efficiency. Based on these four constructs, 12 mutually exclusive and collectively exhaustive parameters have been identified namely; Profit per unit input energy, Gross Margin (without subsidy), Difference in CAGR of Revenue and cost, number of days of receivables, number of days of payables, ratio of capex and depreciation, interest service coverage ratio, debt to equity ratio, fixed asset coverage ratio, Aggregate technical and commercial losses, Employee cost per unit input energy and trend of AT&C losses. The categorization methodology focusses on stimulating and

improving the financial performance of distribution utilities. For the purpose of categorization of utilities based on the identified KPIs, data till FY2013 has been used due to unavailability of audited data for all utilities for FY2014. The importance of each KPI has been derived from its impact on the overall performance of the utilities. The findings have been compared against national level estimates for a detailed analysis of performance of the utilities. This report analyses the several sources of weakness in distribution and identifies the key challenges to improving performance in the short and medium term. The report will not only help various stakeholders in gaining a better understanding of the dynamics of the distribution sector but also help them in identifying key focus areas.

Based on the analysis of data, we believe that for improving the financial performance focus should be on timely tariff rationalization, enforcement of timely tariff filing & quality in financial reporting, prudent power purchase mechanism, optimising capital structure, liquidation of regulatory assets in a time bound manner and improving operational efficiency (reducing technical & distribution losses). A key message of the report is thus that the distribution segment requires the continual attention of the authorities if power sector performance is to improve.

5. Introduction

The chapter comprises of three subsections namely background, project overview and scope of work. Background gives an overview of Forum of Regulators (FOR) and also explains the importance of distribution sector. Project overview and scope of work explain the brief scope of the study conducted by EYLLP.

5.1. Background

The Forum of Regulators (FOR) has been constituted in terms of Section 166 (2) of the Electricity Act, 2003. The Forum consists of Chairperson of the Central Commission and the Chairpersons of the State Commissions. Chairperson of the Central Commission is the Chairperson of the Forum of Regulators and secretarial assistance to the Forum is provided by the Central Commission. The Forum is responsible for harmonization, coordination and ensuring uniformity of approach amongst the Electricity Regulatory Commissions across the country, in order to achieve greater regulatory certainty in the electricity sector.

Restoration of health of the distribution sector remains critical to success of reforms in the power sector, and FOR has been discussing the issues relating to this critical segment of the electricity sector at regular intervals. Operational and financial performance of Distribution utilities has been a major concern.

a) As per the Shunglu Committee Report, Distribution utilities suffered financial losses of INR 1,79,000 crores before subsidy and INR 82,000 crores after subsidy during 2005–2010. The key reasons for these losses were high AT&C losses, rising cost of power purchase with more expensive short-term power, interest payments, etc. Aggregate losses (without accounting for subsidy) for all of the utilities increased from Rs. 64,463 crores in 2009–2010 to Rs. 92,845 crores in 2011–12. Ineffective billing & collection, high level of distribution losses, increasing cash losses and poor financial management are reported to be plaguing the performance of the distribution companies.

b) ACS-ARR Gap: The Shunglu Committee has reported an average gap between average cost of supply and average revenue realisation of INR 0.60/kWh of electricity sold by utilities in FY10. The gap can be attributed to the operational inefficiencies of distribution utilities and their inability to raise tariffs in line with the increase in costs.

c) High technical and commercial losses: AT&C losses have been 25.38% in FY2013 and 22.70 % (Provisional) in FY2014 as per CEA executive summary report for Power sector for September 2015. A significant part of these losses can be attributed to theft and issues related to meter reading and billing.

5.2. Project Overview

This project is undertaken to carry out a study on the "Performance of Distribution Utilities". The Study captures detailed analysis of the financial and operational performance of the distribution utilities. Forum of Regulator (FOR) had decided that a study be carried on performance of distribution utilities capturing the progress made by these utilities across various states as the health of distribution utilities is critical for reforms in power sector. FOR has mandated EYLLP to study and address the above issues, to identify the key performance indicators and to suggest relevant and suitable mechanisms so that the performance of distribution utilities can be improved. The methodology of the report has been discussed in various internal meetings with FOR and FOR's Forty Eighth meeting dated June 11, 2013. Minutes of the meeting is attached in annexure A.

5.3. Scope of work

The Key scope of the assignment is as listed below:

- Identification of Key Performance Indicators along with basic parameters for analysis of performance of the distribution licensees.
- Assessment of performance of the distribution licensees against the identified key Performance Indicators / parameters, including assessment of impact of various policy / regulatory decisions on their performance.
- Identification of gaps in the performance and suggesting measures / mechanisms for enhancing the efficacy of the utilities.
- Classification of the distribution licensees based on the assessment of their performance against the identified Key Performance Indicators / parameters.

6. Research & Methodology

Research and methodology comprises of four subsections namely literature review, methodology, econometric tools used, and suggestions by respective SERCs. Detailed literature review helps in identifying the gaps in the existing pool of resources and in devising a methodology such that report could give a fresh and holistic perspective. Methodology explains the floor plan of the study, while subsection three gives an overview of econometric tools used for determining the weights. Sub section four has compilation of all the suggestions raised by various SERCs during the course of discussion.

6.1. Literature Review

A set of framework and empirical literature have been reviewed during the course of research. This includes:

a) The Ministry of Power, Government of India's report dated March 2013 entitled "State Distribution Utilities: First Annual Integrated Rating", which determines the credit worthiness of 40 distribution utilities. The report adopts both subjective and objective parameters for determining the integrated rating scores of the Distribution Utilities;

b) "The Performance of State Power Utilities for the years 2010-11 to 2012-13" published in 2015 and "The Performance of State Power Utilities for the years 2009-10 to 2011-12" published in 2014 by Power Finance Corporation. These reports have two major sections. In the first section, it reports financial and commercial results at national level, while the second section provides exhaustive operational and financial data on specific states/state power departments; and

c) The World Bank's "More Power to India: The Challenge of Electricity Distribution" dated June 2014 has been referred as part of the sector assessment for this FOR study. The study discusses state level policy frameworks, development of institutions and critically examines power sector from the perspective of distribution business and emphasizes the importance of corporate governance and reporting. The Report also discusses various case studies exhibiting best practices for strengthening every ladder of the value chain.

The aforementioned literature sources have been utilised in building/validating/establishing key assumptions on the Indian power sector that has been the first step to this report. The literature has been referred to, wherever required, during the course of this entire study.

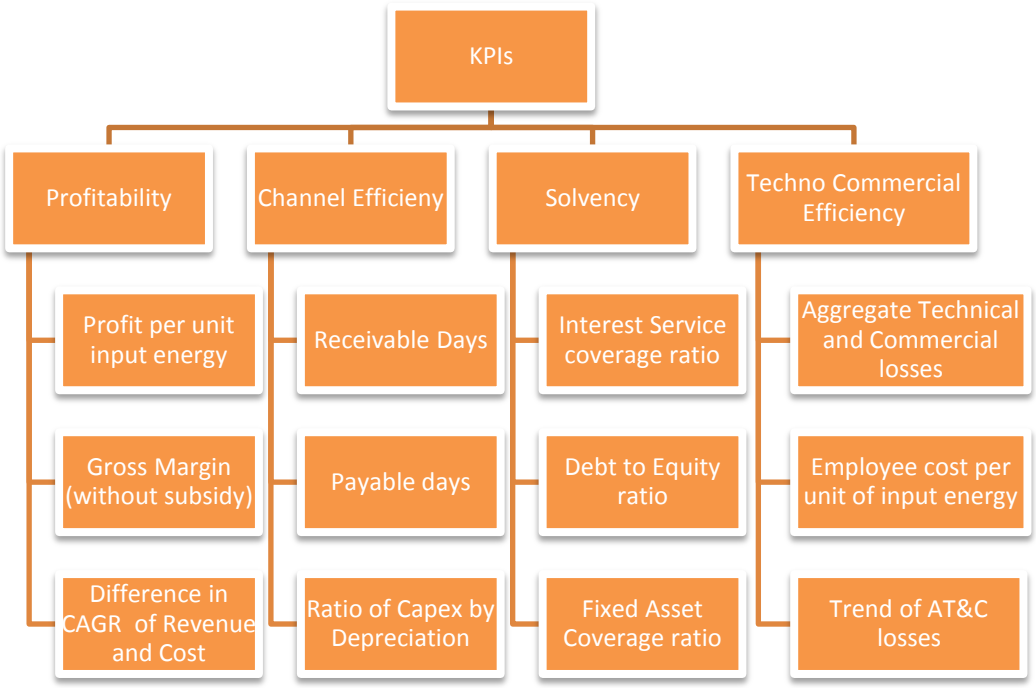
Next subsection explains methodology adopted for the study. Among qualitative and quantitative methods of research, the methodology is heavily leaning towards the quantitative methods.

6.2. Methodology

A quantitative approach has been used in line with the strategic intent of this assignment that focuses on identifying factors that impact the performance of Distribution Utilities. Distribution utilities and power distribution departments operate under different demographic and geological constraints. As such, the quantitative methodology has been devised to minimize the scope of subjectivity from the analysis and to help compare heterogeneous subjects with similar benchmarks. The entire value chain of the distribution business has been studied and more than 100 financial, technical and commercial parameters have been identified.

Quantitative methods, though useful for conducting comparative analysis of heterogeneous subjects, are effective to the extent of the reliability of data used for the analysis. The requisite data has been collected from various publicly available sources as mentioned earlier. Secondary sources which have been considered are annual reports of Distribution Utilities and PFC reports entitled "The Performance of State Power Utilities for the years 2010-11 to 2012-13" and " 2009-10 to 2011-12". Data obtained from these sources have been captured in the designed Performa sheets. Subsequently, respective State Electricity Regulatory Commissions (SERCs) verified and updated the data with SERCs/Distribution utilities of seven States, vis-à-vis Gujarat, Bihar, Andhra Pradesh, Tamil Nadu, Haryana, Maharashtra and 3 utilities of Uttar Pradesh namely KESCO, Poorv VVNL and DVVNL, replied with updated data.

For the purpose of categorization, 12 mutually exclusive and collectively exhaustive parameters (KPIs) were selected from the initial set of financial, technical and commercial parameters. These 12 KPIs represents almost every aspect of value chain of distribution business. Some KPIs have not been considered as they have already been captured in one of these 12 KPIs. Some KPIs were not considered because of unavailability of data across utilities, while some KPIs were left as they were subjective and could not be used for comparing the utilities.



These 12 parameters were divided into 4 constructs i.e. Profitability, Channel efficiency, Solvency and Techno-commercial efficiency. Distributions utilities under consideration were compared against each other based on these 4 constructs and related 12 KPIs.

Factor analysis was conducted and parameters were grouped into four constructs. Initial weights were assigned using conjoint analysis, where preference was given to profitability followed by channel efficiency, solvency and techno commercial efficiency. After determining the initial weights, same had been discussed with industry experts (In house and FOR). After multiple rounds of discussion with experts, weights were finalized. (*Please refer page number 15 for Econometric Tools used for Weight Determination and page number 22 and 23 for weightage for each KPI and range of scores for each KPI)*

Based on total quantitative score, distribution utilities have been grouped into five categories (A-E). Post categorization, key salient features of distribution utilities have been analyzed and key observations have also been included in the analysis. Category 'A' distribution utilities have scored high to moderate in financial and operational performance whereas Category 'E' distribution utilities have scored low to very low in financial and operational performance. *(Please refer page number 38 for list of distribution utilities in category A to E)*

The methodology and findings were discussed in FOR meeting held on June 11, 2015. Few SERCs requested for one month time to be given for re-validation of data. SERC representatives (Members and Chairman) also intended to understand the methodology in detail. Subsequently, FOR increased the time duration by 3 more weeks so that SERCs could revalidate the data. In the given time period, utilities of Andhra Pradesh, Assam, Gujarat, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Puducherry, Sikkim,

Tamil Nadu and Uttarakhand validated and updated the data. In this report analysis has been done of the latest data provided by SERCs. Minutes of 48th FOR meeting are attached in Annexure A for reference.

Data Limitation – Strength of quantitative methods depends upon the three aspects of data – reliability, authenticity or validity and availability. For ensuring the reliability of the data, data from FY2010 to FY2014 have been collected from annual audited accounts or from report - "The Performance of State Power Utilities by Power Finance Corporation for the period of 2010-11 to 2012-13 and for the period of 2009-10 to 2011-12". Initial set of collected data from above mentioned sources has been validated by respective SERCs. However, for the purpose of categorization of utilities based on the identified KPIs, data till FY2013 has been used due to unavailability of audited data for all utilities for FY2014.
Since, quantitative methodology has been adopted for the research; therefore a set of descriptive statistical framework such as mean, trend analysis etc. and inferential statistical methods such as conjoint analysis and factor analysis have been used. Next section gives an overview of inferential statistical methods used in the study.

6.3. Econometric Tools used

Two methods i.e. Statistical methods and Delphi# method have been used for determining the weights of identified parameters for comparing the distribution utilities.

Entire value chain of the distribution business has been studied and 12 parameters representing the different ladders of value chain have been identified. Post that, factor analysis has been conducted and parameters have been grouped into four constructs. Initial weights were assigned using conjoint analysis, where preference was given to profitability followed by channel efficiency, solvency and techno commercial efficiency. After determining the initial weights, same were discussed with industry experts (In house and FOR). After multiple rounds of discussion with experts weights have been finalized.

Conjoint Analysis: It is an inferential statistical tool which is used to determine how different constructs or attributes that defines any entity is being valued by group of people. This method was used to determine primary weights.
Factor Analysis: Factor analysis is a statistical method used to describe variability among observed, correlated variables in terms of a potentially lower number of unobserved variables called factors. This method was used to determine the set of parameters associated with a particular construct.
Delphi Method: Delphi method is generally used in forecasting. However for the study, the same concept has been used and view of industry experts' were taken on the weights determined by the statistical method. The weights were finalized after multiple level of discussion with industry experts.

Next subsection summarizes the queries, objections and suggestions by various SERCs.

 # The Delphi method is a structured communication technique or method, originally developed as a systematic, interactive forecasting method which relies on a panel of experts

6.4. Suggestions by SERCs and FOR

The below table captures suggestions made by SERCs on the methodology during the 48th FOR meeting and subsequent discussions followed during the study of distribution utilities and responses for the same.

S. No.	Suggestions/Remarks	Responses
1.	AERC suggested that "The Parameters used for conducting "Study on Performance of distribution utilities" are purely financial parameters, which may not reflect the regulatory regime of the states. Regulatory parameters such as pending True-ups, Volume of Regulatory Asset pending disposal etc. may also be incorporated in the study".	All parameters are not financial parameters. The parameters such as AT&C losses, Trend of AT&C losses and employee cost per unit input energy are parameters which lay emphasis on operational efficiency. Our objective of the research has been to identify those key performance indicators that objectively compare the performance of different distribution utilities. As such, pending True-ups, timely filing of petitions has not been considered as these would induce subjectivity in the analysis. However, issue of regulatory assets has been acknowledged in the report and aggregate score has been reduced on pro rata basis for utilities having regulatory assets.
2.	AERC suggested that "Across the country, there is a variation in the State Government subsidies such as Revenue subsidy, Tariff Subsidy, power purchase subsidy etc. thereby impacting the cost of electricity supplied. Therefore, we should look into type and amount of State Government subsidy and its impact on the cost of supply. In case of Assam, only power purchase subsidy and target subsidy is being provided by Government of Assam, which is again very much low as compared to subsidies provided by other states of the Country".	Subsidy support is a function of public policy which affects the financial health of utilities. Data analysis suggests that at national level, ratio of subsidy received to subsidy booked was 0.85 in FY2012 while in FY2013 it was 0.98. Moreover, the disbursement of subsidy is not according to the need of utilities. Therefore, utilities tend to use funds raised for capex plan for meeting operational expenditures. In context of these scenarios, subsidy has been considered tactfully. In profitability

		construct, one parameter includes subsidy while others discount it. Also, component wise subsidy data was not available for most of the utilities; hence a comparative analysis cannot be done.
3.	During the FOR meeting dated June 11, 2015, it has been suggested that Collection efficiency may be taken as a KPI under techno commercial efficiency.	Parameters which are mutually exclusive and collectively exhaustive in scope have been considered during the course of this study. Collection efficiency and other parameters of techno commercial efficiency have not been taken as separate parameter as it is already factored in AT&C losses.
4.	AERC suggested that "In case of Assam, subsidy is provided for categories such as Jeevan-Dhara, Domestic A etc., however, no subsidy is provided for agriculture category. The agriculture consumers in Assam mostly use diesel gen-sets for agriculture purpose and the agriculture consumption of electricity is very meagre".	While defining parameters, it has been ensured that such state specific factors do not affect the categorization framework. Treatment of subsidy has already been explained earlier. However, analysis of utilities acknowledges consumer mix data.
5.	AERC suggested that "In the draft report, employee cost/unit input of energy is considered as one of the parameters for analysing performance of the distribution utility. However, it may be noted that employee cost is dependent on various parameters such as consumer mix, HT/LT ratio, volume of rural/urban consumer, demographic and geographic conditions of the area of licensee, spread of consumer etc. In case of Assam (APDCL), the ratio of employee cost/unit input of energy is relatively high because of the above mentioned conditions. Therefore, other parameters such as consumer mix, HT/LT ratio, and volume of rural/urban consumer, demographic and geographic spread shall be considered along with employee cost/unit input of energy to get a proper reflection of APDCL's performance".	Employee cost per unit input energy is a standard parameter used across distribution business for measuring the operational efficiency of a utility. Various factors affect employee cost, however it is an absolute parameter and its variants are being used for forecasting employee cost. Consumer mix is also a socio-economic parameter, hence cannot be used for comparison, however it has been acknowledged in individual analysis of utilities. HT/LT ratio is an intermediate parameter and doesn't exhibit significant correlation with economics of distribution business.

6.	During the FOR meeting dated June 11, 2015, few SERCs suggested that subsidy should be factored in the gross margin.	Parameters have been selected in a way so that there is minimum correlation among the parameters belonging to the same construct. In profitability construct, 'profit per unit of input energy' includes subsidy and hence subsidy has not been factored in gross margins.

7. Introduction of Key Performance Indicators (KPIs)

List of key performance indicators used for study of various Discoms are shown below:

Table 1: Brief description of Key Financial Parameters

Parameter	Formula
Gross margin (%)	(Total Revenue - Power purchase cost) / Total Revenue
Gross margin without subsidy (%)	(Total Revenue – Power purchase cost - Subsidy booked) / (Total Revenue (without subsidy)
Net profit margin (%)	Profit after tax / Total Revenue*
Net profit margin (without subsidy)	Profit after tax (without subsidy) / Total Revenue (without subsidy)
Current ratio	Current assets/Current liabilities
Receivables (no of days)	365/(Revenue from sale of power/Average account receivables)
Payables (no of days)	365/(Cost of purchase of power/Average account payables)
Debt/equity	(Long term debt + Short term debt) / Net worth**
Interest Service coverage ratio	(PAT + Depreciation + Interest expense)/Interest expense***
Debt service coverage ratio	(PAT + Depreciation + Interest expense) / (Interest expense + Principal payment due in the year)
Fixed asset coverage ratio	Net fixed assets/ Total debt
ROE (%)	Profit after tax/ Net worth
ROA (%)	Profit after tax/ Total asset
AT&C losses	1- (Billing Efficiency x Collection Efficiency)

*Profit after Tax and Total Revenue includes subsidy booked

**Net worth = Equity + Reserves + Accumulated Profits, (Losses) – Miscellaneous expenses not written off

***In case of negative PAT, same has been taken for calculation purpose

8. Constructs and corresponding KPIs

Distribution utilities under consideration were compared against each other and grouped into five categories based on the 4 constructs and related 12 parameters.

Four constructs are Profitability, Channel efficiency, Solvency and Techno-commercial efficiency. Based on these four constructs, 12 mutually exclusive and collectively exhaustive parameters have been identified. The four constructs are briefly captured below:

1. **Profitability:** Three parameters have been selected for measuring the profitability of distribution utilities namely,

a. Profit per unit input energy - This parameter is a measure of normalized profit.
b. Gross margin (without subsidy) – Gross margin represents the percent of total sales revenue that the company retains after incurring the direct costs (i.e. power procurement cost). Calculation of Gross Margin has been has been adjusted for subsidy booked as subsidy booked is already included in profit per unit input energy.
c. Difference in compound annual growth rate of Revenue and cost - This parameter is a measure of difference in the growth pattern of revenue and expenses in the last four years.

2. **Channel Efficiency:** Three parameters have been selected for measuring the channel efficiency of distribution utilities namely,

a. Number of days of receivable- Number of days of receivable represents collection period for distribution utilities. This measures effectiveness of a distribution utilities credit and collection efforts in allowing credit to customers, as well as its ability to collect cash from them.
b. Number of days of payable – Number of days of payable represents the dues paying pattern of distribution utilities for purchasing power.
c. Ratio of Capex and Depreciation – This ratio indicates the rate at which a distribution utilities is adding assets as compared to depreciation of asset in a particular period.

3. **Solvency:** Three parameters have been selected for measuring the solvency of distribution utilities namely,

a. Interest service coverage ratio (ISCR) - ISCR measures the ability of distribution utilities to service the interest for the selected period.
b. Debt to equity ratio (D/E) - Debt to equity ratio is an important parameter of financial leverage. Higher debt increases the obligation of interest payment and subsequently affects profitability. It is an important measure as capital structure is one of the key fundamental considerations in financial management.

c. Fixed Asset Coverage Ratio (FACR) - FACR measures the ability of a company to cover its debt obligations with its assets.

4. **Techno commercial efficiency:** Three parameters have been selected for measuring the techno commercial efficiency namely,

a. Aggregate technical and commercial losses – It is a measure of technical and commercial efficiency of electricity distribution business.
b. Employee cost per unit of input energy (regular employee) - It indicates the man power efficiency of a distribution utilities.
c. Trend of AT&C losses – Improvement or deterioration in AT&C losses for the period from FY2010 to FY2013 is a measure of sustainability in operational efficiency.

Final weights for 12 key parameters under four constructs have been given in the next page along with the range of scores for these key parameters.

Final weights for parameters are indicated in the table below:

Table 2: Weight of key parameters

Profitability			Channel Efficiency			Solvency			Techno-commercial efficiency		
40%			15%			25%			20%		
Profit per unit input energy	Gross Margin without Subsidy	Difference in CAGR between Revenue and growth	No of days of Receivables	No of days of Payables	Ratio of Capex and Depreciation in the year	Interest Service Coverage Ratio (ISCR)	Debt to Equity Ratio (D/E)	Fixed Asset Coverage Ratio (FACR)	AT&C losses	Employee cost per unit of input energy	AT&C Loss-trend
15%	15%	10%	7.5%	2.5%	5%	7.5%	12.5%	5%	7.5%	7.5%	5%

Higher weights have been assigned to profitability because once the Distribution Utilities becomes profitable; other parameters such as solvency also improve. It also propels the investment for minimizing technical losses. Each selected parameter has been given a score on a scale of 1 to 5. Once weights are determined, the score has been given on the scale of one to five.

Scores from 1 to 5 has been given for twelve identified parameters based on range in below mentioned table:

Table 3: Score of key parameters

Score	Gross Margin without Subsidy	Profit per unit input energy	Difference in CAGR of Revenue and cost	No of days of Receivables (in days)	No of days of Payables (in days)	Ratio of Capex and Depreciation	Interest Coverage Ratio (ISCR)	Debt to Equity Ratio (D/E)	Fixed Asset Coverage Ratio (FACR)	AT &C losses	Employee cost per unit input energy	AT&C Loss-trend
5	More than 10%	More than 0.05	Above 5%	Less than 60	Less than 60	More than 7	More than 2	Less than 2	More Than 5	Less than 15%	Less than .25	More than 30%
4	Between10% and 5%	Between 0.05 and 0.02	Between 5% and 2%	Between 60 to 90	Between 60 to 90	Between 7 and 4	Between 1.33 and 2	Between 2 and 3	Between 5 and 3	Between 15 % and 25%	Between .25 and .35	Between 30% and 20%
3	Between 5% and 0%	Between 0.02 and 0	Between 2% and 0%	Between 90 to 120	Between 90 to 120	Between 4 and 2	Between 1 and 1.33	Between 3 and 4	Between 3 and 2	Between 25% and 30%	Between .35 to 0.50	Between 20% and 5%
2	Between 0% and (10)%	Between 0 and (0.5)	Between - 0% and (5)%	Between 120 to 150	Between 120 to 150	Between 2 and 1	Less than 1 but more than zero	Between 4 and above	Between 2 and 1	Between 30 % and 35%	Between 0.50 and 1	Between 5% and 0%
1	Below (10)%	Less than (0.5)	Below (5) %	Over 150	Over 150	Below 1	Negative	Negative	Below 1	More than 35%	More than 1	Negative

Based upon above weights, distribution utilities under consideration are grouped into 5 categories.

[#] *Between x and y means including x but excluding y.*

9. Categorization of Distribution Utilities

This section analyses selected parameters, and explains the rationale behind better/ worse performance of distribution utilities in terms of parameter under consideration.

9.1. Gross Margin without subsidy

Analysis of Gross Margin without Subsidy suggests that CESC, TSECL, PSPCL, HPSEB Limited, and KSEB top the list while J&K PD, Arunachal PD, Manipur PD, APNPDCL, and UHBVNL exist at bottom.

Figure 1

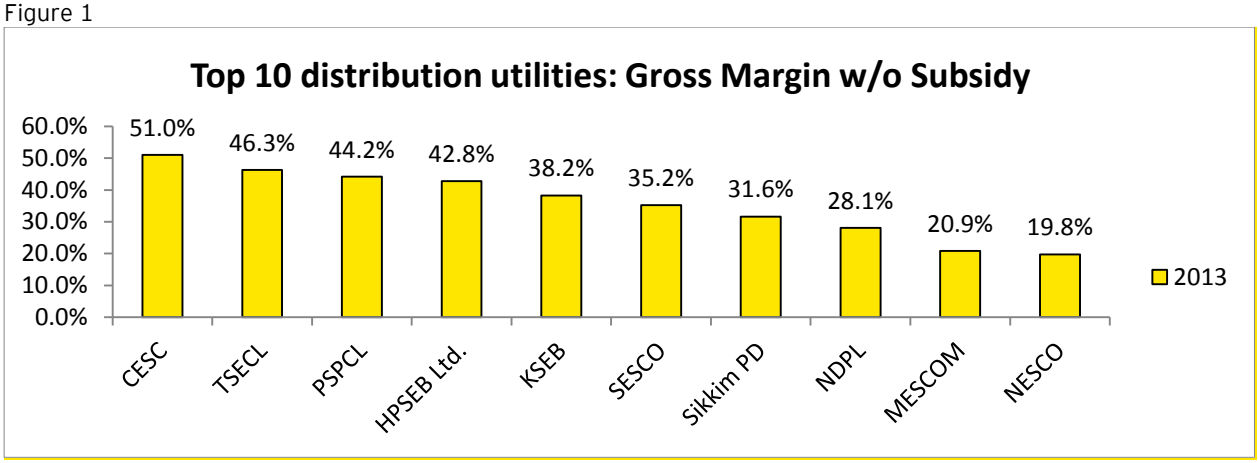
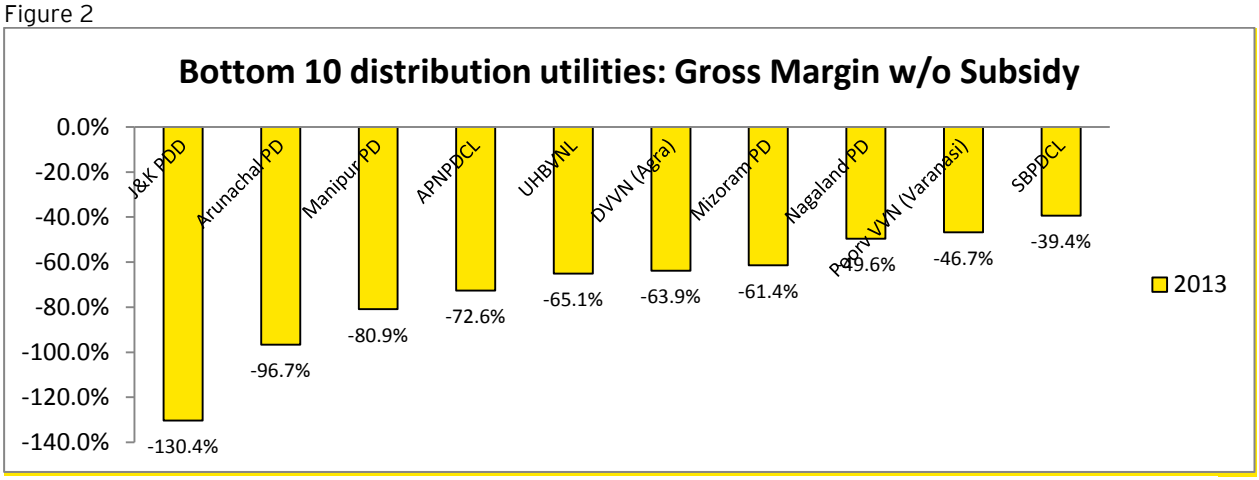


Figure 2



Key Observations for higher Gross margin w/o subsidy for top 10 distribution utilities:

- Relatively lower cost of power purchase – For example KSEB has its own hydro power units, CESC and TSECL have their own generating stations and HPSEB purchases major chunk from hydro stations.
- Relatively prudent tariff rationalization except for TSECL.
- Relatively low to medium AT&C losses except NESCO (~ 40.0%), SESCO (~49.0%) and Sikkim PD (~ 45.0%)

Key Observations for lower Gross margin w/o Subsidy for bottom 10 distribution utilities:

- Relatively high power purchase cost.
- CAGR of tariff (From FY2010 to FY2013) less than 5% except for Mizoram PD.
- Higher AT&C losses - All utilities in bottom 10 have AT&C losses above 25% except APNPDCL (~ 13%).

9.2. Profit per unit Input Energy

Analysis of Profit per unit Input Energy suggests that CESC, Sikkim PD, NDPL, KSEB, and PSPCL top the list while Mizoram PD, Manipur PD, Arunachal PD, Nagaland PD, and APNPDCL exist at bottom.

Figure 3

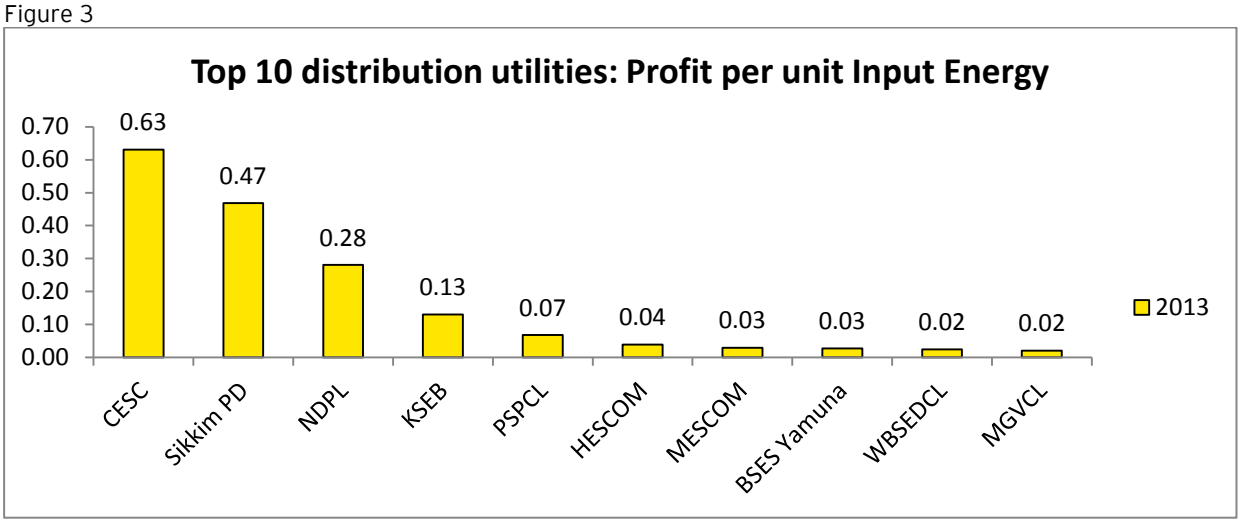
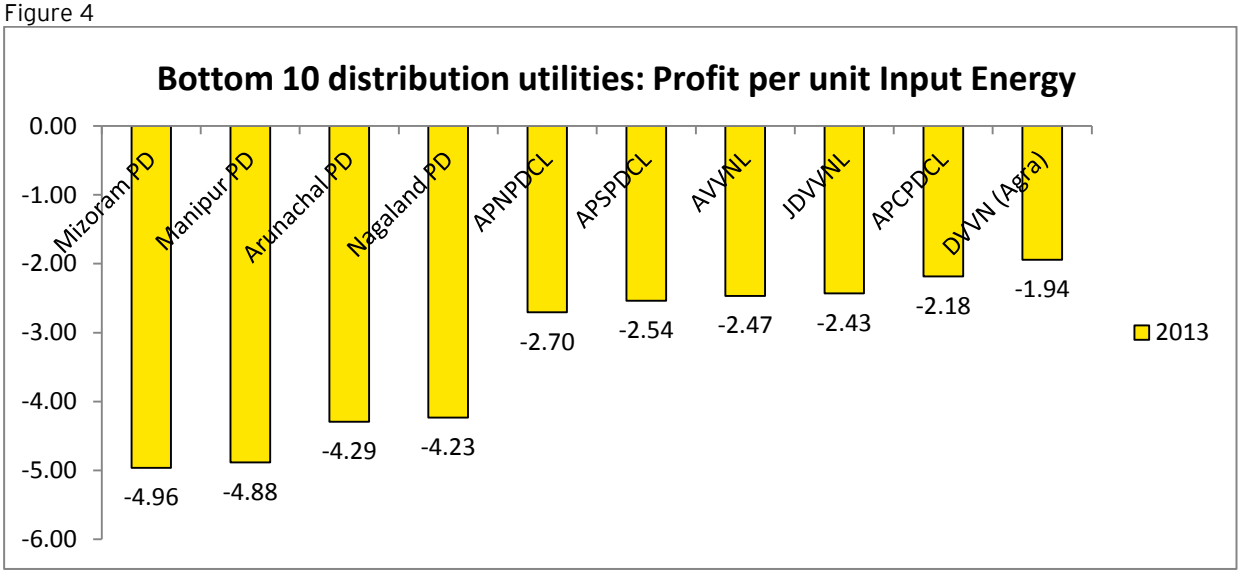


Figure 4



Key Observations of top 10 distribution utilities in terms of profit per unit:

- Prudent tariff rationalization and relatively low power purchase cost.
- Gross margin without subsidy above 15% for all distribution utilities except for MGVCL~ 10.4% and HESCOM ~ 3.4%.
- High and timely subsidy support for PSPCL and HESCOM.
- **AT&C losses below 20% for all distribution utilities except Sikkim PD (~ 45%) and WBSEDCL (~ 32%).**
- Relatively comfortable capital structure leading to low interest cost.
- Profit per unit input energy is highest for CESC due to lower power procurement cost and lower AT&C losses and (Power procurement cost contributes less than 60% of the total expenses).

Key Observations of bottom 10 distribution utilities in terms of profit per unit:

- Gross Margin without subsidy is negative except for JDVVNL (~18%).
- Difference in CAGR of revenue and cost is negative except for AVVNL (6%), JDVVNL (5%) and Mizoram PD (3%).
- Negative net worth for all distribution utilities. AT&C losses for Andhra Pradesh and Rajasthan are below 20% but have relatively high interest cost and poor tariff rationalization. High AT&C losses for all other distribution utilities.
  Distribution utilities of Andhra Pradesh incurred high losses in FY2013 because of very high 'other expenses'.

9.3. Difference in CAGR of Revenue and Cost

Analysis of Compound annual growth rate suggests that Sikkim PD, NBPDCL, UtPCL, AVVNL and HESCOM top the list while WESCO, UHBVNL, APSPDCL, APCPDCL, and NESCO exist at bottom.

Figure 5

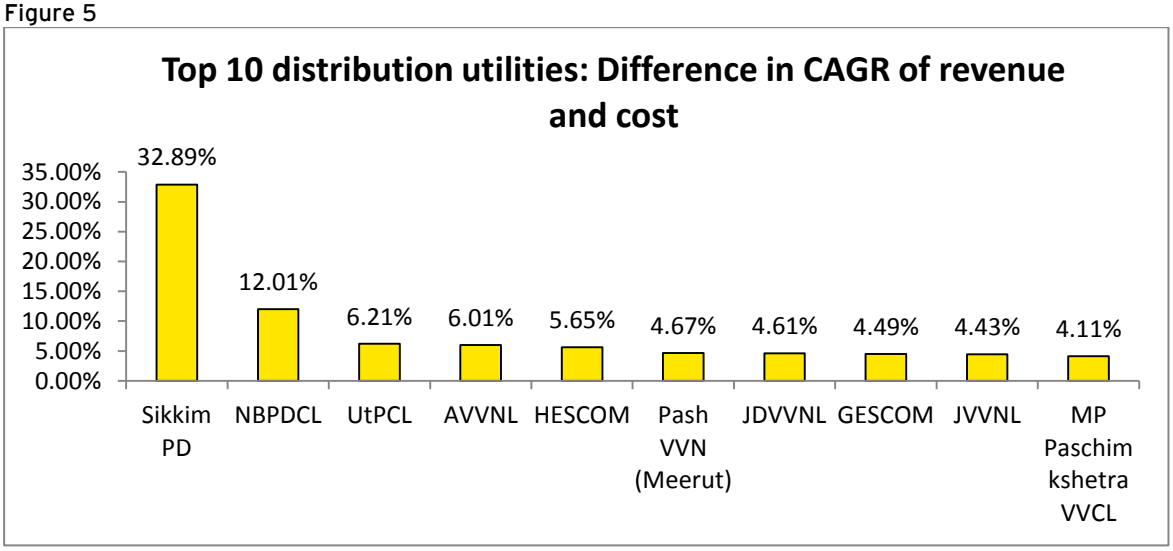
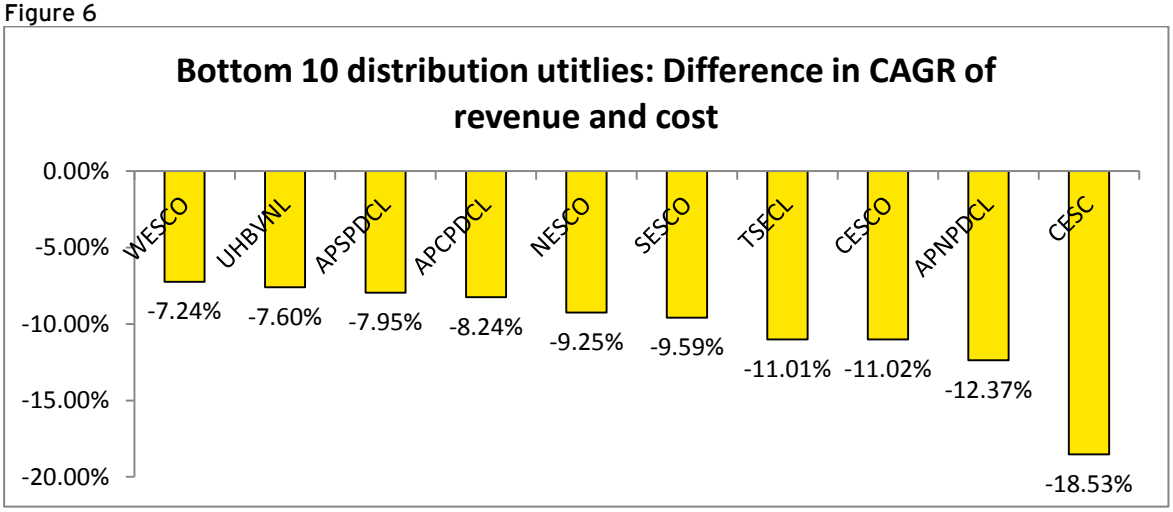


Figure 6



- Difference in CAGR of revenue and cost is a representation of whether distribution utilities are earning enough revenue to meet its cost.
- Positive difference in CAGR of revenue and cost is mainly because tariff increase and lower power purchase cost.

9.4. Debt to Equity ratio

Analysis of Debt to Equity Ratio suggests that DGVCL, Goa PD, MGVCL, PGVCL, and CSPDCL top the list while Mizoram PD, Nagaland PD, SESCO, NESCO and WESCO exist at bottom.

Figure 7

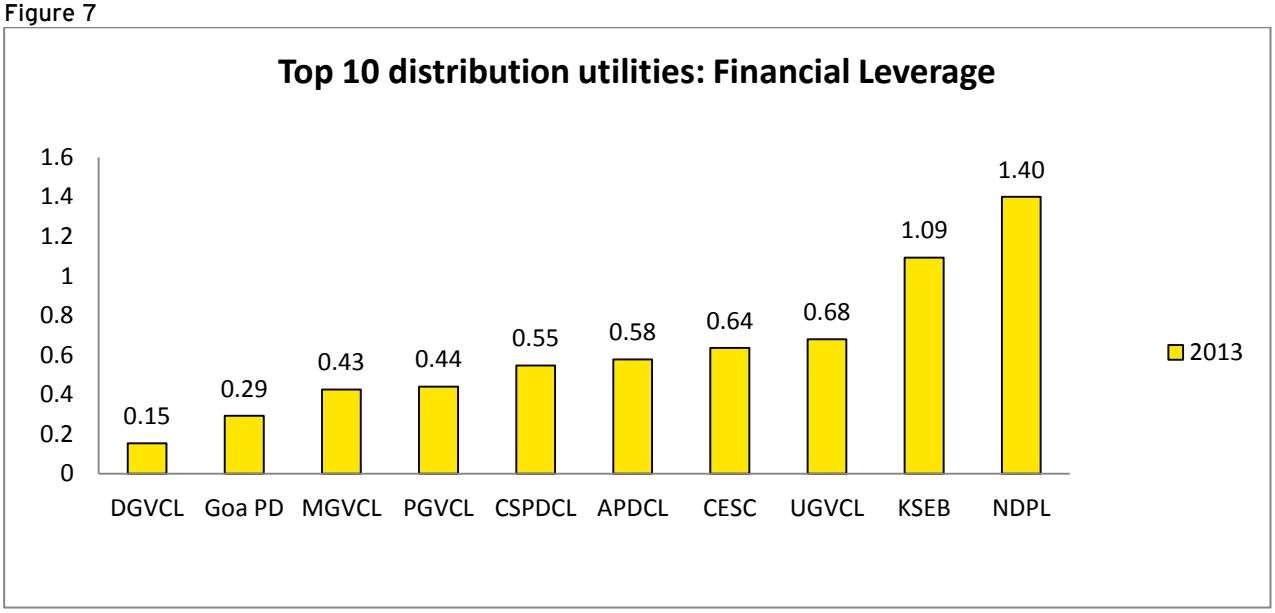
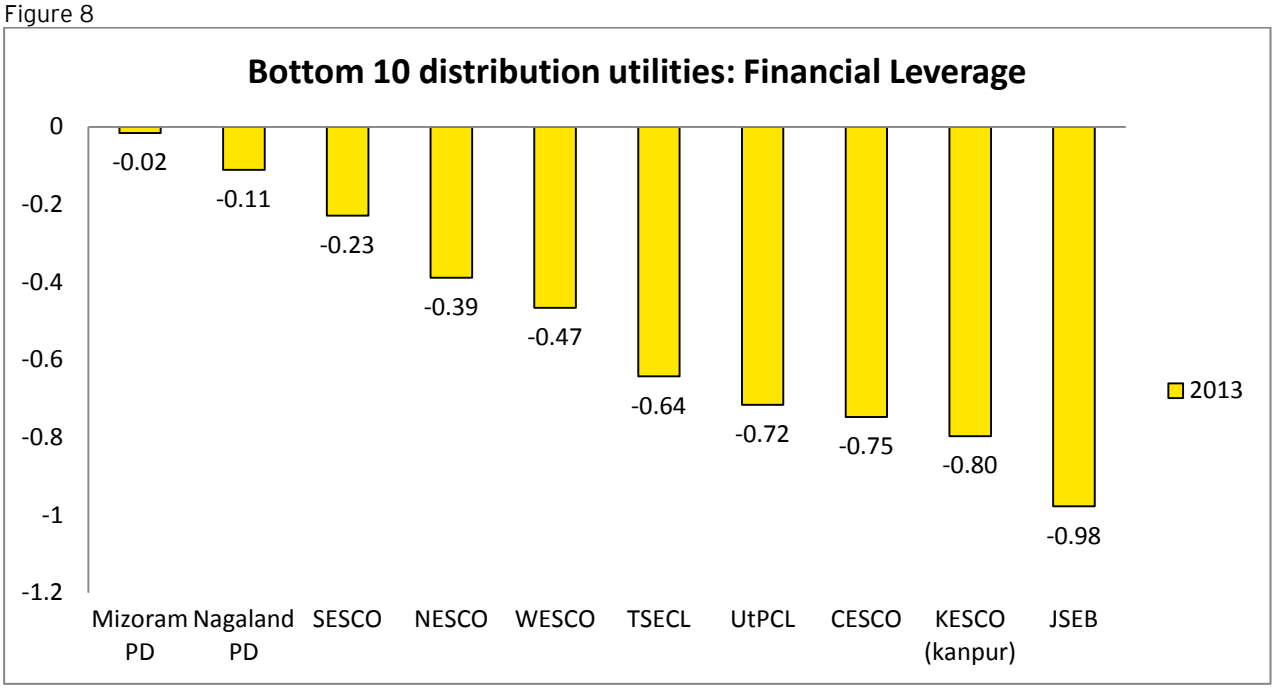


Figure 8



- Healthy financial leverage is maintained either by infusing equity or by maintaining profitability.
- Normative D/E for distribution utilities is 2.33 i.e. Debt to Equity of 70:30.
- Another way is to un-lever the capital structure of distribution utility. This can be done through financial restructuring.

9.5. Interest Service Coverage ratio

Analysis of Interest Service Coverage ratio suggests that CESC, MGVCL, DGVCL, KSEB, and PGVCL top the list while Mizoram PD, Goa PD, Manipur PD, Nagaland PD, and APNPDCL exist at bottom.

Figure 9

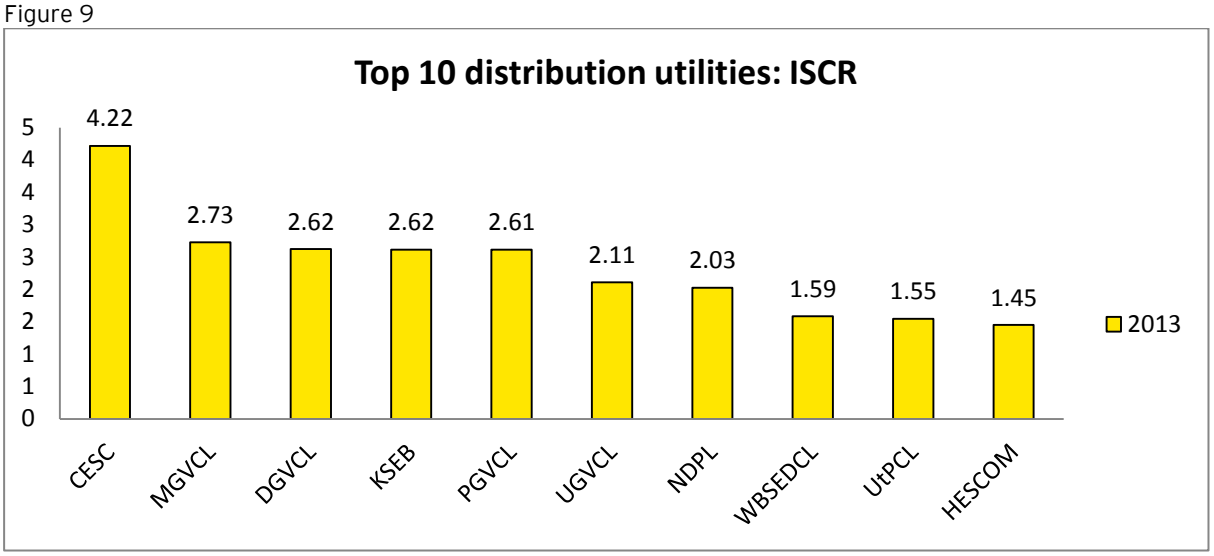
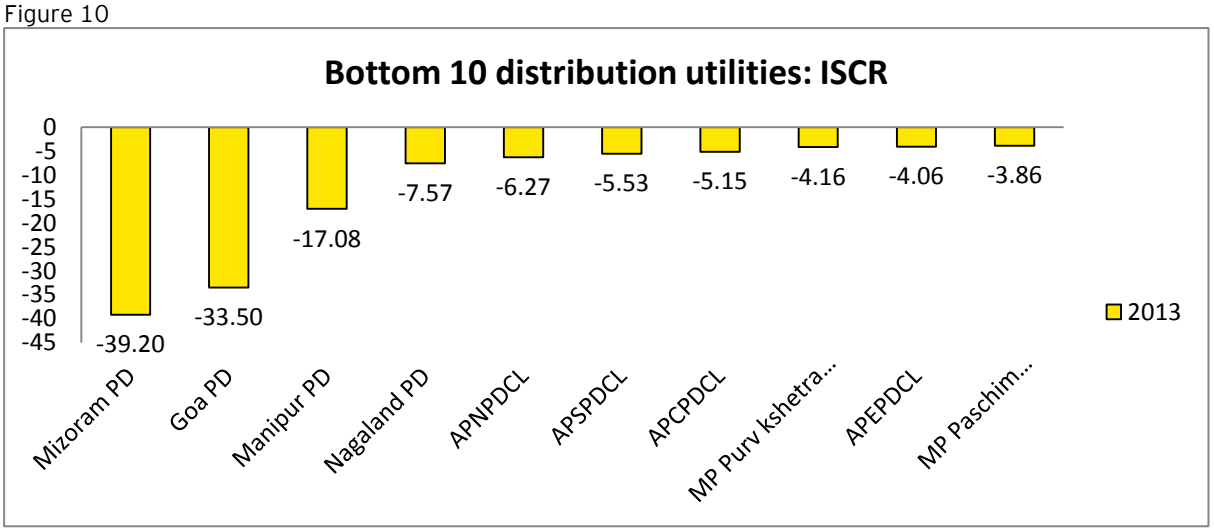


Figure 10



- Interest coverage ratio (ISCR) indicates company's ability to meet its interest payments.
- Average interest coverage ratio (ISCR) of 56 distribution utilities in 2013 is negative indicating many distribution utilities are in financial stress and are facing difficulties in fulfilling interest and principal obligations.

Key Observations of 10 distribution utilities that have reported higher ISCR:

- Relatively comfortable capital structure except for UtPCL.
- Gross Margin without subsidy is positive for all distribution utilities.
- Profit per unit positive for all distribution utilities except for UtPCL.
- Relatively prudent tariff rationalization.
- Relatively low AT&C losses except for WBSEDCL (~32%) and PGVCL (~32%).

Key Observations of 10 distribution utilities that have reported lower ISCR:

- Negative net worth for all distribution utilities except for GOA PD.

- Gross margin without subsidy is negative for APEPDCL (4.6%).
- Profit per unit negative for all distribution utilities.
- Difference in CAGR of Revenue and cost (from FY2010 to FY2013) is negative for all distribution utilities except for MP Purv Kshetra VVCL, APEPDCL and Mizoram PD.
- Relatively high gap between average tariff realized and average cost of supply.
- Higher AT&C losses except for Goa PD and Andhra Pradesh distribution utilities.

9.6. Fixed Asset Coverage ratio

Analysis of Fixed Asset Coverage ratio suggests that Mizoram PD, TSECL, KSEB, DGVCL and CSPDCL top the list while APEPDCL, AVVNL, MVVNL, KESCO, and JDVVNL exist at bottom.

Figure 11

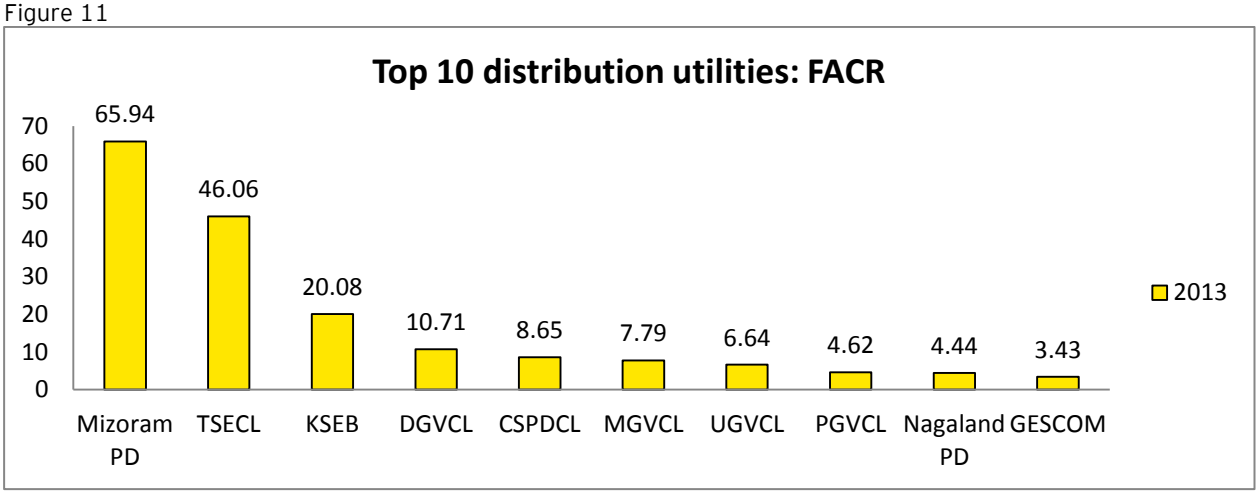
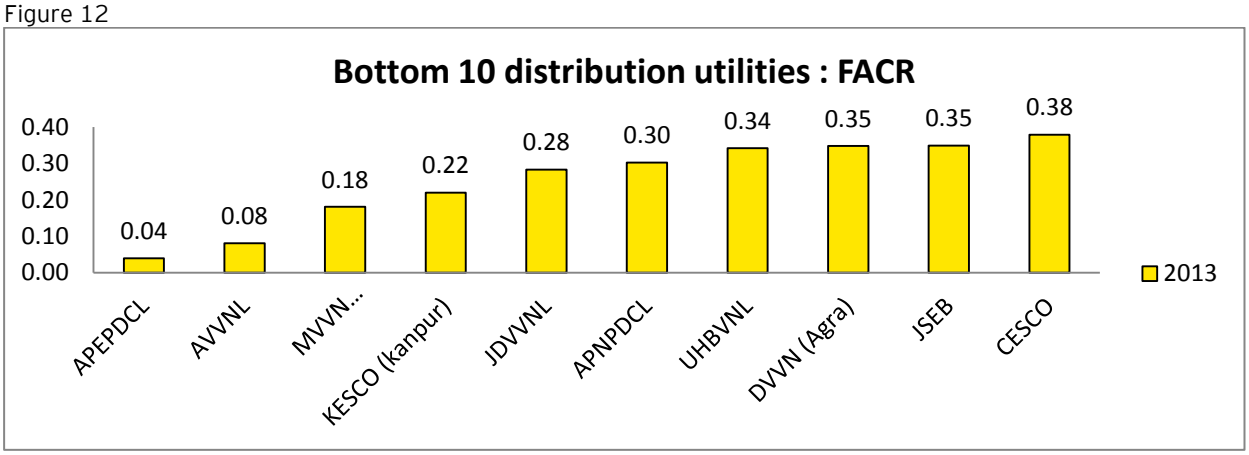


Figure 12



- Fixed Asset coverage ratio of 26 distribution utilities (out of 56) is less than 1.

Key Observations of 10 distribution utilities that have reported higher FACR:

- Comfortable capital structure except for GESCOM, Mizoram PD, Nagaland PD and TSECL.
- Relatively high capex by depreciation ratio.

Key Observations of 10 distribution utilities that have reported lower FACR:

- All distribution utilities are highly leveraged and have negative net worth.

Table 4: Distribution utilities - Fixed Asset coverage ratio

Fixed Asset coverage ratio		
Distribution utilities with FACR more than 1	Distribution utilities with FACR less than 1	Insufficient information
26	25	5

9.7. Number of days of Receivables

Analysis of Number of days of Receivables suggests that DGVCL, KSEB, Mizoram PD, CESC, and PGVCL top the list while Manipur PD, POORV VVN, KESCO, NBPDCL and SBPDCL exist at bottom.

Figure 13

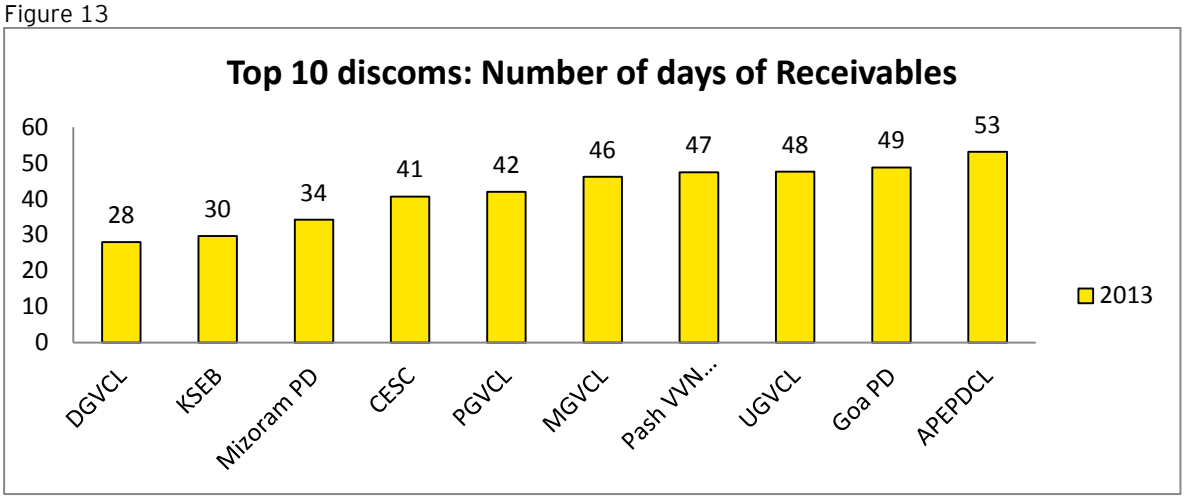
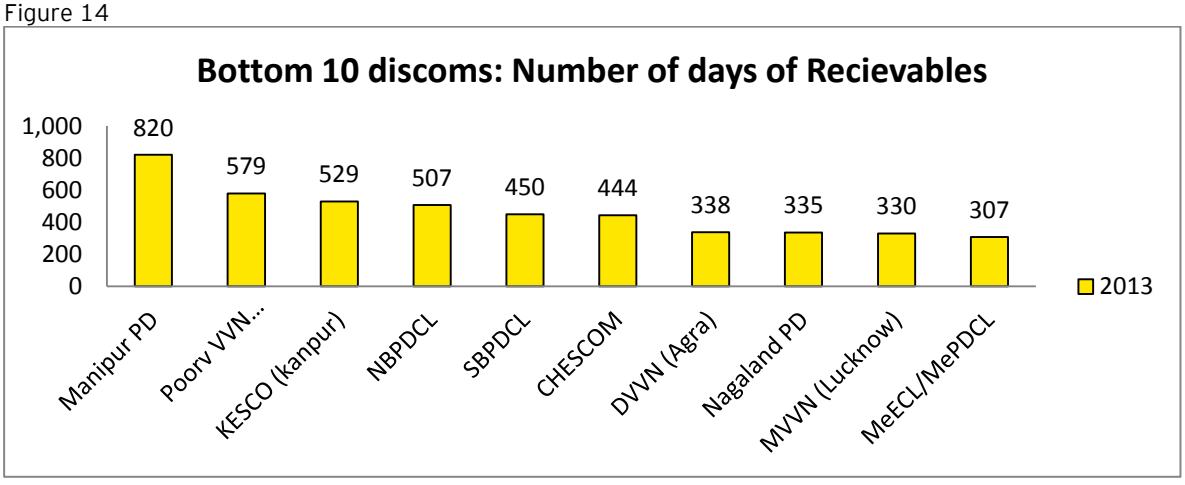


Figure 14



- National average of number of days of receivables for FY2013 was 117 days.

Key Observations of 10 distribution utilities that have reported low receivable days:

- AT&C losses below 20%, except Mizoram PD (~28%) and Paschim VVN (~33%).
- Lesser number of days of receivable indicates that distribution utility has stronger collection mechanism.

Key Observations of 10 distribution utilities that have reported high receivable days:

- AT&C losses above 30% for all distribution utilities.
- Weak Profitability and poor collection mechanism.

9.8. Number of days of Payables

Analysis of Number of days of Payable suggests that PGVCL, DGVCL, MP Paschim Kshetra VVCL, UGVCL and KSEB top the list while POORV VVNL, APDCL, KESCO, TANGEDCO, KESCO, and DVVNL exist at bottom.

Figure 15

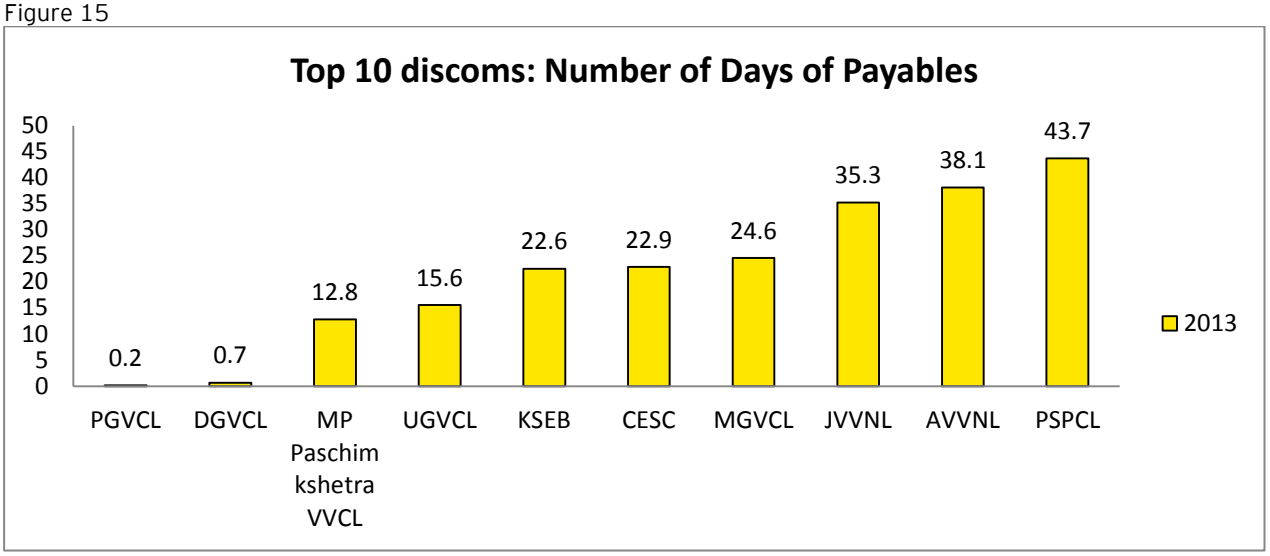
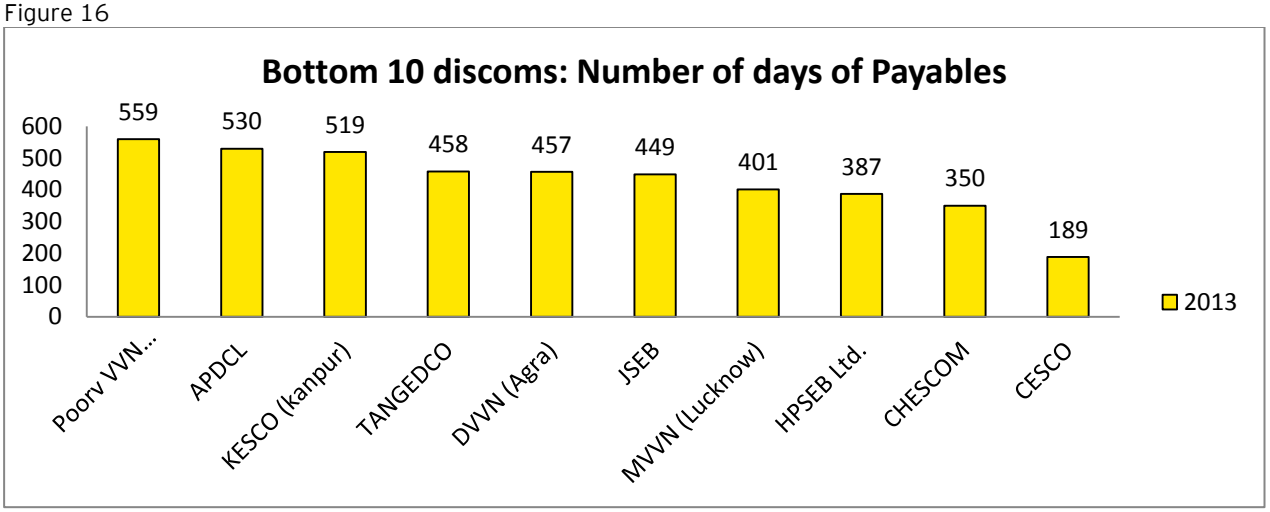


Figure 16



- In case of distribution utilities, majority of account payables are the dues for the power it procures. Number of days of payables for distribution utilities is the measure of how efficient the distribution utility is in terms of paying its dues.
- The national average of number of days of payables for FY2013 is about 104 days.

Key Observations:

- Gujarat distribution utilities have low payable days since GUVNL procures power on behalf of all distribution utilities in Gujarat and PGVCL and DGVCL procure mainly from GUVNL.
- Distribution utilities that have low payable days have also had low receivable days except for MP Paschim Khestra VVL (receivable days ~ 122 as compared to payable days ~ 13).
- Distribution utilities that have high payable days have high receivable days except for HPSEB

  (receivable days of 82 days as compared to payable days of 386).

9.9. Capex/Depreciation

Analysis of Capex/ Depreciation suggests that MeECL/ MePDCL, APDCL, MP Purv Kshetra VVN, Manipur PD and MP Madhya Kshetra VVN top the list while NBPDCL, MVVN, SESCO, SBPDCL, and BSES Yamuna exist at bottom.

Figure 17

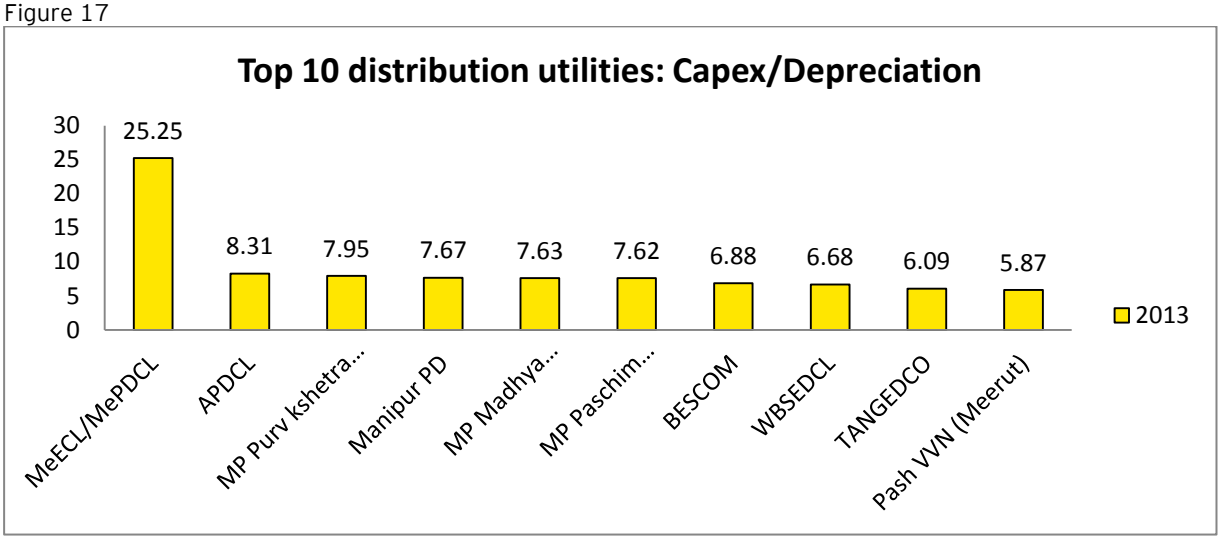
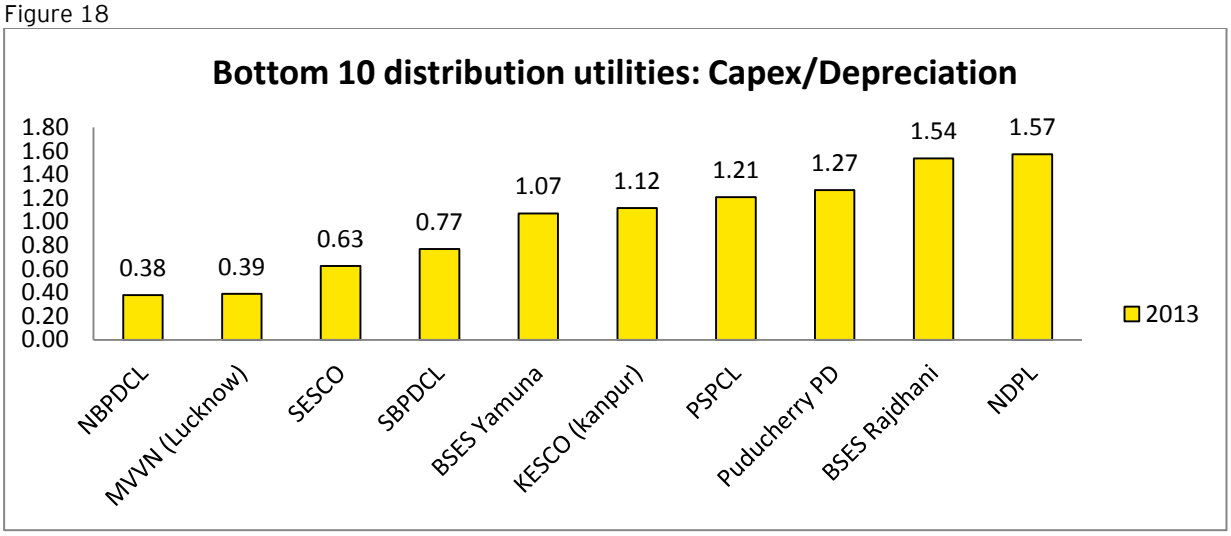


Figure 18



- Ratio of capital expenditure and depreciation is a measure to assess whether the entity is investing enough to run the operations.
- Ratio improved significantly for some distribution utilities after unbundling. Schemes such as DDUGJY (Deen Dayal Upadhyay Gram Jyoti Yojana) and IPDS (Integrated Power Development Scheme) are expected to further improve capital investment in distribution utilities.

Table 5: Distribution utilities - Capex/Depreciation

Capex/Depreciation		
Number of distribution utilities with ratio more than 2	Number of distribution utilities with ratio less than 1	Insufficient information
47	7	2

9.10. AT&C Losses

Analysis of AT&C losses suggests that HPSEB Ltd., DGVCL, APEPDCL, KSEB and MGVCL have relatively low AT&C losses while Arunachal PD, Manipur PD, Nagaland PD, J&K PD, and Poorv VVN have relatively very high AT&C losses.

Figure 19

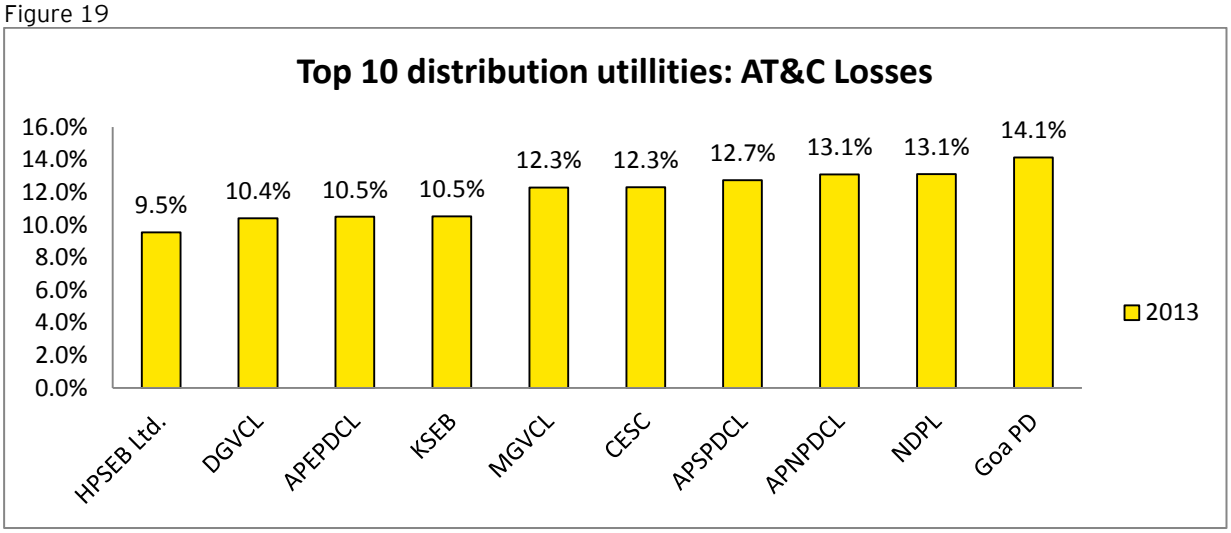
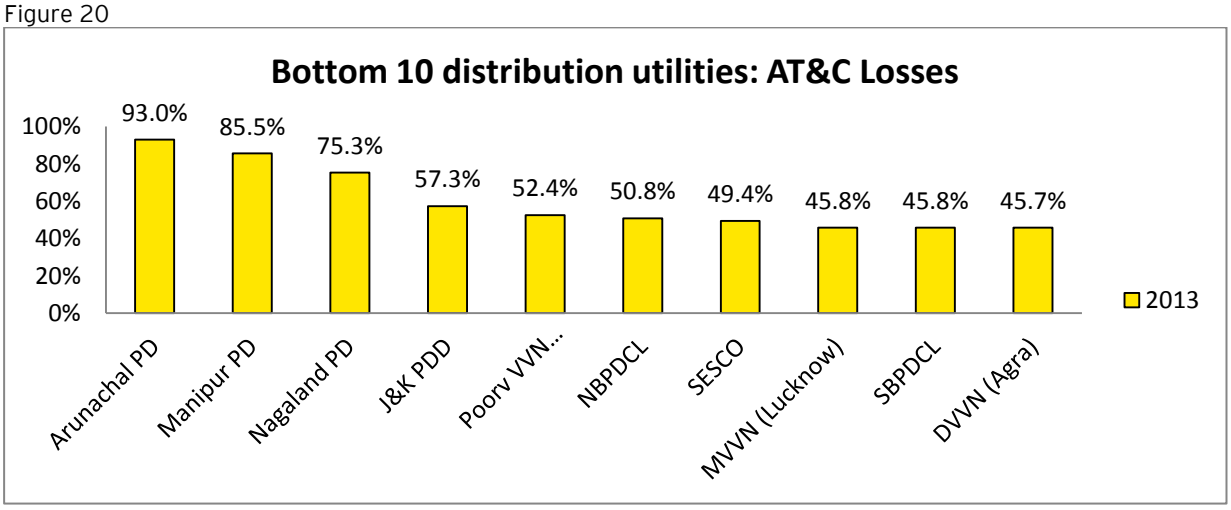


Figure 20



Methodologies adopted for the calculation of AT&C Losses

Forum of Regulator suggests that AT&C losses should be equal to total energy available for sale within the licensed area to the consumer of distribution utilities minus sum of energy realized on account of theft cases and energy realized by distribution utilities divided by total energy available for sale within the licensed area to the consumer of distribution utilities. However, this methodology could not be adopted as all the data required for calculation was not available. Therefore, the methodology given by Power Finance Corporation has been used, which is one minus technical losses multiplied by collection efficiency. The AT&C losses represent the difference between energy available for sale (adjusted for transmission losses and trading in energy) (Mkwh) and energy realised (Mkwh).

The national average of AT&C losses was 25.4 % in FY2013. Out of 56 distribution utilities studied, 27 distribution utilities have AT&C losses lower than national average while 29 distribution utilities have AT&C losses higher than national average.

Key Observations of 10 distribution utilities that have reported low AT&C losses:

- Only three distribution utilities have negative Gross Margin without subsidy namely APSPDCL, APNPDCL and GOA PD.

- Distribution utilities with low AT&C losses have high collection efficiency. Few distribution utilities have reported collection efficiency of more than 100% due to recovery of past dues during the period.

Key Observations of 10 distribution utilities that have reported high AT&C losses:

- Gross Margin without subsidy is negative for all distribution utilities except for SESCO.
- Distribution utilities of North-eastern states, Bihar and Jammu and Kashmir have very high AT&C losses. In Jammu and Kashmir, at many places metering has not been done. In north-eastern states there are high technical losses, while in Bihar there are technical losses as well higher thefts.

9.11. Trend of AT&C Losses

Analysis of AT&C losses suggests that GESCOM, MeECL/MePDCL, HPSEB Ltd, JDVVNL, and AVVNL top the list while Goa PD, Poorv VVN (Varanasi), Manipur PD, KESCO (Kanpur), and MVVN (Lucknow) exist at bottom.

Table 6: Top 10 distribution utilities - AT&C Losses Improvement Trend from FY2010 to FY2013

Distribution utilities	% Change	Absolute change#
GESCOM	52%	20%
MeECL/MePDCL	48%	25%
HPSEB Ltd.	48%	9%
JDVVNL	40%	13%
AVVNL	40%	13%
CSPDCL	37%	15%
DGVCL	32%	5%
Sikkim PD	31%	20%
APNPDCL	29%	5%
Mizoram PD	29%	11%

Table 7: Bottom 10 distribution utilities - AT&C Losses Deterioration Trend from FY2010 to FY2013

Distribution utilities	% Change	Absolute change
Goa PD	-131%	8%
Poorv VVN (Varanasi)	-88%	25%
Manipur PD	-80%	38%
KESCO (kanpur)	-49%	12%
MVVN (Lucknow)	-22%	8%
UHBVNL	-21%	6%
WBSEDCL	-21%	5%
Pash VVN (Meerut)	-21%	6%
TSECL	-16%	5%

[#] *Absolute change is calculated based on difference of AT&C losses in FY2013 and FY2010.*

- GESCOM, distribution utilities of north eastern states such as of Meghalaya and Rajasthan exhibited significant improvement in AT&C losses. However, in absolute terms improvement is highest for MeECL/ MePDCL.
- Distribution utilities of Uttar Pradesh exhibited deterioration in AT&C losses.
- GOA PD has shown high percentage change mainly due to lower AT&C loss in FY2010 (~ 6%). AT&C losses were low in FY2010 due to high collection efficiency (collection efficiency above 106% in FY2010 due to collection of dues).

9.12. Employee Cost per Unit of Input Energy

Analysis of Employee Cost per Unit of Input Energy suggests that NESCO, PGVCL, DGVCL, DVVNL, and UGVCL top the list while Arunachal PD, Mizoram PD, Manipur PD, HPSEB Ltd. and Nagaland PD exist at bottom.

Figure 21

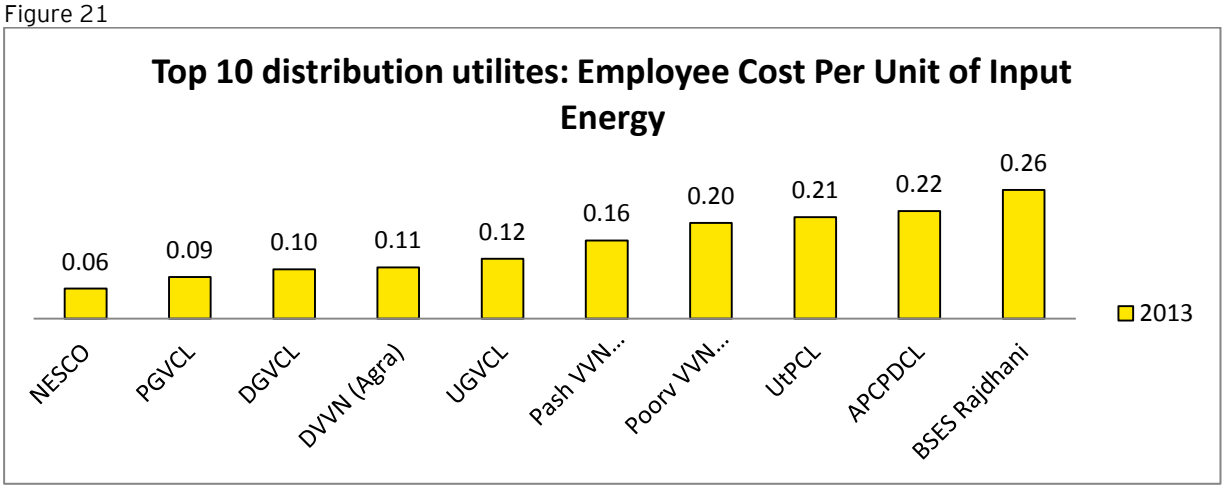
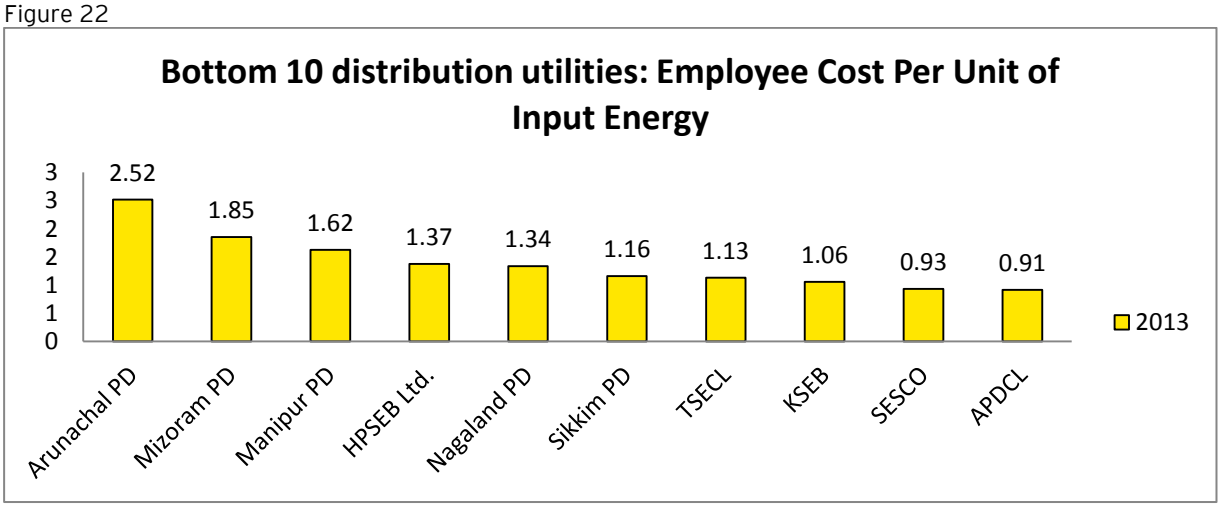


Figure 22



- Employee Cost per unit input energy is a KPI for measuring the operational efficiency of distribution utilities. Many utilities have large manpower on contract, which is generally booked under administrative and general over heads. Since, manpower on contract is flexible; hence, employee cost per unit of input energy reflects the true picture of optimum utilization of manpower.

- In FY2013, 21 distribution utilities have employee cost per unit input energy more than Rs. 0.50.

- Distribution utilities of Gujarat and Uttar Pradesh have comparatively lower employee cost per unit input energy. NESCO realized lowest employee cost per unit input energy because a large portion of manpower is on contract basis.

- Utilities of North eastern states such as Arunachal PD, Mizoram PD etc. have high employee cost per unit input energy mainly due to relatively lower input energy.

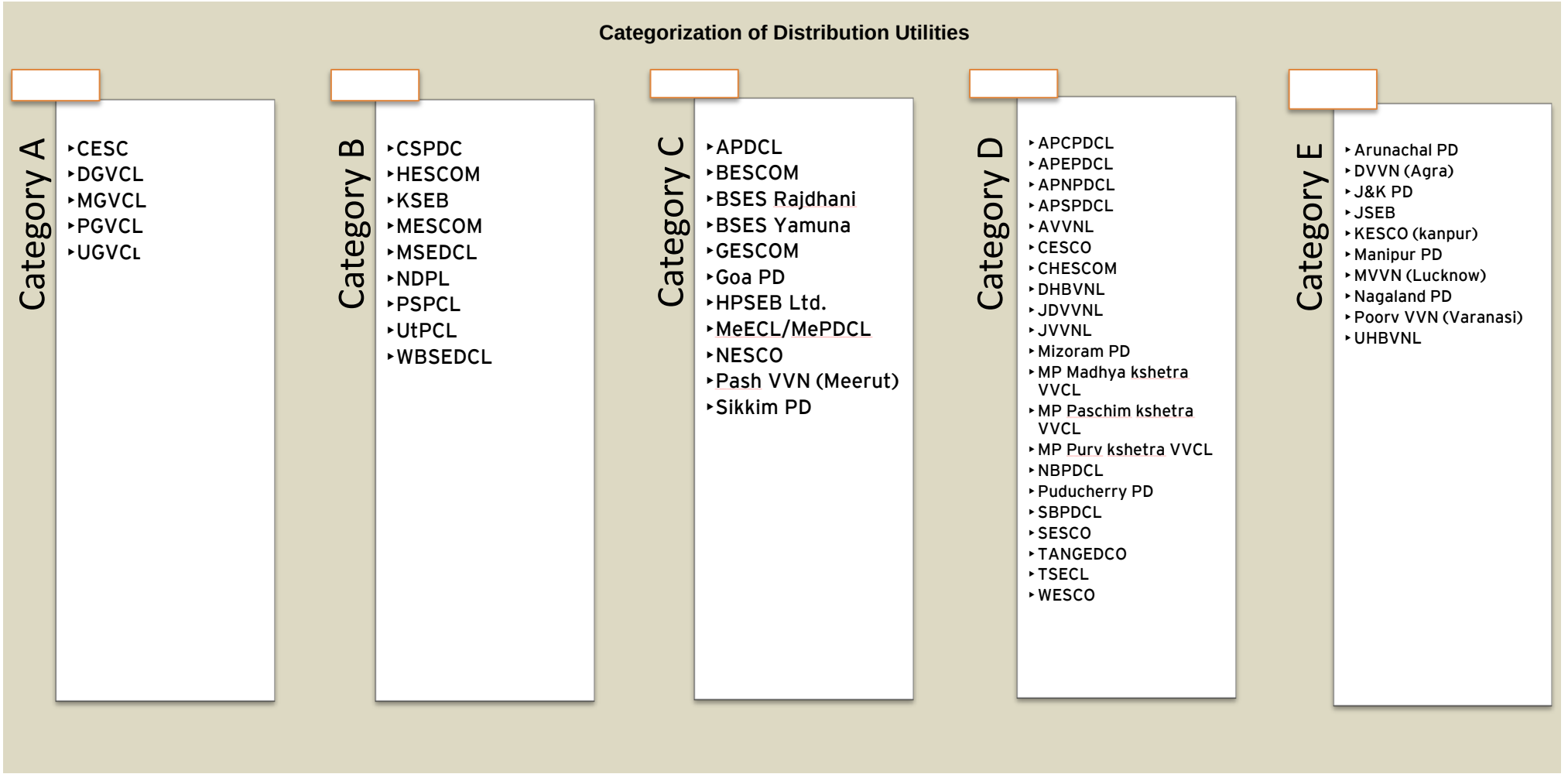
Based on the analysis of distribution utilities' financial and operational performance, distribution utilities have been categorized into five groups as captured in below tables. (Please refer Table 8 at page 37 and Table 9 at page 38)

Table 8: Characteristics of Categories

Category A	Category B	Category C	Category D	Category E
High to moderate financial and operational performance	Moderate to Average financial and operational performance	Average to below average financial and operational performance	Below average to low financial and operational performance	Low to very low financial and operational performance

Category A includes best performing distribution utilities and category E includes poor performing distribution utilities.

Table 9: Categorization of Distribution Utilities



* Distribution utilities with high regulatory assets have been downgraded.

The distribution utilities are evaluated with respect to selected parameters. The integrated scores have been calculated according to framework mentioned above. Based on the scores, the distribution utilities have been categorized into five groups. The major observations of different groups are given in the table below:

Table 10: Category wise key observations

Category wise key observations	
A	• Consistent track record of profitable growth- Profit per unit positive for all distribution utilities from FY2010 to FY2013 because of stronger cost coverage, low AT&C losses and lower interest obligations. • Cost reflective tariffs- Difference between average tariff realized and average cost of supply is either positive or marginally negative. • Comfortable capital structure - D/E below 1 for all distribution utilities. • AT&C losses less than 15% for all distribution utilities except PGVCL (AT&C losses ~30.0%). • Healthy cash collection from consumers, receivable days less than 50 for all distribution utilities.
B	• Profit (loss) per unit above Rs. (0.25) for all distribution utilities. • High leverage level, positive net worth for all distribution utilities except UtPCL. • Difference between average tariff realized and average cost of supply is either positive or marginally negative. • AT&C losses below 30% except WBSEDCL. • Moderate to high number of receivable days, vary from 58 for PSPCL to 172 for NDPL.
C	In between Category B and Category E
D	In between Category B and Category E
E	• Profit per unit highly negative for all distribution utilities because of poor cost coverage. • High AT&C losses (above 30% for all distribution utilities). • Negative net worth resulting in adverse capital structure, D/E negative for all distribution utilities. • Difference between average tariff realized and average cost of supply is negative and gap is above Rs. 1.5. • Significantly stretched receivable and payable days, vary from ~ 250 days for Arunachal PD to above 800 days for Manipur PD.

Key observation for each distribution utility is explained in Chapter 12.

10. Key observations at National level

In this section, key financial and operational parameters of State wise Distribution utilities have been analysed from FY2010 to FY2013.

10.1. Profitability and Subsidy

Profitability

- Key States that have shown substantial change in terms of increase in book profit or reduction in book losses in FY2013 vis-à-vis FY2012 are Bihar, Haryana (DHBVNL), Jharkhand, Punjab, Rajasthan and Chhattisgarh. only 14 distribution utilities reported net profit in FY2013 and National average of Loss per unit input energy was (0.95) paise in FY2013.

- Key States that have shown substantial change in terms of decrease in book profit or increase in book losses in FY2013 vis-à-vis FY2012 are Andhra Pradesh, Haryana (UHBVNL) and Karnataka (BESCOM).

- Distribution utilities of Andhra Pradesh (APCPDCL, APSPDCL, APEPDCL, APEPDCL), Rajasthan (AVVNL, JDVVNL, JVVNL), Uttar Pradesh (DVVN Agra, Poorv VVN (Varanasi), Pash VVN (Meerut), MVVN (Lucknow)), Madhya Pradesh (MP Madhya kshetra VVCL, MP Purv kshetra VVCL, MP Paschim kshetra VVCL), Haryana (DHBVN, UHBVN) and Tamil Nadu (TANGEDCO) reported annual loss of more than Rs. 1,000 crores in FY2013 (Refer Annexure II) .

Table 11: Revenue Gap (Rs/Kwh) at National Level

Parameter	FY2010	FY2011	FY2012	FY2013
Average Revenue (w/o subsidy)	2.68	3.03	3.30	3.76
Average Cost of Supply	3.55	3.98	4.55	5.01
Gap w/o subsidy	**0.87**	**0.95**	**1.25**	**1.25**
Gap on subsidy booked basis	**0.40**	**0.65**	**0.88**	**0.81**
Gap on subsidy received basis	0.61	0.68	0.94	0.83

Average revenue (w/o subsidy) increased from Rs. 2.68 in FY2010 to Rs. 3.76 in FY2013 whereas average cost of supply increased from Rs. 3.55 in FY2010 to Rs. 5.01 in FY2013. The rise in average cost of Supply has been driven largely by an increase in Power Purchase Cost and interest cost. Power Purchase cost has seen its share in total cost climb from 56% in FY2003 to 63% in FY2013. Distribution utilities in the western region (esp. Gujarat and Maharashtra distribution utilities) have lower gap than the national average during the year. 25 Distribution utilities have reported positive difference in CAGR of revenue and cost (for the period from FY2010 to FY2013).

Subsidy

Table No 12: Subsidy booked and Subsidy Received (Rs. crores)

Parameter	FY2011	FY2012	FY2013
Subsidy booked	22,705	30,009	36,964
Subsidy received	20,334	25,771	36,110

- Subsidy booked as a percentage of revenue from sale of power increased to 12.81% in FY2013 as compared to 12.44% in FY2012. Subsidy booked as % of revenue was at 10.93% in FY2011.

- Subsidy released by the State Government has been about 98% of the subsidy booked by the distribution utilities in FY2013. This is an increase from FY2012 when the subsidy received was 85% of the subsidy booked.

  Distribution utilities in states such as Gujarat, Maharashtra, Karnataka, Madhya Pradesh, Haryana, Kerala and Chhattisgarh have been receiving the tariff related subsidies regularly from the state. In Andhra Pradesh, while distribution entities are receiving normal tariff subsidy in timely manner, the expensive power related subsidy receivables have increased in the past few years. However, Distribution utilities in certain states such as Uttarakhand, West Bengal have not received any direct revenue subsidy support from State Governments.

10.2. Channel efficiency

Receivables

- Most distribution utilities have high receivables and poor collection efficiency.
- Distribution utilities of Gujarat, CESC, KSEB, Pash VVN and Goa PD have receivables of less than 60 days whereas NBPDCL, SBPDCL, Sikkim PD, Arunachal PD, Manipur PD, MePDCL, Nagaland PD, distribution utilities in Uttar Pradesh (except PVVNL), CHESCOM have high level of receivables, i.e. more than 200 days sale (Refer Annexure III) .
- The national average of number of days of receivables in FY2013 has been 117 days, in FY2012 it was 148 days; in FY2011 it was 119 days, in FY2010 it was 100 days (Refer Annexure III).

Table No 13: Distribution utilities – Receivable days (less than or more than 60 days)

Number of days of receivables		
No of distribution utilities with ess than 60 receivable days	No of distribution utilities with more than 60 receivable days	Insufficient information
12	43	1

Table No 14: Distribution utilities – Receivable days (below or above national average)

Number of days of receivables		
No of distribution utilities with receivable days less than national average	No of distribution utilities with receivable days more than national average	Insufficient information
29	26	1

Payables

- The national average of number of days of payables for FY2013 has been approx. 104 days; while in FY2012 it was 98 days. In FY2011, it was 97 days while in FY2010 it was 109 days.

Table No 15: Distribution utilities – Payable days (less than or more than 60 days)

Number of days of payables		
No. of distribution utilities with less than 60 payable days	No. of distribution utilities with more than 60 payable days	Insufficient information
11	35	10

Table 16: Distribution utilities – Payable days (below or above national average)

Number of days of payables		
No. of distribution utilities with payable days less than national average	No. of distribution utilities with payable days more than national average	Insufficient information
19	27	10

10.3. Solvency

D/E (Debt to Equity ratio)

Debt to Equity ratio is a representation of financial leverage (Refer Annexure VII).

Table No 17: Distribution utilities - Debt to Equity ratio (positive or negative)

D/E Breakup		
No. of distribution utilities having positive D/E ratio	No. of distribution utilities having negative D/E ratio	Insufficient information
21	29	6

Table No 18: Distribution utilities - Debt to Equity ratio (below or above 2.33)

D/E Breakup	
Distribution utilities having positive D/E ratio and below 2.33	Distribution utilities having D/E ratio above 2.33
11	10

- Low cost coverage in the recent past has resulted in substantial build of debt for funding of losses. Distribution utilities of Tamil Nadu, Rajasthan, Andhra Pradesh, UP, Punjab and Haryana have substantial debt for meeting cash losses.

Table No 19: Top 15 distribution utilities in terms of total debt

Utility	Debt (Rs. crores)
TANGEDCO	44,030.5
AVVNL	22,667.0
JDVVNL	20,954.0
JVVNL	20,520.0
PSPCL	19,790.0
MSEDCL	16,133.12

UHBVNL	14,140.3
WBSEDCL	11,292.79
DVVN (Agra)	10,503.0
JSEB	9,939.0
DHBVNL	8,074.1
MP Purv kshetra VVCL	8,037.0
APCPDCL	7,807.9
Poorv VVN (Varanasi)	7,631.0

Interest Service Coverage Ratio (ISCR)

Table No 20: Distribution utilities - Interest service coverage ratio

Interest service coverage ratio		
No of distribution utilities having positive ISCR	No of distribution utilities having negative ISCR	Insufficient information
21	31	4

- Distribution utilities that have ISCR above 2 in FY2013 are CESC, Gujarat distribution utilities, KSEB and NDPL (Refer Annexure VI).

- Accumulated losses of distribution utilities stood at Rs. 2.5 lakh crores at March 31, 2013 and these were largely funded by borrowing.

- There has been equity infusion in the utilities of Rajasthan, Uttar Pradesh, Uttarakhand, Karnataka, Tamil Nadu, Chhattisgarh, Madhya Pradesh, Tripura, Delhi (NDPL), Gujarat (UGVCL) and Maharashtra (MSEDCL). There was no equity capital in the erstwhile BSEB. However, the successor utilities of BSEB have equity capital of Rs. 1,975 crores in FY2013.

10.4. Techno-Commercial Efficiency

AT&C losses and Collection efficiency

- AT&C losses reduced to 25.4% in FY2013 from 26.3% in FY2012 (26.0% in FY2011) and collection efficiency increased to 94.3% in FY2013 from 93.2% in FY2012 (94.1% in FY2011) (Refer Annexure IX).

- The national average of AT&C losses has been 25.38% in FY2013. Out of 56 distribution utilities studied, 27 distribution utilities have AT&C losses lower than national average while 29 distribution utilities have AT&C losses higher than national average (Refer Annexure IX).

- Distribution utilities of Gujarat (DGVCL, MGVCL, UGVCL), Andhra Pradesh (APEPDCL, APSPDCL, APSPDCL), Delhi (NDPL, BSES Rajdhani), KSEB, HPSEB, CESC, MESCOM and GOA PD have less than 15% AT&C losses (Refer Annexure IX).

10.5. Consumption

Supplies to agricultural consumers and to industrial consumers are two important aspects which affect the collection mechanism, AT&C losses and thus financial health to certain extent. Table below indicates the consumption pattern from FY2010 to FY 2013

Table 21: Distribution utilities - Consumption pattern (MUs)

Parameter	FY2010	FY2011	FY2012	FY2013
Agricultural	1,19,897	1,18,662	1,29,292	1,42,810
% share	23.4%	21.2%	22.7%	22.9%
Industrial	1,73,603	1,84,310	1,80,091	1,88,362
% share	33.9%	32.9%	31.6%	30.2%
Total Energy Sold	5,12,431	5,59,546	5,70,610	6,24,052

- Agricultural consumption has been around 23% of the total energy sold and industrial consumption has been around 30% in FY2013.
- Percentage share of Industrial consumption has decreased by 3.7% from FY2010 to FY2013.

10.6. Regulatory Assets

The concept of Regulatory Assets in the power sector is embedded in the cost plus regulation. Regulatory assets are non-cash assets recorded in the books of distribution utility in cases where the regulator does not raise power tariffs to compensate for higher costs. If the regulator is not able to raise power rates for any reason, the loss is classified as a regulatory asset that can be liquidated in future via tariff hikes. However, accumulating regulatory assets seriously affect the cash flows of the utilities.

Aggregate revenue requirement of distribution utilities has been increasing and tariff rationalization is not in place, therefore little margin has been left for the amortization of regulatory assets. Hence, increasing regulatory assets in the accounts is one amongst the major challenges for distribution utilities.

Table 22: Regulatory Assets

State	(Accumulated Regulatory Assets in Rs. Crores till FY2013)
Tamil Nadu	25,644
Rajasthan	16,033
Delhi	7,190
Kerala	6,018
Haryana	2,344
West Bengal	2,175
Punjab	1,352

Since, regulatory assets adversely affect the financial strength of Distribution Utilities. Therefore, while categorizing the utilities, the same has been considered and the aggregate scores of distribution utilities are reduced on pro rata basis.

11. Key Observations for Distribution Utilities

The performance of distribution utilities are examined under the ambit of selected key performance indicators. In addition to key observations, consumer mix is also reported in the table below. (Refer Annexure I to XI for KPIs)

Table 23: Distribution Utilities wise: Key Observations

Category	Utility	Key Observations
A	CESC	CESC has scored highest in profitability parameters (high gross margin, consistent profit), channel efficiency (receivable and payable days less than 60), solvency parameters (D/E below 1 and ISCR above 4) and moderate score in techno-commercial efficiency (AT&C losses ~ 12% but no significant improvement in losses for the period under consideration). Consumer Mix: Domestic (44%), Commercial (20%), Industrial (26%), Agri (0%), Others (10%)
	DGVCL	Gujarat distribution utilities have scored highest in techno-commercial efficiency except PGVCL (AT&C losses less than 15% with significant improvement in losses except PGVCL which has 30% AT&C losses and low employee cost per unit input energy for all four distribution utilities), channel efficiency (receivable and payable days below 60), solvency parameters (D/E below 1, ISCR above 2.5 and high FACR for all four distribution utilities) and moderately high in profitability parameters (high gross margin except UGVCL and high consistency in profit except DGVCL). Timely subsidy support from the government for all distribution utilities. High subsidy for UGVCL due to higher agricultural consumer base (~ 43%). Consumer Mix: DGVCL - Domestic (16%), Commercial (0.3%), Industrial (71%), Agri (5%), Others (7%) MGVCL - Domestic (21%), Commercial (0.5%), Industrial (41%), Agri (6%), Others (26%) PGVCL - Domestic (13%), Commercial (0.4%), Industrial (26%), Agri (10%), Others (19%) UGVCL - Domestic (8%), Commercial (0.2%), Industrial (29%), Agri (43%), Others (19%)
	MGVCL	
	PGVCL	
	UGVCL	

Category	Utility	Key Observations
B	CSPDCL	CSPDCL has scored high in techno-commercial efficiency (significant improvement in AT&C losses from 40% in FY2010 to 25% in FY2013 and low employee cost per unit input energy), solvency parameters (D/E below 1 in FY2013 but losses eroding the net worth, high FACR but negative ISCR due to negative EBIT), moderate in channel efficiency (moderate receivable days and relatively high payable days) and profitability parameters (high gross margin but negative profit per unit input energy). Consumer Mix: Domestic (22%), Commercial (8%), Industrial (34%), Agri (13%), Others (24%)
	HESCOM MESCOM	Both distribution utilities of Karnataka have scored highest in profitability parameters (gross margin for HESCOM was 43% and MESCOM was 21% and both distribution utilities have shown high consistency in profit), moderate in techno-commercial efficiency (AT&C losses below 20% for both distribution utilities with significant improvement in losses), low in solvency parameters (ISCR ~ 1.5, D/E well above acceptable levels but positive net worth and low FACR for both distribution utilities) and lowest in channel efficiency (very high receivable and payable days, i.e. more than 150 days). Subsidy as a % of revenue for HESCOM in FY2013 was 41% as compared to 12% in FY2012 however ratio of subsidy received to subsidy booked was 70% (100% in FY2012). Consumer Mix: HESCOM - Domestic (15%), Commercial (5%), Industrial (15%), Agri (58%), Others (6%) MESCOM - Domestic (30%), Commercial (13%), Industrial (21%), Agri (29%), Others (7%)
	KSEB	KSEB has scored highest in solvency parameters (D/E ~ 1, ISCR above 2.5 and high FACR), high in profitability parameters (strong gross margin ~ 40% with high consistency in profit), high in channel efficiency (receivable and payable days less than 30) and moderately high in techno-commercial efficiency (low AT&C losses ~ 11% with significant improvement in losses but high employee cost during the period of consideration). However, KSEB has regulatory assets (~ Rs. 6,000 crores) owing to which its rating has been downgraded. Power procurement cost is low (~ 60% of total expenses) mainly due to low cost of hydro power which forms major portion of procured power. Consumer Mix: Domestic (49%), Commercial (13%), Industrial (30%), Agri (2%), Others (6%)
	MSEDCL	MSEDCL has scored high in techno-commercial efficiency (AT&C losses ~ 22% with improvement in losses and low employee cost per unit input energy), moderately high in profitability parameters (high gross margin ~ 17% with negative profit per unit energy), channel efficiency (receivable and payable days more than 90) and low in solvency parameters (D/E well above acceptable levels but positive net worth, ISCR ~ 1 and low FACR). Requires subsidy support from the government as large proportion of

Category	Utility	Key Observations
		electricity is supplied to agricultural sector (~25%). MSEDCL demonstrated distribution franchisee scheme in the cities namely Jalgaon, Aurangabad, & Nagpur. Consumer Mix: Domestic (19%), Commercial (7%), Industrial (42%), Agri (25%), Others (6%)
	NDPL	NDPL has scored highest in profitability parameters (high gross margin ~ 28% with high consistency in profit), high in solvency parameters (D/E below 1.5, ISCR above 2 and low FACR), techno-commercial efficiency (low AT&C losses ~ 13% in FY2013 with no improvement in losses from FY 2011 to FY 2013 and low employee cost per unit input energy) and very low in channel efficiency (receivable and payable days more than 150). However, NDPL has regulatory assets owing to which its score has been downgraded. NDPL has high collection efficiency among all distribution utilities of Delhi (~98.5%) as it has high industrial consumer base (~21%). Consumer Mix: Domestic (30%), Commercial (13%), Industrial (21%), Agri (0.1%), Others (35%)
	PSPCL	PSPCL has scored highest in profitability parameters (high gross margin ~ 44%), channel efficiency (low receivable and payable days, i.e. less than 60 days), moderate in techno-commercial efficiency (low AT&C losses ~ 18% with moderate improvement in losses and moderately high employee cost per unit input energy) and low in solvency parameters (D/E has improved from 9.2 in FY2011 to 3.1 in FY2013, ISCR below 1.5 and low FACR). However, PSPCL has regulatory assets owing to which its score has been downgraded. Increasing subsidy support from the government year on year due to relatively high agricultural consumer base (~29%). Subsidy as a % of revenue for PSPCL in FY2013 was 26%. PSPCL reported profit of Rs. 290 crores in FY2013 as compared to loss of Rs. 540 crores in FY2012 due to high subsidy support and tariff increase. Consumer Mix: Domestic (26%), Commercial (8%), Industrial (34%), Agri (29%), Others (3%)
	UtPCL	UtPCL has scored highest in techno-commercial efficiency (moderate AT&C losses ~ 23% with slight improvement in losses from 28% in FY2010 to 23% in FY2013 and very low employee cost per unit energy), high in profitability parameters (moderately high gross margin ~ 10% with high consistency in profit), low in solvency parameters (negative net worth, ISCR ~ 1.5 and FACR ~ 3) and lowest in channel efficiency (high receivable and payable days, i.e. more than 120 days). Relatively very high industrial consumer base (~56%) compared to agricultural consumers (~4%) during the period under consideration. No subsidy support from state government. Consumer Mix: Domestic (23%), Commercial 11%), Industrial (56%), Agri (4%), Others (6%)
	WBSEDCL	WBSEDCL has scored highest in channel efficiency (receivable days ~ 88 and low payable days ~ 57 days are lower than national average), high in profitability parameters (high gross margin ~ 17%, consistent profit), low in

Category	Utility	Key Observations
		techno-commercial efficiency (high AT&C losses ~ 32% with no signs of improvement in losses and low employee cost per unit energy) and lowest in solvency parameters (D/E above acceptable levels but positive net worth, ISCR ~ 1.6 and low FACR). However, substantial build-up of regulatory assets pertaining to increase in power purchase costs and employee cost. Lower dependence on state government for subsidy support. Consumer Mix: Domestic (29%), Commercial (12%), Industrial (30%), Agri (4%), Others (25%)

Category	Utility	Key Observations
C	APDCL	APDCL has scored moderate in solvency parameters (D/E below 1, FACR ~ 3 but negative ISCR due to negative EBIT), profitability parameters (moderate gross margin ~ 5% due to higher power purchase cost and negative profit per unit energy), low in channel efficiency (receivable and payable days more than 120) and techno-commercial efficiency (moderately high AT&C losses ~ 29% with losses increasing during the years under consideration and moderately high employee cost per unit input energy). APDCL has low dependence on government subsidy as reflected in the tariff order. Consumer Mix: Domestic (38%), Commercial (15%), Industrial (22%), Agri (0.1%), Others (25%)
	BESCOM	Both distribution utilities of Karnataka have scored moderately high in techno-commercial efficiency (low AT&C losses ~ 20% with moderate improvement in losses and moderate employee cost per unit energy for both distribution utilities), profitability parameters except BESCOM (gross profit margin for GESCOM was ~ 18% and for BESCOM was ~ 3% but negative profit per unit energy for both distribution utilities in FY2013), low in channel efficiency (high number of receivable and payable days for both distribution utilities) and lowest in solvency parameters (negative net worth and negative ISCR in FY2013 for both distribution utilities). Timely subsidy support from government of Karnataka for both distribution utilities. More than 85% of power purchased through long term PPA for BESCOM. Consumer Mix: BESCOM - Domestic (23%), Commercial (19%), Industrial (26%), Agri (25%), Others (7%) GESCOM - Domestic (16%), Commercial (5%), Industrial (19%), Agri (53%), Others (6%)
	GESCOM	
	BSES Rajdhani	Both distribution utilities of Delhi have scored moderately high in profitability parameters (high gross margin ~ 18% with lack of consistency in profit for both distribution utilities), techno-commercial efficiency (moderate AT&C losses, i.e. below 18% with slight improvement in AT&C losses and low employee cost per unit energy for both distribution utilities), moderate in solvency parameters (D/E above acceptable levels, i.e. highly leveraged but positive net worth, ISCR ~ 1.3 and FACR below 1 for both distribution utilities)and very low in channel efficiency (receivable and payable days more than 150 days for both distribution utilities during the period under consideration). However, both BSES Yamuna and BSES Rajdhani have regulatory assets owing to which its score has been downgraded. Consumer Mix: BSES Rajdhani - Domestic (43%), Commercial (24%), Industrial (5%), Agri (0.1%), Others (28%) BSES Yamuna - Domestic (52%), Commercial (31%), Industrial (7%), Agri (0%), Others (10%)
	BSES Yamuna	

Category	Utility	Key Observations
	Goa PD	Goa PD has scored moderately high in solvency parameters (D/E below 1, FACR ~ 2.3 and negative ISCR due to negative EBIT), techno-commercial efficiency (low AT&C losses ~ 14%, much below national average and moderately low employee cost per unit input energy), moderately low in channel efficiency (receivable days less than 60 and high number of payable days) and very low in profitability parameters (negative gross margin due to rising power purchase cost and negative profit per unit energy). Profitability of Goa PD has gone down due to no tariff revision in FY 2012 and FY 2013. Consumer Mix: Domestic (27%), Commercial (9%), Industrial (52%), Agri (0.8%), Others (11%)
	HPSEB Ltd.	HPSEB has scored high in techno-commercial efficiency (low AT&C losses ~ 10% with significant improvement in losses from 18% in FY 2012 to 10% in FY 2013 and high employee cost during the years under consideration), moderate in profitability parameters (very high gross margin ~ 43% due to lower power purchase cost but negative profit per unit energy), low in channel efficiency (receivable days below 90 and very high number of payable days) and solvency parameters (negative net worth, ISCR below 1 and FACR ~ 1.5). Power procurement cost as a % of total expenses is 57% for FY2013 due to significant sourcing of power through hydro power plants. Consumer Mix: Domestic (19%), Commercial (5%), Industrial (51%), Agri (0.5%), Others (23%)
	MeECL/MePDCL	MeECL/MePDCL has scored moderately high in profitability parameters (high gross margin ~ 17% but negative profit per unit energy), moderate in techno-commercial efficiency (moderately high AT&C losses ~ 27% with significant improvement in losses from 52% in FY2011 to 27% in FY2013), channel efficiency (very high number of receivable and payable days) and very low in solvency parameters (negative net worth, negative ISCR due to negative EBIT and FACR ~ 1.1). Consumer Mix: Domestic (28%), Commercial (6%), Industrial (40%), Agri (0%), Others (26%)
	NESCO	NESCO has scored moderately high in channel efficiency (moderately high number of receivable days ~ 84 and payable days ~ 117), profitability parameters (high gross margin ~ 20% but negative profit per unit energy), moderate in techno-commercial efficiency (high AT&C losses with losses increasing from 36% in FY2010 to 40% in FY2013 and very low employee cost per unit energy) and very low in solvency parameters (negative net worth, negative ISCR due to negative EBIT and FACR ~ 2). High industrial consumer base during the period under consideration. Consumer Mix: Domestic (27%), Commercial (7%), Industrial (53%), Agri (2%), Others (11%)

Category	Utility	Key Observations
	Pash VVN (Meerut)	Pash VVN has scored high in channel efficiency (receivable days less than 60 and payable days ~ 113), moderate in profitability parameters (depleting gross margin ~ 0.1% due to rising power purchase cost and negative profit per unit energy), techno-commercial efficiency (very low employee cost per unit energy and moderately high AT&C losses with losses increasing from 27% in FY2010 to 33% in FY2013) and very low in solvency parameters (negative net worth and negative ISCR due to negative EBIT). Power supplied to agricultural consumer base (~56%) is subsidized, so distribution utilities requires subsidy support Consumer Mix: Domestic (17%), Commercial (6%), Industrial (13%), Agri (56%), Others (8%)
	Sikkim PD	Sikkim PD has scored highest in profitability parameters (gross margin has increased from -170% in FY2010 to 31% in FY2013 due to lower power purchase cost, high consistency in profit), moderate in techno-commercial efficiency (high AT&C losses with significant improvement in losses during the years of consideration), very low in channel efficiency (high number of receivable and payable days) and solvency parameters. Turned profitable in FY2013 due to tariff revision and comparatively lower power purchase cost. Consumer Mix: Domestic (12%), Commercial (6%), Industrial (13%), Agri (), Others (11%)

Category	Utility	Key Observations
D	APCPDCL	Andhra Pradesh distribution utilities have scored high in techno-commercial efficiency (low AT&C losses for all distribution utilities, i.e. below 13%, significant improvement in losses for all distribution utilities except APEPDCL which has negative trend during the period under consideration and moderately low employee cost per unit energy for all distribution utilities), moderate in channel efficiency (high receivable and payable days for all Distribution utilities except APEPDCL which has receivable days ~ 53 and payable days ~ 95), low in profitability parameters (negative gross margin due to rising power purchase cost with negative profit per unit energy for all distribution utilities except APEPDCL with gross margin ~ 5%) and very low in solvency parameters (negative net worth, negative ISCR and FACR below 0.5 for all distribution utilities). Timely subsidy support from government of Andhra Pradesh. APCPDCL and APNPDCL reported high loss in FY2013 mainly due to increase in total expenses on account of increase in 'other costs'. Other costs have increased due to write off of government receivables. Consumer Mix: APCPDCL - Domestic (20%), Commercial (12%), Industrial (33%), Agri (29%), Others (6%) APEPDCL - Domestic (28%), Commercial (6%), Industrial (37%), Agri (13%), Others (15%) APNPDCL - Domestic (26%), Commercial (4%), Industrial (14%), Agri (41%), Others (14%) APSPDCL - Domestic (26%), Commercial (8%), Industrial (30%), Agri (28%), Others (8%)
	APEPDCL	
	APNPDCL	
	APSPDCL	
	AVVNL	Rajasthan distribution utilities have scored high in channel efficiency (receivable and payable days less than 70 for all three distribution utilities), techno-commercial efficiency (moderately low AT&C losses ~ 20% with significant improvement in losses during FY2010 to FY2013 for all distribution utilities and moderately high employee cost), moderate in profitability parameters (negative gross margin for all distribution utilities except JDVVNL which has gross margin ~ 18% and negative profit per unit energy for all distribution utilities) and very low in solvency parameters (negative net worth, negative ISCR and FACR below 0.5 for all distribution utilities). In addition, these distribution utilities have regulatory assets owing to which its score has been further downgraded. Rising power purchase cost for all three distribution utilities during the period under consideration, however, tariff revision was done in FY2013. Consumer Mix: AVVNL - Domestic (20%), Commercial (6%), Industrial (29%), Agri (40%), Others (5%) JDVVNL - Domestic (21%), Commercial (6%), Industrial (13%), Agri (56%), Others (8%) JVVNL - Domestic (21%), Commercial (9%), Industrial (28%), Agri (35%), Others (7%)
	JDVVNL	
	JVNNL	

Category	Utility	Key Observations
	CESCO	Odisha distribution utilities have scored moderate in profitability parameters (high gross margin with negative profit per unit energy for all distribution utilities), moderate in channel efficiency (moderately high receivable and payable days , i.e. below 90 except CESCO which has receivable and payable days more than 150), very low in solvency parameters (negative net worth for all distribution utilities, negative ISCR except SESCO which has ISCR ~ 0.3 and FACR ~ 1.3-1.4 for all distribution utilities) and techno-commercial efficiency (very high AT&C losses ~ 40-50% for all distribution utilities and high employee cost). Rising power purchase cost for all three distribution utilities during the period under consideration. Consumer Mix: CESCO - Domestic (23%), Commercial (6%), Industrial (22%), Agri (35%), Others (14%) SESCO - Domestic (48%), Commercial (11%), Industrial (25%), Agri (2%), Others (11%) WESCO - Domestic (22%), Commercial (5%), Industrial (60%), Agri (2%), Others (11%)
	SESCO	
	WESCO	
	CHESCOM	CHESCOM has scored moderate in solvency parameters (D/E below acceptable level but positive net worth, FACR ~ 3 and negative ISCR due to negative EBIT), low in channel efficiency (very high receivable and payable days), techno-commercial efficiency (moderately high AT&C losses ~ 30% with increasing trend and high employee cost) and very low in profitability parameters (negative gross margin due to high power purchase cost and negative profit per unit input energy). CHESCOM charged high level of tariff from commercial/industrial consumer base to cross-subsidize other consumer segments, i.e agricultural consumer base (~47%). Timely subsidy support from government of Karnataka. Consumer Mix: Domestic (15%), Commercial (6%), Industrial (18%), Agri (47%), Others (13%)
	DHBVNL	DHBVNL has scored moderately high in channel efficiency (receivable days ~ 77 and payable days ~ 110), moderate in techno-commercial efficiency (moderately high AT&C losses ~ 28% with increasing trend and moderate employee cost), low in profitability parameters (negative gross margin due to rising power purchase cost and negative profit per unit energy) and solvency parameters (highly leveraged, negative ISCR and FACR below 0.5). Further, DHBVNL has regulatory assets owing to which its score has been downgraded. Consumer Mix: Domestic (20%), Commercial (8%), Industrial (24%), Agri (21%), Others (29%)
	Mizoram PD	Mizoram PD has scored moderate in techno-commercial efficiency (moderately high AT&C losses ~ 28% with significant improvement in losses from 39% in FY2010 to 27% in FY2013 and very high employee cost),

Category	Utility	Key Observations
		channel efficiency (low receivable days ~ 34), low in solvency parameters (negative net worth, negative ISCR and very high FACR) and profitability parameters (negative gross margin, consistently making losses and negative profit per unit energy). Rising power purchase cost during the years under consideration. Consumer Mix: Domestic (58%), Commercial (6%), Industrial (0%), Agri (0%), Others (34%)
	MP Madhya kshetra VVCL	Madhya Pradesh distribution utilities have scored high in techno-commercial efficiency (moderately high AT&C losses ~ 30-36% with significant improvement in losses for all distribution utilities during the years under consideration and moderately low employee cost ~0.30-0.50), channel efficiency (very high receivable days and payable days within acceptable limits for all three distribution utilities), low in profitability parameters (negative gross margin and negative profit per unit input energy for all distribution utilities) and solvency parameters (negative net worth, negative ISCR and low FACR for all distribution utilities of Madhya Pradesh during the years under consideration). Timely subsidy support from state government. High agricultural consumer base for all three distribution utilities. Consumer Mix: Madhya kshetra VVCL - Domestic (23%), Commercial (6%), Industrial (21%), Agri (35%), Others (14%) Purv kshetra VVCL - Domestic (21%), Commercial (5%), Industrial (29%), Agri (37%), Others (7%) Paschim kshetra VVCL - Domestic (25%), Commercial (5%), Industrial (21%), Agri (28%), Others (20%)
	MP Purv kshetra VVCL	
	MP Paschim kshetra VVCL	
	NBPDCL	Bihar distribution utilities have scored moderate in solvency parameters (ISCR below 1, highly leveraged and FACR ~ 2-3 for both distribution utilities), low in profitability parameters (negative gross margin and negative profit per unit input energy for both distribution utilities), moderate techno-commercial efficiency (high AT&C losses ~ 45-50% for both distribution utilities, marginal improvement in losses post unbundling from BSEB into NBPDCL and SBPDCL) and channel efficiency (very high receivable and payable days for both distribution utilities). Timely subsidy support from state government. High domestic consumer base (NBPDCL ~ 47% & SBPDCL ~ 35%) for both distribution utilities. Power supplied to domestic sector is subsidized. Consumer Mix: NBPDCL - Domestic (47%), Commercial (9%), Industrial (15%), Agri (3%), Others (26%) SBPDCL - Domestic (35%), Commercial (11%), Industrial (32%), Agri (7%), Others (37%)
	SBPDCL	
	Puducherry PD	Puducherry PD has scored moderate in techno-commercial efficiency (moderately low AT&C losses ~ 21% WITH no significant improvement in losses and low employee cost per unit energy), channel efficiency (low

Category	Utility	Key Observations
		number of receivable days, i.e. 73), moderately low in solvency parameters (negative net worth) and very low in profitability parameters (gross margin decreased from 4.6% in FY2010 to -23.5% in FY2013 due to rising power purchase cost and negative profit per unit energy during the years under consideration). Consumer Mix: Domestic (21%), Commercial (6%), Industrial (57%), Agri (2%), Others (13%)
	TANGEDCO	TANGEDCO has scored moderate in profitability parameters (moderate gross margin ~ 6%), techno-commercial efficiency (moderate AT&C losses ~ 21% with slight improvement in losses and moderate employee cost per unit energy), low in solvency parameters (negative net worth, ISCR ~ 1.1 and low FACR) and channel efficiency (very high receivable and payable days). However, TANGEDCO has regulatory assets owing to which its score has been reduced. High domestic consumer base (~48%) which is subsidized. Highest regulatory assets among all distribution utilities. Subsidy as a % of revenue for TANGEDCO in FY2013 was 13%. Consumer Mix: Domestic (48%), Commercial (11%), Industrial (25%), Agri (2%), Others (14%)
	TSECL	TSECL has scored moderate in profitability parameters (very high gross margin ~ 46% but negative profit per unit energy), channel efficiency (receivable days ~ 90 and low rate of obsolescence of asset block), solvency parameters (high FACR but negative net worth) and very low in techno-commercial efficiency (moderately high employee cost and moderately high AT&C losses ~ 34% with losses increasing from 29% in FY2010 to 34% in FY2013). Consumer Mix: Domestic (22%), Commercial (5%), Industrial (60%), Agri (2%), Others (11%)

Category	Utility	Key Observations
E	Arunachal PD	Arunachal PD has scored moderately low in solvency parameters (negative ISCR due to negative EBIT), low in techno-commercial efficiency (very high AT&C losses ~ 93% with slight improvement in losses and very high employee cost), very low in profitability parameters (negative gross margin and negative profit per unit input energy) and channel efficiency (high number of receivable days ~ 255). Consumer Mix: Domestic (24%), Commercial (7%), Industrial (34%), Agri (0%), Others (34%)
	DVVN (Agra)	Uttar Pradesh distribution utilities have scored moderate in techno-commercial efficiency (low employee cost for all Distribution utilities and moderately high AT&C losses with increasing trend for all distribution utilities except DVVN which has shown slight improvement in losses from 50% in FY2010 to 45% in FY2013), very low in profitability parameters (negative gross margin and negative profit per unit energy for all distribution utilities), channel efficiency (very high receivable and payable days for all distribution utilities) and solvency parameters (negative net worth, negative ISCR and FACR below 1 for all Distribution utilities). Timely subsidy support for MVVN. Consumer Mix: DVVN - Domestic (25%), Commercial (7%), Industrial (20%), Agri (21%), Others (27%) KESCO - Domestic (26%), Commercial (8%), Industrial (34%), Agri (29%), Others (3%) MVVN - Domestic (20%), Commercial (6%), Industrial (29%), Agri (40%), Others (5%) Poorv VVN - Domestic (21%), Commercial (9%), Industrial (28%), Agri (35%), Others (7%)
	KESCO (Kanpur)	
	MVVN (Lucknow)	
	Poorv VVN (Varanasi)	
	J&K PDD	J&K PDD has scored moderately high in techno-commercial efficiency (moderately low employee cost and moderately high AT&C losses with significant improvement in losses), low in solvency parameters .moderately low in profitability parameters (negative gross margin) and very low in channel efficiency. AT&C losses have improved from 73% in FY 2010 to 58% in FY 2013 due to increase in collection efficiency from 76% in FY 2010 to 94% in FY 2013. Consumer Mix: Domestic (42%), Commercial (11%), Industrial (18%), Agri (5%), Others (11%)
	JSEB	JSEB has scored moderate in techno-commercial efficiency (low employee cost and high AT&C losses ~ 43% with slight improvement in losses during the period under consideration), moderately low in channel efficiency (receivable days more than 150 and very high number of payable days) and very low in profitability parameters (negative gross margin due to rising power purchase cost and negative profit per unit energy) and solvency parameters (negative net worth, negative ISCR and FACR below 1 during the period under consideration). Subsidy booked increased significantly from Rs. 450 crores in FY2010 to Rs.

		1,100 crores in FY2013. Entity continues to function as an SEB as unbundling is yet to take place. Consumer Mix: Domestic (40%), Commercial (5%), Industrial (36%), Agri (1%), Others (18%)
	Manipur PD	Manipur PD has scored moderate in channel efficiency (payable days below 120 and very high number of receivable days), moderately low in solvency parameters (negative ISCR due to negative EBIT) and very low in profitability parameters (negative gross margin and negative profit per unit energy) and techno-commercial efficiency (very high AT&C losses with losses increasing from 47% in FY2010 to 85% in FY 2013 and high employee cost during the period under consideration). Consumer Mix: Domestic (44%), Commercial (7%), Industrial (7%), Agri (0.4%), Others (41%)
	Nagaland PD	Nagaland PD has scored moderate in channel efficiency (very high number of receivable days), solvency parameters (high FACR but negative net worth and negative ISCR due to negative EBIT) and very low in profitability parameters (negative gross margin and negative profit per unit energy) and techno-commercial efficiency (very high AT&C losses ~ 75%, well above national average and high employee cost during the period under consideration). Consumer Mix: Domestic (60%), Commercial (9%), Industrial (0%), Agri (0%), Others (31%)
	UHBVNL	UHBVNL has scored moderate in channel efficiency (receivable days ~ 110 but high number of payable days ~ 165), techno-commercial efficiency (moderately low employee cost and high AT&C losses ~ 37% with increasing trend), very low in profitability parameters (negative gross margin and negative profit per unit energy during the period under consideration) and solvency parameters (negative net worth, negative ISCR and FACR below 1). Average revenue realized from electricity supplied to agriculture sector (~34%) is less than Rs. 0.50. Sustained support from the State Government in terms of equity infusion and timely receipt of subsidy. Low fixed asset creation with most of the debt utilized towards working capital financing. High level of regulatory assets. Consumer Mix: Domestic (19%), Commercial (7%), Industrial (25%), Agri (34%), Others (15%)

12. Road Map for improvement

Distribution Utilities in category B need to optimize their capital structure, improve AT&C losses, and improve the collection cycle. Utilities also need to make an effort for liquidating the regulatory assets. Distribution Utilities which are in category C, and D need to improve their cost coverage, reduce AT&C losses, and make effort to strengthen the business model and in process reduce the receivable days. Utilities which are in category C, D, and E, also need to optimize their capital structure, and improve financial reporting. Utilities existing in category E need to revamp their entire business process for improvement. A proper roadmap for reduction of AT&C losses need to be formulated and collection mechanism has to be strengthened. Cost coverage has to be strengthened by adopting prudent power purchase mechanism and tariff rationalization. Debt service obligation has to be reduced and capital structure should be optimized. One way for reducing the debt service obligation is to get the support of Government through schemes such as UDAY, in which 75% of Distribution Utility's debt is to be taken by state government.

The recommendatory changes have been mapped with opportunities/ challenges and represented in the form of matrix.
It's a 3X3 matrix where X axis represents the degree of impact of any structural changes while Y-axis represents the desired time line against the suggested changes.

Table 24: Roadmap of structural changes for Distribution Utilities

Desired Timeline/Challenge	Low	Medium	High
Short Term (in 3 years)	Consumer Sensitization on tariff hike Computer Based Segregation of Account	Unbundling of SEBs	100% metering
Mid Term (in 5 years)		Prudent Power Procurement Reduction in Debt / interest cost and improving efficiency Regulatory Reforms Making Divisions/Business units as Profit Centres	Distribution Franchisee/ other PPP models in power distribution Tariff Rationalization Liquidating Regulatory Assets
Long Term (in 7-10 years)		Reduction in AT&C losses to meet global standards	

Detailed recommendations have been given in chapter 13.

13. Key Recommendations

Based on the analysis of distribution utilities, the following recommendations may be kept in view to improve the performance of distribution utilities:

13.1 Improving Regulatory Framework

The recommendations for improving regulatory framework are as follows:

- **Quality, consistency and timely reporting of financial data** – Lack of consistent, reliable and updated data is a primary barrier to sound business management. It has been observed that many better performing power distribution utilities (for e.g. most Distribution utilities of category A and B – Distribution utilities of Gujarat, CESC, WBSEDCL etc.) (Please refer Annexure I, page no. 63; Annexure II, page no. 65) are timely submitting audited financials, filing tariffs and have relatively better quality in financial reporting. Enforcement of timely tariff filing and quality in financial reporting will not only help in monitoring and performance benchmarking but will also help in planning and decision making. A statutory requirement for utilities to regularly collect primary financial and operational data is advisable. Third-party monitoring/validations may be encouraged.

- **Tariff Rationalization –** Irregular and inadequate tariff revisions, over the past decade, have lowered cost recovery and increased regulatory assets. In many Distribution utilities, including those of Andhra Pradesh, Tamil Nadu, Uttar Pradesh etc. tariff revisions have not been adequate enough to compensate for the costs (please refer Annexure II, page no. 65). This has resulted in large losses impacting the financial risk profile of these entities. Adequate and regular tariff revisions need to be the basic foundation of sustainable functioning of distribution utilities.

- **Timely Fulfillment of Subsidy Commitment**- Delay in subsidy released by state governments not only weakens the cash availability with the Distribution utilities but also increases the accumulated losses. Therefore, the State Governments shall fulfill the subsidy commitments timely, if any.
  Explanation: The ratio of subsidy received to subsidy booked was less than one in the years under the consideration. Moreover there is no timely release of subsidies therefore, the distribution utilities forced to use the long term debts for meeting short term obligations.

- **Strengthen corporate governance** - It has been observed that Distribution utilities that make their audited account information publicly available (Distribution utilities of Gujarat, some private distribution utilities etc.) tend to be relatively top financial performers with higher operational efficiency(please refer Annexure I, page no. 63). A key reason for the

above, as also evident from other literatures, indicate comparatively stronger corporate governance which also impacts overall financial and operational performance.

13.2. Achieving Operational Excellence

The recommendations for achieving operational excellence are as follows:

- **Strengthening techno-commercial efficiency** –All distribution utilities in category E have high AT&C losses (ranging from 30% to 85%) (Please refer Annexure IX, page no. 79). Strengthening metering, billing and collections would improve the commercial efficacy of the Distribution utilities. Also, reducing the technical losses would further improve AT&C losses and hence the financial health of distribution utilities. It is therefore recommended that the Distribution utilities should strive to adhere to the loss reduction targets set by the respective SERCs.

- **Focus on consumer education** – Most of the loss reduction measures and tariff rationalisation would require consumer buy-in. It is therefore essential that state power entities, including the regulatory commissions, should continuously sensitize the consumers about the rationale of tariff setting and also focus on consumer education. Farmers shall also be informed about installing meters and help lower theft in the system which will eventually result in higher power availability for them. A consumer communication plan should be prepared and submitted by Distribution utilities along with its ARR/MYT filing, role of all stakeholders along with SERC which should eventually approve the related costs and monitor the progress.

- **Prudent power procurement** – It has been observed that most of the better performing Distribution utilities have relatively lower power procurement cost per unit and higher cost coverage (please refer Annexure II, page no. 65). It is therefore recommended that Distribution utilities, with low cost coverage and high power procurement cost, should focus on prudent power procurement mechanisms. Further, Distribution utilities should also focus on rational demand assessments and prudent evaluation of potential power procurement options before entering into long term power procurement.

13.3. Changing Industry Land scape

Apart from regulatory and operational reforms, strategic changes are required which shall positively impact the distribution business. Reforms such as enhancing competition, unbundling of SEBs and making divisions/operational business units as profit centre are potential options which could change the landscape of industry.

- **Encourage competition** – In last few years, promising models of distribution franchisees have been developed to obtain efficiencies in distribution. However, the same is yet to find large scale acceptance and further scalability in states who have already implemented such models.

- **Financial and operational independence** – It appears that utilities in some unbundled states have limited autonomous management and dependence in financing decisions and do not function independently.

  The closer a utility is to **having financial and operational independence,** the more likely the impacts expected from unbundling—accountability, transparency, and stronger performance—will be observed and hence for proper energy accounting and loss calculation, proper segregation in reporting and accounting of generation, transmission and distribution businesses shall be encouraged

  As of 2013, Unbundling has been completed in 19 states, most recently in Bihar (November 2012). The remaining 10 states have a single utility operating either as a corporation, power department, or SEB. The unbundled states vary in market structure: 10 have unbundled into multiple distribution companies (distribution utilities), 6 have unbundled into only one distribution utilities, and 3 have separated transmission but kept generation and distribution as one company.

- **Making divisions/business units as profit centres** – Lean and decentralized organizational model should be adopted under which each division/business unit should be treated as a separate business unit/profit center. It is also recommended to have independent financial reporting for each division/business unit. It would not only make each division accountable for its performance but would also facilitate transparent reporting. Moreover, the management and field staff need to be oriented to adopt a commercial approach to generate adequate revenue for every unit of electricity sold to consumers.
  (*Based on the observation that circle wise data of losses are not consistent, and therefore loss trajectory defined in the tariff petition/ order are based on average figure*)

13.4. Improving Financial Aspects

Many Distribution Utilities are incurring high losses, thus net worth of majority of distribution utilities is negative. In addition, Distribution Utilities are also facing the problem of high interest costs. Non liquidation of regulatory assets and uncertainty towards subsidy payments also worsen the cash flows of Distribution Utilities.

- **Reduction in Debt / interest cost and improving efficiency** – It has been observed that all Distribution Utilities in category E have negative net worth resulting in adverse capital structure (please refer Annexure VI, page no. 73; Annexure VII, page no. 75). Moreover,

mounting debt and continuing losses have led to a precipitous decline in creditworthiness of most Distribution Utilities. Losses and debt for many Distribution Utilities have increased sharply because of insufficient tariff hikes, high AT&C losses and low subsidy collection. This has severely impacted their ability to service debt. Faster reduction in Debt / interest costs imperative for the Distribution Utilities' turnaround.

As per our observation, public sector banks and financial institutions have continued financing insolvent Distribution Utilities, ignoring due diligence and prudential norms. This is evident from the higher interest obligations and deteriorating D/E figures (please refer Annexure VII, page no. 75). This flow of liquidity limits the pressure on Distribution Utilities to improve performance and on state governments to allow tariff increases. Recently launched scheme of Ujwal DISCOM Assurance Yojana (UDAY), if implemented in true spirit, will not only help to reduce debt and interest cost but can also have a multi-pronged effect on the entire power sector value chain.

- **Liquidation of Regulatory assets** - Mounting regulatory assets has increased the Distribution Utilities cash-flow problems, jeopardizing routine operations. In Tamil Nadu, Rajasthan, Delhi, Kerala, and West Bengal (please refer table number 22, page no. 44), utilities have had to borrow heavily to fund the revenue deficit. It is necessary that the Distribution Utilities explore ways to liquidate them in a time-bound manner without further procrastination.

Annexures: KPI Trends

There are 12 KPIs which have been considered for conducting a comparative study of distribution utilities. Out of 12 KPIs, 10 parameters i.e. Profit per unit input energy, Gross Margin without Subsidy, No of days of Receivables, No of days of Payables, Ratio of Capex and Depreciation in the year, Interest Service Coverage Ratio, Debt to Equity Ratio, Fixed Asset Coverage Ratio, AT &C losses, Employee cost per unit input energy are base KPIs while 2 parameters i.e. difference in compound annual growth rate of revenue and cost, and improvement (deterioration) of AT&C losses are derived parameters. The base parameters are individually sorted year wise in the table below.

Annexure I - Profit per unit Input Energy

Table 25: KPI Trends: Profit per unit Input Energy

Profit Per Unit Input Energy							
Utility	2013	Utility	2012	Utility	2011	Utility	2010
CESC	0.63	NDPL	0.32	NDPL	0.29	NDPL	0.50
Sikkim PD	0.47	KSEB	0.13	BSES Rajdhani	0.29	BSES Rajdhani	0.16
NDPL	0.28	BSES Rajdhani	0.09	BSES Yamuna	0.19	KSEB	0.15
KSEB	0.13	DGVCL	0.06	KSEB	0.15	BSES Yamuna	0.11
PSPCL	0.07	BESCOM	0.05	GESCOM	0.10	Goa PD	0.05
HESCOM	0.04	HESCOM	0.04	DGVCL	0.05	MESCOM	0.03
MESCOM	0.03	MGVCL	0.04	WBSEDCL	0.03	WBSEDCL	0.03
BSES Yamuna	0.03	BSES Yamuna	0.03	MGVCL	0.03	MGVCL	0.02
WBSEDCL	0.02	WBSEDCL	0.02	CHESCOM	0.02	DGVCL	0.02
MGVCL	0.02	APEPDCL	0.02	APEPDCL	0.01	APEPDCL	0.01
DGVCL	0.02	MESCOM	0.01	UGVCL	0.01	APCPDCL	0.01
BSES Rajdhani	0.02	UGVCL	0.01	APNPDCL	0.01	APNPDCL	0.01
UGVCL	0.01	PGVCL	0.00	MESCOM	0.01	BESCOM	0.01
PGVCL	0.00	APSPDCL	0.00	APSPDCL	0.00	UGVCL	0.00
J&K PDD	0.00	APNPDCL	0.00	PGVCL	0.00	APSPDCL	0.00
TANGEDCO	0.00	APCPDCL	0.00	APCPDCL	0.00	PGVCL	0.00
UtPCL	-0.01	J&K PDD	0.00	BESCOM	0.00	AVVNL	0.00
NESCO	-0.02	TANGEDCO	0.00	J&K PDD	0.00	J&K PDD	0.00
MSEDCL	-0.09	GESCOM	-0.01	TANGEDCO	0.00	JDVVNL	0.00
SESCO	-0.12	NESCO	-0.02	NESCO	-0.01	JVVNL	0.00
BESCOM	-0.16	UtPCL	-0.05	WESCO	-0.06	GESCOM	-0.05
WESCO	-0.21	SESCO	-0.08	MVVN (Lucknow)	-0.07	MSEDCL	-0.13
CSPDCL	-0.22	MSEDCL	-0.08	SESCO	-0.07	CHESCOM	-0.16
SBPDCL	-0.25	WESCO	-0.08	UHBVNL	-0.08	Sikkim PD	-0.16
GESCOM	-0.27	PSPCL	-0.13	HESCOM	-0.08	CSPDCL	-0.16
NBPDCL	-0.29	Pash VVN (Meerut)	-0.17	CESCO	-0.12	Puducherry PD	-0.18
MeECL/MePDCL	-0.36	Sikkim PD	-0.19	MSEDCL	-0.17	HESCOM	-0.24
HPSEB Ltd.	-0.41	CHESCOM	-0.22	UtPCL	-0.19	DHBVNL	-0.37
CESCO	-0.43	MP Paschim kshetra VVCL	-0.35	Goa PD	-0.22	UtPCL	-0.52
CHESCOM	-0.44	CESCO	-0.36	Pash VVN (Meerut)	-0.23	KESCO (kanpur)	-0.57
DHBVNL	-0.66	UHBVNL	-0.46	Sikkim PD	-0.24	APDCL	-0.59
Goa PD	-0.78	Puducherry PD	-0.51	CSPDCL	-0.30	MP Madhya kshetra VVCL	-0.62

Profit Per Unit Input Energy							
Utility	2013	Utility	2012	Utility	2011	Utility	2010
MP Paschim kshetra VVCL	-0.80	HPSEB Ltd.	-0.66	MP Paschim kshetra VVCL	-0.40	Pash VVN (Meerut)	-0.67
JSEB	-0.80	Goa PD	-0.72	PSPCL	-0.41	JSEB	-0.79
Pash VVN (Meerut)	-0.85	MP Madhya kshetra VVCL	-0.79	DHBVNL	-0.45	Poorv VVN (Varanasi)	-0.92
APDCL	-0.94	APDCL	-0.93	Puducherry PD	-0.48	MP Paschim kshetra VVCL	-1.05
Puducherry PD	-0.96	MP Purv kshetra VVCL	-0.99	MP Madhya kshetra VVCL	-0.49	MVVN (Lucknow)	-1.08
MP Purv kshetra VVCL	-0.97	CSPDCL	-1.01	HPSEB Ltd.	-0.50	MP Purv kshetra VVCL	-1.09
MP Madhya kshetra VVCL	-1.05	KESCO (kanpur)	-1.24	MeECL/MePDCL	-0.61	DVVN (Agra)	-1.30
UHBVNL	-1.17	MeECL/MePDCL	-1.29	KESCO (kanpur)	-0.62	Nagaland PD	-2.81
APEPDCL	-1.32	MVVN (Lucknow)	-1.41	JSEB	-0.72	Mizoram PD	-4.44
MVVN (Lucknow)	-1.55	Poorv VVN (Varanasi)	-1.43	MP Purv kshetra VVCL	-0.86	Arunachal PD	-4.91
Poorv VVN (Varanasi)	-1.58	DVVN (Agra)	-1.77	Poorv VVN (Varanasi)	-0.90	CESC	
KESCO (kanpur)	-1.74	TSECL	-1.87	DVVN (Agra)	-0.92	CESCO	
TSECL	-1.77	DHBVNL	-2.32	APDCL	-1.31	HPSEB Ltd.	
JVVNL	-1.90	JVVNL	-2.92	TSECL	-1.64	Manipur PD	
DVVN (Agra)	-1.94	Mizoram PD	-3.21	Arunachal PD	-3.20	MeECL/MePDCL	
APCPDCL	-2.18	JSEB	-3.21	Manipur PD	-3.98	NBPDCL	
JDVVNL	-2.43	JDVVNL	-3.93	JVVNL	-4.01	NESCO	
AVVNL	-2.47	Arunachal PD	-4.40	Nagaland PD	-4.07	PSPCL	
APSPDCL	-2.54	Nagaland PD	-4.52	Mizoram PD	-4.49	SBPDCL	
APNPDCL	-2.70	AVVNL	-5.24	JDVVNL	-4.71	SESCO	
Nagaland PD	-4.23	Manipur PD	-6.07	AVVNL	-5.08	TANGEDCO	
Arunachal PD	-4.29	CESC		CESC		TSECL	
Manipur PD	-4.88	NBPDCL		NBPDCL		UHBVNL	
Mizoram PD	-4.96	SBPDCL		SBPDCL		WESCO	

Annexure II - Gross Margin without Subsidy (%)

Table 26: KPI Trends: Gross Margin without Subsidy (%)

Gross Margin Without Subsidy (%)							
Utility	2013	Utility	2012	Utility	2011	Utility	2010
CESC	51.0%	MeECL/MePDCL	91.5%	CESC	100.0%	CESC	100.0%
TSECL	46.3%	PSPCL	50.8%	TSECL	54.7%	TSECL	64.7%
PSPCL	44.2%	CESC	49.9%	KSEB	45.8%	SESCO	60.1%
HPSEB Ltd.	42.8%	KSEB	45.2%	SESCO	44.4%	CESCO	55.2%
KSEB	38.2%	TSECL	41.7%	PSPCL	42.0%	KSEB	47.2%
SESCO	35.2%	SESCO	32.8%	MeECL/MePDCL	33.9%	NESCO	46.9%
Sikkim PD	31.6%	HPSEB Ltd.	32.7%	NDPL	25.1%	WESCO	35.5%
NDPL	28.1%	NDPL	28.9%	HPSEB Ltd.	24.1%	BSES Yamuna	25.2%
MESCOM	20.9%	GESCOM	25.6%	MESCOM	23.4%	NDPL	24.7%
NESCO	19.8%	MESCOM	25.3%	BSES Rajdhani	22.3%	Goa PD	23.8%
BSES Yamuna	18.7%	WBSEDCL	18.4%	WBSEDCL	21.8%	WBSEDCL	23.1%
BSES Rajdhani	18.5%	CESCO	18.2%	BSES Yamuna	21.7%	BSES Rajdhani	21.4%
JDVVNL	18.5%	BSES Rajdhani	18.0%	CESCO	18.8%	MSEDCL	17.2%
GESCOM	18.4%	BSES Yamuna	17.9%	WESCO	17.3%	APDCL	15.6%
WESCO	17.4%	NESCO	15.0%	NESCO	16.1%	CSPDCL	15.3%
MSEDCL	17.3%	MSEDCL	13.9%	MSEDCL	16.1%	MESCOM	15.3%
WBSEDCL	17.2%	WESCO	13.2%	UtPCL	14.3%	MGVCL	14.8%
MeECL/MePDCL	16.8%	HESCOM	12.0%	HESCOM	13.4%	BESCOM	12.2%
CESCO	15.3%	MGVCL	11.7%	Goa PD	12.1%	DGVCL	9.5%
MGVCL	10.4%	BESCOM	10.7%	MGVCL	12.0%	PGVCL	8.3%
CSPDCL	10.1%	Sikkim PD	8.5%	CSPDCL	9.9%	GESCOM	6.1%
UtPCL	9.8%	DGVCL	7.2%	GESCOM	9.8%	Puducherry PD	4.6%
TANGEDCO	6.4%	PGVCL	5.1%	DGVCL	8.4%	KESCO (kanpur)	4.3%
DGVCL	6.3%	CSPDCL	5.0%	PGVCL	7.3%	JSEB	0.6%
PGVCL	5.5%	UtPCL	3.2%	MP Paschim kshetra VVCL	7.1%	UGVCL	-0.4%
APDCL	5.3%	UGVCL	0.4%	Sikkim PD	7.0%	MP Purv kshetra VVCL	-1.4%
APEPDCL	4.6%	TANGEDCO	0.4%	BESCOM	7.0%	UtPCL	-1.5%
HESCOM	3.4%	APCPDCL	-1.3%	MP Purv kshetra VVCL	6.8%	MP Madhya kshetra VVCL	-1.6%
BESCOM	2.7%	APDCL	-1.5%	KESCO (kanpur)	2.7%	HESCOM	-4.2%
UGVCL	1.4%	MP Paschim kshetra VVCL	-1.6%	APCPDCL	2.5%	APEPDCL	-6.8%
Pash VVN (Meerut)	0.1%	APSPDCL	-1.7%	APSPDCL	1.9%	APCPDCL	-9.4%
KESCO (kanpur)	-1.4%	MP Madhya kshetra VVCL	-5.7%	MP Madhya kshetra VVCL	1.6%	Pash VVN (Meerut)	-9.8%
MP Purv kshetra VVCL	-7.4%	MP Purv kshetra VVCL	-8.5%	APEPDCL	0.7%	MP Paschim kshetra VVCL	-9.9%
Goa PD	-7.7%	Puducherry PD	-9.3%	UGVCL	-0.2%	DHBVNL	-11.0%
APCPDCL	-7.9%	APEPDCL	-9.6%	APDCL	-3.6%	APSPDCL	-15.7%
MP Madhya kshetra VVCL	-8.5%	Goa PD	-10.4%	Pash VVN (Meerut)	-5.0%	Manipur PD	-16.1%
APSPDCL	-14.8%	Mizoram PD	-11.0%	UHBVNL	-5.9%	Mizoram PD	-16.2%
MP Paschim kshetra VVCL	-15.0%	KESCO (kanpur)	-18.0%	TANGEDCO	-7.0%	MVVN (Lucknow)	-16.4%
JVVNL	-15.6%	JSEB	-25.9%	Puducherry PD	-7.6%	CHESCOM	-19.8%

Gross Margin Without Subsidy (%)							
Utility	2013	Utility	2012	Utility	2011	Utility	2010
DHBVNL	-16.4%	CHESCOM	-28.8%	MVVN (Lucknow)	-11.4%	Arunachal PD	-21.8%
AVVNL	-17.4%	DHBVNL	-29.5%	JSEB	-17.5%	Nagaland PD	-27.5%
NBPDCL	-23.1%	JVVNL	-29.8%	Arunachal PD	-17.7%	UHBVNL	-32.5%
Puducherry PD	-23.5%	JDVVNL	-32.1%	DHBVNL	-20.8%	Poorv VVN (Varanasi)	-33.1%
JSEB	-24.5%	AVVNL	-32.5%	CHESCOM	-27.3%	DVVN (Agra)	-35.7%
MVVN (Lucknow)	-29.6%	Pash VVN (Meerut)	-38.0%	AVVNL	-30.1%	JVVNL	-51.1%
CHESCOM	-35.1%	APNPDCL	-46.6%	Manipur PD	-31.5%	APNPDCL	-55.0%
SBPDCL	-39.4%	MVVN (Lucknow)	-46.9%	APNPDCL	-33.1%	AVVNL	-66.9%
Poorv VVN (Varanasi)	-46.7%	Nagaland PD	-74.4%	JVVNL	-34.0%	JDVVNL	-79.1%
Nagaland PD	-49.6%	Poorv VVN (Varanasi)	-76.5%	Poorv VVN (Varanasi)	-34.3%	J&K PDD	-137.5%
Mizoram PD	-61.4%	DVVN (Agra)	-77.1%	DVVN (Agra)	-36.7%	Sikkim PD	-169.6%
DVVN (Agra)	-63.9%	UHBVNL	-87.2%	Mizoram PD	-51.4%	PSPCL	
UHBVNL	-65.1%	Manipur PD	-91.1%	Nagaland PD	-51.5%	HPSEB Ltd.	
APNPDCL	-72.6%	Arunachal PD	-113.1%	JDVVNL	-56.5%	MeECL/MePDCL	
Manipur PD	-80.9%	J&K PDD	-136.4%	J&K PDD	-161.3%	TANGEDCO	
Arunachal PD	-96.7%	NBPDCL		NBPDCL		NBPDCL	
J&K PDD	-130.4%	SBPDCL		SBPDCL		SBPDCL	

Annexure III - Number of days of Receivables

Table 27: KPI Trends: Number of days of Receivables

Number of days of Receivables							
Utility	2013		2012		2011		2010
DGVCL	28.0	DGVCL	25.8	DGVCL	25.5	Mizoram PD	5.5
KSEB	29.7	Mizoram PD	30.2	TSECL	26.2	DGVCL	32.6
Mizoram PD	34.2	KSEB	39.8	Mizoram PD	28.3	KSEB	37.2
CESC	40.6	MGVCL	39.9	WBSEDCL	35.2	Goa PD	45.8
PGVCL	42.0	PGVCL	42.9	KSEB	37.5	MGVCL	49.7
MGVCL	46.2	UGVCL	47.5	PSPCL	40.0	UGVCL	51.0
Pash VVN (Meerut)	47.4	Goa PD	48.2	MGVCL	41.3	NESCO	54.5
UGVCL	47.6	WBSEDCL	52.7	Goa PD	44.1	APEPDCL	55.6
Goa PD	48.8	TSECL	59.8	UGVCL	46.2	WESCO	56.8
APEPDCL	53.1	NESCO	63.5	PGVCL	47.0	PGVCL	58.1
PSPCL	57.8	Puducherry PD	74.6	NESCO	51.2	SESCO	62.9
AVVNL	59.4	PSPCL	75.0	TANGEDCO	57.6	Pash VVN (Meerut)	74.9
JVVNL	67.8	APEPDCL	75.8	WESCO	61.0	WBSEDCL	84.7
JDVVNL	69.4	WESCO	78.1	APEPDCL	62.4	APCPDCL	90.9
CSPDCL	72.5	DHBVNL	80.0	SESCO	64.6	BESCOM	93.3
Puducherry PD	73.2	SESCO	80.5	Pash VVN (Meerut)	69.2	DHBVNL	94.4
DHBVNL	77.0	CSPDCL	83.6	DHBVNL	82.5	Puducherry PD	96.5
APSPDCL	82.4	Pash VVN (Meerut)	90.7	Puducherry PD	83.4	AVVNL	102.3
HPSEB Ltd.	82.5	HPSEB Ltd.	92.9	CSPDCL	92.7	CSPDCL	102.4
WESCO	83.1	MESCOM	99.8	BESCOM	94.1	JVVNL	107.4
NESCO	83.9	AVVNL	103.3	AVVNL	97.9	APDCL	120.2
WBSEDCL	88.0	JVVNL	104.6	MESCOM	101.8	APNPDCL	126.9
TSECL	93.2	APDCL	109.8	JVVNL	105.1	UHBVNL	130.2
MESCOM	94.7	JDVVNL	120.9	APCPDCL	106.9	JSEB	130.2
SESCO	108.4	BESCOM	121.6	APDCL	117.2	MESCOM	130.9
UHBVNL	110.2	TANGEDCO	133.6	MSEDCL	124.7	JDVVNL	152.3
APCPDCL	112.2	UtPCL	136.7	UHBVNL	125.3	MSEDCL	158.4
MSEDCL	115.6	MSEDCL	137.7	APNPDCL	130.0	NDPL	174.2
APDCL	116.7	UHBVNL	149.7	JDVVNL	138.7	Arunachal PD	177.8
MP Paschim kshetra VVCL	122.5	MP Paschim kshetra VVCL	151.0	UtPCL	139.9	MP Paschim kshetra VVCL	181.1
UtPCL	126.2	APCPDCL	159.2	JSEB	140.0	UtPCL	182.8
BESCOM	130.3	JSEB	178.0	Arunachal PD	152.1	MVVN (Lucknow)	260.8
APNPDCL	156.5	HESCOM	184.0	MP Paschim kshetra VVCL	163.2	MP Madhya kshetra VVCL	292.2
HESCOM	158.2	Arunachal PD	188.0	BSES Yamuna	179.0	MP Purv kshetra VVCL	303.8
NDPL	171.7	Sikkim PD	191.7	Sikkim PD	192.5	HESCOM	317.5
JSEB	172.4	APNPDCL	193.1	HESCOM	197.4	CESCO	339.1
BSES Rajdhani	177.6	GESCOM	219.5	BSES Rajdhani	199.9	Nagaland PD	361.0
MP Purv kshetra VVCL	183.8	MP Purv kshetra VVCL	231.9	MeECL/MePDCL	204.0	GESCOM	366.5
GESCOM	183.9	CESCO	263.2	MVVN (Lucknow)	218.0	Poorv VVN (Varanasi)	385.3

Number of days of Receivables							
Utility	2013		2012		2011		2010
BSES Yamuna	195.2	MVVN (Lucknow)	278.5	NDPL	237.3	CHESCOM	390.6
Sikkim PD	195.4	Nagaland PD	279.8	GESCOM	264.0	DVVN (Agra)	474.3
TANGEDCO	213.5	MP Madhya kshetra VVCL	295.6	CESCO	267.9	Sikkim PD	502.5
MP Madhya kshetra VVCL	245.5	DVVN (Agra)	307.2	MP Purv kshetra VVCL	273.8	KESCO (kanpur)	718.3
Arunachal PD	255.5	BSES Rajdhani	327.7	MP Madhya kshetra VVCL	290.2	Manipur PD	1008.7
CESCO	260.6	CHESCOM	354.1	DVVN (Agra)	351.4	APSPDCL	
MeECL/MePDCL	307.4	NDPL	359.1	CHESCOM	353.5	BSES Rajdhani	
MVVN (Lucknow)	329.5	BSES Yamuna	361.0	Nagaland PD	359.5	BSES Yamuna	
Nagaland PD	335.3	MeECL/MePDCL	415.9	Poorv VVN (Varanasi)	413.5	CESC	
DVVN (Agra)	337.9	Poorv VVN (Varanasi)	551.7	KESCO (kanpur)	628.2	HPSEB Ltd.	
CHESCOM	443.8	KESCO (kanpur)	605.5	Manipur PD	827.0	J&K PDD	
SBPDCL	449.6	Manipur PD	750.8	APSPDCL		MeECL/MePDCL	
NBPDCL	506.9	APSPDCL		CESC		NBPDCL	
KESCO (kanpur)	528.7	CESC		HPSEB Ltd.		PSPCL	
Poorv VVN (Varanasi)	579.3	J&K PDD		J&K PDD		SBPDCL	
Manipur PD	819.9	NBPDCL		NBPDCL		TANGEDCO	
J&K PDD		SBPDCL		SBPDCL		TSECL	

Annexure IV - Number of days of Payables

Table 28: KPI Trends: Number of days of Payables

Number of days of Payables							
Utility	2013	Utility	2012	Utility	2011	Utility	2010
PGVCL	0.2	PGVCL	0.2	DGVCL	0.4	DGVCL	0.6
DGVCL	0.7	DGVCL	0.8	MGVCL	7.4	JDVVNL	4.4
MP Paschim kshetra VVCL	12.8	MGVCL	12.7	PSPCL	13.6	MGVCL	9.1
UGVCL	15.6	UGVCL	16.7	MP Paschim kshetra VVCL	14.2	JVVNL	25.4
KSEB	22.6	NDPL	17.2	NDPL	21.3	MP Paschim kshetra VVCL	29.5
CESC	22.9	WBSEDCL	38.0	JDVVNL	26.3	Manipur PD	40.6
MGVCL	24.6	JVVNL	41.0	JVVNL	31.7	UHBVNL	49.7
JVVNL	35.3	PSPCL	43.3	WBSEDCL	41.2	WBSEDCL	54.8
AVVNL	38.1	JDVVNL	56.7	Manipur PD	41.3	MSEDCL	62.8
PSPCL	43.7	KSEB	62.4	BESCOM	59.9	AVVNL	62.9
WBSEDCL	57.2	BESCOM	64.4	MSEDCL	64.2	APEPDCL	68.1
JDVVNL	60.5	BSES Rajdhani	69.7	APEPDCL	64.9	APSPDCL	72.1
BESCOM	68.6	AVVNL	69.7	APCPDCL	66.7	BESCOM	74.7
MP Madhya kshetra VVCL	76.5	SESCO	69.9	DHBVNL	69.2	DHBVNL	75.6
MP Purv kshetra VVCL	76.7	APEPDCL	70.0	WESCO	70.0	APCPDCL	76.5
SESCO	88.3	MSEDCL	74.7	APNPDCL	70.5	KSEB	78.3
APNPDCL	95.9	APNPDCL	74.8	UHBVNL	71.7	WESCO	80.0
MSEDCL	96.0	BSES Yamuna	75.0	KSEB	73.3	APNPDCL	84.8
APEPDCL	96.1	MP Madhya kshetra VVCL	77.0	APSPDCL	77.0	NESCO	98.7
APSPDCL	109.3	WESCO	83.3	AVVNL	78.8	SESCO	121.1
DHBVNL	109.7	Manipur PD	85.4	NESCO	85.2	MVVN (Lucknow)	140.0
WESCO	112.1	NESCO	88.7	SESCO	93.8	MP Madhya kshetra VVCL	140.4
Pash VVN (Meerut)	113.5	APSPDCL	89.6	MeECL/MePDCL	99.7	MESCOM	154.4
NESCO	117.1	DHBVNL	92.6	MP Madhya kshetra VVCL	102.0	Pash VVN (Meerut)	200.0
SBPDCL	117.7	APCPDCL	102.0	MESCOM	157.5	UtPCL	213.4
Manipur PD	119.4	MP Purv kshetra VVCL	114.1	UtPCL	187.3	MP Purv kshetra VVCL	216.7
NBPDCL	122.4	UHBVNL	139.3	MP Purv kshetra VVCL	189.6	HESCOM	238.6
MeECL/MePDCL	123.2	UtPCL	144.6	CESCO	191.4	GESCOM	295.8
GESCOM	131.1	HESCOM	195.0	HESCOM	203.0	CESCO	299.8
APCPDCL	137.1	CESCO	196.2	Pash VVN (Meerut)	208.7	CHESCOM	358.2
UtPCL	144.0	Pash VVN (Meerut)	204.8	GESCOM	252.2	JSEB	363.2
MESCOM	153.2	MESCOM	214.7	CHESCOM	296.6	APDCL	534.1
HESCOM	156.9	CHESCOM	300.8	JSEB	304.9	DVVN (Agra)	643.9
UHBVNL	165.3	GESCOM	301.5	MVVN (Lucknow)	313.3	Poorv VVN (Varanasi)	729.2
BSES Rajdhani	165.3	HPSEB Ltd.	343.6	TANGEDCO	412.8	KESCO (kanpur)	810.4
BSES Yamuna	169.5	JSEB	394.9	APDCL	458.3	Arunachal PD	
CESCO	188.8	TANGEDCO	439.3	DVVN (Agra)	626.1	BSES Rajdhani	

Number of days of Payables							
Utility	2013	Utility	2012	Utility	2011	Utility	2010
CHESCOM	350.1	MVVN (Lucknow)	443.3	Poorv VVN (Varanasi)	632.8	BSES Yamuna	
HPSEB Ltd.	386.7	APDCL	498.6	KESCO (kanpur)	721.9	CESC	
MVVN (Lucknow)	401.4	DVVN (Agra)	574.3	Arunachal PD		CSPDCL	
JSEB	449.1	Poorv VVN (Varanasi)	575.2	BSES Rajdhani		Goa PD	
DVVN (Agra)	456.9	KESCO (kanpur)	653.8	BSES Yamuna		HPSEB Ltd.	
TANGEDCO	457.7	MeECL/MePDCL	2012.1	CESC		J&K PDD	
KESCO (kanpur)	518.9	MP Paschim kshetra VVCL		CSPDCL		MeECL/MePDCL	
APDCL	529.6	Arunachal PD		Goa PD		Mizoram PD	
Poorv VVN (Varanasi)	559.3	CESC		HPSEB Ltd.		Nagaland PD	
Arunachal PD		CSPDCL		J&K PDD		NBPDCL	
CSPDCL		Goa PD		Mizoram PD		NDPL	
Goa PD		J&K PDD		Nagaland PD		PGVCL	
J&K PDD		Mizoram PD		NBPDCL		PSPCL	
Mizoram PD		Nagaland PD		PGVCL		Puducherry PD	
Nagaland PD		NBPDCL		Puducherry PD		SBPDCL	
NDPL		Puducherry PD		SBPDCL		Sikkim PD	
Puducherry PD		SBPDCL		Sikkim PD		TANGEDCO	
Sikkim PD		Sikkim PD		TSECL		TSECL	
TSECL		TSECL		UGVCL		UGVCL	

Annexure V - Capital Expenditure/Depreciation

Table 29: KPI Trends: Capital Expenditure/Depreciation

Ratio of Capex and Depreciation							
Utility	2013	Utility	2012	Utility	2011	Utility	2010
MeECL/MePDCL	25.25	MeECL/MePDCL	16.67	J&K PDD	34.59	DHBVNL	16.00
APDCL	8.31	Goa PD	13.33	MeECL/MePDCL	12.26	UHBVNL	13.50
MP Purv kshetra VVCL	7.95	MP Purv kshetra VVCL	8.65	APDCL	9.49	Nagaland PD	11.79
Manipur PD	7.67	TANGEDCO	8.62	DHBVNL	9.13	NESCO	7.36
MP Madhya kshetra VVCL	7.63	WBSEDCL	8.40	TANGEDCO	8.71	APDCL	7.24
MP Paschim kshetra VVCL	7.62	APDCL	7.28	UHBVNL	8.58	JSEB	6.86
BESCOM	6.88	MP Madhya kshetra VVCL	6.65	WBSEDCL	7.25	CSPDCL	5.43
WBSEDCL	6.68	Pash VVN (Meerut)	5.87	JSEB	7.24	J&K PDD	4.31
TANGEDCO	6.09	BESCOM	5.25	Poorv VVN (Varanasi)	6.92	GESCOM	4.02
Pash VVN (Meerut)	5.87	MP Paschim kshetra VVCL	5.01	Nagaland PD	6.40	MESCOM	3.98
CHESCOM	5.39	Poorv VVN (Varanasi)	4.85	MSEDCL	6.18	NDPL	3.89
MSEDCL	4.91	PGVCL	4.33	PSPCL	6.12	CHESCOM	3.54
DGVCL	4.41	NESCO	4.00	JDVVNL	5.45	BESCOM	3.51
JDVVNL	4.41	DHBVNL	3.98	NESCO	4.50	MP Purv kshetra VVCL	3.48
PGVCL	4.36	DVVN (Agra)	3.97	AVVNL	4.39	PGVCL	3.38
JSEB	4.31	JDVVNL	3.60	MP Madhya kshetra VVCL	4.39	HESCOM	3.37
DHBVNL	4.24	MVVN (Lucknow)	3.43	MVVN (Lucknow)	4.28	KESCO (kanpur)	3.31
TSECL	4.21	AVVNL	3.37	NDPL	4.18	WBSEDCL	3.23
Nagaland PD	4.07	CSPDCL	3.04	CSPDCL	4.17	MSEDCL	3.23
Poorv VVN (Varanasi)	3.92	KESCO (kanpur)	3.00	MP Paschim kshetra VVCL	4.02	Pash VVN (Meerut)	3.11
NESCO	3.88	JVVNL	2.84	MP Purv kshetra VVCL	4.02	MP Madhya kshetra VVCL	3.09
UGVCL	3.64	CHESCOM	2.80	JVVNL	3.86	MGVCL	3.00
AVVNL	3.46	DGVCL	2.77	WESCO	3.43	UtPCL	2.67
JVVNL	3.31	Manipur PD	2.72	Manipur PD	3.38	MP Paschim kshetra VVCL	2.66
UtPCL	3.13	MGVCL	2.71	MESCOM	3.29	APSPDCL	2.51
CSPDCL	3.01	APCPDCL	2.53	BESCOM	3.00	Poorv VVN (Varanasi)	2.48
GESCOM	2.89	UHBVNL	2.52	PGVCL	2.99	APCPDCL	2.39
MGVCL	2.83	CESCO	2.29	CHESCOM	2.90	BSES Rajdhani	2.25
WESCO	2.67	WESCO	2.29	DVVN (Agra)	2.78	BSES Yamuna	2.20
CESCO	2.64	MESCOM	2.25	Pash VVN (Meerut)	2.71	DGVCL	2.19
UHBVNL	2.40	UGVCL	2.20	UtPCL	2.45	Goa PD	2.16
MESCOM	2.37	KSEB	2.10	MGVCL	2.32	UGVCL	1.95
APSPDCL	2.31	NDPL	2.07	APCPDCL	2.25	WESCO	1.93
APCPDCL	2.23	GESCOM	2.05	DGVCL	2.19	APNPDCL	1.84
DVVN (Agra)	2.19	APNPDCL	1.60	KSEB	2.06	Puducherry PD	1.76
CESC	1.98	APEPDCL	1.60	BSES Rajdhani	2.06	KSEB	1.75
APEPDCL	1.96	HESCOM	1.51	BSES Yamuna	2.01	APEPDCL	1.49
J&K PDD	1.89	BSES Yamuna	1.49	KESCO (kanpur)	1.94	CESCO	1.24

Ratio of Capex and Depreciation							
Utility	2013	Utility	2012	Utility	2011	Utility	2010
APNPDCL	1.79	APSPDCL	1.11	UGVCL	1.83	Manipur PD	0.83
KSEB	1.67	J&K PDD	1.06	GESCOM	1.81	MVVN (Lucknow)	0.82
HESCOM	1.60	TSECL	0.87	HESCOM	1.40	DVVN (Agra)	0.54
NDPL	1.57	JSEB	0.74	APNPDCL	1.25	AVVNL	0.00
BSES Rajdhani	1.54	BSES Rajdhani	0.71	APSPDCL	1.19	JDVVNL	0.00
Puducherry PD	1.27	CESC	0.64	CESCO	1.18	JVVNL	0.00
PSPCL	1.21	SESCO	0.44	APEPDCL	1.11	TSECL	0.00
KESCO (kanpur)	1.12	PSPCL	0.41	Puducherry PD	1.00	SESCO	-0.21
BSES Yamuna	1.07	HPSEB Ltd.	0.00	SESCO	0.80	CESC	-0.69
SBPDCL	0.77	Puducherry PD	0.00	Goa PD	0.60	Arunachal PD	
SESCO	0.63	Nagaland PD	-0.94	CESC	0.20	HPSEB Ltd.	
MVVN (Lucknow)	0.39	MSEDCL	-13.23	TSECL	0.17	MeECL/MePDCL	
NBPDCL	0.38	UtPCL	-26.17	HPSEB Ltd.	0.00	Mizoram PD	
Goa PD	0.00	Arunachal PD		Arunachal PD		NBPDCL	
HPSEB Ltd.	0.00	Mizoram PD		Mizoram PD		PSPCL	
Sikkim PD	0.00	NBPDCL		NBPDCL		SBPDCL	
Arunachal PD		SBPDCL		SBPDCL		Sikkim PD	
Mizoram PD		Sikkim PD		Sikkim PD		TANGEDCO	

Annexure VI - Interest Service Coverage Ratio

Table 30: KPI Trends: Interest Service Coverage Ratio

Interest Coverage Ratio							
Utility	2013	Utility	2012	Utility	2011	Utility	2010
CESC	4.22	CESC	4.1	KSEB	3.78	NDPL	5.86
MGVCL	2.73	DGVCL	3.5	NDPL	3.25	Goa PD	4.89
DGVCL	2.62	KSEB	3.3	CESC	3.20	KSEB	3.87
KSEB	2.62	PGVCL	3.1	DGVCL	2.86	CESC	2.97
PGVCL	2.61	BESCOM	2.9	PGVCL	2.84	PGVCL	2.37
UGVCL	2.11	MGVCL	2.8	MGVCL	2.59	MGVCL	2.26
NDPL	2.03	UGVCL	2.7	UGVCL	2.36	BSES Rajdhani	2.16
WBSEDCL	1.59	NDPL	2.3	BSES Rajdhani	2.19	DGVCL	2.15
UtPCL	1.55	APEPDCL	1.8	APEPDCL	2.03	APEPDCL	2.06
HESCOM	1.45	APSPDCL	1.7	BSES Yamuna	1.96	UGVCL	2.00
PSPCL	1.44	WBSEDCL	1.6	WBSEDCL	1.88	BSES Yamuna	2.00
MESCOM	1.35	APNPDCL	1.6	APSPDCL	1.84	APNPDCL	1.96
BSES Rajdhani	1.26	MESCOM	1.6	APNPDCL	1.84	APSPDCL	1.80
BSES Yamuna	1.26	BSES Rajdhani	1.5	GESCOM	1.74	WBSEDCL	1.76
TANGEDCO	1.14	HESCOM	1.5	BESCOM	1.73	BESCOM	1.74
MSEDCL	1.07	APCPDCL	1.4	APCPDCL	1.57	APCPDCL	1.72
NBPDCL	0.91	GESCOM	1.4	MESCOM	1.56	MESCOM	1.68
HPSEB Ltd.	0.69	BSES Yamuna	1.3	CHESCOM	1.45	JVVNL	1.24
SBPDCL	0.64	TANGEDCO	1.2	MVVN (Lucknow)	1.22	GESCOM	1.20
SESCO	0.31	PSPCL	1.1	TANGEDCO	1.18	JDVVNL	1.16
CHESCOM	-0.10	UtPCL	0.8	HESCOM	1.08	AVVNL	1.15
UHBVNL	-0.29	SESCO	0.7	UHBVNL	0.95	MSEDCL	0.70
DHBVNL	-0.34	CHESCOM	0.5	SESCO	0.79	HESCOM	0.66
NESCO	-0.36	UHBVNL	0.3	MSEDCL	0.59	CHESCOM	0.62
JSEB	-0.36	WESCO	0.3	CESCO	0.54	WESCO	0.61
AVVNL	-0.46	MSEDCL	0.3	WESCO	0.47	NESCO	0.50
BESCOM	-0.50	HPSEB Ltd.	-0.3	PSPCL	0.40	CESCO	-0.32
JVVNL	-0.65	Pash VVN (Meerut)	-0.8	MeECL/MePDCL	-0.02	JSEB	-0.43
MeECL/MePDCL	-0.74	NESCO	-1.0	MP Paschim kshetra VVCL	-0.09	UHBVNL	-0.53
JDVVNL	-0.77	CESCO	-1.2	UtPCL	-0.14	SESCO	-0.53
GESCOM	-0.92	MeECL/MePDCL	-1.2	MP Madhya kshetra VVCL	-0.39	Pash VVN (Meerut)	-1.28
DVVN (Agra)	-1.31	MP Paschim kshetra VVCL	-1.8	Pash VVN (Meerut)	-0.58	DHBVNL	-1.35
WESCO	-1.39	JVVNL	-2.1	JSEB	-0.70	Mizoram PD	-1.78
Pash VVN (Meerut)	-1.50	JDVVNL	-2.3	DHBVNL	-0.92	CSPDCL	-2.01
CESCO	-1.52	AVVNL	-2.7	NESCO	-0.93	KESCO (kanpur)	-2.23
CSPDCL	-1.67	APDCL	-4.7	HPSEB Ltd.	-0.96	Poorv VVN (Varanasi)	-2.40
KESCO (kanpur)	-1.71	JSEB	-5.2	MP Purv kshetra VVCL	-1.58	APDCL	-2.51
MVVN (Lucknow)	-1.85	MP Madhya kshetra VVCL	-5.5	KESCO (kanpur)	-3.13	Nagaland PD	-4.22
Poorv VVN (Varanasi)	-1.94	MP Purv kshetra VVCL	-7.3	AVVNL	-3.94	UtPCL	-4.31

Interest Coverage Ratio							
Utility	2013	Utility	2012	Utility	2011	Utility	2010
APDCL	-3.09	DHBVNL	-7.3	JDVVNL	-4.24	MP Madhya kshetra VVCL	-5.08
MP Madhya kshetra VVCL	-3.82	Nagaland PD	-8.4	JVVNL	-4.86	MP Paschim kshetra VVCL	-5.79
MP Paschim kshetra VVCL	-3.86	MVVN (Lucknow)	-10.7	Goa PD	-4.90	MP Purv kshetra VVCL	-6.63
APEPDCL	-4.06	Poorv VVN (Varanasi)	-12.4	Poorv VVN (Varanasi)	-5.51	MVVN (Lucknow)	-7.07
MP Purv kshetra VVCL	-4.16	DVVN (Agra)	-15.5	CSPDCL	-5.81	Manipur PD	-7.10
APCPDCL	-5.15	Manipur PD	-17.1	DVVN (Agra)	-6.07	DVVN (Agra)	-8.56
APSPDCL	-5.53	CSPDCL	-21.7	Nagaland PD	-7.20	Arunachal PD	-11.47
APNPDCL	-6.27	KESCO (kanpur)	-22.0	APDCL	-8.04	J&K PDD	-168.28
Nagaland PD	-7.57	Arunachal PD	-23.0	Arunachal PD	-9.71	HPSEB Ltd.	
Manipur PD	-17.08	Goa PD	-28.8	Mizoram PD	-11.15	MeECL/MePDCL	
Goa PD	-33.50	Mizoram PD	-125.0	Manipur PD	-11.60	NBPDCL	
Mizoram PD	-39.20	J&K PDD	-201.06	J&K PDD	-202.49	PSPCL	
J&K PDD	183.38	NBPDCL		NBPDCL		Puducherry PD	
Arunachal PD		Puducherry PD		Puducherry PD		SBPDCL	
Puducherry PD		SBPDCL		SBPDCL		Sikkim PD	
Sikkim PD		Sikkim PD		Sikkim PD		TANGEDCO	
TSECL		TSECL		TSECL		TSECL	

Annexure VII - Debt to Equity Ratio

Table 31: KPI Trends: Debt to Equity

Debt to Equity Ratio							
Utility	2013	Utility	2012	Utility	2011	Utility	2010
DGVCL	0.15	Goa PD	0.11	DGVCL	0.25	Goa PD	0.13
Goa PD	0.29	DGVCL	0.17	PGVCL	0.39	CSPDCL	0.20
MGVCL	0.43	PGVCL	0.23	APDCL	0.41	APDCL	0.43
PGVCL	0.44	APDCL	0.47	KSEB	0.42	DGVCL	0.51
CSPDCL	0.55	CESC	0.48	CSPDCL	0.45	KSEB	0.52
APDCL	0.58	MGVCL	0.49	MGVCL	0.69	PGVCL	0.56
CESC	0.64	UGVCL	0.49	UGVCL	0.71	MGVCL	0.66
UGVCL	0.68	KSEB	0.70	CESC	0.72	CESC	0.71
KSEB	1.09	GESCOM	1.72	Goa PD	1.22	UGVCL	1.22
NDPL	1.40	MESCOM	1.93	NDPL	1.56	MESCOM	1.73
CHESCOM	2.17	NDPL	2.07	MESCOM	1.62	WBSEDCL	2.17
PSPCL	3.06	PSPCL	2.83	GESCOM	2.46	MSEDCL	4.01
SBPDCL	3.16	BSES Rajdhani	3.56	WBSEDCL	2.63	APCPDCL	6.11
BSES Rajdhani	3.57	BSES Yamuna	3.95	BSES Rajdhani	7.15	APSPDCL	8.12
BSES Yamuna	4.06	WBSEDCL	4.68	BSES Yamuna	8.21	GESCOM	10.23
NBPDCL	4.22	BESCOM	6.84	APCPDCL	8.57	APNPDCL	10.23
MESCOM	6.26	APCPDCL	10.43	APSPDCL	9.06	JVVNL	10.83
WBSEDCL	6.87	APSPDCL	10.61	PSPCL	9.21	APEPDCL	11.51
HESCOM	27.22	APNPDCL	13.39	MSEDCL	9.90	JDVVNL	13.57
MSEDCL	40.60	MSEDCL	16.07	APNPDCL	12.13	AVVNL	13.80
DHBVNL	99.07	APEPDCL	17.60	BESCOM	14.01	BESCOM	23.83
BESCOM	-159.01	HESCOM	101.15	APEPDCL	18.37	HESCOM	-16.83
GESCOM	-10.49	HPSEB Ltd.	-9.27	HPSEB Ltd.	39.46	DHBVNL	-4.94
Poorv VVN (Varanasi)	-9.62	CSPDCL	-5.58	HESCOM	-15.85	MP Madhya kshetra VVCL	-1.80
APEPDCL	-4.58	MeECL/MePDCL	-3.72	MeECL/MePDCL	-4.80	CHESCOM	-1.78
APSPDCL	-3.37	Pash VVN (Meerut)	-3.35	DHBVNL	-3.39	MP Paschim kshetra VVCL	-1.61
HPSEB Ltd.	-3.21	CHESCOM	-2.63	CHESCOM	-3.34	MVVN (Lucknow)	-1.47
APNPDCL	-2.17	Poorv VVN (Varanasi)	-2.21	AVVNL	-2.56	JSEB	-1.32
MP Madhya kshetra VVCL	-1.82	MP Paschim kshetra VVCL	-2.19	MP Madhya kshetra VVCL	-2.28	MP Purv kshetra VVCL	-1.26
MP Paschim kshetra VVCL	-1.76	MP Madhya kshetra VVCL	-2.07	JDVVNL	-2.27	CESCO	-0.84
APCPDCL	-1.75	DHBVNL	-1.86	TANGEDCO	-2.25	Pash VVN (Meerut)	-0.84
MP Purv kshetra VVCL	-1.53	TANGEDCO	-1.56	JVVNL	-2.17	Poorv VVN (Varanasi)	-0.53
Pash VVN (Meerut)	-1.50	MP Purv kshetra VVCL	-1.51	MP Paschim kshetra VVCL	-1.81	UtPCL	-0.47
AVVNL	-1.42	AVVNL	-1.41	MP Purv kshetra VVCL	-1.46	Mizoram PD	-0.31
TANGEDCO	-1.42	JVVNL	-1.41	JSEB	-1.29	WESCO	-0.28
JDVVNL	-1.40	JDVVNL	-1.38	CESCO	-0.85	KESCO (kanpur)	-0.27
JVVNL	-1.38	JSEB	-0.93	Pash VVN (Meerut)	-0.70	NESCO	-0.20
MVVN (Lucknow)	-1.21	CESCO	-0.79	MVVN (Lucknow)	-0.59	Nagaland PD	-0.17
UHBVNL	-1.07	NESCO	-0.73	WESCO	-0.53	SESCO	-0.14

Debt to Equity Ratio							
Utility	2013	Utility	2012	Utility	2011	Utility	2010
DVVN (Agra)	-0.99	UtPCL	-0.71	UHBVNL	-0.43	Arunachal PD	
JSEB	-0.98	SESCO	-0.64	UtPCL	-0.39	BSES Rajdhani	
KESCO (kanpur)	-0.80	WESCO	-0.55	Poorv VVN (Varanasi)	-0.32	BSES Yamuna	
CESCO	-0.75	MVVN (Lucknow)	-0.35	DVVN (Agra)	-0.26	DVVN (Agra)	
UtPCL	-0.72	UHBVNL	-0.25	KESCO (kanpur)	-0.23	Manipur PD	
TSECL	-0.64	DVVN (Agra)	-0.20	NESCO	-0.21	NDPL	
WESCO	-0.47	KESCO (kanpur)	-0.20	Mizoram PD	-0.20	Puducherry PD	
NESCO	-0.39	Nagaland PD	-0.13	Nagaland PD	-0.18	TSECL	
SESCO	-0.23	Mizoram PD	-0.11	SESCO	-0.15	UHBVNL	
Nagaland PD	-0.11	Arunachal PD		Arunachal PD		HPSEB Ltd.	
Mizoram PD	-0.02	Manipur PD		Manipur PD		J&K PDD	
Arunachal PD		Puducherry PD		Puducherry PD		MeECL/MePDCL	
Manipur PD		TSECL		TSECL		NBPDCL	
Puducherry PD		J&K PDD		J&K PDD		PSPCL	
J&K PDD		NBPDCL		NBPDCL		SBPDCL	
MeECL/MePDCL		SBPDCL		SBPDCL		Sikkim PD	
Sikkim PD		Sikkim PD		Sikkim PD		TANGEDCO	

Annexure VIII - Fixed Asset Coverage Ratio

Table 32: KPI Trends: Fixed Asset Coverage Ratio

Fixed Asset Coverage Ratio							
Utility	2013	Utility	2012	Utility	2011	Utility	2010
Mizoram PD	65.94	Mizoram PD	11.90	Mizoram PD	7.07	CSPDCL	6.85
TSECL	46.06	UGVCL	10.09	DGVCL	6.61	Mizoram PD	5.52
KSEB	20.08	DGVCL	9.04	CSPDCL	5.49	MGVCL	4.75
DGVCL	10.71	PGVCL	7.79	KSEB	5.30	NESCO	4.58
CSPDCL	8.65	MGVCL	6.78	PGVCL	4.95	KSEB	4.35
MGVCL	7.79	CSPDCL	4.80	MGVCL	4.72	Nagaland PD	4.33
UGVCL	6.64	UHBVNL	4.33	UtPCL	4.68	UtPCL	4.20
PGVCL	4.62	Nagaland PD	4.32	UGVCL	4.47	DGVCL	3.53
Nagaland PD	4.44	Goa PD	3.49	UHBVNL	4.30	PGVCL	3.45
GESCOM	3.43	KSEB	3.18	NESCO	4.16	WESCO	3.31
UtPCL	2.99	CESC	3.11	Nagaland PD	3.86	CHESCOM	3.25
CHESCOM	2.91	Poorv VVN (Varanasi)	3.07	APDCL	3.09	BESCOM	3.05
APDCL	2.91	APDCL	2.88	Poorv VVN (Varanasi)	2.88	SESCO	2.92
NBPDCL	2.90	GESCOM	2.82	CHESCOM	2.77	UGVCL	2.53
Goa PD	2.28	CHESCOM	2.63	SESCO	2.51	APDCL	2.43
CESC	2.07	MESCOM	2.10	MESCOM	2.46	MESCOM	2.32
SBPDCL	2.04	UtPCL	1.84	Pash VVN (Meerut)	2.32	CESC	2.25
NESCO	1.94	BESCOM	1.68	GESCOM	2.22	Goa PD	1.84
MSEDCL	1.63	HESCOM	1.59	CESC	2.16	GESCOM	1.71
HESCOM	1.48	MSEDCL	1.55	Goa PD	2.12	Poorv VVN (Varanasi)	1.64
WESCO	1.46	WESCO	1.50	BESCOM	1.83	WBSEDCL	1.63
SESCO	1.45	DVVN (Agra)	1.50	HPSEB Ltd.	1.82	Pash VVN (Meerut)	1.61
HPSEB Ltd.	1.45	HPSEB Ltd.	1.44	WESCO	1.69	MSEDCL	1.49
BESCOM	1.27	MeECL/MePDCL	1.14	WBSEDCL	1.60	HESCOM	1.15
MeECL/MePDCL	1.15	NESCO	1.09	MSEDCL	1.53	KESCO (kanpur)	0.97
WBSEDCL	0.90	WBSEDCL	1.05	DVVN (Agra)	1.50	APCPDCL	0.88
PSPCL	0.83	KESCO (kanpur)	1.05	HESCOM	1.31	MVVN (Lucknow)	0.84
NDPL	0.83	MVVN (Lucknow)	0.88	NDPL	1.15	APSPDCL	0.81
TANGEDCO	0.69	PSPCL	0.88	MeECL/MePDCL	1.10	DHBVNL	0.72
Pash VVN (Meerut)	0.67	TANGEDCO	0.81	KESCO (kanpur)	1.02	APNPDCL	0.64
BSES Rajdhani	0.67	NDPL	0.76	TANGEDCO	0.94	JVVNL	0.60
Poorv VVN (Varanasi)	0.56	BSES Rajdhani	0.66	MVVN (Lucknow)	0.93	MP Purv kshetra VVCL	0.57
BSES Yamuna	0.55	DHBVNL	0.65	PSPCL	0.81	MP Madhya kshetra VVCL	0.56
MP Madhya kshetra VVCL	0.49	APCPDCL	0.65	APSPDCL	0.73	MP Paschim kshetra VVCL	0.56
DHBVNL	0.47	APSPDCL	0.63	BSES Rajdhani	0.73	AVVNL	0.44
MP Paschim kshetra VVCL	0.46	BSES Yamuna	0.57	APCPDCL	0.69	CESCO	0.42
MP Purv kshetra VVCL	0.45	SESCO	0.57	DHBVNL	0.68	JDVVNL	0.40
MESCOM	0.44	APNPDCL	0.51	BSES Yamuna	0.68	JSEB	0.39
JVVNL	0.43	JVVNL	0.49	APNPDCL	0.54	APEPDCL	0.05

Fixed Asset Coverage Ratio							
Utility	2013	Utility	2012	Utility	2011	Utility	2010
APCPDCL	0.40	MP Purv kshetra VVCL	0.46	JVVNL	0.53	Arunachal PD	
APSPDCL	0.39	MP Madhya kshetra VVCL	0.45	MP Madhya kshetra VVCL	0.44	BSES Rajdhani	
CESCO	0.38	MP Paschim kshetra VVCL	0.40	MP Purv kshetra VVCL	0.43	BSES Yamuna	
JSEB	0.35	CESCO	0.38	MP Paschim kshetra VVCL	0.43	DVVN (Agra)	
DVVN (Agra)	0.35	JSEB	0.35	JSEB	0.39	HPSEB Ltd.	
UHBVNL	0.34	AVVNL	0.34	AVVNL	0.38	J&K PDD	
APNPDCL	0.30	JDVVNL	0.32	CESCO	0.38	Manipur PD	
JDVVNL	0.28	Pash VVN (Meerut)	0.31	JDVVNL	0.35	MeECL/MePDCL	
KESCO (kanpur)	0.22	APEPDCL	0.03	APEPDCL	0.03	NBPDCL	
MVVN (Lucknow)	0.18	Arunachal PD		Arunachal PD		NDPL	
AVVNL	0.08	J&K PDD		J&K PDD		PSPCL	
APEPDCL	0.04	Manipur PD		Manipur PD		Puducherry PD	
Arunachal PD		NBPDCL		NBPDCL		SBPDCL	
J&K PDD		Puducherry PD		Puducherry PD		Sikkim PD	
Manipur PD		SBPDCL		SBPDCL		TANGEDCO	
Puducherry PD		Sikkim PD		Sikkim PD		TSECL	
Sikkim PD		TSECL		TSECL		UHBVNL	

Annexure IX - AT&C Losses

Table 33: KPI Trends: AT&C Losses

AT&C losses							
Utility	2013	Utility	2012	Utility	2011	Utility	2010
HPSEB Ltd.	9.53%	APEPDCL	9.37%	UGVCL	7.20%	Goa PD	6.12%
DGVCL	10.40%	KSEB	12.17%	APEPDCL	10.02%	APEPDCL	9.66%
APEPDCL	10.49%	MGVCL	12.18%	HPSEB Ltd.	10.12%	MGVCL	14.80%
KSEB	10.53%	APSPDCL	12.19%	DGVCL	13.08%	DGVCL	15.23%
MGVCL	12.29%	DGVCL	13.14%	MESCOM	13.75%	NDPL	15.68%
CESC	12.30%	UGVCL	14.51%	NDPL	13.75%	APSPDCL	16.63%
APSPDCL	12.74%	Goa PD	15.12%	Goa PD	14.08%	APCPDCL	17.93%
APNPDCL	13.09%	NDPL	15.67%	KSEB	14.09%	MESCOM	18.40%
NDPL	13.12%	BSES Rajdhani	16.65%	APSPDCL	14.20%	APNPDCL	18.52%
Goa PD	14.14%	APNPDCL	17.26%	MGVCL	14.24%	UGVCL	18.89%
UGVCL	14.37%	APCPDCL	17.77%	Puducherry PD	14.43%	Puducherry PD	19.35%
MESCOM	14.57%	MESCOM	17.94%	BSES Rajdhani	15.80%	BESCOM	21.10%
BSES Rajdhani	15.16%	HPSEB Ltd.	18.04%	APNPDCL	16.07%	KESCO (kanpur)	25.20%
APCPDCL	15.64%	Puducherry PD	18.91%	BSES Yamuna	18.13%	WBSEDCL	26.13%
PSPCL	17.66%	PSPCL	18.96%	PSPCL	19.64%	JVVNL	26.70%
BSES Yamuna	17.94%	MSEDCL	21.63%	APCPDCL	20.56%	Pash VVN (Meerut)	27.68%
GESCOM	18.28%	BESCOM	22.75%	TANGEDCO	21.49%	Poorv VVN (Varanasi)	27.86%
JDVVNL	18.97%	Nagaland PD	22.85%	JDVVNL	22.55%	DHBVNL	28.11%
AVVNL	19.90%	JVVNL	23.18%	BESCOM	22.75%	CHESCOM	28.21%
HESCOM	20.45%	HESCOM	23.62%	MSEDCL	23.30%	UtPCL	28.35%
BESCOM	20.45%	JDVVNL	23.83%	JVVNL	24.73%	HESCOM	28.51%
JVVNL	20.91%	GESCOM	23.96%	GESCOM	25.75%	TSECL	29.16%
TANGEDCO	21.08%	TANGEDCO	24.22%	HESCOM	26.22%	APDCL	29.98%
Puducherry PD	21.35%	BSES Yamuna	25.54%	DHBVNL	26.29%	UHBVNL	30.58%
MSEDCL	21.95%	UtPCL	25.84%	AVVNL	26.80%	JDVVNL	31.51%
UtPCL	23.00%	DHBVNL	27.53%	WBSEDCL	28.24%	PGVCL	32.35%
CSPDCL	25.12%	AVVNL	28.12%	UtPCL	28.48%	AVVNL	33.04%
MeECL/MePDCL	26.60%	WBSEDCL	28.49%	CHESCOM	28.70%	MP Paschim kshetra VVCL	36.16%
Mizoram PD	27.55%	CHESCOM	28.99%	CSPDCL	28.84%	NESCO	36.70%
MP Paschim kshetra VVCL	28.16%	CSPDCL	29.04%	UHBVNL	29.85%	MVVN (Lucknow)	37.58%
DHBVNL	28.31%	UHBVNL	29.06%	APDCL	29.91%	WESCO	37.58%
APDCL	28.94%	APDCL	30.48%	MP Paschim kshetra VVCL	31.12%	GESCOM	38.05%
MP Madhya kshetra VVCL	29.97%	KESCO (kanpur)	30.48%	PGVCL	32.35%	Mizoram PD	38.95%
CHESCOM	30.42%	PGVCL	32.35%	TSECL	34.48%	CESCO	39.98%
WBSEDCL	31.56%	TSECL	33.76%	Pash VVN (Meerut)	34.64%	CSPDCL	40.04%
PGVCL	32.35%	MP Paschim kshetra VVCL	34.43%	MP Purv kshetra VVCL	37.99%	MP Madhya kshetra VVCL	42.26%
Pash VVN (Meerut)	33.39%	MP Purv kshetra VVCL	34.94%	NESCO	38.47%	JSEB	45.40%
TSECL	33.85%	Pash VVN (Meerut)	35.95%	JSEB	39.70%	MP Purv kshetra VVCL	46.11%
MP Purv kshetra VVCL	36.40%	Mizoram PD	36.59%	Manipur PD	40.17%	Manipur PD	47.55%

AT&C losses							
Utility	2013	Utility	2012	Utility	2011	Utility	2010
UHBVNL	36.97%	NESCO	39.54%	KESCO (kanpur)	41.45%	DVVN (Agra)	49.62%
KESCO (kanpur)	37.61%	DVVN (Agra)	40.50%	DVVN (Agra)	41.81%	SESCO	51.00%
NESCO	39.61%	WESCO	43.46%	Mizoram PD	43.09%	Nagaland PD	65.36%
WESCO	41.87%	JSEB	44.30%	WESCO	43.84%	J&K PDD	72.79%
JSEB	42.50%	MVVN (Lucknow)	44.42%	MP Madhya kshetra VVCL	43.95%	Arunachal PD	97.88%
CESCO	43.61%	Manipur PD	44.80%	MVVN (Lucknow)	46.44%	BSES Rajdhani	
Sikkim PD	45.00%	MeECL/MePDCL	44.85%	CESCO	49.30%	BSES Yamuna	
DVVN (Agra)	45.69%	MP Madhya kshetra VVCL	45.85%	Nagaland PD	49.73%	CESC	
SBPDCL	45.77%	CESCO	46.15%	MeECL/MePDCL	51.63%	HPSEB Ltd.	
MVVN (Lucknow)	45.83%	Poorv VVN (Varanasi)	52.37%	Poorv VVN (Varanasi)	53.31%	KSEB	
SESCO	49.36%	SESCO	52.60%	SESCO	54.14%	MeECL/MePDCL	
NBPDCL	50.76%	J&K PDD	64.06%	Sikkim PD	65.46%	MSEDCL	
Poorv VVN (Varanasi)	52.37%	Sikkim PD	67.75%	J&K PDD	71.45%	NBPDCL	
J&K PDD	57.27%	Arunachal PD	77.28%	Arunachal PD	93.22%	PSPCL	
Nagaland PD	75.30%	CESC		CESC		SBPDCL	
Manipur PD	85.49%	NBPDCL		NBPDCL		Sikkim PD	
Arunachal PD	92.96%	SBPDCL		SBPDCL		TANGEDCO	

Annexure X - Employee Cost per unit of Input Energy

Table 34: KPI Trends: Employee Cost per unit Input Energy

Employee cost per unit of input energy							
Utility	2013	Utility	2012	Utility	2011	Utility	2010
NESCO	0.06	NESCO	0.04	NESCO	0.03	Puducherry PD	0.00
PGVCL	0.09	Pash VVN (Meerut)	0.08	Pash VVN (Meerut)	0.10	DVVN (Agra)	0.10
DGVCL	0.10	DVVN (Agra)	0.09	DVVN (Agra)	0.12	Pash VVN (Meerut)	0.12
DVVN (Agra)	0.11	PGVCL	0.11	DGVCL	0.12	APCPDCL	0.12
UGVCL	0.12	DGVCL	0.12	PGVCL	0.13	PGVCL	0.14
Pash VVN (Meerut)	0.16	UGVCL	0.15	UGVCL	0.17	DGVCL	0.15
Poorv VVN (Varanasi)	0.20	Poorv VVN (Varanasi)	0.19	APCPDCL	0.19	UGVCL	0.16
UtPCL	0.21	UtPCL	0.20	Poorv VVN (Varanasi)	0.20	APNPDCL	0.20
APCPDCL	0.22	APCPDCL	0.22	CESCO	0.21	UtPCL	0.20
BSES Rajdhani	0.26	Puducherry PD	0.23	Puducherry PD	0.21	Poorv VVN (Varanasi)	0.21
JSEB	0.27	MSEDCL	0.24	BSES Rajdhani	0.22	BESCOM	0.21
Puducherry PD	0.27	MVVN (Lucknow)	0.24	UtPCL	0.24	APSPDCL	0.22
BESCOM	0.28	BSES Rajdhani	0.26	MSEDCL	0.24	MSEDCL	0.23
SBPDCL	0.31	BESCOM	0.26	BESCOM	0.25	JSEB	0.23
APSPDCL	0.31	JSEB	0.29	JSEB	0.25	APEPDCL	0.24
MP Paschim kshetra VVCL	0.32	APNPDCL	0.29	MVVN (Lucknow)	0.27	GESCOM	0.26
MSEDCL	0.32	WESCO	0.29	MGVCL	0.30	J&K PDD	0.29
KESCO (kanpur)	0.32	DHBVNL	0.30	KESCO (kanpur)	0.31	JDVVNL	0.29
CSPDCL	0.32	APSPDCL	0.31	WESCO	0.31	HESCOM	0.30
WBSEDCL	0.33	GESCOM	0.31	DHBVNL	0.31	MVVN (Lucknow)	0.31
MVVN (Lucknow)	0.33	MP Paschim kshetra VVCL	0.31	CSPDCL	0.32	KESCO (kanpur)	0.32
MGVCL	0.34	KESCO (kanpur)	0.31	GESCOM	0.33	Sikkim PD	0.32
APNPDCL	0.34	APEPDCL	0.32	BSES Yamuna	0.34	BSES Rajdhani	0.33
MP Madhya kshetra VVCL	0.35	BSES Yamuna	0.33	NDPL	0.34	CSPDCL	0.34
BSES Yamuna	0.35	MGVCL	0.34	MP Paschim kshetra VVCL	0.36	MGVCL	0.35
NDPL	0.35	NDPL	0.36	HESCOM	0.36	NDPL	0.39
DHBVNL	0.36	MP Madhya kshetra VVCL	0.37	APNPDCL	0.38	MESCOM	0.39
HESCOM	0.36	HESCOM	0.39	J&K PDD	0.38	CHESCOM	0.40
J&K PDD	0.40	J&K PDD	0.41	APEPDCL	0.39	Goa PD	0.42
APEPDCL	0.40	CHESCOM	0.42	JDVVNL	0.39	MP Madhya kshetra VVCL	0.45
NBPDCL	0.41	UHBVNL	0.42	WBSEDCL	0.42	BSES Yamuna	0.46
GESCOM	0.42	WBSEDCL	0.46	UHBVNL	0.44	MP Purv kshetra VVCL	0.48
UHBVNL	0.43	MESCOM	0.46	MP Madhya kshetra VVCL	0.44	WBSEDCL	0.53
CHESCOM	0.46	Goa PD	0.48	Goa PD	0.45	DHBVNL	0.58
MESCOM	0.49	SESCO	0.49	APSPDCL	0.45	JVVNL	0.63
Goa PD	0.50	CESCO	0.50	MESCOM	0.48	MP Paschim kshetra VVCL	0.64
MP Purv kshetra VVCL	0.50	JVVNL	0.51	CHESCOM	0.49	APDCL	0.82

Employee cost per unit of input energy							
Utility	2013	Utility	2012	Utility	2011	Utility	2010
CESCO	0.51	MP Purv kshetra VVCL	0.53	MP Purv kshetra VVCL	0.54	KSEB	0.85
JVVNL	0.53	TANGEDCO	0.57	TANGEDCO	0.55	AVVNL	0.86
TANGEDCO	0.54	JDVVNL	0.73	AVVNL	0.57	Nagaland PD	0.88
WESCO	0.56	AVVNL	0.78	JVVNL	0.58	Mizoram PD	1.88
JDVVNL	0.57	APDCL	0.85	SESCO	0.64	Arunachal PD	3.74
CESC	0.57	PSPCL	0.87	PSPCL	0.75	CESC	
AVVNL	0.58	KSEB	0.99	Sikkim PD	0.78	CESCO	
MeECL/MePDCL	0.71	MeECL/MePDCL	0.99	MeECL/MePDCL	0.84	HPSEB Ltd.	
PSPCL	0.88	Sikkim PD	1.08	APDCL	0.84	Manipur PD	
APDCL	0.91	CSPDCL	1.08	HPSEB Ltd.	0.94	MeECL/MePDCL	
SESCO	0.93	TSECL	1.14	KSEB	0.98	NBPDCL	
KSEB	1.06	HPSEB Ltd.	1.42	TSECL	1.20	NESCO	
TSECL	1.13	Nagaland PD	1.44	Manipur PD	1.41	PSPCL	
Sikkim PD	1.16	Mizoram PD	1.63	Nagaland PD	1.73	SBPDCL	
Nagaland PD	1.34	Manipur PD	1.66	Mizoram PD	1.88	SESCO	
HPSEB Ltd.	1.37	Arunachal PD	2.04	Arunachal PD	2.40	TANGEDCO	
Manipur PD	1.62	CESC		CESC		TSECL	
Mizoram PD	1.85	NBPDCL		NBPDCL		UHBVNL	
Arunachal PD	2.52	SBPDCL		SBPDCL		WESCO	

Annexure XI - Trend of AT&C Losses and Difference in CAGR of Revenue and Cost

Table 35: KPI Trends: Trend of AT&C Losses and Difference in CAGR of Revenue and Cost

Utilities	AT&C loss trend	Utilities	Difference In CAGR of Revenue and Cost
GESCOM	51.96%	Sikkim PD	32.89%
MeECL/MePDCL	48.48%	NBPDCL	12.01%
HPSEB Ltd.	48.37%	UtPCL	6.21%
JDVVNL	39.80%	AVVNL	6.01%
AVVNL	39.77%	HESCOM	5.65%
CSPDCL	37.26%	Pash VVN (Meerut)	4.67%
DGVCL	31.71%	JDVVNL	4.61%
Sikkim PD	31.26%	GESCOM	4.49%
APNPDCL	29.32%	JVVNL	4.43%
Mizoram PD	29.27%	MP Paschim kshetra VVCL	4.11%
MP Madhya kshetra VVCL	29.08%	MESCOM	4.10%
HESCOM	28.29%	Mizoram PD	3.12%
KSEB	25.27%	PSPCL	2.80%
UGVCL	23.93%	TANGEDCO	2.09%
APSPDCL	23.39%	APEPDCL	2.00%
MP Paschim kshetra VVCL	22.12%	UGVCL	1.75%
JVVNL	21.69%	MP Purv kshetra VVCL	1.65%
J&K PDD	21.33%	MSEDCL	0.79%
MP Purv kshetra VVCL	21.06%	PGVCL	0.71%
MESCOM	20.82%	DHBVNL	0.42%
UtPCL	18.87%	J&K PDD	0.41%
MGVCL	16.96%	MeECL/MePDCL	0.38%
NDPL	16.33%	MGVCL	0.25%
APCPDCL	12.77%	DGVCL	0.25%
PSPCL	10.08%	CSPDCL	0.15%
DVVN (Agra)	7.92%	NDPL	0.13%
JSEB	6.39%	WBSEDCL	-0.14%
MSEDCL	5.79%	SBPDCL	-0.18%
Arunachal PD	5.03%	KSEB	-0.50%
BSES Rajdhani	4.05%	Arunachal PD	-0.57%
APDCL	3.48%	HPSEB Ltd.	-0.62%
SESCO	3.22%	BSES Yamuna	-0.66%
BESCOM	3.08%	APDCL	-0.82%
TANGEDCO	2.09%	BSES Rajdhani	-0.89%
BSES Yamuna	1.05%	MVVN (Lucknow)	-1.39%
PGVCL	0.00%	MP Madhya kshetra VVCL	-1.52%
DHBVNL	-0.71%	BESCOM	-2.24%
CESC	-2.50%	Manipur PD	-2.57%
SBPDCL	-4.21%	JSEB	-2.59%

Utilities	AT&C loss trend	Utilities	Difference In CAGR of Revenue and Cost
CHESCOM	-7.83%	CHESCOM	-3.14%
NESCO	-7.93%	Poorv VVN (Varanasi)	-3.18%
APEPDCL	-8.67%	KESCO (kanpur)	-5.72%
CESCO	-9.08%	Nagaland PD	-6.08%
Puducherry PD	-10.34%	Puducherry PD	-6.20%
WESCO	-11.42%	DVVN (Agra)	-6.41%
Nagaland PD	-15.21%	Goa PD	-7.17%
NBPDCL	-15.57%	WESCO	-7.24%
TSECL	-16.08%	UHBVNL	-7.60%
Pash VVN (Meerut)	-20.63%	APSPDCL	-7.95%
WBSEDCL	-20.78%	APCPDCL	-8.24%
UHBVNL	-20.90%	NESCO	-9.25%
MVVN (Lucknow)	-21.95%	SESCO	-9.59%
KESCO (kanpur)	-49.25%	TSECL	-11.01%
Manipur PD	-79.79%	CESCO	-11.02%
Poorv VVN (Varanasi)	-87.98%	APNPDCL	-12.37%
Goa PD	-131.05%	CESC	-18.53%

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Key Performance Indicators – Formulae and Justification of KPI

KPI (commercial/Operational)	Formula	Justification for KPI
No of units sold/Sq. Km		
No of units sold/No of consumers		Per capita consumption
Revenue		
Revenue from Sale of power/Total revenue		Measure of operating revenue
Revenue from Unmetered sale/total revenue		Measure of unaccounted units of sale of power
Revenue from Trading/Total revenue		Measure of trading revenue
Revenue from Others/Total revenue		Exceptional revenue component
Consumer mix (electricity billed)		Measure of consumer composition
Domestic (%)		
Domestic unmetered (%)		
Commercial (%)		
Industrial HT (%)		
Industrial LT (%)		
Industrial (%)		
Agricultural (%)		
Agricultural unmetered (%)		
Public lighting (%)		
Public works (%)		
Bulk supply (%)		
Railway (%)		
Interstate (%)		
Others (%)		
Category wise average tariff realization		Category wise tariff reflecting cost of supply in order to assess level of cross-subsidization
Domestic sales/No of domestic units sold		
Commercial sales/No of commercial units sold		
Industrial sales/No of industrial units sold		
Agricultural sales/No of agricultural units sold		
Average tariff	Total revenue (excluding subsidy)/Total adjusted input units	
Category wise Average Tariff (sales per unit) w.r.t Average Cost of Supply (COS)	(Power cost + O&M + Interest + Depreciation + Other costs)/ Av. COS	Measure of efficiency of business operation
Domestic avg. tariff (in % of avg. COS)		Per unit measure of cost of supply in terms units sold
Commercial avg. tariff (in % of avg. COS)		
Industrial avg. tariff (in % of avg. COS)		
Agricultural avg. tariff (in % of avg. COS)		
Average tariff (in % of avg. COS)		Measure of revenue gap

KPI (commercial/Operational)	Formula	Justification for KPI
Average cost of supply per unit of power purchased		Measure of revenue gap
Power purchase cost/unit of energy sold		Measure of revenue gap
O&M/unit of energy sold		Measure of revenue gap
Depreciation/unit of energy sold		Measure of purchase composition from different sources
Interest/unit of energy sold		
others/unit of energy sold		
Difference between avg. tariff and avg. COS		
Regulatory asset created during the year		
Cumulative regulatory asset at the beginning of financial the year		
Change in regulatory asset (%)		
Power purchase (electricity procured)		
Central sector (%)		
IPP (%)		
State Sector (%)		
Renewable Energy (%)		
Others (%)		Measure of power purchase optimization
Means of procurement (electricity procured)		
Long-term PPA (%)		
Short-term bilateral & trading (%)		
Short-term trading through exchange (%)		
Unscheduled interchange (%)		
Power purchase (costs)		
Central sector/unit procured		
IPP/unit procured		
State Sector/unit procured		
Renewable Energy/unit procured		
Others/unit procured		
Means of procurement (costs)		
Long-term PPA/unit procured		
Short-term bilateral & trading/unit procured		
Short-term trading through exchange/unit procured		
Total power purchase cost/unit procured		
Grant and Subsidies		
Subsidy booked/Subsidy received		Measure of realization of subsidy
Received/unit sold to subsidised consumers		
Booked/unit sold to subsidised consumers		
Domestic subsidy/unit sold		Level of domestic subsidy per unit
Agricultural subsidy/unit sold		Level of agricultural subsidy per unit
Subsidy/Revenue from sale of power		Percentage of subsidy provided w.r.t. revenue
AT&C loss (%)	(Net input energy-Energy	Measure of composition of losses

KPI (commercial/Operational)	Formula	Justification for KPI
	Realized) / Net input energy	
T&D loss (%)		
Billing efficiency (%)	No of units sold/No of input energy units	
Collection efficiency (%)	No of units realized/No of units sold	

Annexure A - Minutes of the forty eighth meeting of forum of regulators

(Meeting held at New Delhi on June 11, 2015)

Agenda Item No. 11: Presentation and Discussion on the Study commissioned by "FOR" on "Performance of Distribution Utilities".

In furtherance to the decision of the Forum for carrying out a study on "Performance of Distribution Utilities", the Secretariat of "FOR", after following due process, appointed M/s Ernst & Young LLP as the Consultant for carrying out the study.

The Consultant submitted the draft report and made a presentation (enclosed as Annexure - VI) on the findings of the study. The presentation included, key performance indicators (technical, financial and commercial aspects), weights given to these key performance indicators and finally categorization of the distribution licensees into five different categories, based on their scores.

The distribution licensees under consideration were compared against each other and their performance evaluated based on 4 constructs (Profitability, Channel efficiency, Solvency and Techno-commercial efficiency) and related 12 parameters and grouped into five categories. The 12 parameters, inter alia include, Gross Margin without subsidy, Profit per unit input energy, Difference in CAGR between Revenue and expenses, number of days of receivable and number of days of payable, ratio of capex and depreciation, interest service coverage ratio and debt to equity ratio, fixed assets coverage ratio, AT&C losses and Employee cost per unit input energy and trend of AT&C losses. Based on the importance of each performance indicator (derived from its impact on the overall performance of the utilities) weights were assigned.

The findings have been compared to national level estimates for a detailed analysis of the performance of the utilities. Relevant gaps in the performance of Distribution utilities were identified and appropriate measures/mechanisms for enhancing the efficacy of the utilities have been suggested. It was decided that the ERCs will validate the data (as referred to in the draft report) within a month. Based on the validated data, the report may be finalized.

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