

**SUMMER INTERNSHIP REPORT**

**Analysis of ARR Petition under MYT 2012-15 for  
Generation, Transmission & Distribution Licensees in  
Delhi**

UNDER THE GUIDANCE OF

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## **DECLARATION**

I, S. PRASANNA, Roll No 1120812262, student of MBA-POWER MANAGEMENT (2011-13) at National Power Training Institute, Faridabad hereby declare that the Summer Training Report entitled “**Analysis of ARR Petition under MYT 2012-15 for Generation, Transmission & Distribution Licensees in Delhi**” is an original work and the same has not been submitted to any other Institute for the award of any other degree.

A Seminar presentation of the Training Report was made on September, 03, 2012 and the suggestions as approved by the faculty were duly incorporated.

**Presentation In charge**

**(Faculty)**

**Signature of the Candidate**

**Countersigned**

**Director/Principal of the Institute**

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## EXECUTIVE SUMMARY

ARR (Aggregate Revenue Requirement) petition is filed by every Generation Company, Transmission Licensee & Distribution Licensee before the Appropriate Commission for its approval. The Commission after prudence check shall determine the tariff under Section 62 (1) of Electricity Act 2003. Every petitioner shall have to file petition for approval of ARR 120 days prior to the start of Financial Year and the appropriate commission shall pass the final tariff orders within 120 days from the receipt of an application after considering all suggestions and objections received from the public.

Under this study, all the Generation, Transmission and Distribution Licensees have filed a petition before DERC for approval of ARR from FY 2012-13 to FY 2014-15.

The DERC work is to find discrepancies if any in the petition, ask for data gaps and finally after technical validation session with the petitioner and in accordance with regulations develop an ARR model as well as prepare a draft and then they will pass the final Tariff Orders.

During the initial study of petition I found many discrepancies in it. Which I have discussed with my mentor and he guided me on the same. It is very important to check whether the petition is as per regulation and expenses are within limit. Since an incorrect Tariff Order may cause Tariff shock to the consumer.

After prudence check and under the proper guidance of my mentor I have done certain analysis of the petition for

- 1) IPGCL - Generating Company
- 2) DTL - Transmission Company
- 3) BRPL - Distribution Company
- 4) TPDDL - Distribution Company

which I have drafted in this report. As well as I have gone through the ARR model submitted by the petitioner and incorporated in it my procedures based on regulations and past tariff orders passed by DERC.

## **LIST OF ABBREVIATIONS**

A&G	Administration & General
AAD	Advance Against Depreciation
ARR	Aggregate Revenue Requirement
AT&C	Aggregate Technical & Commercial loss
BRPL	BSES Rajdhani Private Limited
BSES	Bombay Suburban Electricity Supply
BYPL	BSES Yamuna Private Limited
BST	Bulk Supply Tariff
CAGR	Compounded Annual Growth Rate
CAPEX	Capital Expenditure
CEA	Central Electricity Authority
CERC	Central Electricity Regulatory Commission
CPI	Consumer Price Index
CTS	Cost To Serve
CWIP	Capital Work In Progress
DERA	Delhi Electricity Reforms Act
DERC	Delhi Electricity Regulatory Commission
DESU	Delhi Electricity Supply Undertaking
DISCOM	Distribution Company
DTL	Delhi Transco Limited
DVB	Delhi Vidyut Board
EA	Electricity Act
FY	Financial Year
GFA	Gross fixed Asset
IPGCL	Indraprastha Power Generation Company Limited
MoP	Ministry of Power
MYT	Multi Year Tariff
NDMC	New Delhi Municipal Corporation
NDPL	North Delhi Power Limited
NEP	National Electricity Policy
NTI	Non Tariff Income
NTP	National Tariff policy

O&M	Operation & Maintenance
PPCL	Pragati Power Corporation Limited
R&M	Repair & Maintenance
ROCE	Return on Capital Employed
ROE	Return on Equity
SERC	State Electricity Regulatory Commission
T&C	Terms & Conditions
T&D	Transmission & Distribution
TO	Tariff Order
TOD	Time of Day
TPDDL	Tata Power Delhi Distribution Limited
WPI	Wholesale Price Index

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# CHAPTER-1

## INTRODUCTION

### 1.1 DELHI POWER SCENARIO:

- Earlier in Delhi Transmission & Distribution losses increase from 22.60% in 1991-92 to 42.70% in 1997-98. Precarious financial position occurs opening losses rose from Rs 250 cr to Rs. 713 cr .Weak billing system persists 57% are billed and collection efficiency are only 88%. Imbalance in power Demand & Supply of exists.
- So Re-structuring of power sector recommended.so DERC set up notified on 3.3.99 under ERC Act, 1998 and established in Dec. 1999 as one member commission. Delhi Electricity Reform Act 2000 Enacted from 3.11.2000. Concept Paper on Tariff by DERC- September 2000.Order on Rationalisation started on January 2001.

Multiyear ARR/tariff proposal for FY 2000-01 by DVB included a set of tariff determination principle for the years 2002-06. Different methodology generally followed for fixation of tariff as listed out in the Concept Paper on Tariff

- Rate of Return Regulation
- Performance Based Regulation
- Price/Revenue Cap Regulation

DVB proposed Performance Based Regulation to meet the requirement and to make system more efficient

Pre-requisite of Performance Based Regulation:

- Calls for sound MIS including scientific
- Estimation of T&D losses
- Energy audit
- Sound data base to set Bench mark

Any commitment by DVB not binding on the successor companies

Average tariff as proposed by DVB was not acceptable because the estimated units billed to various consumers were likely be different from the billed units envisaged in their tariff proposal. Basis of calculation would not remain same for “tariff in year 2001-02 and required revision in the tariff in the year, however the tariff for different categories will be determined based on average tariff. The requisite inputs for above were not available. Proposal regarding the projection of Annual capital expenditure in each year for the next 5 year on historical basis was not acceptable because DVB not able to provide even the present value of fixed assets. Relying on a number of assumption for the same. Projections could only be done based on the present status of the assets, the need for investment and availability of funds.

Improvements in efficiency is not Suggested. It also needs improvement in quality of service & reliability in power supply. Parameters would differ for successor entities , Loss reduction ought to be higher in initial years. Development of efficient MIS is very vital. Therefore multiyear tariff proposal by DVB suffered.

The Commission found that

“Multiyear tariff setting principles” is an issue that merits consideration, it is not the mature stage for fixation of multiyear tariff principles. “Appreciating the sprit behind the proposal for multi year tariff the Commission shall be willing to consider any suggestion in this regard at an appropriate stage in future”

Transfer Scheme by GNCTD for unbundling DVB. Notified on 20.11.01 but not made effective 6 successor entities: 3 DISCOMs, GENCO, TRANSCO, Holding Company. Policy Directions notified by GNCTD bidding criterion: loss reduction programme has been introduced. Reduction of AT&C loss programmes were introduced. 16% return on equity has showed. 50% of additional revenues due to over achievement. Retail tariffs for 3 DISCOMs to be same till 2006-07. Govt. to bridge gap by loan of Rs. 2600 Cr. to TRANSCO for transition period. DERC to determine opening loss levels and Bulk Supply Tariff to DISCOMs. Differential BST based on paying capacity of DISCOMs. Govt. to bridge gap by loan of Rs. 3450 Cr. to TRANSCO filed first ARR for the FY 2002-03 and FY 2003-04 in December 2002. First Order on RST issued on 26.06.2003 for Private Discoms.

## **1.2 PROBLEM STATEMENT**

A proper and correct ARR is significant both for the consumer as well as for the petitioner since if the Commission approves an ARR which is very high then it may cause increase per unit cost of electricity to the consumer which may result in Tariff Shock.

Also on the other hand if the Commission approves an ARR which is very less as compared to licensee actual expenses then it may end up resulting in revenue gap for the licensee due to which it will have to bear losses, as well it may not be able to purchase power from the generating company resulting in load shedding etc. This will result in loss to the consumer in the end.

### **1.3 OBJECTIVE**

The main objectives of the project are as follows:

- Understand the basis on which Generation, Transmission & Distribution Licensees are filling their petitions for approval of ARR
- Analyse the basis of the petition and find discrepancies.
- Analyse the ARR Model submitted by the petitioner and incorporate in it my procedures based on regulations and past tariff orders passed by DERC.
- Finally to draft a report.

## **1.4 CONCEPTUALIZATION of Introduction to ARR & Tariff Orders**

An ARR petition is a request to regulatory body made by a utility/licensee for approval of all its annual expenses to be recovered from consumers through tariff. It also includes a normative profit (ROE) for the utility. Through an ARR file the licensee shows its various expenses & costs in detail along with the details of number of consumers, quantum of power purchase & sale, losses, ROE, etc.

The respective regulatory commission of a state studies the ARR petition filed by the petitioner to check that whether the projections of costs are in accordance with the terms & conditions of tariff or not and to what extent these are meeting the norms of regulations. After going through the ARR file, the commission approves the expenses of a licensee after some corrections, suggestions and modifications, if felt necessary for meeting the regulatory norms.

This document of approved ARR petition is sent back to the licensee as an order from the commission and it is commonly known as the tariff order. The honorary commission may issue tariff order every year based on the ARR petition filed by the licensee or on suo-moto basis.

### **1.4.1 Structure of tariff orders**

In a broad sense a Tariff Order consists of following items in sequence:-

#### 1. Background & features

- Functions of the commission
- Regulations
- Advices
- Procedural background
- Salient features of the order

#### 2. Public hearing process

- Objections and issues raised by consumers during public hearing
- Response of licensee over the issues raised
- Commission's ruling on the issues

#### 3. True up of year proceeding to the preceding year of ensuing year.

#### 4. Annual performance review for the preceding year.

## 5. Determination of ARR for the ensuing year

- Components of ARR
- Summary

## 6. Tariff philosophy and design

- MYT framework
- TOD tariff
- Subsidy schemes
- Incentives/disincentives

## 7. Tariff schedule

- Category wise fixed/demand charges
- Category wise energy charges
- Scheme for rebates/penalties

## 8. Other issues related to tariff determination.

The above mentioned 8 basic elements of a TO explain the design and structure of any tariff order (TO). As my project is based on determination of ARR so our basic focus area will be components of ARR.

### **1.4.2 Components of ARR**

The ARR parameters are segregated into financial & operational parameters.

The operational parameters are as follows:

1. Energy Sales (Consumer category-wise)
2. Power Purchase
3. Assessment of technical & commercial loss.

The financial parameters are as follows:

1. Capital Investment / CAPEX
2. Capital Structure ( Debt/Equity ratio)
3. Depreciation
4. Rate of return (ROE or ROCE)

5. Interest on loan
6. Norms on working capital
7. Cost of foreign exchange risk
8. Operation & Maintenance Expenses
  - Repair & Maintenance Expenses
  - Administrative & General Expenses
  - Employee Expenses
9. Income Tax
10. Non-Tariff Income
11. Provision for Bad Debts.
12. Interest on Security Deposit.

## **Energy Sales**

Projection of consumer category wise energy sales is essential for estimation of likely revenue and to determine the quantum of power purchase. Proper estimation of category-wise energy sales is most essential to arrive at the quantum of power purchase and the likely revenue by sale of energy. Category wise sale estimation gives an idea about the trends in consumption pattern, like which category, whether subsidizing or subsidized is showing either increase or decrease in consumption which is crucial in forecasting category wise revenue. The present method used by the DERCs is based on actual past sale data (historical trend method) & future forecasting.

## **Power Purchase Cost**

Once the energy requirement is arrived at, the power purchase cost is worked out by applying merit order dispatch principles for the allocated capacities / PPAs. Cost of power is the most important item of expenditure for the licensees. Every Commission examines the projected availability of power from different sources in details & the requirement of sales. In the ARR power purchase are reckoned only from those sources which have long term contracts with the DISCOMs.

The rates of power purchased from individual generators are on the basis of their respective agreements. As regards energy costs for DISCOMs, the methodology adopted is to take the total energy cost, commonly known as Bulk Supply Tariff (BST), comprising



- Energy costs;
- Transmission costs;
- SLDC charges.

The cost of purchase of power is largely a known parameter. The amount payable by the distribution licensees is based on power purchase agreements with various generators that clearly establish the price determination procedure. In case of central power sector units (CPSU's) or other generators supplying power to more than one state, the Central Electricity Regulatory Commission (CERC) determines tariff. Most of the elements constituting the total charges i.e. capacity charges, base energy related charges, adjustment to base energy charges for cost of fuel and other factors, taxes, duties, incentive payments etc. Are known or can be estimated with a reasonable degree of accuracy.

While approving the cost of power procurement, the Commission determines the quantum of electricity to be procured, consistent with power procurement plan, from various sources of supply in accordance with the principle of merit order scheduling and dispatch, based on a ranking of all approved sources of supply in the order of their respective variable costs, with certain exceptions, as in the case of Non-Conventional Energy (NCE) projects, Nuclear projects & some hydro projects accorded by various general and specific orders of the Commission the status of „must-run“ projects. In order to arrive at the quantum and cost of power procurement, the Commissions had adopted the Sales Forecast, the Transmission & Distribution loss trajectory. The power purchase cost is a uncontrollable expenditure item & is trued up through Fuel Surcharge Adjustment (FSA) mechanism.

The relevant clause of National Tariff Policy (Clause 5.3 (h) (4) and Clause 8.2.1 (1)) says:

*“Uncontrollable costs should be recovered speedily to ensure that future consumers are not burdened with past costs. Uncontrollable costs would include (but not limited to) fuel costs, costs on account of inflation, taxes and cess, variations in power purchase unit costs including on account of hydro-thermal mix in case of adverse natural events.”* and

*“All power purchase costs need to be considered legitimate unless it is established that the merit order principle has been violated or power has been purchased at unreasonable rates.”*

Variations in power purchase costs for the purpose of true-up will rarely occur as the Fuel Surcharge Adjustment (FSA) formula issued by the Commission attempts to capture both the price variance and the fuel variance during the course of the year itself. Any further variations

would arise mainly on account of purchases exceeding the limits approved in the Tariff Order. All extra purchases of power do not automatically qualify for true-up. If the purchases are for categories where the Commission has fixed a ceiling or quota, extra purchases will not qualify for true-up.

### **Assessment of Losses**

Every Commission had given its serious thought and careful consideration for high level of loss incurred by the distribution licensees. The SERCs have taken steps to improve the base line data either by directing the DISCOMs to conduct various studies or by conducting sample studies on their own. At first Commissions had fixed loss reduction trajectory. Then the Commissions had judged the over or under performance of DISCOMs. The gains or losses due to over or under improvement are to be accrued with Customers as well as the DISCOMs. To implement open access in distribution, Commissions have asked DISCOMs to file voltage wise losses so that the open access charges could be calculated. The Commissions approach can be divided into Distribution losses & AT&C losses.

In case of DISCOMS where Agricultural consumption is predominant especially unmetered agricultural consumption due care is taken by respective SERCs. The DISCOMs were inflating the Agricultural unmetered consumption so that they could show lower losses. In most of the cases the Flat rate Agricultural consumption is measured by LT side metering of Distribution Transformer. Based on this, the annual per HP Normative consumption is fixed for the particular period.

### **Capital Expenditure**

After enactment of EA 2003 & unbundling of SEBs the capital expenditure has been increased. Most of the capital expenditure of state owned Utilities is funded through central government schemes like APDRP, RGGVY, Rural electrification, System Improvement & HVDS etc. The state government also through budgetary provisions is funding towards Capital work. The capital work is necessary to strengthen the T & D network to support the expected increase in generation (considering made availability of supply). Even Funds in the form of loan are available from World Bank, Asian Development Bank also. In the initial years (in FY 2004-05 & 2005-06 specially) of tariff petitions the DISCOMs have proposed huge amount towards capital expenditure. The Regulatory Commissions if had agreed the Capital expenses would have finally burdened on the consumers. Also comparing to the

lower revenue collection the capital work would have hampered the financial viability of the DISCOMs. As the trend is set by Commission for approval of CAPEX then the DISCOMs have also filed more systematic & scheme wise details while seeking approval from Commission. The Regulatory Commissions have approved the capital expenditures based on historical actual trend in CAPEX capitalized & also the impact of such investment in reduction in T&D losses.

## **Capital Structure**

Capital Structure includes Debt component & equity component. The utility is allowed to get reasonable return on the capital investment done. The normative Debt equity ratio is 70:30.

DERC has allowed normative 70:30 Debt Equity ratio to calculate RoE.

Equity more than 30% of the capital base is normally treated as normative loan for the purpose of calculating ROE and thus the tariff by almost all the SERCs in India. Where actual equity employed is less than 30%, the actual equity shall be considered.

## **Depreciation**

Depreciation is directly related to the capital assets. The Original Cost of Fixed Assets (OCFA) and capitalization of capital works form the basis of the Fixed Assets. For Electricity industry, the depreciation rates are the rates, notified by the Ministry of Power, Government of India (rates specified in 1992 & 1994), rates specified by the CERC which are generally accepted by the SERCs & are issued in their tariff regulations. Depreciation is applied on the opening balances of the Fixed Assets for the ensuing year at specific rates applicable to particular assets subject to a limit of 90% of the Fixed Asset value (the balance being treated as scrap value). In this regard, the crucial factor that varies the computations is the additions to the Fixed Assets which are entirely dependent on the capitalization of the Capital Works-in-progress during the year.

From an accounting perspective, Depreciation is a charge to the Profit and Loss account and represents a measure of the wearing out, consumption or other loss in value of an asset arising from use, efflux of time or obsolescence through technology and market changes. From a regulatory perspective, depreciation is a small amount of the original cost of the capital assets, built into the tariff computation every year with a view to providing the utility a source of funding to repay instalments of debt capital. From the investor's point of view,

depreciation is a non cash expense which reduces tax burden but generates internal cash for investments. The regulators have two view points on depreciation. One view is depreciation is the refund of capital & the other view is a constant charge against an asset to create a fund for its replacement. As the asset is used over its operational life, Depreciation is proportionately charged over the useful life of the asset. Advance against depreciation (AAD) is required in certain conditions like if the debt redemption obligation is not matching with the existing depreciation allowed. It is necessary that all the SERCs should follow same depreciation rate to bring uniform approach in tariff orders.

### **Rate of Return (ROE or ROCE)**

The ROCE is allowed on the Net Capital base (Asset base or regulated rate base) for the ensuing year. The Capital Base of the Licensees is divided into two parts - the positive part and the negative part, to derive the net capital base on which a return is provided. The positive part consists of the original cost of fixed assets (OCFA) excluding consumer contributions; intangible assets; the original cost of Capital Works-in-Progress (CWIP); compulsory investments, and working capital. On the negative side are depicted, the matching financials of the assets created, like Accumulated depreciation, loans from Government and other approved institutions, consumer deposits by way of security and amounts outstanding in the Tariffs and Dividends Control Reserve and Development Reserve at the close of the year. The ROE is allowed on the average of opening & closing equity & free reserves for the ensuing year. The total capital is normatively divided in the ratio of 70:30 & the equity component is calculated to derive Return on Equity to be allowed.

### **Interest on Loan**

Approved interest on loans is directly related to the loans taken into the Capital Base computations. The loans drawn for CAPEX and interest thereon are a pass-through in the tariffs. The interest rates are computed on the basis of the rates on loans filed by the Licensees for the current year and the ensuing year. Lease rentals and other finance charges are also included under this heading. Other finance charges include discounts to consumers, such as, incentive, etc. The weighted average rate of interest & normative repayments so worked out is taken to the ARR. The SERCs analyses the source wise break up of loan & interest thereon. All the Commissions had considered actual loan portfolio & interest to be paid for such project. Capital projects are being funded from loan, consumer contribution,

depreciation (internal accruals) & Govt. grant & loans etc. The loan & interest on loan is considered from audited accounts of the DISCOMs.

It is necessary to consider the difference between the capitalization schedule and the new borrowings considered for interest expenditure and rules that the SERCs shall not consider borrowings due to revenue / cash deficit, unapproved investments and capital work in progress for determination of interest expenditure. Further, the SERCs shall only consider loans borrowed for use and useful assets (assets capitalized) and any other loans borrowed / swapped for reducing the interest cost on such loans. The interest amount is subject to claw-back as the interest being allowed is for the capital works, and any variations in the capital expenditure program (under spending or overspending) have to be adjusted if Capital Work In Progress (CWIP) remains in the Capital Base computations as per the Sixth Schedule to the Electricity (Supply) Act, 1948.

### **Interest on Working Capital**

Working capital is required to maintain cash flow liquid. Usually the SERCs have taken working capital as a % of O&M expenses, average cost of store & average cash & bank balance etc. The interest rate for working capital is the short term Prime Lending Rate of State Bank of India.

### **Operation & Maintenance Expenses**

The O&M expenses have three components.

1. Employee expenses
2. A&G expenses
3. R& M expenses

The employee expenses includes following components.

1. Salaries
2. Overtime
3. Dearness allowance
4. Other allowance
5. Bonus
6. Medical expenses

7. Earned leave encashment
8. Payment under workmen compensation Act
9. Payment to helpers/Employees of storm & monsoon gang
10. Staff Welfare expenses
11. Terminal Benefits
12. Increase in employee cost on account of pay revision

The A&G expenses includes following components.

1. Rent rates & taxes
2. Security arrangement
3. Telephone, Electricity, Water & Postage charges
4. Legal, audit, consultancy & other professional charges
5. Travelling, Conveyance & vehicle charges
6. Vehicle license & registration charges
7. Books, periodical, computer stationary & printing stationary
8. Staff expenses
9. Freight

The A&G expenses also include licensee & Expected Revenue Charges (ERC) filing fees & other purchase related expenses.

The R&M expenses include expenses on maintenance of T&D network. It includes

1. Repairs and maintenance of plant machinery
2. Vehicles
3. furniture and fixtures
4. office equipment
5. line materials and cables
6. Transformers and related equipment
7. Meters and metering equipment.

The various approached held to estimate the O&M expenses are explained as follows

## Historical Trend Method

Based on the actual O&M expenses the CAGR is calculated & the O&M expenses are approved following the trend. The past period whose actual data is available is considered like data for 3 years, 5 years.

## WPI & CPI Indexed costs

DERC in its MYT order has calculated O&M expenses permissible towards ARR for each year of the Control Period using the formula detailed below. The R&M expenses are linked to the Gross Fixed Assets, while the employee expenses and A&G expenses are linked to an Inflation Index, as shown below:

- a)  $O\&M_n = (R\&M_n + EMP_n + A\&G_n) * (1 - X_n)$
1. Where,  $R\&M_n = K * GFAn-1$ ;
  2.  $EMP_n + A\&G_n = (EMP_{n-1} + A\&G_{n-1}) * (INDX_n / INDX_{n-1})$ ; and
  3.  $INDX_n = 0.55 * CPI_n + 0.45 * WPI_n$

Where

- b) 'K' is a constant (could be expressed in %) governing the relationship between O&M costs and gross fixed assets (GFA) for the nth year. Value of K will be determined by the Commission in the MYT Tariff order based on Licensee's filing, benchmarking, approved cost by the Commission in past and any other factor the Commission feels appropriate;
- c) INDX<sub>n</sub> - Inflation Factor to be used for indexing can be taken as a combination of the Consumer Price Index (CPI) and the Wholesale Price Index (WPI) for immediately preceding five years;
- d) EMP<sub>n</sub> – Employee Costs of the Licensee for the nth year;
- e) A&G<sub>n</sub> – Administrative and General Costs of the Licensee for the nth year;
- f) R&M<sub>n</sub> – Repair and Maintenance Costs of the Licensee for the nth year;
- g) X<sub>n</sub> is an efficiency factor for nth year. Value of X<sub>n</sub> will be determined by the Commission in the MYT Tariff order based on Licensee's filing, benchmarking, approved cost by the Commission in past and any other factor the Commission feels appropriate.

## **R&M Expenses**

R & M Expenses are normally taken as a fixed percentage of the opening GFA then some escalation may be allowed by the commission if found logical with due consideration of CPI & WPI indexes.

The R&M expenses include expenses on maintenance of T&D network. It includes repairs and maintenance of:

- Plant machinery
- Vehicles
- Furniture and fixtures
- Office equipment
- Line materials and cables
- Transformers and related equipments
- Meters and metering equipment, etc.

R & M also stands for Renovation & Modernization expenses which are beyond my scope of analysis.

## **Non Tariff Income**

Non tariff income shall be the revenue in excess of the revenue collected on account of tariffs as approved by the Commission, and shall include such items as Delayed Payment Surcharge (DPS) and Meter rent.

So, NTI (Non Tariff Income) consists of:-

- DPS shall be estimated taking into account the uncollected amount and the prevailing bank rate.
- The meter rent shall be based on the amount being charged on this account and the number of metered consumers.



## 1.5 ORGANIZATION PROFILE

### 1.5.1 Delhi's Restructuring and Establishment of DERC

The Delhi Vidyut Board (DVB) was a State Electricity Board (SEB) set up in 1997 under the Electricity (Supply) Act, 1948, succeeding the Delhi Electricity Supply Undertaking (DESU), which had existed since 1957 as a wing of the Municipal Corporation of Delhi; it was an integrated utility with generation, transmission and distribution functions serving all of Delhi except the NDMC and MES (Cantonment) areas, to which it supplied power in bulk. The creation of DVB, replacing DESU, in 1997 proved to be merely a change in the legal status of the organization and was not followed by any real change in its structure, functioning and work culture: its reputation continued to deteriorate and its poor commercial performance—the best known thing about DVB perhaps being its high Transmission and Distribution (T&D) losses—made it a drain on the public exchequer and incapable of raising the resources necessary to improve its services. There were unprecedented, widespread expressions of public discontent during the difficult summer of 1998. Against the above background, one of the first major steps taken by the new Government of the NCT of Delhi was to bring out a Strategy Paper on Power Sector Reforms in February 1999. This paper envisaged:

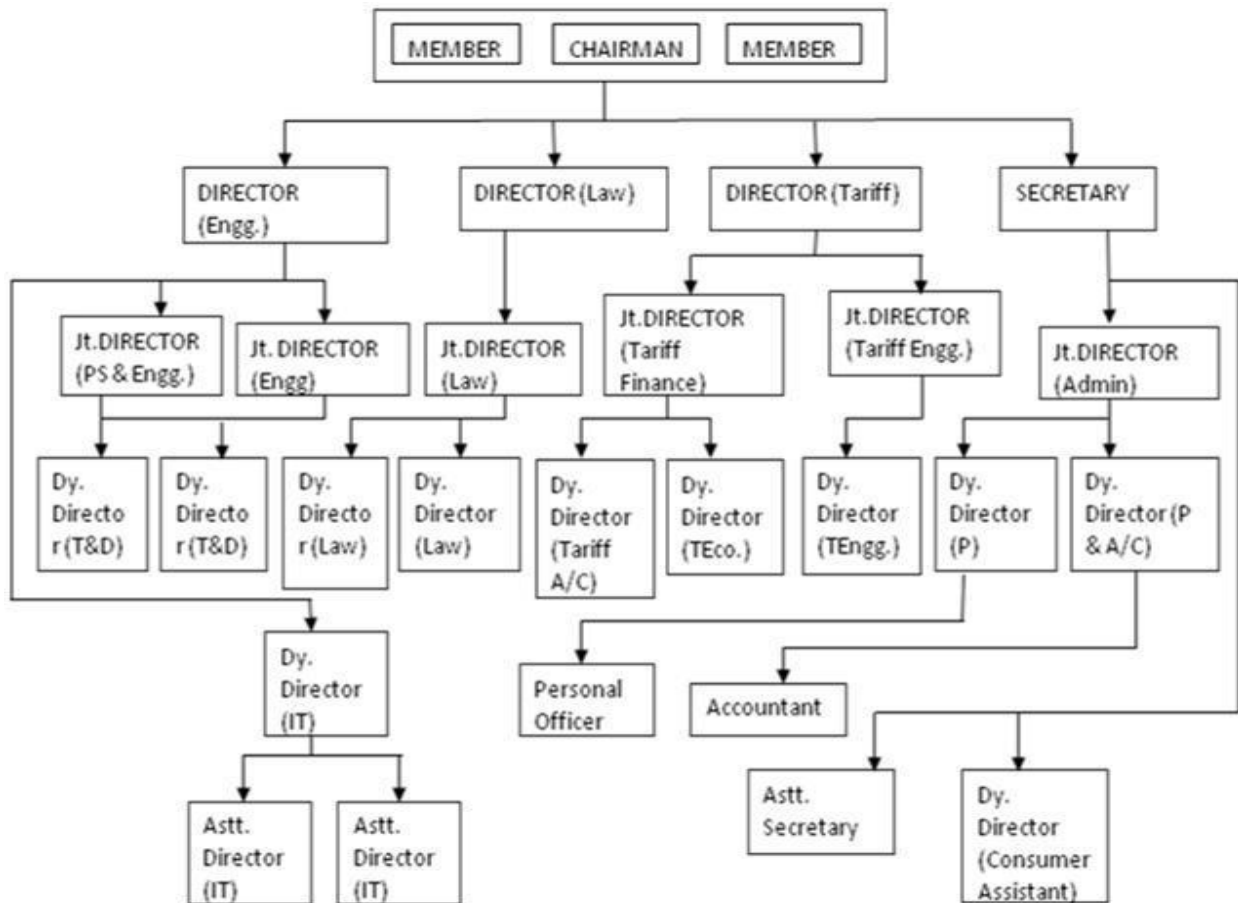
- Setting up of a Regulatory Commission;
- Unbundling of the DVB into separate Generation, transmission and distribution companies;
- Disinvestment of distribution;
- Interim measures to improve the performance of DVB;
- Protection of staff interests.

Starting with a strategy paper, the then new Delhi Government moved quickly to restructure the electricity industry in the territory and privatize the distribution business. In a little over three years, in July 2002, the distribution business was handed over to private parties.

The Govt. of India had enacted the Electricity Regulatory Commissions Act, 1998 (No.14 of 1998) on 2nd July, 1998 with the objective of providing for the establishment of a CERC and SERCs, rationalization of electricity tariff, transparent policies regarding subsidies, promotion of efficient and environmentally benign policies and for matters connected therewith or incidental thereto.

### 1.5.2 Organization Chart of DERC

On this page is shown the current organization hierarchy or profile chart of DERC.



*F2.1- Organization chart*

### 1.5.3 Functions of Delhi Electricity Regulatory Commission

The DERC came into existence under section 17 of Electricity Regulatory Commission Act, 1998 (ERC Act, 1998) on 3rd March 1999 through a Notification of the Government of NCT of Delhi on the 10th of December 1999 to discharge the following functions.

1. To determine the tariff for electricity, wholesale, bulk, grid or retail, as the case may be, in the manner provided in Section 29 of the ERC Act, 1998;
2. To determine the tariff payable for the use of the transmission facilities in the manner provided in Section 29 of the ERC Act, 1998;
3. To regulate power purchase and procurement process of the transmission utilities and distribution utilities including the price at which the power shall be procured from the generating companies, generating stations or from other sources for transmission, sale, distribution and supply in the National Capital Territory of Delhi;

4. To promote competition, efficiency and economy in the activities of the electricity industry to achieve the objects and purposes of the Central Electricity Regulatory Commission Act, 1998;
5. Any other functions the Government of NCT of Delhi may notify further from time to time.

The Government of NCT of Delhi promulgated the Delhi Electricity Reform Ordinance, 2000 on 28th October 2000. The Commission constituted under the ERC Act, 1998 was deemed to be the first Commission under the aforesaid Ordinance. The DER Bill, 2000 after receiving the assent of the President, was later notified as the Delhi Electricity Reform Act, 2000 (DERA, 2000).

This Act provided for the constitution of an Electricity Regulatory Commission for the NCT of Delhi to be known as —Delhi Electricity Regulatory Commission to exercise the following functions.

- To determine the tariff for electricity, wholesale bulk, or retail, as the case maybe;
- To determine the tariff payable for the use of the transmission facilities;
- To regulate power purchase and procurement process of the licensees and transmission utilities including the price at which the power shall be procured from the generating companies, generating stations or from other sources for transmission, sale, distribution and supply in the National Capital Territory of Delhi;
- To promote competition, efficiency and economy in the activities of the electricity industry to achieve the objects and purposes of this Act;
- To aid and advise the Government in matters concerning electricity generation, transmission, distribution and supply in the National Capital Territory of Delhi;
- To regulate the operation of the power system within the National Capital Territory of Delhi;
- To set standards for the electricity industry in the National Capital Territory of Delhi including standards related to quality, continuity and reliability of service;

- To promote competitiveness and make avenues for participation of private sector in the electricity industry in the National Capital Territory of Delhi and also to ensure a fair deal to the customers;
- To aid and advise the Government in the formulation of its power policy;
- To collect and publish data and forecasts on the demand for, and use of, electricity in the National Capital Territory of Delhi and to require the licensees to collect and publish such data;
- To regulate the assets, properties and interest in properties concerned or related to the electricity industry in the National Capital Territory of Delhi including the conditions governing entry into and exit from the electricity industry in such manner as to safeguard the public interest;
- To issue licenses for transmission, bulk supply, distribution or supply of electricity and determine the conditions to be included in the licenses;
- To regulate the working of the licensees and other persons authorized or permitted to engage in the electricity industry in the National Capital Territory of Delhi and to promote their working in an efficient, economical and equitable manner;
- To require licensees to formulate prospective plans and schemes in coordination with others for the promotion of generation, transmission, distribution, supply and utilization of electricity, quality of service and to devise proper power purchase and procurement process;
- To adjudicate upon the disputes and differences between the licensees and/or transmission utilities and to refer the matter for arbitration;
- To aid and advise the Government on any other matter referred to the Commission by the Government.

Subsequently Government of India notified the Electricity Act, 2003 which repealed the ERC Act, 1998. As per provisions contained in Section 86 of the Electricity Act, 2003, DERC has the responsibility to discharge the following functions: -

- a. To determine the tariff for generation, supply, transmission and wheeling of electricity, wholesale, bulk or retail, as the case may be, within the State: Provided that where open access has been permitted to a category of consumers under section 42, it shall determine only the wheeling charges and surcharge thereon, if any, for the said category of consumers;
- b. To regulate electricity purchase and procurement process of distribution licensees including the price at which electricity shall be procured from the generating companies or licensees or from other sources through agreements for purchase of power for distribution and supply within the State;
- c. To facilitate intra-State transmission and wheeling of electricity;
- d. To issue licenses to persons seeking to act as transmission licensees, distribution licensees and electricity traders with respect to their operations within the State;
- e. To promote co-generation and generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity to any person, and also specify, for purchase of electricity from such sources, a percentage of the total consumption of electricity in the area of a distribution licensee;
- f. To adjudicate upon the disputes between the licensees, and generating companies and to refer any dispute for arbitration;
- g. To levy fee for the purposes of this Act;
- h. To specify State Grid Code consistent with the Grid Code specified under clause (h) of sub-section (1) of section 79;
- i. To specify or enforce standards with respect to quality, continuity and reliability of service by licensees;
- j. To fix the trading margin in the intra-State trading of electricity, if considered, necessary; and
- k. To discharge such other functions as may be assigned to it under this Act.
- l. To advise the State Government on all or any of the following matters, namely:-

- Promotion of competition, efficiency and economy in activities of the electricity industry;
- Promotion of investment in electricity industry;
- Reorganization and restructuring of electricity industry in the State;
- Matters concerning generation, transmission, distribution and trading of electricity or any other matter referred to the State Commission by that Government.

The Act further provides that the Commission would be guided by the National Electricity Policy, National Electricity Plan and Tariff Policy published under section 3 of the EA, 2003. After enactment of EA, 2003, the provisions of DERA, 2000 so far as not inconsistent with the provisions of EA, 2003 would be applicable. DERC is a three member body entrusted with a responsibility of regulating the electricity sector in the state in a rational, transparent and participative manner. Its responsibilities include tariff setting, overseeing service quality, approving Power Purchase Agreements between a DISCOM and a generating company etc. All deliberations before DERC are public. Therefore, any consumer can participate in the decision making process in the electricity sector ranging from setting the service quality standards to tariff revision. For example, if a DISCOM wants a hike in tariff, it has to approach the SERC with a detailed proposal. DERC invites public comments on the proposal, holds a public hearing where any consumer is allowed to present his views and then decides the revised tariff. As per the Electricity Act 2003, for better handling of consumer grievance, every DISCOM is expected to have one or more CGRFs and every state one or more offices of the Ombudsman. CGRF and Ombudsman in Delhi would function according to regulations notified by the DERC.

#### 1.5.4 Critical Assessment of Organization

##### ➤ **Strengths**

- Best SERC in the whole country as per its performance, establishment and implementation of regulations and overall performance
- Excellent work Culture and environment.
- Only SERC to complete two Consumer Satisfaction Surveys (C.S.S. 2007 and C.S.S. 2009) providing nearly 95% accuracy

- Strong balance sheet showing profits coming from license incomes exceeding the total expenditures incurred.
- All up to date annual reports, regulations and tariff orders
- Strong and sound top management.

#### ➤ **Weakness**

- Shortage of trained manpower.
- Most of the employees are on deputation or on contract for a term of 1 to 3 years or at the maximum of 5 years which leads to wastage of time whenever a new employee joins.
- Lack of continuity owing to temporary staff.
- Non-availability of soft database available for previous year's information during the period 2003 till date.
- No well established algorithm or process for testing of technology or monitoring the DISCOMs.

#### ➤ **Opportunities**

- Tremendous Pace of electricity distribution performance improvement prevailing in the state.
- Improvement in Electricity Distribution SoPs successfully at later ends.
- Awareness among the consumers regarding Electricity Distribution SoPs and CGRFs.
- Regulating open access.
- Promotion of DSM measures and Renewable sources in the state.

- Overcoming Technology testing and other bottlenecks to ensure quality, reliable and uninterrupted power to consumers.

➤ **Threats**

- Lack of consumer awareness and participation about DERC and its functioning affecting performance of the commission.
- Lack of consumer satisfaction owing to no well established monitoring of performances of DISCOMs
- Loss of efficient employees after completion of deputation tenure or contract of the employees.

### 1.5.5 Suggestions and Recommendations to DERC

- Increase in the tenure or contract of employees and design provision of extension as per the performance of the employee.
- In order to motivate the employees, the management should look to the monetary as well as the non-monetary performance based incentives and benefits.
- Manpower training in terms of:
  - Reorientation of work culture
  - Development of managerial skills
  - Up gradation of technical skills should be laid more emphasis on.
- To develop monitoring mechanisms and IT interfacing to ensure access to real performance of the DISCOMs.
- Being a statutory body under Delhi Government, DERC does not have any vision or mission as such specified. Hence, DERC should look into the development of the same.



- To start special department to work for consumer awareness and education regarding electricity distribution and power consumption with emphasis on DSM, energy conservation, renewable energy sources and Electricity Distribution SoPs Regulations.
- DERC should ask for the authority to create posts for the required staff or employees, i.e. recruitment of staff to be taken care by DERC.
- To develop an online portal to ensure the availability of all the data to the DERC staff for quick reference.

## CHAPTER-2

### LITERATURE REVIEW, POLICY AND RESEARCH METHODOLOGY

#### 2.1 LITERATURE REVIEW

##### **Bernard Tenenbaum United States :**

A pre-specified and relatively detailed multi-year tariff setting system for distribution entities.— Not a standard commercial contract.— Usually contained in one or more legal instruments—basic law, secondary legislation, concession agreements. Self-contained and self administered tariff setting agreement. A detailed tariff setting agreement administered by an (independent) regulator.

- Limits regulatory discretion at least for a first multi-year period. Contract complements the regulator. Our focus as used in real-world electricity distribution privatizations (Especially Latin America)What is in the regulatory contracts? Do they create more effective regulatory systems.

##### Key Characteristics of Regulatory :

- Contains one or more formulas with pre-specified parameters that determine average tariff level or average Total revenue. Controllable costs are tied to external indices or benchmarks with performance targets. Non-controllable costs are automatically passed through on a regular or episodic basis. Usually established prior to privatization. Accompanied by three types of regulatory actions

Periodic adjustments for inflation or “true-ups”, Extraordinary adjustments, Resetting tariffs at the end of the multi-year period, Disputes between regulator and company are handled by arbitration, special court, or regular court.

##### **ZYRAE RREGULLATORIT PËRENERGJI: ENERGY REGULATORY OFFICE**

One of the key benefits of the multiyear approach to revenue-setting is that it enables stronger incentives to improve performance to be placed on operators. The new pricing rules incorporate a mechanism to drive up overall efficiency of the companies, as well as including

specific factors to reduce losses. The efficiency factor in particular must be balanced against clear targets for the quality of service to avoid licensees reducing the quality of their service. ERO has decided to launch the MYT process in May 2012, some nine months prior to the date when the resulting tariffs should be introduced. The timetable indicated in ERO's letter of 8 June 2012 also provides for three rounds of public consultation, as well as extensive opportunities for clarification meetings with licensees. This will improve the overall transparency of the process, and should provide for revenues to be set on a firm basis.

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#### **THE WORLD BANK ,Washington, D.C.**

The multi-year tariff system should include benchmarks or targets for controllable costs and automatic pass-through for non-controllable costs. The categorization of costs may change over time as industry structure changes. However, the regulator should be allowed to change the tariff treatment of a particular cost only at the end of a multi-year tariff period. The benchmarks for controllable costs can be based on the company's historic performance, an external index or the performance of comparable companies. The benchmarks must be credible and set achievable targets or they will be ineffective as incentives to change behavior. In establishing a benchmark, the tariff formula should distinguish whether price, quantity or both elements are under the control of the company.

Benchmarks or targets should be combined with incentive mechanisms. Such incentive mechanisms should be limited to costs or operating parameters that are measurable, material, controllable and predictable. At any one time, there should be no more than 3 or 4 incentive mechanisms in operation.

The two most important benchmarks in many developing and former socialist countries are the technical and commercial loss-reduction targets and the price paid for discretionary power purchases. The financial viability of a new private distribution entity will depend critically on its ability to reduce commercial losses (theft).

Benchmarks should be used for establishing a maximum pass-through price for power purchases. A well-designed benchmark for power purchases should possess three characteristics. First, it should not be set too low. If the benchmark is too low (**Chile and Brazil**), generators will be unwilling to sign contracts with distributors for new capacity and this will eventually lead to shortages. If feasible, the benchmark should be based on market measures (**Colombia and the Netherlands**) rather than administrative projections of supply costs (**Brazil and California**). Second, any market benchmark should not be based solely.

The multi-year tariff order (MYTO) was developed to improve the **Nigerian electricity** market, remove corruption in the system, and push for the attainment of Vision 2020-20, a mantra pursued vigorously by the government. But, findings by the committee on metering showed that 50 percent of registered customers in the country were not metered and are still not metered – a situation that undermines the total success of the new electricity tariff regime – MYTO. There are prevalent sharp practices which impact on the consumers as arbitrary charges are passed on to clients to meet overhead cost in an environment of inefficiency and dwindling electricity supply.

The report revealed that ‘poor supply of electricity in the country and gross inefficiency on the part of the discos to curtail operational losses...remain the only available option’. With the new methodology released by the regulating commission, three classes of customers are likely to receive estimated bills: those with faulty meters, customers whose meters cannot be read, and existing customers without meters. Primarily, the model calculates the revenue requirement of the power sector and then extracts the price that must be charged accordingly in line with the system capacity. Basically, the MYTO also presents to Nigerians a unified way of determining the total industry revenue requirement. The framework was designed to provide a 15-year projection for tariff in the sector as a result of long gestation period required for investors to recoup their investment. Ultimately, the model will be used to set wholesale and retail prices in NESL.

In arriving at the cost-reflective tariff, key variable were considered including inflation, interest rates, and exchange rate. Others were plant load factor, losses, gas price, and depreciation. Projected generation capacities as well as capital and operating expenditures were also factored. There is also a condition that operators would demonstrate efficiency over time. So much has gone into reviving the power sector by all assessment.

## **KESC's 2002 multi-year tariff determination: lessons for Pakistan and South Asia**

*Ian Alexander, Aftab Raza, and Joseph Daniel Wright*

In preparation for privatization of the KESC (Karachi Electricity Supply Company), a state-owned vertically integrated electricity utility in Pakistan, the company requested that the regulatory body NEPRA (National Electric Power Regulatory Authority) grant a MYT (multi-year tariff). The new regulatory framework was proposed to assure the prospective investor would be allowed a reasonable period to recover the losses of the initial years of privatization before the base tariff is adjusted through a review. Thus permitting a much smaller initial price increase than would have been necessary if an MYT framework were not established.

The MYT - established by NEPRA in September 2002 - is essentially a consumer price index-X price cap on the controllable costs of KESC while uncontrollable costs are considered on a pass through basis. The assurance to earn reasonable returns and incentives to make investment are based on the investors ability to meet efficiency targets, especially those relating to losses, set by NEPRA. The adoption of MYT for KESC is a radical shift from a rate of return regime to a performance-based regulation in the power sector of Pakistan. Similar MYT schemes are expected to be introduced for other distribution companies in the country.

This paper briefly reviews the most salient features of the MYT that has been established. As the first clear MYT in the energy sector in South Asia, there are lessons in this determination that other regulators and regulated companies should consider. Issues for consideration have also been noted.

## 2.2 Guiding Policies for Determining Tariff

The Commissions are guided by the Electricity Act 2003 (the Act) and its own regulations i.e. SERC (Terms and Conditions for Determination of Tariff) Regulations. The Commission is also guided by the National Electricity Policy and the National Tariff Policy in the determination of tariffs. The Commission also proposes to take into account the issues raised in the Draft Report of the Expert Committee on Integrated Energy Policy published by the Planning Commission, Government of India.

### 2.2.1 Electricity Act 2003

Main features of Electricity Act 2003 related to distribution and tariff determination are listed below:-

- Distribution to be licensed by SERCs
- Distribution licensee free to take up generation & Generating co. free to take up distribution license. This would facilitate private sector participation without Government guarantee/ Escrow. (Sections 7, 12)
- Retail tariff to be determined by the Regulatory Commission (Section 62)
- Metering made mandatory. (Section 55)
- Provision for suspension/revocation of licence by Regulatory Commission as it is an essential service which cannot be allowed to collapse. (Sections 19, 24)
- Open access in distribution to be allowed by SERC in phases. (Section 42)
- In addition to the wheeling charges provision for surcharge if open access is allowed before elimination of cross subsidies, to take care of current level of cross subsidy
- Licensee's obligation to supply. (Section 42) 15
- This would give choice to customer.
- Regulatory Commission to determine tariff for supply of electricity by generating co. on long/medium term contracts. (Section 62)
- No tariff fixation by regulatory commission if tariff is determined through competitive bidding or where consumers, on being allowed open access enter into agreement with generators/traders.
- Consumer tariff should progressively reduce cross subsidies and move towards actual cost of supply. (Section 61 (g), (h))

- State Government may provide subsidy in advance through the budget for specified target groups if it requires the tariff to be lower than that determined by the Regulatory Commission. (Section 65)
- Regulatory Commissions may undertake regulation including determination of multi-year tariff principles, which rewards efficiency and is based on commercial principles. (Section 61 (e), (f))
- Regulatory Commission to look at the costs of generation, transmission and distribution separately. (Section 62 (2)).

### 2.2.2 National Electricity Policy

The Government of India has issued the National Electricity Policy in accordance with Section 3 of the Electricity Act 2003 which aims at laying guidelines for accelerated development of the power sector, providing supply of electricity to all areas, and protecting interests of consumers and other stakeholders.

The Commission will take into account the guidelines laid down by this Policy on various issues like recovery of cost of services and targeted subsidies, efficiency improvements, Multi Year Tariff (MYT) framework, etc.

National Electricity policy lays down that the amount of cross subsidy & the additional surcharge to be levied from consumers who are permitted open access should not be so onerous that it eliminates competition which is intended to be fostered in generation & supply of power directly to the consumers through open access.

Open access consumers need to pay generator's charges, transmission usage charges, and wheeling charges plus cross subsidy surcharge to compensate the distribution licensee. Sections 42(distribution licensee & open access) of the Electricity Act, 2003, which permit open access, enjoin upon Commissions to fix the surcharge which shall be utilized to meet the current level of cross-subsidy. The Commissions under study have issued open access regulations & the charges based on voltage wise cost to serve & T&D losses.

Cross subsidy surcharge formula used by SERCs is as follows:

$$S=T-[C (1+L/100) +D]$$

Where S is the surcharge

T is the tariff payable by the relevant category of consumers;

C is the weighted average cost power purchase of top 5% at the margin excluding liquid fuel based generation & renewable power.

D is the wheeling charges.

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

The open access is allowed for HT consumers having contract demand more than 1MVA.

Open access is aimed to bring competition in retail business.

### 2.2.3 National Tariff Policy

The Government of India has issued the National Tariff Policy in accordance with Section 3 of the Electricity Act 2003 which aims at Ensure availability of electricity to consumers at reasonable and competitive rates, Ensure financial viability of the sector and attract investments, Promote transparency, consistency and predictability in regulatory approaches across jurisdictions and minimise perceptions of regulatory risks and Promote competition, efficiency in operations and improvement in quality of supply.

Based on the guiding principles of the National Tariff Policy, Commission proposes to adopt certain measures for tariff determination as stated below:

- Commission will institute a system and undertake independent scrutiny of financial, commercial and technical data submitted by the licensees. The above exercise is envisaged to be completed by March, 2008 for every distribution circle of the licensee.
- Commission would develop a policy for treatment of bad debts based on the proposed methodology of the utility – during the course of the deliberations with the licensee during the process of tariff determination for the ensuing year.
- While allowing the total capital cost of generation projects, the Commission would ensure that these are reasonable and to achieve this objective. The Commission would evolve requisite benchmarks on capital costs.

Commission would like to promote projects under Clean Development Mechanism (CDM). Tariff fixation for all electricity projects (generation, transmission and distribution) that result in lower Green House Gas (GHG) emissions than the relevant base line would take into



account the benefits obtained from the CDM so as to provide adequate incentive to project developers.

#### 2.2.4 Integrated Energy Policy

The broad vision behind the Integrated Energy Policy is to reliably meet the demand for energy services of all sectors including the lifeline energy needs of vulnerable households, in all parts of the country, with safe and convenient energy at the least cost in a technically efficient, economically viable and environmentally sustainable manner.

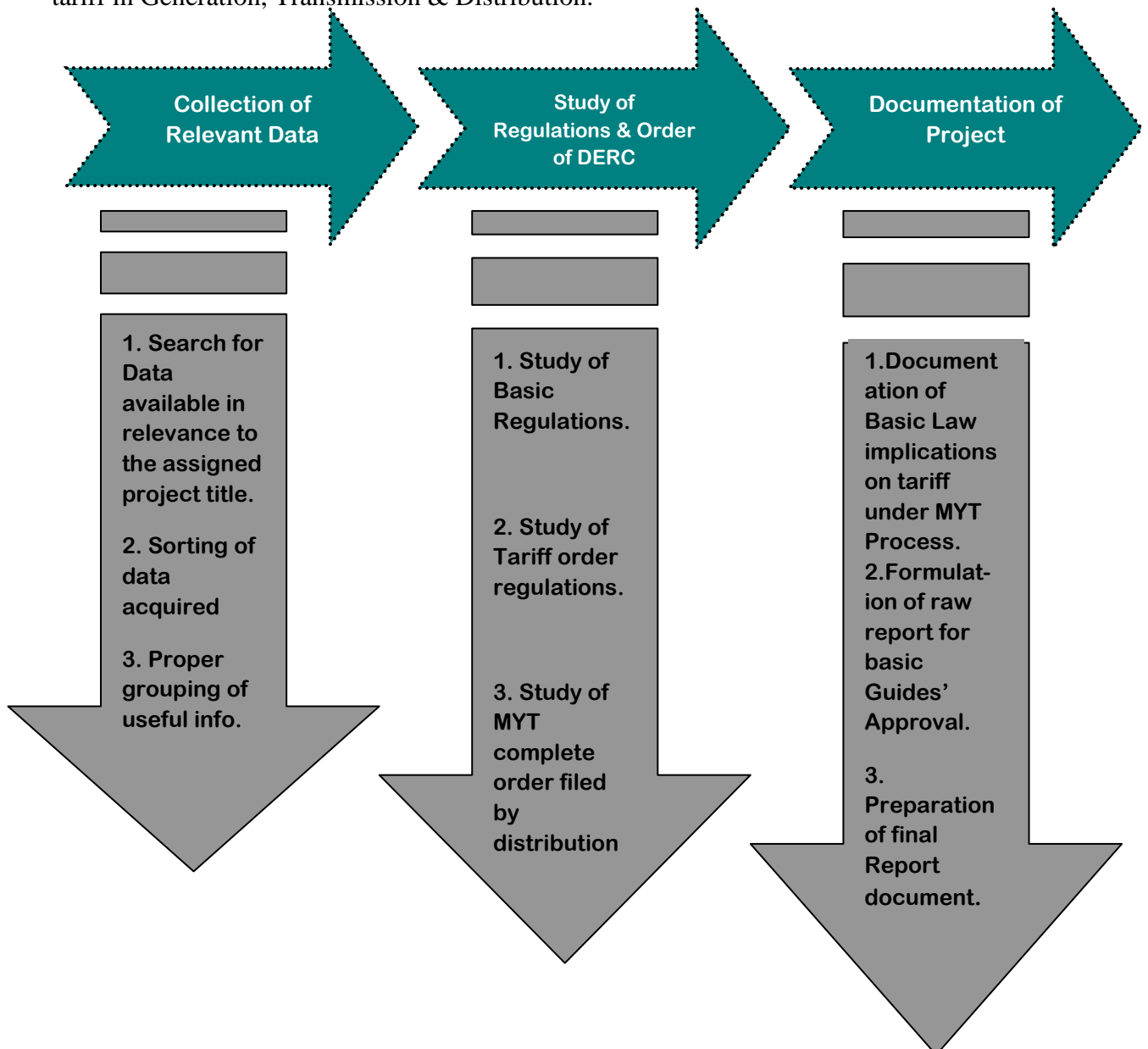
To meet this end the Commission would like the licensee to propose measures to be undertaken for Energy Efficiency/Demand Side Management. The Commission would evaluate the proposals before allowing such expenditures in the tariffs

## 2.3 RESEARCH METHODOLOGY:

This project is based on the basic concept of research methodology. The following concepts are directly or indirectly used while doing this project.

### 2.3.1 Research Design

This study is an exploratory research to understand more about the problems in multi year tariff in Generation, Transmission & Distribution.



*Project:* Analysis of ARR petition under MYT 2012-15 for Generation, Transmission & Distribution Licensees in Delhi

## CHAPTER-3

### 3.1 MULTI YEAR TARIFF (MYT) FRAMEWORK

Section 61 of the act states that the appropriate commission, for determining the terms and conditions for the determination of tariff, shall be guided inter-alia, by multi year tariff principles. Multi year tariff (MYT) framework is to be adopted for any tariffs to be determined from April 1, 2006. The framework should feature a five year control period. The initial control period may however be of 3 years duration for transmission and distribution if deemed necessary by the regulatory commission on account of data uncertainties and practical consideration.

- The distribution part of the electricity sector in Delhi was privatized with the effect from 1 July, 2002 and tariffs in Delhi were governed by the policy directions issued by GoNCTD, vide its notification of 22 November, 2001 and as amended on 31 May, 2002.
- Although the Act was passed in 2003, it ensured that provisions on the enactments specified in the DERA (Delhi Act NO.2 of 2001), not inconsistent with the provisions of the Act remain applicable to Delhi, as it was a part of the Schedule referred to in Section 185 of the Act. As the validity of these notifications ended on 31 March, 2007, the Commission decided to adopt Multi Year Tariff (MYT) principles for determination of tariffs, in line with the provisions in Section 61 of the Act.
- The Commission designed the MYT framework in the State and set long term performance targets for entities engaged in generation, transmission and distribution. Simultaneously, the Commission segregated costs into two categories; first which are expected to be easily controlled by the entity and a second category over which an entity does not have significant control. The Commission would set targets for each year of the Control Period for the items or parameters that are deemed to be “controllable” and which shall include: Operation & Maintenance (O&M) Expenses. AT&C losses, Quality of Supply etc.
- Any financial losses arising out of the under-performance with respect to the targets specified by the Commission for the “controllable” parameters shall be to the Licensee’s account. The Commission in the subsequent sections has discussed the circumstances under which the controllable parameters shall be trued-up during the Control Period.

- The MYT framework is also designed to provide predictability and reduce regulatory risk. This can be achieved by approval of a detailed capital investment plan for each entity, considering the expected network expansion and load growth during the Control Period. The longer time span enables the distribution company to propose its investment plan with details on the possible sources of financing and the corresponding capitalization schedule for each investment.

### 3.1.1 Basic Crux

MYT is a tariff determination system where the tariff setting exercise is done for a number of years in one go. The desired bench marks are set by regulator for adherence by the licensee or generator for a number of years i.e. for the control period.

The Multi Year Tariff has the following advantages:

- It makes the tariff *more predictable* therefore leading to better revenue cycle management.
- It ensures to an extent that the costs are *recovered* in a more mechanistic manner.
- It *reduces* the burden on regulators as well as on the Utilities. They can concentrate on their core activities.
- It provides for *transparent and stable* system of incentives.
- It is expected to lead to greater *private sector interest in investment* in the power sector.

However, the successful implementation of MYT system depends on the availability of reliable information regarding the sector, preparedness and involvement of all participants.

### 3.1.2 Background of MYT Regulations

- The power sector in Delhi was privatized with effect from 1<sup>st</sup> July, 2002 and the electricity tariffs in Delhi were governed by the Policy Directions issued by GoNCTD vide its notification of 22<sup>nd</sup> November, 2001 and as amended on 31<sup>st</sup> May, 2002.
- The important parameters involved in determination of tariffs during this Control Period, (also known as Policy Direction Period) included the following:

- a) Reduction of Aggregate Technical and Commercial(AT&C) Losses by at least 17 percent during the period 2002 to 2007;
  - b) The distribution licensee to earn at least a return of 16 percent on the issued and paid up capital and free reserves invested into fixed or any other assets in the distribution business;
  - c) Electricity tariffs of the three distribution licensees to be identical till the end of 2006-07;
  - d) A particular method for computation and treatment of over achievement and under achievement made by the distribution licensee vis-à-vis the targets of AT&C loss level; and
  - e) The Government to give a transitional loan support of Rs 3450 Cr to the Delhi Transco Limited (DTL) to bridge the gap between its revenue requirement and bulk supply tariff.
- The Electricity Act 2003 requires the State Commission to specify the Terms and Conditions for the determination of tariff. Under Section 61 of the Act, the Delhi Electricity Regulatory Commission will consider the following factors, while determining the tariff:
- a) the principles and methodologies specified by the Central DERC for determination of the tariff applicable to generating companies and transmission licensees;
  - b) the generation, transmission, distribution and supply of electricity are conducted on commercial principles;
  - c) the factors which would encourage competition, efficiency, economical use of the resources, good performance and optimum investments;
  - d) safeguarding of consumers' interest and at the same time , recovery of the cost of electricity in a reasonable manner;
  - e) the principles rewarding efficiency in performance;
  - f) multi year tariff principles;
  - g) that the tariff progressively reflects the cost of supply of electricity and progressively reduce the cross subsidies within the period to be specified by the Appropriate DERC;
- Post policy direction period, the DERC has adopted a comprehensive Multi Year Tariff (MYT) regime covering principles on addressing issues of:
- a) determination of AT&C losses;
  - b) power purchase and consumer sales variation;

- c) approval of operating and capital cost, and
  - d) ensuring quality of supply to consumers.
- In this context, the DERC has framed Regulations specifying the Terms and Conditions for determination of tariff for Generation, Transmission and Distribution of electricity under the Multi Year Tariff ( MYT) framework for the period FY 2007-08 to FY 2010-11. The DERC will be guided by the principles and methodologies specified in Section 61 of the Act, and by regulations issued by CERC for generation and transmission tariff, and the decisions taken in Forum Of Regulators (FOR) in accordance with National Tariff policy.

### 3.1.3 The MYT consultation process

- The Delhi Electricity regulatory Commission prepared draft Regulations based upon the Multi Year Tariff principles for Generation, Transmission and Distribution of electricity, along with a MYT Consultative Paper which highlighted the various issues which were to be debated before the finalization of the said Regulations.
- These draft Regulations and MYT Consultative Paper were posted on the DERC's website and a notice to this effect was published in the leading newspapers seeking comments from public and stakeholders. The said public notice was published in the leading newspapers viz. Times of India (English), Pioneer (English), Hindustan Times (English), Hindustan (Hindi), Hamara Masqsd (Urdu) and Educator (Punjabi) on 11.10.2006.
- In response to the said public notice, the DERC received submissions from various stakeholders. These responses and suggestions have been considered by the DERC while finalizing these Regulations. A public hearing was held in this regard on 27.11.2006 in the DERC.

### 3.1.4 Objectives of Multi Year Tariff Regulations

- Continue and improve upon the existing incentivization framework to reward performance and promote efficiency;
- Provide regulatory certainty to the investors and consumers by promoting transparency, consistency and predictability of regulatory approaches;
- Ensure financial viability of the sector to attract investments and safeguard consumers' interest; and
- Develop equitable risk sharing mechanism between utility and consumers.

### 3.1.5 Control Period

The Control Period specified by DERC in MYT Regulations is 2007-2011(till March 2011).The control period will provide flexibility to the utilities in planning their investments, costs and performance improvement.

### 3.1.6 Controllable and uncontrollable parameters

- Controllable parameters in generation
  - Station heat rate;
  - Availability;
  - Auxiliary energy consumption;
  - Operation & maintenance expenses;
  - Plant load factor
  - Financing cost which includes cost of debt(interest) ,cost of equity(return);and
  - depreciation
- Controllable parameters in transmission
  - Availability of transmission system;
  - Operation & maintenance expenses;
  - Return on capital employed;
  - Depreciation
- Controllable parameters in Distribution
  - AT&C losses, which shall be measured as the difference between the units input into the distribution system and the units realized(units billed and collected) wherein the units realized shall be equal to the product of units billed and collection efficiency;
  - Distribution losses, which shall be measured as the difference between total energy input for sale to all its consumers and sum of the total energy billed in its License area in the same year;
  - Collection efficiency, which shall be measured as ratio of total revenue realized to the total revenue billed for the same year. The revenue realization from arrears relating to the DVB period, electricity duty and late payment surcharge shall be included for computation of collection efficiency;
  - Operation and Maintenance Expenditure which includes employee expenses, repairs and maintenance expenses , administration and general expenses and other miscellaneous expenses viz. audit fees, rents, legal fees etc;

- Return on Capital Employed;
- Depreciation;
- Quality of supply.
- Uncontrollable parameters in generation
  - Supply of coal
  - Gross generation output
- Uncontrollable parameters in transmission
  - Reactive energy charges
  - Unscheduled Interchange(UI) charges
- Uncontrollable parameters in distribution
  - Sales mix;
  - Power purchase cost;
  - Transmission charges paid to DTL, Power Grid if any, which is the central transmission utility;
  - Transmission charges paid to SLDC, NRLDC; and
  - Wheeling charges (in case distribution network of other distribution licensees is used for procurement of power).

### 3.1.7 Filing of Business Plan and ARR Petition

The generating companies, transmission and distribution licensees (utilities) will submit their Business Plans and Aggregate Revenue Requirement (ARR) petitions for the Control Period to the DERC, for determination of tariffs during the Control Period.

- CAPITAL INVESTMENTS
  - a) As per MYT regulations, the DERC will undertake comprehensive review of the capital investment plans which has to be filled along with Business Plan of the licensee and generating companies and approve the amount of capital investment to be undertaken during the Control Period.
  - b) The actual capital expenditure incurred annually will be monitored but no adjustments would be made for the observed differences on an annual basis. Adjustment for the actual capital investment vis-à-vis approved capital investment will be done at the end of the Control Period.
- OPERATION & MAINTANANCE



- a) The operation & maintenance (O&M) expenses comprise of cost incurred on a day-to-day taxes, legal charges, and audit and other charges. The DERC has proposed to conduct a detailed analysis of each element of O&M costs and approve a consolidated basis in order to run the business efficiently. These costs include:
- b) Employee expenses, which include: wages and salaries” and “contribution to employee funds”;
- c) Repair and Maintenance expenses; and
- d) Administrative & General expenses, including expenses on rents, rates and value for O&M expenses for the first year of the Control Period to be increased in subsequent years of the Control Period on a pre determined principle as specified in the regulations. The O&M expenses have been treated as controllable parameter and any loss or gain on account of the same will not be adjusted in the ARR of the licensee.

➤ **RETURN ON CAPITAL EMPLOYED**

The principle for providing return to the transmission and distribution licensee has been based on the principle of Return on Capital Employed (RoCE) on a regulated rate base, with the weighted average cost of capital to be determined independently for each year of the control period.

In case of generating companies, the principle for providing return has been based on the Return on Equity.

➤ **DEPRECIATION**

The DERC has adopted the rates of depreciation stipulated by the CERC in Generation Tariff Regulations, 2004, and has also provided for Advance against depreciation (AAD) should the need arise.

### 3.1.8 Features of Generation Tariff in MYT Regulations

#### Norms of Operation

- a) The DERC has specified norms of operation for the generating stations for determination of tariffs for each year of the Control Period. The norms of operation for existing generating stations may be changed by DERC considering the expected efficiency improvements based on the Business Plan of the generating companies

- b) Norms of operation for new generating stations have been taken as specified in the tariff regulations issued by CERC.
- c) The DERC has also specified the formula for Fuel Price Adjustment (FPA) to be used for calculation of any variation in the fuel price from the values approved by the DERC in its MYT order. The variation in fuel prices will be adjusted on a monthly basis. The generating companies have to separately indicate rate of energy charges at base price of primary and secondary fuel and the fuel price adjustment.

### 3.1.9 Features of Transmission Tariff in MYT Regulations

The DERC has provided an incentive to the Transmission Licensee for achieving a higher level of annual transmission system availability vis-à-vis the target level specified by the DERC. This is in line with the practice followed by CERC for determination of transmission tariff.

### 3.1.10 Features of Distribution Tariff in MYT Regulations

#### ➤ Segregation of wheeling and retail supply business

The DERC has approved a framework recognizing the necessity to consider the “retail supply business” and the “network business” of the distribution licensees separately. The DERC will determine separate components of the distribution tariff as;

- a) Wheeling tariff, to recover the cost of “network business”- will reflect Capital Servicing Costs(depreciation, interest on loans, interest on working capital and return on equity), O&M costs( employee costs, R&M costs, A&G costs), and related network business costs(true-ups, incentives, penalties).
- b) Retail Supply Tariff, to recover the power purchase costs, transmission costs, any other costs clearly attributable to the supply business, distribution losses, and cross subsidies. This segregation will be useful to determine non-discriminatory tariff for consumers permitted open access under section 42 of the Act.

### 3.1.11 Sales Projections

- a) The regulations envisage that the sales quantum and consumer mix are dependent to a large extent on factors beyond the control of licensee.

- b) In view of recognizing the need for providing universal service obligations, energy sales have been considered as uncontrollable for the first Control Period.

### 3.1.12 Contingency Reserve

The DERC has also created a Contingency Reserve (CR) for each licensee at the start of the Control Period for minimizing the impact of uncontrollable factors on retail tariffs and ensure tariff stability across the Control Period.

### 3.1.13 Annual Truing Up Mechanism

The DERC will review variations in approved values of uncontrollable parameters through an annual truing up mechanism while there will be no adjustment for variations in controllable items. Annual truing-up will be carried out for variations due to sales and power purchase costs.

### 3.1.14 Profit Sharing

The regulations also contain a profit sharing mechanism to provide benefits of better performance of the licensee to the consumers (via contingency reserve) and to provide incentives to licensee for achieving better efficiency than the targets set by the DERC.

## 3.2 Analysis of IPGCL-Generation Petition

### 3.2.1 About IPGCL

Indraprastha Power Generation Company Limited (GENCO), to which the generation assets of existing Indraprastha Thermal Power Station, Rajghat Thermal Power Station and Gas Turbine Power station have been transferred.

### 3.2.2 Determination of ARR for FY 2012-13 & FY 2014-15

#### ➤ Station Heat Rate

Particulars	FY 2012-13		FY 2013-14		FY 2014-15	
	Proposed	Approved	Proposed	Approved	Proposed	Approved
Station Heat Rate	3248	3200	3248	3200	3248	3200

#### **Basis of the petition:**

The Petitioner has requested to allow at least the station heat rate at 3248 kCal/kWh for the RPH station for the MYT period

#### **Analysis:**

The norms of operation provided in the MYT Regulations, 2011 have been determined considering the current state of each plant, and the expected performance improvements during the Control Period and these norms are comparatively lenient to norms specified by the CERC. So I have considered the norms of operations as per the MYT Regulations 2011, for the determination of tariff for each plant during the Control Period.

#### ➤ Plant Availability

Particulars	FY 2012-13		FY 2013-14		FY 2014-15	
	Proposed	Approved	Proposed	Approved	Proposed	Approved
Plant Availability	70%	75%	70%	75%	70%	75%

#### **Basis of the petition:**

The Petitioner has considered the availability of 70% for projection of Gross Generation and other associated parameters for the next control period.

**Analysis:**

The actual availability of Rajghat Power Station during the MYT Control Period FY 2007-12 has been 73.5% in FY 2007-08, 78.89% in FY 2008-09, 54.64% in FY 2009-10, 75.98% in FY 2010-11 & 68.37% in FY 2011-12. Thus, it is observed that except FY 2009-10 and FY 2011-12, the availability has been higher than the target availability of 70%, as stipulated in the MYT Regulations for the period FY 2007-08 to FY 2011-12.

In view of the past performance of the RPH, I have fixed target availability at 75% for recovery of full fixed cost.

➤ **Auxiliary Power Consumption (APC)**

Particulars	FY 2012-13		FY 2013-14		FY 2014-15	
	Proposed	Approved	Proposed	Approved	Proposed	Approved
Auxiliary Power Consumption	12.50%	11.28%	12.50%	11.28%	12.50%	11.28%

**Basis of the petition:**

The Petitioner has requested the Commission to approve the targeted auxiliary power consumption for FY 2012-13 to FY 2014-15 at 12.50%.

**Analysis:**

Regarding Rajghat Power House, the Commission has allowed normative auxiliary power consumption of 11.28% since 2003. So I retain the normative auxiliary consumption for Rajghat Power House as 11.28% for FY 2012-13 to FY 2014-15.

➤ **Gross and Net Generation**

Particulars	FY 2012-13		FY 2013-14		FY 2014-15	
	Proposed	Approved	Proposed	Approved	Proposed	Approved
Gross Generation (MU)	828	887	828	887	828	887
Net Generation (MU)	724	787	724	787	724	787

**Basis of the petition:**

The Petitioner has projected gross generation during the Control Period to be 828 MU. Net generation, considering the proposed auxiliary consumption of 12.50% has been proposed to be 724 MU.

**Analysis:**

I have calculated the gross and net generation for determination of fuel cost by considering normative PLF of 75%, the approved auxiliary consumption of 11.28%.

➤ **O&M Expenses**

Particulars	FY 2012-13		FY 2013-14		FY 2014-15	
	Proposed	Approved	Proposed	Approved	Proposed	Approved
R&M Expenses	25.23	21.33	23.52	22.02	21.31	22.73
Employee Expenses	54.42	54.89	59.86	59.3	65.84	64.08
A&G Expenses	8.41	8.16	9.08	8.8	9.91	9.5
O&M Expenses	88.06	84.37	92.46	90.12	97.06	96.31

**Basis of the petition:**

In accordance with the MYT Regulations 2011, the Normative Operation and Maintenance (O&M) expenses allowable to a generation company shall comprise the following:

- (a) Salaries, wages, pension contribution and other employee costs;
- (b) Administrative and General costs;
- (c) Repairs and maintenance; and
- (d) Other miscellaneous expenses.

**Analysis:**

I have used the methodology as specified in the MYT Regulations 2011 for calculation of O&M expenses for the Control Period (FY 2012-13 to FY 2014-15).

➤ **Depreciation**

Particulars	FY 2012-13		FY 2013-14		FY 2014-15	
	Proposed	Approved	Proposed	Approved	Proposed	Approved
Depreciation	23.64	12.93	23.64	12.93	23.64	12.93

**Basis of the petition:**

The Petitioner has charged depreciation on the basis of straight-line method, on the fixed assets in use at the beginning of the year. The depreciation is based on the original cost, estimated life and residual life. Depreciation amount during the Control Period from FY 2012-13 to FY 2014-15 has been calculated as per the depreciation rates specified under MYT Regulations 2011 issued by the Commission.

**Analysis:**

I have calculated the depreciation according to the methodology and depreciation rates notified in the MYT Regulations 2011 and the approved fixed assets for each year of the Control Period.

➤ **Return on Equity**

Particulars	FY 2012-13		FY 2013-14		FY 2014-15	
	Proposed	Approved	Proposed	Approved	Proposed	Approved
Return on Equity	8.49	9.72	8.5	9.72	8.51	9.72

**Basis of the petition:**

For the Control Period from FY 2012-13 to FY 2014-15, the Petitioner has considered RoE @ 14% in line with the MYT Regulations 2011 of the Commission.

**Analysis:**

I have considered RoE @ 14% for the Control Period from FY 2012-13 to FY 2014-15, in line with the MYT Regulations 2011.

**➤ Interest on Loan**

Particulars	FY 2012-13		FY 2013-14		FY 2014-15	
	Proposed	Approved	Proposed	Approved	Proposed	Approved
Interest on Loan	6.13	8.12	4.64	6.57	3.13	5.02

**Basis of the petition:**

The Petitioner has made certain capital additions during the MYT Control Period. The same has been funded through Reserve and surplus. As per MYT Regulations, 2011 70% of the capital additions has been considered to be funded through Loans. Accordingly, interest on this normative loan has been taken @ 11.50% per annum, as per the MYT Regulations, 2011.

**Analysis:**

I have calculated the interest on loan for each year of the Control Period in accordance with the following methodology specified in the MYT Regulations 2011.

**➤ Interest on Working Capital**

Particulars	FY 2012-13		FY 2013-14		FY 2014-15	
	Proposed	Approved	Proposed	Approved	Proposed	Approved
Interest on Working Capital	15.88	17.27	16.12	17.6	16.39	17.95

**Basis of the petition:**

The Petitioner has calculated the Interest on Working Capital for the second MYT period as per the following norms specified in the MYT Regulations 2011.



The Petitioner has submitted that the fuel cost has increased steeply in FY 2010-11; this increase in prices of fuel had substantial impact on certain components considered in the computation of working capital and resultantly the interest on working capital has considerably increased in comparison to the interest allowed by the Commission.

**Analysis:**

I have calculated the working capital requirement and interest on working capital of the Petitioner considering the approved values for each year of the Control Period FY 2012-13 to FY 2014-15.

➤ **Tax Expenses**

Particulars	FY 2012-13		FY 2013-14		FY 2014-15	
	Proposed	Approved	Proposed	Approved	Proposed	Approved
Income Tax	2.76	2.76	2.76	2.76	2.76	2.76

**Basis of the petition:**

The Petitioner has submitted a liability towards income tax which it shall incur during next Control Period.

**Analysis:**

I have projected the value of income tax (limited to the tax on return on equity) considering the submission made by the Petitioner. The same shall be trued up at the time of truing up of the respective year of the Control Period.

**3.2.3 Petitioner values for calculating variable cost**

Particulars	FY 2012-13	FY 2013-14	FY 2014-15
Station Heat Rate	3248	3248	3248
Plant Availability	70%	70%	70%
Gross Generation (MU)	828	828	828
Auxiliary Power Consumption	12.50%	12.50%	12.50%
Net Generation (MU)	724	724	

### 3.2.4 Approved values for calculating Variable Cost

Particulars	FY 2012-13	FY 2013-14	FY 2014-15
Station Heat Rate	3200	3200	3200
Plant Availability	75%	75%	75%
Gross Generation (MU)	887	887	887
Auxiliary Power Consumption	11.28%	11.28%	11.28%
Net Generation (MU)	787	787	787

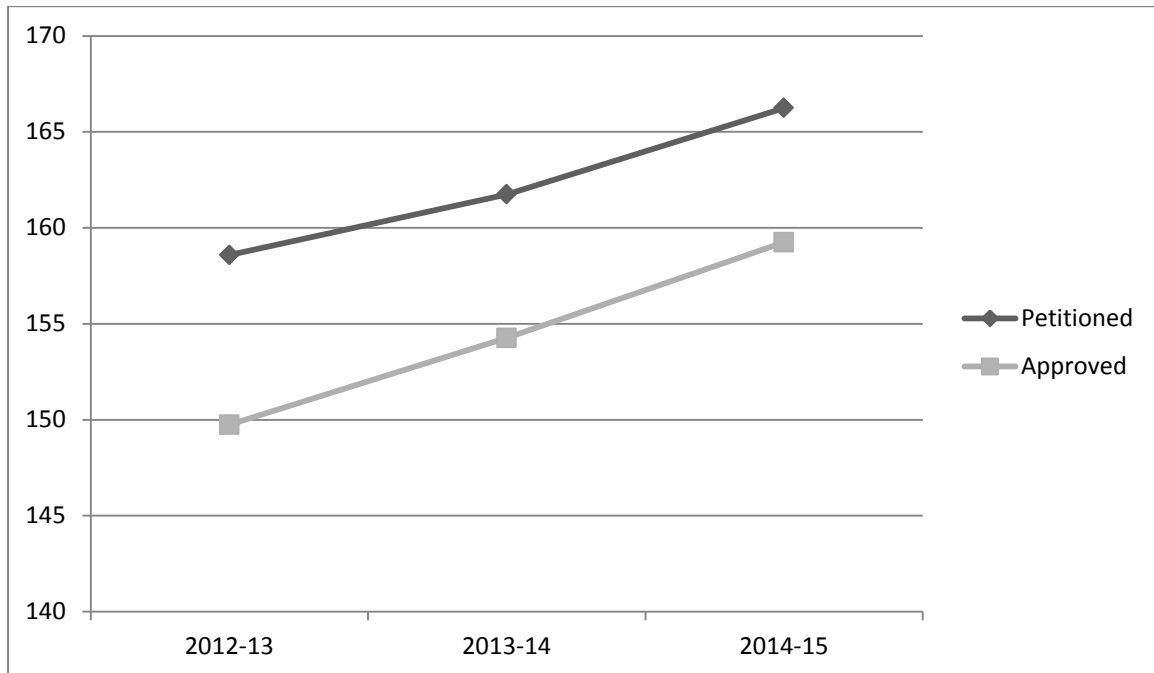
### 3.2.5 Total Annual Fixed Cost for RPH submitted by the Petitioner (Rs Cr)

Particulars	FY 2012-13	FY 2013-14	FY 2014-15
O&M Expenses	88.06	92.46	97.06
Depreciation	23.64	23.64	23.64
Interest Charges	6.13	4.64	3.13
Return on Equity	8.49	8.50	8.51
Interest on Working Capital	15.88	16.12	16.39
Income Tax	2.76	2.76	2.76
Secondary Fuel Oil	13.62	13.62	13.62
Special Allowance for R&M Expenses	-	-	1.12
<b>Annual Fixed Charges</b>	<b>158.58</b>	<b>161.74</b>	<b>166.24</b>

### 3.2.6 Annual Fixed Charges approved for RPH (Rs Cr)

Particulars	FY 2012-13	FY 2013-14	FY 2014-15
O&M Expenses	84.37	90.12	96.31
Depreciation	12.93	12.93	12.93
Interest Charges	8.12	6.57	5.02
Return on Equity	9.72	9.72	9.72
Interest on Working Capital	17.27	17.60	17.95
Income Tax	2.76	2.76	2.76
Cost of Secondary Fuel Oil	14.57	14.57	14.57
<b>Annual Fixed Charges</b>	<b>149.74</b>	<b>154.26</b>	<b>159.25</b>

### 3.2.7 Comparison of ARR between Petitioned & Approved Values



### 3.3 Analysis of DTL-Transmission Petition

#### 3.3.1 About DTL

Delhi Transmission Limited (TRANSCO), the Transmission Company to which the existing transmission assets of DVB have been transferred

#### 3.3.2 Determination of ARR for FY 2012-13 & FY 2014-15

##### ➤ O&M Expenses

Particulars	FY 2012-13		FY 2013-14		FY 2014-15	
	Proposed	Approved	Proposed	Approved	Proposed	Approved
O&M Expenses	227.81	180.72	261.68	195.66	307.46	211.17

#### **Basis of the petition**

As per the MYT Regulations 2011, the Operation and Maintenance (O&M) expenses shall be allowed to a transmission licensee on normative basis and shall include:

- (a) Salaries, wages, pension contribution and other employee costs;
- (b) Administrative and General expenses which shall also include expense related to raising of loans;
- (c) Repairs and Maintenance;
- (d) Expenses related to auxiliary energy consumption in the sub-station for the purpose of air-conditioning, lighting, technical consumption, etc.; and
- (e) Other miscellaneous expenses, statutory levies and taxes (except corporate income tax).

The Petitioner has submitted that DTL is in the process of using Latest EHV Technology of Gas Insulated Switchgear (GIS), Substation Automation etc. for optimization of Power Quality etc. which needs imparting specialized, training to manpower to these latest technologies. Accordingly the Petitioner has proposed for additional Training expenditure for FY 2012-13 to 2014-15.

#### **Analysis**

In the Tariff Order for FY 2011-12 dated August 26, 2011, the Commission had approved Rs. 2.45 Cr under A&G expenses as additional expenses of specialised training for Gas Insulated Switchgears (GIS) for FY 2009-10. The Petitioner has submitted the expenses for GIS training in FY 2010-11 at Rs 0.31 Cr.

I believe that the expenditure on training for GIS is a specialized activity and is not recurring in nature, and has considered these expenses separately. Hence no expenses on GIS training have been considered for calculation of the base A&G expenses.

➤ **Depreciation**

Particulars	FY 2012-13		FY 2013-14		FY 2014-15	
	Proposed	Approved	Proposed	Approved	Proposed	Approved
Depreciation	165.26	141.15	214.56	162.24	250.78	183.32

**Basis of the petition**

The Petitioner has submitted that the depreciation for the Control Period i.e. FY 2012-13 to FY 2014-15 has been calculated by considering the rates of depreciation as specified in the MYT Regulations 2011, the existing GFA and assets proposed to be capitalised during the period.

**Analysis**

I have calculated the depreciation for FY 2012-13 to FY 2014-15 by considering the revised closing balance of GFA for FY 2011-12 as the opening balance of GFA for Control Period (FY 2012-13 to FY 2014-15).

➤ **Return on capital employed (ROCE)**

Particulars	FY 2012-13		FY 2013-14		FY 2014-15	
	Proposed	Approved	Proposed	Approved	Proposed	Approved
Return on Capital Employed	335.08	275.52	430.97	300.13	491.88	325.92

**Basis of the petition:**

The Petitioner has submitted that the Return on Capital Employed (ROCE) has been calculated as per MYT Regulations 2011 by Considering Regulated Rate Base (RRB) and Weighted Average Cost of Capital (WACC). i.e.

$$\text{ROCE} = \text{RRB} * \text{WACC}$$

**Analysis:**

I have calculated the RoCE for the Control Period (FY 2012-13 to FY 2014-15) based on the WACC derived and the approved regulated rate base.

**➤ Income Tax**

Particulars	FY 2012-13		FY 2013-14		FY 2014-15	
	Proposed	Approved	Proposed	Approved	Proposed	Approved
Income Tax Provision	35.92	20.51	44.97	23.87	47.41	27.23

**Basis of the petition:**

The Petitioner has submitted that as per MYT Regulations 2011 there is a provision of Income tax on return on equity. In case the tax liability falls under normal provisions, DTL should be entitled to recover the same in subsequent Tariff Orders.

**Analysis:**

I have projected the income tax for the Petitioner for the Control Period considering the return on average equity for each year of the Control Period (FY 2012-13 to FY 2014-15).

**➤ Non-Tariff Income**

Particulars	FY 2012-13		FY 2013-14		FY 2014-15	
	Proposed	Approved	Proposed	Approved	Proposed	Approved
Non-Tariff Income	35.92	20.51	44.97	23.87	47.41	27.23

**Basis of the petition:**

The Petitioner has projected the non-tariff income from various sources for Control Period. Income from non-tariff sources has been projected at Rs 2.50 Cr for FY 2012-13, FY 2013-14 and FY 2014-15 respectively.

**Analysis:**

For the Control Period, I have analysed the submissions made by the Petitioner and have projected the NTI as submitted by the Petitioner.

➤ **Additional Power Purchase Liability for Policy Direction Period  
(2002-07)**

**Basis of the petition:**

The Petitioner submitted in its petition that it has received revised bills for an amount of Rs. 3.78 Cr (excluding surcharge). In its subsequent submissions the Petitioner submitted that it has received additional power purchase bills of Rs 5.85 Cr during FY 2011-12 after submission of the tariff petition. The total power purchase liability for the prior period has thus been submitted at Rs 9.62 Cr.

**Analysis:**

For any power purchase bill received by the Petitioner during the year, I consider carrying cost from the date of the payment in case bill has been paid on time or due date in case there was delayed payment / no payment till March 2012.

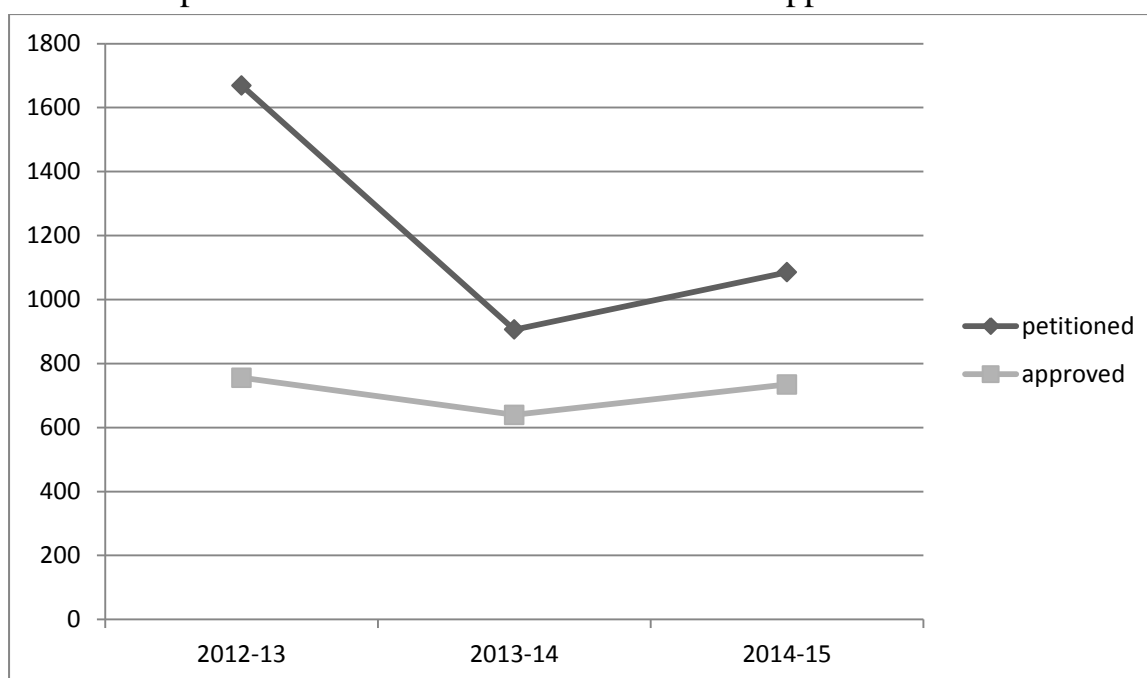
**3.3.3 ARR submitted by the Petitioner (Rs Cr)**

Particulars	FY 2012-13	FY 2013-14	FY 2014-15
O&M Expenses	227.81	261.68	307.46
Depreciation	165.26	214.56	250.78
Rebate on Sale/Wheeling of Power	2.50	2.50	2.50
Return on Capital Employed	335.08	430.97	491.88
Less: A&G and Employee Expenses Capitalized	33.46	45.97	12.39
Less: Non-Tariff Income	2.50	2.50	2.50
Income Tax Provision	35.92	44.97	47.41
<b>Revenue Requirement</b>	<b>730.61</b>	<b>906.21</b>	<b>1085.14</b>
Additional Power Purchase Liability for Prior Period (2002-07)	3.78		
True up of Control Period (FY 2007-08 to FY 2011-12) (including DVB Arrears)	934.60		
<b>Annual Revenue Requirement</b>	<b>1668.99</b>	<b>906.21</b>	<b>1085.14</b>

### 3.3.4 Approved ARR FY 2012-13 to FY 2014-15 (Rs Cr)

Particulars	FY 2012-13	FY 2013-14	FY 2014-15
O&M Expenses	180.72	195.66	211.17
Depreciation	141.15	162.24	183.32
Rebate on Sale/Wheeling of Power	0.00	0.00	0.00
Income Tax	20.51	23.87	27.23
<b>Total Expenditure</b>	<b>342.38</b>	<b>381.77</b>	<b>421.72</b>
Return on Capital Employed	275.52	300.13	325.92
<b>Less: Expenses Capitalized</b>	<b>29.72</b>	<b>40.01</b>	<b>10.38</b>
<b>Less: Non-Tariff Income</b>	<b>2.50</b>	<b>2.50</b>	<b>2.50</b>
<b>Aggregate Revenue Requirement(for current year)</b>	<b>585.68</b>	<b>639.40</b>	<b>734.75</b>
Additional Power Purchase Liability for Prior Period (2002-07)	9.72		
Payment of Pension Trust	160.00		
<b>Annual Revenue Requirement(including prior period liabilities)</b>	<b>755.40</b>	<b>639.40</b>	<b>734.75</b>

### 3.3.5 Comparison of ARR between Petitioned & Approved Values





## CHAPTER-4

### Analysis of Distribution Petition

#### 4.1 Analysis of BRPL-Distribution Petition

##### 4.1.1 About BRPL

South-west Delhi Electricity Distribution Company Limited (DISCOM 2); the Distribution Company now renamed as BSES Rajdhani Power Limited for Distribution in South and West Delhi

##### 4.1.2 Determination of ARR for FY 2012-13 & FY 2014-15

###### ➤ Power Purchase Cost

Power purchase cost is the single largest component in the ARR of a distribution company. Hence, it is imperative that the element of cost is estimated with utmost care based on the most efficient way of procuring power from the generating stations through long term/short term arrangements or through bilateral purchases agreements.

Particulars	FY 2012-13		FY 2013-14		FY 2014-15	
	Proposed	Approved	Proposed	Approved	Proposed	Approved
Power Purchase Cost	4,678.57	4339.3	5,129.51	4987.49	5,547.69	5493.51

###### **Basis of the petition:**

The petitioner has stated that the power purchase costs are un-controllable & unpredictable. So they have requested for variation and escalation of power purchase cost to be allowed through PPPAC formula.

###### **Analysis:**

The fixed cost of power purchase cost was determined through CERC latest tariff order and variable cost through petition submitted by other Discoms like BYPL & TPDDL. So it leads to variation.

###### ➤ Inter & Intra State Transmission Charges

Particulars	FY 2012-13		FY 2013-14		FY 2014-15	
	Proposed	Approved	Proposed	Approved	Proposed	Approved
Inter-State Transmission charges	314.45	252.59	346.51	265.22	382.79	278.48
Inter-State Transmission charges	475.04	296.12	475.04	250.64	475.04	288.02

**Basis of the petition:**

The petitioner has stated that

1. Intra-state Transmission charges are calculated on the basis of transmission loss of 1.25% reported by DTL.
2. Inter-state Transmission charges are calculated on the basis of CERC latest order.

**Analysis:**

1. On the basis of actual losses occurred for FY 2011-12 Intra-state Transmission losses of 1.2% have been approved.
2. Inter-state Transmission charges FY 2012-15 is calculated by considering an inflation factor of 5% per annum for FY 2011-12

➤ **O&M Expenses**

Particulars	FY 2012-13		FY 2013-14		FY 2014-15	
	Proposed	Approved	Proposed	Approved	Proposed	Approved
O&M Expenses	645.48	465.39	751.63	500.12	871.35	531.83

**Basis of the petition:**

BRPL has submitted the O&M Expenses which consist of Employee Expenses, R&M Expenses and A&G Expenses for control period FY 2012-15 separately.

**Analysis:**

Since O&M Expenses of BRPL is much higher and crossed its benchmark while comparing to other distribution utilities, the values are approved by taking the past records of O&M Expenses and MYT Tariff regulations.

➤ **Depreciation**

Particulars	FY 2012-13		FY 2013-14		FY 2014-15	
	Proposed	Approved	Proposed	Approved	Proposed	Approved
Depreciation	146.96	160.28	175.48	173.6	205.12	238.93

**Basis of the petition:**

As per petition, the calculation of depreciation charges for FY 2012-15 is done by asset wise method as specified in MYT regulation 2011.

**Analysis:**

Since the details for asset wise method are not available fully, the calculation of depreciation charges is computed through year-wise asset blocks.

➤ **Return on capital employed (ROCE)**

Particulars	FY 2012-13		FY 2013-14		FY 2014-15	
	Proposed	Approved	Proposed	Approved	Proposed	Approved
Return on Capital Employed	499.84	390.99	594.39	426.92	697.65	447.22

**Basis of the petition:**

The petitioner has estimated ROCE by taking Regulated Rate Base (RRB) for each year of the control period FY 2012-15.

**Analysis:**

As per Regulation, the return for the year shall be determined by multiplying the weighted average cost of capital employed to the average of “Net Fixed Asset” for each year. Thus, the return allowed each year is determined based on the values of assets capitalised.

➤ **Income Tax**

Particulars	FY 2012-13		FY 2013-14		FY 2014-15	
	Proposed	Approved	Proposed	Approved	Proposed	Approved
Income Tax	90.7	31.01	107.25	33.2	126.02	34.01

**Basis of the petition:**

The petitioner has submitted the details of Taxes on income.

**Analysis:**

The approved income tax liability for FY 2012-15 is given above

➤ **Non-Tariff Income**

Particulars	FY 2012-13		FY 2013-14		FY 2014-15	
	Proposed	Approved	Proposed	Approved	Proposed	Approved
Non-Tariff Income	54.63	125.03	54.63	125.03	54.63	125.03

**Basis of the petition:**

The Petitioner has considered Non Tariff Income (NTI) FY 2012-13 to FY 2014-15 at the same level as approved for FY 2011-12

**Analysis:**

The approved Non-Tariff income for FY 2012-15 is based on same level of FY 2010-2011.

**4.1.3 Proposed ARR for FY 2012-13 to FY 2014-15 (Rs. Cr)**

Expenditure	FY 2012-13	FY 2013-14	FY 2014-15
Power Purchase Cost	4,678.57	5,129.51	5,547.69
Inter-State Transmission charges	314.45	346.51	382.79
Intra-state Transmission (Delhi Transco) charges	475.04	475.04	475.04
O&M Expenses	645.48	751.63	871.35
Depreciation including Advance Against Depreciation	146.96	175.48	205.12
RoCE including Supply margin	499.84	594.39	697.65
Income Tax	90.70	107.25	126.02
Less: Non Tariff Income	54.63	54.63	54.63
<b>Aggregate Revenue Requirement</b>	<b>6,796.41</b>	<b>7,525.18</b>	<b>8,251.02</b>

4.1.4 Proposed ARR for Wheeling Business for FY 2012-13 to FY 2014-15 (Rs. Cr)

Particulars	FY 2012-13	FY 2013-14	FY 2014-15
O&M Expenses	445.08	517.44	597.75
Depreciation	97.20	16.06	135.66
Return on Capital Employed	484.53	576.18	676.28
Less: Non Tariff Income	18.05	18.05	18.05
<b>Annual Revenue Requirement</b>	<b>1,008.76</b>	<b>1,191.63</b>	<b>1,391.64</b>

4.1.5 Proposed ARR for Retail Supply Business for FY 2012-13 to FY 2014-15 (Rs. Cr)

Particulars	FY 2012-13	FY 2013-14	FY 2014-15
Cost of power purchase, including T&D losses	4,678.57	5,129.51	5,547.69
Inter-State Transmission charges	314.45	346.51	382.79
Intra-state Transmission charges	475.04	475.04	475.04
SLDC fees and charges			
O&M Expenses	200.40	234.19	273.60
Depreciation	49.76	59.42	69.45
Return on Capital Employed	15.31	18.21	21.37
Income Tax	90.70	107.25	126.02
Less: Non-Tariff Income	36.58	36.58	36.58
<b>Annual Revenue Requirement</b>	<b>5,787.65</b>	<b>6,333.55</b>	<b>6,859.38</b>

4.1.6 Approved ARR for FY 2012-13 to FY 2014-15 (Rs. Cr)

Particulars	FY 2012-13	FY 2013-14	FY 2014-15
Cost of power purchase, including T&D losses	4339.30	4987.49	5493.51
Inter-State Transmission charges	252.59	265.22	278.48
Intra-state Transmission charges	296.12	250.64	288.02
SLDC fees and charges	3.33	3.49	3.67
O&M Expenses	465.39	500.12	531.83
Depreciation	160.28	173.60	238.93
Return on Capital Employed	390.99	426.92	447.22
Income Tax	31.01	33.20	34.01
Less: Non-Tariff Income	125.03	125.03	125.03
<b>Annual Revenue Requirement</b>	<b>5813.98</b>	<b>6515.65</b>	<b>7190.65</b>

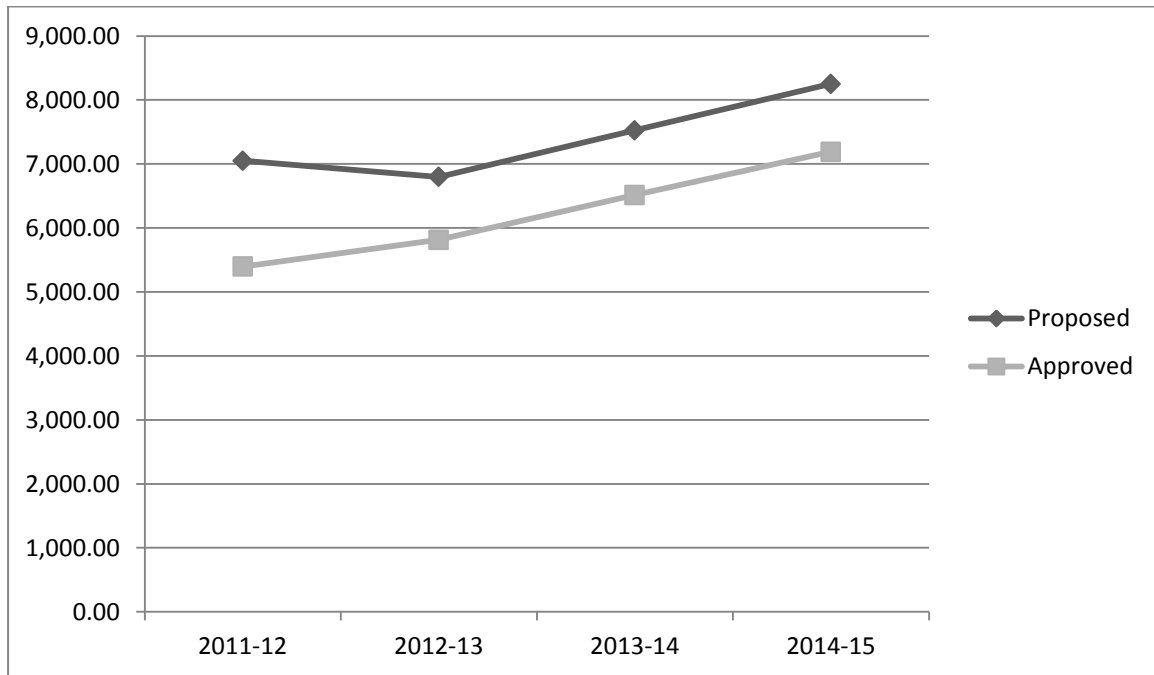
4.1.7 Approved ARR for Wheeling Business for FY 2012-13 to FY 2014-15 (Rs. Cr)

Particulars	FY 2012-13	FY 2013-14	FY 2014-15
O&M Expenses	280.67	302.66	321.06
Depreciation	126.44	136.39	191.32
Return on Capital Employed	288.02	312.85	328.18
Income Tax Provision	22.85	24.33	24.96
Less: Non Tariff Income	18.99	18.99	18.99
<b>Annual Revenue Requirement</b>	<b>698.99</b>	<b>757.25</b>	<b>846.53</b>

4.1.8 Approved ARR for Retail Supply Business for FY 2012-13 to FY 2014-15 (Rs. Cr)

Particulars	FY 2012-13	FY 2013-14	FY 2014-15
Cost of power purchase	4339.30	4987.49	5493.51
Inter-State Transmission charges	252.59	265.22	278.48
Intra-state Transmission charges	296.12	250.64	288.02
SLDC fees and charges	3.33	3.49	3.67
O&M Expenses	184.72	197.46	210.77
Depreciation (including AAD)	33.85	37.21	47.61
Return on Capital Employed	102.96	114.06	119.04
Income Tax Provision	8.17	8.87	9.05
Less: Non-Tariff Income	106.04	106.04	106.04
<b>Annual Revenue Requirement</b>	<b>5114.99</b>	<b>5758.40</b>	<b>6344.11</b>

#### 4.1.9 Comparison of ARR between Petitioned & Approved Values



## 4.2 Analysis of TPDDL-Distribution Petition

### 4.2.1 About TPDDL

North ,North-West Delhi Distribution Company Limited; the NDPL Distribution Company now renamed as Tata Power Delhi Distribution Limited for Distribution in North and North-West Delhi

### 4.2.2 Determination of ARR for FY 2012-13 & FY 2014-15

#### ➤ Power Purchase Cost

Particulars	FY 2012-13		FY 2013-14		FY 2014-15	
	Proposed	Approved	Proposed	Approved	Proposed	Approved
Power Purchase Cost	3587.63	3170.35	4193.98	3605.02	4691.79	3986.4

#### Basis of the petition

1. Fixed cost: It is based on the new CERC Tariff Regulations, 2010 and on provisional Tariff Orders issued by CERC for the period FY 2009-14. For FY 2014-15, the Petitioner has considered a 3% escalation in fixed charges.
2. Variable cost: To estimate variable charges of each station for the Control Period FY 2012-15, Variable cost of thermal and gas stations has been escalated by 5% on year on year basis over the base rate of FY 2011-12 (till October 2011).

#### Analysis

1. The fixed charges have been taken from the latest Tariff Order issued by CERC up to June 7, 2012.
2. The variable cost submitted by TPDDL with an escalation of 5% during each year has been accepted.



➤ **Inter & Intra State Transmission Charges**

Particulars	FY 2012-13		FY 2013-14		FY 2014-15	
	Proposed	Approved	Proposed	Approved	Proposed	Approved
Inter-State Transmission charges	259.7	169.13	297.15	177.58	305.74	186.46
Intra-state Transmission charges	201.42	192.48	211.49	162.92	222.06	187.21

**Basis of the petition:**

The petitioner has stated that

1. Intra-state Transmission charges are calculated on the basis of transmission loss of 1.25% reported by DTL.
2. Inter-state transmission charges has been escalated by 5% on year on year basis over the base rate of FY 2011-12 for control period.

**Analysis:**

1. The intra-state transmission losses of 1.20% have been approved based on the actual losses for FY 2011-12 reported by Delhi Transco Limited.
2. I approve the inter-state transmission charges by considering an inflation factor of 5% per annum on the actual transmission charges submitted by the Petitioner for FY 2011-12.

➤ **SLDC fees and charges:**

Particulars	FY 2012-13		FY 2013-14		FY 2014-15	
	Proposed	Approved	Proposed	Approved	Proposed	Approved
SLDC fees and charges	3.92	0.46	4.49	0.49	4.62	0.51

**Basis of the petition:**

The charges for SLDC have been projected by escalating the approved SLDC charges for FY 2010-11 by 5% per annum.

**Analysis:**

I consider power purchase rebate @ 2% of the gross power purchase cost and transmission rebate @ 2% of the total transmission and SLDC charges for projection of the normative rebate on the power purchase cost.

➤ **O&M Expenses**

Particulars	FY 2012-13		FY 2013-14		FY 2014-15	
	Proposed	Approved	Proposed	Approved	Proposed	Approved
O&M Expenses	548.03	390.34	662.23	413.51	803.81	438.79

**Basis of the petition:**

The Petitioner has submitted the Operation and Maintenance (O&M) expenses which include:

- (a) Salaries, wages, pension contribution and other employee costs;
- (b) Administrative and General expenses which shall also include expense related to raising of loans;
- (c) Repairs and Maintenance; and
- (d) Other miscellaneous expenses, statutory levies and taxes (except corporate income tax).

The Petitioner submitted that the methodology adopted by the Commission in MYT Regulations, 2011 which only takes inflation into account and does not address other factors for increase in expenses like increase in minimum wage rate, increase in number of consumers etc.

**Analysis:**

In my point of view the expenses pertaining to FY 2011-12 seem to be abnormally high in some of the DISCOMs as compared to the trend of the expenses observed during the previous financial years. Hence the projections have been made by considering the trend of expenses for the period from FY 2007-08 to FY 2010-11.

I have benchmarked the O&M expenses of the Petitioner against O&M expenses of the distribution licensees in other States. It has been observed that the O&M expenses of the Petitioner are higher than those of other distribution utilities.

➤ **Depreciation**

Particulars	FY 2012-13		FY 2013-14		FY 2014-15	
	Proposed	Approved	Proposed	Approved	Proposed	Approved
Depreciation	211.09	126.71	227.22	133.62	258.82	141.01

**Basis of the petition:**

The Petitioner has requested the Commission to provide for advance against depreciation (AAD) during the Control Period (FY 2012-13 to FY 2014-15), by considering the actual debt repayment and the depreciation recovered during the year.

**Analysis:**

I have calculated the advance against depreciation for each year of the Control Period, using the principles specified in the MYT Regulations, 2011 and considering the details of actual cumulative debt repayment and accumulated depreciation claimed by the Petitioner, am not approving AAD for the Control Period (FY 2012-13 to FY 2014-15).

➤ **Return on capital employed (ROCE)**

Particulars	FY 2012-13		FY 2013-14		FY 2014-15	
	Proposed	Approved	Proposed	Approved	Proposed	Approved
Return on Capital Employed	363.7	284.14	404.87	297.56	442.28	310.93

**Basis of the petition:**

The Petitioner has calculated the return on capital employed considering the Regulated Rate Base (RRB) and the WACC for FY 2012-13 to FY 2014-15. The Petitioner has determined the weighted average cost of capital (WACC) for FY 2012-13 to FY 2014-15 considering the proposed debt-equity ratio, cost of equity at 16% and weighted average cost of debt.

**Analysis:**

For determining the WACC, I have followed the methodology specified in MYT Regulations, 2011. Debt to equity ratio has been considered on the average values of debt and equity. The cost of equity has been considered at 16% and the cost of debt has been determined by dividing total interest cost by average debt approved for the respective years of the Control Period, FY 2012-13 to FY 2014-15.

➤ **New Initiative**

Particulars	FY 2012-13		FY 2013-14		FY 2014-15	
	Proposed	Approved	Proposed	Approved	Proposed	Approved
New Initiative	8	0	8	0	8	0

**Basis of the petition:**

The Petitioner has proposed Rs 8.00 Cr for each year of the MYT Control Period, FY 2012-13 to FY 2014-15 as additional expense on account of expenditure incurred on some new initiatives, as shown in the table below:

- (a) Consumer Awareness / Education:
- (b) Energy conservation and Demand side management:
- (c) Additional budget for training:

**Analysis:**

I have analysed the break-up of the expenses submitted by the Petitioner in detail and observed that consumer awareness/education expenses & training expenses have been included

under base A&G expenses. As regards the DSM expenses, it shall be considered as a part of Capex schemes.

**➤ Non-Tariff Income**

Particulars	FY 2012-13		FY 2013-14		FY 2014-15	
	Proposed	Approved	Proposed	Approved	Proposed	Approved
Non Tariff income	69.17	74.28	76.94	74.28	82.64	74.28

**Basis of the petition:**

The Petitioner has considered Non Tariff Income (NTI) FY 2012-13 to FY 2014-15 at the same level as approved for FY 2011-12

**Analysis:**

The approved Non-Tariff income for FY 2012-15 is based on same level of FY 2010-2011.

#### 4.2.3 Proposed ARR for FY 2012-13 to FY 2014-15 (Rs. Cr)

Particulars	FY 2012-13	FY 2013-14	FY 2014-15
Cost of power purchase, including T&D losses	3587.63	4193.98	4691.79
Inter-State Transmission charges	259.70	297.15	305.74
Intra-state Transmission charges	201.42	211.49	222.06
SLDC fees and charges	3.92	4.49	4.62
O&M Expenses	548.03	662.23	803.81
Depreciation including AAD	211.09	227.22	258.82
New Initiative	8.00	8.00	8.00
Return on Capital Employed	363.70	404.87	442.28
Income Tax	40.45	44.42	49.17
Other Income (Including income from wheeling charges)	69.17	76.94	82.64
<b>Annual Revenue Requirement</b>	<b>5154.76</b>	<b>5976.91</b>	<b>6703.65</b>

#### 4.2.4 Approved ARR for FY 2012-13 to FY 2014-15 (Rs. Cr)

Particulars	FY 2012-13	FY 2013-14	FY 2014-15
Cost of power purchase	3170.35	3605.02	3986.40
Inter-State Transmission charges	169.13	177.58	186.46
Intra-state Transmission charges	192.48	162.92	187.21
SLDC fees and charges	0.46	0.49	0.51
O&M Expenses (Net of expenses capitalized)	390.34	413.51	438.79
Depreciation	126.71	133.62	141.01
New Initiative	0.00	0.00	0.00
Return on Capital Employed	284.14	297.56	310.93
Income Tax	22.86	23.77	24.46
Non Tariff Income	74.28	74.28	74.28
<b>Annual Revenue Requirement</b>	<b>4282.20</b>	<b>4740.20</b>	<b>5201.49</b>

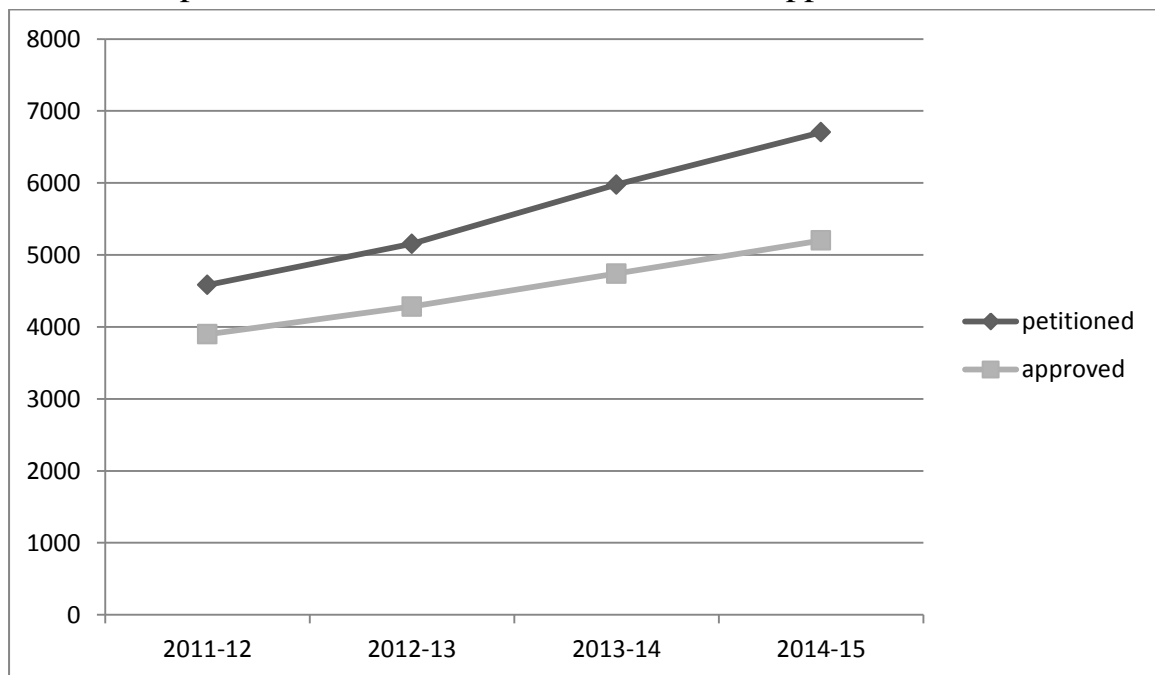
4.2.5 Approved ARR for Wheeling Business for FY 2012-13 to FY 2014-15 (Rs. Cr)

Particulars	FY 2012-13	FY 2013-14	FY 2014-15
O&M Expenses	241.34	254.41	270.10
Depreciation	97.22	102.41	107.96
Return on Capital Employed	204.32	211.98	219.79
Income Tax Provision	16.44	16.93	17.29
Less: Non Tariff Income	29.71	29.71	29.71
<b>Annual Revenue Requirement</b>	<b>529.61</b>	<b>556.01</b>	<b>585.43</b>

4.2.6 Approved ARR for Retail Supply Business for FY 2012-13 to FY 2014-15 (Rs. Cr)

Particulars	FY 2012-13	FY 2013-14	FY 2014-15
Cost of power purchase	3170.35	3605.02	3986.40
Inter-State Transmission charges	169.13	177.58	186.46
Intra-state Transmission charges	192.48	162.92	187.21
SLDC fees and charges	0.46	0.49	0.51
O&M Expenses	149.00	159.11	168.69
Depreciation	29.50	31.22	33.05
Return on Capital Employed	79.82	85.58	91.14
Income Tax Provision	6.42	6.84	7.17
Less: Non-Tariff Income	44.57	44.57	44.57
<b>Annual Revenue Requirement</b>	<b>3752.59</b>	<b>4184.19</b>	<b>4616.06</b>

#### 4.2.7 Comparison of ARR between Petitioned & Approved Values



## CHAPTER-5

### CONCLUSION AND WAY FORWARD

#### 5.1 CONCLUSION

While analysing the petition several issues were raised, on what basis the petitioner is filing the petition is that basis is correct or not, whether they have followed the correct regulation or not and whether they have inflated certain expenses or not so that consumer do not get tariff shock as well as excessive loss do not cause to the licensee after analysing all these aspects I have incorporated my procedures in the ARR model submitted by the petitioner for Generation, Transmission & Distribution business under the proper guidance of my mentor.

So after analysis I propose the following ARR for Licensed Generation, Transmission & Distribution business of IPGCL, DTL, BRPL, TPDDL as follows:

#### **IPGCL - Generation Company**

- For FY 2012-13 – Rs 149.74 Crores
- For FY 2013-14 – Rs 154.26 Crores
- For FY 2014-15 – Rs 159.25 Crores

#### **DTL - Transmission Company**

- For FY 2012-13 – Rs 755.40 Crores
- For FY 2013-14 – Rs 639.40 Crores
- For FY 2014-15 – Rs 734.75 Crores

#### **BRPL - Distribution Company**

- For FY 2012-13 – Rs 5813.98 Crores
- For FY 2013-14 – Rs 6515.65 Crores
- For FY 2014-15 – Rs 7190.65 Crores

#### **TPDDL - Distribution Company**

- For FY 2012-13 – Rs 4282.20 Crores
- For FY 2013-14 – Rs 4740.20 Crores
- For FY 2014-15 – Rs 5201.49 Crores



## 5.2 LIMITATIONS

While carrying out the project work I had to face several difficulties which can be summarized through following points:

- Different types of structures followed by DERC for different Petitions.
- Certain confidential information pertaining to Technical Validation Session (TVS) was not shared with me.
- The project report is all not exhaustive due to time constraints.
- Poor availability of internet facility at hostel.
- Expertise has their own job constraints due to which full utilization of their guidance was not possible.

### 5.3 RECOMMENDATIONS

- DERC should adopt separate tariff schedule to discoms to improve the performance and efficiency
- Price/Revenue Cap Regulation may adopt to keep the expenses under limit.
- DERC should adopt regulations and discentives for not meeting the renewable purchase obligations.
- DERC should ask Discoms to go for Pre-paid metering systems to reduce the revenue gap.

## 5.4 REFERENCES

- Tariff Orders issued by DERC of previous years for IPGCL, DTL, BRPL & TPDDL
- Derc Order on True up for FY 2007-08, ARR for FY 2009-10 for IPGCL
- Derc Order on True up for FY 2007-08, ARR for FY 2009-10 for DTL
- Derc Order on True up for FY 2007-08, ARR for FY 2009-10 for BRPL
- Derc Order on True up for FY 2007-08, ARR for FY 2009-10 for TPDDL
- Derc Order on True up for FY 2008-09 & FY 2009-10 and ARR for FY 2011-12 for IPGCL, DTL, BRPL & TPDDL
- [www.derc.gov.in](http://www.derc.gov.in)
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