



**"A critical study of the Indian Open access system as set up under the Electricity Act 2003- what it ought to do for 24x7 power supply to all."**

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"A critical study of the Indian Open access system as set up under the Electricity Act 2003- what it ought to do for 24x7 power supply to all, " under my supervision.

Further, I certify that the work is based on the investigation made, data collected and analyzed by him and it has not been submitted in any other University or Institution for award of any degree. In my opinion it is fully adequate, in scope and utility, as a dissertation towards partial fulfillment for the award of degree of LLM.

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## **ABBREVIATIONS**

|           |                                               |
|-----------|-----------------------------------------------|
| ABT...    | Availability Based Tariff                     |
| ARR ..... | Aggregate Revenue Requirement                 |
| AT&C..... | Aggregate Technical And Commercial Losses     |
| CERC..... | Central Electricity Regulatory Commission     |
| CPP.....  | Captive Power Plants                          |
| CPSU      | Central Power State Utilities                 |
| CSS.....  | Cross Subsidy Surcharge                       |
| CTU.....  | Central Transmission Utility                  |
| DISCOM... | Distributing Company                          |
| IPP.....  | Independent Power Producer                    |
| kW.....   | Kilo Watt                                     |
| MERC..... | Maharashtra Electricity Regulatory Commission |
| MU.....   | Million Units                                 |
| MW.....   | Mega Watt                                     |
| NEP.....  | National Electricity Policy                   |
| NLDC..... | National Load Despatch Centre                 |
| NTP.....  | National Tariff Policy                        |
| OA.....   | Open Access                                   |
| PPA.....  | Power Purchase Agreement                      |
| RLDC..... | Regional Load Despatch Centre                 |
| SEB.....  | State Electricity Board                       |
| SERC..... | State Electricity Regulatory Commission       |
| SLDC..... | State Load Despatch Centre                    |
| STU.....  | State Transmission Utility                    |
| T&D.....  | Transmission And Distribution                 |

## Table of Contents

|                                                                                |              |
|--------------------------------------------------------------------------------|--------------|
| <b>Abstract .....</b>                                                          | <b>viii</b>  |
| <b>Need &amp; Objective of the Study.....</b>                                  | <b>1</b>     |
| <b>Review Of Literature.....</b>                                               | <b>3</b>     |
| <b>Statement of Questions &amp;<br/>Research Design &amp; Methodology.....</b> | <b>5</b>     |
| <b>Introduction.....</b>                                                       | <b>6</b>     |
| <b>Historical Position</b>                                                     |              |
| <b>Production &amp; generation of electricity</b>                              |              |
| <b>Open Access.....</b>                                                        | <b>15</b>    |
| <b>Need for Open Access</b>                                                    |              |
| <b>Why open access introduced in Electricity Act 2003</b>                      |              |
| <b>Features of Open Access</b>                                                 |              |
| <b>Entitlement of Open Access</b>                                              |              |
| <b>Procurement of Open Access</b>                                              |              |
| <b>Open access Charges</b>                                                     |              |
| <b>Legal Provisions.....</b>                                                   | <b>24</b>    |
| <b>Drawbacks in implementing Open Access.....</b>                              | <b>26</b>    |
| <b>Reforms in Electricity Act 2003.....</b>                                    | <b>33</b>    |
| <b>Electricity (Amendment) Bill 2014</b>                                       |              |
| <b>Concept of 24x7 Power Supply</b>                                            |              |
| <b>Recommendations.....</b>                                                    | <b>38</b>    |
| <b>Conclusion.....</b>                                                         | <b>41</b>    |
| <b>Bibliography.....</b>                                                       | <b>44</b>    |
| <b>Annexures.....</b>                                                          | <b>45-84</b> |

## **Table of Figures**

**Figure 1: Chain of Amendments**

**Figure 2: Power Sector Outlay and expenditure (Rs. in crores) since the First Five year Plan**

**Figure 3: Electricity Supply Chain**

**Figure 4: Actual achievement and growth in electricity generation in the country during 2009-10 to 2015-16**

**Figure 5: The power supply position in the country during 2009-10 to 2015-16**

**Figure 6: Share of State/UT's in State sector generation in 2011-12**

**Figure 7: Per Capita Consumption (kWh) across States/UT's for 2011-12**

**Figure 8: Flow of electricity**

**Figure 9: Open access charges**

**Figure 10: State level open Access Issues**

**Figure 11: State-wise Open Access Consumers at IEX (As on 30<sup>th</sup> June 2013)**

**Figure 12: Barriers to Open Access**

**Figure 13: State Electricity Duty (Rs. crore) in different states for 2011-12**

**Figure 14: Open Access Wish list**

## **List of Annexures**

1. Unit Cost of Power Supply, 2009-10 to 2014-15
2. Bulk Unit Cost of Power Supply (including from own generation)
3. Cost of Structure of SPU's 2009-10 (Actual)
4. Cost of Structure of SPU's 2010-11 (Actual)
5. Cost of Structure of SPU's 2011-12 (Actual)
6. Cost of Structure of SPU's 2012-13 (R.E)
7. Cost of Structure of SPU's 2013-14
8. Share of Operation and Maintenance in Total Cost
9. Share of Estt./Admn. in Total Cost
10. Share of Depreciation in Total Cost
11. Average Tariff for Industry
12. Sales Revenue as a Ratio of Cost
13. Average Tariff for Sale of Electricity 2009-10 to 2013-14
14. Consumer Category wise Average Tariff, 2009-10
15. Consumer Category wise Average Tariff, 2010-11
16. Consumer Category wise Average Tariff, 2011-12
17. Consumer Category wise Average Tariff, 2012-13 (R.E)
18. Consumer Category wise Average Tariff, A.P 2013-14
19. Total Cost of purchase Power
20. Rate of Purchase of Power (including from its own units)
21. Share of Interest in Total Cost
22. Number of Consumers

## **Abstract**

The Electricity Act, 2003 (Hereinafter referred to as "Act of 2003") was enacted as an exhaustive Code on all matters concerning electricity. It provides for "unbundling" of State Electricity Boards into separate utilities for generation, transmission and distribution. It repealed the Indian Electricity Act, 1910 the Electricity (Supply) Act, 1948 and the Electricity Regulatory Commissions Act, 1998. The Act of 2003, in furtherance of the policy envisaged under the Electricity Regulatory Commissions Act, 1998 ("1998 Act"), mandated the establishment of an independent and transparent regulatory mechanism, and has entrusted wide ranging responsibilities with the Regulatory Commissions. While the 1998 Act provided for independent regulation in the area of tariff determination; the Act of 2003 has distanced the Government from all forms of regulation, namely, licensing, tariff regulation, specifying Grid Code, facilitating competition through open access, etcetera.

One of the most important features of Act of 2003 is the introduction of open access under Section 42 of the Act of 2003. Under the open access regime, distribution companies and eligible consumers have the freedom to buy electricity directly from generating companies or trading licensees of their choice and correspondingly the generating companies have the freedom to sell.

The demand for electricity depends on real time basis. The extensively disseminated and speedily growing power demand requirements of the nation necessitates it to be met in the most favourable manner. Generation has been delicensed to give a philip to power geeneration. The Government has started quite a lot of improvement methods to produce a constructive environment for enhancement of new generating capacity in the country. The overall generation in the country has been increased from 967.150 BU during 2013-14 to 1048.673 BU during the year 2014-15.

The Category wise generation performance is as follows: -

Thermal Increased by 10.83 %

Hydro Reduced by 4.16 %

Nuclear Increased by 5.47 %

Bhutan Import Reduced by 10.54 %

**Overall Growth rate recorded by 8.43 % during the year 2014-2015.**

The Act of 2003, provides for an extremely moderate structure for generation. There lies no prerequisite of licensing for generation. Captive generation is free from all controls. The actual challenge of restructuring or reformation in the power sector remains in a well-organized and resourceful management of the distribution segment. The Act of 2003 also facilitates trading of electricity. Open access charges differ far and wide across States with nearly all states having high charges. All this affects the feasibility of the agenda even though it has been laid that the open access charges must not be so heavy or burdensome that they prevent the very competition which is to be accomplished with the help of the mechanism. Also, there are insistent, infrastructural and outfitted issues that fade this crucial principle of open access. The power producers can strive for better mechanisms with efficiency with the help of open access.

While generating companies are keen to address the power requirements of consumers greater than 1 MW, who are not serviced by the distribution licensees on the contrary the distribution licensees consider it as a poaching of their large paying customers thus affecting their performance i.e ATC losses etcetera.

On one hand distribution companies feel threatened by cherry picking of their large consumers at the same time, transmission companies both State and Centre have been providing open access for giving power to such consumers having a load greater than 1 MW but transmission transfer capacity/capability has not kept pace with the power requirements of the deficient states/regions resulting into bottling up of the surplus powers in some regions.

Since January 2011, all transmission pockets had to be built through competitive bidding and keeping that in view many of the large transmission networks even for 765 KV AC are being built now by private sector transmission companies which would increase the transfer capacity and facilitate open access.

Section 11 of the Act of 2003 which authorised state governments to introduce policy actions not to allow sale of power outside the State has hindered the operation of

open access. These provisions have attracted the attention of the Government after the matter reached the Supreme Court and forms part of the proposed amendments of the The Electricity Amendment Bills 2014.

More reforms in the Act of 2003 is of significance at this time when India is striving to achieve 24x7 power supply goals. The Act of 2003 provides for the required facilitating conditions for open access but the hindrance from a long span of years had been that State had not thoroughly developed the transmission sector. The passage for power supply is very inadequate or deficient and might stay the same for more years to come if left unaddressed. Therefore, the urgent requirement in today's time is for a structure for better mechanism like introducing suitable price signals which in turn would prompt enhanced utilisation of the scarce assets, and advance the investments as well. Moreover, "open access" at accurate and affordable prices would result into a harmonious wholesale power market.

## **Need & Objective of the Study**

The Indian Power Sector is divided mainly into three sectors, i.e. generation, transmission and distribution. There is lot of competition in the generation sector due to the contribution or involvement of the private sector in it. The transmission sector is broadly driven by the Power Grid Corporation of India Limited, which is owned by the Government. Transmission sector requires a lot of investment to improve the infrastructure that is the reason Government holds monopoly in this segment of power business. Whereas, the distribution sector can be privatized thereby inducing competition and providing the consumers with a choice and at an advantage.

The concept of open access was introduced in the Act of 2003 to promote competition and to benefit the consumers. Even after more than a decade of the implementation of the provisions of the Act of 2003, the mechanism has not proved to be effective so as to remove all the impediments in the way of open access and achieve the full benefits of open access in the whole nation.

Despite all the impediments, India has always been placing essential trust in Open Access for the Power Sector development, increasing carriage capacity, manoeuvring of the power market and developing trust in the consumers by providing them with better power supply.

Unfortunately, Open Access is still facing so many hurdles and drawbacks in the nation inspite of being the main building block of a better and competitive market structure.

Significance of Open Access has been far and wide recognized as the soul and one of the fundamental objectives of the Act of 2003, because;

- Open access is the concept constructed to flood in the competition and choice for the consumers which in turn would lead to more investments and would further safeguard the interests of the consumers.

- Open access is not just to protect the interest of the consumers but also it is required for mandating the regulators to pioneer and promote competition in the power industry.
- Thus the concept of open access is significant in categorizing and as a result providing with some essential and far-reaching resolutions to the various obstacles in the proper execution of Open Access in the Nation.
- A true competition would only evolve when the low voltage consumers/ domestic consumers and small commercial establishments would have the choice of supplier who can provide them power at competitive rates and not at the mercy of distribution licencees which is the way it is today. The distribution licencees having the monopoly over all the consumers in the licensed areas. A beginning has been made in Bombay where Tata Power and Reliance Energy are competing even with the small consumers to provide power at competitive rates. Though the original licensee was Reliance Energy, Tata Power has made significant inroads in taking away consumers from Reliance Energy as Tata Power was able to provide energy at lower rates than Reliance. The same has to be replicated all over and the Amendment to the Act of 2003 places a major emphasis on segregation of carriage and content in the distribution sector.

## Review of Literature

- Shafqat Mughal [2010] in National Power Engineering Conference presented a paper on *"The changing scenario of electricity trading and power market mechanism in India"* which portrayed the importance of Open Access in the power market. It was described that Open Access is important to an unrestricted and fair electricity market. Power generators and the dealers/customers (i.e. buyers) have to share a conjoint transmission network for the wheeling of power from the area of generation to the area of consumption. Open Access provides non-discriminatory usage of the inter-state and intra-state transmission system and accelerating of the trading of power from one Utility to another. It also enables putting up of Independent Power Producers (IPPs), Captive Power Producers (CPPs), and the merchant power plants. Open Access at the state level will be facilitated by the intra-state availability based tariff (ABT). The Open Access can generate desirable results if it can guarantee satisfactory margins in the transmission system. Once Open Access is implemented, the experience gained helps in postulating signals for identification of overcrowded corridors and expansion planning. □
- Clyde Wayne Crews [1999] in his paper *"Rethinking Electricity Deregulation: Does Open Access Have It Wired -- Or Tangled?"* states that Open Access to the power grid is envisioned to mean every commercial, residential or industrialized consumer having a choice of any electricity provider.
- S.S. Barpanda [2010] in his paper *"Open Access in Inter State Transmission System 3rd Capacity Building Programme for Officers of Electricity Regulatory Commissions"* overviews the Indian Power Market and the contribution of Open Access into the power market/sector. It offers an insight into Open Access in inter-state transmission and open access charges, programing of collective transactions through Power Exchanges

and real time congestion management. □

- Planning Commission, Government of India (2009) *"Report of the Task Force on Measures for Operationalising Open Access in the Power Sector"* confers the legal provisions, annotations and recommendations for the same. The Indian Energy Exchange conducted a simulation exercise which was done to examine the bearings on the finances of Discom, in case if the bulk consumers are shifted from structures or regulated prices to market prices. The assessment indicated that varying of one-third of HT consumers from regulated prices to open access regime may create additional revenues for the Discom. It was proven that endowing the HT consumers with open access would not be disadvantageous to the Discom. Representatives of the Indian Energy Exchange stated that IIT, Delhi had done a study on the "Impact of Migration of the HT Consumers from the State Utility Owned Discom to Market Purchase Mode" and as per the Report, exodus of HT consumers from Discom to open access purchase would result into additional revenue for the seven states namely Maharashtra, Gujarat, Haryana, Andhra Pradesh, Tamil Nadu, Punjab and Rajasthan (states considered in the study). This could be accredited to the costly power purchased by Discom. The Task force noted that the introduction of Open Access at the macro-level would assist in reducing shortages and would accelerate capacity addition, besides introduction of competition.
- Chatterjee and Kumar (2012) reviewed the wide prevailing scenario of the Indian power sector and have expansively conveyed their views in their book published by the Oxford Publishing House. Both the Authors have seized a resilient view in favour of promoting Open Access mechanism in the Indian power sector. However, they have also pointed out the various obstacles in the implementation of open access, thereby addressing the issue of regulatory commissions impasse in introducing the open access mechanism in the country.

## **Statement of Questions or Hypothesis**

- Why does power scarcity exist in the country?
- What measures can be taken to improve the power supply in the country and to meet 24x7 power supply?
- What is the status of the open access in India?
- Are various States apprehensive in facilitating open access?
- Is Electricity (Amendment) Act 2014 going to be fruitful for curbing out power issues in the Country?

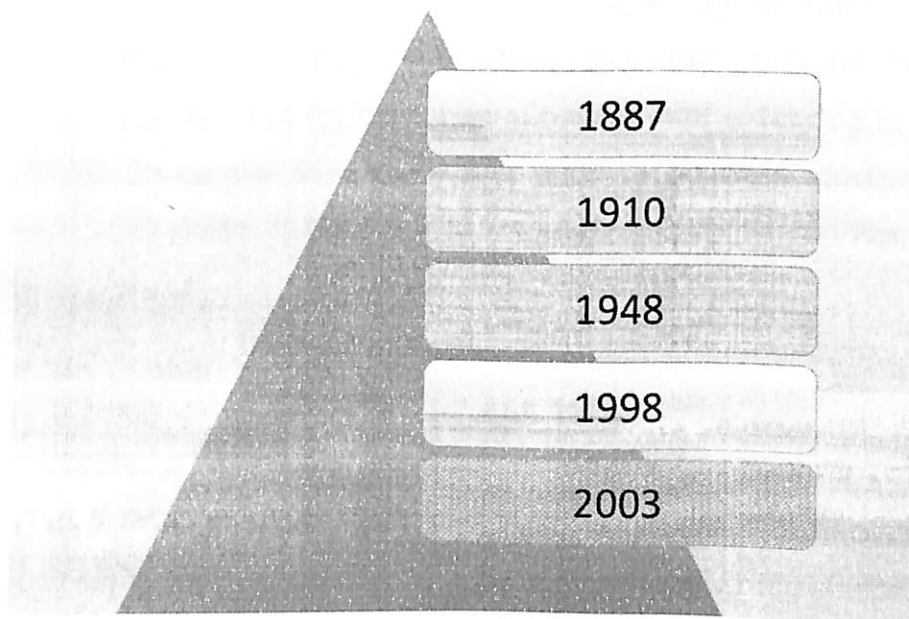
## **Research Design and Methodology**

- The research methodology adopted for this project is secondary research. Book/commentaries on Electricity Law and journals and websites related to open access have been referred.
- Alongside a few important case studies have also been analysed to research on the prevailing issues and giving recommendations.

## Introduction

### Historical Position

Figure 1: Chain of Amendments



- ***The Electricity Act, 1887***

The 1887 Act was the first enactment/legislation which regulated the generation, supply and use of the electricity in India.

- ***The Electricity Act, 1910***

The Electricity Act, 1910 replaced and repealed the Electricity Act of 1887 to comprehensively construct a legal framework for the electricity sector in the country and the main focus of the Act was on supply of electricity. This Act envisioned the advancement and growth of electricity industry with the help of

private licences. The Act created a legal structure for arrangement of wires and other requisites pertaining to the electricity supply.

- ***The Electricity (Supply) Act, 1948***

Thereafter, came into picture the Electricity(Supply) Act, 1948 which mandated the creation of a State Electricity Board. The Board was assigned with the onus of disposing the electricity supply in the State. The objective of this Act was to improve the supply of power but it was observed that the performance of State Electricity Boards with in a few years only faded and weakened due to innumerable factors, major failure being that these Electricity Boards were also required to take decisions on tariffs in an independent manner and further cross subsidies had extended to very shaky levels. Thus, to tackle this issue and also to distance governance from determination of tariffs, the Electricity Regulation Commission Act, 1998 was brought into picture.

- ***Electricity Regulation Commission Act, 1998***

This Act crafted a regulatory mechanism. After a few years it was observed that all three Acts of 1910, 1948 and 1998 to govern the electricity industry were required to be contained in a new comprehensive legislation/enactment with the dogma of reassuring more participation of private sector in all areas like generation, transmission and distribution. Therefore, the Electricity Act, 2003 was formulated with the main objective to distance the regulatory powers from the Government and delegating it to the Regulatory Commissions.

- ***The Electricity Act 2003***

More substantial accumulation in the new Act is the introduction of new concepts of power trading and open access. The main feature of the Electricity Act 2003 is to incite the efficacy in working and guiding the inaccuracy to protect the interest of the consumers and also to attain the recovery costs for the investors.

## **Production and significance of Power**

In India the requirement for power has been exceeding its availability in the market. Considerable scarcity of energy exists in the country which is the outcome of insufficiency in generation, transmission and distribution. Moreover, there is wasteful use of electricity. The elevated levels of technical and commercial losses and lack of viable advancement in administration of utilities lead has to indefensible monetary procedures. Cross-subsidies charges have boosted to unsound levels. Scantiness in distribution system has been one of the chief rationales behind meager quality of electricity supply. Power industry is capital-intensive having extensive conception periods. Moreover, resources of power generation are erratically spread across the country. Electricity is one of basic tenets for quick economic expansion and poverty easing. The nation has put up the target to provide electricity access in all households in five years. Thus, reaching the target is a difficult task which requires noteworthy improvements to generation capacity and extension of transmission & distribution network.

In India the stipulation for electricity has been surpassing the augmentation of accessibility. Considerable power scarcity exists in the country all which is because of insufficiency in generation, transmission and distribution as well as ineffectual use of electricity. Thus, the noteworthy point is the stake holders ought to understand that the ground authenticity and the requirements of the circumstances. It needs to be understood that this colossal difficulty faced by the nation cannot be solved with a stroke of pen. Therefore, to achieve the better power supply in the country the Government keeps on making efforts with its different plans and provisions.

Following figures in sequence reflect the five year plans of government so far, the supply model of electricity and how the Nation has grown in generating electricity so far and other relevant figures/ diagrams to better understand the electricity production (state-wise) and its consumption.

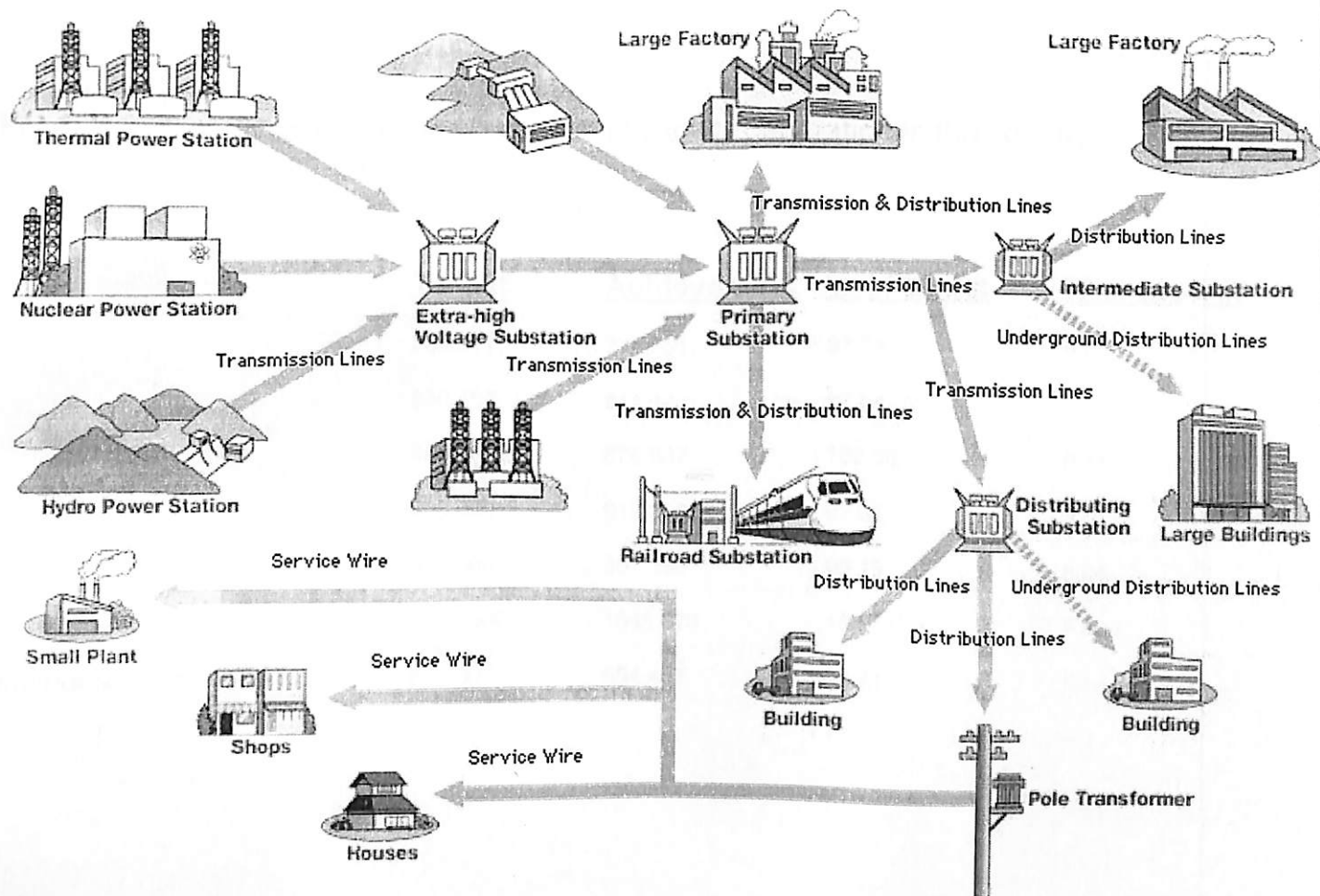
Figure 2: Power Sector Outlay and expenditure (Rs. crore) since the First Five year Plan<sup>1</sup>:

|               | <b>Plan Outlay</b> | <b>Actual expenditure</b> |
|---------------|--------------------|---------------------------|
| First Plan    | 393                | 260                       |
| Second Plan   | 427                | 445                       |
| Third Plan    | 1,020              | 1,252                     |
| Forth Plan    | 2,448              | 2,932                     |
| Fifth Plan    | 7,294              | 7,400                     |
| Sixth Plan    | 19,265             | 18,299                    |
| Seventh Plan  | 34,273             | 37,895                    |
| Eighth Plan   | 79,589             | 76,677                    |
| Ninth Plan    | 124,225            | 114,008                   |
| Tenth Plan    | 270,276            | 182,380                   |
| Eleventh Plan | 572,648            | NA                        |

<sup>1</sup> [http://planningcommission.gov.in/reports/genrep/arep\\_seb11\\_12.pdf](http://planningcommission.gov.in/reports/genrep/arep_seb11_12.pdf)

Figure 3: Electricity Supply Chain

Source: Tokyo Electric Power Company.<sup>2</sup> This is an ideal supply chain model mostly prevalent in developed economies. Some of the components might not be applicable to India



### Generation of electricity

<sup>2</sup> TEPCO [www.tepco.co.jp/en/challenge/energy/pow-net-e.html](http://www.tepco.co.jp/en/challenge/energy/pow-net-e.html)

- The performance of electricity generation is reflected as follows; the objective to generate power in the year 2015-2016 was fixed at 1137.5 Billion Unit (BU). i.e. advancement of approximately 8.47% over the last target generation of 1048.673 for the year 2014-2015.
- The growth in generation was 8.43% in 2014-15 as compared to 2013-14.

Figure 4: Actual achievement and growth in electricity generation in the country during 2009-10 to 2015-16<sup>3</sup>

| <u>Year</u>                  | <u>Target</u> | <u>Achievement</u> | <u>% of target</u> | <u>% of growth</u> |
|------------------------------|---------------|--------------------|--------------------|--------------------|
| 2009-10                      | 789.511       | 771.551            | 97.73              | 6.6                |
| 2010-11                      | 830.757       | 811.143            | 97.64              | 5.56               |
| 2011-12                      | 855.000       | 876.887            | 102.56             | 8.11               |
| 2012-13                      | 930.000       | 912.056            | 98.07              | 4.01               |
| 2013-14                      | 975.000       | 967.150            | 99.19              | 6.04               |
| 2014-15                      | 1023.000      | 1048.673           | 102.51             | 8.43               |
| 2015-16* (Upto October 2015) | 663.007       | 654.467            | 98.71              | 5.14               |

### ***Power Supply Position***

<sup>3</sup> <http://powermin.nic.in/power-sector-glance-all-india>

Figure 5: The power supply position in the country during 2009-10 to 2015-16<sup>4</sup> :

| Year     | <u>Energy</u>      |                     |                              |       | <u>Peak</u>        |                 |                              |       |
|----------|--------------------|---------------------|------------------------------|-------|--------------------|-----------------|------------------------------|-------|
|          | <u>Requirement</u> | <u>Availability</u> | <u>Surplus(+)/Deficts(-)</u> |       | <u>Peak Demand</u> | <u>Peak Met</u> | <u>Surplus(+)/Deficts(-)</u> |       |
|          | (MU)               | (MU)                | (MU)                         | (%)   | (MW)               | (MW)            | (MW)                         | (%)   |
| 2009-10  | 8,30,594           | 7,46,644            | -83,950                      | -10.1 | 1,19,166           | 1,04,009        | -15,157                      | -12.7 |
| 2010-11  | 8,61,591           | 7,88,355            | -73,236                      | -8.5  | 1,22,287           | 1,10,256        | -12,031                      | -9.8  |
| 2011-12  | 9,37,199           | 8,57,886            | -79,313                      | -8.5  | 1,30,006           | 1,16,191        | -13,815                      | -10.6 |
| 2012-13  | 9,95,557           | 9,08,652            | -86,905                      | -8.7  | 1,35,453           | 1,23,294        | -12,159                      | -9.0  |
| 2013-14  | 10,02,257          | 9,59,829            | -42,428                      | -4.2  | 1,35,918           | 1,29,815        | -6,103                       | -4.5  |
| 2014-15  | 10,68,923          | 10,30,785           | -38,138                      | -3.6  | 1,48,166           | 1,41,160        | -7,006                       | -4.7  |
| 2015-16* | 6,62,204           | 6,46,223            | -15,981                      | -2.4  | 1,53,366           | 1,48,463        | -4,903                       | -3.2  |

Figure 6: Share of State/UT's in State sector generation in 2011-12<sup>5</sup>

<sup>4</sup> <http://powermin.nic.in/power-sector-glance-all-india>

<sup>5</sup> [http://planningcommission.nic.in/reports/genrep/rep\\_arpower0306.pdf](http://planningcommission.nic.in/reports/genrep/rep_arpower0306.pdf)

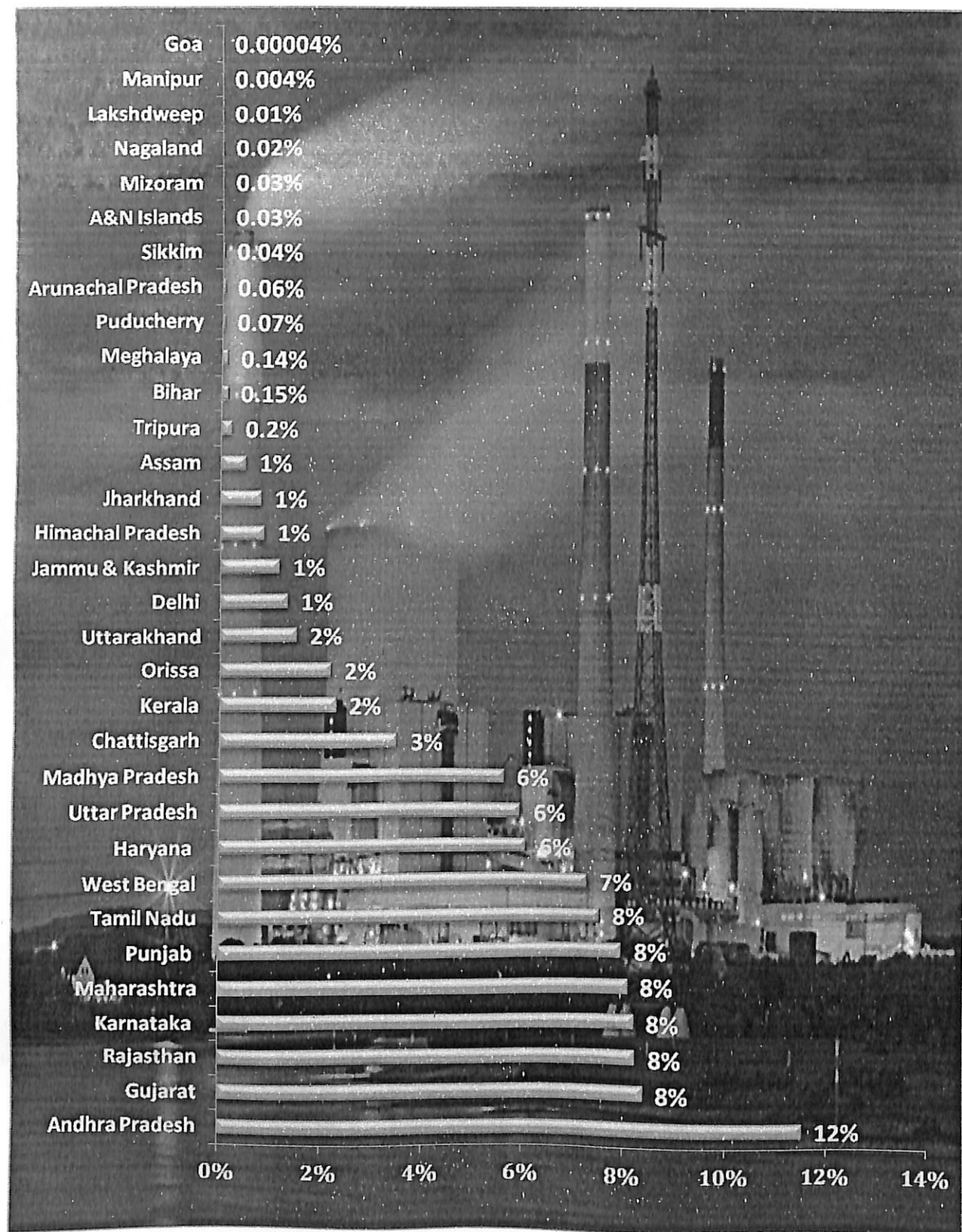
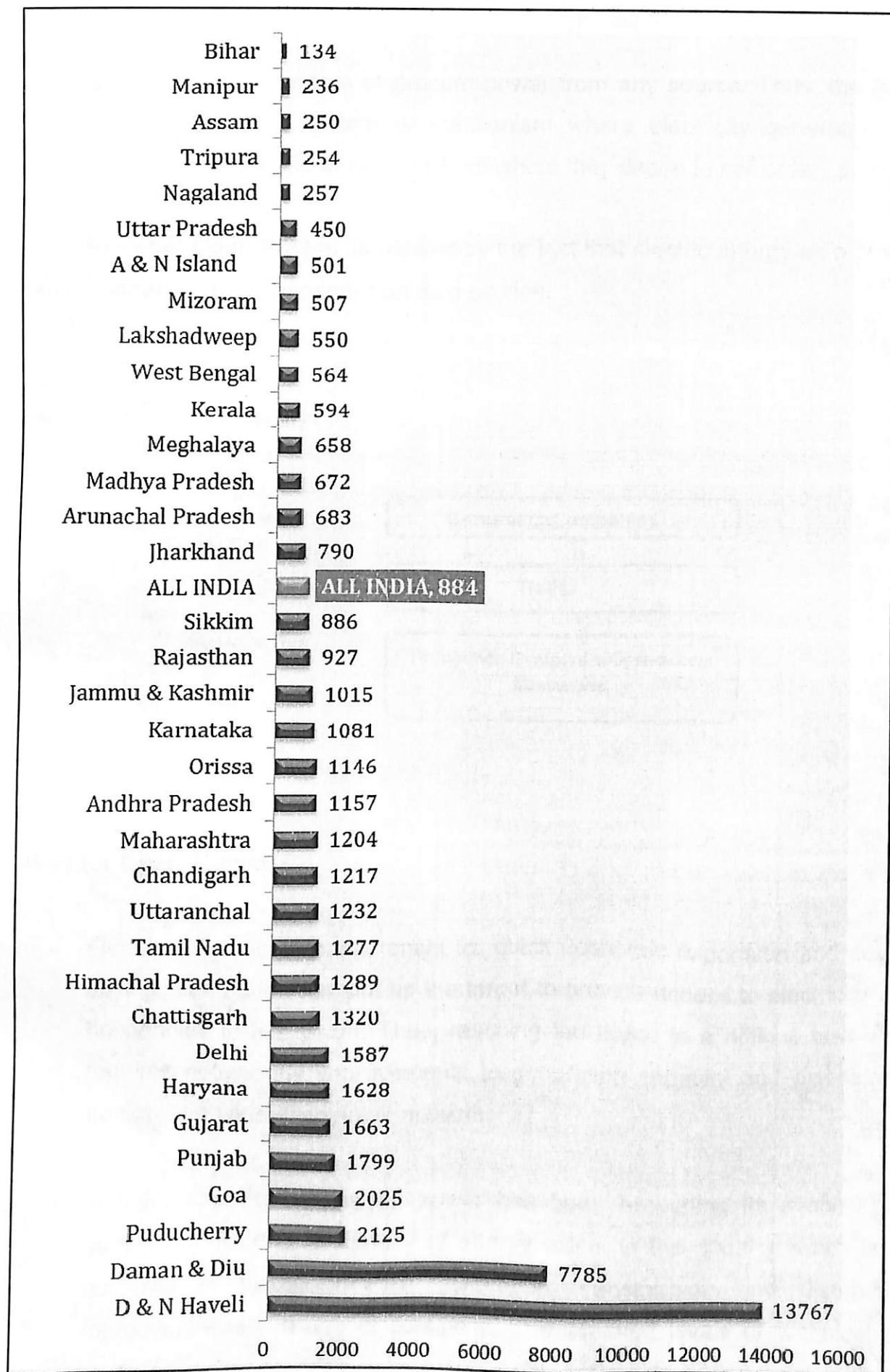


Figure 7: Per Capita Consumption (kWh) across States/UT's for 2011-12<sup>6</sup>

<sup>6</sup> ibid

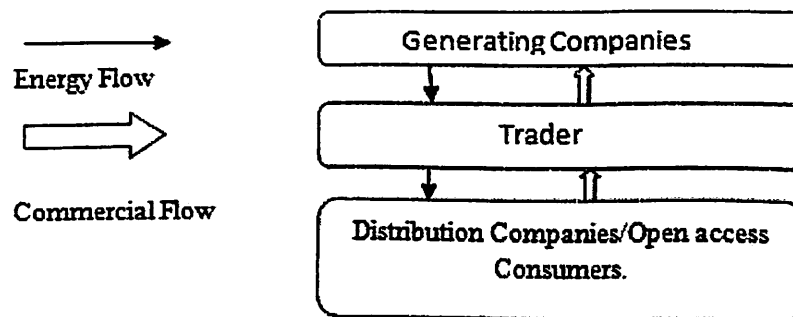


## Open Access

Open access implies freedom to procure power from any source. Thus, the Act of 2003 aims to create a system or mechanism where electricity generators and consumers can choose the entity to or from whom they desire to sell or buy power.

The concept of Open Access is backed by the fact that electric energy as a product can be parted from the transmission as a service.

Figure 8: Flow of electricity



## Need for Open Access

- Electricity is one of basic tenets for quick economic expansion and poverty easing. The nation has put up the target to provide access to electricity in all households in five years. Thus, reaching the target is a difficult task which requires noteworthy improvements to generation capacity and extension of transmission and distribution network.
- In India the requirement for power has been exceeding its availability in market. Considerable scarcity of energy exists in the country which is the outcome of insufficiency in generation, transmission and distribution, moreover, wasteful use of electricity. The elevated levels of technical and

commercial losses and lack of viable advancement in administration of utilities have lead to indefensible monetary procedures.

- Cross-subsidies charges have boosted to unsound levels. Scantiness in distribution system has been one of the chief rationales behind meagre quality of electricity supply.
- Power industry is capital-intensive having extensive conception periods. Moreover, resources of power generation are erratically spread across the country. Besides what all prevails in power sector, the Act of 2003, actually endeavours at bringing about competition with the final purpose of making certain growth of efficiency flowing from the competition for the consumers.
- In the perspective of competition, 'Open Access' is the keystone of the Act. Open Access has been envisaged as a significant tool of pioneering the competition in the electricity industry and making sure that the buyers and suppliers of electricity are provided with choices.
- The Act of 2003 envisions Open Access in transmission and distribution system.
- Open Access in transmission is legal from the very beginning and devoid of any impediments. On the other hand, when open access to distribution networks is introduced by the relevant State Commissions for allowing immense consumers to buy directly from the generators, it is believed that competition in the market would augment the accessibility of cheaper and trustworthy power supply.
- The Regulatory Commissions are required to have facilitative agenda for non-discriminatory open access. This necessitates load dispatch services with a good communication and data attainment potential in good time. The Act of 2003 disallows or restrains the State transmission utilities/transmission licensees from slotting in the trading in electricity.

- In the Electricity (Amendment) Bill, 2014, it has been mandated that the State Commissions shall within five years necessarily allow open access to consumers having demand exceeding one megawatt.
- The concept of open access is a departure from the existing single buyer model wherein the transmission utilities/licensees buy power from generating companies and in turn sell to the distribution companies. In the old system the distribution companies had the only option of buying power from the transmission utilities/licensees. Under this new regime the distribution licensees would be at liberty to procure power from any source. This would generate competition amongst the sellers and help reduce gradually the cost of generation/procurement.
- It is pertinent here to mention that unlike distribution, open access in transmission has been allowed from the very beginning and without the requirement of payment of any surcharge by the licensees and the generating companies.

### **Why Open Access has been introduced in the Electricity Act, 2003?**

Inculcating competition in power industry with an improved regulatory regime is the framework around which the Electricity Act, 2003 is formulated. One of the main objectives of the Act of 2003 incites the efficacy in working and guiding the inaccuracy to protect the interest of the consumers and also to attain the recovery costs for the investors.

The Government has, formulated different provisions in the new Act of 2003 to enhance the power sector. It is to be appreciated that the Government acts now only as a facilitator because the Act of 2003 forbids the Government to stringent regulations, i.e., licensing, generation, tariff fixation, etcetera and also eradicates the impasses in different activities of generation, transmission, distribution and supply of

electricity thereby steering towards an encouraging environment for advancing the power sector.

In earlier laws as explained in the historical background, the transmission companies used to acquire power from the generating companies and to sell it out to the distribution companies. The distribution companies as a result were only limited to the purchase of power from the fixed transmitters. Furthermore, under the new law, the transmission utility has been barred from participating in buying and selling of electricity. In other words, the generators would be free to choose the distributors and the distributors to choose their suppliers, and the owners of the transmission wires would be obliged to give non-discriminatory access to the transmission facilities for conveyance of electricity from generator to the distributor, on payment of transmission charge.

'Competition' is the assurance bought in by the Act of 2003 as it aims to enhance competition in the power sector. Upstream competition among generators has been guaranteed by providing non-discriminatory open access in transmission from the very inception.

Downstream, competition has been stimulated in two ways- firstly, by providing for open access in distribution and secondly, by permitting more than one licensee in the same area of supply.

## **Features of Open Access**

### ***Open Access in Transmission:***

- Due to non-discriminatory open access to the transmission system, open access in transmission enables the licensees (distribution licensees and traders) and generating companies the right to use the transmission system without any discrimination.
- The Act of 2003 debars the transmission utilities/licensees from trading in electricity, i.e., from getting involved into the business of buying and selling of the electricity. As owners of the transmission facilities, the utilities do not have

any commercial interests and are responsible for only maintenance of their transmission facilities and get paid for the usage of these facilities.

- The open access system also encourages competition, thus, reduces the cost of generation/ procurement.

***Open Access in distribution:***

- This ensures the right of consumers to get supply from a person other than the distribution licensee of his/her area of supply by using the distribution system of such distribution licensee.
- Consequent to the enactment of the Electricity (Amendment) Bill, 2014, it has been mandated that the State Commissions shall within five years necessarily allow open access to consumers having demand exceeding one megawatt. (1 mg).
- Due to the provision of open access, the law balances the right of the consumers to procure power from a source of choice.

**Entitlement for Open Access and Requisites thereof:**

- As per the provisions pertaining to the Open Access in the Act of 2003, the licensees, the generating companies, captive generating plants and consumers shall be eligible for open access to the intra-State transmission system of the State Transmission Utility or any transmission licensee on payment of transmission and other charges as may be determined by the Commission.
- As per the provisions, the licensees, generating stations, captive generating plants and consumers shall be entitled for open access to the distribution system of a distribution licensee on payment of the wheeling charges and other charges as determined by the Commission.

- Moreover, open access shall be permissible for the consumers seeking power more than 1 Megawatt and are allied with the help of an independent feeder springing or emanating from a substation of licensee or an industrial feeder on a condition that all the consumers on such industrial feeder choose for open access and have concurrent agenda of drawing power under such open access.
- The consumers who are not on independent feeders, shall be sanctioned open access on the condition that they harmonize to restrictions levied by the Utility on the feeders aiding them.
- It is also laid in the Act of 2003 that the obligations or duties of the distribution licensee relating to open access consumers shall be of a common carrier to provide non-discriminatory open access as specified under section 42(3) of the Act of 2003.
- Any person who is declared insolvent or bankrupt or has outstanding dues against him for more than two months of billing of the distribution/transmission licensee shall not be eligible for open access on the new application.

***Criteria for granting long-term access or medium-term open access or short term open access:***

- The State Transmission Utility shall have due regard to the expansion or reinforcement required for the intra-State transmission system before granting or awarding the long-term open access.
- Medium-term open access or short-term open access shall be granted if the resultant power flow can be lodged in the existing transmission system or the transmission system under execution.
- There are two conditions:

No expansion shall be conveyed to the transmission system for the only purpose of granting medium-term open access or short-term open access. Also, the formation of a dedicated transmission line shall not be formed as an expansion of the transmission system for the purpose of this regulation.

***Application procedure for Open Access:***

- All applications for open access shall be made in the prescribed Form and submitted to the Nodal agency as per the regulations.
- All applicants seeking open access shall submit an undertaking of not having entered into Power purchase agreement (PPA) or any other bilateral agreement for the capacity (quantum of power) for which open access is sought.

***Processing of Application by the Agency:***

- i) The Nodal Agency screens the Application of the Applicant seeking Open access after proper consultation with other entities involved in Inter-State transmission system.
- ii) Specifications need to be given in terms of the name of the sub-station or switch yard or pooling station by the Nodal agency where the connection needs to be granted using the proposed or existing line of transmission.
- iii) The connectivity point and name of the line shall be specified which requires open access.
- iv) The Applicant needs to sign an agreement of connection with the Central Transmission Utility agreeing to connect with the sub-station or transmission line identified by the nodal agency.

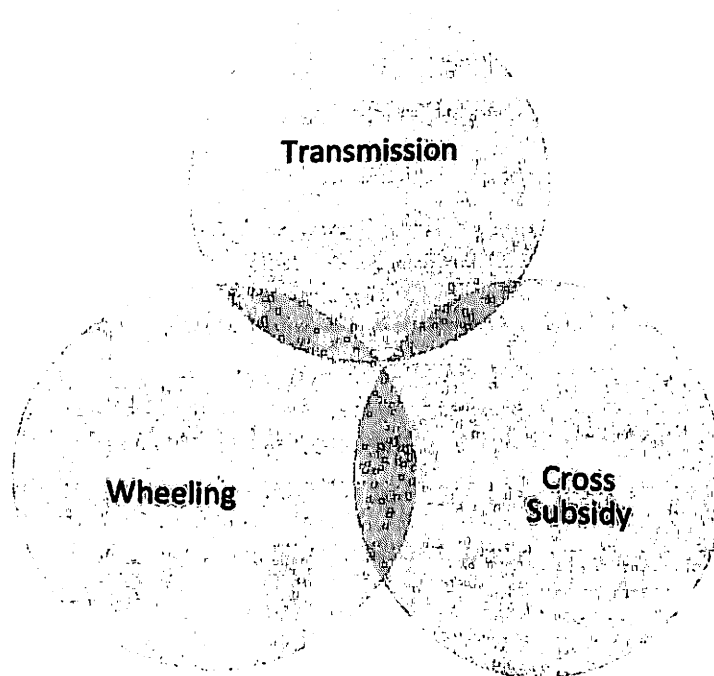
- v) As per the CEA (Technical Standards for Connectivity to the Grid) Regulations, 2007, the parties need to sign a Tripartite Agreement. It has to be signed by the Applicant, Central Transmission Utility and Inter State Transmission licensee, in the case of an applicant whose connectivity is being granted to the inter-state transmission system of an inter-state transmission licensee.

### **Open Access Charges**

There are major charges to be paid by open access consumers to distribution licensee, transmission licensees and other related entities, other than the power purchase cost paid to the generator or supplying entity.

Some of the applicable **Open Access Charges** are as follows:

Figure 9: Open access charges



- **Transmission charges:**

The consumer who avails open access needs to pay charges to the transmission licensee for the use of transmission system and related facilities for the carriage of electricity.

Transmission charges are levied on generating stations, captive generating plants and all the consumers connected to the state transmission network at 66 or 132 kv and Discom network at 11 and 33 Kv.

- ***Wheeling charges or distribution charges:***

Distribution charges are those charges which are paid to distribution licensee for the use of distribution system and associated facilities by another person for the conveyance of electricity.

The licensees, generating stations, captive generating plants and consumers shall be eligible for open access to distribution system of a distribution licensee on payment of the wheeling charges as may be determined by the Commission.

Distribution charges are thus, pertinent to generating stations, captive generating plants and consumers who are connected to Discom network i.e. at 11 and 33 kV.

- ***Cross subsidy surcharge:***

Open access gained by the consumer of a distribution licensee of the State who in addition to the transmission and/or wheeling charges, is required to pay cross subsidy surcharge as determined by the Commission.

Cross subsidy surcharge is decided or calculated on per unit basis and thus is required to be paid every month by the consumers availing open access centered on the actual energy utilized during the whole month with the help of open access. The consumer availing open access needs to pay the expanse of surcharge to the distribution licensee of the area of supply from whom the consumer procures power before opting for open access. This surcharge is in real terms the compensatory amount paid to the distribution licensee of the area of supply. This cross subsidy surcharge is required to be paid by the open access consumers regardless of the voltage or connectivity level.

## Legal Provisions

- 'Open Access' has been defined under Section 2(47) which reads as under:

**"Open access"** means the non-discriminatory provision for the use of transmission lines or distribution system or associated facilities with such lines or system by any licensee or consumer or a person engaged, in generation in accordance with the regulations specified by the Appropriate Commission.<sup>7</sup>

As per the definition it comes out to be a non-discriminatory provision for the utilization of transmission lines or the distribution system.

- 'Transmission lines' is also defined under Section 2(72) which reads as under:

**"Transmission lines"** means all high pressure cables and overhead lines (not being an essential part of the distribution system of a licensee) transmitting electricity from a generating station to another generating station or a sub-station, together with any step-up and step-down transformers, switch-gear and other works necessary to and used for the control of such cables or overhead lines, and such buildings or part thereof as may be required to accommodate such transformers, switch-gear and other works.<sup>8</sup>

- 'Distribution system' is also defined under the Act at Section 2(19) as under:

**"Distribution system"** means the system of wires and associated facilities between the delivery points on the transmission lines or the generating station connection and the point of connection to the installation of the consumers.<sup>9</sup>

- Section 38-40 of the Act of 2003 lays that Open Access to the transmission lines to be provided to licensees, generating companies, and also to consumers subject to open access in distribution.
- As per Section 42 of the Act of 2003, Open Access in distribution to be allowed by State Electricity Regulatory Commission in phases. And open access to be allowed on payment of a surcharge to be levied by State

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<sup>7</sup> Section 2(47) of the Electricity Act, 2003

<sup>8</sup> Section 2(72) of the Electricity Act, 2003

<sup>9</sup> Section 2(19) of the Electricity Act, 2003.

Electricity Regulatory Commissions to take care of, current level of cross subsidy and licensor's obligation to supply.

- **Availing supply of electricity:**

In the case of *Brihanmumbai Electric Supply and Transport Undertaking Vs. Maharashtra Electricity Regulatory Commission (MERC) and Ors.*<sup>10</sup>, "it was held that there are two ways in which a consumer stated in a particular area can avail supply of electricity.

- ✓ When an application is made by a consumer to a distribution licensee for supply of electricity, such a distribution licensee requests other distribution licensee in an area to provide it network to make available for wheeling electricity to such consumers and this open access is to be given as per provisions of Section 42 (3) of Act. Local authority is exempted from such an obligation and may refuse to provide.
- ✓ Second option is, under Section 43 of Act, to provide electricity to consumer by distribution licensee from its own network. Therefore, if in a particular area local authority has its network and it does not permit wheeling of electricity by making available its network, other distribution licensee will have to provide electricity from its own network. For this purpose, if it is not having its network, it will have to lay down its network if it requires in order to supply electricity to a consumer seeking supply. There is no exemption from universal service obligation to any distribution licensee under Act, on account of presence of a "local authority" as a distribution licensee in particular area of supply, which is also reinforced by Paragraph 5.4.7 of National Electricity Policy which states that second licensee in same area shall have obligation to supply to all consumers in accordance with Section 43 of Act."

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<sup>10</sup> AIR2015SC1224

## Drawbacks/Bottlenecks in implementing Open Access

- **Cross Subsidy Surcharge:** The Act of 2003 in section 42(2) lays-down that the state regulatory commissions must allow open access in view of the expense of Cross Subsidy Surcharge. Earlier, industrial and commercial consumers had paid a high tariff for the electricity they had consumed. This is in order to make sure that domestic and agricultural consumers be given power at a less expensive rate. This extra amount, known as cross-subsidy has continued under the Act of 2003, since regulators are allowed to set differential tariff based on the consumer category.

When an industrial or commercial consumer decides to purchase power from an independent generator and not from the distribution licensee in that area, that distribution licensee loses the cross subsidy amount. The CS Surcharge is imposed on the consumer to ensure that the distribution licensee does not pass on this additional amount to the domestic and agricultural consumers, which can result in a steep rise in the cost of power. The Act of 2003, however, recognizes that the ultimate goal is to eliminate cross-subsidy as concept, so that all consumers pay the same amount for electricity.

CS Surcharge has been, for the last several years, the single biggest roadblock to an open access regime, and the development of a market where a consumer can choose to purchase power from a generator of its choice.

- **Open Access considered NOT an Absolute Right**

*In the case of GMR Energy Limited Vs. Government of Karnataka<sup>11</sup>, "it was held that Regulations made it abundantly clear that open access was not an unbridled or absolute right. Moreover, when electricity was needed to meet a circumstance arising in public interest or natural calamity or circumstances arising out of threat to security of State, Public Order, question of anybody enforcing or claiming this right of open access was not permissible Said right*

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<sup>11</sup> MANU/KA/0200/2010

*could be exercised in manner stipulated in Regulations in absence of any direction issued by Government under Section 11 of Act Thus, right to open access was also regulated under the Act. Open access meant only that private generating companies should not be discriminated in use of transmission lines or distribution system or associated facilities. It did not mean a right was conferred on them absolutely to supply electricity to a consumer or a licensee of their choice and that such a right could not be curtailed under any circumstances”.*

- **Transmission passage obtainability:**

Transmission blocking or jamming is one of the main constraints in availing the open access. The evacuation systems are planned largely based on the transmission capacities needed to meet Long-term PPAs but the current transmission system is required to meet the fixed and steady transmission prerequisites as well as Open Access requirements ascending in the short term. Therefore, transmission organization must intrinsically incorporate margins for the medium and short-term open access.

- **Tariff Policy**

The National Electricity Policy, 2005 lucidly lays the expanse of surcharge and additional surcharge levied upon the consumers who are permitted to gain the open access for the meager reasons that charges do not become so onerous to shake or affect the competition. Still some of the State Commissions use other formulas for stipulating the formula for the purpose of Cross Subsidy Surcharge.

- **Infrastructural hurdle**

There is a pressing requirement to segregate the supply and the wire concerns of the distribution licensees mainly because the licensees exercise a natural monopoly over the infrastructure, i.e. wires. Thus, if a consumer wants to switch over some other entity than the Discom for availing open access is uncertain about the network or passage available with the Discom. All this

daunts the consumer to avail of gain from another alternative (i.e. open access). Thus this severe issue which is a big hurdle in open access needs to be corrected by segregating the accounting of wire and supply business and in furtherance the financial separation.

- **Apprehension of States towards Open Access**

There are a few States in India which do not encourage the practice of open access, thus, for example, Uttar Pradesh does not allow and encourage open access at all as there is not even one open access consumer in the State of U.P. This in turns leads to power shortage in the State.

The Following table explains problems and issues related to Open Access in different Indian states:

Figure 10: State level open Access Issues<sup>12</sup>

| State              | Issues with Open Access                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Maharashtra</b> | <i>Costs for the open Access consumers in the Maharashtra State are higher due to the significant surge or rise in the cross subsidy surcharge in the latest tariff revision</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>West Bengal</b> | <i>The Cross subsidy surcharge is surged at a height of 3.27/kWh as the State of West Bengal uses a modified formula for calculating the cross subsidy surcharge. Thus, open access is expensive for the consumers to avail for the procurement of power.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Haryana</b>     | <p><i>Regulations, 2013, The state of affairs for grant of open Access have been tightened due to the 1<sup>st</sup> amendment in the Terms and Conditions for Grant of Connectivity and open Access for Intra-state Transmission and Distribution system.</i></p> <p><i>Likewise, an open access consumer is required to prove a definite slot- wise schedule of power in one day advance time. The consumer is additionally mandated to administer its drawl from the licensee in case a reduced final schedule is accepted. However, penalties will be charged in case of over drawl in any time-slot.</i></p> <p><i>Moreover, if the consumer exceeds the demand which was contracted by him by more than 5% than a heavy penalty will be levied on the soP amount for that month in the form of demand surcharge of 25%. The Regulation also confines the incentive provided to an open access consumers due to reasons within its control. The consumer shall be compensated only to the extent of 10% of the entitled drawl in a time slot or up to 5% of the entitled drawl on aggregate basis for all the 96 time slots in a day.</i></p> |
| <b>Odisha</b>      | <i>The current cross subsidy surcharge in the state of Odisha is at a height of 2.76 per unit in addition to the moderately higher wheeling charges of 0.99 per unit. All this has drastically increased the cost for open access consumers.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

<sup>12</sup> [http://www.iiexindia.com/Uploads/Reports/14\\_01\\_2015IEX\\_India\\_IPM\\_Report.pdf](http://www.iiexindia.com/Uploads/Reports/14_01_2015IEX_India_IPM_Report.pdf)

|                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Jharkhand</b> | <p>The amendment was brought to the Jharkhand open Access Regulation 2010 wherein the open access consumer and open access generator is required to pay to the distribution licensee for reactive power drawl and injection @ 6 paisa/kVARH with an escalation of 0.25 paisa per annum. And in case of drawl the payment is to be given when the voltage at the interface metering point is below 97% and in case of injection when the voltage at the interface metering is above 103%. This has further led to an increase in costs for the open access consumers in the state.</p> <p>Moreover, less information pertaining to limited open access indicates opaqueness in the process. Thus, the State utility and the regulator should make the open access information transparently available on the website of the state Load Dispatch Centre.</p> |
| <b>U.P.</b>      | <p>Uttar Pradesh has currently zero Cross subsidy surcharge and the open access charges are low in the State.</p> <p>The lack of open Access consumers in the state is primarily due issues pertaining to the infrastructure and lack of preparedness at the SLDC level.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Punjab</b>    | <p>The Regulator has constrained the demand of OA customers to the point the peak load restrictions are allowed as per the Regulations governing Open access. This leads to the restricting the open access activity.</p> <p>Moreover, open access consumers are the cross subsidizing category for other consumer groups due to stereotypical reasons. Thus, reduction of power off-take by them from PsPCL power pool has given adverse effect on the tariff of other categories.</p>                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Bihar</b>     | <p>Though the regulatory framework is conducive in the state of Bihar still there are limited number of open access consumers. Poor information on the reasons for limited open access indicates opacity in process. It is therefore for the state utility and the Regulator to make open access information transparently available on the website of the state Load Dispatch Centre.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

Figure 11: State-wise Open Access Consumers at IEX (As on 30<sup>th</sup> June 2013)<sup>13</sup>

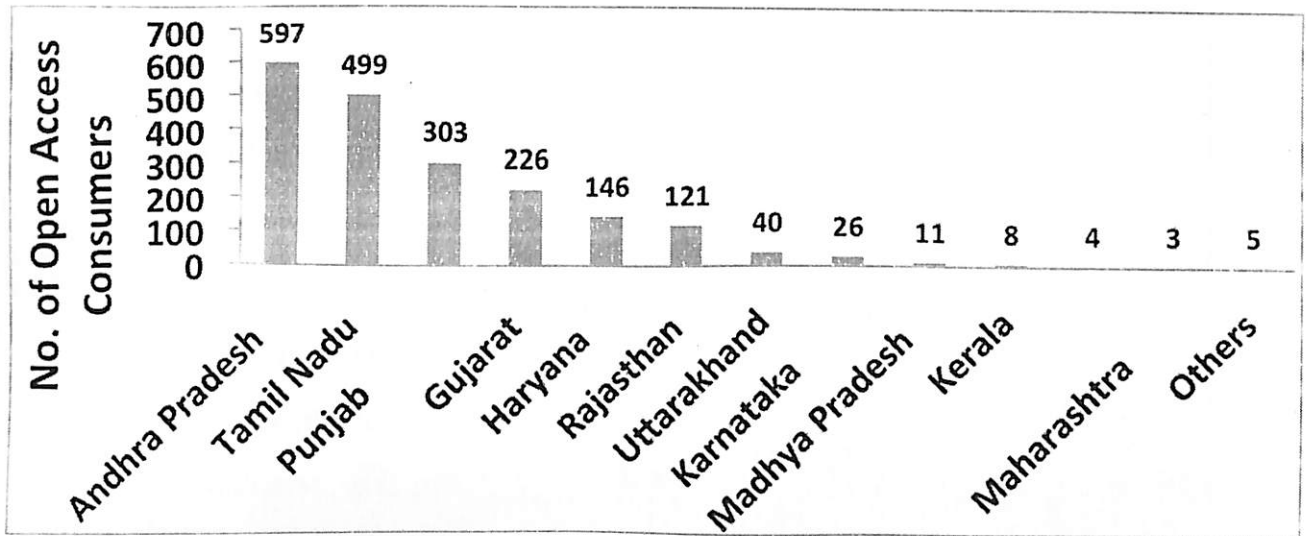
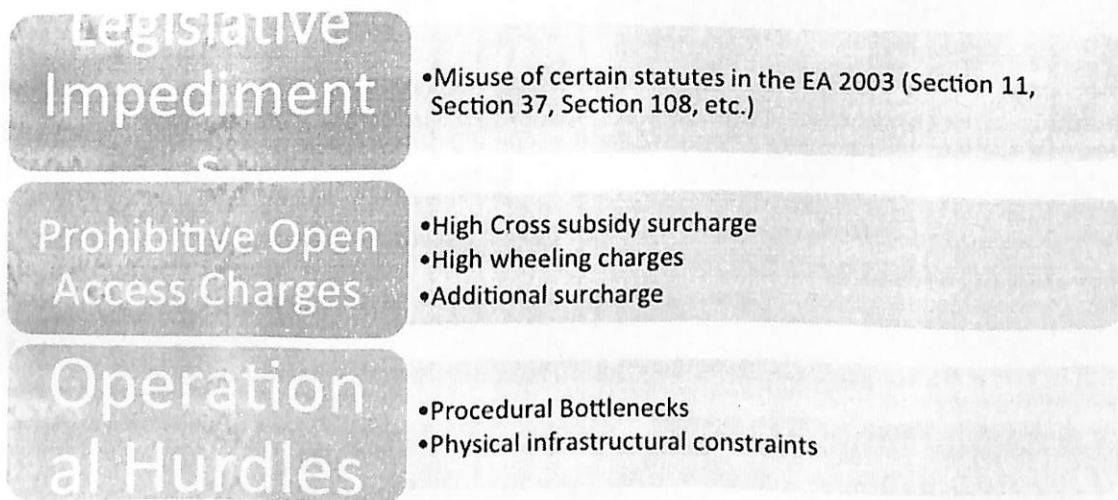


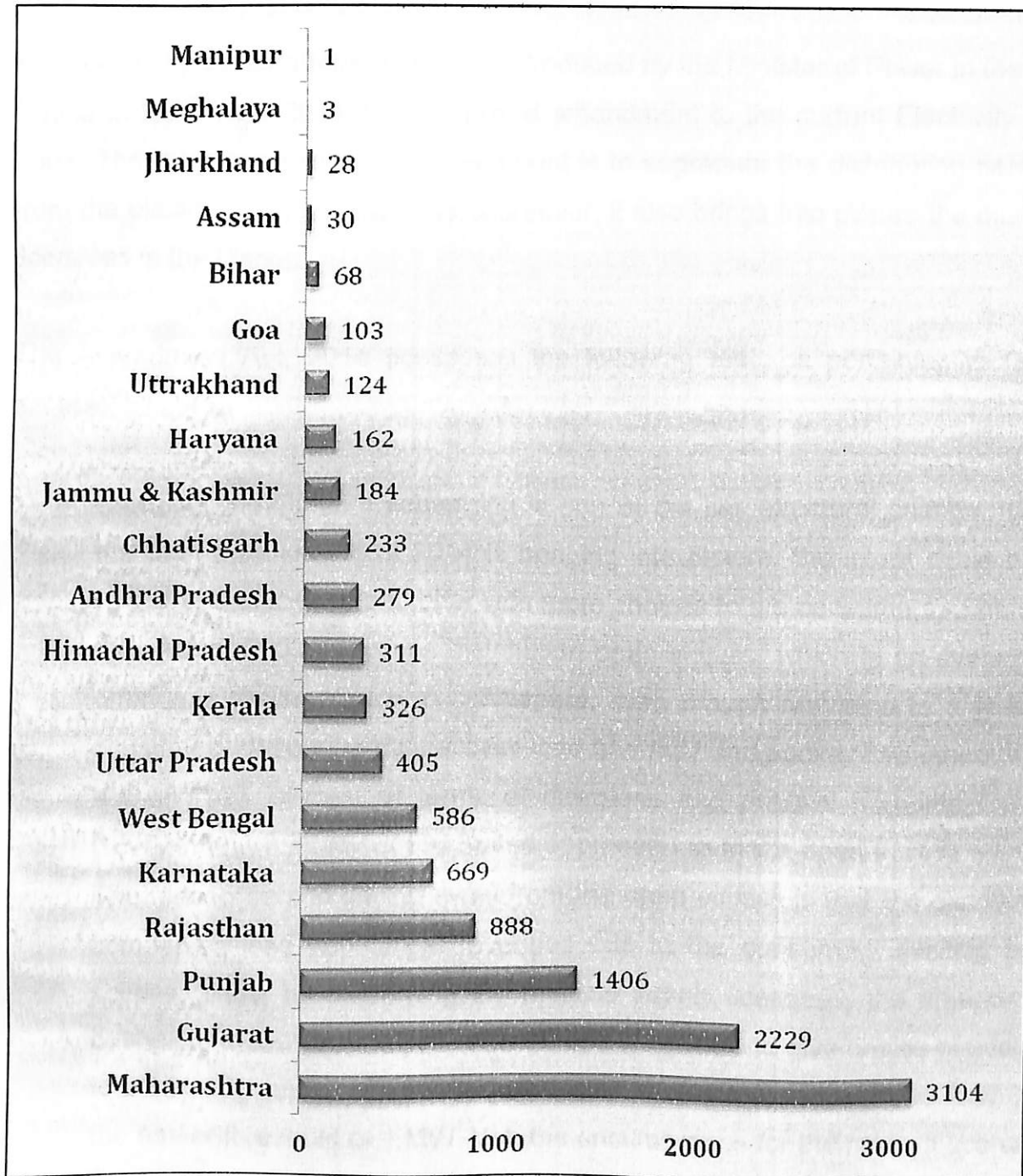
Figure 12: Barriers to Open Access<sup>14</sup>



<sup>13</sup> [www.ficci.com/events/21546/ISP/8-IEX.ppt](http://www.ficci.com/events/21546/ISP/8-IEX.ppt)

<sup>14</sup> Ibid.

Figure 13: State Electricity Duty (Rs. crore) in different states for 2011-12<sup>15</sup>



The average incidence of SED on the sale of electricity was around 18.8 paise/kWh in 2011-12.

<sup>15</sup> [http://planningcommission.nic.in/reports/genrep/rep\\_arpower0306.pdf](http://planningcommission.nic.in/reports/genrep/rep_arpower0306.pdf)

## **Reforms in the Electricity Act**

### **The Electricity (Amendment) Bill, 2014**

The Electricity (Amendment) Bill, 2014 introduced by the Minister of Power in the Lok Sabha in December 2014 as a proposed amendment to the current Electricity Act, 2003. The main purpose of the amendment is to segregate the distribution network from the electricity supply business. Moreover, it also brings into picture the multiple licensees in the Market.

The Amendment Act, 2014 possesses the following features pertaining to Open access:

- Carriage and Content separation is one of the key structural change, which the draft amendment of 2014 is bringing into picture, the intent could be to encourage efficiency and offer with more choices to the consumers. Whereas, the Act of 2003 sanctions distribution open access, which is an avenue for offering a similar choice to consumers, even though restricted to only large consumers devouring connectivity load of 1 MW and above. Even though the Act of 2003 is clear in terms of directions and policies from the Central Government, majority of the States apprehend to make open access a trend. The reason behind shying away from the open access is that the distribution companies lose substantial revenues due to the consumers availing open access. Thus, by presenting the multiple supply licensees, the amendment bashes to systemize the provision for open access and give choice of supplier to a larger group of consumers, who may have a lower connected load than the earlier threshold of 1 MW. Yet, the encumbrance for the present licensees on justification of the loss of cross-subsidy remnants and it is not clear how the same will be addressed.

- Section 37 of the Electricity Act 2003 is proposed to be amended by Clause 16 of the Amendment Bill 214 to empower the Government in power to issue timely directions for Grid security and safety.<sup>16</sup>
- Section 38 of the Electricity Act 2003 is proposed to be amended by the clause 17 of the Bill to specify that a consumer availing the open access procedure to procure power shall be required to pay surcharge along with the transmission charges. Moreover, it is clearly stated that the surcharge shall be as specified by the Appropriate State Commission and not by the Central Commission as the issue of cross subsidy is dealt by State Commission and not the Central commission.<sup>17</sup>
- Section 39 of the Electricity Act 2003 is proposed to be amended by Clause 18 of the Amendment Bill which states that consumer getting power with the help of open access is required to pay surcharge along with the transmission charges that needs to be paid.<sup>18</sup>
- Section 42 of the Electricity Act 2003 is proposed to be amended by the Bill in detail as it lays down that the distribution licensee is required to improve and maintain a proficient, co-ordinated and cost-effective distribution system in his area of distribution and to make way for supplying electricity as per the provisions laid down in the Act, also to endow with a non-discriminatory open access to its distribution system as indicated by the Appropriate State Commission, Moreover the distribution licensee is required to perform such other functions as well which are not inconsistent with the Act as may be specified by the Appropriate Commission. As per section 42 (4) in the Bill, no cross subsidy surcharge shall be levied on availing open access in renewable energy sources. It is also stated in the Bill that the consumer availing Open access facility shall not switch over to any other supplier without giving notice

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<sup>16</sup> Clause 16 of the Electricity (Amendment) Act 2014

<sup>17</sup> Clause 17 of the Electricity (Amendment) Act 2014

<sup>18</sup> Clause 18 of the Electricity (Amendment) Act 2014

of minimum time period as may be specified by the Appropriate Commission.<sup>19</sup>

- Section 49 of the Electricity Act 2003 is proposed to be amended by the Bill of 2014 by Clause 28 which states that all the consumers procuring power for more than 1 MW are allowed to avail the open access facility by entering into an agreement with any person for supply or purchase of electricity on stated terms and conditions as agreed by them.<sup>20</sup>
- The 2014 Bill tries to bring in the concept of **Smart grid**. Smart Grid is defined as an electricity network that uses information and communication technology to generate, transmit and distribute electricity efficiently. It seeks to promote provision of electricity through Smart Grid. The Bill also provides for the installation of smart meters for proper accounting and measurement of the consumption and metering of electricity.

## **Concept of 24x7 Power Supply**

### **SMART-GRIDS**

A "Smart-Grid" is a model for changing an electric power grid with the help of advanced communications, automated controls and other forms of enhanced information technology. It assimilates fresh innovative tools and technologies from generation, transmission and distribution to endow the consumers with appliances and equipment.<sup>21</sup>

This concept or vision of a Smart-Grid is proposed to be brought into picture for efficient and effective generation, distribution and consumption after assimilating

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<sup>19</sup> Clause 20 of the Electricity (Amendment) Act 2014

<sup>20</sup> Clause 28 of the Electricity (Amendment) Act, 2014

<sup>21</sup> S. Massoud Amin and B.F. Wollenberg, "Toward a SmartGrid: power delivery for the 21st century," IEEE Power and Energy Magazine, Vol. 3, No. 5, pp. 34-41, Sept.-Oct. 2005.

energy infrastructure, processes, devices, data and markets into a a harmonized and combined process.

The arrangements for Smart-Grid sums up all the steps or junctures of electric power cycle i.e. generation, transmission, distribution, metering and consumption. Making of Smart-grid primarily focuses on sustainable alternatives, hence facilitates devices at all levels within the grid (from utility to customer) to sense, anticipate and respond in an independent manner to real-time conditions by accessing, sharing and acting on real-time information. In other words, Smart-Grid is the union of intelligence and operational technology applied to the electric grid thereby countenancing the sustainable options to consumers thus leading to improved security, consistency and efficiency to utilities.

It is also anticipated that this modern type of smart-grid would generate a digital energy system that will perform the following functions: <sup>22</sup>

- ✓ Spot and address any budding problem on the system before it affects the service.
- ✓ Retort to the local inputs used in the system.
- ✓ Feature in the widespread dimensions, speedy communications, integrated and unconventional diagnostics.
- ✓ Feedback mechanism that swiftly stabilise the system after disruptions or disorders.
- ✓ Consumers are endowed with appropriate information and control options.
- ✓ Install and integrate disseminated resources together with the renewable resources.
- ✓ Assimilate the “smart” appliances and consumer devices like the hybrid cars, electric vehicles, etc.

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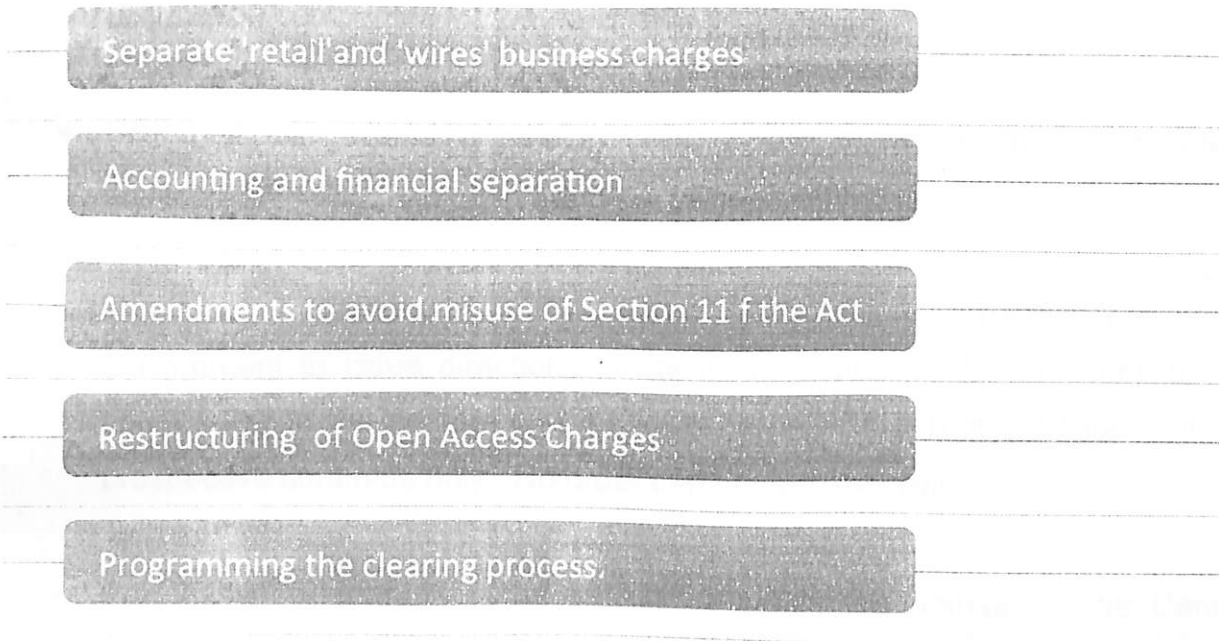
<sup>22</sup> E. Richard Brown, “Impact of Smart Grid on distribution system design,” Industry Applications Conference, Oct. 2008.

Besides the above stated amendments proposed in the Electricity Act 2003 on the concept of open access other provisions are also proposed to be amended in detail. Proposed provisions related only to open access are produced for the sake of brevity and confinement to the title of the Report.

Therefore, it is to be comprehended that these proposed amendments when come into force, how effective are on the power sector.

## Recommendations

Figure 14: Open Access Wish list



The following are a few recommendations for improving the open access practice in the country and thereby ensuring better power procurement:

- The provisions of Act of 2003 needs to be clear enough so that the consumers of 1 MW and above atleast do not fall within the purview of the State Regulatory Commissions as far as tariff fixation is concernd. Such consumers are required to independently source power from the generating companies, power exchnage trading companies and any other means as is permitted under the Act of 2003.
- Segregation of carriage and content in distribution need to be time bound and shoud also address the issues pertaining to the responsibility of commercial losses, quality of supply, standard of performance, service and

allocation/decision of the long term PPA which the distribution companies have got as part of legacy at the time of restructuring of the sectors in the State.

- The Regulatory Commissions to be made duty bound to instigate the concept of deemed open access approvals for the consumers for definite timelines in case of abnormal adjournments by the Load Dispatch Centres and/or distribution companies for the necessary permissions.
- CERC should extend a helping hand to the State regulators for timely implementation of Open Access across the country.
- Provision of Section 11 of the Act of 2003 which empowers the State Government to issue directions in the State in public interest needs to be taken away to the extent that it should be only for a limited period and for prospective contracts only. No order can be retrospective.
- Prerogative of formulation of NE&TP is within the domain of the Central Government. While amending the electricity and tariff policy the principle should mandatorily be followed by the State Governments /State Regulatory commission instead of only being guiding in nature.
- The Central government if wants to achieve the better power supply mission than it should persuade the state governments to indulge more into the Open access. Moreover, the states which do not indulge in open access should be persuaded more and given more funds and help to achieve the benefits of better power supply via open access.
- The section 86 of the Act necessitates the state commissions to only ascertain wheeling and surcharges for the consumers eligible for open access under section 42 but it does not talk about anything related consumers eligible for open access under section 49. This builds up excessive perplexity and litigation. Thus, needs to be dealt with time. Therefore, to certify unvarying treatment for all consumers availing open access and to eradicate likelihood

of numerous interpretations. All the terms and conditions concerning the open access issue must be postulated under one section in a clear and explicit manner.

- The State / Regional Load Dispatch Centres are required to play a pro-active role to set down various effective provisions that are fair and uniform in their approach and can be enforced for open access to triumph. Infrastructure needs to be strengthened so that Open Access can be popular in the country. Once the in consultation with various patrons lays down policies and procedures should not be amended/changed repeatedly for individual gains of the suppliers or consumers.
- Given the proliferation of supply licensees and open access consumers that is expected as a result of the amendment, it is crucial to monitor and mandate public sharing of all important and relevant intra-state market transactions. Further, facilitate transparent analysis of all market transactions, the act should also mandate setting up of market surveillance committees at both centre and state level, which should comprise of, stake holders which may inuce advocacy groups, industry associations such as CCI, ASSOCHAM, FICCI as well as eminent persons in the power sector( power sector professionls) to balance the interest of all stakeholders.
- The load of the sate, regional and national levels need to be operated by independent companies not as a subsidiary of any state governemnt company. The Sections 29(6) and 33(5) are required to be corrected as to include all entities which are a part of the grid system. As these sections only deal with the issue of non-compliance with the directions of gird operator, specify penalties only for licensees and seem to have exempted open access consumers and generators. This is not at all correct as all the entities which are a part of the grid system are required to meet with the grid code and all the specifications and directions as predetermined by the grid operator.
- The section 142 empowers the commissions to penalize anyone for non-compliance with its orders, directions or rules or regulations. In the current

Act, this section applies to any entity or person who is guilty of such non-compliance. However, the proposed amendments restrict its scope to only a generator or a licensee. Given the proliferation of open access consumers and market-based entities that is expected as a result of the proposed amendment, it would be highly inappropriate to restrict the scope of this important clause. This should therefore be changed to include any person who is guilty of non-compliance with any of the commission's orders, rules or regulations.

- There is a need to create a market for transmission rights. Considerable capacity remains unsold on the exchange because of the want of transmission capacity between the point of injection and point of withdrawal.
- The Indian Power Market with the backing of government, regulators and all the participants is evolving in the correct path but inhibitions like improper supply, inadequate transmission capacity and inefficient management of jamming in transmission lines, all these act as major hindrances in the implementation of a flawless, developed power market. Thus, the existence of Power Exchanges is likely to overcome these barriers. This is going to be one of the vault in the long journey of capacity building, efficient working of power sector & maximum utilization of resources. Thus, will help in improving the deficiency of power.

## **Conclusion**

In India, the shortage of electricity results in extreme inelasticity of demand in the time near to delivery. This results in both supplier market power and buyer's desperation to secure energy irrespective of cost. With this background, capacity markets could be considered in India for a various reasons the capacity is acquired ahead of time, the pressure on the utilities in the near term can be considerably reduced. As a corollary, commitment to capacity in forward markets puts a downward pressure on energy prices in short term markets and would also reduce volatility. Open Access has been widely recognized as the soul of the Electricity Act. This is so because open access is the mechanism crafted to usher in competition and choice, and in turn facilitate investments and protect interests of the consumers. Commercially, open access mechanism in India is still evolving and is, therefore, yet far from being adequate and mature to provide a robust business model for power utilities.

The matter of open access for consumers with load exceeding 1 MW has been under dialogue in recent past in analysis of a variety of interpretations floated in the framework. The Government of India in its latest explanation has expressed that Section 42 of the Electricity Act makes it obligatory for all consumers who require load more than 1 Megawatt to be open access consumers and that the tariffs for such consumers shall not be keeping pace by SERCs.

The rules & regulations make it profusely obvious that open access is not a rampant or absolute right. It is based on transmission constraints and maintenance of the safety of the grid; it is approved on first come first served basis. Whenever there is jamming it is granted by bidding. This open access is required by a generating company to supply power to any licensee and it is accorded as per the Rules & regulations under Section 10(2) of the Act. Thus, grant of open access is based on Section-11 of the Act. When power is required to congregate a situation occurring in public interest or natural disaster or conditions happening out of menace to safety & security of the Public Order & State, it is allowed. The right to open access is regulated or restricted under the Electricity Act. Thus, it is not an absolute right or unbridled right.

Electricity is one of the chief tool for speedy economic development and poverty mitigation. In India the stipulation for electricity has been surpassing the augmentation of accessibility. Considerable crest and power scarcity exist in the country all which is because of insufficiency in generation, transmission and distribution as well as ineffectual use of electricity. All that is affects high level of technical and commercial. Thus, the noteworthy point is the stake holders ought to understand that the ground authenticity and the requirements of the circumstances. It needs to be understood that this colossal difficulty faced by the nation cannot be solved with a stroke of pen. It is a very ambitious endeavour in the backdrop of the Indian state of affairs. The preliminary period of five years set for providing access of power to all households is over. But at the same instance the purpose has to be accomplished in near future, if the nation has to ensue in the pathway of enlargement and amalgamation of its market with the world economy to facilitate it to have a stand in the world affairs. Several sacrifices on the part of all the stake holders in this project is of much importance. Till adequate power is produced o generated in the nation, which could convene all our necessities, in case of ominous want, in public interest, the Government ought to have the power to get involved to surge over state of affairs, which is accurately depicted as "*extraordinary circumstances*". Thus, to that point private interest must capitulate to public interest.

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## Annexure 1

| UNIT COST OF POWER SUPPLY |                  |             |         |         |                  |                 |
|---------------------------|------------------|-------------|---------|---------|------------------|-----------------|
| S.No.                     | State/EDs        | 2009-10     | 2010-11 | 2011-12 | 2012-13<br>(R.E) | 2013-14<br>(AP) |
| <i>I SPU's</i>            |                  | (Paise/Kwh) |         |         |                  |                 |
| 1                         | Andhra Pradesh   | 402.05      | 427.29  | 478.70  | 526.87           | 563.15          |
| 2                         | Assam            | 546.86      | 641.91  | 673.06  | 685.09           | 629.15          |
| 3                         | Bihar            | 713.07      | 861.10  | 1171.00 | 864.42           | 784.59          |
| 4                         | Chattisgarh      | 339.97      | 373.60  | 443.61  | 417.75           | 410.76          |
| 5                         | Delhi            | 513.99      | 554.42  | 658.64  |                  |                 |
| 6                         | Gujarat          | 381.04      | 418.43  | 454.87  | 484.54           | 495.54          |
| 7                         | Haryana          | 578.75      | 557.51  | 798.91  | 679.58           | 646.06          |
| 8                         | Himachal Pradesh | 451.03      | 485.17  | 523.22  | 543.63           | 526.01          |
| 9                         | Jammu & Kashmir  | 644.42      | 699.48  | 865.14  | 755.57           | 674.30          |
| 10                        | Jharkhand        | 500.10      | 513.62  | 626.56  | 748.22           | 942.44          |
| 11                        | Karnataka        | 408.78      | 456.60  | 472.69  | 500.46           | 504.79          |
| 12                        | Kerala           | 439.26      | 455.39  | 484.17  | 658.97           | 596.71          |
| 13                        | Madhya Pradesh   | 539.33      | 538.31  | 612.81  | 601.38           | 538.61          |
| 14                        | Maharashtra      | 468.73      | 498.87  | 525.21  | 549.80           | 584.19          |
| 15                        | Meghalaya        | 451.39      | 487.77  | 592.08  | 621.24           | 524.19          |
| 16                        | Orissa           | 337.91      | 421.94  | 532.59  |                  |                 |
| 17                        | Punjab           | 422.05      | 473.31  | 479.85  | 544.72           | 578.47          |
| 18                        | Rajasthan        | 699.71      | 654.68  | 688.72  | 720.89           | 697.54          |
| 19                        | Tamil Nadu       | 504.34      | 590.64  | 611.69  | 714.01           | 645.72          |
| 20                        | Uttar Pradesh    | 500.55      | 559.20  | 668.44  | 672.04           | 706.23          |
| 21                        | Uttarakhand      | 409.51      | 401.32  | 453.18  | 494.99           | 510.20          |
| 22                        | West Bengal      | 443.49      | 460.37  | 618.09  | 590.78           | 612.91          |
| Average of SPU's :        |                  | 472.68      | 507.73  | 571.22  | 593.99           | 594.64          |

## II. EDs

|   |                   |         |        |         |         |        |
|---|-------------------|---------|--------|---------|---------|--------|
| 1 | Arunachal Pradesh | 1222.30 | 871.36 | 1171.28 | 963.80  | 824.19 |
| 2 | Goa               | 287.20  | 321.03 | 367.87  | 408.00  | 371.73 |
| 3 | Manipur           | 782.40  | 798.97 | 976.55  | 915.61  | 855.31 |
| 4 | Mizoram           | 913.24  | 725.76 | 826.59  | 845.84  | 740.58 |
| 5 | Nagaland          | 630.23  | 727.16 | 920.43  | 1011.23 | 906.04 |
| 6 | Pondicherry       | 262.80  | 322.40 | 358.39  | 403.38  | 406.16 |
| 7 | Sikkim            | 243.44  | 306.17 | 332.14  | 342.41  | 318.95 |
| 8 | Tripura           | 376.83  | 464.93 | 570.19  | 584.41  | 510.37 |

|                       |               |               |               |               |               |
|-----------------------|---------------|---------------|---------------|---------------|---------------|
| <b>Average of EDs</b> | <b>364.20</b> | <b>410.59</b> | <b>476.15</b> | <b>508.81</b> | <b>486.44</b> |
|-----------------------|---------------|---------------|---------------|---------------|---------------|

|                          |               |               |               |               |               |
|--------------------------|---------------|---------------|---------------|---------------|---------------|
| <b>All India Average</b> | <b>471.09</b> | <b>506.29</b> | <b>569.84</b> | <b>592.75</b> | <b>593.13</b> |
|--------------------------|---------------|---------------|---------------|---------------|---------------|

# Annexure 2

## BULK UNIT COST OF POWER SUPPLY (including from own generation)

| S.No. | State/EDs | 2009-10 | 2010-11 | 2011-12 | 2012-13<br>(R.F) | 2013-14<br>(AP) |
|-------|-----------|---------|---------|---------|------------------|-----------------|
|-------|-----------|---------|---------|---------|------------------|-----------------|

### I SPUs

(Paise/Kwh)

|    |                  |        |        |        |        |        |
|----|------------------|--------|--------|--------|--------|--------|
| 1  | Andhra Pradesh   | 276.33 | 290.22 | 332.09 | 385.62 | 425.62 |
| 2  | Assam            | 264.89 | 333.23 | 375.88 | 374.34 | 363.80 |
| 3  | Bihar            | 263.93 | 304.89 | 373.80 | 341.89 | 388.14 |
| 4  | Chattisgarh      | 180.88 | 207.90 | 259.41 | 256.82 | 285.91 |
| 5  | Delhi            | 346.96 | 381.89 | 452.36 |        |        |
| 6  | Gujarat          | 274.94 | 305.63 | 338.18 | 360.19 | 371.71 |
| 7  | Haryana          | 335.93 | 343.09 | 394.45 | 397.64 | 399.49 |
| 8  | Himachal Pradesh | 260.94 | 279.36 | 269.98 | 302.68 | 309.52 |
| 9  | Jammu & Kashmir  | 192.12 | 217.00 | 271.10 | 319.56 | 384.01 |
| 10 | Jharkhand        | 231.24 | 266.39 | 311.52 | 402.45 | 547.43 |
| 11 | Karnataka        | 258.35 | 306.38 | 309.52 | 333.49 | 341.60 |
| 12 | Kerala           | 215.58 | 221.55 | 238.08 | 383.46 | 320.86 |
| 13 | Madhya Pradesh   | 202.91 | 215.80 | 275.56 | 290.86 | 288.23 |
| 14 | Maharashtra      | 278.94 | 320.45 | 355.96 | 377.22 | 387.99 |
| 15 | Meghalaya        | 150.21 | 185.47 | 260.41 | 206.22 | 206.13 |
| 16 | Orissa           | 143.21 | 199.72 | 254.05 |        |        |
| 17 | Punjab           | 205.46 | 236.74 | 230.66 | 276.28 | 303.41 |
| 18 | Rajasthan        | 366.27 | 325.24 | 335.90 | 375.80 | 380.08 |
| 19 | Tamil Nadu       | 303.55 | 341.12 | 377.01 | 429.09 | 387.81 |
| 20 | Uttar Pradesh    | 281.49 | 309.27 | 369.92 | 389.62 | 409.18 |
| 21 | Uttarakhand      | 249.21 | 249.24 | 297.22 | 331.30 | 340.60 |
| 22 | West Bengal      | 260.49 | 271.60 | 377.67 | 382.88 | 382.32 |

|                          |               |               |               |               |               |
|--------------------------|---------------|---------------|---------------|---------------|---------------|
| <b>Average of SPUs :</b> | <b>270.46</b> | <b>295.69</b> | <b>335.18</b> | <b>363.30</b> | <b>373.20</b> |
|--------------------------|---------------|---------------|---------------|---------------|---------------|

## II. EDs

|   |                   |        |        |        |        |        |
|---|-------------------|--------|--------|--------|--------|--------|
| 1 | Arunachal Pradesh | 203.18 | 185.43 | 325.26 | 316.22 | 288.03 |
| 2 | Goa               | 188.90 | 219.53 | 263.72 | 286.28 | 247.27 |
| 3 | Manipur           | 202.73 | 229.53 | 377.55 | 342.43 | 343.33 |
| 4 | Mizoram           | 226.47 | 253.04 | 325.46 | 347.29 | 288.50 |
| 5 | Nagaland          | 238.47 | 254.64 | 358.40 | 383.00 | 370.16 |
| 6 | Pondicherry       | 199.86 | 252.56 | 290.78 | 329.00 | 329.89 |
| 7 | Sikkim            | 158.53 | 188.54 | 228.99 | 243.71 | 228.00 |
| 8 | Tripura           | 156.60 | 241.90 | 311.44 | 314.70 | 294.12 |

|                       |               |               |               |               |               |
|-----------------------|---------------|---------------|---------------|---------------|---------------|
| <b>Average of EDs</b> | <b>190.92</b> | <b>229.63</b> | <b>290.71</b> | <b>310.72</b> | <b>292.06</b> |
|-----------------------|---------------|---------------|---------------|---------------|---------------|

|                          |               |               |               |               |               |
|--------------------------|---------------|---------------|---------------|---------------|---------------|
| <b>All India Average</b> | <b>269.34</b> | <b>294.74</b> | <b>334.55</b> | <b>362.56</b> | <b>372.07</b> |
|--------------------------|---------------|---------------|---------------|---------------|---------------|

## Annexure 3

## COST STRUCTURE OF SPUs, 2009-10 (Actual)

| S.No. | State/EDs | Fuel     | Power | O & M | Estt/ | Misc. | Depre-  | Interest | Total |
|-------|-----------|----------|-------|-------|-------|-------|---------|----------|-------|
|       |           | Purchase |       | exp.  | Admn. | exp.  | ciation |          |       |

## I. SPUs

(Paise/Kwh of sale)

|    |                  |        |        |       |        |        |       |        |        |
|----|------------------|--------|--------|-------|--------|--------|-------|--------|--------|
| 1  | Andhra Pradesh   | 0.00   | 337.44 | 4.52  | 25.41  | -2.37  | 15.05 | 22.00  | 402.05 |
| 2  | Assam            | 0.00   | 386.96 | 9.13  | 110.71 | 2.06   | 17.85 | 20.15  | 546.86 |
| 3  | Bihar            | 10.99  | 416.91 | 9.60  | 101.04 | 21.24  | 9.84  | 143.45 | 713.07 |
| 4  | Chattisgarh      | 0.00   | 266.09 | 6.82  | 54.77  | 0.00   | 5.53  | 6.76   | 339.97 |
| 5  | Delhi            | 0.00   | 412.80 | 8.47  | 39.33  | 13.68  | 15.08 | 24.62  | 513.99 |
| 6  | Gujarat          | 0.00   | 331.60 | 3.88  | 31.47  | 0.00   | 10.27 | 3.82   | 381.04 |
| 7  | Haryana          | 0.00   | 456.60 | 3.64  | 75.52  | 3.62   | 6.43  | 32.94  | 578.75 |
| 8  | Himachal Pradesh | 0.00   | 305.93 | 4.29  | 109.60 | -8.48  | 14.87 | 24.82  | 451.03 |
| 9  | Jammu & Kashmir  | 3.78   | 516.03 | 10.66 | 88.45  | 0.00   | 21.58 | 3.91   | 644.42 |
| 10 | Jharkhand        | 24.81  | 332.44 | 11.77 | 43.02  | -18.08 | 8.60  | 97.53  | 500.10 |
| 11 | Karnataka        | 0.00   | 328.61 | 3.20  | 38.59  | 5.71   | 10.33 | 22.34  | 408.78 |
| 12 | Kerala           | 25.94  | 240.93 | 12.33 | 115.21 | -6.03  | 32.12 | 18.76  | 439.26 |
| 13 | Madhya Pradesh   | 0.00   | 319.98 | 5.49  | 98.14  | 18.09  | 37.63 | 60.00  | 539.33 |
| 14 | Maharashtra      | 0.00   | 372.87 | 9.32  | 33.48  | 33.63  | 12.70 | 6.72   | 468.73 |
| 15 | Meghalaya        | 0.00   | 227.44 | 26.46 | 124.31 | 0.00   | 26.50 | 46.69  | 451.39 |
| 16 | Orissa           | 0.00   | 228.66 | 6.62  | 57.41  | 25.35  | 7.52  | 12.35  | 337.91 |
| 17 | Punjab           | 111.70 | 144.30 | 11.79 | 78.89  | 0.37   | 24.65 | 50.35  | 422.05 |
| 18 | Rajasthan        | 0.00   | 518.55 | 5.55  | 82.22  | -5.26  | 15.33 | 83.33  | 699.71 |
| 19 | Tamil Nadu       | 74.92  | 295.15 | 6.00  | 56.68  | 8.81   | 14.53 | 48.25  | 504.34 |
| 20 | Uttar Pradesh    | 0.00   | 408.37 | 13.01 | 20.53  | 11.46  | 11.53 | 35.66  | 500.55 |
| 21 | Uttarakhand      | 0.00   | 330.20 | 7.87  | 27.02  | 17.21  | 14.95 | 12.26  | 409.51 |
| 22 | West Bengal      | 0.04   | 341.87 | 6.25  | 45.81  | 12.37  | 14.09 | 23.06  | 443.49 |

|                 |       |        |      |       |      |       |       |        |
|-----------------|-------|--------|------|-------|------|-------|-------|--------|
| Average of SPUs | 16.24 | 343.15 | 7.14 | 51.43 | 8.29 | 14.86 | 31.57 | 472.68 |
|-----------------|-------|--------|------|-------|------|-------|-------|--------|

## II. EDs

|   |                   |       |        |        |        |      |        |        |         |
|---|-------------------|-------|--------|--------|--------|------|--------|--------|---------|
| 1 | Arunachal Pradesh | 16.14 | 401.10 | 138.82 | 595.15 | 0.00 | 0.00   | 71.09  | 1222.30 |
| 2 | Goa               | 0.00  | 222.66 | 12.74  | 42.27  | 0.00 | 6.42   | 3.11   | 287.20  |
| 3 | Manipur           | 3.79  | 369.92 | 24.85  | 163.39 | 0.00 | 220.46 | 0.00   | 782.40  |
| 4 | Mizoram           | 16.26 | 343.14 | 68.18  | 263.07 | 0.00 | 0.00   | 222.58 | 913.24  |
| 5 | Nagaland          | 0.25  | 375.06 | 49.85  | 104.53 | 2.61 | 42.39  | 55.54  | 630.23  |
| 6 | Pondicherry       | 0.00  | 231.09 | 2.92   | 19.68  | 0.00 | 9.10   | 0.00   | 262.80  |
| 7 | Sikkim            | 0.66  | 200.27 | 18.15  | 24.36  | 0.00 | 0.00   | 0.00   | 243.44  |
| 8 | Tripura           | 86.54 | 121.42 | 20.30  | 100.37 | 0.00 | 48.20  | 0.00   | 376.83  |

|                       |              |               |              |              |             |              |              |               |
|-----------------------|--------------|---------------|--------------|--------------|-------------|--------------|--------------|---------------|
| <b>Average of EDs</b> | <b>10.04</b> | <b>233.37</b> | <b>18.53</b> | <b>70.12</b> | <b>0.11</b> | <b>19.92</b> | <b>12.10</b> | <b>364.20</b> |
|-----------------------|--------------|---------------|--------------|--------------|-------------|--------------|--------------|---------------|

|                          |              |               |             |              |             |              |              |               |
|--------------------------|--------------|---------------|-------------|--------------|-------------|--------------|--------------|---------------|
| <b>All India Average</b> | <b>16.15</b> | <b>341.54</b> | <b>7.31</b> | <b>51.71</b> | <b>8.17</b> | <b>14.93</b> | <b>31.28</b> | <b>471.09</b> |
|--------------------------|--------------|---------------|-------------|--------------|-------------|--------------|--------------|---------------|

## Annexure 4

**COST STRUCTURE OF SPUs, 2010-11 (Actual)**

| S.No.                  | State/EDs        | Fuel                       | Power Purchase | O & M exp.  | Estt/ Admn.  | Misc. exp.  | Depre- ciation | Interest     | Total         |
|------------------------|------------------|----------------------------|----------------|-------------|--------------|-------------|----------------|--------------|---------------|
| <b>I. SPUs</b>         |                  | <b>(Paise/Kwh of sale)</b> |                |             |              |             |                |              |               |
| 1                      | Andhra Pradesh   | 0.00                       | 346.81         | 4.00        | 39.70        | -1.49       | 15.87          | 22.42        | 427.29        |
| 2                      | Assam            | 0.00                       | 472.27         | 8.03        | 104.94       | 21.64       | 16.23          | 18.80        | 641.91        |
| 3                      | Bihar            | 10.80                      | 529.68         | 10.18       | 103.30       | 28.17       | 14.73          | 164.24       | 861.10        |
| 4                      | Chattisgarh      | 0.00                       | 300.98         | 6.49        | 52.41        | 0.00        | 8.43           | 5.29         | 373.60        |
| 5                      | Delhi            | 0.00                       | 456.70         | 9.83        | 27.52        | 11.83       | 14.23          | 34.32        | 554.42        |
| 6                      | Gujarat          | 0.00                       | 373.62         | 3.32        | 28.00        | 0.00        | 10.75          | 2.73         | 418.43        |
| 7                      | Haryana          | 0.00                       | 453.10         | 2.85        | 43.51        | 8.10        | 6.32           | 43.62        | 557.51        |
| 8                      | Himachal Pradesh | 0.00                       | 314.15         | 5.21        | 113.79       | 14.57       | 16.00          | 21.44        | 485.17        |
| 9                      | Jammu & Kashmir  | 4.95                       | 566.62         | 12.21       | 90.47        | 0.00        | 21.74          | 3.49         | 699.48        |
| 10                     | Jharkhand        | 13.23                      | 383.59         | 6.48        | 44.42        | -16.03      | 7.52           | 74.42        | 513.62        |
| 11                     | Karnataka        | 0.00                       | 391.02         | 3.06        | 44.23        | -16.41      | 10.81          | 23.88        | 456.60        |
| 12                     | Kerala           | 16.17                      | 253.55         | 15.80       | 128.58       | -10.10      | 32.25          | 19.14        | 455.39        |
| 13                     | Madhya Pradesh   | 0.00                       | 330.18         | 6.29        | 118.52       | 6.03        | 33.59          | 43.69        | 538.31        |
| 14                     | Maharashtra      | 0.00                       | 406.14         | 7.21        | 31.97        | 31.79       | 14.98          | 6.77         | 498.87        |
| 15                     | Meghalaya        | 0.00                       | 274.70         | 25.97       | 128.54       | 0.00        | 24.45          | 34.12        | 487.77        |
| 16                     | Orissa           | 0.00                       | 323.92         | 5.95        | 50.23        | 21.38       | 7.02           | 13.44        | 421.94        |
| 17                     | Punjab           | 102.46                     | 186.80         | 13.15       | 95.47        | 2.40        | 22.30          | 50.73        | 473.31        |
| 18                     | Rajasthan        | 0.00                       | 443.86         | 5.33        | 69.23        | 6.43        | 17.54          | 112.29       | 654.68        |
| 19                     | Tamil Nadu       | 83.73                      | 347.04         | 4.84        | 66.17        | 14.61       | 13.25          | 61.01        | 590.64        |
| 20                     | Uttar Pradesh    | 0.00                       | 448.51         | 18.58       | 27.53        | 16.89       | 9.02           | 38.67        | 559.20        |
| 21                     | Uttarakhand      | 0.00                       | 317.95         | 7.66        | 29.76        | 19.37       | 14.86          | 11.72        | 401.32        |
| 22                     | West Bengal      | 0.05                       | 362.12         | 7.14        | 39.60        | 17.66       | 13.64          | 20.15        | 460.37        |
| <b>Average of SPUs</b> |                  | <b>15.34</b>               | <b>373.33</b>  | <b>7.26</b> | <b>53.43</b> | <b>8.87</b> | <b>14.83</b>   | <b>34.68</b> | <b>507.73</b> |

**II. EDs**

|                          |                   |              |               |              |              |             |              |              |               |
|--------------------------|-------------------|--------------|---------------|--------------|--------------|-------------|--------------|--------------|---------------|
| 1                        | Arunachal Pradesh | 10.41        | 353.14        | 112.54       | 342.14       | 0.00        | 0.00         | 53.14        | 871.36        |
| 2                        | Goa               | 0.00         | 259.62        | 5.41         | 46.19        | 0.00        | 6.44         | 3.37         | 321.03        |
| 3                        | Manipur           | 2.92         | 381.93        | 21.10        | 189.31       | 0.00        | 203.70       | 0.00         | 798.97        |
| 4                        | Mizoram           | 5.24         | 342.55        | 128.97       | 207.08       | 0.00        | 0.00         | 41.93        | 725.76        |
| 5                        | Nagaland          | 0.21         | 397.01        | 46.00        | 189.73       | 1.14        | 41.02        | 52.04        | 727.16        |
| 6                        | Pondicherry       | 0.00         | 288.26        | 2.54         | 22.43        | 0.00        | 9.18         | 0.00         | 322.40        |
| 7                        | Sikkim            | 0.70         | 255.30        | 18.68        | 31.48        | 0.00        | 0.00         | 0.00         | 306.17        |
| 8                        | Tripura           | 167.50       | 142.80        | 17.02        | 94.06        | 0.00        | 43.54        | 0.00         | 464.93        |
| <b>Average of EDs</b>    |                   | <b>19.66</b> | <b>272.22</b> | <b>18.00</b> | <b>73.04</b> | <b>0.05</b> | <b>20.63</b> | <b>6.98</b>  | <b>410.59</b> |
| <b>All India Average</b> |                   | <b>15.40</b> | <b>371.82</b> | <b>7.42</b>  | <b>53.72</b> | <b>8.74</b> | <b>14.92</b> | <b>34.27</b> | <b>506.29</b> |

## Annexure 5

**COST STRUCTURE OF SPUs, 2011-12 (Actual)**

| S.No.                  | State/EDs        | Fuel         | Power         | O & M       | Estt/<br>Admn. | Misc.<br>exp. | Depre-<br>ciation | Interest     | Total         |
|------------------------|------------------|--------------|---------------|-------------|----------------|---------------|-------------------|--------------|---------------|
|                        |                  | Purchase     |               | exp.        |                |               |                   |              |               |
| <i>I. SPUs</i>         |                  |              |               |             |                |               |                   |              |               |
| (Paise/Kwh of sale)    |                  |              |               |             |                |               |                   |              |               |
| 1                      | Andhra Pradesh   | 0.00         | 395.26        | 4.57        | 36.23          | -3.05         | 16.30             | 29.39        | 478.70        |
| 2                      | Assam            | 0.00         | 544.85        | 8.84        | 119.93         | -33.48        | 14.02             | 18.90        | 673.06        |
| 3                      | Bihar            | 11.85        | 656.23        | 12.47       | 144.65         | 152.01        | 21.43             | 172.36       | 1171.00       |
| 4                      | Chattisgarh      | 0.00         | 370.67        | 6.53        | 51.23          | 0.00          | 8.62              | 6.56         | 443.61        |
| 5                      | Delhi            | 5.13         | 536.43        | 11.61       | 29.07          | 12.33         | 15.43             | 48.59        | 658.60        |
| 6                      | Gujarat          | 0.00         | 413.75        | 3.20        | 27.25          | 0.00          | 11.04             | -0.36        | 454.87        |
| 7                      | Haryana          | 0.00         | 511.49        | 2.79        | 47.49          | 173.32        | 7.65              | 56.18        | 798.91        |
| 8                      | Himachal Pradesh | 0.00         | 311.84        | 6.54        | 125.88         | 27.13         | 22.69             | 29.14        | 523.22        |
| 9                      | Jammu & Kashmir  | 3.63         | 699.44        | 12.37       | 119.81         | 0.00          | 26.20             | 3.69         | 865.14        |
| 10                     | Jharkhand        | 9.68         | 469.63        | 7.55        | 54.01          | -10.58        | 17.32             | 78.94        | 626.56        |
| 11                     | Karnataka        | 0.00         | 387.10        | 3.02        | 44.19          | 3.73          | 11.43             | 23.21        | 472.69        |
| 12                     | Kerala           | 17.62        | 273.79        | 15.75       | 131.79         | -5.25         | 29.16             | 21.31        | 484.17        |
| 13                     | Madhya Pradesh   | 0.00         | 415.87        | 5.20        | 110.12         | 1.27          | 34.13             | 46.23        | 612.81        |
| 14                     | Maharashtra      | 0.00         | 438.28        | 6.90        | 34.23          | 25.69         | 9.54              | 10.58        | 525.21        |
| 15                     | Meghalaya        | 0.00         | 371.03        | 26.28       | 132.03         | 0.00          | 22.95             | 39.80        | 592.08        |
| 16                     | Orissa           | 0.00         | 413.48        | 5.44        | 67.64          | 22.60         | 7.74              | 15.70        | 532.59        |
| 17                     | Punjab           | 106.14       | 172.14        | 11.77       | 106.03         | 1.41          | 20.14             | 62.22        | 479.85        |
| 18                     | Rajasthan        | 0.00         | 444.12        | 6.13        | 71.96          | 3.31          | 18.23             | 144.96       | 688.72        |
| 19                     | Tamil Nadu       | 102.66       | 350.80        | 4.95        | 65.50          | 17.93         | 10.03             | 59.82        | 611.69        |
| 20                     | Uttar Pradesh    | 0.00         | 540.47        | 18.70       | 30.64          | 8.68          | 11.05             | 58.90        | 668.44        |
| 21                     | Uttarakhand      | 0.00         | 371.33        | 8.53        | 25.53          | 19.06         | 15.51             | 13.22        | 453.18        |
| 22                     | West Bengal      | 0.03         | 505.37        | 9.54        | 40.91          | 16.16         | 15.38             | 30.70        | 618.09        |
| <b>Average of SPUs</b> |                  | <b>17.01</b> | <b>417.93</b> | <b>7.43</b> | <b>55.22</b>   | <b>17.47</b>  | <b>14.45</b>      | <b>41.70</b> | <b>571.22</b> |

*II. EDs*

|   |                   |        |        |        |        |      |        |       |         |
|---|-------------------|--------|--------|--------|--------|------|--------|-------|---------|
| 1 | Arunachal Pradesh | 11.35  | 679.40 | 83.44  | 361.82 | 0.00 | 0.00   | 35.25 | 1171.28 |
| 2 | Goa               | 0.00   | 311.91 | 4.34   | 47.76  | 0.00 | 0.89   | 2.97  | 367.87  |
| 3 | Manipur           | 2.83   | 548.46 | 18.36  | 196.88 | 0.00 | 210.02 | 0.00  | 976.55  |
| 4 | Mizoram           | 0.06   | 476.91 | 142.37 | 203.88 | 0.00 | 0.00   | 3.37  | 826.59  |
| 5 | Nagaland          | 0.23   | 597.14 | 51.16  | 172.34 | 1.22 | 47.63  | 50.71 | 920.43  |
| 6 | Pondicherry       | 0.00   | 327.99 | 2.97   | 18.85  | 0.00 | 8.58   | 0.00  | 358.39  |
| 7 | Sikkim            | 1.05   | 279.45 | 18.54  | 33.11  | 0.00 | 0.00   | 0.00  | 332.14  |
| 8 | Tripura           | 191.11 | 213.08 | 18.98  | 100.06 | 0.00 | 46.96  | 0.00  | 570.19  |

|                       |              |               |              |              |             |              |             |               |
|-----------------------|--------------|---------------|--------------|--------------|-------------|--------------|-------------|---------------|
| <b>Average of EDs</b> | <b>20.65</b> | <b>344.10</b> | <b>16.56</b> | <b>70.90</b> | <b>0.05</b> | <b>19.58</b> | <b>4.30</b> | <b>476.15</b> |
|-----------------------|--------------|---------------|--------------|--------------|-------------|--------------|-------------|---------------|

|                          |              |               |             |              |              |              |              |               |
|--------------------------|--------------|---------------|-------------|--------------|--------------|--------------|--------------|---------------|
| <b>All India Average</b> | <b>17.07</b> | <b>416.86</b> | <b>7.56</b> | <b>55.45</b> | <b>17.22</b> | <b>14.53</b> | <b>41.16</b> | <b>569.84</b> |
|--------------------------|--------------|---------------|-------------|--------------|--------------|--------------|--------------|---------------|

## Annexure 6

**COST STRUCTURE OF SPUs, 2012-13 (R.F)**

| S.No. | State/EDs | Fuel | Power Purchase | O & M exp. | Estt/ Admn. | Misc. exp. | Depre- ciation | Interest | Total |
|-------|-----------|------|----------------|------------|-------------|------------|----------------|----------|-------|
|-------|-----------|------|----------------|------------|-------------|------------|----------------|----------|-------|

*I. SPUs*

(Paise/Kwh of sale)

|    |                  |        |        |       |        |        |       |        |        |
|----|------------------|--------|--------|-------|--------|--------|-------|--------|--------|
| 1  | Andhra Pradesh   | 0.00   | 459.05 | 4.06  | 30.69  | 2.19   | 17.86 | 13.03  | 526.87 |
| 2  | Assam            | 0.00   | 525.65 | 8.62  | 116.86 | 1.90   | 13.66 | 18.41  | 685.09 |
| 3  | Bihar            | 0.00   | 589.47 | 16.19 | 126.44 | 54.66  | 36.16 | 41.50  | 864.42 |
| 4  | Chattisgarh      | 0.00   | 348.33 | 6.51  | 47.87  | 0.00   | 8.01  | 7.03   | 417.75 |
| 5  | Gujarat          | 0.00   | 441.43 | 3.32  | 27.30  | 0.00   | 12.11 | 0.38   | 484.54 |
| 6  | Haryana          | 0.00   | 521.29 | 4.82  | 47.16  | 10.70  | 9.12  | 86.49  | 679.58 |
| 7  | Himachal Pradesh | 0.00   | 345.50 | 5.13  | 144.05 | 0.00   | 16.33 | 32.62  | 543.63 |
| 8  | Jammu & Kashmir  | 3.28   | 632.32 | 9.39  | 88.36  | 0.00   | 19.59 | 2.64   | 755.57 |
| 9  | Jharkhand        | 14.76  | 582.16 | 7.76  | 57.45  | -11.31 | 15.60 | 81.79  | 748.22 |
| 10 | Karnataka        | 0.00   | 412.17 | 2.94  | 44.66  | 5.06   | 10.06 | 25.58  | 500.46 |
| 11 | Kerala           | 31.82  | 428.90 | 16.11 | 138.35 | -10.06 | 24.38 | 29.46  | 658.97 |
| 12 | Madhya Pradesh   | 0.00   | 421.53 | 5.01  | 103.71 | 4.42   | 32.90 | 33.82  | 601.38 |
| 13 | Maharashtra      | 0.00   | 457.56 | 6.82  | 35.33  | 25.08  | 10.89 | 14.12  | 549.80 |
| 14 | Meghalaya        | 0.00   | 287.53 | 26.90 | 156.08 | 0.00   | 50.96 | 99.76  | 621.24 |
| 15 | Punjab           | 114.17 | 218.07 | 12.28 | 109.98 | 4.76   | 20.05 | 65.40  | 544.72 |
| 16 | Rajasthan        | 0.00   | 488.07 | 5.81  | 57.13  | 4.09   | 18.06 | 147.72 | 720.89 |
| 17 | Tamil Nadu       | 116.38 | 419.99 | 6.00  | 75.13  | 0.00   | 15.24 | 81.27  | 714.01 |
| 18 | Uttar Pradesh    | 0.00   | 547.41 | 18.34 | 34.18  | 10.87  | 11.87 | 49.37  | 672.04 |
| 19 | Uttarakhand      | 0.00   | 409.01 | 9.86  | 28.84  | 13.37  | 19.46 | 14.44  | 494.99 |
| 20 | West Bengal      | 0.03   | 485.16 | 9.28  | 34.90  | 17.06  | 12.69 | 31.67  | 590.78 |

|                        |              |               |             |              |             |              |              |               |
|------------------------|--------------|---------------|-------------|--------------|-------------|--------------|--------------|---------------|
| <b>Average of SPUs</b> | <b>18.48</b> | <b>446.84</b> | <b>7.52</b> | <b>55.79</b> | <b>7.75</b> | <b>15.45</b> | <b>42.16</b> | <b>593.99</b> |
|------------------------|--------------|---------------|-------------|--------------|-------------|--------------|--------------|---------------|

*II. EDs*

|   |                   |        |        |        |        |      |        |       |         |
|---|-------------------|--------|--------|--------|--------|------|--------|-------|---------|
| 1 | Arunachal Pradesh | 11.53  | 540.69 | 71.61  | 310.79 | 0.00 | 0.00   | 29.17 | 963.80  |
| 2 | Goa               | 0.00   | 340.47 | 7.05   | 57.09  | 0.00 | 0.72   | 2.66  | 408.00  |
| 3 | Manipur           | 11.94  | 473.24 | 19.57  | 200.37 | 0.00 | 210.49 | 0.00  | 915.61  |
| 4 | Mizoram           | 0.07   | 499.66 | 144.93 | 198.60 | 0.00 | 0.00   | 2.58  | 845.84  |
| 5 | Nagaland          | 0.23   | 648.15 | 53.55  | 187.05 | 1.22 | 43.97  | 77.07 | 1011.23 |
| 6 | Pondicherry       | 0.00   | 370.96 | 2.64   | 20.60  | 0.00 | 9.18   | 0.00  | 403.38  |
| 7 | Sikkim            | 1.15   | 289.65 | 17.94  | 33.68  | 0.00 | 0.00   | 0.00  | 342.41  |
| 8 | Tripura           | 176.23 | 229.08 | 28.58  | 104.79 | 0.00 | 45.73  | 0.00  | 584.41  |

|                       |              |               |              |              |             |              |             |               |
|-----------------------|--------------|---------------|--------------|--------------|-------------|--------------|-------------|---------------|
| <b>Average of EDs</b> | <b>21.08</b> | <b>365.60</b> | <b>19.36</b> | <b>77.06</b> | <b>0.05</b> | <b>20.61</b> | <b>5.06</b> | <b>508.81</b> |
|-----------------------|--------------|---------------|--------------|--------------|-------------|--------------|-------------|---------------|

|                          |              |               |             |              |             |              |              |               |
|--------------------------|--------------|---------------|-------------|--------------|-------------|--------------|--------------|---------------|
| <b>All India Average</b> | <b>18.52</b> | <b>445.66</b> | <b>7.69</b> | <b>56.10</b> | <b>7.63</b> | <b>15.53</b> | <b>41.62</b> | <b>592.75</b> |
|--------------------------|--------------|---------------|-------------|--------------|-------------|--------------|--------------|---------------|

## Annexure 7

**COST STRUCTURE OF SPUs, 2013-14**

| S.No. | State/EDs | Fuel     | Power    | O & M | Estt/ | Misc. | Depre-  | Interest | Total |
|-------|-----------|----------|----------|-------|-------|-------|---------|----------|-------|
|       |           | Purchase | Purchase | exp.  | Admn. | exp.  | ciation |          |       |

**I. SPUs**

(Paise/Kwh of sale)

|    |                  |        |        |       |        |        |       |        |        |
|----|------------------|--------|--------|-------|--------|--------|-------|--------|--------|
| 1  | Andhra Pradesh   | 0.00   | 502.84 | 3.54  | 26.79  | 2.65   | 15.86 | 11.47  | 563.15 |
| 2  | Assam            | 0.00   | 492.51 | 8.37  | 99.38  | 1.62   | 11.62 | 15.66  | 629.15 |
| 3  | Bihar            | 56.98  | 569.05 | 13.55 | 62.80  | 9.94   | 29.81 | 42.45  | 784.59 |
| 4  | Chattisgarh      | 0.00   | 356.45 | 5.34  | 35.97  | 0.00   | 6.56  | 6.43   | 410.76 |
| 5  | Gujarat          | 0.00   | 452.88 | 3.30  | 27.05  | 0.00   | 12.06 | 0.25   | 495.54 |
| 6  | Haryana          | 0.00   | 501.56 | 4.61  | 40.54  | 10.10  | 8.53  | 80.72  | 646.06 |
| 7  | Himachal Pradesh | 0.00   | 352.03 | 5.74  | 131.85 | 0.00   | 18.59 | 17.80  | 526.01 |
| 8  | Jammu & Kashmir  | 0.08   | 542.28 | 9.16  | 100.87 | 0.00   | 19.20 | 2.70   | 674.30 |
| 9  | Jharkhand        | 27.89  | 765.07 | 8.06  | 59.40  | -11.74 | 13.64 | 80.11  | 942.44 |
| 10 | Karnataka        | 0.00   | 418.28 | 2.96  | 44.98  | 5.53   | 10.43 | 22.61  | 504.79 |
| 11 | Kerala           | 22.25  | 362.12 | 16.53 | 151.70 | -11.47 | 23.65 | 31.93  | 596.71 |
| 12 | Madhya Pradesh   | 0.00   | 388.94 | 3.71  | 76.85  | 3.21   | 26.70 | 39.20  | 538.61 |
| 13 | Maharashtra      | 0.00   | 477.79 | 6.94  | 44.49  | 29.87  | 11.91 | 13.19  | 584.19 |
| 14 | Meghalaya        | 0.00   | 270.97 | 19.67 | 114.64 | 0.00   | 50.55 | 68.35  | 524.19 |
| 15 | Punjab           | 122.92 | 239.82 | 12.63 | 112.50 | 2.37   | 20.41 | 67.83  | 578.47 |
| 16 | Rajasthan        | 0.00   | 484.92 | 5.49  | 38.03  | 3.90   | 17.41 | 147.80 | 697.54 |
| 17 | Tamil Nadu       | 120.27 | 362.09 | 5.31  | 63.39  | 0.00   | 13.33 | 81.35  | 645.72 |
| 18 | Uttar Pradesh    | 0.00   | 560.24 | 17.58 | 32.79  | 12.55  | 12.17 | 70.89  | 706.23 |
| 19 | Uttarakhand      | 0.00   | 416.64 | 10.59 | 29.82  | 14.94  | 21.24 | 16.97  | 510.20 |
| 20 | West Bengal      | 0.04   | 490.23 | 10.61 | 38.45  | 20.02  | 14.10 | 39.47  | 612.91 |

|                        |              |               |             |              |             |              |              |               |
|------------------------|--------------|---------------|-------------|--------------|-------------|--------------|--------------|---------------|
| <b>Average of SPUs</b> | <b>20.30</b> | <b>449.15</b> | <b>7.11</b> | <b>51.56</b> | <b>7.56</b> | <b>14.90</b> | <b>44.05</b> | <b>594.64</b> |
|------------------------|--------------|---------------|-------------|--------------|-------------|--------------|--------------|---------------|

**II. EDs**

|   |                   |        |        |        |        |      |        |       |        |
|---|-------------------|--------|--------|--------|--------|------|--------|-------|--------|
| 1 | Arunachal Pradesh | 9.02   | 486.40 | 60.75  | 241.44 | 0.00 | 0.00   | 26.58 | 824.19 |
| 2 | Goa               | 0.00   | 295.82 | 8.53   | 63.39  | 0.00 | 1.73   | 2.25  | 371.73 |
| 3 | Manipur           | 9.95   | 466.77 | 15.97  | 171.32 | 0.00 | 191.29 | 0.00  | 855.31 |
| 4 | Mizoram           | 0.06   | 407.38 | 143.24 | 187.84 | 0.00 | 0.00   | 2.05  | 740.58 |
| 5 | Nagaland          | 0.19   | 590.81 | 67.95  | 159.85 | 1.01 | 36.18  | 50.07 | 906.04 |
| 6 | Pondicherry       | 0.00   | 371.89 | 2.91   | 21.82  | 0.00 | 9.53   | 0.00  | 406.16 |
| 7 | Sikkim            | 1.20   | 266.81 | 16.87  | 34.08  | 0.00 | 0.00   | 0.00  | 318.95 |
| 8 | Tripura           | 121.21 | 255.19 | 22.33  | 79.75  | 0.00 | 31.90  | 0.00  | 510.37 |

|                       |              |               |              |              |             |              |             |               |
|-----------------------|--------------|---------------|--------------|--------------|-------------|--------------|-------------|---------------|
| <b>Average of EDs</b> | <b>19.48</b> | <b>345.66</b> | <b>20.63</b> | <b>75.68</b> | <b>0.04</b> | <b>20.81</b> | <b>4.14</b> | <b>486.44</b> |
|-----------------------|--------------|---------------|--------------|--------------|-------------|--------------|-------------|---------------|

|                          |              |               |             |              |             |              |              |               |
|--------------------------|--------------|---------------|-------------|--------------|-------------|--------------|--------------|---------------|
| <b>All India Average</b> | <b>20.29</b> | <b>447.71</b> | <b>7.30</b> | <b>51.90</b> | <b>7.46</b> | <b>14.98</b> | <b>43.50</b> | <b>593.13</b> |
|--------------------------|--------------|---------------|-------------|--------------|-------------|--------------|--------------|---------------|

## Annexure 8

**TOTAL COST OF PURCHASE OF POWER**

| S.No.                | State/EDs        | 2009-10         | 2010-11         | 2011-12         | 2012-13<br>(R.E) | 2013-14<br>(AP) |
|----------------------|------------------|-----------------|-----------------|-----------------|------------------|-----------------|
| <i>SPUs</i>          |                  | (Rs. Crore)     |                 |                 |                  |                 |
| 1                    | Andhra Pradesh   | 20234.4         | 22453.2         | 28024.3         | 31977.1          | 44066.5         |
| 2                    | Assam            | 1321.7          | 1871.5          | 2242.2          | 2331.1           | 2696.9          |
| 3                    | Bihar            | 2529.5          | 3251.8          | 4393.4          | 4658.7           | 5726.1          |
| 4                    | Chattisgarh      | 3543.6          | 3978.6          | 5182.9          | 5733.8           | 8589.5          |
| 5                    | Delhi            | 8869.0          | 11718.0         | 14319.0         |                  |                 |
| 6                    | Gujarat          | 15206.0         | 18710.6         | 22707.0         | 25368.9          | 28500.0         |
| 7                    | Haryana          | 10756.5         | 11577.2         | 14820.1         | 16581.2          | 20166.3         |
| 8                    | Himachal Pradesh | 2171.6          | 2622.0          | 2655.9          | 3046.7           | 3221.7          |
| 9                    | Jammu & Kashmir  | 1978.0          | 2289.8          | 2984.5          | 3854.5           | 3509.0          |
| 10                   | Jharkhand        | 1924.4          | 2601.7          | 3051.8          | 4317.9           | 6669.8          |
| 11                   | Karnataka        | 11110.4         | 14551.9         | 16432.8         | 19239.4          | 21409.4         |
| 12                   | Kerala           | 3384.5          | 3721.6          | 4375.3          | 7369.0           | 6673.4          |
| 13                   | Madhya Pradesh   | 7216.0          | 8373.0          | 11830.1         | 14307.6          | 18706.0         |
| 14                   | Maharashtra      | 23842.0         | 28949.4         | 35120.2         | 40977.5          | 46088.4         |
| 15                   | Meghalaya        | 222.6           | 303.6           | 438.4           | 368.0            | 512.1           |
| 16                   | Orissa           | 2796.0          | 4243.0          | 5398.0          |                  |                 |
| 17                   | Punjab           | 4718.1          | 6254.4          | 6032.7          | 8247.7           | 9571.4          |
| 18                   | Rajasthan        | 16252.3         | 15336.6         | 16833.9         | 20683.0          | 23014.0         |
| 19                   | Tamil Nadu       | 17052.5         | 20427.0         | 21478.3         | 24000.5          | 26269.3         |
| 20                   | Uttar Pradesh    | 17181.8         | 20288.1         | 27344.3         | 31178.1          | 35677.7         |
| 21                   | Uttarakhand      | 2063.5          | 2305.3          | 3064.5          | 3666.7           | 4070.2          |
| 22                   | West Bengal      | 6727.1          | 7821.8          | 11220.0         | 13662.1          | 13681.2         |
| <b>Total of SPUs</b> |                  | <b>181101.4</b> | <b>213650.0</b> | <b>259949.5</b> | <b>281569.6</b>  | <b>328818.5</b> |

## II. EDs

|                        |                   |                 |                 |                 |                 |                 |
|------------------------|-------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 1                      | Arunachal Pradesh | 95.4            | 113.0           | 210.6           | 203.9           | 256.2           |
| 2                      | Goa               | 651.7           | 795.0           | 990.5           | 1022.8          | 869.1           |
| 3                      | Manipur           | 107.6           | 145.8           | 235.1           | 223.9           | 284.1           |
| 4                      | Mizoram           | 78.8            | 108.9           | 150.8           | 178.4           | 169.2           |
| 5                      | Nagaland          | 122.1           | 149.8           | 211.0           | 228.2           | 252.8           |
| 6                      | Pondicherry       | 536.0           | 712.5           | 930.8           | 1069.9          | 1118.3          |
| 7                      | Sikkim            | 145.9           | 186.0           | 213.5           | 232.7           | 233.6           |
| 8                      | Tripura           | 97.9            | 139.0           | 204.3           | 240.5           | 400.0           |
| <b>Total of EDs</b>    |                   | <b>1835.4</b>   | <b>2350.0</b>   | <b>3146.7</b>   | <b>3400.2</b>   | <b>3583.3</b>   |
| <b>All India Total</b> |                   | <b>182936.8</b> | <b>215999.9</b> | <b>263096.2</b> | <b>284969.8</b> | <b>332401.9</b> |

## Annexure 9

| RATE OF PURCHASE OF POWER (including from its own units) |                  |             |         |         |                  |                 |
|----------------------------------------------------------|------------------|-------------|---------|---------|------------------|-----------------|
| S.No.                                                    | State/EDs        | 2009-10     | 2010-11 | 2011-12 | 2012-13<br>(R.E) | 2013-14<br>(AP) |
| SPUs                                                     |                  | (Paise/Kwh) |         |         |                  |                 |
| 1                                                        | Andhra Pradesh   | 276.3       | 290.2   | 332.1   | 385.6            | 425.6           |
| 2                                                        | Assam            | 264.9       | 333.2   | 375.9   | 374.3            | 363.8           |
| 3                                                        | Bihar            | 263.2       | 303.8   | 371.5   | 341.0            | 378.8           |
| 4                                                        | Chattisgarh      | 180.9       | 207.9   | 259.4   | 256.8            | 285.9           |
| 5                                                        | Delhi            | 347.0       | 381.9   | 452.4   |                  |                 |
| 6                                                        | Gujarat          | 274.9       | 305.6   | 338.2   | 360.2            | 371.7           |
| 7                                                        | Haryana          | 335.9       | 343.1   | 394.4   | 397.6            | 479.3           |
| 8                                                        | Himachal Pradesh | 328.2       | 352.4   | 335.0   | 302.7            | 309.5           |
| 9                                                        | Jammu & Kashmir  | 239.2       | 274.0   | 349.9   | 432.1            | 377.6           |
| 10                                                       | Jharkhand        | 244.9       | 273.2   | 326.3   | 418.1            | 583.2           |
| 11                                                       | Karnataka        | 258.4       | 306.4   | 309.5   | 333.5            | 341.6           |
| 12                                                       | Kerala           | 331.8       | 354.0   | 388.2   | 489.6            | 436.7           |
| 13                                                       | Madhya Pradesh   | 358.3       | 354.0   | 453.3   | 461.2            | 463.2           |
| 14                                                       | Maharashtra      | 278.9       | 320.4   | 356.0   | 377.2            | 388.0           |
| 15                                                       | Meghalaya        | 235.0       | 268.9   | 376.0   | 346.5            | 328.7           |
| 16                                                       | Orissa           | 143.2       | 199.7   | 254.0   |                  |                 |
| 17                                                       | Punjab           | 318.0       | 424.3   | 404.6   | 417.0            | 450.2           |
| 18                                                       | Rajasthan        | 366.3       | 325.2   | 335.9   | 375.8            | 380.1           |
| 19                                                       | Tamil Nadu       | 378.7       | 399.3   | 448.7   | 503.4            | 473.6           |
| 20                                                       | Uttar Pradesh    | 281.5       | 309.3   | 369.9   | 389.6            | 409.2           |
| 21                                                       | Uttarakhand      | 249.2       | 249.2   | 297.2   | 331.3            | 340.6           |
| 22                                                       | West Bengal      | 258.5       | 271.6   | 376.3   | 384.4            | 383.7           |
| Average of SPUs                                          |                  | 291.2       | 316.6   | 359.6   | 386.2            | 402.6           |

## II. EDs

|   |                   |       |       |       |       |       |
|---|-------------------|-------|-------|-------|-------|-------|
| 1 | Arunachal Pradesh | 307.5 | 281.8 | 435.4 | 421.4 | 401.7 |
| 2 | Goa               | 188.9 | 219.5 | 263.7 | 286.3 | 247.3 |
| 3 | Manipur           | 201.4 | 228.5 | 376.6 | 336.8 | 338.4 |
| 4 | Mizoram           | 227.0 | 269.9 | 341.9 | 381.2 | 317.4 |
| 5 | Nagaland          | 278.1 | 288.9 | 416.7 | 444.4 | 423.9 |
| 6 | Pondicherry       | 199.9 | 252.6 | 290.8 | 329.0 | 329.9 |
| 7 | Sikkim            | 164.9 | 196.3 | 233.4 | 243.5 | 228.3 |
| 8 | Tripura           | 232.1 | 287.2 | 468.9 | 437.2 | 363.6 |

|                       |              |              |              |              |              |
|-----------------------|--------------|--------------|--------------|--------------|--------------|
| <b>Average of EDs</b> | <b>202.4</b> | <b>238.9</b> | <b>303.6</b> | <b>325.1</b> | <b>308.0</b> |
|-----------------------|--------------|--------------|--------------|--------------|--------------|

|                          |              |              |              |              |              |
|--------------------------|--------------|--------------|--------------|--------------|--------------|
| <b>All India Average</b> | <b>289.9</b> | <b>315.5</b> | <b>358.8</b> | <b>385.3</b> | <b>401.3</b> |
|--------------------------|--------------|--------------|--------------|--------------|--------------|

### AVERAGE TARIFF FOR SALE OF ELECTRICITY

| S.No. State/EDs | 2009-10 | 2010-11 | 2011-12 | 2012-13<br>(R.E) | 2013-14<br>(AP) |
|-----------------|---------|---------|---------|------------------|-----------------|
|-----------------|---------|---------|---------|------------------|-----------------|

SPUs

(Paise/Kwh)

|    |                  |        |        |        |        |        |
|----|------------------|--------|--------|--------|--------|--------|
| 1  | Andhra Pradesh   | 266.53 | 310.80 | 338.28 | 400.80 | 547.21 |
| 2  | Assam            | 428.77 | 428.31 | 493.99 | 511.46 | 478.20 |
| 3  | Bihar            | 303.02 | 387.02 | 464.20 | 450.66 | 515.66 |
| 4  | Chattisgarh      | 286.79 | 299.59 | 309.29 | 340.21 | 335.09 |
| 5  | Delhi            | 446.66 | 379.52 | 407.18 |        |        |
| 6  | Gujarat          | 352.54 | 384.62 | 422.14 | 450.25 | 462.78 |
| 7  | Haryana          | 342.51 | 391.00 | 326.22 | 406.49 | 401.49 |
| 8  | Himachal Pradesh | 404.46 | 399.65 | 432.22 | 439.64 | 447.46 |
| 9  | Jammu & Kashmir  | 242.14 | 292.19 | 334.82 | 385.90 | 386.36 |
| 10 | Jharkhand        | 284.61 | 296.25 | 348.56 | 408.66 | 415.90 |
| 11 | Karnataka        | 351.01 | 428.73 | 433.23 | 456.94 | 476.92 |
| 12 | Kerala           | 337.93 | 354.17 | 349.99 | 444.49 | 441.99 |
| 13 | Madhya Pradesh   | 313.05 | 361.20 | 383.88 | 411.67 | 423.52 |
| 14 | Maharashtra      | 432.31 | 466.29 | 493.61 | 547.31 | 582.30 |
| 15 | Meghalaya        | 419.74 | 337.35 | 342.84 | 385.91 | 378.74 |
| 16 | Orissa           | 306.75 | 370.94 | 446.57 |        |        |
| 17 | Punjab           | 255.23 | 292.49 | 319.91 | 363.01 | 367.03 |
| 18 | Rajasthan        | 304.01 | 306.80 | 325.96 | 350.25 | 429.65 |
| 19 | Tamil Nadu       | 290.11 | 339.72 | 339.38 | 456.03 | 493.26 |
| 20 | Uttar Pradesh    | 291.75 | 346.61 | 348.48 | 420.59 | 508.83 |
| 21 | Uttarakhand      | 288.88 | 364.34 | 365.95 | 384.04 | 383.64 |
| 22 | West Bengal      | 398.26 | 452.79 | 535.75 | 549.00 | 580.85 |

|                        |               |               |               |               |               |
|------------------------|---------------|---------------|---------------|---------------|---------------|
| <b>Average of SPUs</b> | <b>326.93</b> | <b>368.27</b> | <b>388.35</b> | <b>440.15</b> | <b>481.25</b> |
|------------------------|---------------|---------------|---------------|---------------|---------------|

## II. EDs

|   |                   |        |        |        |        |        |
|---|-------------------|--------|--------|--------|--------|--------|
| 1 | Arunachal Pradesh | 328.72 | 300.39 | 319.31 | 340.26 | 358.65 |
| 2 | Goa               | 323.01 | 326.68 | 312.60 | 362.95 | 368.46 |
| 3 | Manipur           | 320.79 | 290.72 | 286.40 | 285.69 | 282.05 |
| 4 | Mizoram           | 287.46 | 222.45 | 420.98 | 443.77 | 452.51 |
| 5 | Nagaland          | 278.21 | 261.41 | 349.55 | 383.11 | 382.94 |
| 6 | Pondicherry       | 239.55 | 264.42 | 298.49 | 346.56 | 375.64 |
| 7 | Sikkim            | 429.34 | 287.68 | 320.37 | 328.00 | 305.87 |
| 8 | Tripura           | 343.59 | 314.31 | 363.22 | 400.10 | 475.28 |

|                       |               |               |               |               |               |
|-----------------------|---------------|---------------|---------------|---------------|---------------|
| <b>Average of EDs</b> | <b>307.55</b> | <b>294.91</b> | <b>318.35</b> | <b>358.06</b> | <b>379.80</b> |
|-----------------------|---------------|---------------|---------------|---------------|---------------|

|                          |               |               |               |               |               |
|--------------------------|---------------|---------------|---------------|---------------|---------------|
| <b>All India Average</b> | <b>326.63</b> | <b>367.15</b> | <b>387.31</b> | <b>438.96</b> | <b>479.84</b> |
|--------------------------|---------------|---------------|---------------|---------------|---------------|

*Note: Delhi data is for NDPL Discom only*

### CONSUMER CATEGORYWISE AVERAGE TARIFF, 2009-10

| S.No. | State/EDs | Domes-<br>tic | Commer-<br>cial | Agri./<br>irrig. | Indus-<br>trial | Rly.<br>tractn. | Outside<br>State | Overall<br>average |
|-------|-----------|---------------|-----------------|------------------|-----------------|-----------------|------------------|--------------------|
|-------|-----------|---------------|-----------------|------------------|-----------------|-----------------|------------------|--------------------|

SPUs

(Paise/Kwh)

|    |                  |        |        |        |        |         |        |        |
|----|------------------|--------|--------|--------|--------|---------|--------|--------|
| 1  | Andhra Pradesh   | 271.45 | 928.08 | 9.16   | 404.72 | 428.96  | 41.29  | 266.53 |
| 2  | Assam            | 354.00 | 527.00 | 374.26 | 458.00 | 0.00    | 336.07 | 428.77 |
| 3  | Bihar            | 181.54 | 483.72 | 64.00  | 430.50 | 1958.88 | 383.98 | 303.02 |
| 4  | Chattisgarh      | 177.52 | 454.17 | 53.44  | 364.40 | 3032.26 | 605.18 | 286.79 |
| 5  | Delhi            | 429.64 | 640.27 | 200.00 | 470.81 | 1074.07 | 0.00   | 446.66 |
| 6  | Gujarat          | 374.23 | 562.58 | 176.92 | 527.47 | 579.44  | 494.04 | 352.54 |
| 7  | Haryana          | 326.65 | 417.71 | 35.84  | 424.67 | 424.41  | 0.00   | 342.51 |
| 8  | Himachal Pradesh | 261.89 | 501.94 | 554.12 | 345.67 | 0.00    | 641.71 | 404.46 |
| 9  | Jammu & Kashmir  | 141.34 | 230.00 | 129.02 | 256.45 | 0.00    | 0.00   | 242.14 |
| 10 | Jharkhand        | 74.00  | 434.00 | 49.00  | 433.45 | 474.99  | 402.00 | 284.61 |
| 11 | Karnataka        | 338.20 | 640.96 | 145.28 | 492.59 | 0.00    | 0.00   | 351.01 |
| 12 | Kerala           | 183.39 | 745.65 | 109.90 | 413.15 | 397.88  | 880.64 | 337.93 |
| 13 | Madhya Pradesh   | 344.77 | 578.33 | 261.24 | 495.33 | 443.37  | 0.00   | 313.05 |
| 14 | Maharashtra      | 416.14 | 700.59 | 201.89 | 530.64 | 566.27  | 0.00   | 432.31 |
| 15 | Meghalaya        | 292.43 | 591.77 | 158.73 | 500.07 | 0.00    | 341.50 | 419.74 |
| 16 | Orissa           | 193.73 | 377.80 | 185.43 | 337.68 | 370.67  | 0.00   | 306.75 |
| 17 | Punjab           | 289.96 | 487.20 | 0.00   | 425.14 | 495.92  | 26.13  | 255.23 |
| 18 | Rajasthan        | 372.39 | 544.82 | 123.13 | 492.94 | 405.09  | 395.34 | 304.01 |
| 19 | Tamil Nadu       | 169.69 | 588.99 | 0.03   | 462.79 | 0.00    | 201.37 | 290.11 |
| 20 | Uttar Pradesh    | 205.65 | 512.86 | 159.63 | 458.98 | 411.13  | 0.00   | 291.75 |
| 21 | Uttarakhand      | 188.54 | 338.98 | 138.87 | 331.63 | 459.13  | 457.80 | 288.88 |
| 22 | West Bengal      | 334.83 | 533.06 | 141.36 | 460.35 | 93.04   | 416.68 | 398.26 |

|                        |               |               |               |               |               |               |               |
|------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| <b>Average of SPUs</b> | <b>273.81</b> | <b>600.16</b> | <b>101.60</b> | <b>457.94</b> | <b>758.95</b> | <b>423.00</b> | <b>326.93</b> |
|------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|

## II. EDs

|   |                   |        |        |        |        |      |        |        |
|---|-------------------|--------|--------|--------|--------|------|--------|--------|
| 1 | Arunachal Pradesh | 300.00 | 375.38 | 0.00   | 300.12 | 0.00 | 390.30 | 328.72 |
| 2 | Goa               | 152.84 | 201.59 | 105.00 | 440.02 | 0.00 | 247.02 | 323.01 |
| 3 | Manipur           | 261.61 | 314.89 | 432.89 | 324.35 | 0.00 | 361.06 | 320.79 |
| 4 | Mizoram           | 188.29 | 342.33 | 0.00   | 320.00 | 0.00 | 450.35 | 287.46 |
| 5 | Nagaland          | 210.00 | 360.19 | 0.00   | 290.05 | 0.00 | 395.00 | 278.21 |
| 6 | Pondicherry       | 83.00  | 284.83 | 3.25   | 286.01 | 0.00 | 445.94 | 239.55 |
| 7 | Sikkim            | 160.00 | 260.07 | 0.00   | 254.99 | 0.00 | 667.21 | 429.34 |
| 8 | Tripura           | 288.35 | 367.50 | 147.01 | 321.69 | 0.00 | 437.32 | 343.59 |

|                       |               |               |              |               |             |               |               |
|-----------------------|---------------|---------------|--------------|---------------|-------------|---------------|---------------|
| <b>Average of EDs</b> | <b>170.95</b> | <b>247.93</b> | <b>58.57</b> | <b>353.42</b> | <b>0.00</b> | <b>436.98</b> | <b>307.55</b> |
|-----------------------|---------------|---------------|--------------|---------------|-------------|---------------|---------------|

|                          |               |               |               |               |               |               |               |
|--------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| <b>All India Average</b> | <b>272.13</b> | <b>594.08</b> | <b>101.55</b> | <b>456.14</b> | <b>758.95</b> | <b>424.29</b> | <b>326.63</b> |
|--------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|

*Note: Delhi data is for NDPL Discom only*

**CONSUMER CATEGORYWISE AVERAGE TARIFF, 2010-11**

| S.No. | State/EDs | Domes-<br>tic | Commer-<br>cial | Agri./<br>irrig. | Indus-<br>trial | Rly.<br>tractn. | Outside<br>State | Overall<br>average |
|-------|-----------|---------------|-----------------|------------------|-----------------|-----------------|------------------|--------------------|
|-------|-----------|---------------|-----------------|------------------|-----------------|-----------------|------------------|--------------------|

SPUs

(Paise/Kwh)

|    |                  |        |         |        |        |        |         |        |
|----|------------------|--------|---------|--------|--------|--------|---------|--------|
| 1  | Andhra Pradesh   | 300.50 | 1085.24 | 10.73  | 457.31 | 474.31 | 160.07  | 310.80 |
| 2  | Assam            | 392.00 | 542.00  | 389.77 | 447.00 | 0.00   | 263.73  | 428.31 |
| 3  | Bihar            | 214.07 | 637.97  | 223.55 | 504.51 | 569.36 | 411.76  | 387.02 |
| 4  | Chattisgarh      | 197.56 | 444.87  | 102.34 | 375.28 | 414.98 | 435.40  | 299.59 |
| 5  | Delhi            | 354.29 | 641.78  | 235.29 | 467.95 | 105.26 | 0.00    | 379.52 |
| 6  | Gujarat          | 368.98 | 553.26  | 167.02 | 514.75 | 557.58 | 377.46  | 384.62 |
| 7  | Haryana          | 346.39 | 450.91  | 41.53  | 474.05 | 445.34 | 0.00    | 391.00 |
| 8  | Himachal Pradesh | 270.85 | 510.85  | 513.13 | 369.13 | 0.00   | 521.36  | 399.65 |
| 9  | Jammu & Kashmir  | 161.00 | 268.98  | 142.00 | 283.80 | 0.00   | 0.00    | 292.19 |
| 10 | Jharkhand        | 92.76  | 464.87  | 47.69  | 461.68 | 513.69 | 261.34  | 296.25 |
| 11 | Karnataka        | 354.38 | 682.13  | 304.73 | 524.45 | 0.00   | 0.00    | 428.73 |
| 12 | Kerala           | 198.32 | 722.86  | 115.11 | 427.45 | 412.11 | 1075.17 | 354.17 |
| 13 | Madhya Pradesh   | 401.86 | 621.32  | 298.97 | 488.89 | 499.96 | 0.00    | 361.20 |
| 14 | Maharashtra      | 482.23 | 845.97  | 205.91 | 602.41 | 658.69 | 0.00    | 466.29 |
| 15 | Meghalaya        | 269.39 | 528.80  | 165.27 | 403.71 | 0.00   | 145.51  | 337.35 |
| 16 | Orissa           | 242.36 | 491.55  | 112.36 | 411.78 | 457.39 | 0.00    | 370.94 |
| 17 | Punjab           | 318.49 | 509.72  | 51.33  | 434.01 | 520.83 | 199.57  | 292.49 |
| 18 | Rajasthan        | 361.79 | 533.73  | 127.12 | 415.42 | 403.56 | 518.24  | 306.80 |
| 19 | Tamil Nadu       | 169.29 | 671.14  | 0.08   | 486.16 | 0.00   | 1053.05 | 339.72 |
| 20 | Uttar Pradesh    | 271.38 | 441.91  | 195.85 | 496.28 | 412.38 | 0.00    | 346.61 |
| 21 | Uttarakhand      | 241.54 | 415.56  | 162.63 | 414.42 | 512.82 | 583.60  | 364.34 |
| 22 | West Bengal      | 412.10 | 583.01  | 145.59 | 557.52 | 518.80 | 311.46  | 452.79 |

|                        |               |               |               |               |               |               |               |
|------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| <b>Average of SPUs</b> | <b>303.89</b> | <b>648.80</b> | <b>138.18</b> | <b>488.22</b> | <b>494.34</b> | <b>351.26</b> | <b>368.27</b> |
|------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|

## II. EDs

|   |                   |        |        |        |        |      |        |        |
|---|-------------------|--------|--------|--------|--------|------|--------|--------|
| 1 | Arunachal Pradesh | 315.00 | 389.93 | 0.00   | 315.10 | 0.00 | 280.00 | 300.39 |
| 2 | Goa               | 152.86 | 240.98 | 112.35 | 442.99 | 0.00 | 271.10 | 326.68 |
| 3 | Manipur           | 273.78 | 312.72 | 270.86 | 280.70 | 0.00 | 245.69 | 290.72 |
| 4 | Mizoram           | 163.36 | 337.84 | 0.00   | 263.19 | 0.00 | 188.98 | 222.45 |
| 5 | Nagaland          | 210.00 | 360.15 | 0.00   | 290.31 | 0.00 | 307.00 | 261.41 |
| 6 | Pondicherry       | 101.63 | 289.92 | 2.08   | 339.85 | 0.00 | 257.21 | 264.42 |
| 7 | Sikkim            | 160.00 | 260.04 | 0.00   | 235.00 | 0.00 | 374.63 | 287.68 |
| 8 | Tripura           | 294.22 | 419.20 | 250.15 | 436.60 | 0.00 | 288.54 | 314.31 |

|                       |               |               |              |               |             |               |               |
|-----------------------|---------------|---------------|--------------|---------------|-------------|---------------|---------------|
| <b>Average of EDs</b> | <b>179.01</b> | <b>276.95</b> | <b>88.53</b> | <b>381.75</b> | <b>0.00</b> | <b>292.64</b> | <b>294.91</b> |
|-----------------------|---------------|---------------|--------------|---------------|-------------|---------------|---------------|

|                          |               |               |               |               |               |               |               |
|--------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| <b>All India Average</b> | <b>301.88</b> | <b>642.61</b> | <b>138.13</b> | <b>486.47</b> | <b>494.34</b> | <b>346.27</b> | <b>367.15</b> |
|--------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|

*Note: Delhi data is for NDPL Discom only*

**CONSUMER CATEGORYWISE AVERAGE TARIFF, 2011-12**

| S.No. | State/EDs | Domes-<br>tic | Commer<br>cial | Agri/<br>irrig. | Indus-<br>trial | Rly.<br>tractn. | Outside<br>State | Overall<br>average |
|-------|-----------|---------------|----------------|-----------------|-----------------|-----------------|------------------|--------------------|
|-------|-----------|---------------|----------------|-----------------|-----------------|-----------------|------------------|--------------------|

SPUs

(Paise/Kwh)

|    |                  |        |         |        |        |        |        |        |
|----|------------------|--------|---------|--------|--------|--------|--------|--------|
| 1  | Andhra Pradesh   | 264.85 | 1075.32 | 12.02  | 425.04 | 449.82 | 662.57 | 338.28 |
| 2  | Assam            | 426.99 | 611.00  | 430.75 | 521.00 | 0.00   | 231.63 | 493.99 |
| 3  | Bihar            | 319.30 | 756.47  | 169.13 | 674.49 | 588.44 | 361.32 | 464.20 |
| 4  | Chattisgarh      | 240.44 | 512.80  | 129.87 | 419.71 | 474.10 | 368.01 | 309.29 |
| 5  | Delhi            | 384.38 | 717.20  | 235.29 | 564.05 | 473.68 | 0.00   | 407.18 |
| 6  | Gujarat          | 408.72 | 551.52  | 207.21 | 566.19 | 576.76 | 358.95 | 422.14 |
| 7  | Haryana          | 347.37 | 486.39  | 43.62  | 498.29 | 486.71 | 0.00   | 326.22 |
| 8  | Himachal Pradesh | 297.67 | 588.29  | 0.00   | 413.98 | 0.00   | 536.97 | 432.22 |
| 9  | Jammu & Kashmir  | 166.00 | 322.00  | 160.02 | 316.99 | 0.00   | 0.00   | 334.82 |
| 10 | Jharkhand        | 121.00 | 576.01  | 55.99  | 522.50 | 548.07 | 325.64 | 348.56 |
| 11 | Karnataka        | 382.59 | 724.97  | 280.46 | 556.25 | 0.00   | 0.00   | 433.23 |
| 12 | Kerala           | 198.86 | 743.89  | 107.52 | 418.59 | 399.25 | 331.33 | 349.99 |
| 13 | Madhya Pradesh   | 430.04 | 649.10  | 317.71 | 525.64 | 558.25 | 0.00   | 383.88 |
| 14 | Maharashtra      | 443.27 | 897.23  | 214.74 | 630.45 | 761.51 | 0.00   | 493.61 |
| 15 | Meghalaya        | 276.83 | 468.56  | 142.86 | 406.13 | 0.00   | 207.29 | 342.84 |
| 16 | Orissa           | 236.63 | 609.87  | 110.43 | 527.37 | 529.22 | 0.00   | 446.57 |
| 17 | Punjab           | 377.41 | 580.91  | 0.20   | 486.16 | 594.20 | 141.06 | 319.91 |
| 18 | Rajasthan        | 393.72 | 575.91  | 129.39 | 458.08 | 460.29 | 479.53 | 325.96 |
| 19 | Tamil Nadu       | 170.92 | 700.57  | 0.00   | 478.20 | 0.00   | 298.38 | 339.38 |
| 20 | Uttar Pradesh    | 271.95 | 567.24  | 191.87 | 509.94 | 483.78 | 0.00   | 348.48 |
| 21 | Uttarakhand      | 238.56 | 411.16  | 177.02 | 418.15 | 486.29 | 0.00   | 365.95 |
| 22 | West Bengal      | 484.96 | 636.58  | 263.57 | 589.62 | 651.96 | 915.25 | 535.75 |

|                        |               |               |               |               |               |               |               |
|------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| <b>Average of SPUs</b> | <b>315.41</b> | <b>696.23</b> | <b>143.66</b> | <b>515.42</b> | <b>553.93</b> | <b>376.31</b> | <b>388.35</b> |
|------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|

## II. EDs

|   |                   |        |        |        |         |      |        |        |
|---|-------------------|--------|--------|--------|---------|------|--------|--------|
| 1 | Arunachal Pradesh | 330.00 | 410.06 | 0.00   | 305.25  | 0.00 | 270.00 | 319.31 |
| 2 | Goa               | 129.76 | 260.46 | 90.53  | 493.07  | 0.00 | 255.49 | 312.60 |
| 3 | Manipur           | 251.16 | 308.87 | 446.19 | 354.34  | 0.00 | 243.79 | 286.40 |
| 4 | Mizoram           | 307.30 | 496.08 | 0.00   | 1015.02 | 0.00 | 284.62 | 420.98 |
| 5 | Nagaland          | 340.00 | 450.15 | 0.00   | 350.00  | 0.00 | 250.00 | 349.55 |
| 6 | Pondicherry       | 101.90 | 358.93 | 1.24   | 348.92  | 0.00 | 334.58 | 298.49 |
| 7 | Sikkim            | 204.65 | 405.57 | 0.00   | 612.80  | 0.00 | 293.01 | 320.37 |
| 8 | Tripura           | 356.89 | 471.63 | 332.66 | 446.26  | 0.00 | 323.85 | 363.22 |

|                       |               |               |               |               |             |               |               |
|-----------------------|---------------|---------------|---------------|---------------|-------------|---------------|---------------|
| <b>Average of EDs</b> | <b>207.44</b> | <b>320.15</b> | <b>111.73</b> | <b>420.45</b> | <b>0.00</b> | <b>360.09</b> | <b>318.35</b> |
|-----------------------|---------------|---------------|---------------|---------------|-------------|---------------|---------------|

|                          |               |               |               |               |               |               |               |
|--------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| <b>All India Average</b> | <b>313.72</b> | <b>689.88</b> | <b>143.64</b> | <b>513.92</b> | <b>553.93</b> | <b>368.14</b> | <b>387.31</b> |
|--------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|

*Note: Delhi data is for NDPL Discom only*

## Annexure 14

**CONSUMER CATEGORYWISE AVERAGE TARIFF, 2012-13 (R.E)**

| S.No. | State/EDs | Domes-<br>tic | Commer<br>cial | Agri./<br>irrig. | Indus-<br>trial | Rly.<br>tractn. | Outside<br>State | Overall<br>average |
|-------|-----------|---------------|----------------|------------------|-----------------|-----------------|------------------|--------------------|
|-------|-----------|---------------|----------------|------------------|-----------------|-----------------|------------------|--------------------|

**I. SPUs**

(Paise/Kwh)

|    |                  |        |         |        |        |        |        |        |
|----|------------------|--------|---------|--------|--------|--------|--------|--------|
| 1  | Andhra Pradesh   | 324.46 | 1388.78 | 18.74  | 546.52 | 553.91 | 0.00   | 400.80 |
| 2  | Assam            | 434.88 | 623.00  | 446.71 | 537.00 | 0.00   | 286.75 | 511.46 |
| 3  | Bihar            | 286.00 | 694.99  | 357.00 | 583.58 | 591.00 | 415.00 | 450.66 |
| 4  | Chhatisgarh      | 269.00 | 529.00  | 135.00 | 470.06 | 506.25 | 361.03 | 340.21 |
| 5  | Gujarat          | 448.02 | 613.06  | 214.88 | 591.63 | 795.67 | 384.58 | 450.25 |
| 6  | Haryana          | 441.24 | 555.08  | 48.04  | 574.08 | 575.15 | 0.00   | 406.49 |
| 7  | Himachal Pradesh | 303.62 | 600.05  | 0.00   | 422.30 | 0.00   | 547.71 | 439.64 |
| 8  | Jammu & Kashmir  | 181.56 | 348.81  | 168.50 | 340.92 | 0.00   | 0.00   | 385.90 |
| 9  | Jharkhand        | 216.00 | 567.08  | 70.25  | 603.19 | 581.25 | 0.00   | 408.66 |
| 10 | Karnataka        | 400.76 | 756.59  | 298.26 | 585.35 | 0.00   | 0.00   | 456.94 |
| 11 | Kerala           | 259.46 | 771.71  | 152.61 | 537.08 | 474.67 | 0.00   | 444.49 |
| 12 | Madhya Pradesh   | 460.87 | 695.64  | 340.49 | 563.46 | 647.45 | 0.00   | 411.67 |
| 13 | Maharashtra      | 486.60 | 1030.97 | 239.79 | 716.36 | 776.03 | 0.00   | 547.31 |
| 14 | Meghalaya        | 315.37 | 483.27  | 182.37 | 436.77 | 0.00   | 218.40 | 385.91 |
| 15 | Punjab           | 416.68 | 611.65  | 0.35   | 580.62 | 614.29 | 43.10  | 363.01 |
| 16 | Rajasthan        | 441.11 | 610.65  | 147.14 | 474.20 | 429.78 | 404.87 | 350.25 |
| 17 | Tamil Nadu       | 231.94 | 815.56  | 0.00   | 702.09 | 0.00   | 300.00 | 456.03 |
| 18 | Uttar Pradesh    | 295.10 | 534.46  | 236.82 | 653.65 | 593.50 | 0.00   | 420.59 |
| 19 | Uttarakhand      | 283.66 | 449.70  | 228.60 | 414.16 | 466.74 | 0.00   | 384.04 |
| 20 | West Bengal      | 538.09 | 712.12  | 413.57 | 641.54 | 707.34 | 461.68 | 549.00 |

|                        |               |               |               |               |               |               |               |
|------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| <b>Average of SPUs</b> | <b>361.31</b> | <b>761.14</b> | <b>165.44</b> | <b>599.28</b> | <b>627.46</b> | <b>390.96</b> | <b>440.15</b> |
|------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|

**II. EDs**

|   |                   |        |        |        |        |      |        |        |
|---|-------------------|--------|--------|--------|--------|------|--------|--------|
| 1 | Arunachal Pradesh | 346.00 | 430.04 | 0.00   | 321.21 | 0.00 | 299.98 | 340.26 |
| 2 | Goa               | 167.66 | 271.04 | 113.33 | 494.46 | 0.00 | 298.06 | 362.95 |
| 3 | Manipur           | 256.37 | 344.63 | 262.50 | 257.17 | 0.00 | 233.12 | 285.69 |
| 4 | Mizoram           | 307.72 | 496.34 | 0.00   | 474.51 | 0.00 | 350.00 | 443.77 |
| 5 | Nagaland          | 340.00 | 450.00 | 0.00   | 350.00 | 0.00 | 200.00 | 383.11 |
| 6 | Pondicherry       | 116.87 | 400.50 | 1.41   | 408.16 | 0.00 | 334.58 | 346.56 |
| 7 | Sikkim            | 253.65 | 469.19 | 0.00   | 644.91 | 0.00 | 281.75 | 328.00 |
| 8 | Tripura           | 344.00 | 491.00 | 301.01 | 518.04 | 0.00 | 403.06 | 400.10 |

|                       |               |               |              |               |             |               |               |
|-----------------------|---------------|---------------|--------------|---------------|-------------|---------------|---------------|
| <b>Average of EDs</b> | <b>226.13</b> | <b>345.18</b> | <b>77.97</b> | <b>447.89</b> | <b>0.00</b> | <b>319.44</b> | <b>358.06</b> |
|-----------------------|---------------|---------------|--------------|---------------|-------------|---------------|---------------|

|                          |               |               |               |               |               |               |               |
|--------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| <b>All India Average</b> | <b>359.10</b> | <b>754.09</b> | <b>165.39</b> | <b>596.80</b> | <b>627.46</b> | <b>384.74</b> | <b>438.96</b> |
|--------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|

**CONSUMER CATEGORYWISE AVERAGE TARIFF, A.P 2013-14**

| S.No.          | State/EDs        | Domes-<br>tic | Commer-<br>cial | Agri/<br>irrig. | Indus-<br>trial | Rly.<br>tractn. | Outside<br>State | Overall<br>average |
|----------------|------------------|---------------|-----------------|-----------------|-----------------|-----------------|------------------|--------------------|
| <i>I. SPUs</i> |                  |               |                 |                 |                 |                 |                  | (Paise/Kwh)        |
| 1              | Andhra Pradesh   | 473.86        | 1128.49         | 44.25           | 535.88          | 553.91          | 0                | 547.21             |
| 2              | Assam            | 435           | 623             | 446.71          | 537             | 0               | 250              | 478.2              |
| 3              | Bihar            | 328.9         | 799.25          | 410.55          | 671.12          | 679.65          | 435.75           | 515.66             |
| 4              | Chhatisgarh      | 286           | 590             | 154             | 480.82          | 541.18          | 281              | 335.09             |
| 5              | Gujarat          | 462.05        | 595.58          | 217.56          | 607.9           | 633.29          | 387.46           | 462.78             |
| 6              | Haryana          | 437.13        | 554.42          | 46.48           | 573.01          | 570.2           | 0                | 401.49             |
| 7              | Himachal Pradesh | 309.7         | 612.05          | 0               | 430.77          | 0               | 558.66           | 447.46             |
| 8              | Jammu & Kashmir  | 181.56        | 348.8           | 168.5           | 340.92          | 0               | 0                | 386.36             |
| 9              | Jharkhand        | 236           | 595             | 74              | 632.24          | 610             | 0                | 415.9              |
| 10             | Karnataka        | 422.84        | 784.31          | 306.73          | 610.18          | 0               | 0                | 476.92             |
| 11             | Kerala           | 281.09        | 777.12          | 172.94          | 567.86          | 505.29          | 0                | 441.99             |
| 12             | Madhya Pradesh   | 474.7         | 716.51          | 350.7           | 580.61          | 736.5           | 0                | 423.52             |
| 13             | Maharashtra      | 524.21        | 1110.65         | 258.33          | 771.81          | 835.78          | 0                | 582.3              |
| 14             | Meghalaya        | 313.59        | 474.28          | 179.41          | 429.38          | 0               | 236.57           | 378.74             |
| 15             | Punjab           | 424.23        | 616.84          | 0               | 586.68          | 613.79          | 43.25            | 367.03             |
| 16             | Rajasthan        | 549.6         | 729.44          | 180.57          | 582.25          | 535.98          | 417.01           | 429.65             |
| 17             | Tamil Nadu       | 255.53        | 856.29          | 0               | 735.76          | 0               | 325              | 493.26             |
| 18             | Uttar Pradesh    | 435.06        | 463.59          | 224.18          | 736.35          | 747.72          | 0                | 508.83             |
| 19             | Uttarakhand      | 283.16        | 450.13          | 228.65          | 413.46          | 502.14          | 0                | 383.64             |
| 20             | West Bengal      | 540.25        | 716.02          | 415.22          | 650.45          | 710.87          | 172.29           | 580.85             |

|                        |               |               |               |               |               |               |               |
|------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| <b>Average of SEBs</b> | <b>410.55</b> | <b>770.10</b> | <b>183.09</b> | <b>628.11</b> | <b>663.85</b> | <b>324.10</b> | <b>481.25</b> |
|------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|

## II. EDs

|   |                   |        |        |        |        |   |        |        |
|---|-------------------|--------|--------|--------|--------|---|--------|--------|
| 1 | Arunachal Pradesh | 360    | 449.85 | 0      | 336.54 | 0 | 350    | 358.65 |
| 2 | Goa               | 149.54 | 268.01 | 106.11 | 488.62 | 0 | 405.26 | 368.46 |
| 3 | Manipur           | 256.37 | 344.64 | 165.19 | 257.2  | 0 | 211.71 | 282.05 |
| 4 | Mizoram           | 322.66 | 496.34 | 0      | 474.12 | 0 | 375    | 452.51 |
| 5 | Nagaland          | 340    | 450    | 0      | 350.29 | 0 | 300    | 382.94 |
| 6 | Pondicherry       | 137.89 | 476.71 | 2.83   | 481.67 | 0 | 334.58 | 375.64 |
| 7 | Sikkim            | 270.06 | 491.96 | 0      | 639.98 | 0 | 252.73 | 305.87 |
| 8 | Tripura           | 344    | 491    | 554.59 | 518.04 | 0 | 422.02 | 475.28 |

|                       |               |               |               |               |             |               |               |
|-----------------------|---------------|---------------|---------------|---------------|-------------|---------------|---------------|
| <b>Average of EDs</b> | <b>230.24</b> | <b>364.00</b> | <b>125.90</b> | <b>479.20</b> | <b>0.00</b> | <b>338.07</b> | <b>379.80</b> |
|-----------------------|---------------|---------------|---------------|---------------|-------------|---------------|---------------|

|                          |               |               |               |               |               |               |               |
|--------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| <b>All India Average</b> | <b>407.84</b> | <b>764.00</b> | <b>183.06</b> | <b>625.89</b> | <b>663.85</b> | <b>325.01</b> | <b>479.84</b> |
|--------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|

### AVERAGE TARIFF FOR INDUSTRY

| S.No. | State/EDs | 2009-10 | 2010-11 | 2011-12 | 2012-13<br>(R.E) | 2013-14<br>(AP) |
|-------|-----------|---------|---------|---------|------------------|-----------------|
|-------|-----------|---------|---------|---------|------------------|-----------------|

#### I. SPUs

(Paise/Kwh)

|    |                  |        |        |        |        |        |
|----|------------------|--------|--------|--------|--------|--------|
| 1  | Andhra Pradesh   | 404.72 | 457.31 | 425.04 | 546.52 | 535.88 |
| 2  | Assam            | 458.00 | 447.00 | 521.00 | 537.00 | 537.00 |
| 3  | Bihar            | 430.50 | 504.51 | 674.49 | 583.58 | 671.12 |
| 4  | Chattisgarh      | 364.40 | 375.28 | 419.71 | 470.06 | 480.82 |
| 5  | Delhi            | 470.81 | 467.95 | 564.05 |        |        |
| 6  | Gujarat          | 527.47 | 514.75 | 566.19 | 591.63 | 607.90 |
| 7  | Haryana          | 424.67 | 474.05 | 498.29 | 574.08 | 573.01 |
| 8  | Himachal Pradesh | 345.67 | 369.13 | 413.98 | 422.30 | 430.77 |
| 9  | Jammu & Kashmir  | 256.45 | 283.80 | 316.99 | 340.92 | 340.92 |
| 10 | Jharkhand        | 433.45 | 461.68 | 522.50 | 603.19 | 632.24 |
| 11 | Karnataka        | 492.59 | 524.45 | 556.25 | 585.35 | 610.18 |
| 12 | Kerala           | 413.15 | 427.45 | 418.59 | 537.08 | 567.86 |
| 13 | Madhya Pradesh   | 495.33 | 488.89 | 525.64 | 563.46 | 580.61 |
| 14 | Maharashtra      | 530.64 | 602.41 | 630.45 | 716.36 | 771.81 |
| 15 | Meghalaya        | 500.07 | 403.71 | 406.13 | 436.77 | 429.38 |
| 16 | Orissa           | 337.68 | 411.78 | 527.37 |        |        |
| 17 | Punjab           | 425.14 | 434.01 | 486.16 | 580.62 | 586.68 |
| 18 | Rajasthan        | 492.94 | 415.42 | 458.08 | 474.20 | 582.25 |
| 19 | Tamil Nadu       | 462.79 | 486.16 | 478.20 | 702.09 | 735.76 |
| 20 | Uttar Pradesh    | 458.98 | 496.28 | 509.94 | 653.65 | 736.35 |
| 21 | Uttarakhand      | 331.63 | 414.42 | 418.15 | 414.16 | 413.46 |
| 22 | West Bengal      | 460.35 | 557.52 | 589.62 | 641.54 | 650.45 |

|                        |               |               |               |               |               |
|------------------------|---------------|---------------|---------------|---------------|---------------|
| <b>Average of SPUs</b> | <b>457.94</b> | <b>488.22</b> | <b>515.42</b> | <b>599.28</b> | <b>628.11</b> |
|------------------------|---------------|---------------|---------------|---------------|---------------|

## II. EDs

|   |                   |        |        |         |        |        |
|---|-------------------|--------|--------|---------|--------|--------|
| 1 | Arunachal Pradesh | 300.12 | 315.10 | 305.25  | 321.21 | 336.54 |
| 2 | Goa               | 440.02 | 442.99 | 493.07  | 494.46 | 488.62 |
| 3 | Manipur           | 324.35 | 280.70 | 354.34  | 257.17 | 257.20 |
| 4 | Mizoram           | 320.00 | 263.19 | 1015.02 | 474.51 | 474.12 |
| 5 | Nagaland          | 290.05 | 290.31 | 350.00  | 350.00 | 350.29 |
| 6 | Pondicherry       | 286.01 | 339.85 | 348.92  | 408.16 | 481.67 |
| 7 | Sikkim            | 254.99 | 235.00 | 612.80  | 644.91 | 639.98 |
| 8 | Tripura           | 321.69 | 436.60 | 446.26  | 518.04 | 518.04 |

|                       |               |               |               |               |               |
|-----------------------|---------------|---------------|---------------|---------------|---------------|
| <b>Average of EDs</b> | <b>353.42</b> | <b>381.75</b> | <b>420.45</b> | <b>447.89</b> | <b>479.20</b> |
|-----------------------|---------------|---------------|---------------|---------------|---------------|

|                          |               |               |               |               |               |
|--------------------------|---------------|---------------|---------------|---------------|---------------|
| <b>All India Average</b> | <b>456.14</b> | <b>486.47</b> | <b>513.92</b> | <b>596.80</b> | <b>625.89</b> |
|--------------------------|---------------|---------------|---------------|---------------|---------------|

*Note: Delhi data is for NDPL Discom only*

**SALES REVENUE AS A RATIO OF COST**

| S.No. | State/EDs | 2009-10 | 2010-11 | 2011-12 | 2012-13<br>(R.E) | 2013-14<br>(AP) |
|-------|-----------|---------|---------|---------|------------------|-----------------|
|-------|-----------|---------|---------|---------|------------------|-----------------|

*I. SPUs*

(%)

|    |                  |       |       |       |       |       |
|----|------------------|-------|-------|-------|-------|-------|
| 1  | Andhra Pradesh   | 66.29 | 72.74 | 70.67 | 76.07 | 97.17 |
| 2  | Assam            | 78.41 | 66.72 | 73.39 | 74.66 | 76.01 |
| 3  | Bihar            | 42.49 | 44.94 | 39.64 | 52.13 | 65.72 |
| 4  | Chattisgarh      | 84.36 | 80.19 | 69.72 | 81.44 | 81.58 |
| 5  | Delhi            | 84.39 | 71.32 | 66.25 |       |       |
| 6  | Gujarat          | 92.52 | 91.92 | 92.80 | 92.92 | 93.39 |
| 7  | Haryana          | 59.18 | 70.13 | 40.83 | 59.81 | 62.14 |
| 8  | Himachal Pradesh | 89.67 | 82.37 | 82.61 | 80.87 | 85.07 |
| 9  | Jammu & Kashmir  | 37.58 | 41.77 | 38.70 | 51.07 | 57.30 |
| 10 | Jharkhand        | 56.91 | 57.68 | 55.63 | 54.62 | 44.13 |
| 11 | Karnataka        | 85.87 | 93.90 | 91.65 | 91.30 | 94.48 |
| 12 | Kerala           | 76.93 | 77.77 | 72.29 | 67.45 | 74.07 |
| 13 | Madhya Pradesh   | 58.04 | 67.10 | 62.64 | 68.45 | 78.63 |
| 14 | Maharashtra      | 92.23 | 93.47 | 93.98 | 99.55 | 99.68 |
| 15 | Meghalaya        | 92.99 | 69.16 | 57.90 | 62.12 | 72.25 |
| 16 | Orissa           | 90.80 | 89.85 | 83.85 |       |       |
| 17 | Punjab           | 60.47 | 61.80 | 66.67 | 66.64 | 63.45 |
| 18 | Rajasthan        | 43.45 | 46.86 | 47.33 | 48.59 | 61.59 |
| 19 | Tamil Nadu       | 57.52 | 57.52 | 55.48 | 63.87 | 76.39 |
| 20 | Uttar Pradesh    | 58.29 | 61.98 | 52.13 | 62.58 | 72.05 |
| 21 | Uttarakhand      | 70.54 | 90.78 | 80.75 | 77.59 | 75.19 |
| 22 | West Bengal      | 89.80 | 98.35 | 86.68 | 92.93 | 94.77 |

|                        |              |              |              |              |              |
|------------------------|--------------|--------------|--------------|--------------|--------------|
| <b>Average of SPUs</b> | <b>69.80</b> | <b>72.78</b> | <b>68.30</b> | <b>74.10</b> | <b>80.93</b> |
|------------------------|--------------|--------------|--------------|--------------|--------------|

## II. EDs

|   |                   |        |        |       |       |       |
|---|-------------------|--------|--------|-------|-------|-------|
| 1 | Arunachal Pradesh | 26.89  | 34.47  | 27.26 | 35.3  | 43.52 |
| 2 | Goa               | 112.47 | 101.76 | 84.98 | 88.96 | 99.12 |
| 3 | Manipur           | 41     | 36.39  | 29.33 | 31.2  | 32.98 |
| 4 | Mizoram           | 31.48  | 30.65  | 50.93 | 52.46 | 61.1  |
| 5 | Nagaland          | 44.14  | 35.95  | 37.98 | 37.89 | 42.26 |
| 6 | Pondicherry       | 91.15  | 82.02  | 83.29 | 85.91 | 92.49 |
| 7 | Sikkim            | 176.36 | 93.96  | 96.46 | 95.79 | 95.9  |
| 8 | Tripura           | 91.18  | 67.6   | 63.7  | 68.46 | 93.13 |

|                       |              |              |              |              |              |
|-----------------------|--------------|--------------|--------------|--------------|--------------|
| <b>Average of EDs</b> | <b>84.45</b> | <b>71.83</b> | <b>66.86</b> | <b>70.37</b> | <b>78.08</b> |
|-----------------------|--------------|--------------|--------------|--------------|--------------|

|                          |              |              |              |              |              |
|--------------------------|--------------|--------------|--------------|--------------|--------------|
| <b>All India Average</b> | <b>67.31</b> | <b>70.31</b> | <b>66.00</b> | <b>74.05</b> | <b>80.90</b> |
|--------------------------|--------------|--------------|--------------|--------------|--------------|

### SHARE OF O&M IN TOTAL COST

| S.No. State/EDs | 2009-10 | 2010-11 | 2011-12 | 2012-13<br>(R.E) | 2013-14<br>(AP) |
|-----------------|---------|---------|---------|------------------|-----------------|
|-----------------|---------|---------|---------|------------------|-----------------|

SPUs

(%)

|    |                  |      |      |      |      |      |
|----|------------------|------|------|------|------|------|
| 1  | Andhra Pradesh   | 1.12 | 0.94 | 0.95 | 0.77 | 0.63 |
| 2  | Assam            | 1.67 | 1.25 | 1.31 | 1.26 | 1.33 |
| 3  | Bihar            | 1.35 | 1.18 | 1.06 | 1.87 | 1.73 |
| 4  | Chattisgarh      | 2.01 | 1.74 | 1.47 | 1.56 | 1.30 |
| 5  | Delhi            | 1.65 | 1.77 | 1.76 |      |      |
| 6  | Gujarat          | 1.02 | 0.79 | 0.70 | 0.69 | 0.67 |
| 7  | Haryana          | 0.63 | 0.51 | 0.35 | 0.71 | 0.71 |
| 8  | Himachal Pradesh | 0.95 | 1.07 | 1.25 | 0.94 | 1.09 |
| 9  | Jammu & Kashmir  | 1.65 | 1.75 | 1.43 | 1.24 | 1.36 |
| 10 | Jharkhand        | 2.35 | 1.26 | 1.21 | 1.04 | 0.86 |
| 11 | Karnataka        | 0.78 | 0.67 | 0.64 | 0.59 | 0.59 |
| 12 | Kerala           | 2.81 | 3.47 | 3.25 | 2.45 | 2.77 |
| 13 | Madhya Pradesh   | 1.02 | 1.17 | 0.85 | 0.83 | 0.69 |
| 14 | Maharashtra      | 1.99 | 1.45 | 1.31 | 1.24 | 1.19 |
| 15 | Meghalaya        | 5.86 | 5.32 | 4.44 | 4.33 | 3.75 |
| 16 | Orissa           | 1.96 | 1.42 | 1.02 |      |      |
| 17 | Punjab           | 2.79 | 2.78 | 2.45 | 2.25 | 2.18 |
| 18 | Rajasthan        | 0.79 | 0.81 | 0.89 | 0.81 | 0.79 |
| 19 | Tamil Nadu       | 1.19 | 0.82 | 0.81 | 0.84 | 0.82 |
| 20 | Uttar Pradesh    | 2.60 | 3.32 | 2.80 | 2.73 | 2.49 |
| 21 | Uttarakhand      | 1.92 | 1.91 | 1.88 | 1.99 | 2.08 |
| 22 | West Bengal      | 1.41 | 1.55 | 1.54 | 1.57 | 1.73 |

|                 |     |     |     |     |     |
|-----------------|-----|-----|-----|-----|-----|
| Average of SPUs | 1.5 | 1.4 | 1.3 | 1.3 | 1.2 |
|-----------------|-----|-----|-----|-----|-----|

## II. EDs

|   |                   |       |       |       |       |       |
|---|-------------------|-------|-------|-------|-------|-------|
| 1 | Arunachal Pradesh | 11.36 | 12.91 | 7.12  | 7.43  | 7.37  |
| 2 | Goa               | 4.44  | 1.68  | 1.18  | 1.73  | 2.30  |
| 3 | Manipur           | 3.18  | 2.64  | 1.88  | 2.14  | 1.87  |
| 4 | Mizoram           | 7.47  | 17.77 | 17.22 | 17.13 | 19.34 |
| 5 | Nagaland          | 7.91  | 6.33  | 5.56  | 5.30  | 7.50  |
| 6 | Pondicherry       | 1.11  | 0.79  | 0.83  | 0.65  | 0.72  |
| 7 | Sikkim            | 7.45  | 6.10  | 5.58  | 5.24  | 5.29  |
| 8 | Tripura           | 5.39  | 3.66  | 3.33  | 4.89  | 4.38  |

|                       |            |            |            |            |            |
|-----------------------|------------|------------|------------|------------|------------|
| <b>Average of EDs</b> | <b>5.1</b> | <b>4.4</b> | <b>3.5</b> | <b>3.8</b> | <b>4.2</b> |
|-----------------------|------------|------------|------------|------------|------------|

|                          |            |            |            |            |            |
|--------------------------|------------|------------|------------|------------|------------|
| <b>All India Average</b> | <b>1.6</b> | <b>1.5</b> | <b>1.3</b> | <b>1.3</b> | <b>1.2</b> |
|--------------------------|------------|------------|------------|------------|------------|

**SHARE OF ESTT/ADMN IN TOTAL COST**

| S.No. | State/EDs | 2009-10 | 2010-11 | 2011-12 | 2012-13<br>(R.E) | 2013-14<br>(AP) |
|-------|-----------|---------|---------|---------|------------------|-----------------|
|-------|-----------|---------|---------|---------|------------------|-----------------|

SPUs

(%)

|    |                  |       |       |       |       |       |
|----|------------------|-------|-------|-------|-------|-------|
| 1  | Andhra Pradesh   | 6.32  | 9.29  | 7.57  | 5.83  | 4.76  |
| 2  | Assam            | 20.24 | 16.35 | 17.82 | 17.06 | 15.80 |
| 3  | Bihar            | 14.17 | 12.00 | 12.35 | 14.63 | 8.00  |
| 4  | Chattisgarh      | 16.11 | 14.03 | 11.55 | 11.46 | 8.76  |
| 5  | Delhi            | 7.65  | 4.96  | 4.41  |       |       |
| 6  | Gujarat          | 8.26  | 6.69  | 5.99  | 5.63  | 5.46  |
| 7  | Haryana          | 13.05 | 7.81  | 5.94  | 6.94  | 6.28  |
| 8  | Himachal Pradesh | 24.30 | 23.45 | 24.06 | 26.50 | 25.07 |
| 9  | Jammu & Kashmir  | 13.73 | 12.93 | 13.85 | 11.69 | 14.96 |
| 10 | Jharkhand        | 8.60  | 8.65  | 8.62  | 7.68  | 6.30  |
| 11 | Karnataka        | 9.44  | 9.69  | 9.35  | 8.92  | 8.91  |
| 12 | Kerala           | 26.23 | 28.24 | 27.22 | 21.00 | 25.42 |
| 13 | Madhya Pradesh   | 18.20 | 22.02 | 17.97 | 17.24 | 14.27 |
| 14 | Maharashtra      | 7.14  | 6.41  | 6.52  | 6.43  | 7.62  |
| 15 | Meghalaya        | 27.54 | 26.35 | 22.30 | 25.12 | 21.87 |
| 16 | Orissa           | 16.99 | 12.81 | 12.70 |       |       |
| 17 | Punjab           | 18.69 | 20.17 | 22.10 | 20.19 | 19.45 |
| 18 | Rajasthan        | 11.75 | 10.57 | 10.45 | 7.93  | 5.45  |
| 19 | Tamil Nadu       | 11.24 | 11.20 | 10.71 | 10.52 | 9.82  |
| 20 | Uttar Pradesh    | 4.10  | 4.92  | 4.58  | 5.09  | 4.64  |
| 21 | Uttarakhand      | 6.60  | 7.42  | 5.63  | 5.83  | 5.84  |
| 22 | West Bengal      | 10.33 | 8.60  | 6.62  | 5.91  | 6.27  |

|                        |             |             |            |            |            |
|------------------------|-------------|-------------|------------|------------|------------|
| <b>Average of SPUs</b> | <b>10.9</b> | <b>10.5</b> | <b>9.7</b> | <b>9.4</b> | <b>8.7</b> |
|------------------------|-------------|-------------|------------|------------|------------|

## II. EDs

|   |                   |       |       |       |       |       |
|---|-------------------|-------|-------|-------|-------|-------|
| 1 | Arunachal Pradesh | 48.69 | 39.26 | 30.89 | 32.25 | 29.29 |
| 2 | Goa               | 14.72 | 14.39 | 12.98 | 13.99 | 17.05 |
| 3 | Manipur           | 20.88 | 23.69 | 20.16 | 21.88 | 20.03 |
| 4 | Mizoram           | 28.81 | 28.53 | 24.66 | 23.48 | 25.36 |
| 5 | Nagaland          | 16.59 | 26.09 | 18.72 | 18.50 | 17.64 |
| 6 | Pondicherry       | 7.49  | 6.96  | 5.26  | 5.11  | 5.37  |
| 7 | Sikkim            | 10.01 | 10.28 | 9.97  | 9.84  | 10.68 |
| 8 | Tripura           | 26.64 | 20.23 | 17.55 | 17.93 | 15.63 |

|                       |             |             |             |             |             |
|-----------------------|-------------|-------------|-------------|-------------|-------------|
| <b>Average of EDs</b> | <b>19.3</b> | <b>17.8</b> | <b>14.9</b> | <b>15.2</b> | <b>15.6</b> |
|-----------------------|-------------|-------------|-------------|-------------|-------------|

|                          |             |             |            |            |            |
|--------------------------|-------------|-------------|------------|------------|------------|
| <b>All India Average</b> | <b>11.0</b> | <b>10.6</b> | <b>9.7</b> | <b>9.5</b> | <b>8.8</b> |
|--------------------------|-------------|-------------|------------|------------|------------|

## Annexure 20

## SHARE OF DEPRECIATION IN TOTAL COST

| S.No.           | State/EDs        | 2009-10 | 2010-11 | 2011-12 | 2012-13<br>(R.E) | 2013-14<br>(AP) |
|-----------------|------------------|---------|---------|---------|------------------|-----------------|
| SPUs            |                  | (%)     |         |         |                  |                 |
| 1               | Andhra Pradesh   | 3.74    | 3.71    | 3.40    | 3.39             | 2.82            |
| 2               | Assam            | 3.26    | 2.53    | 2.08    | 1.99             | 1.85            |
| 3               | Bihar            | 1.38    | 1.71    | 1.83    | 4.18             | 3.80            |
| 4               | Chattisgarh      | 1.63    | 2.26    | 1.94    | 1.92             | 1.60            |
| 5               | Delhi            | 2.93    | 2.57    | 2.34    |                  |                 |
| 6               | Gujarat          | 2.70    | 2.57    | 2.43    | 2.50             | 2.43            |
| 7               | Haryana          | 1.11    | 1.13    | 0.96    | 1.34             | 1.32            |
| 8               | Himachal Pradesh | 3.30    | 3.30    | 4.34    | 3.00             | 3.53            |
| 9               | Jammu & Kashmir  | 3.35    | 3.11    | 3.03    | 2.59             | 2.85            |
| 10              | Jharkhand        | 1.72    | 1.46    | 2.76    | 2.08             | 1.45            |
| 11              | Karnataka        | 2.53    | 2.37    | 2.42    | 2.01             | 2.07            |
| 12              | Kerala           | 7.31    | 7.08    | 6.02    | 3.70             | 3.96            |
| 13              | Madhya Pradesh   | 6.98    | 6.24    | 5.57    | 5.47             | 4.96            |
| 14              | Maharashtra      | 2.71    | 3.00    | 1.82    | 1.98             | 2.04            |
| 15              | Meghalaya        | 5.87    | 5.01    | 3.88    | 8.20             | 9.64            |
| 16              | Orissa           | 2.23    | 1.66    | 1.45    |                  |                 |
| 17              | Punjab           | 5.84    | 4.71    | 4.20    | 3.68             | 3.53            |
| 18              | Rajasthan        | 2.19    | 2.68    | 2.65    | 2.50             | 2.50            |
| 19              | Tamil Nadu       | 2.88    | 2.24    | 1.64    | 2.13             | 2.06            |
| 20              | Uttar Pradesh    | 2.30    | 1.61    | 1.65    | 1.77             | 1.72            |
| 21              | Uttarakhand      | 3.65    | 3.70    | 3.42    | 3.93             | 4.16            |
| 22              | West Bengal      | 3.18    | 2.96    | 2.49    | 2.15             | 2.30            |
| Average of SPUs |                  | 3.1     | 2.9     | 2.5     | 2.6              | 2.5             |

## II. EDs

|   |                   |       |       |       |       |       |
|---|-------------------|-------|-------|-------|-------|-------|
| 1 | Arunachal Pradesh | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| 2 | Goa               | 2.24  | 2.01  | 0.24  | 0.18  | 0.47  |
| 3 | Manipur           | 28.18 | 25.50 | 21.51 | 22.99 | 22.37 |
| 4 | Mizoram           | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| 5 | Nagaland          | 6.73  | 5.64  | 5.17  | 4.35  | 3.99  |
| 6 | Pondicherry       | 3.46  | 2.85  | 2.40  | 2.28  | 2.35  |
| 7 | Sikkim            | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| 8 | Tripura           | 12.79 | 9.36  | 8.24  | 7.82  | 6.25  |

|                       |            |            |            |            |            |
|-----------------------|------------|------------|------------|------------|------------|
| <b>Average of EDs</b> | <b>5.5</b> | <b>5.0</b> | <b>4.1</b> | <b>4.1</b> | <b>4.3</b> |
|-----------------------|------------|------------|------------|------------|------------|

|                          |            |            |            |            |            |
|--------------------------|------------|------------|------------|------------|------------|
| <b>All India Average</b> | <b>3.2</b> | <b>3.0</b> | <b>2.6</b> | <b>2.6</b> | <b>2.5</b> |
|--------------------------|------------|------------|------------|------------|------------|

**SHARE OF INTEREST IN TOTAL COST**

| S.No.                  | State/EDs        | 2009-10    | 2010-11    | 2011-12    | 2012-13<br>(R.E) | 2013-14<br>(AP) |
|------------------------|------------------|------------|------------|------------|------------------|-----------------|
| <i>SPUs</i>            |                  | <i>(%)</i> |            |            |                  |                 |
| 1                      | Andhra Pradesh   | 5.47       | 5.25       | 6.14       | 2.47             | 2.04            |
| 2                      | Assam            | 3.69       | 2.93       | 2.81       | 2.69             | 2.49            |
| 3                      | Bihar            | 20.12      | 19.07      | 14.72      | 4.80             | 5.41            |
| 4                      | Chattisgarh      | 1.99       | 1.41       | 1.48       | 1.68             | 1.57            |
| 5                      | Delhi            | 4.79       | 6.19       | 7.38       |                  |                 |
| 6                      | Gujarat          | 1.00       | 0.65       | -0.08      | 0.08             | 0.05            |
| 7                      | Haryana          | 5.69       | 7.82       | 7.03       | 12.73            | 12.49           |
| 8                      | Himachal Pradesh | 5.50       | 4.42       | 5.57       | 6.00             | 3.38            |
| 9                      | Jammu & Kashmir  | 0.61       | 0.50       | 0.43       | 0.35             | 0.40            |
| 10                     | Jharkhand        | 19.50      | 14.49      | 12.60      | 10.93            | 8.50            |
| 11                     | Karnataka        | 5.46       | 5.23       | 4.91       | 5.11             | 4.48            |
| 12                     | Kerala           | 4.27       | 4.20       | 4.40       | 4.47             | 5.35            |
| 13                     | Madhya Pradesh   | 11.12      | 8.12       | 7.54       | 5.62             | 7.28            |
| 14                     | Maharashtra      | 1.43       | 1.36       | 2.01       | 2.57             | 2.26            |
| 15                     | Meghalaya        | 10.34      | 6.99       | 6.72       | 16.06            | 13.04           |
| 16                     | Orissa           | 3.65       | 3.15       | 2.95       |                  |                 |
| 17                     | Punjab           | 11.93      | 10.72      | 12.97      | 12.01            | 11.73           |
| 18                     | Rajasthan        | 11.91      | 17.15      | 21.05      | 20.49            | 21.19           |
| 19                     | Tamil Nadu       | 9.57       | 10.33      | 9.78       | 11.38            | 12.60           |
| 20                     | Uttar Pradesh    | 7.12       | 6.91       | 8.81       | 7.35             | 10.04           |
| 21                     | Uttarakhand      | 2.99       | 2.92       | 2.92       | 2.92             | 3.33            |
| 22                     | West Bengal      | 5.20       | 4.38       | 4.97       | 5.36             | 6.44            |
| <b>Average of SPUs</b> |                  | <b>6.7</b> | <b>6.8</b> | <b>7.3</b> | <b>7.1</b>       | <b>7.4</b>      |

## II. EDs

|   |                   |       |      |      |      |      |
|---|-------------------|-------|------|------|------|------|
| 1 | Arunachal Pradesh | 5.82  | 6.10 | 3.01 | 3.03 | 3.22 |
| 2 | Goa               | 1.08  | 1.05 | 0.81 | 0.65 | 0.60 |
| 3 | Manipur           | 0.00  | 0.00 | 0.00 | 0.00 | 0.00 |
| 4 | Mizoram           | 24.37 | 5.78 | 0.41 | 0.30 | 0.28 |
| 5 | Nagaland          | 8.81  | 7.16 | 5.51 | 7.62 | 5.53 |
| 6 | Pondicherry       | 0.00  | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 | Sikkim            | 0.00  | 0.00 | 0.00 | 0.00 | 0.00 |
| 8 | Tripura           | 0.00  | 0.00 | 0.00 | 0.00 | 0.00 |

|                       |            |            |            |            |            |
|-----------------------|------------|------------|------------|------------|------------|
| <b>Average of EDs</b> | <b>3.3</b> | <b>1.7</b> | <b>0.9</b> | <b>1.0</b> | <b>0.9</b> |
|-----------------------|------------|------------|------------|------------|------------|

|                          |            |            |            |            |            |
|--------------------------|------------|------------|------------|------------|------------|
| <b>All India Average</b> | <b>6.6</b> | <b>6.8</b> | <b>7.3</b> | <b>7.0</b> | <b>7.3</b> |
|--------------------------|------------|------------|------------|------------|------------|

## Annexure 22

## NUMBER OF CONSUMERS

| S.No. | State/EDs | 2009-10 | 2010-11 | 2011-12 | 2012-13<br>(R.E) | 2013-14<br>(AP) |
|-------|-----------|---------|---------|---------|------------------|-----------------|
|-------|-----------|---------|---------|---------|------------------|-----------------|

SPUs

(In lakhs)

|    |                  |     |     |     |     |     |
|----|------------------|-----|-----|-----|-----|-----|
| 1  | Andhra Pradesh   | 215 | 228 | 238 | 238 | 238 |
| 2  | Assam            | 17  | 19  | 23  | 23  | 30  |
| 3  | Bihar            | 32  | 28  | 33  | 42  | 56  |
| 4  | Chhatisgarh      | 30  | 37  | 36  | 38  | 39  |
| 5  | Gujarat          | 112 | 115 | 124 | 132 | 139 |
| 6  | Haryana          | 46  | 48  | 49  | 52  | 54  |
| 7  | Himachal Pradesh | 19  | 20  | 20  | 21  | 21  |
| 8  | Jammu & Kashmir  | 12  | 13  | 13  | 13  | 13  |
| 9  | Jharkhand        | 15  | 17  | 20  | 34  | 37  |
| 10 | Karnataka        | 168 | 176 | 182 | 190 | 200 |
| 11 | Kerala           | 97  | 101 | 105 | 108 | 111 |
| 12 | Madhya Pradesh   | 86  | 91  | 111 | 111 | 111 |
| 13 | Maharashtra      | 179 | 194 | 205 | 207 | 207 |
| 14 | Meghalaya        | 3   | 3   | 3   | 3   | 3   |
| 15 | Punjab           | 69  | 73  | 76  | 80  | 83  |
| 16 | Rajasthan        | 62  | 91  | 98  | 115 | 112 |
| 17 | Tamil Nadu       | 216 | 226 | 232 | 239 | 247 |
| 18 | Uttar Pradesh    | 107 | 120 | 131 | 139 | 151 |
| 19 | Uttarakhand      | 14  | 15  | 16  | 16  | 18  |
| 20 | West Bengal      | 76  | 86  | 107 | 117 | 129 |

|                    |             |             |             |             |             |
|--------------------|-------------|-------------|-------------|-------------|-------------|
| <b>Sub-total I</b> | <b>1575</b> | <b>1701</b> | <b>1822</b> | <b>1918</b> | <b>1999</b> |
|--------------------|-------------|-------------|-------------|-------------|-------------|

## II. EDs

|   |                   |   |   |   |   |   |
|---|-------------------|---|---|---|---|---|
| 1 | Arunachal Pradesh | 2 | 2 | 2 | 2 | 2 |
| 2 | Goa               | 5 | 5 | 6 | 6 | 6 |
| 3 | Manipur           | 2 | 2 | 2 | 2 | 2 |
| 4 | Mizoram           | 2 | 2 | 2 | 2 | 2 |
| 5 | Nagaland          | 2 | 2 | 2 | 2 | 2 |
| 6 | Pondicherry       | 3 | 3 | 3 | 4 | 4 |
| 7 | Sikkim            | 1 | 1 | 1 | 1 | 1 |
| 8 | Tripura           | 4 | 5 | 5 | 6 | 7 |

|                     |           |           |           |           |           |
|---------------------|-----------|-----------|-----------|-----------|-----------|
| <b>Sub-total II</b> | <b>21</b> | <b>22</b> | <b>23</b> | <b>25</b> | <b>26</b> |
|---------------------|-----------|-----------|-----------|-----------|-----------|

|              |             |             |             |             |             |
|--------------|-------------|-------------|-------------|-------------|-------------|
| <b>Total</b> | <b>1596</b> | <b>1723</b> | <b>1845</b> | <b>1943</b> | <b>2025</b> |
|--------------|-------------|-------------|-------------|-------------|-------------|