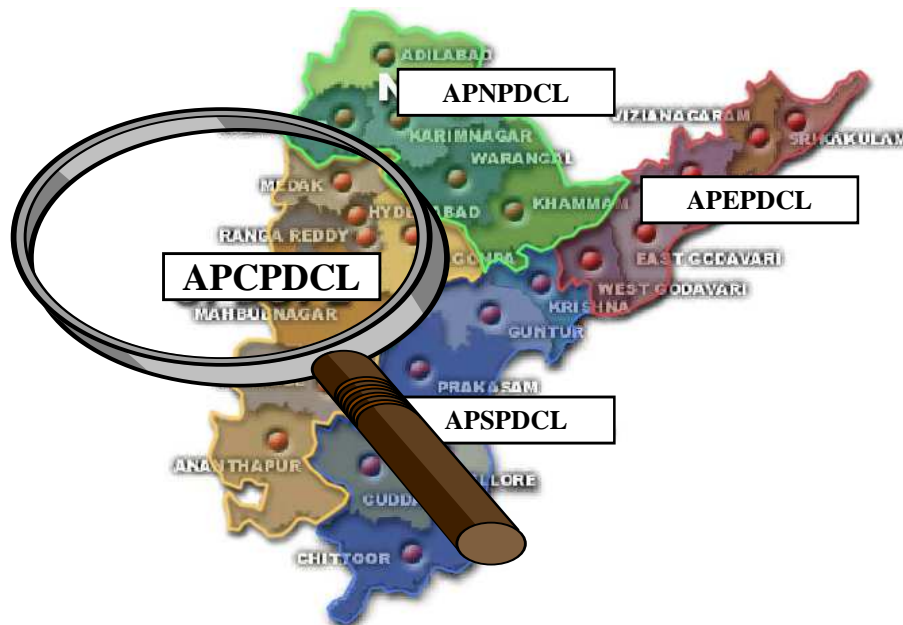


# CENTRAL POWER DISTRIBUTION COMPANY OF ANDHRA PRADESH LIMITED

(Distribution & Retail Supply Licensee)



Filing of Distribution Business True-up for 2<sup>nd</sup>  
Control period and Aggregate Revenue  
Requirement for Distribution Business  
3<sup>rd</sup> Control period



3<sup>rd</sup> December 2013

**BEFORE THE HONOURABLE ANDHRA PRADESH ELECTRICITY  
REGULATORY COMMISSION**

AT ITS OFFICE AT 5<sup>th</sup> Floor, Singareni Bhavan, Red Hills, Hyderabad - 500 004

**FILING NO. \_\_\_\_\_/2013**

**CASE NO. \_\_\_\_\_/2013**

In the matter of:

**Filing of the ARR & Tariff applications for the Distribution business for the Control Period FY 2015-2019 under multi-year tariff principles in accordance with the “Andhra Pradesh Electricity Regulatory Commission (Terms And Conditions For Determination Of Tariff For Wheeling And Retail Sale Of Electricity) Regulation, 2005” by the Central Power Distribution Company of Andhra Pradesh Limited (‘APCPDCL’ or ‘the Company’ or ‘the Licensee’) as the Distribution Supply Licensee.**

In the matter of:

**CENTRAL POWER DISTRIBUTION COMPANY OF ANDHRA PRADESH LIMITED**

... Applicant

The Applicant respectfully submits as under: -

- 1 This filing is made by the **CENTRAL POWER DISTRIBUTION COMPANY OF ANDHRA PRADESH LIMITED (CPDCL)** under Section 61 of the Electricity Act 2003 for determination of the ARR and Tariff for the distribution business for the years FY 2014-15 to FY 2018-19 (‘Control Period’) following multi-year tariff principles as laid out in Regulation 4 Of 2005 of APERC.
- 2 Introduction of Tariff Regulation based on MYT Principles - In November 2005, the Commission issued the Andhra Pradesh Electricity Regulatory Commission (Terms and Conditions for Determination of Tariff for Wheeling and Retail Sale of Electricity)

Regulation, 2005 ("Regulation") specifying the principles and procedures of filing for the Annual Aggregate Revenue Requirement (ARR) and Tariff proposals for the ensuing year and filings for the Control Period ( FY 2014-15 to FY 2018-19) under Multi-Year Tariff Principles.

- 3 The essential characteristic of this regulation is to provide incentivisation on certain performance parameters and provide a degree of regulatory certainty for the Control Period. This system of an incentive based system of regulation is a challenging one especially in the present case where the control period is for a period of five years. The challenges arise due to the difficulty in establishing appropriate targets five years ahead and the tendency to adopt uniform and universal performance norms for the licensees. Though the first and second control periods have helped the licensee to align itself to the incentive based system of regulation, the licensees would request the Hon'ble Commission to exercise suitable caution and recognise the current level of performance of the licensee, before fixing up performance benchmarks. As an example, the licensees which have already achieved significant level of efficiencies say in loss reduction cannot be expected to carry forward the same trend in the third control period, with the same loss reduction as the initial state of performance of the licensee. As such, recognising the different socio-economic and geographical conditions of the four distribution licensees, the licensee earnestly submits that there should be sufficient flexibility in deriving different levels of norms. For example, different norms for O&M costs have to be allowed for base values for each discom considering different consumer mix, assets and employee.
- 4 Licensee had submitted resource plan with Hon'ble Commission as per the Regulation 4 of 2005 dated 17.08.2013. Resource plan consists detailed projection of capital expenditure, sales forecast, load forecast, availability projection and voltage wise losses as per resource plan guidelines.
- 5 The Licensee had assumed the projections as per the Resource pan submitted by Hon'ble Commission.
- 6 This petition has been developed as per the provisions of the Regulation 4 of 2005. The Licensee is submitting the following as part of the ARR and tariff filings for the third Control Period ( FY 2013-14 to FY 2018-19):
  - Allocation statement to segregate expenses and incomes of distribution business

- ARR and Tariff Proposals (“Wheeling Charges”) for the Distribution business of the licensee for the third Control Period ( FY 2014-15 to FY 2018-19), including
    - (a) True-up for the period FY 2009-10 to FY 2013-14 (Provisional)
    - (b) Investment Plan ( abstract as per the resource plan)
    - (c) Indexation parameters for the network costs
    - (d) Loss reduction trajectory; (as per the resource plan)
- 7 The filing also includes a brief analysis of the performance of the licensee during the second period and the projection for third control period. In the following paragraphs, the licensee provides a summary of the filings.

## Summary of the Filing

8 **Performance Analysis:** A brief analysis of the key elements of licensee's business is as follows:

- **Loss reduction**

The licensee has improved performance in terms of distribution loss reduction (including EHT) substantially from a level of 18.08% during 2005-06 to 14.78% during 2012-13, which is a result of the company's consistent endeavour to improve levels of efficiency.

It is estimated that the loss level during 2013-2014 would be at 17.46 % that is higher than 12.84 % for the FY 2013-2014 as envisaged in the Tariff Order due to increased sales percentage particularly, in the agriculture sector which is higher compared to approved in the tariff order. Licensee has been making efforts to assess agricultural sales as per the proposed ISI methodology. As per the new methodology, estimated agricultural sales were more or less equal to the projections made by the licensee in retail supply business of FY 2013-14. Hence, licensee humbly requests Hon'ble Commission to recognise the fact of higher agricultural sales while arriving distribution losses. Licensee humbly requests Hon'ble commission

- to adopt top down approach rather than bottom up approach in arriving power purchase
- to recognise unmetered sales and losses as a whole in terms of % of total purchase instead of setting targets independently for agricultural sales and losses.

In view of this, APCPDCL requests the Hon'ble Commission to revisit the level of agricultural consumption approved for APCPDCL which will in turn determine the distribution losses/ wheeling losses.

- **True-up of Distribution business for Second Control period**

The Distribution Licensee (APCPDCL) files for the trueing-up of Rs 677 Crs. including carrying cost for the Second MYT Control Period from FY 2009-10 to FY 2013-14 (Provisional). Actual cost of debt i.e. 10.75% for FY 2009-10, FY 2010-11 and 12% for FY 2011-12, FY 2012-13 respectively has been considered for computing carrying cost. Provisional value of 12% has been taken for FY 2013-14 to arrive at an estimate of

carrying cost for FY 2013-14. Summary of ARR line items and revenue for FY 2009-2010 to FY 2013-2014 (Provisional) is shown in the table below.

|                | Particulars  | FY 2009-10  |            |                  | FY 2010-11  |             |             | FY 2011-12  |             |            | FY 2012-13  |             |            | FY 2013-14  |             |            | Total       |              |            |
|----------------|--|-------------|------------|------------------|-------------|-------------|-------------|-------------|-------------|------------|-------------|-------------|------------|-------------|-------------|------------|-------------|--------------|------------|
|                |  | App         | Act.       | Dev <sup>1</sup> | App         | Act         | Dev         | App         | Act         | Dev        | App         | Act         | Dev        | App         | Prov        | Dev        | App         | Act/<br>Prov | Dev        |
| A              | O&M (Net)  | 645         | 603        | (42)             | 716         | 850         | 134         | 785         | 1105        | 320        | 869         | 1106        | 237        | 954         | 1380        | 425        | 3969        | 5043         | 1074       |
| B              | ROCE   | 185         | 179        | (6)              | 209         | 210         | 1           | 228         | 268         | 40         | 244         | 307         | 63         | 257         | 399         | 141        | 1123        | 1362         | 239        |
| C              | Depreciation during the year                           | 225         | 167        | (58)             | 302         | 182         | (119)       | 381         | 220         | (161)      | 444         | 255         | (189)      | 514         | 330         | (184)      | 1866        | 1154         | (712)      |
| D              | Taxes on Income  | 2           | 3          | 2                | 2           | 2           | 1           | 2           | 1           | 0          | 2           | -           | (2)        | 2           | 41          | 39         | 8           | 48           | 40         |
| E              | Special Appn. For Safety measures                      | 5           | -          | (5)              | 5           | -           | (5)         | 5           | -           | (5)        | 5           | -           | (5)        | 5           | 25          | 20         | 25          | 25           | 0          |
| F              | Other Expenditure                                      | -           | 2          | 2                | -           | 1           | 1           | -           | 2           | 2          | -           | 16          | 16         | -           | 2           | 2          | -           | 23           | 23         |
| <b>G=</b>      |  |             |            |                  |             |             |             |             |             |            |             |             |            |             |             |            |             |              |            |
| <b>A to F</b>  | <b>Gross ARR</b>                                       | <b>1061</b> | <b>953</b> | <b>(108)</b>     | <b>1234</b> | <b>1245</b> | <b>12</b>   | <b>1400</b> | <b>1596</b> | <b>196</b> | <b>1564</b> | <b>1684</b> | <b>120</b> | <b>1732</b> | <b>2176</b> | <b>444</b> | <b>6990</b> | <b>7655</b>  | <b>665</b> |
|                |  |             |            |                  |             |             |             |             |             |            |             |             |            |             |             |            |             |              |            |
| H              | Revenue from Tariffs                                   | 6           | 0          | (6)              | 0           | 0           | 0           | 0           | 0           | 0          | 0           | 0           | 0          | 0           | 0           | 0          | 6           | 1            | (6)        |
| I              | Non Tariff Income                                      | 32          | 40         | 8                | 32          | 43          | 11          | 32          | 47          | 15         | 32          | 51          | 19         | 32          | 37          | 4          | 161         | 219          | 58         |
| <b>J = H+I</b> | <b>Total Revenue</b>                                   | <b>38</b>   | <b>40</b>  | <b>2</b>         | <b>32</b>   | <b>43</b>   | <b>11</b>   | <b>32</b>   | <b>47</b>   | <b>15</b>  | <b>32</b>   | <b>51</b>   | <b>19</b>  | <b>32</b>   | <b>37</b>   | <b>4</b>   | <b>168</b>  | <b>220</b>   | <b>52</b>  |
|                |  |             |            |                  |             |             |             |             |             |            |             |             |            |             |             |            |             |              |            |
| <b>K=</b>      |  |             |            |                  |             |             |             |             |             |            |             |             |            |             |             |            |             |              |            |
| <b>G-J</b>     | <b>Total Gap from Distribution Business</b>            | <b>1022</b> | <b>912</b> | <b>(110)</b>     | <b>1201</b> | <b>1202</b> | <b>1</b>    | <b>1368</b> | <b>1548</b> | <b>181</b> | <b>1531</b> | <b>1633</b> | <b>102</b> | <b>1700</b> | <b>2139</b> | <b>439</b> | <b>6822</b> | <b>7435</b>  | <b>613</b> |
| L              | Carrying Cost  |             |            | (6)              |             |             | (12)        |             |             | (4)        |             |             | 12         |             |             | 75         |             |              | 64         |
| <b>M=</b>      |  |             |            |                  |             |             |             |             |             |            |             |             |            |             |             |            |             |              |            |
| <b>K+L</b>     | <b>Total Gap including Carrying Cost for Truing-up</b> |             |            | <b>(116)</b>     |             |             | <b>(11)</b> |             |             | <b>176</b> |             |             | <b>113</b> |             |             | <b>515</b> |             |              | <b>677</b> |

## 9 Resource Plan for the Control Period

As per Clause 9.1 of the Regulation, the Resource Plan for the third Control Period was filed before the Hon'ble Commission on dated 17.08.2013. The Resource Plan contains the following:

- Sales Forecast;
- Power Procurement Plan; and

- Distribution Plan (Capital Investment Plan)
- Voltage wise loss projection ( required to project power procurement plan)

### Sales Forecast

Sales for the Control period has been projected using CAGR method on historical sales and considering appropriate load restrictions. Final sales projections have been arrived at by taken into account additional load. The Licensee's sales projections (MU) are as below.

|                           | 2012-13      | 2013-14       | 2014-15       | 2015-16       | 2016-17       | 2017-18       | 2018-19       |
|---------------------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|
|                           | Actual       | Projections   |               |               |               |               |               |
| <b>L.T. Supply</b>        | <b>18871</b> | <b>21,602</b> | <b>23,196</b> | <b>24,914</b> | <b>26,764</b> | <b>28,758</b> | <b>30,908</b> |
| Domestic Supply           | 6223         | 7,577         | 8,223         | 8,924         | 9,687         | 10,515        | 11,415        |
| Non-Domestic Supply       | 1964         | 2,410         | 2,634         | 2,880         | 3,149         | 3,442         | 3,764         |
| Industrial Supply         | 1169         | 1,401         | 1,495         | 1,597         | 1,706         | 1,823         | 1,949         |
| Irrigation & Agricultural | 8659         | 9,179         | 9,730         | 10,314        | 10,932        | 11,588        | 12,284        |
| Other LT                  | 855          | 1,035         | 1,114         | 1,199         | 1,290         | 1,390         | 1,497         |
| <b>H.T. Supply</b>        | <b>11234</b> | <b>15,214</b> | <b>17,015</b> | <b>18,543</b> | <b>20,061</b> | <b>21,988</b> | <b>23,809</b> |
| Incl Segregated           | 8868         | 10,910        | 11,887        | 12,909        | 13,984        | 15,261        | 16,793        |
| Incl Others               | 1628         | 2,051         | 2,347         | 2,740         | 3,137         | 3,761         | 4,024         |
| Irrigation & Agricultural | 383          | 1,749         | 1,934         | 1,934         | 1,956         | 1,956         | 1,956         |
| Traction                  | 149          | 322           | 657           | 760           | 774           | 788           | 804           |
| Other HT                  | 206          | 183           | 191           | 201           | 210           | 221           | 232           |
| <b>Total</b>              | <b>30105</b> | <b>36,816</b> | <b>40,211</b> | <b>43,456</b> | <b>46,825</b> | <b>50,746</b> | <b>54,717</b> |

### Power Purchase Plan

Power purchase requirement has been projected in the Resource Plan considering the capacities and availability from various existing and upcoming generating sources.

The below table lists down the consolidated energy availability from various Energy sources as projected in the Resource Plan.

| <b>Consolidated Power Procurement</b> |                 |                 |                 |                 |                 |                 |
|---------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| <b>Station Name</b>                   | <b>FY 13-14</b> | <b>FY 14-15</b> | <b>FY 15-16</b> | <b>FY 16-17</b> | <b>FY 17-18</b> | <b>FY 18-19</b> |
| APGENCO Thermal                       | 36,033          | 51,301          | 51,385          | 51,733          | 56,852          | 64,328          |
| APGENCO Hydel                         | 7,091           | 6,824           | 7,218           | 7,355           | 7,355           | 7,355           |
| <b>APGENCO Total</b>                  | <b>43,124</b>   | <b>58,126</b>   | <b>58,603</b>   | <b>59,088</b>   | <b>64,207</b>   | <b>71,683</b>   |
| CGS excluding NPTC Simhadri           | 14,098          | 17,172          | 15,882          | 17,021          | 19,905          | 20,879          |
| NTPC Simhadri                         | 10,695          | 10,695          | 10,695          | 10,695          | 10,695          | 10,695          |
| <b>CGS Total</b>                      | <b>24,793</b>   | <b>27,867</b>   | <b>26,576</b>   | <b>27,716</b>   | <b>30,600</b>   | <b>31,574</b>   |
| APGPCL+APGENCO (gas)                  | 283             | 283             | 283             | 283             | 283             | 283             |
| IPP                                   | 3,859           | 7,516           | 11,899          | 14,752          | 14,752          | 14,752          |
| NCE                                   | 3,981           | 5,292           | 6,663           | 7,858           | 9,070           | 9,777           |
| Others                                | 2,813           | 5,884           | 16,200          | 19,498          | 20,984          | 23,053          |
| <b>Total Energy Availability</b>      | <b>78,854</b>   | <b>105,066</b>  | <b>127,108</b>  | <b>139,212</b>  | <b>150,629</b>  | <b>167,511</b>  |
| <b>Total Energy Requirement</b>       | <b>100,765</b>  | <b>111,591</b>  | <b>120,312</b>  | <b>129,195</b>  | <b>139,958</b>  | <b>151,122</b>  |
| <b>Energy Surplus/Deficit</b>         | <b>(21,911)</b> | <b>(6,525)</b>  | <b>6,796</b>    | <b>10,017</b>   | <b>10,671</b>   | <b>16,389</b>   |

### Loss Trajectory

- As per the MYT framework, the licensees need to forecast a loss reduction trajectory over the five -year Control Period. So far, in the Tariff Orders loss percentages for the Licensees have been represented by including sales at extra high tension voltage level ('EHT sales') both in input as well as in the total sales. However, this distorts the actual performance in terms of loss reduction, as distribution losses are applicable only to energy flowing at or below 33 KV. Therefore, while setting loss reduction targets in the MYT filing, the licensee has adopted a modified loss computation, which corrects and adjusts for this distortion by excluding EHT sales both in the input and the sales (Losses excluding EHT sales). The following table shows the loss reduction trajectory for the Control Period. For comparative purpose, the losses including and excluding EHT sales (in input and sales both) are also shown:

| <b>Loss as % of Discom input</b> | <b>2008-09</b> | <b>2009-10</b> | <b>2010-11</b> | <b>2011-12</b> | <b>2012-13</b> | <b>2013-14</b> |
|----------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Losses excluding EHT sales       | 18.68          | 18.41          | 17.34          | 18.13          | 16.28          | 17.46          |
| Losses including EHT sales       | 16.94          | 16.67          | 15.67          | 16.36          | 14.78          | 15.33          |



- The Licensee would request the Hon'ble Commission to consider this modified loss computation approach while setting the loss reduction trajectory for the Licensee over the Control Period.

10 **Distribution Plan (Capital Investment Plan):** The licensee has prepared a detailed capital investment plan for the Control Period based on a comprehensive analysis of state of the existing network loading conditions and the expected future loading of the network during each year of the control period based on the projected load growth and the same is explained in detail in Section 2.2. The proposed capital investment of the licensee has been classified into the following areas-

- **Base Capital Expenditure:** The primary purpose of the capital expenditure proposed under this head is to meet the load growth of the licensee and to strengthen its distribution network. The key elements of the proposed base capital expenditure include the following

- Substation Additions
- Feeder Additions
- DTR Additions
- New PTR additions in existing substations

To estimate the above network additions for the control period, the licensee has defined certain trigger points for peak loading of each of the above network elements. Network additions are proposed once the peak loading exceeds the predefined trigger points. The extent of network capacity proposed to be added is commensurate to meet the increased load growth.

- **Other Capital Expenditure**

- **Loss Reduction:** The licensee has identified certain areas viz installation of high quality meters, HVDS conversion, laying of AB cables and replacement of existing conductor with higher capacity conductor which have a good potential of reducing losses. Accordingly the licensee has proposed the requisite capital expenditure under this head.
- **Reliability and Contingency Improvement:** The licensee has identified certain areas such as reconductoring of lines, replacement of OH lines with UG cables and provision of alternate supplies at 33KV, 11KV and LT voltage levels which have a good potential for improving the reliability and quality of

supply to the consumer. Accordingly the licensee has proposed the requisite capital expenditure under this head.

- **Renovation and Modernization:** The licensee has proposed certain capex under this head to replace the assets which have outlived their useful lives and also in improving the performance of certain existing assets
- **Technology Upgradation:** Keeping in view the changing electricity distribution business environment and with the objective of providing the best quality of service to consumers, the licensee would like to leverage technology in an optimal manner. In this regard, licensee has identified Geographical Information System, WAN, AMR solutions, SCADA, ERP/IT application as key areas of investment.
- **New Consumer Related Capex:** The meter and the associated network infrastructure related to the release of service to a new consumer falls under this head.
- **Civil Infrastructure Development:** The licensee has proposed investments under this head to cater to construction of new office buildings and in improving the amenities at the existing offices.

11 The following table provides a summary of the investment plan for each of the years of the Control Period:

| <b>Investment Area - CPDCL</b>                               | <b>2013-14</b> | <b>2014-15</b> | <b>2015-16</b> | <b>2016-17</b> | <b>2017-18</b> | <b>2018-19</b> |
|--|----------------|----------------|----------------|----------------|----------------|----------------|
| <b>Load Growth &amp; Network Strengthening ( Base Capex)</b> | <b>1,217</b>   | <b>1,191</b>   | <b>1,406</b>   | <b>1,448</b>   | <b>1,927</b>   | <b>2,004</b>   |
| SS Unit Additions  | 251            | 304            | 485            | 359            | 444            | 498            |
| PTR Additions  | 7              | 7              | 4              | 8              | 9              | 5              |
| Feeder Additions   | 103            | 44             | 73             | 73             | 58             | 45             |
| DTR Additions  | 856            | 836            | 845            | 1,009          | 1,415          | 1,456          |
| <b>AT &amp; C Loss Reduction</b>                             | <b>50</b>      | <b>92</b>      | <b>104</b>     | <b>44</b>      | <b>34</b>      | <b>36</b>      |
| <b>Reliability Improvement &amp; Contingency Schemes</b>     | <b>35</b>      | <b>40</b>      | <b>45</b>      | <b>51</b>      | <b>57</b>      | <b>65</b>      |
| <b>Renovation &amp; Modernisation</b>                        | <b>28</b>      | <b>32</b>      | <b>36</b>      | <b>41</b>      | <b>46</b>      | <b>52</b>      |
| <b>Technology Upgradation</b>                                | <b>93</b>      | <b>81</b>      | <b>5</b>       | <b>5</b>       | <b>5</b>       | <b>4</b>       |
| <b>New Consumer Capex</b>                                    | <b>71</b>      | <b>82</b>      | <b>93</b>      | <b>105</b>     | <b>120</b>     | <b>136</b>     |
| <b>Civil Infrastructure Development</b>                      | <b>8</b>       | <b>9</b>       | <b>10</b>      | <b>11</b>      | <b>12</b>      | <b>14</b>      |
| Add: IDC   |                |                |                |                |                |                |
| Add: Expenses Capitalised                                    |                |                |                |                |                |                |
| <b>Total Investment Requirement</b>                          | <b>1,536</b>   | <b>1,563</b>   | <b>1,754</b>   | <b>1,758</b>   | <b>2,259</b>   | <b>2,376</b>   |

12 **Allocation Statement – Clause 5 of the Regulation prescribes that “Till such time as there is a complete segregation of accounts between Distribution and Retail Supply businesses, the ARR for each business shall be supported by an Allocation Statement that contains the apportionment of costs and revenues to that business. The allocation statement shall also contain the methodology that has been used for the apportionment.”** The licensee has prepared an allocation statement for the actual income and expenditure during 2012-13 based on allocation of the following income and expenses to Retail supply business, while allocating the rest of the expenses and income to the distribution business

| Allocation to Retail Supply Business      |                              |
|---|------------------------------|
| Income                                    | Expenditure                  |
| Revenue from Sale of Power                | Power Purchase               |
| Other income                              | Other financial charges      |
| UI Charges/ Pool trade                    | Interest on security deposit |
| Miscellaneous charges from consumers      |                              |
| Recoveries for theft of power/malpractice |                              |
| Revenue from IS sales(D-trade)            |                              |

14 **O&M expense projection** – Clause 6.3 (a) of the Regulation provides the following for projection of the O&M costs: *“The Operation and Maintenance (O&M) costs which include employee-related costs, repair & maintenance costs and administrative & general costs, estimated for the Base Year and the year prior to the Base Year in complete detail, together with the forecast for each year of the Control Period based on the norms proposed by the Distribution Licensee including indexation and other appropriate mechanisms...”*. The licensee has provided the details of the O&M cost components (as mentioned in the Regulation) in Form 1.3a and explained the rationale in Section 4.3.1. In line with the requirement of the Regulation, the licensee has developed a formula on the basis of the following principles:

- The O&M costs of the licensee is essentially driven by the following factors:
  - Number of consumers;
  - Geographical expanse of the licensee’s area of supply; and
  - The load/ sales handled by the system

- The above factors are related with measurable indicators or parameters in the licensee's business either directly or through some suitable proxy as follows:
  - Employee expenses (EE) in proportion to total energy sales
  - Administrative & General (A&G) expenses in proportion to total energy sales
  - Repairs & Maintenance expenses in proportion to Gross fixed assets
- The estimates of EE and A&G expenses for the Base Year (2012-13) has been arrived based on the latest audited accounts available and escalated for FY 2013-14 and for each year of the third Control Period (FY2015-19). Escalation rate is computed based on weighted average of Consumer Price Index for Industrial Workers (CPI-IW) and Wholesale Price Index (WPI). R&M expenses is being projected in proportion of GFA during the year which itself factors escalation rate used in projections of capital expenditure. O&M Expenses projections are as shown below.

| Particulars                                 |         | 2013-14        | 2014-15        | 2015-16        | 2016-17        | 2017-18        | 2018-19        |
|---|---------|----------------|----------------|----------------|----------------|----------------|----------------|
| <b>Operation &amp; Maintenance Expenses</b> | Rs. Crs | <b>1526.09</b> | <b>1837.37</b> | <b>2182.61</b> | <b>2580.54</b> | <b>3064.18</b> | <b>3623.90</b> |
| Employee Cost                               | Rs. Crs | 1107.36        | 1331.14        | 1583.61        | 1878.50        | 2240.99        | 2660.13        |
| Administrative & General Expenses           | Rs. Crs | 174.76         | 210.07         | 249.91         | 296.45         | 353.66         | 419.80         |
| Repair & Maintenance Expenses               | Rs. Crs | 243.98         | 296.16         | 349.09         | 405.59         | 469.54         | 543.97         |

- The proposed methodology factors both inflationary adjustment and addition of new offices/ employees due to load growth.
- The licensee humbly requests the Commission to consider the impact of the wage revision as a true-up in the ARR for subsequent years.
- The detailed basis of estimation for each year of the Control Period is provided in the Section 4.3.1 of the accompanying document.

## 15 ***Return on Capital Employed***

*The licensee has computed the ROCE as provided in the Clause 15 of the Regulation which specifies that the ROCE be computed by multiplying the Regulated Rate Base (RRB) by the Weighted Average Cost of Capital (WACC). The licensee has computed the ROCE as provided in the regulation and compared the same with the*

expected interest pay out. The detailed computations are explained in Section 4.7 and a summary of comparison of the ROCE and expected interest is as follows:

| Particulars                               | FY 2013-14     | FY 2014-15     | FY 2015-16     | FY 2016-17     | FY 2017-18     | FY 2018-19     |
|---|----------------|----------------|----------------|----------------|----------------|----------------|
| <b>Return on Capital Employed</b>         | <b>398.17</b>  | <b>525.43</b>  | <b>627.67</b>  | <b>751.95</b>  | <b>903.76</b>  | <b>1094.47</b> |
| <b>Regulatory Rate Base</b>               | <b>3097.08</b> | <b>4092.05</b> | <b>4983.72</b> | <b>5888.80</b> | <b>6923.71</b> | <b>8151.91</b> |
| <i>Additions to GFA</i>                   | 1911.18        | 1766.78        | 1964.33        | 2017.72        | 2489.92        | 2756.47        |
| <i>Additions to Consumer Contribution</i> | 252.23         | 258.23         | 274.19         | 260.88         | 288.87         | 295.70         |
| <i>Working Capital</i>                    | 156.45         | 188.65         | 223.78         | 263.72         | 311.69         | 367.27         |
| <b>WACC</b>                               | <b>12.86%</b>  | <b>12.84%</b>  | <b>12.59%</b>  | <b>12.77%</b>  | <b>13.05%</b>  | <b>13.43%</b>  |
| <i>Cost of Debt %</i>                     | 12.48%         | 12.45%         | 12.13%         | 12.36%         | 12.74%         | 13.23%         |
| <i>Return on Equity %</i>                 | 14.00%         | 14.00%         | 14.00%         | 14.00%         | 14.00%         | 14.00%         |

#### 16 Depreciation:

The depreciation has been calculated for the every year considering the Depreciation rates for each class of asset base and also Fully Depreciated Assets during the control period. The Fully depreciated assets during the year have been deducted form the opening balance of the next consecutive years to calculate the depreciation. Depreciation computation after considering the Fully Depreciated Assets (FDA) balances is tabulated below.

| Particulars                              | 2013-14 (Base year) | 2014-15       | 2015-16       | 2016-17       | 2017-18        | 2018-19        |
|--|---------------------|---------------|---------------|---------------|----------------|----------------|
| Opening Balance of assets                | 7642.86             | 9554.04       | 11320.82      | 13285.15      | 15302.87       | 17792.79       |
| Asset Additions during the Year          | 1911.18             | 1766.78       | 1964.33       | 2017.72       | 2489.92        | 2756.47        |
| Fully Depreciated assets during the year | 1865.12             | 2195.98       | 2662.46       | 2910.17       | 3225.06        | 3671.58        |
| <b>Depreciation During the Year</b>      | <b>557.55</b>       | <b>684.41</b> | <b>801.17</b> | <b>915.53</b> | <b>1068.49</b> | <b>1248.09</b> |

17 **Aggregate Revenue Requirement (ARR) for each year of the third control period**

The ARR for the Distribution business for each year of the Control Period is determined as follows.

| Particulars   | Base Year      | Year 1         | Year 2         | Year 3         | Year 4         | Year 5         |
|---|----------------|----------------|----------------|----------------|----------------|----------------|
| <b>Operation and Maintenance Charges</b>                                | 1526.09        | 1837.37        | 2182.61        | 2580.54        | 3064.18        | 3623.90        |
| Depreciation  | 557.55         | 684.41         | 801.17         | 915.53         | 1068.49        | 1248.09        |
| Advance Against Depreciation  |                |                |                |                |                |                |
| Taxes on Income   | 40.88          | 54.02          | 65.79          | 77.73          | 91.39          | 107.61         |
| Other Expenditure   | 0.46           | 188.32         | 188.34         | 188.37         | 188.40         | 188.43         |
| Special Appropriations  | 25.00          | 30.00          | 35.00          | 40.00          | 45.00          | 50.00          |
| <b>Total Expenditure</b>  | <b>2149.98</b> | <b>2794.11</b> | <b>3272.91</b> | <b>3802.17</b> | <b>4457.46</b> | <b>5218.02</b> |
| Less: IDC and expenses capitalized*                                     |                |                |                |                |                |                |
| Less: O&M expenses capitalized  | 146.46         | 148.13         | 166.13         | 165.22         | 213.95         | 224.03         |
| <b>Net Expenditure</b>  | <b>2003.52</b> | <b>2645.98</b> | <b>3106.78</b> | <b>3636.95</b> | <b>4243.51</b> | <b>4993.99</b> |
| Add Return on Capital Employed  | 398.17         | 525.43         | 627.67         | 751.95         | 903.76         | 1094.47        |
| <b>Total Distribution ARR</b>   | <b>2401.69</b> | <b>3171.40</b> | <b>3734.45</b> | <b>4388.90</b> | <b>5147.28</b> | <b>6088.45</b> |
| Less: Wheeling Revenue from Third Party/Open Access/NTI (if any)        | 264.45         | 299.12         | 332.38         | 364.47         | 400.26         | 440.64         |
| <b>Revenue Requirement, (Net transferred to Retail Supply Business)</b> | <b>2137.24</b> | <b>2872.28</b> | <b>3402.06</b> | <b>4024.43</b> | <b>4747.02</b> | <b>5647.82</b> |

18 **Wheeling Charges and Losses**

The Licensee is striving to reduce the losses by the implementation of loss reduction measures like strengthening of the network infrastructure, addition of network elements, and vigorously undertaking the Energy Audit visit to keep a close tab on the losses. The Licensee expects to reach the APERC approved loss targets for FY 2013-14 by FY 2018-19 by undertaking the above mentioned measures. Hence, the Licensee humbly requests the Hon'ble Commission to approve the loss trajectory as given in the table below.

| Losses                | FY 2013-14 | FY 2014-15 | FY 2015-16 | FY 2016-17 | FY 2017-18 | FY 2018-19 |
|-----------------------|------------|------------|------------|------------|------------|------------|
| <b>LT Loss (%)</b>    | 10.80%     | 10.17%     | 9.58%      | 9.03%      | 8.50%      | 8.01%      |
| <b>11 kV Loss (%)</b> | 6.31%      | 6.02%      | 5.75%      | 5.49%      | 5.24%      | 5.01%      |

| Losses         | FY<br>2013-14 | FY<br>2014-15 | FY<br>2015-16 | FY<br>2016-17 | FY<br>2017-18 | FY<br>2018-19 |
|----------------|---------------|---------------|---------------|---------------|---------------|---------------|
| 33 kV Loss (%) | 5.58%         | 5.21%         | 4.88%         | 4.56%         | 4.26%         | 3.99%         |

The licensee is proposing the following distribution wheeling charges for each of the control period.

| Wheeling Tariff – Rs./kVA/month |          |          |          |          |          |
|---------------------------------|----------|----------|----------|----------|----------|
| Voltage Level                   | FY 14-15 | FY 15-16 | FY 16-17 | FY 17-18 | FY 18-19 |
| 33 kV (Rs./kVA/Month)           | 58.48    | 63.23    | 68.07    | 72.04    | 79.39    |
| 11 kV (Rs./kVA/Month)           | 303.83   | 338.97   | 375.02   | 410.96   | 439.59   |
| LT (Rs./kVA/Month)              | 417.90   | 455.19   | 496.47   | 541.81   | 602.57   |

19 This filing has been discussed and approved by the Board of Directors of APCPDCL and Sri S.A.M. Rizvi, Chairman and Managing Director of APCPDCL has been authorised to execute and file the said document on behalf of APCPDCL. Accordingly, the current filing documents is signed and verified by, and backed by the affidavit of Sri S.A.M. Rizvi ,the Chairman and Managing Director.

20 In the aforesaid facts and circumstances, the Applicant request that this Hon'ble Commission may be pleased to:

- Take the accompanying ARR and Wheeling Tariff application of APCPDCL on record for Distribution Business and treat it as complete;
- Grant suitable opportunity to APCPDCL within a reasonable time frame to file additional material information that may be subsequently available;
- Consider and approve APCPDCL's ARR and Tariff application including all requested regulatory treatments in the filing;
- Pass such order as the Hon'ble Commission may deem fit and proper in the facts and circumstances of the case.

CENTRAL POWER DISTRIBUTION COMPANY OF ANDHRA PRADESH LIMITED.

(APPLICANT)

Through

\_\_\_\_\_  
CHAIRMAN AND MANAGING DIRECTOR

Place:  
Dated:

**CENTRAL POWER  
DISTRIBUTION COMPANY  
OF ANDHRA PRADESH  
LIMITED**

Distribution Business Truing up for  
Second Control Period (FY 09-14) and  
Aggregate Revenue Requirement for  
Third Control Period (FY 15-19)



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## **Aggregate Revenue Requirement of Distribution Business of APCPDCL for the Third control period (FY 15-19)**

**Central Power Distribution Company of Andhra Pradesh Ltd (APCPDCL)**, the Distribution licensee caters the power requirements of 8.8 million consumers of Domestic, Commercial and various categories of consumers including 8,360 Nos of HT consumers in seven districts of Andhra Pradesh Viz., Ananthapur, Kurnool, Mahabubnagar, Nalgonda, Medak, Rangareddy and Hyderabad. To support its operations, APCPDCL has 1518 Nos. of 33/11 KV substations, 2,350 Nos. of Power Transformers, 16,361 KM of 33 KV Network, 91,725 KM of 11 KV network, 2,05,653 KM of LT network, 3,41,687 Nos of Distribution Transformers of various capacities.

### **1 Truing up of the licensee's Distribution Business for the Second Control Period**

This filing is made by the Distribution Licensee, CENTRAL POWER DISTRIBUTION COMPANY OF ANDHRA PRADESH LIMITED (APCPDCL) under **Clause 19, Pg 11 of the 'Andhra Pradesh Electricity Regulatory Commission** (Terms and Conditions for Determination Of Tariff For Wheeling and Retail Sale of Electricity)' Regulation No. 4 of 2005 for corrections for "uncontrollable" and "controllable" items and as well as sharing of gains/losses for the Second control period (FY 2009-10 to FY 2013-14(provisional)).

This filing has been prepared as per the provisions of the above mentioned Regulation. The Licensee is submitting the following as part of the Correction filings for the Second Control Period (FY 2009-10 to FY 2013-14(Provisional))

- i. Allocation statement to segregate expenses and income of Controllable and Uncontrollable items under Distribution Business
- ii. Statement of Variance with Tariff Order approved figures pertain to items under Distribution Business for the Second Control Period ( FY 2009-10 to FY 2013-14 (provisional))
- iii. Corrections for Uncontrollable items under Distribution Business along with reasons for variation
- iv. Corrections for Controllable items under Distribution Business along with reasons for variation

As per the 'Andhra Pradesh Electricity Regulatory Commission (Terms and Conditions for Determination Of Tariff For Wheeling and Retail Sale of Electricity)' Regulation No. 4 of 2005, Clause 10, Pg 7 –

“1. ....  
 .....  
 .....

4. *Controllable and Uncontrollable items of ARR:- The expenditure of the Distribution Licensee considered as “controllable” and “uncontrollable” shall be as follows:*

| <b>Distribution Business</b>     |  |
|----------------------------------|--|
| <b>ARR Item</b>                  | <b>“Controllable”/”Uncontrollable”</b> |
| Operation & Maintenance expenses | Controllable                           |
| Return on Capital Employed       | Controllable                           |
| Depreciation                     | Controllable                           |
| Taxes on Income                  | Uncontrollable                         |
| Non-tariff income                | Controllable                           |

*In addition to the above items the retail supply business shall include the following:*

| <b>Distribution Business</b> |  |
|------------------------------|--|
| <b>ARR Item</b>              | <b>“Controllable”/”Uncontrollable”</b> |
| Cost of power purchase       | Uncontrollable                         |

5. *Pass-through of gains and losses on variations in “uncontrollable” items of ARR:- The Distribution Licensee shall be eligible to claim variations in “uncontrollable” items in the ARR for the year succeeding the relevant year of the Control Period depending on the availability of data as per actuals with respect to effect of uncontrollable items:*

*Provided that the Commission shall allow the financing cost on account of the time gap between the time when the true-up becomes due and when it is actually allowed and the corrections shall not be normally revisited.*

6. *Sharing of gains and losses on variations in “controllable” items of ARR:- The Distribution Licensee in its annual filings during the Control Period shall present gains and losses for each controllable item of the Aggregate Revenue Requirement.*

*A statement of gain and loss against each controllable item will be presented after adjusting for any variations on account of uncontrollable factors.*

*7. For the purpose of sharing gains and losses with the consumers, only aggregate gains or losses for the Control Period as a whole will be considered. The Commission will review the gains and losses for each item of the ARR and make appropriate adjustments wherever required:*

*Provided that for the first Control Period, insofar as the gains and losses from the Retail Supply Business of the Distribution Licensee are concerned, these will be shared with the consumers on yearly basis.”*

Hence, this Petition details the total truing up gap arising out of the deviations in both “uncontrollable” and “controllable” items for the Second MYT Control Period in subsequent sections of this Petition.

#### **1.1 True-up of Aggregate Revenue Requirement (ARR) Components & Total Revenue Gap from Distribution Business including Carrying Cost**

The Distribution Licensee (APCPDCL) files for the truing-up of **Rs 677 Crs.** including carrying cost for the Second MYT Control Period from FY 2009-10 to FY 2013-14 (Provisional). Actual cost of debt i.e. **10.75%** for FY 2009-10, FY 2010-11 and **12%** for FY 2011-12, FY 2012-13 respectively has been considered for computing carrying cost. Provisional value of **12.50%** has been taken for FY 2013-14 to arrive at an estimate of carrying cost for FY 2013-14. Summary of ARR line items and revenue for FY 2009-2010 to FY 2013-2014 (Provisional) is shown in the table below.

All figures in Rs. Crs.

| Sl. No          | Particulars                              | FY 2009-10   |              |              | FY 2010-11   |              |             | FY 2011-12   |              |            | FY 2012-13   |              |            | FY 2013-14   |              |            | Total        |                 |            |
|-----------------|--|--------------|--------------|--------------|--------------|--------------|-------------|--------------|--------------|------------|--------------|--------------|------------|--------------|--------------|------------|--------------|-----------------|------------|
|                 |  | Apr.         | Act.         | Dev.         | Apr.         | Act.         | Dev.        | Apr.         | Act.         | Dev.       | Apr.         | Act.         | Dev.       | Apr.         | Prov.        | Dev.       | Apr.         | Act. +<br>Prov. | Dev.       |
| A               | O & M Expenses                           | 645          | 603          | (42)         | 716          | 850          | 134         | 785          | 1,105        | 320        | 869          | 1,106        | 237        | 954          | 1,380        | 425        | 3,969        | 5,043           | 1,074      |
| B               | Return on Capital Employed               | 185          | 179          | (6)          | 209          | 210          | 1           | 228          | 268          | 40         | 244          | 307          | 63         | 257          | 399          | 141        | 1,123        | 1,362           | 239        |
| C               | Depreciation during the year             | 225          | 167          | (58)         | 302          | 182          | (119)       | 381          | 220          | (161)      | 444          | 255          | (189)      | 514          | 330          | (184)      | 1,866        | 1,154           | (712)      |
| D               | Taxes on Income                          | 2            | 3            | 2            | 2            | 2            | 1           | 2            | 1            | (0)        | 2            | -            | (2)        | 2            | 41           | 39         | 8            | 48              | 40         |
| E               | CPecial Appn. For Safety measures        | 5            | -            | (5)          | 5            | -            | (5)         | 5            | -            | (5)        | 5            | -            | (5)        | 5            | 25           | 20         | 25           | 25              | -          |
| F               | Other Expenditure                        | -            | 2            | 2            | -            | 1            | 1           | -            | 2            | 2          | -            | 16           | 16         | -            | 2            | 2          | -            | 23              | 23         |
| <b>G=A to F</b> | <b>Gross ARR</b>                         | <b>1,061</b> | <b>953</b>   | <b>(108)</b> | <b>1,234</b> | <b>1,245</b> | <b>12</b>   | <b>1,400</b> | <b>1,596</b> | <b>196</b> | <b>1,564</b> | <b>1,684</b> | <b>120</b> | <b>1,732</b> | <b>2,176</b> | <b>444</b> | <b>6,990</b> | <b>7,655</b>    | <b>665</b> |
| H               | Revenue                                  | 1,029        | 1,022        | (6)          | 1,201        | 1,201        | -           | 1,367        | 1,368        | 0          | 1,531        | 1,531        | 0          | 1,700        | 1,700        | 0          | 6,828        | 6,823           | (6)        |
| I               | Non Tariff Income                        | 32           | 40           | 8            | 32           | 43           | 11          | 32           | 47           | 15         | 32           | 51           | 19         | 32           | 37           | 4          | 161          | 219             | 58         |
| <b>J=H+I</b>    | <b>Total Revenue</b>                     | <b>1,061</b> | <b>1,063</b> | <b>2</b>     | <b>1,234</b> | <b>1,245</b> | <b>11</b>   | <b>1,400</b> | <b>1,415</b> | <b>15</b>  | <b>1,564</b> | <b>1,582</b> | <b>19</b>  | <b>1,732</b> | <b>1,737</b> | <b>5</b>   | <b>6,990</b> | <b>7,042</b>    | <b>52</b>  |
| <b>K=G-J</b>    | <b>Total Gap from Distribution</b>       | <b>0</b>     | <b>(110)</b> | <b>(110)</b> | <b>0</b>     | <b>1</b>     | <b>1</b>    | <b>0</b>     | <b>181</b>   | <b>181</b> | <b>0</b>     | <b>102</b>   | <b>102</b> | <b>0</b>     | <b>439</b>   | <b>439</b> | <b>0</b>     | <b>613</b>      | <b>613</b> |
| <b>L</b>        | <b>Carrying Cost</b>                     |              |              | <b>(6)</b>   |              |              | <b>(12)</b> |              |              | <b>(4)</b> |              |              | <b>12</b>  |              |              | <b>75</b>  |              |                 | <b>64</b>  |
| <b>M=K+L</b>    | <b>Total Gap including Carrying Cost</b> |              |              | <b>(116)</b> |              |              | <b>(12)</b> |              |              | <b>176</b> |              |              | <b>113</b> |              |              | <b>515</b> |              |                 | <b>677</b> |

[1] App. – Approved, Act. – Actual, Dev. – Deviation, Prov. - Provisional

As shown in the table above, the actual Gross ARR is **Rs 7,655 Crs.** as against APERC approved of **Rs. 6,990 Crs.** As per APCPDCL's filing on 29.11.2008, projected total Gross ARR for the Second MYT Control Period is **Rs 10,642 Crs.**

## 1.2 Reasons for Deviation in year wise Aggregate Revenue Requirement

### 1.2.1 Operation & Maintenance (O&M) Expenses

APCPDCL's actual (provisional for FY 2013-14) O&M Expenses (net of capitalization) for the Second MYT Control period is **Rs 5043 Crs.** as against the Hon'ble Commission approved expenses of **Rs. 3,969 Crs.** resulting in a deviation of **Rs 1074 Crs.** Summary of Operation &

Maintenance (O&M) Expenses for FY 2009-2010 to FY 2013-2014 (Provisional) is as shown below.

All figures in Rs. Crs..

| Particulars  | FY 2009-10 |      |                  | FY 2010-11 |     |     | FY 2011-12 |      |     | FY 2012-13 |      |     | FY 2013-14 |      |     | Total |          |      |
|--|------------|------|------------------|------------|-----|-----|------------|------|-----|------------|------|-----|------------|------|-----|-------|----------|------|
|  | App        | Act. | Dev <sup>1</sup> | App        | Act | Dev | App        | Act  | Dev | App        | Act  | Dev | App        | Prov | Dev | App   | Act/Prov | Dev  |
| <b>O &amp; M Expenses ( net of expenses capitalised)</b> | 645        | 603  | (42)             | 716        | 850 | 134 | 785        | 1105 | 320 | 869        | 1106 | 237 | 954        | 1380 | 425 | 3969  | 5043     | 1074 |
| Employee Expenses  |            | 380  |                  |            | 625 |     |            | 831  |     |            | 766  |     |            | 983  |     |       | 3585     |      |
| A&G Expenses   |            | 71   |                  |            | 87  |     |            | 112  |     |            | 120  |     |            | 153  |     |       | 543      |      |
| Repairs & Maintenance                                    | 645        | 151  | (42)             | 716        | 138 | 134 | 785        | 162  | 320 | 869        | 220  | 237 | 954        | 244  | 425 | 3969  | 916      | 1074 |

As per APCPDCL's filing on 29.11.2008, projected net (of capitalization) O&M Expenses for the Second MYT Control Period is Rs 4,830 Crs. Yearwise projected net O&M expenses for the Second Control Period as per filing is as below.

All figures in Rs. Crs..

| Particulars  | FY 2009-10 | FY 2010-11 | FY 2011-12 | FY 2012-13  | FY 2013-14  | Total       |
|--|------------|------------|------------|-------------|-------------|-------------|
| <b>O &amp; M Expenses ( net of expenses capitalised)</b> | <b>653</b> | <b>797</b> | <b>956</b> | <b>1121</b> | <b>1302</b> | <b>4830</b> |

#### **Reasons for deviations in O&M Expenses**

From the above table, it is observed that the O&M expenses for the year FY 2009-10 are within limits of approved figures of the Hon'ble Commission. During the years FY 2010-11, FY 2011-12 and FY 2012-13, the O&M charges are higher than the approval of the Hon'ble Commission by Rs. 134 Crs., Rs. 320 Crs. and Rs. 237 Crs. respectively.

Employee expenses and A&G expenses are linked to inflation and thus escalated using (Consumer Price Index) CPI and (Wholesale Price Index) WPI.

Therefore, Employee Expenses have increased owing to inflation. Increase in CPI and WPI during the Second MYT Control Period are as depicted in the table below.

| Particulars       | FY 2009-10 | FY 2010-11 | FY 2011-12 | FY 2012-13 |
|-------------------|------------|------------|------------|------------|
| CPI               | 163        | 180        | 195        | 215        |
| % Increase in CPI | 13%        | 10%        | 8%         | 10%        |
| WPI               | 131        | 143        | 156        | 168        |
| % Increase in WPI | 4%         | 9%         | 9%         | 8%         |

Source: Actual CPI - [www.labourbureau.nic.in](http://www.labourbureau.nic.in), Actual WPI - [www.eaindustry.nic.in](http://www.eaindustry.nic.in) (Office of the Economic Advisor website)

O&M expenses have increased mainly due to the following reasons, which were not considered while fixing the O&M Cost target for the Distribution Business by the Hon'ble Commission.

- i. Wage Revision w.e.f. 01.04.2010
- ii. Actuarial Valuation Report
- iii. Leave Encashment
- iv. DA hike and new recruitment
- v. Increase in Repairs and Maintenance cost
- vi. Increase in travelling and vehicle hire expenses

#### a. Employee Expenses

##### i. Wage Revision Impact ( w.e.f. 01.04.2010):

During the FY 2010-11, Pay Revision of the employees has taken place w.e.f. 01.04.2010 due to which pay was increased over the years from FY 2010-11 onwards which was already communicated by the Licensee during the process of MYT filing. Due to wage revision impact, the Licensee requests the Hon'ble Commission to provide a true-up to meet the increased O&M cost of APCPDCL. Major element wise Employee Cost details are as below detailing the wage revision impact.

| Employee Cost (In Rs.Crs.) | FY 2009-10 | FY 2010-11 | FY 2011-12 | FY 2012-13 | FY 2013-14 (Prov) | Growth Over 4 years (FY 09-10 to FY 12-13) |
|----------------------------|------------|------------|------------|------------|-------------------|--|
| Basic Pay                  | 213        | 377        | 387        | 399        | 392               | 23%  |
| D.A                        | 57         | 26         | 67         | 106        | 142               | 23%  |
| Other allowances           | 38         | 81         | 91         | 89         | 85                | 33%  |
| EL Encashment              | 10         | 18         | 18         | 22         | 21                | 30%  |
| <b>Total</b>               | <b>318</b> | <b>502</b> | <b>563</b> | <b>616</b> | <b>640</b>        | <b>25%</b>                                 |

ii. **Terminal Benefits as per Actuarial Valuation report:**

The Licensee has made the Actuarial Valuation towards Pension and Gratuity Provision and Final EL Encashment Provisions in respect of Employees retired/to be retired. Accordingly, the Pension Contribution rate has been revised from 24.51% to 29.80% for the financial year 2010-11. As a result, the provision for Pension and Gratuity has been increased in the FY 2010-11. During the F Y 2011-12, the Pension & Gratuity contribution rate was revised to 23.35% and the Actuarial Valuation for Final EL Encashment was done for the past years also and accordingly Rs 175 Crs. was provided in the accounts. In the F Y 2012-13, the contribution rate for Pension & Gratuity has been revised to 23.84% and the same has been adopted for the F Y 2013-14 also.

Rs. In Crores

| Terminal Benefits (In Rs. Crs.) | 2009-10 | 2010-11 | 2011-12 | 2012-13 | FY 2013-14 (Prov) | Growth Over 4 years (FY 09-10 to FY 12-13) |
|---------------------------------|---------|---------|---------|---------|-------------------|--|
| Pension and Gratuity Provision  | 51      | 107     | 110     | 126     | 127               | 35%  |
| Final EL                        | 11      | 20      | 175     | 47      | 51                | 62%  |



| Terminal Benefits (In Rs. Crs.) | 2009-10 | 2010-11 | 2011-12 | 2012-13 | FY 2013-14 (Prov) | Growth Over 4 years (FY 09-10 to FY 12-13) |
|---------------------------------|---------|---------|---------|---------|-------------------|--|
| Encashment Provision            |         |         |         |         |                   |  |

iii. **Leave Encashment:**

The Licensee has made provision towards leave encashment of Rs. 11 Crs. and Rs. 20 Crs. for FY 2009-10 and FY 2010-11 respectively. For FY 2011-12 and FY 2012-13, a provision of Rs. 175.33 Crs. and Rs. 46.58 Crs. respectively towards leave encashment has been made as per the actuarial valuation report.

b. **A&G Expenses**

Increase in travelling expenditure and vehicle hire charges due to rigorous inspection of field units, unforeseen hike in fuel cost, etc caused rise in Administration and General Expenses. The vehicle running expenses during 2009-10 to 2012-13 and 2013-14(Provisional) has been shown below.

All figures in Rs. Crs..

| Activity *                               | FY 2009-10 | FY 2010-11 | FY 2011-12 | FY 2012-13 | FY 2013-14 (Prov) |
|--|------------|------------|------------|------------|-------------------|
| Conveyance and Travelling expenses       | 17.1       | 21.47      | 23.26      | 26.14      | 24.05             |
| Vehicle running expenses for jeeps & car | 1.09       | 1.25       | 1.14       | 1.01       | 0.96              |
| Vehicle Hire Charges                     | 12.37      | 16.16      | 20.97      | 25.72      | 19.77             |

\*Rounded –off figures

c. Repairs & Maintenance Expenses

R&M expenses are linked to Gross Fixed Asset (GFA) which depends on capital expenditure. Increase in DTR repairs cost as well as maintenance cost of Lines and Cables & metering equipment due to unforeseen increase in material and labour rates have increased R&M expenses during the Second MYT Control Period. The comparative statement of R&M expenses from FY 2009-10 to FY 2012-13 and 2013-14 (Provisional) of few works has been tabulated below

All figures in Rs. Crs

| Activity  | FY 2009-10 | FY 2010-11 | FY 2011-12 | FY 2012-13 | FY 2013-14<br>(Prov) |
|---|------------|------------|------------|------------|----------------------|
| Repairs & Maintenance-Substations                 | 18.95      | 31.90      | 38.87      | 63.05      | 58                   |
| Engaging of labour for maintenance works          | 38.33      | 46.36      | 43.94      | 72.60      | 97                   |
| Repairs & Maintenance-Transformers                | 20.39      | 29.61      | 35.88      | 40.24      | 28                   |
| Repairs & Maintenance- Lines & Cable network      | 22.60      | 10.05      | 12.13      | 15.69      | 12                   |
| Repairs & Maintenance- Plant & Machinery          | 40.89      | 9.38       | 15.83      | 16.34      | 10                   |
| Repairs & Maintenance-Meters & Metering equipment | 4.35       | 3.81       | 6.07       | 5.78       | 3                    |

**1.2.2 Regulated Rate Base (RRB)**

APCPDCL's actual (provisional for FY 2013-14) RRB for the Second MYT Control period is **Rs 11,060 Crs.** whereas the Hon'ble Commission approved expenses of **Rs. 10206 Crs.** resulting in a deviation of Rs 854 Crs. Summary of RRB line items for FY 2009-10 to FY 2013-14 (Provisional) is as below.

| Particulars                               | FY 2009-10 |      |                  | FY 2010-11 |      |       | FY 2011-12 |      |     | FY 2012-13 |      |     | FY 2013-14 |      |     | Total |              |     |
|---|------------|------|------------------|------------|------|-------|------------|------|-----|------------|------|-----|------------|------|-----|-------|--------------|-----|
|   | App        | Act. | Dev <sup>1</sup> | App        | Act  | Dev   | App        | Act  | Dev | App        | Act  | Dev | App        | Prov | Dev | App   | Act/<br>Prov | Dev |
| <b>Regulatory Rate Base</b>               | 1679       | 1549 | (131)            | 1901       | 1818 | (83)  | 2070       | 2141 | 71  | 2218       | 2453 | 235 | 2338       | 3099 | 761 | 10206 | 11060        | 854 |
| <i>Additions to GFA</i>                   | 803        | 690  | (113)            | 795        | 659  | (136) | 829        | 922  | 94  | 903        | 937  | 34  | 970        | 1911 | 942 | 4301  | 5120         | 820 |
| <i>Additions to Consumer Contribution</i> | 329        | 304  | (25)             | 311        | 261  | (50)  | 307        | 362  | 55  | 318        | 400  | 82  | 373        | 479  | 106 | 1638  | 1806         | 168 |
| <i>Working Capital</i>                    | 60         | 106  | 46               | 65         | 157  | 92    | 72         | 202  | 130 | 79         | 203  | 123 | 87         | 156  | 69  | 363   | 824          | 460 |

Additions to GFA and Additions to Consumer Contribution impact RRB. Deviation in total RRB is on account of higher Additions to Consumer Contribution than APERC approved total figures for the MYT Period from FY 2009-10 to FY 2013-14. Actual RRB is lower than APERC approved RRB till FY 2010-11 and exceeds approved RRB from FY 2011-12 onwards. This is because actual Additions to GFA is lower than approved values because of lower actual capital expenditure. But later on actual RRB has exceeded the approved values because of higher actual Additions to Consumer Contribution as well as asset addition as compared to what is approved by the Hon'ble Commission,

As per APCPDCL's filing on 29.11.2008, projected RRB for the Second MYT Control Period is Rs 21,150 Crs. Yearwise projected RRB, Additions to GFA and Additions to Consumer Contribution for the Second Control Period as per filing in 2009 has been depicted below.

All figures in Rs.

Crs

| Particulars                               | FY 2009-10     | FY 2010-11     | FY 2011-12     | FY 2012-13     | FY 2013-14     | Total        |
|---|----------------|----------------|----------------|----------------|----------------|--------------|
| <b>Regulated Rate Base</b>                | <b>2493.06</b> | <b>3441.02</b> | <b>4330.26</b> | <b>5088.15</b> | <b>5797.23</b> | <b>21150</b> |
| <i>Additions to GFA</i>                   | 1419.70        | 1613.11        | 1538.32        | 1558.20        | 1724.17        | <b>7854</b>  |
| <i>Additions to Consumer Contribution</i> | 125.34         | 154.75         | 122.66         | 137.92         | 161.21         | <b>702</b>   |

#### Reasons for deviations in RRB

##### a. Additions to GFA:

Additions to GFA is lower than approved during FY 2009-10 and FY 2010-11 because of actual capex incurred is lower and also captalization of assets is lower than capitalization

schedule considered by the Hon'ble APERC in MYT Tariff Order for the 2<sup>nd</sup> control Period.

The scheme wise major Capital expenditure incurred during 2010-11, 2011-12, 2012-13 and first half of 2013-14 is shown in the following table:

in Rs Crs

| Name of the Scheme | 2010-11       | 2011-12       | 2012-13       | 2013-14 ( H1) |
|--------------------|---------------|---------------|---------------|---------------|
| APDRP              | 0.08          | 0.05          | 0.05          |               |
| HVDS               | 156.36        | 104.98        | 25.52         | 1.49          |
| Indira Jala Prabha |               | 1.32          | 4.28          | 1.16          |
| Indiramma          | 0.02          |               |               |               |
| JBIC-SS            | 6.60          | 0.45          | 0.07          | 0.00          |
| LT Cabling         | 0.12          |               |               |               |
| PFC-Metering       | 0.16          | 0.01          | 0.02          | 0.00          |
| PIE                | 5.12          | 6.59          | 9.88          | 4.23          |
| R-APDRP            | 1.36          | 75.10         | 131.66        | 106.59        |
| RGVY               | 27.37         | 34.46         | 5.08          | 1.79          |
| ROS                | 79.23         | 241.76        | 237.25        | 115.94        |
| SI: Bulk           | 61.41         | 66.74         | 98.54         | 51.47         |
| SI-SS Rural        | 0.21          | 0.05          | 0.03          |               |
| SI-SS Urban        | 62.04         | 18.21         | 2.28          | 0.16          |
| SPA:PE             | 70.38         | 151.44        | 198.58        | 123.22        |
| T&D                | 270.37        | 241.55        | 264.19        | 128.94        |
| <b>Total</b>       | <b>740.84</b> | <b>942.62</b> | <b>977.41</b> | <b>535.0</b>  |

**b. Additions to Consumer Contribution:**

As compared with the APERC approved consumer contributions, the actual contributions are higher from FY 2011-12 onwards because of higher number of consumer additions and increase in the load capacity.

**1.2.3 Return on Capital Employed (ROCE)**

APCPDCL's actual (provisional for FY 2013-14) ROCE for the Second MYT Control period is **Rs 1,362 Crs.** as against the Hon'ble Commission approved expenses of **Rs. 1,123 Crs.** resulting in a deviation of **Rs 239 Crs.** Summary of Return on Capital Employed (ROCE) line items for FY 2009-10 to FY 2013-14 (Provisional) is as below.

All figures in Rs. Crs.

| Particulars                        | FY 2009-10 |      |                  | FY 2010-11 |      |       | FY 2011-12 |      |     | FY 2012-13 |      |     | FY 2013-14 |      |     | Total |              |     |
|------------------------------------|------------|------|------------------|------------|------|-------|------------|------|-----|------------|------|-----|------------|------|-----|-------|--------------|-----|
|                                    | App        | Act. | Dev <sup>1</sup> | App        | Act  | Dev   | App        | Act  | Dev | App        | Act  | Dev | App        | Prov | Dev | App   | Act/<br>Prov | Dev |
| Return on Capital Employed         | 185        | 179  | (6)              | 209        | 210  | 1     | 228        | 268  | 40  | 244        | 307  | 63  | 257        | 399  | 141 | 1123  | 1362         | 239 |
| Regulatory Rate Base               | 1679       | 1549 | (131)            | 1901       | 1818 | (83)  | 2070       | 2141 | 71  | 2218       | 2453 | 235 | 2338       | 3099 | 761 | 10206 | 11060        | 854 |
| Additions to GFA                   | 803        | 690  | (113)            | 795        | 659  | (136) | 829        | 922  | 94  | 903        | 937  | 34  | 970        | 1911 | 942 | 4301  | 5120         | 820 |
| Additions to Consumer Contribution | 329        | 304  | (25)             | 311        | 261  | (50)  | 307        | 362  | 55  | 318        | 400  | 82  | 373        | 479  | 106 | 1638  | 1806         | 168 |
| Working Capital                    | 60         | 106  | 46               | 65         | 157  | 92    | 72         | 202  | 130 | 79         | 203  | 123 | 87         | 156  | 69  | 363   | 824          | 460 |
| WACC(%)                            | 11         | 12   | 1                | 11         | 12   | 1     | 11         | 13   | 2   | 11         | 13   | 2   | 11         | 13   | 2   | 55    | 61           | 6   |
| Cost of Debt %                     | 10         | 11   | 1                | 10         | 11   | 1     | 10         | 12   | 2   | 10         | 12   | 2   | 10         | 12   | 2   | 50    | 58           | 8   |
| Return on Equity %                 | 14         | 14   | 0                | 14         | 14   | 0     | 14         | 14   | 0   | 14         | 14   | 0   | 14         | 14   | 0   | 14    | 14           | 0   |

Deviation in total ROCE is on account of deviation in RRB and WACC (cost of debt component) than APERC approved figures for the MYT Period from FY 2009-10 to FY 2013-14. Increase in interest rate is one of the reasons for increasing ROCE, which has been explained below.

As per APCPDCL's filing on 29.11.2008, projected ROCE for the Second MYT Control Period is Rs 2,706 Crs.. Year wise projected ROCE, RRB and cost of debt for the Second Control Period as per filing in 2009 has been tabulated below.

All figures in Rs. Crs

| Particulars                | FY 2009-10 | FY 2010-11 | FY 2011-12 | FY 2012-13 | FY 2013-14<br>(Prov) | Total  |
|----------------------------|------------|------------|------------|------------|----------------------|--------|
| Return on Capital Employed | 293        | 426        | 553        | 664        | 770                  | 2,706  |
| Regulatory Rate Base       | 2,493      | 3,441      | 4,330      | 5,088      | 5,797                | 21,150 |
| Cost of Debt %             | 10.98      | 11.84      | 12.35      | 12.72      | 13.04                |        |

#### Reasons for deviations in ROCE

#### Regulatory Rate Base (RRB):

The less Regulated Rate Base in the first two years is due to lower consumer contributions and lower fixed asset additions than the approved as the Capital expenditure incurred is lower than the approved figures during first two years of the control period as explained above.

**Weighted Average Cost of Capital (WACC):**

The average cost of debt is 10.75% p.a. for the initial two years i.e. 2009-10 and 2010-11 than the approved cost of debt at 10.00% and further increase to 12% p.a. in FY 2011-12 to FY 2012-13 and 12.5% for FY 2013-14. As a result the weighted average cost of capital increased from 11% p.a. to 11.56% during first two years of control period and to 12.5% p.a. in subsequent years 2011-12 ,2012-13 and 2013-14.

**1.2.4 Depreciation**

Actual Gross Depreciation for the Second MYT Control Period is Rs. 1,154 Crs. as compared to Rs, 1,866 Crs. approved by the Hon'ble Commission. Summary table of Gross Depreciation for FY 2009-10 to FY 2013-14 (Provisional) has been provided below.

All figures in Rs. Crs

| Particulars                  | FY 2009-10 |      |                  | FY 2010-11 |     |       | FY 2011-12 |     |       | FY 2012-13 |     |       | FY 2013-14 |      |       | Total |          |       |
|------------------------------|------------|------|------------------|------------|-----|-------|------------|-----|-------|------------|-----|-------|------------|------|-------|-------|----------|-------|
|                              | App        | Act. | Dev <sup>1</sup> | App        | Act | Dev   | App        | Act | Dev   | App        | Act | Dev   | App        | Prov | Dev   | App   | Act/Prov | Dev   |
| Depreciation during the year | 225        | 167  | (58)             | 302        | 182 | (119) | 381        | 220 | (161) | 444        | 255 | (189) | 514        | 330  | (184) | 1866  | 1154     | (712) |

Net depreciation has been considered as per APERC Wheeling Tariff Order (dated 20<sup>th</sup> March, 2009), where the Hon'ble Commission has approved net depreciation which excludes depreciation on assets arising out of consumer contribution. Para 218, Pg. 75 of the above mentioned Tariff Order, which specifies that net depreciation has been approved by the Hon'ble Commission has been reproduced below.

*“The depreciation expense is approved at Rs. 1865.54 Cr. against Rs.3091.07 Cr. filed by CPDCL with the following modifications to the filings;*

a) .....

.....

.....

*e) assets funded by persons other than Licensee are removed for the purpose of computing the depreciation as provided in Regulation 4 of 2005.”*

According to APCPDCL's filing on 29.11.2008, projected Depreciation for the Second MYT Control Period is Rs 3,091 Crs. Yearwise projected Depreciation for the Second Control Period as per filing in 2009 is as follows.

All figures in Rs. Crs

| Particulars                  | FY 2009-10 | FY 2010-11 | FY 2011-12 | FY 2012-13 | FY 2013-14 | Total |
|------------------------------|------------|------------|------------|------------|------------|-------|
| Depreciation during the year | 383        | 501        | 625        | 730        | 852        | 3,091 |

#### Reasons for deviations in Depreciation

- Due to change in depreciation methodology of calculating depreciation from the date of Capitalization unlike the past practice of arriving depreciation only on Opening Balance of Fixed Assets.
- The Assets additions during the FY 2009-10 & FY 2010-11 are Rs.690.21 Crs.& Rs.659.07Crs. respectively, is lower than the corresponding approved figures of Rs.803.44 Crs.& Rs.795.20 Crs., as a result, the asset base became lower when compared to APERC approved and hence depreciation is lower than the approved figures.

#### 1.2.5 Taxes on Income

The Hon'ble Commission approved Rs. 7.50 Crs. as taxes on income for the Second MYT Control period, whereas actual taxes on income was Rs. 48 Crs. Summary of Taxes on Income for FY 2009-10 to FY 2013-14 (Provisional) is provided below.

All figures in Rs. Crs

| Particulars     | FY 2009-10 |      |                  | FY 2010-11 |     |     | FY 2011-12 |     |     | FY 2012-13 |     |     | FY 2013-14 |      |     | Total |          |     |
|-----------------|------------|------|------------------|------------|-----|-----|------------|-----|-----|------------|-----|-----|------------|------|-----|-------|----------|-----|
|                 | App        | Act. | Dev <sup>1</sup> | App        | Act | Dev | App        | Act | Dev | App        | Act | Dev | App        | Prov | Dev | App   | Act/Prov | Dev |
| Taxes on Income | 2          | 3    | 2                | 2          | 2   | 1   | 2          | 1   | 0   | 2          |     | -2  | 2          | 41   | 39  | 8     | 48       | 40  |

In APCPDCL's filing on 29.11.2008, projected taxes on income for the Second MYT Control Period is Rs 16.50 Crs.. Yearwise projected taxes on income for the Second Control Period as per filing in 2009 is as follows.

All figures in Rs. Crs

| Particulars | FY 2009-10 | FY 2010-11 | FY 2011-12 | FY 2012-13 | FY 2013-14 | Total |
|-------------|------------|------------|------------|------------|------------|-------|
| Taxes on    | 3.30       | 3.30       | 3.30       | 3.30       | 3.30       | 16.50 |

| Particulars | FY 2009-10 | FY 2010-11 | FY 2011-12 | FY 2012-13 | FY 2013-14 | Total |
|-------------|------------|------------|------------|------------|------------|-------|
| Income      |            |            |            |            |            |       |

#### Reasons for deviations in Taxes on Income

The taxes on income are arrived as per the tax amounts paid during the years.

#### 1.2.6 Special Appropriation for Safety Measures

The Hon'ble Commission approved **Rs. 25 Crs.** towards Special Appropriation for Safety Measures for the Second MYT Control Period. Summary of Special Appropriation for Safety Measures for FY 2009-10 to FY 2013-14 (Provisional) is as below.

All figures in Rs. Crs.

| Particulars                               | FY 2009-10 |      |                  | FY 2010-11 |     |     | FY 2011-12 |     |     | FY 2012-13 |     |     | FY 2013-14 |      |      | Total |          |     |
|---|------------|------|------------------|------------|-----|-----|------------|-----|-----|------------|-----|-----|------------|------|------|-------|----------|-----|
|   | App        | Act. | Dev <sup>1</sup> | App        | Act | Dev | App        | Act | Dev | App        | Act | Dev | App        | Prov | Dev  | App   | Act/Prov | Dev |
| Special Appropriation for Safety Measures | 5          | 0    | (5)              | 5          | 0   | (5) | 5          | 0   | (5) | 5          | 0   | (5) | 5          | 25   | (20) | 25    | 25       | 0   |

#### Reasons for deviations in Special Appropriation for Safety Measures

The Hon'ble commission had approved Rs. 5 Crs. for every year towards Special appropriation for safety measures for the Second MYT Control Period. The licensee has incurred the following capital works expenses towards safety measures.

- i. Erection of intermediate poles for proper clearance
- ii. Providing of Earthing
- iii. Providing of fencing
- iv. Reconstruction of damaged DTR plinth
- v. Plinth Raisings
- vi. Providing of SMC Distribution boxes
- vii. Providing of foot Crs.oss arms



- viii. Rectification of DTR structures
- ix. Replacement of damaged AB cable
- x. Providing of safety materials viz. Gum boots, Helmets, Safety belt, Earth rods, Gloves etc.

All figures in Rs. Crs.

| Particulars   | FY 2009-10 | FY 2010-11 | FY 2011-12 | FY 2012-13 | FY 2013-14<br>(Prov) | Total  |
|---|------------|------------|------------|------------|----------------------|--------|
| <b>Expenditure incurred towards safety measures</b> | -          | 23.32      | 22.82      | 30.30      | 25                   | 101.44 |

As the same has been considered in Asset base under Capital Expenditure it has not been shown under Special appropriations head upto FY 2012-13.

### 1.2.7 Other Expenditure

Actual Other Expenditure for the Second MYT Control Period is Rs. 23 Crs. Summary of Other Expenditure for FY 2009-10 to FY 2013-14 (Provisional) has illustrated below.

All  
figures in Rs. Crs.

| Particulars       | FY 2009-10 |      |                  | FY 2010-11 |     |     | FY 2011-12 |     |     | FY 2012-13 |     |     | FY 2013-14 |      |     | Total |              |     |
|-------------------|------------|------|------------------|------------|-----|-----|------------|-----|-----|------------|-----|-----|------------|------|-----|-------|--------------|-----|
|                   | App        | Act. | Dev <sup>1</sup> | App        | Act | Dev | App        | Act | Dev | App        | Act | Dev | App        | Prov | Dev | App   | Act/<br>Prov | Dev |
| Other Expenditure |            | 2    | 2                |            | 1   | 1   |            | 2   | 2   |            | 16  | 16  |            | 2    | 2   | 0     | 23           | 23  |

### Reasons for incurring Other Expenditure

Actual (provisional) Other Expenditure of APCPDCL is Rs.23 Crs.. The following expenditure has been incurred by the licensee which has not been considered by the

Hon'ble Commission in the Wheeling Tariff Order for FY 2009-10 to FY 2013-14 dated 20<sup>th</sup> March, 2009.

| Particulars   | FY 2009-10  | FY 2010-11  | FY 2011-12  | FY 2012-13   | FY 2013 -14 (Prov) |
|---|-------------|-------------|-------------|--------------|--------------------|
| Compensation for Injuries, Death and Damages (CRS.) | 1.47        | 2.30        | 2.01        | 1.75         | 1.52               |
| Price Variation                                     | (1.78)      | (1.59)      | 1.90        | (1.31)       | (1.45)             |
| Others  | 1.86        | (0.14)      | (1.92)      | 15.97        | 1.93               |
| <b>Total</b>  | <b>1.55</b> | <b>0.56</b> | <b>1.99</b> | <b>16.41</b> | <b>2.00</b>        |

#### Reasons for Deviation in year wise Non Tariff Income

Actual Non Tariff Income (NTI) for the Second MYT Control Period is Rs. 219 Crs., whereas Rs. 161 Crs. has been approved by the Hon'ble Commission. Summary Table of Non Tariff Income (NTI) for FY 2009-10 to FY 2013-14 (Provisional) has been provided below.

All figures in Rs. Crs.

| Particulars       | FY 2009-10 |      |                  | FY 2010-11 |     |     | FY 2011-12 |     |     | FY 2012-13 |     |     | FY 2013-14 |      |     | Total |          |     |
|-------------------|------------|------|------------------|------------|-----|-----|------------|-----|-----|------------|-----|-----|------------|------|-----|-------|----------|-----|
|                   | App        | Act. | Dev <sup>1</sup> | App        | Act | Dev | App        | Act | Dev | App        | Act | Dev | App        | Prov | Dev | App   | Act/Prov | Dev |
| Non Tariff Income | 32         | 40   | 8                | 32         | 43  | 11  | 32         | 47  | 15  | 32         | 51  | 19  | 32         | 37   | 4   | 161   | 219      | 58  |

In APCPDCL's filing on 29.11.2008, projected Non Tariff Income for the Second MYT Control Period is Rs 69 Crs.. Yearwise projected Non Tariff Income for the Second Control Period as per filing in 2009 is as follows.

All figures in Rs. Crs.

| Particulars              | FY 2009-10 | FY 2010-11 | FY 2011-12 | FY 2012-13 | FY 2013-14 | Total     |
|--------------------------|------------|------------|------------|------------|------------|-----------|
| <b>Non Tariff Income</b> | <b>19</b>  | <b>16</b>  | <b>14</b>  | <b>11</b>  | <b>9</b>   | <b>69</b> |

### Reasons for deviations in Non Tariff Income

Actual (provisional) Non Tariff Income is higher by Rs 58 Crs. compared to APERC approved figures. APCPDCL has received the Non Tariff Income under the following heads.

All figures in Rs. Crs.

| Particulars                                    | FY 2009-10 | FY 2010-11 | FY 2011-12 | FY 2012-13 | FY 2013 - 14 (Prov) |
|--|------------|------------|------------|------------|---------------------|
| Interest on Staff Loans and Advances           | 0.03       | 0.02       | 0.08       | 0.03       | 0.03                |
| Fines and Penalties from suppliers/contractors | 7.78       | 16.85      | 12.63      | 10.12      | 0.00                |
| Sale of Tender schedules                       | 0.74       | 0.59       | 0.69       | 0.92       | 0.99                |
| Rental contractors                             | 0.27       | 0.25       | 0.34       | 0.26       | 0.26                |
| Supervision charges (Turnkey works)            | 16.09      | 21.58      | 28.30      | 32.10      | 32.42               |
| Interest on instalments due from consumers     | 0.17       | 0.07       | 0.03       | 0.06       | 0.06                |
| Discounts received from vendors                | 0.28       | 0.36       | 0.08       | 0.01       | 0.01                |
| Rebate from funding agencies                   | 0.86       | 0.72       | 0.59       | 0.46       | 0.47                |
| Meter testing charges                          | 0.17       | 0.44       | 0.10       | 0.43       | 0.45                |
| Transformer testing charges                    | 0.25       | 0.49       | 0.09       | 0.02       | 0.02                |
| Hire charges equipment                         | 0.09       | 0.02       | 0.02       | 0.00       | 0.00                |
| Registration fee                               | 0.32       | 0.10       | 0.15       | 0.13       | 0.13                |

| Particulars      | FY 2009-10   | FY 2010-11   | FY 2011-12   | FY 2012-13   | FY 2013-14 (Prov) |
|------------------|--------------|--------------|--------------|--------------|-------------------|
| Other Income     | 13.31        | 1.86         | 4.31         | 6.52         | 2.02              |
| <b>Total NTI</b> | <b>40.36</b> | <b>43.35</b> | <b>47.41</b> | <b>51.10</b> | <b>36.86</b>      |

### 1.2.8 Carrying Cost

APCPDCL has incurred carrying cost of Rs. 64 Crs. during the Second MYT Control Period. Summary Table of Carrying Cost for FY 2009-10 to FY 2013-14 (Provisional) is as below.

All figures in Rs. Crs.

| Particulars                              | FY 2009-10 | FY 2010-11 | FY 2011-12 | FY 2012-13 | FY 2013-14 (Prov) | Total |
|--|------------|------------|------------|------------|-------------------|-------|
| Opening Gap                              |            | (61)       | (128)      | (41)       | 112               |       |
| Addition to Gap                          | (55)       | (55)       | 91         | 141        | 490               | 613   |
| Interest on ST loan to bridge the gap    | (6)        | (12)       | (4)        | 12         | 75                | 64    |
| Closing gap including interest component | (61)       | (128)      | (41)       | 112        | 677               | 677   |

Year wise carrying cost has been computed as the interest on the short term loans taken by APCPDCL to meet the revenue gap. Actual cost of debt i.e. 10.75% for FY 2009-10, FY 2010-11 and 12% for FY 2011-12, FY 2012-13 respectively has been considered for computing interest on short term loans. Provisional value of 12.5% has been taken for FY 2013-14 to arrive at an estimate of carrying cost for FY 2013-14. Therefore, APCPDCL has incurred total carrying cost of Rs. 64 Crs. to fund the revenue gap during the Second MYT Control Period from FY 2009-10 to FY 2013-14 (Provisional).

The Distribution licensee requests the Hon'ble Commission to allow it to recover the total Truing up gap from the Distribution business in the Third Control Period. The licensee has amortized the total truing up gap for each year of the Third control period (5 years) considering and interest rate of 12%. The annual amortized cost which the licensee has computed is **Rs. 188 Crs.** which has been factored in the filing of the Distribution ARR for the Third control period

### **1.3 Prayer**

The Petitioner (Distribution Licensee) prays that the Hon'ble Commission may:

- i. Approve the true-up of expenses and revenue for the Distribution Business for the Second MYT Control Period (FY 2009-10 to FY 2013-14 (Provisional)).
- ii. Approve Rs. 665 Crs., which is the deviation in Aggregate Revenue Requirement during the Second MYT Control Period.
- iii. Approve .Rs. 613 Crs. as total revenue gap from the Distribution Business for the Second MYT Control Period.
- iv. Approve Rs. 64 Crs. as carrying cost for total revenue gap from the Distribution Business for the Second MYT Control Period.
- v. Approve **Rs. 677 Crs.** as total gap including carrying cost filed before the Hon'ble Commission for truing-up of the Distribution Business for the Second MYT Control Period.

## **2 Aggregate Revenue Requirement of APCPDCL's Distribution Business for Third Control Period**

**APERC Regulation 4 of 2005 states that** *“Every Distribution Licensee shall file for each of its licensed business an application for approval of its Aggregate Revenue Requirement (ARR) for each year of the Control Period, not less than 120 days before the commencement of the first year of the Control Period. This filing shall be in such form and in such manner as specified and in accordance with the Guidelines issued by the Commission. The Distribution Licensees may file such applications for ARR of the first Control Period within a period not less than 90 days before the commencement of the Control Period. The ARR filing for the Distribution business shall be for the entire Control Period”*

..  
..  
..

*“The ARR filings shall contain the following*

- 1. The Operation and Maintenance (O&M) costs which include employee-related costs, repair & maintenance costs and administrative & general costs, estimated for the Base Year and the year prior to the Base Year in complete detail, together with the forecast for each year of the Control Period based on the norms proposed by the Distribution Licensee including indexation and other appropriate mechanisms in terms of the principles enunciated in this Regulation for O&M cost allowance.*
- 2. Regulated Rate Base (RRB) for the Base Year and each year of the Control Period which requires submission of the working capital requirement and a detailed scheme/project-wise Capital Investment Plan with a capitalisation schedule covering each year of the Control Period consistent with the Commission's approved **Resource Plan**.*
- 3. A proposal for appropriate capital structure and its cost of financing (interest cost and return on equity) for the purpose of computing Weighted Average Cost of Capital.*
- 4. Targets proposed for reduction of distribution losses during the Control Period duly adhering to the Licensees' Standards of Performance Regulation.*
- 5. Details of depreciation, including Advance against depreciation if any required and capitalisation schedules for each year of the Control Period.*
- 6. Description of external parameters proposed to be used for indexation;*
- 7. Details of taxes on income;*
- 8. Any other relevant expenditure;*
- 9. Proposals for sharing of gains and losses;*

- 10. *Proposals for efficiency parameter targets;*
- 11. *Proposals for rewarding efficiency in performance*
- 12. *Any other matters considered appropriate”*

In accordance with Point no 2. Mentioned above, the Distribution licensee has already filed the Resource Plan with the Hon’ble Commission covering the Sales Forecast, Load Forecast, Power Procurement Plan and Distribution Plan (Capital Investment Plan) consistent with the requirements of the Commission’s Guidelines on Load Forecast and Resource Plan. The details of the Resource plan filed with the Hon’ble Commission has been attached in Annexure-A

## 2.1 Gross Fixed Assets Projections

### 2.1.1 Asset additions

The capital investment plan as projected in the Resource plan has been considered for arriving at the Distribution Cost for the next control period. The licensee continues to lay utmost importance on timely completion of projects undertaken and has been following the practice of capitalizing (adding to fixed assets) only those works which have actually been completed. Total capitalisation for the Base Year and the Control Period has been projected based on the following assumptions:

1. 65% for the year 2013-14 & 2014-15 and a progressive increase in capitalisation rate to 68%,70%,75% and 80% for 2015-16,2016-17,2017-18 and 2018-19 respectively of capital investment are assumed to be capitalized within the year
2. 100% of the opening Capital Work-in-Progress for the year will be completed and capitalized during the year.
3. IDC(Interest During Construction) has been calculated as a percentage of the average Capital Works-in-Progress for the year. The Expenses Capitalized has been projected at 10% of Capital Expenditure incurred for the year after netting off Release of services component.

Thus, the licensee has projected capital investment undertaken and its capitalization for the Base Year and Control Period as given below:

| Details  | 2013-14<br>(Base<br>Year) | 2014-15 | 2015-16 | 2016-17 | 2017-18 | 2018-19 |
|--|---------------------------|---------|---------|---------|---------|---------|
| Opening Balance of Capital Work in Progress (CWIP) | 770.83                    | 614.03  | 620.71  | 632.29  | 593.75  | 632.06  |

|  |                 |                 |                 |                 |                 |                 |
|--|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| <b>Capital Expenditure during the year</b> | <b>1,754.39</b> | <b>1,773.45</b> | <b>1,975.91</b> | <b>1,979.18</b> | <b>2,528.23</b> | <b>2,655.52</b> |
| Base Capital Expenditure                   | 1,535.88        | 1,563.21        | 1,754.22        | 1,757.57        | 2,259.11        | 2,376.32        |
| IDC  | 72.04           | 62.10           | 55.56           | 56.38           | 55.17           | 55.16           |
| Expenses Capitalised                       | 146.46          | 148.13          | 166.13          | 165.22          | 213.95          | 224.03          |
| <b>Transfer to fixed assets</b>            | <b>1,911.18</b> | <b>1,766.78</b> | <b>1,964.33</b> | <b>2,017.72</b> | <b>2,489.92</b> | <b>2,756.47</b> |
| Closing CWIP                               | <b>614.03</b>   | <b>620.71</b>   | <b>632.29</b>   | <b>593.75</b>   | <b>632.06</b>   | <b>531.10</b>   |

## 2.2 Depreciation

The depreciation has been calculated for the every year considering the Depreciation rates for each class of asset base and also Fully Depreciated Assets during the control period.

During FY 2012-13 an amount of **Rs. 452.79 crores** has been incurred towards depreciation which has been detailed below

| Particulars - Rs. Crs.              | 2012-13 (Actual) |
|-------------------------------------|------------------|
| Opening Balance of assets           | 6722.72          |
| Asset Additions during the Year     | 938.30           |
| <b>Depreciation During the Year</b> | <b>452.79</b>    |

The Depreciation rates as per Ministry of Power guidelines have been assumed to arrive at next 5 years depreciation which is shown below:

| Description of asset                          | Rate of Depreciation |
|---|----------------------|
| Buildings and Other Civil Works               | 3.02%                |
| Battery Chargers                              | 33.40%               |
| Material Handling Equipments                  | 7.84%                |
| Meters / Meter Equipments                     | 12.77%               |
| Office Equipments and Air Conditioners        | 12.77%               |
| Plant & Machinery and Lines, Cables & Network | 7.84%                |
| Capacitor Banks                               | 5.27%                |
| Furniture & Fixtures                          | 12.77%               |
| Vehicle – Car / Jeep / Scooter / Motor Cycle  | 33.40%               |



|                             |        |
|-----------------------------|--------|
| Vehicle – Lorry / Truck     | 33.40% |
| Computers and IT Equipments | 12.77% |

The Fully depreciated assets during the year have been deducted from the opening balance of the next consecutive year to calculate the depreciation.

Depreciation computation after considering the Fully Depreciated Assets (FDA) balances is tabulated below:

| Particulars –Rs. Crs.                    | 2013-14<br>(Base<br>year) | 2014-15       | 2015-16       | 2016-17       | 2017-18        | 2018-19        |
|--|---------------------------|---------------|---------------|---------------|----------------|----------------|
| Opening Balance of assets                | 7642.86                   | 9554.04       | 11320.82      | 13285.15      | 15302.87       | 17792.79       |
| Asset Additions during the Year          | 1911.18                   | 1766.78       | 1964.33       | 2017.72       | 2489.92        | 2756.47        |
| Fully Depreciated assets during the year | 1865.12                   | 2195.98       | 2662.46       | 2910.17       | 3225.06        | 3671.58        |
| <b>Depreciation During the Year</b>      | <b>557.55</b>             | <b>684.41</b> | <b>801.17</b> | <b>915.53</b> | <b>1068.49</b> | <b>1248.09</b> |

### 2.3 Consumer Contribution

The development charges and service line charges collected from the consumers will be form part of the consumer contributions towards capital assets The Consumer Contribution and Grants received during the year as per audited accounts of FY 2012-13 are as follows

| Particulars –Rs. Crs.                                  | FY 2012-13 |
|--|------------|
| <b>a. Consumer Contribution towards capital assets</b> |            |
| Opening Balance  | 2005.43    |
| (+) Current Year Additions                             | 386.13     |
| Closing Balance  | 2391.56    |
| <b>b. Subsidies towards cost of capital assets</b>     |            |
| Opening Balance  | 71.48      |
| (+) Current Year Additions                             | 0.00       |
| Closing Balance  | 71.48      |
| <b>c. Grants/Donations towards cost of capital</b>     |            |

|  |                |
|--|----------------|
| <b>assets</b>                                  |                |
| Opening Balance                                | 267.33         |
| (+) Current Year Additions                     | 14.63          |
| Closing Balance                                | 281.96         |
| <b>Total (Closing balance of a+b+c)</b>        | <b>2745.00</b> |
| Less:Withdrawal towards cost of Capital Assets | (993.23)       |
| <b>Total</b>                                   | <b>1751.77</b> |

The consumer contribution additions and Grants has been estimated based on the past trend and new consumer additions in the next 5 years of the control period which is as follows

| Particulars<br>–Rs. Crs         | 2013-14<br>(Base year) | 2014-15       | 2015-16       | 2016-17       | 2017-18       | 2018-19       |
|---------------------------------|------------------------|---------------|---------------|---------------|---------------|---------------|
| Consumer Contribution additions | 460.95                 | 519.41        | 568.28        | 586.57        | 649.82        | 696.62        |
| Grants                          | 18.52                  |               |               |               |               |               |
| <b>Total</b>                    | <b>479.47</b>          | <b>519.41</b> | <b>568.28</b> | <b>586.57</b> | <b>649.82</b> | <b>696.62</b> |

Further, in proportion in which depreciation on the consumer contributed assets has been charged during every year of the control period, the following amounts have been treated as withdrawal from consumer contribution as per the accounting standard 12 and thus reduced from the Consumer contribution additions during the year.

| Particulars –Rs. Crs.                               | 2013-14<br>(Base year) | 2014-15       | 2015-16       | 2016-17       | 2017-18       | 2018-19       |
|---|------------------------|---------------|---------------|---------------|---------------|---------------|
| With drawl of depreciation on Consumer Contribution | 227.24                 | 261.18        | 294.09        | 325.69        | 360.95        | 400.93        |
| <b>Net Consumer Contribution &amp; Grants</b>       | <b>252.23</b>          | <b>258.23</b> | <b>274.19</b> | <b>260.88</b> | <b>288.87</b> | <b>295.70</b> |

The Consumer Contribution and Grants balances at the end of the years are arrived as follows

| Particulars –Rs. Crs.            | 2013-14<br>(Base year) | 2014-15        | 2015-16        | 2016-17        | 2017-18        | 2018-19        |
|----------------------------------|------------------------|----------------|----------------|----------------|----------------|----------------|
| Opening Balance                  | 1751.77                | 2004.00        | 2262.23        | 2536.42        | 2797.31        | 3086.18        |
| <b>During the Year Transfers</b> | <b>252.23</b>          | <b>258.23</b>  | <b>274.19</b>  | <b>260.88</b>  | <b>288.87</b>  | <b>295.70</b>  |
| <b>Closing Balance</b>           | <b>2004.00</b>         | <b>2262.23</b> | <b>2536.42</b> | <b>2797.31</b> | <b>3086.18</b> | <b>3381.87</b> |

## 2.4 Working Capital

The working capital (WC) requirements has been calculated as per Regulatory norm of 1/12 th of O&M expenses. Considering the past analysis of historical trend the O&M stores is considered as 12% of Repairs and Maintenance cost for arriving at total WC requirement which is shown below

| Particulars –Rs. Crs.              | 2013-14<br>(Base<br>year) | 2014-<br>15   | 2015-16       | 2016-17       | 2017-18       | 2018-19       |
|------------------------------------|---------------------------|---------------|---------------|---------------|---------------|---------------|
| O&M expenses(1 month)              | 127.17                    | 153.11        | 181.88        | 215.04        | 255.35        | 301.99        |
| O&M stores                         | 29.28                     | 35.54         | 41.89         | 48.67         | 56.34         | 65.28         |
| <b>Working capital requirement</b> | <b>156.45</b>             | <b>188.65</b> | <b>223.78</b> | <b>263.72</b> | <b>311.69</b> | <b>367.27</b> |

## 2.5 Regulated Rate Base

APERC Regulation 4 of 2005 states that the Regulated Rate Base (RRB) for the purpose of computing the Return on Capital Employed (ROCE) for the **ith** year of the Control Period will be computed in the following manner

$$RRB_i = RRB_{i-1} + (\text{Change in RAB}_i) + WC_i$$

where

$RRB_{i-1}$  is the Regulated Rate base at the opening of the year  $i = (\text{Original Cost of Fixed Assets} - \text{Accumulated Depreciation} - \text{outstanding Consumer Contributions})_i$

$(\text{Change in RAB}_i)$  is computed as =  $(\text{Capitalised Investments} - \text{Depreciation} - \text{Consumer Contribution})_i / 2$

$WC_i = \text{Working Capital requirement for the year } i$

The licensee has computed the RRB for all five years of the control period including Base year as follows:

| Particulars –Rs. Crs. | 2013-14<br>(Base<br>year) | 2014-15         | 2015-16         | 2016-17         | 2017-18         | 2018-19         |
|-----------------------|---------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| <b>Assets</b>         | <b>9554.04</b>            | <b>11320.82</b> | <b>13285.15</b> | <b>15302.87</b> | <b>17792.79</b> | <b>20549.26</b> |
| OCFA Opening Balance  | 7642.86                   | 9554.04         | 11320.82        | 13285.15        | 15302.87        | 17792.79        |
| Additions to OCFA     | 1911.18                   | 1766.78         | 1964.33         | 2017.72         | 2489.92         | 2756.47         |

|                                    |                |                |                |                |                |                |
|------------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|
| <b>Depreciation</b>                | <b>4058.71</b> | <b>4743.12</b> | <b>5544.29</b> | <b>6459.83</b> | <b>7528.31</b> | <b>8776.40</b> |
| Opening Balance                    | 3501.16        | 4058.71        | 4743.12        | 5544.29        | 6459.83        | 7528.31        |
| Depreciation during the Year       | 557.55         | 684.41         | 801.17         | 915.53         | 1068.49        | 1248.09        |
| <b>Consumer Contributions</b>      | <b>2004.00</b> | <b>2262.23</b> | <b>2536.42</b> | <b>2797.31</b> | <b>3086.18</b> | <b>3381.87</b> |
| Cons Contributions Opening Balance | 1751.77        | 2004.00        | 2262.23        | 2536.42        | 2797.31        | 3086.18        |
| Additions to Cons Contributions    | 252.23         | 258.23         | 274.19         | 260.88         | 288.87         | 295.70         |
| <b>Working Capital</b>             | <b>156.45</b>  | <b>188.65</b>  | <b>223.78</b>  | <b>263.72</b>  | <b>311.69</b>  | <b>367.27</b>  |
| <b>Change in Rate Base</b>         | <b>550.70</b>  | <b>412.07</b>  | <b>444.48</b>  | <b>420.65</b>  | <b>566.28</b>  | <b>606.34</b>  |
| <b>Regulated Rate Base</b>         | <b>3097.08</b> | <b>4092.05</b> | <b>4983.72</b> | <b>5888.80</b> | <b>6923.71</b> | <b>8151.91</b> |

## 2.6 Operation & Maintenance Expense projections

The Operation & Maintenance (O&M) Expenses consist of the following components:

- Employee Expenses (EE) including Salaries, wages and other employee costs;
- Administrative & General costs (A&G) including legal charges, audit fees, rent, rates and taxes;
- Repairs and Maintenance (R&M) including equipment maintenance, repairs, fault corrections, etc.

During the Second Control period (FY 09-14), the Licensee had projected O & M Expenses by considering norms linked to number of consumers, line length (Circuit KM) and number of Substations. The Hon'ble Commission has approved O&M expenses based on Compounded Annual Growth Rate (CAGR) of historical values, without considering the effect of increase in network elements and growth in Gross Fixed Assets (GFA) on R&M Expenses and increase in Employee Expenses due to Pay Revision.

The Distribution Licensee's (APCPDCL) actual (provisional for FY 2013-14) O&M Expenses (net of capitalization) for the Second Control period is **Rs 5,043 Crs.** as against the Hon'ble Commission approved expenses of **Rs.3,969 Crs.** Brief comparison of O& M expenses and its components as approved and actual for the Second Control Period is as shown below.

| Particulars –Rs. Crs.  | FY 2009-10 |            |           | FY 2010-11 |            |            | FY 2011-12 |             |            | FY 2012-13 |             |            | FY 2013-14 |             |            | Total       |              |             |
|--|------------|------------|-----------|------------|------------|------------|------------|-------------|------------|------------|-------------|------------|------------|-------------|------------|-------------|--------------|-------------|
|  | App        | Act.       | Dev       | App        | Act        | Dev        | App        | Act         | Dev        | App        | Act         | Dev        | App        | Prov        | Dev        | App         | Act/<br>Prov | Dev         |
| <b>O &amp; M Expenses<br/>( net of expenses capitalised)</b> | <b>645</b> | <b>603</b> | <b>42</b> | <b>716</b> | <b>850</b> | <b>134</b> | <b>785</b> | <b>1105</b> | <b>320</b> | <b>869</b> | <b>1106</b> | <b>237</b> | <b>954</b> | <b>1380</b> | <b>425</b> | <b>3969</b> | <b>5043</b>  | <b>1074</b> |
| <i>Employee Expenses</i>                                     |            | 380        |           |            | 625        |            |            | 831         |            |            | 766         |            |            | 983         |            |             |              | 3585        |
| <i>A&amp;G Expenses</i>                                      |            | 71         |           |            | 87         |            |            | 112         |            |            | 120         |            |            | 153         |            |             |              | 543         |
| <i>Repairs &amp; Maintenance</i>                             | 645        | 151        | 42        | 716        | 138        | 134        | 785        | 162         | 320        | 869        | 220         | 237        | 954        | 244         | 425        | 3969        | 916          | 1074        |

Employee expenses and A&G expenses are linked to inflation and thus should be escalated using (Consumer Price Index) CPI and (Wholesale Price Index) WPI. Therefore, Employee Expenses have increased owing to inflation, which has been disregarded while approving expenses for the Second Control period using historical values and CAGR method as well as in the projections done by the Distribution Licensees linking O&M Expenses to the number of consumers, line length (Circuit km) and number of Substations. Increase in CPI and WPI during the Second MYT Control Period are as depicted in the table below.

| Particulars       | FY 2009-10 | FY 2010-11 | FY 2011-12 | FY 2012-13 |
|-------------------|------------|------------|------------|------------|
| CPI               | 163        | 180        | 195        | 215        |
| % Increase in CPI | 13%        | 10%        | 8%         | 10%        |
| WPI               | 131        | 143        | 156        | 168        |
| % Increase in WPI | 4%         | 9%         | 9%         | 8%         |

Source: Actual CPI - [www.labourbureau.nic.in](http://www.labourbureau.nic.in), Actual WPI - [www.eaindustry.nic.in](http://www.eaindustry.nic.in) (Office of the Economic Advisor website)

O&M expenses have increased mainly due to the following reasons, which were not considered while approving the O&M cost for the Second Control Period by the Hon'ble Commission.

- Wage Revision w.e.f. 01.04.2010
- Actuarial Valuation Report
- Leave Encashment
- DA hike and new recruitment
- Increase in Repairs and Maintenance cost
- Increase in travelling and vehicle hire expenses

Hence, Distribution Licensee would like to propose new methodology based on norms which factor increase in network elements and inflationary cost.

### **2.6.1 Proposed Methodology for Projection of O & M expenses**

The Licensee proposes norm based methodology to project O&M expenses for the Third Control period. This method accounts for both inflationary cost on existing O&M expenses and increase in expenses due to addition of employees & office space. The proposed methodology correlates expenses to sales (discom and open access) and Gross fixed assets as shown below.

- Employee expenses (EE) and Administrative & General (A&G) expenses in proportion to the total sales in the discom
- Repairs and Maintenance expenses (R&M) in proportion to Gross fixed assets (GFA)

Maharashtra Electricity Regulatory Commission (MERC) has followed a similar approach for approving O&M expenses by linking it to sales and GFA for Tata Power. In MERC Tata Power Company Limited's Distribution Business Order on '**Approval of Aggregate Revenue Requirement for FY 2011-12 and Multi Year Tariff for the Second Control Period (FY 2012-13 and FY 2015-16)**', dated 28<sup>th</sup> June, 2013 has specified that it has approved O&M expenses based on per unit of wheeled energy and opening GFA (R&M Expenses linked to GFA). Relevant excerpt from Para 5.4.2 of the Tariff Order has been reproduced below.

*"The Commission has approved O&M expenses for FY 2012-13 to FY 2015-16 in accordance with the provisions of MERC MYT Regulations, 2011, based on the approved sales and wheeled energy for FY 2012-13 to FY 2015-16, along with the capitalisation approved by the Commission during the years starting from FY 2012-13. The Commission has considered the segregation of Opening GFA between the Wires Business and Supply Business same as that for FY 2011-12 as discussed in Section 4 of this Order. Further, to arrive at opening GFA for FY 2012-13, the closing GFA of FY 2011-12, as approved by the Commission in the previous Section of this Order has been considered."*

The Distribution Licensee (APCPDCL) has arrived at below norms for O&M expenses based on the above methodology:

#### **Linking of O&M components to sales and GFA**

The licensee has observed that with increase in sales, there is a proportional increase in the Employee Expenses as well as A&G expenses. Also, an increase in the Gross Fixed Assets (GFA) proportionately increases the R&M expenses. Hence, the licensee would like to project the EE and A&G expenses proportional to sales and the R&M expenditure proportional to GFA.

## **2.6.2 Projection of O&M Expenses**

### **2.6.2.1 Determination of Repairs and Maintenance Expenses**

The Licensee has observed that R&M expenses are directly proportional to Gross Fixed Assets (GFA) of the corresponding financial year. Existing assets and further addition to assets will directly increase the repairs and maintenance expenses. Hence, a correlation between R&M expenses and average GFA in a year can be determined by observing the previous Control period figures. Since GFA depends on Capital Expenditure, therefore by linking increase in R&M to increase in GFA, inflationary cost is also factored in. Hence escalation rate which is the weighted average of CPI and WPI has not been used to project R&M Expenses.

The actual GFA and R&M for FY 2008-09 and Second Control period (excluding FY 2013-14) are shown below:

| <b>R&amp;M % of GFA Computation</b>                 | <b>Unit</b>     | <b>FY 2008-09</b> | <b>FY 2009-10</b> | <b>FY 2010-11</b> | <b>FY 2011-12</b> | <b>FY 2012-13</b> |
|---|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| <b>O&amp;M Expenses (Net of capitalisation)</b>     | <b>Rs. Crs.</b> | <b>540</b>        | <b>603</b>        | <b>850</b>        | <b>1105</b>       | <b>1106</b>       |
| Repairs & Maintenance (R&M)                         | Rs. Crs.        | 116               | 151               | 138               | 162               | 220               |
| Opening GFA   | Rs. Crs.        | 3808              | 4434              | 5124              | 5783              | 6706              |
| Closing GFA   | Rs. Crs.        | 4434              | 5124              | 5783              | 6706              | 6244              |
| <b>Average GFA</b>                                  | <b>Rs. Crs.</b> | <b>4121</b>       | <b>4779</b>       | <b>5454</b>       | <b>6244</b>       | <b>7174</b>       |
| <b>R&amp;M Expenses as % of Average GFA</b>         | <b>%</b>        | <b>2.82</b>       | <b>3.17</b>       | <b>2.53</b>       | <b>2.60</b>       | <b>3.08</b>       |
| <b>Average R&amp;M Expenses as % of Average GFA</b> | <b>%</b>        |                   |                   |                   |                   | <b>2.84</b>       |

In the above table, it can be seen that R&M expenses as a % of average GFA is in the range of **2.5% to 3.17%** during FY 2008-09 and Second Control period. Average of (R&M Expenses as % of Average

GFA) during FY 2008-09 to FY 2012-13 is **2.84%**. The Licensee has projected R&M expenses for each year of Third Control period by taking 2.84% (Average of (R&M Expenses as % of Average GFA)) of the corresponding year's Average GFA. The below table summarizes the projection of the Distribution Licensee Average GFA for the Third control period and the associated R&M expenses

| R&M Expenses projection | Unit           | FY 2013-14 | FY 2014-15 | FY 2015-16 | FY 2016-17 | FY 2017-18 | FY 2018-19 |
|-------------------------|----------------|------------|------------|------------|------------|------------|------------|
| Opening GFA             | Rs. Crs        | 7,643      | 9,554      | 11,321     | 13,285     | 15,303     | 17,793     |
| Closing GFA             | Rs. Crs        | 9,554      | 11,321     | 13,285     | 15,303     | 17,793     | 20,549     |
| Average GFA             | Rs. Crs        | 8,598      | 10,437     | 12,303     | 14,294     | 16,548     | 19,171     |
| <b>R&amp;M Cost</b>     | <b>Rs. Crs</b> | <b>244</b> | <b>296</b> | <b>349</b> | <b>405</b> | <b>469</b> | <b>544</b> |

The total R&M expense for the third Control period is projected to be **Rs. 2,063 Crs.** as seen from the table above.

### **2.6.2.2 Determination of Employee expenses and Administrative & General expenses**

The Licensee has captured the EE and A&G expenses along with the sales (including open access sales) for FY 12-13 which are summarized below.

| Employee Expenses/ A&G Unit cost computation |                 | FY 12-13      |
|--|-----------------|---------------|
| Consumer sales                               | MU              | 30,105        |
| Open Access sales                            | MU              | 676           |
| <b>Total sales</b>                           | <b>MU</b>       | <b>30,781</b> |
| <b>Employee Expenses/Sales</b>               | <b>Rs./Unit</b> | <b>0.27</b>   |
| <b>A&amp;G Expenses/Sales</b>                | <b>Rs./Unit</b> | <b>0.04</b>   |
| <b>(E and A&amp;G Expenses)/Sales</b>        | <b>Rs./Unit</b> | <b>0.31</b>   |

It can be observed from the above table that for FY 12-13 the EE per unit sales was **Rs. 0.27/Unit** while the A&G per unit sales was **Rs. 0.04/Unit**.

**Escalation Rate:** The norms arrived at for the year 2012-13 is escalated year on year using the weighted average of Consumer Price Index (CPI) for industrial workers and Wholesale Price Index (CPI- Industrial Workers: 80% and WPI: 20%). An increase in CPI proportionately increases impacts EE while an increase in WPI proportionately increases the A&G Expenses. The Distribution Licensee's historical EE and A&G expenses are in the ratio of 80:20. . Hence, 80% and 20% weightage have been assigned to CPI and WPI respectively.

The below table lists the CPI (Industrial Worker) data for the period of April 2009 to March 2013 and WPI from FY 2008-09 to FY 2012-13 are detailed in the below table:



| CPI  |     |     |       |       |     |      |      |        |      |     |     |     |
|------|-----|-----|-------|-------|-----|------|------|--------|------|-----|-----|-----|
| Year | Jan | Feb | March | April | May | June | July | August | Sept | Oct | Nov | Dec |
| 2009 |     |     |       | 150   | 151 | 153  | 160  | 162    | 163  | 165 | 168 | 169 |
| 2010 | 172 | 170 | 170   | 170   | 172 | 174  | 178  | 178    | 179  | 181 | 182 | 185 |
| 2011 | 188 | 185 | 185   | 186   | 187 | 189  | 193  | 194    | 197  | 198 | 199 | 197 |
| 2012 | 198 | 199 | 201   | 205   | 206 | 208  | 212  | 214    | 215  | 217 | 218 | 219 |
| 2013 | 221 | 223 | 224   | 226   | 228 | 231  | 235  | 237    | 238  |     |     |     |

Source: CPI - [www.labourbureau.nic.in](http://www.labourbureau.nic.in)

| Particulars | FY 2008-09 | FY 2009-10 | FY 2010-11 | FY 2011-12 | FY 2012-13 |
|-------------|------------|------------|------------|------------|------------|
| WPI         | 126        | 131        | 143        | 156        | 168        |

Source: WPI - [www.eaindustry.nic.in](http://www.eaindustry.nic.in) (Office of the Economic Advisor website)

The weighted average of CAGR of CPI (from April 2009 to September 2013) and CAGR of WPI (from FY 2008-09 to FY 2012-13) has been calculated as shown in the table below.

| Particulars                             |               |
|---|---------------|
| CPI CAGR (April 2009 to September 2013) | 10.80%        |
| WPI CAGR (FY 2008-09 to FY 2012-13)     | 7.39%         |
| Weights- CPI:WPI                        | 80:20         |
| <b>Escalation Rate</b>                  | <b>10.12%</b> |

The escalation rate calculated as per the norm mentioned above is **10.12%**. The EE per unit expenses and A&G per unit expenses have been escalated at the rate of **10.12%** for each year of the third control period.

The Licensee has linked the Employee expenses and Administrative & General expenses to the total sales for the respective year. This is considered on the premise that, the sales in an area is directly linked to these expenses as higher the number of sales, more the number of substations, deputation of more employees and higher expenses. Hence, the Licensee has determined that the total Employee expenses and A&G expenses can be computed using the sales projections and escalated per unit costs. This method also takes care of the Pay Revision factor since the per unit of the Second Control period (FY 2012-13) has been escalated by the weighted average of CPI and WPI to take into consideration the effect of inflation.

To determine the per unit Employee expenses and A&G expenses for each year, the Licensee determined the per unit cost for the final year of the Second Control period (FY 2012-13) as illustrated below.

| <b>Employee Cost/ A&amp;G Unit cost computation</b> | <b>Unit</b>     | <b>FY 2012-13</b> |
|---|-----------------|-------------------|
| Actual Employee Expenses                            | Rs. Crs.        | 825               |
| Actual A&G Expenses                                 | Rs. Crs.        | 130               |
| Consumer sales                                      | MU              | 30,105            |
| Open Access sales                                   | MU              | 676               |
| <b>Total sales</b>                                  | <b>MU</b>       | <b>30,781</b>     |
| Employee Cost/Sales                                 | Rs./Unit        | 0.27              |
| A&G Expenses/Sales                                  | Rs./Unit        | 0.04              |
| <b>(E and A&amp;G Expenses)/Sales</b>               | <b>Rs./Unit</b> | <b>0.31</b>       |
| <b>Unit Cost Escalation linked to WPI/CPI Index</b> | <b>%</b>        | <b>10.12</b>      |

Taking the sales projections for the Third Control period (unrestricted sales from Resource Plan) and escalating the per unit costs using the weighted average of CPI and WPI, the Licensee arrived at the following per year Employee Expenses and A&G Expenses.

| <b>Employee and A&amp;G expense projection</b> | <b>Unit</b>    | <b>FY 2013-14</b> | <b>FY 2014-15</b> | <b>FY 2015-16</b> | <b>FY 2016-17</b> | <b>FY 2017-18</b> | <b>FY 2018-19</b> |
|--|----------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Consumer sales                                 | MU             | 36,816            | 40,211            | 43,456            | 46,825            | 50,746            | 54,717            |
| Open Access sales                              | MU             | 710               | 753               | 798               | 846               | 897               | 950               |
| <b>Total Sales</b>                             | <b>MU</b>      | <b>37,526</b>     | <b>40,964</b>     | <b>44,254</b>     | <b>47,670</b>     | <b>51,643</b>     | <b>55,667</b>     |
| Employee Cost/Sales                            | Rs./Unit       | 0.30              | 0.32              | 0.36              | 0.39              | 0.43              | 0.48              |
| A&G Expenses/Sales                             | Rs./Unit       | 0.05              | 0.05              | 0.06              | 0.06              | 0.07              | 0.08              |
| <b>Employee Cost</b>                           | <b>Rs. Crs</b> | <b>1107</b>       | <b>1331</b>       | <b>1584</b>       | <b>1878</b>       | <b>2241</b>       | <b>2660</b>       |
| <b>A&amp;G Expenses</b>                        | <b>Rs. Crs</b> | <b>175</b>        | <b>210</b>        | <b>250</b>        | <b>296</b>        | <b>354</b>        | <b>420</b>        |

The Licensee has projected that the total O&M expenses for the Third Control period to be Rs. 13,289 Crs. O&M projections for the Control period and other details are shown in the table below.

| <b>O&amp;M cost projection</b> | <b>Unit</b>    | <b>FY 2013-14</b> | <b>FY 2014-15</b> | <b>FY 2015-16</b> | <b>FY 2016-17</b> | <b>FY 2017-18</b> | <b>FY 2018-19</b> |
|--------------------------------|----------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Employee Cost                  | Rs. Crs        | 1107              | 1331              | 1584              | 1878              | 2241              | 2660              |
| A&G Expenses                   | Rs. Crs        | 175               | 210               | 250               | 296               | 354               | 420               |
| R&M Cost                       | Rs. Crs        | 244               | 296               | 349               | 405               | 469               | 544               |
| <b>Total O&amp;M Expenses</b>  | <b>Rs. Crs</b> | <b>1,526</b>      | <b>1,837</b>      | <b>2,183</b>      | <b>2,581</b>      | <b>3,064</b>      | <b>3,624</b>      |

## 2.7 Weighted Average Cost of Capital (WACC)

The Regulation prescribes that the licensees will be compensated for the financing costs through Return on Capital Employed (ROCE) principle. This principle is aimed at providing the licensee

with the return on debt as well as return on equity at a normative level. The licensee has computed the ROCE as provided in Clause 15 of the Regulation which specifies that the ROCE be computed by multiplying the Regulated Rate Base (RRB) by the Weighted Average Cost of Capital (WACC).

The Regulation specifies the following methodology for computation of ROCE:

Return on Capital Employed (RoCE) for the RRB for the year 'i' shall be computed in the following manner:

$$RoCE_i = WACC * RRB_i$$

Where RRB is the Regulated Rate Base for the year i and WACC is the Weighted Average Cost of Capital. The detailed computation of RRB is explained in Section 4.2 above. With respect to the WACC, the Regulation specifies the the formula as follows:

$$WACC_{RRB} = \left[ \frac{D/E}{1 + D/E} \right] r_d + \left[ \frac{1}{1 + D/E} \right] r_e$$

Where,

D/E is the Debt to Equity Ratio – Licensee is proposing a normative Debt : Equity ratio of 75:25

$r_d$  is the Cost of Debt

$r_e$  is the Return on Equity which is taken at 14%.

### Interest Rate

As the Weighted Average Cost of Capital (WACC) is expected to remain unchanged during the Control Period and the interest rates are showing signs of hardening up with inflation also showing an upward trend has resulted upward trend in nominal interest rate in the recent past.

The licensee debt structure in the FY 2012-13 has been shown below

| Lender                      | Tenure | ROI    |
|-----------------------------|--------|--------|
| <b>Vidyut Bonds</b>         |        | 11.60% |
| <b>Working Capital</b>      |        |        |
| SBH (CC on Current Assets)  |        | 12.00% |
| Tamilnadu Merchantaile Bank |        | 12.00% |
| Indian Overseas Bank        |        | 11.75% |
| Bank of India               |        | 11.50% |

| Lender                           | Tenure        | ROI             |
|----------------------------------|---------------|-----------------|
| Andhra Bank                      |               | 11.50%          |
| Syndicate Bank                   |               | 11.50%          |
| Canara Bank                      |               | 11.25%          |
| State Bank of Mysore             |               | 12.50%          |
| Vijaya Bank                      |               | 11.45%          |
| Federal Bank                     |               | 12.25%          |
| Central Bank of India            |               | 11.50%          |
| Punjab & Sind Bank               |               | 11.50%          |
| Indian Bank Koti                 |               | 11.40%          |
| M/s REC LTD                      |               | 12.75%          |
| BANK OF INDIA                    |               | 11.00%          |
| Oriental Bank of commerce        |               | 11.00%          |
| UNION BANK OINDIA                |               | 11.00%          |
| BANK OF MAHARASTRA               |               | 11.00%          |
| <b>Secured Long term loans</b>   |               |                 |
| REC                              | 5 to 15 years | 10.50 to 12.75% |
| PFC                              | 13 years      | 9.00 to 12.75%  |
| Syndicate Bank                   | 13 years      | 11.15 to 11.50% |
| CANARABANK                       | 13 years      | 11.15 to 11.75% |
| State Bank of Hyderabad          | 13 years      | 11.70 to 11.75% |
| Corporation Bank                 | 13 years      | 12.00%          |
| Karnataka Bank                   | 12 years      | 12.25%          |
| <b>Unsecured Long term loans</b> |               |                 |
| Syndicate Bank                   | 10 years      | 12.00%          |
| AB                               | 10 years      | 12.00%          |
| State Bank of Hyderabad          | 3 years       | 12.00%          |
| Canara Bank                      | 3 years       | 11.00%          |

Hence, after considering the inflation impact, the licensee has proposed a rate of 12 % as the cost of debt for new loans.

The Weighted average Cost of Capital (WACC) arrived for the five years of Control Period is as follows:

| Particulars              | 2013-14<br>(Base year) | 2014-15 | 2015-16 | 2016-17 | 2017-18 | 2018-19 |
|--------------------------|------------------------|---------|---------|---------|---------|---------|
| <b>Capital Structure</b> |                        |         |         |         |         |         |
| Debt Percent             | 75.00%                 | 75.00%  | 75.00%  | 75.00%  | 75.00%  | 75.00%  |

|                          |               |               |               |               |               |               |
|--------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Equity percent           | 25.00%        | 25.00%        | 25.00%        | 25.00%        | 25.00%        | 25.00%        |
| <b>Cost of Funds</b>     |               |               |               |               |               |               |
| Cost of Debt percent     | 12.48%        | 12.45%        | 12.13%        | 12.36%        | 12.74%        | 13.23%        |
| Return on Equity percent | 14.00%        | 14.00%        | 14.00%        | 14.00%        | 14.00%        | 14.00%        |
| <b>WACC</b>              | <b>12.86%</b> | <b>12.84%</b> | <b>12.59%</b> | <b>12.77%</b> | <b>13.05%</b> | <b>13.43%</b> |

## 2.8 Return on Equity

As per the Hon'ble Commission MYT Tariff order, the Return on Equity considered for arriving at Weighted Average Cost of Capital is taken as 14%.

## 2.9 Return on Capital Employed

The licensee has arrived at RoCE for all five years of the control period as a product of Regulated Rate Base (RRB) and Weighted Average Cost of Capital (WACC) which is as follows:

| RoCE                         | 2013-14<br>(Base<br>year) | 2014-15       | 2015-16       | 2016-17       | 2017-18       | 2018-19        |
|------------------------------|---------------------------|---------------|---------------|---------------|---------------|----------------|
| RRB                          | 3097.08                   | 4092.05       | 4983.72       | 5888.80       | 6923.71       | 8151.91        |
| WACC                         | 12.86%                    | 12.84%        | 12.59%        | 12.77%        | 13.05%        | 13.43%         |
| <b>RoCE (RRB *<br/>WACC)</b> | <b>398.17</b>             | <b>525.43</b> | <b>627.67</b> | <b>751.95</b> | <b>903.76</b> | <b>1094.47</b> |

## 2.10 Special Appropriations for safety measures

The licensee has planned to incur the following expenditure exclusively towards safety of Consumers and employees of the organisation

| Particulars   | 2013-14<br>(Base<br>year) | 2014-<br>15 | 2015-<br>16 | 2016-<br>17 | 2017-<br>18 | 2018-19 |
|---|---------------------------|-------------|-------------|-------------|-------------|---------|
| Erection of intermediate poles for proper clearance | 2.30                      | 2.76        | 3.23        | 3.69        | 4.15        | 4.61    |
| Providing of Earthing                               | 0.26                      | 0.31        | 0.36        | 0.41        | 0.46        | 0.51    |
| Providing of fencing                                | 0.18                      | 0.21        | 0.25        | 0.28        | 0.32        | 0.35    |
| Reconstruction of damaged DTR plinth                | 2.47                      | 2.96        | 3.45        | 3.95        | 4.44        | 4.93    |
| Plinth Raisings                                     | 1.62                      | 1.94        | 2.26        | 2.59        | 2.91        | 3.23    |
| Providing of SMC Distribution                       | 0.23                      | 0.28        | 0.32        | 0.37        | 0.41        | 0.46    |

|  |              |              |              |              |              |              |
|--|--------------|--------------|--------------|--------------|--------------|--------------|
| boxes  |              |              |              |              |              |              |
| Providing of foot cross arms                           | 0.43         | 0.51         | 0.60         | 0.68         | 0.77         | 0.85         |
| Rectification of DTR structures                        | 13.64        | 16.36        | 19.09        | 21.82        | 24.55        | 27.28        |
| Replacement of damaged AB cable                        | 0.95         | 1.14         | 1.32         | 1.51         | 1.70         | 1.89         |
| Providing of safety materials viz. Gum boots, Helmets, | 0.85         | 1.02         | 1.19         | 1.36         | 1.53         | 1.70         |
| Running of Neutral wire from SS                        | 2.10         | 2.51         | 2.93         | 3.35         | 3.77         | 4.19         |
| <b>Total</b>   | <b>25.00</b> | <b>30.00</b> | <b>35.00</b> | <b>40.00</b> | <b>45.00</b> | <b>50.00</b> |

## 2.11 Taxes on Income

The licensee is allowed a Return on Equity on 25% of RRB at 16% (including Supply Margin). The licensee has assumed that this return would be the profit accrued to it every year and accordingly computed the Income tax on this considering an Income tax rate of 33% for the Third control period

| Particulars –Rs. Crs. | 2013-14<br>(Base<br>year) | 2014-<br>15 | 2015-<br>16 | 2016-<br>17 | 2017-<br>18 | 2018-19 |
|-----------------------|---------------------------|-------------|-------------|-------------|-------------|---------|
| Taxes on Income       | 40.88                     | 54.02       | 65.79       | 77.73       | 91.39       | 107.61  |

## 2.12 Other Expenses

The licensee has proposed to incur the following expenditure towards welfare of employees during the next control period.

| Particulars                                 | 2013-14<br>(Base<br>year) | 2014-<br>15   | 2015-<br>16   | 2016-<br>17   | 2017-<br>18   | 2018-19       |
|---|---------------------------|---------------|---------------|---------------|---------------|---------------|
| Library expense                             | 0.02                      | 0.02          | 0.02          | 0.02          | 0.02          | 0.02          |
| Children Creche                             | 0.02                      | 0.02          | 0.03          | 0.03          | 0.03          | 0.04          |
| Primary Health Care centre                  | 0.08                      | 0.08          | 0.08          | 0.08          | 0.08          | 0.09          |
| Canteen expenditure                         | 0.13                      | 0.14          | 0.15          | 0.16          | 0.18          | 0.19          |
| Employee Pool vehicle charges               | 0.06                      | 0.06          | 0.07          | 0.08          | 0.08          | 0.09          |
| Physical fitness(Zym) expenses              | 0.12                      | 0.12          | 0.12          | 0.13          | 0.13          | 0.13          |
| Sports Meet charges                         | 0.030                     | 0.031         | 0.031         | 0.032         | 0.032         | 0.033         |
| <b>Amortisation of Distribution True-up</b> |                           | <b>187.84</b> | <b>187.84</b> | <b>187.84</b> | <b>187.84</b> | <b>187.84</b> |
| <b>Total Other expenses</b>                 | <b>0.46</b>               | <b>188.32</b> | <b>188.34</b> | <b>188.37</b> | <b>188.40</b> | <b>188.43</b> |

The Distribution true-up gap for CPDL for the 2<sup>nd</sup> control period arrived is Rs. 677 crores (including carrying cost). The Distribution licensee proposes to amortise the true-up gap over the next 5 years of the control period calculated @ cost of debt of 12% p.a. which comes to **Rs. 187.84 crores** for every year.

## 2.13 Anticipated Revenue Requirement

The anticipated consolidated ARR for the Distribution business for each year of the Control Period is determined as follows:

| Particulars   | 2013-14<br>(Base year) | 2014-15        | 2015-16        | 2016-17        | 2017-18        | 2018-19        |
|---|------------------------|----------------|----------------|----------------|----------------|----------------|
| <b>Operation and Maintenance Charges</b>                                | 1526.09                | 1837.37        | 2182.61        | 2580.54        | 3064.18        | 3623.90        |
| Depreciation  | 557.55                 | 684.41         | 801.17         | 915.53         | 1068.49        | 1248.09        |
| Advance Against Depreciation  |                        |                |                |                |                |                |
| Taxes on Income   | 40.88                  | 54.02          | 65.79          | 77.73          | 91.39          | 107.61         |
| Other Expenditure   | 0.46                   | 188.32         | 188.34         | 188.37         | 188.40         | 188.43         |
| Special Appropriations  | 25.00                  | 30.00          | 35.00          | 40.00          | 45.00          | 50.00          |
| <b>Total Expenditure</b>  | 2149.98                | 2794.11        | 3272.91        | 3802.17        | 4457.46        | 5218.02        |
| Less: IDC and expenses capitalized*                                     |                        |                |                |                |                |                |
| Less: O&M expenses capitalized  | 146.46                 | 148.13         | 166.13         | 165.22         | 213.95         | 224.03         |
| <b>Net Expenditure</b>  | 2003.52                | 2645.98        | 3106.78        | 3636.95        | 4243.51        | 4993.99        |
| Add Return on Capital Employed  | 398.17                 | 525.43         | 627.67         | 751.95         | 903.76         | 1094.47        |
| <b>Total Distribution ARR</b>   | 2401.69                | 3171.40        | 3734.45        | 4388.90        | 5147.28        | 6088.45        |
| Less: Wheeling Revenue from Third Party/Open Access/NTI (if any)        | 264.45                 | 299.12         | 332.38         | 364.47         | 400.26         | 440.64         |
| <b>Revenue Requirement, (Net transferred to Retail Supply Business)</b> | <b>2137.24</b>         | <b>2872.28</b> | <b>3402.06</b> | <b>4024.43</b> | <b>4747.02</b> | <b>5647.82</b> |

## 2.14 Non-Tariff Income

The licensee has projected the Non-tariff income under Distribution Business under the following heads

| Particulars                                | 2013-14<br>(Base year) | 2014-15 | 2015-16 | 2016-17 | 2017-18 | 2018-19 |
|--|------------------------|---------|---------|---------|---------|---------|
| Staff Loans & Advances                     | 0.03                   | 0.03    | 0.03    | 0.03    | 0.03    | 0.03    |
| Sale of Tender schedules                   | 0.99                   | 1.07    | 1.15    | 1.24    | 1.34    | 1.44    |
| Supervision charges                        | 32.42                  | 32.75   | 33.07   | 33.40   | 33.74   | 34.07   |
| Interest on instalments due from consumers | 0.06                   | 0.06    | 0.06    | 0.06    | 0.07    | 0.07    |
| Discounts received from vendors            | 0.01                   | 0.01    | 0.01    | 0.01    | 0.01    | 0.01    |
| Rebate from funding agencies               | 0.47                   | 0.48    | 0.49    | 0.50    | 0.51    | 0.52    |
| Meter testing charges                      | 0.45                   | 0.47    | 0.50    | 0.52    | 0.55    | 0.58    |
| Transformer testing charges                | 0.02                   | 0.02    | 0.02    | 0.02    | 0.03    | 0.03    |

|                                  |               |               |               |               |               |               |
|----------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Registration fee                 | 0.13          | 0.14          | 0.14          | 0.14          | 0.14          | 0.15          |
| Other miscellaneous income       | 2.29          | 2.31          | 2.33          | 2.36          | 2.38          | 2.41          |
| Amortisation of dep on CC assets | 227.24        | 261.18        | 294.09        | 325.69        | 360.95        | 400.93        |
| <b>Total</b>                     | <b>264.11</b> | <b>298.52</b> | <b>331.90</b> | <b>363.98</b> | <b>399.74</b> | <b>440.22</b> |

The Amortisation of depreciation on CC assets shown under the Non-tariff income is the depreciable value of consumer contributed assets during the year shown as a deferred revenue as explained in the **Para 2.3** above.

### **3 Open Access Consumers**

The revenue from open access consumers has been projected for the base year at the approved wheeling rate as per MYT 2<sup>nd</sup> control period Order. The wheeling revenue for the next 5 years has been estimated at the proposed wheeling charges.

The list of open access consumers who have entered long term contracts with the licensee are shown below:

| Sl.No | Supplier Name                      | Voltage | CMD  | Date of Agreement                        | Validity Period          |
|-------|------------------------------------|---------|------|--|--------------------------|
| 1     | B.H.E.L. Ltd.                      | 33      | 1000 | 22-07-2002/<br>29-06-2004                | 22-09-2019               |
| 2     | I T W Signode Ltd.                 | 33      | 2500 | 3/31/1995                                | 21-05-2015<br>(20 years) |
| 3     | Gayatri Agro Industrial Power Ltd. | 33      | 4990 | 13-11-1998/<br>22-12-2012/<br>23-07-2013 | 12-11-2018<br>(20 years) |

### **4 Wheeling Losses**

The Hon'ble Commission had approved a loss trajectory for the licensee as per the Wheeling tariff order for the period FY 2009-10 to FY 2013-14. The Hon'ble Commission after considering the practical limitations in achieving the loss reduction trajectory revised the loss trajectory to achieve the normative loss level by 2017 and passed the revised order altering the MYT loss reduction trajectory for four years of the MYT period beginning with FY2010-11 in the Retail Supply Tariff order for FY 2010-11. The below table captures the approved and revised losses for the licensee for FY 2012-13

| <b>FY 2012-13 Losses</b>                                  |  |
|---|--|
|   |  |
| <b>Wheeling Tariff Order<br/>FY 2009-10 to FY 2013-14</b> | <b>Revised as in Retail Supply<br/>Tariff Order FY 2010-11</b> |



|              |       |       |
|--------------|-------|-------|
| <b>33 kV</b> | 3.99% | 3.99% |
| <b>11 KV</b> | 3.33% | 5.50% |
| <b>LT</b>    | 3.51% | 8.70% |

The licensee has taken various steps to reduce the losses like strengthening of the network infrastructure, addition of network elements, and vigorously undertaking the Energy Audit visit to keep a close tab on the losses. However, the licensee would like to submit that the actual losses as computed for FY 2012-13 are higher than approved by the Hon'ble Commission as given in the below table

| <b>CPDCL FY 2012-13 Approved vs Actual Distribution losses</b>                           |               |
|--|---------------|
| LT Metered Sales (MU)  | 10,211        |
| APERC approved Agriculture sales (MU)  | 8,074         |
| <b>LT Loss %</b>   | <b>8.70%</b>  |
| 11 kV Sales (MU)   | 3,486         |
| <b>Energy Requirement at 11 KV</b>   | <b>23,514</b> |
| <b>11 KV Loss %</b>  | <b>5.50%</b>  |
| 33 kV sales (MU)   | 4,509         |
| <b>Energy Requirement at 33 KV</b>   | <b>29,392</b> |
| <b>33 kV Loss %</b>  | <b>3.99%</b>  |
| <b>Energy Requirement at 132 KV excl of EHT Sales (MU)</b>                               | <b>30,613</b> |
| <b>Distribution Losses excluding EHT Sales (APERC approved voltage level losses)</b>     | <b>14.15%</b> |
| <b>Actual Distribution Losses excluding EHT Sales (APERC approved agriculture sales)</b> | <b>18.10%</b> |
| <b>Difference in Loss %</b>  | <b>3.95%</b>  |

Additionally, the actual agricultural sales are higher than the APERC approved Agriculture sales. This has resulted in the licensee procuring additional energy from expensive sources which are not recognised leading to financial losses to the licensee. The actual Agriculture sales of the licensee in FY 2012-13 were 8,659 MU as against the APERC approved figure of 8,074 MU. The higher Agriculture sales of 586 MU translates into an additional energy procurement of nearly 730 MU. The higher losses of the licensee as compared to the APERC approved figures translate into an additional energy procurement of nearly 1,500 MU. The additional power purchase cost incurred to the licensee was nearly Rs. 1,300 Crs. due to this additional power procurement. The Fuel Surcharge Adjustment (FSA) which passes on the increase in power procurement cost to the consumer does not factor in the higher Agriculture sales and higher losses leading to a loss of nearly Rs. 1,300 Crs. to the licensee.

The licensee requests the Hon'ble Commission to take the actual losses of FY 2012-13 as the base and accordingly fix the loss trajectory for the next 10 years.

The computation of distribution losses for FY 2012-13 was done by two methods, one by considering the APERC approved Agriculture sales and the second by considering the actual Agriculture sales.

**FY 2012-13 Distribution losses computation considering the actual Agriculture sales**

The Energy Input at the DISCOM periphery inclusive of EHT sales was captured. The EHT metered sales were deducted to arrive at the Energy Input at the DISCOM periphery exclusive of EHT sales. The 33 kV sales, 11 kV sales, metered LT sales and actual Agriculture sales were deducted from the Energy Input to arrive at the Distribution losses excluding EHT sales.

**FY 2012-13 Distribution losses computation considering APERC approved Agriculture sales**

The Energy Input at the DISCOM periphery inclusive of EHT sales was captured. The EHT metered sales were deducted to arrive at the Energy Input at the DISCOM periphery exclusive of EHT sales. The metered 33 kV sales, 11 kV sales metered LT sales and approved Agriculture sales were deducted from the Energy Input to arrive at the Distribution losses excluding EHT sales.

The below table summarizes the FY 2012-13 distribution losses computed by the above mentioned methods

| <b>FY 2012-13 Distribution Losses</b>              | <b>Actual Agriculture sales</b> | <b>APERC approved Agriculture sales</b> |
|--|---------------------------------|---|
| Energy Input at DISCOM periphery                   | 35,328                          | 35,328                                  |
| EHT sales  | 3,239                           | 3,239                                   |
| <b>Energy Input at DISCOM periphery (excl EHT)</b> | <b>32,089</b>                   | <b>32,089</b>                           |
| 33 kV sales  | 4,509                           | 4,509                                   |
| 11 kV sales  | 3,486                           | 3,486                                   |
| LT sales excluding Agriculture                     | 10,211                          | 10,211                                  |
| Agriculture sales                                  | 8,659                           | 8,074                                   |
| <b>Total sales excluding EHT sales</b>             | <b>26,866</b>                   | <b>26,281</b>                           |
| Distribution Losses excluding EHT sales (MU)       | <b>5,223</b>                    | <b>5,808</b>                            |
| Distribution Losses excluding EHT sales (%)        | <b>16.28%</b>                   | <b>18.10%</b>                           |
| Difference in Losses (%)                           |                                 | <b>1.82%</b>                            |

For the computation of the loss trajectory for the next two control periods, the licensee has taken the losses computed for FY 2012-13 considering the Agriculture sales as approved by the Hon'ble Commission as the base value which is **18.10%**. The licensee has classified the total distribution losses of 18.10% into three voltage level losses – LT, 11 KV and 33 kV by taking some approximation as 100% metering of 11 kV feeders and DTRs has still not been achieved. The voltage level loss computation for the licensee is given in the below table.

| <b>FY 2012-13 Losses</b>                          |             |               |                       |
|---|-------------|---------------|-----------------------|
| <b>Item</b>                                       | <b>Unit</b> | <b>Value</b>  | <b>APERC approved</b> |
| Energy Input at DISCOM Periphery (excl EHT sales) | <b>MU</b>   | <b>32,089</b> |                       |
| 33 kV sales                                       | <b>MU</b>   | 4,509         |                       |
| 33 kV loss  | <b>MU</b>   | <b>1,845</b>  |                       |
| <b>33 kV losses (%)</b>                           | <b>%</b>    | <b>5.75%</b>  | <b>3.99%</b>          |
| Energy Input at 11 kV                             | <b>MU</b>   | <b>25,734</b> |                       |
| 11 kV Sales                                       | <b>MU</b>   | 3,486         |                       |
| 11 kV Loss  | <b>MU</b>   | <b>1,673</b>  |                       |
| <b>11 kV losses (%)</b>                           | <b>%</b>    | <b>6.50%</b>  | <b>5.50%</b>          |
| Energy Input at LT                                | <b>MU</b>   | <b>20,576</b> |                       |
| LT Sales  | <b>MU</b>   | 18,285        |                       |
| LT Loss   | <b>MU</b>   | <b>2,290</b>  |                       |
| <b>LT Loss (%)</b>                                | <b>%</b>    | <b>11.13%</b> | <b>8.70%</b>          |
| Total Distribution Losses (MU)                    | <b>MU</b>   | 5,808         |                       |
| Total Distribution Losses (%)                     | <b>%</b>    | <b>18.10%</b> |                       |

The licensee observes that in spite of considering the minimum of approved Agriculture sales and actual Agriculture sales, the losses at various voltage levels is higher than the losses approved by the Hon'ble Commission. The incremental losses have resulted in additional procurement of energy for FY 2012-13 for which the licensee has not gained any additional revenue. The licensee requests the Hon'ble Commission to consider the actual losses of FY 2012-13 as computed above to arrive at the loss trajectory for the next control periods, i.e. from FY 2014-15 to FY 2018-19.

The licensee is striving to reduce the losses by the implementation of loss reduction measures like strengthening of the network infrastructure, addition of network elements, and vigorously

undertaking the Energy Audit visit to keep a close tab on the losses. The licensee expects to reach the APERC approved loss targets for FY 2013-14 by FY 2018-19 by undertaking the above mentioned measures. Hence, the licensee humbly requests the Hon'ble Commission to approve the loss trajectory as given in the below table.

| <b>Losses</b>         | <b>FY<br/>13-14</b> | <b>FY<br/>14-15</b> | <b>FY<br/>15-16</b> | <b>FY<br/>16-17</b> | <b>FY<br/>17-18</b> | <b>FY<br/>18-19</b> |
|-----------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| <b>LT Loss (%)</b>    | 10.80%              | 10.17%              | 9.58%               | 9.03%               | 8.50%               | 8.01%               |
| <b>11 kV Loss (%)</b> | 6.31%               | 6.02%               | 5.75%               | 5.49%               | 5.24%               | 5.01%               |
| <b>33 kV Loss (%)</b> | 5.58%               | 5.21%               | 4.88%               | 4.56%               | 4.26%               | 3.99%               |

## **5 Wheeling Charges and Losses**

The licensee has determined voltage wise wheeling charges and losses to recover ARR and distribution network losses. As per the Regulation, the licensee has determined the ARR for the distribution business and that forms the basis for determination of wheeling charges.

### ***Proposed Cost Allocation Methodology***

Distribution Licensee has proposed allocation of ARR components to the various voltages for determination of wheeling charges as shown below

1. Operation and Maintenance expenses
  - a. Employee Expenses (EE) – Driven by assets
  - b. Administrative & General Expenses (A&G) – *Driven by Contracted demand (HT)/ Coincident demand (LT)*
  - c. Repairs & Maintenance (R&M) expenses – Driven by assets
2. Depreciation – Driven by assets
3. Interest/ROCE – Driven by assets
4. Other Expenses– Driven by assets

Allocation of ARR components excluding A&G expenses have been allocated in proportion to net GFA pertaining to that respective voltage. Whereas, allocation of A&G expenses are being done in proportion to contracted demand/ coincident demand to that respective voltage.

*Step 1: Voltage wise (exclusive) allocation of Gross fixed assets*

*Step 2: Voltage wise determination of contracted load for HT and coincident demand for LT*

*Step 3: Allocation of ARR components for the respective voltage based on Gross fixed assets (GFA) and contracted load/ coincident demand*

#### **Determination of voltage wise asset base**

The Distribution licensee has projected voltage wise asset base (GFA) for each year of the control period based on assets addition. The following table summarizes voltage wise assets based on projected capitalization schedule

| <b>Voltage wise Gross fixed assets (Rs. Crs.)</b> |                 |                 |                 |                 |                 |
|---|-----------------|-----------------|-----------------|-----------------|-----------------|
| <b>Voltage level</b>                              | <b>FY 14-15</b> | <b>FY 15-16</b> | <b>FY 16-17</b> | <b>FY 17-18</b> | <b>FY 18-19</b> |
| <b>33 kV</b>                                      | <b>1,101</b>    | <b>1,301</b>    | <b>1,506</b>    | <b>1,711</b>    | <b>2,487</b>    |
| <b>11 kV</b>                                      | <b>5,223</b>    | <b>6,231</b>    | <b>7,428</b>    | <b>8,890</b>    | <b>12,218</b>   |
| <b>LT</b>   | <b>2,237</b>    | <b>2,421</b>    | <b>2,687</b>    | <b>3,085</b>    | <b>4,733</b>    |
| <b>Total</b>                                      | <b>8,561</b>    | <b>9,954</b>    | <b>11,621</b>   | <b>13,686</b>   | <b>19,437</b>   |

#### **Determination of voltage wise demand**

The Distribution Licensee has captured the historical Contracted Demand of 33 kV and 11 kV. Whereas, Coincident demand of LT category has been considered due to high diversity factor in LT connected load, restricted supply given to agricultural consumers. Considering the historical growth of the above, the Licensee has projected the Contracted Demand of 33 kV and 11 kV and Coincident demand of LT for each year of the third Control Period as shown in the below table

| <b>Determination of contracted load ( 33 kV and 11 kV) and Coincident Demand (LT) – MW</b> |                      |                 |                 |                 |                 |                 |
|--|----------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| <b>Parameter</b>   | <b>Voltage Level</b> | <b>FY 14-15</b> | <b>FY 15-16</b> | <b>FY 16-17</b> | <b>FY 17-18</b> | <b>FY 18-19</b> |

|   |              |              |              |              |              |              |
|---|--------------|--------------|--------------|--------------|--------------|--------------|
| <b>Contracted Load – CD<sub>33</sub></b>    | <b>33 kV</b> | <b>1,916</b> | <b>2,171</b> | <b>2,460</b> | <b>2,788</b> | <b>3,160</b> |
| <b>Contracted Load – CD<sub>11</sub></b>    | <b>11 kV</b> | <b>2,004</b> | <b>2,181</b> | <b>2,373</b> | <b>2,583</b> | <b>2,811</b> |
| <b>Coincident Demand – CID<sub>LT</sub></b> | <b>LT</b>    | <b>4,004</b> | <b>4,303</b> | <b>4,626</b> | <b>4,972</b> | <b>5,344</b> |

The Load at 33 kV contributed from all voltages was computed by adding up the following

- Grossed up 33 kV Contracted Load with 33 kV losses
- Grossed 11 kV Contracted Load with 11 kV losses and further by 33 kV losses
- Coincident Demand of LT

| <b>Voltage Level Losses (%) – as filed as per Resource Plan</b> |                 |                 |                 |                 |                 |
|---|-----------------|-----------------|-----------------|-----------------|-----------------|
|   | <b>FY 14-15</b> | <b>FY 15-16</b> | <b>FY 16-17</b> | <b>FY 17-18</b> | <b>FY 18-19</b> |
| <b>33 kV</b>  | <b>5.21%</b>    | <b>4.88%</b>    | <b>4.56%</b>    | <b>4.3%</b>     | <b>4.0%</b>     |
| <b>11 kV</b>  | <b>6.02%</b>    | <b>5.75%</b>    | <b>5.49%</b>    | <b>5.24%</b>    | <b>5.01%</b>    |
| <b>LT</b>   | <b>10.17%</b>   | <b>9.58%</b>    | <b>9.03%</b>    | <b>8.50%</b>    | <b>8.01%</b>    |

The Load at 11 kV contributed from all the voltages was computed by adding the following

- Grossed up 11 kV Contracted load with 11 kV losses
- Coincident demand of LT grossed down with 33 kV losses

The Load at 11 kV contributed from all the voltages was computed by adding the following

- Coincident demand of LT grossed down with 33 kV losses and further by 11 kV losses

The below table lists the Demand and Contracted load after adjusting for the losses

| <b>Total Demand contribution at each voltage level after loss adjustment – MW</b> |  |                 |                 |                 |                 |                 |
|---|--|-----------------|-----------------|-----------------|-----------------|-----------------|
|   |  | <b>FY 14-15</b> | <b>FY 15-16</b> | <b>FY 16-17</b> | <b>FY 17-18</b> | <b>FY 18-19</b> |
|   | <b>Load at 33 kV from all voltages</b> | <b>8,274</b>    | <b>9,018</b>    | <b>9,835</b>    | <b>10,731</b>   | <b>11,717</b>   |
|   | <b>Load at 11 kV from all voltages</b> | <b>5,927</b>    | <b>6,407</b>    | <b>6,926</b>    | <b>7,486</b>    | <b>8,090</b>    |
|   | <b>Load at LT from all voltages</b>    | <b>3,566</b>    | <b>3,858</b>    | <b>4,172</b>    | <b>4,510</b>    | <b>4,874</b>    |

The GFA additions are projected based on **physical assets** added to the respective voltages. However, voltage wise GFA should be segregated based on exclusive utilization of asset for the respective voltage level i.e 11 kV assets being used by 11 kV loads and LT loads, 33 kV assets being used by all 33 kV, 11 kV and LT loads.

Exclusive voltage wise assets have been segregated based on Contracted demand for 33 kV and 11 kV and Coincident demand for LT after adjusting for losses - apportioning of 33 kV asset base towards 33 kV, 11 kV and LT, apportioning of 11 kV asset base towards 11 kV and LT. The LT asset base is considered for 100% towards LT. Voltage wise asset base after apportioning is as shown below

| <b>Voltage wise Asset Base Apportioning - Net (Rs. Crs.)</b> |                 |                 |                 |                 |                 |
|--|-----------------|-----------------|-----------------|-----------------|-----------------|
|  | <b>FY 14-15</b> | <b>FY 15-16</b> | <b>FY 16-17</b> | <b>FY 17-18</b> | <b>FY 18-19</b> |
| <b>33 kV</b>   | <b>269</b>      | <b>329</b>      | <b>395</b>      | <b>464</b>      | <b>698</b>      |
| <b>11 kV</b>   | <b>2,178</b>    | <b>2,601</b>    | <b>3,096</b>    | <b>3,691</b>    | <b>5,123</b>    |
| <b>LT</b>  | <b>6,114</b>    | <b>7,023</b>    | <b>8,130</b>    | <b>9,530</b>    | <b>13,616</b>   |
| <b>Total</b>   | <b>8,561</b>    | <b>9,954</b>    | <b>11,621</b>   | <b>13,686</b>   | <b>19,437</b>   |

#### **Allocation of ARR components**

##### **a) Allocation of expenses based on GFA**

#### **O&M Expense allocation**

The O&M expenses have been segregated into three major components – EE, A&G and R&M. related to substations, lines and customer expenses. The Distribution licensee has observed that the actual Employee expenses and Repairs & Maintenance expenses are a function of asset base. An increase in the asset base leads to a proportional increase in EE and R&M expenses. Hence, Employee Expenses and Repairs & Maintenance Expenses have allocated based on the voltage level asset base (net).

The Distribution licensee has observed that Administrative & General expenditure incurred are linked to the Contracted Demand at 33 kV and 11 kV level and to the Coincident demand at LT level (due to high Diversity factor of LT) as expenses like Building maintenance, stationary, meter billing equipment etc. are planned considering the Contracted demand at the 33 kV and 11 kV and Coincident demand at LT level.

### Depreciation/ROCE allocation

Depreciation and ROCE computation is directly linked to the asset base. Hence, the Depreciation and ROCE have been allocated based on the apportioned asset base.

### Other Expense allocation

The other expenses have also been allocated based on the apportioned asset base.

The voltage wise ARR has been arrived with the methodology explained above which is summarized in the below table.

|                   |       | Voltage wise ARR Apportioning (Rs. Crs.) |          |          |          |          |
|-------------------|-------|--|----------|----------|----------|----------|
|                   |       | FY 14-15                                 | FY 15-16 | FY 16-17 | FY 17-18 | FY 18-19 |
| ARR <sub>33</sub> | 33 kV | 121                                      | 149      | 180      | 213      | 264      |
| ARR <sub>11</sub> | 11 kV | 707                                      | 859      | 1,035    | 1,236    | 1,439    |
| ARR <sub>LT</sub> | LT    | 2,045                                    | 2,395    | 2,810    | 3,299    | 3,945    |
| Total             |       | 2,873                                    | 3,402    | 4,025    | 4,747    | 5,648    |

The voltage level wheeling charges are computed by dividing the ARR at that voltage level divided by the Demand at that voltage level as summarized in the below table.

| Voltage Level | Voltage-wise wheeling charges |
|---------------|-------------------------------|
| 33kV          | $ARR_{33} / CD_{33}$          |
| 11kV          | $ARR_{11} / CD_{11}$          |
| LT            | $ARR_{LT} / CID_{LT}$         |

CD - Contracted demand adjusted for losses

CID - Coincident demand



Based on the methodology explained above, the licensee is proposing the following distribution wheeling charges for each of the control period.

| <b>Wheeling Tariff – Rs./kVA/month</b> |                 |                 |                 |                 |                 |
|--|-----------------|-----------------|-----------------|-----------------|-----------------|
| <b>Voltage Level</b>                   | <b>FY 14-15</b> | <b>FY 15-16</b> | <b>FY 16-17</b> | <b>FY 17-18</b> | <b>FY 18-19</b> |
| 33 kV (Rs./kVA/Month)                  | <b>58.48</b>    | <b>63.23</b>    | <b>68.07</b>    | <b>72.04</b>    | <b>79.39</b>    |
| 11 kV (Rs./kVA/Month)                  | <b>303.83</b>   | <b>338.97</b>   | <b>375.02</b>   | <b>410.96</b>   | <b>439.59</b>   |
| LT (Rs./kVA/Month)                     | <b>417.90</b>   | <b>455.19</b>   | <b>496.47</b>   | <b>541.81</b>   | <b>602.57</b>   |

- A consumer drawing energy at the 33 kV level of the Distribution licensee network would have to pay the 33 kV wheeling charges
- A consumer drawing energy at 11 kV level of the Distribution licensee network would have to pay the wheeling charges of 11 kV and 33 kV
- A consumer drawing energy at LT level of the Distribution licensee network would have to pay the wheeling charges for LT, 11 kV and 33 kV

The expected wheeling revenue for the next 5 years of the control period is shown below

|                  | 2013-14 | 2014-15 | 2015-16 | 2016-17 | 2017-18 | 2018-19 |
|------------------|---------|---------|---------|---------|---------|---------|
| Wheeling Revenue | 0.34    | 0.60    | 0.49    | 0.49    | 0.52    | 0.41    |

## **Annexure-A**

### **Resource Plan filed by the Distribution Licensee for the Third Control Period**

In pursuant to the relevant clauses of the Andhra Pradesh Electricity Regulatory Commission (Terms and Conditions for Determination of Tariff for Wheeling and Retail Sale of Electricity Regulation, Regulation 4 of 2005, the present filing envisage for Aggregate Revenue Requirement & Proposed Tariffs for Distribution Business for the Third Control Period Viz FY 2014-15 to 2018-19 (Five Years) As per the provisions of the Tariff Regulation (Reg. 4/2005) and APERC guidelines for Resource Plan(Dec 2006), the licensee has already submitted the Resource Plan for the next 10 years FY 2014-15 to FY 2023-24 and detailed Capital investment plan for the 3<sup>rd</sup> control period i.e. FY 2014-15 to FY 2018-19 to the Hon'ble Commission for approval on 17.08.2013 which contains

- Sales Forecast
- Loss Trajectory
- Load Forecast
- Power Procurement Plan
- Capital Investment Plan which are explained in detail in the below sections.

#### **Load Growth**

The factors affecting the actual consumption are numerous and often beyond the control of the licensees (policy, individual consumer's conditions, weather conditions, variations in demand-supply conditions of the consumer's product, etc.). Therefore, an accurate point-estimate of the consumption (sales by licensees) is not possible. Under such situation, the attempt is to look into various factors and estimate the interrelationships and explore various methodologies and analyse the range of results to arrive at a reasonably accurate forecast within a range and use a single point-estimate within the range for the limited purpose of estimating future costs/ revenues.

The methodologies to be used for sales forecast depend on various factors like the segment of consumers for which the forecast is being made, the time horizon of the forecast (short-term or long-term), availability of past data for relevant parameters, the desired nature and the level of details of the forecasts. In order to capture the inherent characteristics of various categories and at different voltage levels, the licensee have prepared the sales forecast on past trends by using CAGR.

#### **Trend Method**

The trend method is a non-causal model of demand forecasting which assumes that the underlying factors, which drive the demand for electricity, are expected to follow the same trend as in the past. These trends shall continue in the future except certain categories like Lift Irrigation, Traction etc.

The voltage wise sales forecast for all categories except agriculture has been projected for the two control periods FY 2014-15 to 2018-19 and FY 2019-20 to FY 2023-24 by considering the following:

- **Base Sales Data:** Category-wise and voltage wise actual sales for FY 2007-08 to FY 2012-13
- **Growth rates:** 5 year Compounded Annual Growth Rate (CAGR) has been computed for each category in each circle. CAGR have been moderated growth rates to remove any exceptions/ outliers due to sudden increase / decrease in sales as follows
  - 5 years (2012-13 over 2007-08),
  - 4 years (2011-12 over 2007-08),
  - 3 years (2012-13 over 2009-10), (2010-11 over 2007-08),

The below table captures the historical sales for the licensee and the 4-year and 5-year CAGR

| CPDCL Historical Sales (MU)    |               |               |               |               |               |               |             |             |
|--------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|-------------|-------------|
| LT Category                    | FY 07-08      | FY 08-09      | FY 09-10      | FY 10-11      | FY 11-12      | FY 12-13      | 4 year CAGR | 5 year CAGR |
| LT-I Domestic                  | 4,060         | 4,473         | 5,002         | 5,540         | 5,970         | 6,223         | 10.1%       | 8.9%        |
| LT-II Non-domestic/Commercial  | 1,342         | 1,480         | 1,604         | 1,779         | 1,919         | 1,964         | 9.3%        | 7.9%        |
| LT-III Industrial              | 1,111         | 1,102         | 1,127         | 1,201         | 1,201         | 1,153         | 2.0%        | 0.7%        |
| LT-IV Cottage Industries       | 16            | 15            | 15            | 16            | 16            | 17            | -0.1%       | 0.5%        |
| LT-V Agriculture               | 6,213         | 6,971         | 7,749         | 7,770         | 8,740         | 8,659         | 8.9%        | 6.9%        |
| LT-VI Street Lighting & PWS    | 444           | 608           | 699           | 712           | 728           | 781           | 13.2%       | 12.0%       |
| LT-VII General Purpose         | 52            | 55            | 60            | 73            | 71            | 73            | 8.0%        | 7.1%        |
| LT-VIII Temporary Supply       | 7             | 3             | 3             | 2             | 3             | 1             |             |             |
| <b>LT Total (Restricted)</b>   | <b>13,246</b> | <b>14,708</b> | <b>16,259</b> | <b>17,091</b> | <b>18,648</b> | <b>18,871</b> | <b>8.9%</b> | <b>7.3%</b> |
| <b>LT Total (Unrestricted)</b> |               |               |               |               | <b>19,884</b> | <b>20,122</b> |             | <b>8.7%</b> |
| HT Category                    |               |               |               |               |               |               |             |             |
| HT-I Industry                  | 6,662         | 7,400         | 8,174         | 9,162         | 9,691         | 8,516         | 9.8%        | 5.0%        |
| HT-I (B) Ferro-Alloys          | 274           | 246           | 351           | 423           | 418           | 352           | 11.1%       | 5.1%        |
| HT-II Others (Commercial)      | 1,093         | 1,184         | 1,246         | 1,448         | 1,595         | 1,628         | 9.9%        | 8.3%        |
| HT - IV Agriculture            | 331           | 305           | 380           | 407           | 469           | 383           | 9.1%        | 3.0%        |

|  |               |               |               |               |               |               |             |             |
|--|---------------|---------------|---------------|---------------|---------------|---------------|-------------|-------------|
| HT-V Railway Traction                    | 97            | 101           | 106           | 118           | 142           | 149           | 9.8%        | 8.9%        |
| HT-VI Townships and Residential Colonies | 81            | 85            | 87            | 91            | 100           | 113           | 5.3%        | 6.9%        |
| HT-VII Green Power                       | -             | -             | -             | -             | -             | -             |             |             |
| HT-VIII RESCOs                           | -             | -             | -             | -             | -             | -             |             |             |
| HT-VIII Temporary Supply                 | 10            | 10            | 7             | 7             | 14            | 38            | 10.3%       | 32.0%       |
| HT-New LI Schemes                        | -             | -             | -             | -             | -             | -             |             |             |
| <b>HT Total (Restricted)</b>             | <b>8,548</b>  | <b>9,332</b>  | <b>10,351</b> | <b>11,657</b> | <b>12,429</b> | <b>11,234</b> | <b>9.8%</b> | <b>5.6%</b> |
| <b>HT Total (Unrestricted)</b>           |               |               |               |               | <b>13,826</b> | <b>12,703</b> |             | <b>8.2%</b> |
| <b>LT+HT Total (Restricted)</b>          | <b>21,793</b> | <b>24,040</b> | <b>26,610</b> | <b>28,748</b> | <b>31,077</b> | <b>30,105</b> | <b>9.3%</b> | <b>6.7%</b> |
| <b>LT+HT Total (Unrestricted)</b>        |               |               |               |               | <b>33,710</b> | <b>32,824</b> |             | <b>8.5%</b> |

- The licensee has taken category wise growth rates in each circle for projecting the sales requirement. The growth rate at the DISCOM level is a computed number.
- The forecasts thus arrived at have been looked at as a guiding value for modification to the trend based forecasts. The growth rates adopted for all the categories except Agriculture is based on the circle wise CAGR obtained from FY 2007-08 to FY 2012-13.
- The licensee has nearly 10,00,000 agriculture consumer base and is releasing 60000 agriculture services every year. Hence 6% growth rate is considered for projection of agriculture sales for the control period.
- The growth rates are applied on unrestricted sales considering the actual sales during FY 2012-13 and load relief impact.
- The projection of sales of Government Lift irrigation schemes is done based on the requirement given by the Irrigation Department, GOAP and from Hyderabad Metro Rail & South Central Railways.

### **Econometric Method**

To confirm that the sales projection through the trend method is accurate, sales projection for specific categories was done through the econometric method. This section details out the sales projection through the econometric method for specific consumer categories

Multiple linear regression method has been adopted for unrestricted sales projections using econometric analysis, where linear functional form of the independent variables has been considered. Category-wise sales for each district have been forecast primarily based on sectoral gross district domestic product, number of consumers specific to the sector, price of electricity and any other relevant factors appropriate for that particular category.

Linear regression method involves using historical dependent and independent variable data to derive a linear causal relationship between the variables and obtain a fitted line, which will give the estimated

value for the dependent variable for corresponding values of the independent variables, as shown below.

Fitted line:  $\hat{Y} = a + b_1X_1 + b_2X_2 + b_3X_3 + \dots$ , where  $\hat{Y}$  = estimated/forecast value of the dependent variable (category-wise district-wise unrestricted sales);  $X_1, X_2, X_3$  are the independent variables (for ex., district wise gross domestic product - D-GDP), number of domestic consumers, agriculture D-GDP, investment in LT industry, area of irrigated land, etc. ).

### **Category Wise Sales Projections**

The consolidated category wise sales forecast for the CPDCL for the next two control periods is tabulated below

| Category   | Actual        | CPDCL Consolidated Sales Projection |               |               |               |               |               |               |               |               |               |               |
|--|---------------|-------------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
|  | 2012-13       | 2013-14                             | 2014-15       | 2015-16       | 2016-17       | 2017-18       | 2018-19       | 2019-20       | 2020-21       | 2021-22       | 2022-23       | 2023-24       |
| <b>LT Category</b>                                 |               |                                     |               |               |               |               |               |               |               |               |               |               |
| LT-I Domestic                                      | 6,223         | 7,577                               | 8,223         | 8,924         | 9,687         | 10,515        | 11,415        | 12,392        | 13,455        | 14,609        | 15,864        | 17,228        |
| LT-II Non-domestic/Commercial                      | 1,964         | 2,410                               | 2,634         | 2,880         | 3,149         | 3,442         | 3,764         | 4,115         | 4,500         | 4,920         | 5,380         | 5,884         |
| LT-III Industrial                                  | 1,153         | 1,381                               | 1,475         | 1,575         | 1,683         | 1,799         | 1,923         | 2,057         | 2,200         | 2,355         | 2,520         | 2,699         |
| LT-IV Cottage Industries                           | 17            | 20                                  | 21            | 22            | 23            | 24            | 26            | 27            | 29            | 31            | 32            | 34            |
| LT-V Agriculture                                   | 8,659         | 9,179                               | 9,730         | 10,314        | 10,932        | 11,588        | 12,284        | 13,021        | 13,802        | 14,630        | 15,508        | 16,438        |
| LT-VI Street Lighting & PWS                        | 781           | 947                                 | 1,020         | 1,099         | 1,184         | 1,276         | 1,376         | 1,485         | 1,602         | 1,729         | 1,866         | 2,015         |
| LT-VII General Purpose                             | 73            | 87                                  | 93            | 98            | 105           | 111           | 118           | 126           | 135           | 144           | 153           | 164           |
| LT-VIII Temporary Supply                           | 1             | 2                                   | 2             | 2             | 2             | 2             | 2             | 2             | 2             | 2             | 2             | 2             |
| <b>LT Total (Unrestricted)</b>                     | <b>20,122</b> | <b>21,602</b>                       | <b>23,196</b> | <b>24,914</b> | <b>26,764</b> | <b>28,758</b> | <b>30,908</b> | <b>33,225</b> | <b>35,724</b> | <b>38,420</b> | <b>41,327</b> | <b>44,465</b> |
| <b>HT Category at 11 KV</b>                        | -             | -                                   | -             | -             | -             | -             | -             | -             | -             | -             | -             | -             |
| HT-I Industry Segregated                           | 2,194         | 2,726                               | 2,963         | 3,222         | 3,505         | 3,813         | 4,149         | 4,517         | 4,918         | 5,357         | 5,836         | 6,359         |
| HT-I (B) Ferro-Alloys                              | 9             | 10                                  | 10            | 10            | 10            | 10            | 10            | 10            | 10            | 10            | 10            | 10            |
| HT-II Others (Commercial)                          | 1,088         | 1,369                               | 1,504         | 1,652         | 1,815         | 1,995         | 2,192         | 2,409         | 2,648         | 2,911         | 3,201         | 3,519         |
| HT-III Airports, Bus Stations and Railway Stations | -             | -                                   | -             | -             | -             | -             | -             | -             | -             | -             | -             | -             |
| HT-IV (A) Govt. Lift Irrigation Schemes            | 12            | 75                                  | 75            | 75            | 75            | 75            | 75            | 75            | 75            | 75            | 75            | 75            |
| HT-IV (B) Agriculture                              | 12            | 47                                  | 47            | 47            | 47            | 47            | 47            | 47            | 47            | 47            | 47            | 47            |
| HT-IV (C) CPWS                                     | 50            | 58                                  | 58            | 58            | 58            | 58            | 58            | 58            | 58            | 58            | 58            | 58            |
| HT-VI Townships and Residential Colonies           | 83            | 85                                  | 88            | 90            | 93            | 95            | 98            | 101           | 104           | 107           | 111           | 114           |
| HT-VII Green Power                                 | -             | -                                   | -             | -             | -             | -             | -             | -             | -             | -             | -             | -             |
| RESCOs   | -             | -                                   | -             | -             | -             | -             | -             | -             | -             | -             | -             | -             |
| HT-VIII Temporary Supply                           | 38            | -                                   | -             | -             | -             | -             | -             | -             | -             | -             | -             | -             |
| <b>HT 11 KV Total (Unrestricted)</b>               | <b>3,959</b>  | <b>4,370</b>                        | <b>4,744</b>  | <b>5,154</b>  | <b>5,602</b>  | <b>6,092</b>  | <b>6,629</b>  | <b>7,217</b>  | <b>7,860</b>  | <b>8,564</b>  | <b>9,336</b>  | <b>10,182</b> |
| <b>HT Category at 33 KV</b>                        | -             | -                                   | -             | -             | -             | -             | -             | -             | -             | -             | -             | -             |
| HT-I Industry Segregated                           | 3,700         | 4,567                               | 4,962         | 5,393         | 5,862         | 6,374         | 6,933         | 7,542         | 8,206         | 8,931         | 9,722         | 10,586        |
| HT-I (B) Ferro-Alloys                              | 234           | 259                                 | 279           | 299           | 321           | 345           | 371           | 399           | 429           | 462           | 497           | 536           |
| HT-II Others (Commercial)                          | 498           | 613                                 | 660           | 711           | 766           | 825           | 888           | 957           | 1,031         | 1,111         | 1,198         | 1,291         |
| HT-III Airports, Bus Stations and Railway Stations | -             | -                                   | -             | -             | -             | -             | -             | -             | -             | -             | -             | -             |
| HT-IV (A) Govt. Lift Irrigation Schemes            | 18            | 24                                  | 24            | 24            | 24            | 24            | 24            | 24            | 24            | 24            | 24            | 24            |
| HT-IV (B) Agriculture                              | 9             | 24                                  | 24            | 24            | 24            | 24            | 24            | 24            | 24            | 24            | 24            | 24            |
| HT-IV (C) CPWS                                     | 21            | 25                                  | 25            | 25            | 25            | 25            | 25            | 25            | 25            | 25            | 25            | 25            |
| HT-VI Townships and Residential Colonies           | 30            | 33                                  | 35            | 38            | 41            | 44            | 47            | 51            | 55            | 59            | 64            | 69            |
| HT-VII Green Power                                 | -             | -                                   | -             | -             | -             | -             | -             | -             | -             | -             | -             | -             |
| RESCOs   | -             | -                                   | -             | -             | -             | -             | -             | -             | -             | -             | -             | -             |
| HT-VIII Temporary Supply                           | 0             | -                                   | -             | -             | -             | -             | -             | -             | -             | -             | -             | -             |
| <b>HT 33 KV Total (Unrestricted)</b>               | <b>5,113</b>  | <b>5,545</b>                        | <b>6,009</b>  | <b>6,513</b>  | <b>7,063</b>  | <b>7,661</b>  | <b>8,312</b>  | <b>9,022</b>  | <b>9,795</b>  | <b>10,637</b> | <b>11,554</b> | <b>12,554</b> |
| <b>HT Category at 132 KV</b>                       | -             | -                                   | -             | -             | -             | -             | -             | -             | -             | -             | -             | -             |
| HT-I Industry Segregated                           | 2,622         | 3,221                               | 3,541         | 3,847         | 4,141         | 4,567         | 5,172         | 5,697         | 6,103         | 6,543         | 7,020         | 7,538         |
| HT-I (B) Ferro-Alloys                              | 110           | 127                                 | 133           | 139           | 145           | 151           | 158           | 165           | 173           | 181           | 189           | 197           |
| HT-II Others (Commercial)                          | 42            | 68                                  | 182           | 376           | 556           | 942           | 944           | 926           | 947           | 948           | 950           | 952           |
| HT-III Airports, Bus Stations and Railway Stations | 55            | 65                                  | 69            | 73            | 77            | 82            | 87            | 92            | 97            | 103           | 109           | 116           |
| HT-IV (A) Govt. Lift Irrigation Schemes            | 262           | 451                                 | 451           | 451           | 474           | 474           | 474           | 474           | 474           | 474           | 474           | 474           |
| HT-IV (B) Agriculture                              | -             | -                                   | -             | -             | -             | -             | -             | -             | -             | -             | -             | -             |
| HT-IV (C) CPWS                                     | -             | -                                   | -             | -             | -             | -             | -             | -             | -             | -             | -             | -             |
| HT-V Railway Traction                              | 149           | 322                                 | 657           | 760           | 774           | 788           | 804           | 821           | 839           | 859           | 880           | 903           |
| HT-VI Townships and Residential Colonies           | -             | -                                   | -             | -             | -             | -             | -             | -             | -             | -             | -             | -             |
| HT-VII Green Power                                 | -             | -                                   | -             | -             | -             | -             | -             | -             | -             | -             | -             | -             |
| RESCOs   | -             | -                                   | -             | -             | -             | -             | -             | -             | -             | -             | -             | -             |
| HT-VIII Temporary Supply                           | -             | -                                   | -             | -             | -             | -             | -             | -             | -             | -             | -             | -             |
| <b>HT 132 KV Total (Unrestricted)</b>              | <b>3,631</b>  | <b>5,300</b>                        | <b>6,262</b>  | <b>6,875</b>  | <b>7,396</b>  | <b>8,234</b>  | <b>8,868</b>  | <b>9,405</b>  | <b>9,863</b>  | <b>10,337</b> | <b>10,852</b> | <b>11,409</b> |
| <b>(LT+HT) Total (Unrestricted)</b>                | <b>32,824</b> | <b>36,816</b>                       | <b>40,211</b> | <b>43,456</b> | <b>46,825</b> | <b>50,746</b> | <b>54,717</b> | <b>58,869</b> | <b>63,241</b> | <b>67,958</b> | <b>73,070</b> | <b>78,610</b> |

### **Improved Network**

The Capital investment plan that has been prepared and filed before the Hon'ble Commission as a part of Load forecast and Resource Plan is considered for projection of Distribution MYT.

This Distribution Plan is prepared considering the capital investments required for System Expansion Plan and System Improvement Plan. The Capital Expenditure Plan proposed by Licensee for 3<sup>rd</sup> Control Period has been classified into Base Capex (System Expansion/Network Strengthening) and Other Capex (System Improvement).

### **Base Capital Expenditure**

The Base Capex is planned to cater the load growth and network strengthening. The following methodology has been adopted for the estimation of the Base Capex:

#### ***Methodology***

The following data has been gathered for all the sub-divisions in a DISCOM:

#### **Sales Forecast**

Projection of sub-division wise sales for the control period has been carried out on the basis of the actual sales of the last six years. The sales projections were done for LT, HT 11 kV, total HT sales and the total sales for the DISCOM for each year in the control period. The growth-rates were calculated for each sub-division for each year in the control period. CAGR (Compounded Annual Growth Rate) for a five year period was computed for each sub-division. CAGR for LT sales and 11kV sales was computed to project the loading of network elements (Sub station (33/11 kV, PTR, Feeder and DTR) for the 3<sup>rd</sup> control period.

#### **Sub-division Classification**

Sub-divisions are classified as Urban, Semi-urban and Rural based on the current location and current load pattern.

This classification helps the Licensee to compute the load density in the respective area. Addition of S/s or PTR will be proposed based on the load growth and Load density in that area. For example, load density would be high in urban area rather than sub-urban and rural area and hence, addition of S/s would be optimal in rural areas rather than addition of PTR to reduce line losses.

#### **Network Loading Data**

The details of all Sub Stations in the Licensee area were gathered along with the location area classification, details of constituent network elements and their respective peak loading values.

#### **Power Transformer Details**

The power transformer (PTR) capacities installed in each substation were gathered along with the peak loading details of PTRs'. The data used for analysis is the year end values of 2012-13 and is as received from the field to ensure that the model captures and reflects the real

situation as in the fields. The peak loading details as received from the field was validated to remove any exceptions.

### **Feeder Details**

The details captured for analysis are the total number of feeders installed in a substation and the peak currents flowing through the same. This data was captured from the field during the year 2012-13. The peak current data in feeders of a sub-station have been validated to remove exceptions, if any.

### **Distribution Transformer Details**

The total number of distribution transformers catered by a substation at the end of the year 2012-13 has been considered. The DTRs in every Sub-Station have been categorized into five ranges based upon their respective peak loading.

### **Modelling for Network Additions (Substations; PTRs; Feeders; DTRs)**

The PTR and feeder loadings in every substation (in a sub-division) have been assumed to grow at the same rate as the year-on-year sales growth of sum of LT and HT 11 kV sales of that particular subdivision. The substation capacity limit has been capped at 16 MVA for Urban substations, 10 MVA for sub-urban substations, and 5 MVA for rural substations. These limits have been set with an objective to reduce line losses and improve the voltage profile.

For example, if a S/s having a 10 MVA PTR capacity, 90% of peak load, sub urban area, 10% growth rate. This requires additional PTR capacity to cater to the load growth in that area. However, with the threshold limit, a new S/s will be proposed closer to the load center to reduce line losses and improve voltage profile.

A new substation will be proposed as per the following conditions:

- 1 If an additional PTR is required and the substation cannot accommodate any further PTRs based on the criteria mentioned above.
- 2 Average loading on PTRs' in substation is greater than the threshold set (% loading of its capacity) for new substation addition.

A certain loading of the PTRs' in the present substation is transferred to the new substation. The PTR capacity to be installed in the new substation is 5 MVA in rural and semi-urban areas and 8 MVA in case of urban areas. The load transfer from a present substation to a new substation has been factored in such a way that in most situations the average loading on PTRs' in the present substation after the load transfer doesn't exceed 80% in any of the years in the control period. The load transfer from a present substation to a new substation in the later years in the control period has been increased to ensure that total network is well balanced at the end of the control period.



The number of feeders proposed for a new substation is a factor of the new capacity installed in that substation, the average new substation loading, and a maximum feeder current limit of 60 Amps.

For year 2013-14 as the projects have already started for new substations installation, and a few of them proposed for this year are already operational, the difference in the additions as proposed by the model and the estimates for 2013-14 has been carried forward to the subsequent years in the control period. This has been done so to ensure that the network is strengthened to cater to the load growth expected during the control period.

### **Power Transformers**

A new PTR will be proposed as per the following conditions:

- 1 If the peak loading of any of the PTRs' installed exceeds the threshold set (% loading of its capacity) and if the substation can accommodate a new PTR i.e. Urban- 16 MVA, SU – 10 MVA, Rural -5 MVA

The PTR capacity proposed is either 5 MVA or 8 MVA, depending on substation capacity.

The final loading on the PTRs' after a new PTR is proposed is such that the distribution of peak loads on all PTRs' is the same. This shall ensure that all the PTRs' are loaded equally unlike the scenario of peak loading on one of them being very high.

A similar carry forward approach has been adopted for the PTR additions as done for substations.

### **Feeders**

The total number of feeders in a substation has been capped to 16. New feeders will be proposed under the following condition:

- 1 Peak feeder current exceeds more than 100 Amps (except 2013-14, where a higher Amperage has been set as threshold, in order to phase out the feeder additions, most of which would have otherwise added in 2013-14, as the present network is significantly overloaded)
- 2 If no new substation addition is being proposed;
- 3 If additional feeder can be accommodated in the substation.

The peak currents in the feeders are distributed equally among the ones over loaded and the new feeders proposed.

A similar carry forward approach has been adopted for the feeder additions as done above for substations and PTRs'.

### Distribution Transformers

The number of DTRs' has been categorized in various load bands as can be seen in the table below:

| Name of Sub-Station | DTR Loading Information ( Beginning of the Year ) |      |        |         |           |       |
|---------------------|---|------|--------|---------|-----------|-------|
|                     | No. of DTRs'                                      | <40% | 40-60% | 60%-80% | 80%- 100% | >100% |
| SS - 1              | 29  | 7    | 3      | 2       | 5         | 12    |
| SS - 2              | 135   | 12   | 6      | 14      | 35        | 68    |
| SS - 3              | 277   | 66   | 13     | 21      | 35        | 142   |
| SS - 4              | 165   | 15   | 10     | 14      | 35        | 91    |

The median value of the bands has been assumed to grow at the same rate as that of year-on-year grow rate of LT sales. For e.g., the median value of the band 40%-60% is 50%, and if a substation has LT sales growth of 10% for that year, the median loading value would shift to 55%. As there is a shift in the median value, some of DTRs' in this band of 40%-60%, may have peak loads more than 60%. Certain of these DTRs' which may be overloaded have been shifted to the next band level.

| Shift in DTR loading during the year |     |        |         |          |       |
|--------------------------------------|-----|--------|---------|----------|-------|
| No. of DTRs' shifted                 | 40% | 40-60% | 60%-80% | 80%-100% | >100% |
| 52                                   | 34  | 1      | 0       | 0        | 17    |
| 317                                  | 210 | 1      | 1       | 2        | 103   |
| 547                                  | 360 | 6      | 1       | 3        | 177   |
| 386                                  | 256 | 1      | 1       | 2        | 126   |

Of the 142 DTRs' in the band of >100%, 3 DTRs' have moved to the next band of 40% for the shift in median loading. The shift of DTRs' to other bands also has been worked out on similar lines. We have assumed that, for LT sales growth of around 14% to 25% w.r.t various load-bands, about one-fourth of the DTRs' would shift from one band to the next higher band. The shift is more than one-fourth for higher growth rates and less for lesser growth rates.

The addition of DTRs' has been proposed in case the loading exceeds 80%. These overloaded DTRs' are supported with equivalent number of additional DTRs' in the same year.

The overloaded and new DTRs' would share the load and hence at the end of the year shall have a loading of approximately 40%.

As for the e.g. mentioned above, the final scenario would look as captured in table below:

| DTRs added during the year | DTR Loading Information ( End of the Year ) |     |         |         |          |       |
|----------------------------|---|-----|---------|---------|----------|-------|
|                            | No. of DTRs'                                | 40% | 40%-60% | 60%-80% | 80%-100% | >100% |
| 17                         | 46  | 40  | 4       | 2       |          |       |
| 105                        | 240   | 221 | 6       | 13      |          |       |
| 180                        | 457   | 420 | 18      | 19      |          |       |
| 128                        | 293   | 270 | 10      | 13      |          |       |

A similar carry forward approach has been adopted for the DTR additions as done above for others.

**Threshold Peak Loading of Network Elements**

With the current loading of the network elements, very large number of new S/s , PTR's, feeder's and DTR's are being proposed in the first of the control period or current year. Licensee adopted differential threshold limits to ensure uniform network additions each year during the control period. Summary of the threshold peak loading are shown below.

|                     | FY 2013-14 | FY 2014-15 | FY 2015-16 | FY 2016-17 | FY 2017-18 | FY 2018-19 |
|---------------------|------------|------------|------------|------------|------------|------------|
| Urban SS threshold  | 80%        | 80%        | 80%        | 75%        | 75%        | 75%        |
| SU SS threshold     | 90%        | 80%        | 80%        | 80%        | 80%        | 80%        |
| Rural SS threshold  | 95%        | 95%        | 90%        | 90%        | 90%        | 90%        |
| Urban PTR threshold | 95%        | 95%        | 95%        | 95%        | 95%        | 80%        |
| SU PTR threshold    | 90%        | 90%        | 90%        | 90%        | 85%        | 80%        |
| Rural PTR threshold | 90%        | 90%        | 90%        | 90%        | 85%        | 80%        |
| Urban DTR threshold | 100%       | 95%        | 90%        | 90%        | 90%        | 90%        |
| SU DTR threshold    | 100%       | 95%        | 90%        | 90%        | 90%        | 90%        |
| Rural DTR threshold | 100%       | 95%        | 90%        | 90%        | 90%        | 90%        |

|                           |     |     |     |     |     |     |
|---------------------------|-----|-----|-----|-----|-----|-----|
| Feeder Threshold<br>(Amp) | 170 | 120 | 100 | 100 | 100 | 100 |
|---------------------------|-----|-----|-----|-----|-----|-----|

### **Network Element Cost**

Network element Cost of the Licensee considered for computing Base Capital Expenditure during the control period is as shown below. **2012-13 Cost of Units considered for calculating Capital Expenditure**

| Cost Data                             |              | Rs.        |
|---------------------------------------|--------------|------------|
| SS Unit Addition<br>(Urban Area)      | Units        |            |
| Labour Cost                           | Rs/ SS Unit  | 1,858,574  |
| Material Cost                         | Rs/ SS Unit  | 18,585,739 |
| Total Cost                            | Rs/ SS Unit  | 20,444,313 |
| SS Unit Addition<br>(Semi-urban Area) |              | -          |
| Labour Cost                           | Rs/ SS Unit  | 1,584,876  |
| Material Cost                         | Rs/ SS Unit  | 15,848,764 |
| Total Cost                            | Rs/ SS Unit  | 17,433,640 |
| PTR Unit Addition<br>(Urban)          |              | -          |
| Labour Cost                           | Rs/PTR Unit  | 380,000    |
| Material Cost                         | Rs/PTR Unit  | 3,915,500  |
| Total Cost                            | Rs/PTR Unit  | 4,295,500  |
| PTR Unit Addition<br>(Semi- Urban)    |              |            |
| Labour Cost                           | Rs/PTR Unit  | 248,278    |
| Material Cost                         | Rs/PTR Unit  | 3,516,700  |
| Total Cost                            | Rs/PTR Unit  | 3,764,978  |
| Feeder Unit Addition                  |              | -          |
| Labour Cost                           | Rs/Feeder Km | 239,256    |
| Material Cost                         | Rs/Feeder Km | 1,265,183  |
| Total Cost                            | Rs/Feeder Km | 1,504,439  |
| DTR Unit Addition                     |              | -          |

| Cost Data     |             | Rs.     |
|---------------|-------------|---------|
| Labour Cost   | Rs/DTR Unit | 52,041  |
| Material Cost | Rs/DTR Unit | 280,143 |
| Total Cost    | Rs/DTR Unit | 332,184 |

### **Capital Cost Escalation Factor**

Relevant categories of WPI, CPI for Capital Goods segment (Metal Alloys, Rubber & Plastic, and Machinery) have been considered in the ratio of 45:55 for calculating an overall escalation rate. The five year average of this factor has been computed to be 7.26% (rounded up to 8%). The escalation parameter that has been considered on the unit costs of 2012-13 to arrive at the unit costs for every year of the 3<sup>rd</sup> control period is as mentioned below in the table below. (The detailed computation of Escalation Rate has been provided in the Appendix.)

| 2013-14 | 2014-15 | 2015-26 | 2016-17 | 2017-18 | 2018-19 |
|---------|---------|---------|---------|---------|---------|
| 8%      | 8%      | 8%      | 8%      | 8%      | 8%      |

### **Base Capex Network Additions Summary:-**

The network to be added in the 3<sup>rd</sup> control period in CPDCL is as mentioned below in the table:

|                      | Unit | FY 13-14 | FY 14-15 | FY 15-16 | FY 16-17 | FY 17-18 | FY 18-19 | 3 <sup>rd</sup> Control Period (FY14-19) |
|----------------------|------|----------|----------|----------|----------|----------|----------|--|
| Substation Additions | Nos. | 111      | 128      | 197      | 127      | 150      | 156      | 758                                      |
| PTR Additions        | Nos. | 16       | 15       | 8        | 14       | 16       | 8        | 61                                       |
| Feeder Additions     | Nos. | 633      | 248      | 386      | 356      | 263      | 190      | 1,443                                    |
| DTR Additions        | Nos. | 39,787   | 35,973   | 33,646   | 37,199   | 48,328   | 46,037   | 201,183                                  |

**Base Capital Expenditure:-**

The network to be added in the 3<sup>rd</sup> control period is as mentioned below in the table:

| CPDCL                                | Unit          | FY 13-14     | FY 14-15     | FY 15-16     | FY 16-17     | FY 17-18     | FY 18-19     | 3 <sup>rd</sup> Control Period (FY14-19) |
|--------------------------------------|---------------|--------------|--------------|--------------|--------------|--------------|--------------|--|
| Substation Additions                 | Rs Crs        | 251          | 304          | 485          | 359          | 444          | 498          | 2,090                                    |
| PTR Additions                        | Rs Crs        | 7            | 7            | 4            | 8            | 9            | 5            | 33                                       |
| Feeder Additions                     | Rs Crs        | 103          | 44           | 73           | 73           | 58           | 45           | 293                                      |
| DTR Unit Additions (60 kVA capacity) | Rs Crs        | 856          | 836          | 845          | 1,009        | 1,415        | 1,456        | 5,561                                    |
| <b>Total Base Capex</b>              | <b>Rs Crs</b> | <b>1,217</b> | <b>1,191</b> | <b>1,406</b> | <b>1,448</b> | <b>1,927</b> | <b>2,004</b> | <b>7,977</b>                             |

**Other Capital Expenditure**

Apart from the base capital expenditure projected based on the load growth and existing load on the net work, it is proposed to invest an amount of Rs.1733 Crores for loss reduction, technology up gradation and improvement of existing network. The expenditure is basically divided into following heads:

1. AT&C loss reduction
2. Reliability Improvement & Contingency Schemes
3. Renovation & Modernisation
4. Technology Up gradation
5. New Consumer Capex
6. Civil Infrastructure Development

The actual expenditure towards each line item has been considered and indexation of 8% every year towards increase in cost for the next 5 years. The current Wholesale Price Index (WPI) and Consumer Price Index (CPI) and the past trend have been considered to arrive at escalation rate.

### Total Capital Expenditure

The total capital expenditure projected by the licensee for the 3<sup>rd</sup> control period has been tabulated below:

| Capital Expenditure Summary |   |              |              |              |              |              |                                 |              |
|-----------------------------|---|--------------|--------------|--------------|--------------|--------------|---------------------------------|--------------|
| All values in Rs Crs        | 2013-14   | 2014-15      | 2015-16      | 2016-17      | 2017-18      | 2018-19      | Total Control Period (FY 14-19) |              |
| <b>A</b>                    | Load Growth & Network Strengthening ( Base Capex) | 1,217        | 1,191        | 1,406        | 1,448        | 1,927        | 2,004                           | 7,977        |
|                             | SS Unit Additions (Outdoor)                       | 191          | 240          | 415          | 284          | 363          | 411                             | 1,714        |
|                             | SS Unit Additions (Indoor)                        | 59           | 64           | 69           | 75           | 81           | 87                              | 376          |
|                             | PTR Additions                                     | 7            | 7            | 4            | 8            | 9            | 5                               | 33           |
|                             | Feeder Additions                                  | 103          | 44           | 73           | 73           | 58           | 45                              | 293          |
|                             | DTR Additions                                     | 856          | 836          | 845          | 1,009        | 1,415        | 1,456                           | 5,561        |
| <b>B</b>                    | <b>Other Capex Total</b>                          | <b>319</b>   | <b>372</b>   | <b>348</b>   | <b>309</b>   | <b>332</b>   | <b>372</b>                      | <b>1,733</b> |
|                             | AT & C Loss Reduction                             | 50           | 92           | 104          | 44           | 34           | 36                              | 310          |
|                             | Reliability Improvement & Contingency Schemes     | 35           | 40           | 45           | 51           | 57           | 65                              | 257          |
|                             | Renovation & Modernisation                        | 28           | 32           | 36           | 41           | 46           | 52                              | 206          |
|                             | Technology Upgradation                            | 93           | 81           | 5            | 5            | 5            | 4                               | 101          |
|                             | New Consumer Capex                                | 71           | 82           | 93           | 105          | 120          | 136                             | 536          |
|                             | Civil Infrastructure Development                  | 8            | 9            | 10           | 11           | 12           | 14                              | 56           |
|                             | Land Cost for SS                                  | 19           | 21           | 38           | 33           | 36           | 42                              | 171          |
|                             | Road Cutting Cost (Cables for SS)                 | 15           | 16           | 18           | 19           | 21           | 22                              | 96           |
| <b>C</b>                    | <b>Total Capex Expenditure for Discom (A+B)</b>   | <b>1,536</b> | <b>1,563</b> | <b>1,754</b> | <b>1,758</b> | <b>2,259</b> | <b>2,376</b>                    | <b>9,710</b> |

### Scheme Wise Capital Expenditure

The major schemes under which Discoms plan their capital expenditure are:

- 1) System Improvement (SI).
- 2) Release of Services (RoS).
- 3) HVDS.
- 4) R-APDRP Part A & Part B.

- 5) Pumpset Energisation.
- 6) SC&ST Sub-plan.

Scheme wise investment plan is shown in the following sections. For the purpose of filing, the investment plan is not being submitted on a case to case basis. However, at the time of execution the detailed investment plan shall be submitted adhering to the guidelines issued by the commission on the scheme wise investment plan. As per the Regulation, 10% deviation is allowed by the Commission considering some uncontrollable variables which can not be anticipated beforehand.

**Summary of Investment Plan**

The approved budget provision for the capital works for the year 2013-14 is Rs. 920 crores. In view of the actual progress of works under sanctioned schemes and also the schemes proposed / being formulated for funding by REC / PFC / Gol (R-APDRP), the revised estimate of capital investment for the year 2013-14 is Rs. 1536 crores. The scheme wise actual capex for 2012-13 and revised estimates for FY 2013-14 and projections for next 5 years is tabulated below

| Particulars        | 2012-13       |
|--------------------|---------------|
|                    | Actual        |
| APDRP              | 0.05          |
| HVDS               | 25.52         |
| Indira Jala Prabha | 4.28          |
| JBIC-SS            | 0.07          |
| PFC-Metering       | 0.02          |
| PIE                | 9.88          |
| R-APDRP            | 131.66        |
| RGGVY              | 5.08          |
| ROS                | 237.25        |
| SI: Bulk           | 98.54         |
| SI-SS Rural        | 0.03          |
| SI-SS Urban        | 2.28          |
| SPA:PE             | 198.58        |
| T&D                | 264.17        |
| <b>Total</b>       | <b>977.41</b> |

The projected capital expenditure for the control period is as presented below:



| Scheme  | Revised Estimate | Projections     |                |                 |                |                |
|---|------------------|-----------------|----------------|-----------------|----------------|----------------|
|   | 2013-14          | 2014-15         | 2015-16        | 2016-17         | 2017-18        | 2018-19        |
| <b>SPA-PE</b>                                 | 342              | 359             | 377            | 396             | 416            | 436            |
| <b>SI:Substations</b>                         | 205.62           | 83.58           | 243.80         | 260.28          | 493.80         | 554.24         |
| <b>HVDS</b>                                   | 84.44            | 281.35          | 196.9          | 200             | 200            | 200            |
| <b>SI:Bulk</b>                                | 278              | 123.84          | 278            | 278             | 557            | 676            |
| <b>R-APDRP</b>                                |                  |                 |                |                 |                |                |
| SS unit addition (Outdoor)                    | 15.54            | 25.89           | 11.15          | 0.79            | 0.00           | 0.00           |
| SS unit Addition (Indoor)                     | 37.83            | 63.05           | 25.22          | 0.00            | 0.00           | 0.00           |
| AT&C Losses reduction                         | 58.87            | 62.06           | 93.68          | 64.79           | 15.87          | 0.00           |
| Reliability Improvement & Contingency Schemes | 62.85            | 71.19           | 80.63          | 91.28           | 102.16         | 0.00           |
| Technology Upgradation                        | 75.40            | 75.27           | 4.93           | 5.06            | 0.00           | 0.00           |
| <b>SC ST Sub-plan</b>                         | 18.52            |                 |                |                 |                |                |
| <b>T&amp;D</b>                                | 356.83           | 417.98          | 442.91         | 461.38          | 474.29         | 510.00         |
| <b>Total Capex Plan (Rs. in crores)</b>       | <b>1535.881</b>  | <b>1563.215</b> | <b>1754.22</b> | <b>1757.573</b> | <b>2259.11</b> | <b>2376.32</b> |

### Reduced Losses

For the computation of the loss trajectory for the next two control periods, the licensee has taken the losses computed for FY 2012-13 considering the Agriculture sales as approved by the Hon'ble Commission as the base value which is **18.10%**. The licensee has classified the total distribution losses of 18.10% into three voltage level losses – LT, 11 kV and 33 kV by taking some approximation as 100% metering of 11 kV feeders and DTRs has still not been achieved. The voltage level loss computation for the licensee is given in the below table.

| <b>FY 2012-13 Losses</b>                          |           |               |                |
|---|-----------|---------------|----------------|
| Item  | Unit      | Value         | APERC approved |
| Energy Input at DISCOM Periphery (excl EHT sales) | <b>MU</b> | <b>32,089</b> |                |
| 33 kV sales                                       | <b>MU</b> | 4,509         |                |
| 33 kV loss  | <b>MU</b> | <b>1,845</b>  |                |
| <b>33 kV losses (%)</b>                           | <b>%</b>  | <b>5.75%</b>  | <b>3.99%</b>   |
| Energy Input at 11 kV                             | MU        | <b>25,734</b> |                |
| 11 kV Sales                                       | <b>MU</b> | 3,486         |                |
| 11 kV Loss  | <b>MU</b> | <b>1,673</b>  |                |
| <b>11 kV losses (%)</b>                           | <b>%</b>  | <b>6.50%</b>  | <b>5.50%</b>   |

|                                |           |               |              |
|--------------------------------|-----------|---------------|--------------|
| Energy Input at LT             | <b>MU</b> | <b>20,576</b> |              |
| LT Sales                       | <b>MU</b> | 18,285        |              |
| LT Loss                        | <b>MU</b> | <b>2,290</b>  |              |
| LT Loss (%)                    | <b>%</b>  | <b>11.13%</b> | <b>8.70%</b> |
| Total Distribution Losses (MU) | <b>MU</b> | 5,808         |              |
| Total Distribution Losses (%)  | <b>%</b>  | <b>18.10%</b> |              |

The licensee observes that in spite of considering the minimum of approved Agriculture sales and actual Agriculture sales, the losses at various voltage levels is higher than the losses approved by the Hon'ble Commission. The incremental losses have resulted in additional procurement of energy for FY 2012-13 for which the licensee has not gained any additional revenue. The licensee requests the Hon'ble Commission to consider the actual losses of FY 2012-13 as computed above to arrive at the loss trajectory for the next two control periods, i.e. from FY 2014-15 to FY 2018-19, FY 2019-20 to FY 2022-23.

The licensee is striving to reduce the losses by the implementation of loss reduction measures like strengthening of the network infrastructure, addition of network elements, and vigorously undertaking the Energy Audit visit to keep a close tab on the losses. The licensee expects to reach the APERC approved loss targets for FY 2013-14 by FY 2018-19 by undertaking the above mentioned measures. Hence, the licensee humbly requests the Hon'ble Commission to approve the loss trajectory as given in the below table.

| Losses         | FY 13-14 | FY 14-15 | FY 15-16 | FY 16-17 | FY 17-18 | FY 18-19 |
|----------------|----------|----------|----------|----------|----------|----------|
| LT Loss (%)    | 10.80%   | 10.17%   | 9.58%    | 9.03%    | 8.50%    | 8.01%    |
| 11 kV Loss (%) | 6.31%    | 6.02%    | 5.75%    | 5.49%    | 5.24%    | 5.01%    |
| 33 kV Loss (%) | 5.58%    | 5.21%    | 4.88%    | 4.56%    | 4.26%    | 3.99%    |

The below table contains an indicative loss trajectory for the 4<sup>th</sup> Control period. The licensee would like to emphasise that the loss trajectory for the 4<sup>th</sup> Control period would depend on the actual achievement of the loss levels by the end of the 3<sup>rd</sup> Control period.

| Losses                | FY 19-20 | FY 20-21 | FY 21-22 | FY 22-23 | FY 23-24 |
|-----------------------|----------|----------|----------|----------|----------|
| <b>LT Loss (%)</b>    | 7.85%    | 7.69%    | 7.54%    | 7.39%    | 7.24%    |
| <b>11 kV Loss (%)</b> | 4.91%    | 4.81%    | 4.71%    | 4.62%    | 4.53%    |
| <b>33 kV Loss (%)</b> | 3.91%    | 3.83%    | 3.75%    | 3.68%    | 3.60%    |

## **6 E-Filing Forms**

Form 1.1g -  
Loans

**INDIAN LOANS & DEBENTURES**

This form pertains to the Total Indian Loans and Debentures

Base Year

Please fill in the required details pertaining to each year

Amount in Rs. Crores

| Loan Type                      | Account Code | Loan Agency (Source of Loan) | Loan Code* | Related Project Code | Year of incurring loan | Moratorium Period (in years) | Tenure of Loan (in years) | Rate of Interest | Balance at the beginning of the year | Amount received during the year | Amount redeemed during the year | Balance outstanding at the end of the year | Interest Expense incurred during the year | Interest Expense paid till end of the year | Interest payment defaulted on (if any) | Principle payment defaulted on (if any) |
|--------------------------------|--------------|------------------------------|------------|----------------------|------------------------|------------------------------|---------------------------|------------------|--------------------------------------|---------------------------------|---------------------------------|--|---|--|--|---|
| <b>Secured Loans</b>           |              |                              | all        |                      |                        |                              |                           |                  | 7525.14                              | 1056.41                         | 2542.63                         | 6038.92                                    | 844.66                                    | 844.66                                     |  |   |
| Bonds                          |              |                              | all        |                      |                        |                              |                           |                  | 36.75                                | 0.00                            | 36.75                           | 0.00                                       | 2.13                                      | 2.13                                       |  |   |
| Vidyut Bonds                   |              |                              |            |                      |                        |                              |                           | 11.60%           | 36.75                                |                                 | 36.75                           | 0.00                                       | 2.13                                      | 2.13                                       |  |   |
|                                |              |                              |            |                      |                        |                              |                           |                  |                                      |                                 |                                 |  |   |  |  |   |
| Debentures                     |              |                              | all        |                      |                        |                              |                           |                  | 0.00                                 | 0.00                            | 0.00                            | 0.00                                       | 0.00                                      | 0.00                                       |  |   |
|                                |              |                              |            |                      |                        |                              |                           |                  |                                      |                                 |                                 |  |   |  |  |   |
| Borrowings for working capital |              |                              | all        |                      |                        |                              |                           |                  | 4541.94                              | 0.00                            | 2251.09                         | 2290.85                                    | 387.27                                    | 387.27                                     |  |   |
| SBH (CC on Current Assets)     |              |                              |            |                      |                        |                              |                           | 12.00%           | 299.19                               |                                 |                                 | 299.19                                     | 36.00                                     | 36.00                                      |  |   |
| Tamilnadu Merchantaile Bank    |              |                              |            |                      |                        |                              |                           | 12.00%           | 100.00                               |                                 | 100.00                          | 0.00                                       | 10.29                                     |  |  |   |
| Indian Overseas Bank           |              |                              |            |                      |                        |                              |                           | 11.75%           | 250.00                               |                                 |                                 | 250.00                                     | 28.13                                     |  |  |   |
| Bank of India                  |              |                              |            |                      |                        |                              |                           | 11.50%           | 350.00                               |                                 |                                 | 350.00                                     | 38.50                                     |  |  |   |
| Andhra Bank                    |              |                              |            |                      |                        |                              |                           | 11.50%           | 525.00                               |                                 |                                 | 525.00                                     | 59.06                                     |  |  |   |
| Syndicate Bank                 |              |                              |            |                      |                        |                              |                           | 11.50%           | 375.00                               |                                 | 258.34                          | 116.66                                     | 30.99                                     | 30.99                                      |  |   |
| Canara Bank                    |              |                              |            |                      |                        |                              |                           | 11.25%           | 200.00                               |                                 | 200.00                          | 0.00                                       |   | 0.00                                       |  |   |
| State Bank of Mysore           |              |                              |            |                      |                        |                              |                           | 12.50%           | 100.00                               |                                 | 100.00                          | 0.00                                       | 8.05                                      | 8.05                                       |  |   |
| Vijaya Bank                    |              |                              |            |                      |                        |                              |                           | 11.45%           | 300.00                               |                                 | 75.00                           | 225.00                                     | 33.62                                     | 33.62                                      |  |   |
| Federal Bank                   |              |                              |            |                      |                        |                              |                           | 12.25%           | 75.00                                |                                 |                                 | 75.00                                      | 28.75                                     | 28.75                                      |  |   |
| Central Bank of India          |              |                              |            |                      |                        |                              |                           | 11.50%           | 250.00                               |                                 |                                 | 250.00                                     | 22.50                                     |  |  |   |
| Punjab & Sind Bank             |              |                              |            |                      |                        |                              |                           | 11.50%           | 200.00                               |                                 |                                 | 200.00                                     | 8.36                                      | 8.36                                       |  |   |



|  |  |  |            |  |  |            |              |        |                |                |                |                |               |               |  |  |
|--|--|--|------------|--|--|------------|--------------|--------|----------------|----------------|----------------|----------------|---------------|---------------|--|--|
| Funds from State Government and Institution approved by State Government |  |  | all        |  |  |            |              |        | 25.97          | 0.00           | 5.62           | 20.35          | 0.00          | 0.00          |  |  |
| Govt. Loan   |  |  |            |  |  | 0 to 3 yrs | 13 to 15 yrs |        | 25.97          |                | 5.62           | 20.35          |               |               |  |  |
|  |  |  |            |  |  |            |              |        |                |                |                |                |               |               |  |  |
| Other Unsecured Loans  |  |  | all        |  |  |            |              |        | 256.70         | 0.00           | 241.88         | 14.82          | 21.24         | 21.24         |  |  |
| Syndicate Bank   |  |  |            |  |  |            | 10.00        | 12.00% | 29.06          |                | 20.34          | 8.72           | 1.78          | 1.78          |  |  |
| AB   |  |  |            |  |  |            | 10.00        | 12.00% | 12.74          |                | 6.65           | 6.09           | 1.14          | 1.14          |  |  |
| State Bank of Hyderabad  |  |  |            |  |  |            | 3.00         | 12.00% | 150.00         |                | 150.00         | 0.00           | 15.04         | 15.04         |  |  |
| CanaraBank   |  |  |            |  |  |            | 3.00         | 11.00% | 64.89          |                | 64.89          | 0.00           | 3.28          | 3.28          |  |  |
|  |  |  |            |  |  |            |              |        |                |                |                |                |               |               |  |  |
| <b>TOTAL</b>   |  |  | <b>all</b> |  |  |            |              |        | <b>7807.81</b> | <b>1056.41</b> | <b>2790.13</b> | <b>6074.09</b> | <b>865.90</b> | <b>865.90</b> |  |  |







|  |  |  |            |  |  |            |              |  |         |       |         |       |        |        |  |  |
|--|--|--|------------|--|--|------------|--------------|--|---------|-------|---------|-------|--------|--------|--|--|
| Funds from State Government and Institution approved by State Government |  |  | all        |  |  |            |              |  | 20.35   | #REF! | 5.62    | #REF! | 0.00   | 0.00   |  |  |
| Govt. Loan   |  |  |            |  |  | 0 to 3 yrs | 13 to 15 yrs |  | 20.35   | #REF! | 5.62    | #REF! |        |        |  |  |
|  |  |  |            |  |  |            |              |  |         |       |         |       |        |        |  |  |
| Other Unsecured Loans  |  |  | all        |  |  |            |              |  | 14.81   | 0.00  | 14.81   | 0.00  | 2.26   | 2.26   |  |  |
| Syndicate Bank   |  |  |            |  |  | 10.00      | 12.00%       |  | 8.72    |       | 8.72    | 0.00  | 1.90   | 1.90   |  |  |
| AB   |  |  |            |  |  | 10.00      | 12.00%       |  | 6.09    |       | 6.09    | 0.00  | 0.36   | 0.36   |  |  |
|  |  |  |            |  |  |            |              |  |         |       |         |       |        |        |  |  |
|  |  |  |            |  |  |            |              |  |         |       |         |       |        |        |  |  |
| <b>TOTAL</b>   |  |  | <b>all</b> |  |  |            |              |  | 6074.09 | #REF! | 1810.87 | #REF! | 708.68 | 708.68 |  |  |





|  |  |  |            |  |  |            |              |  |         |         |        |         |        |        |  |  |
|--|--|--|------------|--|--|------------|--------------|--|---------|---------|--------|---------|--------|--------|--|--|
| Funds from State Government and Institution approved by State Government |  |  | all        |  |  |            |              |  | 14.73   | 0.00    | 5.62   | 9.11    | 0.00   | 0.00   |  |  |
| Govt. Loan   |  |  |            |  |  | 0 to 3 yrs | 13 to 15 yrs |  | 14.73   | 0.00    | 5.62   | 9.11    |        |        |  |  |
|  |  |  |            |  |  |            |              |  |         |         |        |         |        |        |  |  |
| Other Unsecured Loans  |  |  | all        |  |  |            |              |  | 0.00    | 0.00    | 0.00   | 0.00    | 0.00   | 0.00   |  |  |
|  |  |  |            |  |  |            |              |  |         |         |        |         |        |        |  |  |
|  |  |  |            |  |  |            |              |  |         |         |        |         |        |        |  |  |
| <b>TOTAL</b>   |  |  | <b>all</b> |  |  |            |              |  | 5307.01 | 1185.94 | 900.43 | 5592.52 | 660.83 | 660.83 |  |  |

Year 3

Amount in Rs. Crores

| Loan Type  | Account Code | Loan Agency (Source of Loan) | Loan Code* | Related Project Code | Year of incurring loan | Moratorium Period (in years) | Tenure of Loan (in years) | Rate of Interest | Balance at the beginning of the year | Amount received during the year | Amount redeemed during the year | Balance outstanding at the end of the year | Interest Expense incurred during the year | Interest Expense paid till end of the year | Interest payment defaulted on (if any) | Principle payment defaulted on (if any) |
|--|--------------|------------------------------|------------|----------------------|------------------------|------------------------------|---------------------------|------------------|--------------------------------------|---------------------------------|---------------------------------|--|---|--|--|---|
| <b>Secured Loans</b>   |              |                              | all        |                      |                        |                              |                           |                  | 5583.41                              | 1171.00                         | 576.94                          | 6177.48                                    | 727.54                                    | 727.54                                     |  |   |
| Bonds  |              |                              | all        |                      |                        |                              |                           |                  | 0.00                                 | 0.00                            | 0.00                            | 0.00                                       | 0.00                                      | 0.00                                       |  |   |
| Vidyut Bonds   |              |                              |            |                      | 2005-06                |                              |                           |                  |                                      |                                 |                                 |  |   |  |  |   |
| Debentures   |              |                              | all        |                      |                        |                              |                           |                  | 0.00                                 | 0.00                            | 0.00                            | 0.00                                       | 0.00                                      | 0.00                                       |  |   |
|  |              |                              |            |                      |                        |                              |                           |                  |                                      |                                 |                                 |  |   |  |  |   |
|  |              |                              |            |                      |                        |                              |                           |                  |                                      |                                 |                                 |  |   |  |  |   |
|  |              |                              |            |                      |                        |                              |                           |                  |                                      |                                 |                                 |  |   |  |  |   |
| Borrowings for working capital   |              |                              | all        |                      |                        |                              |                           |                  | 336.69                               | 0.00                            | 18.75                           | 317.94                                     | 39.22                                     | 39.22                                      |  |   |
| SBH (CC on Current Assets)   |              |                              |            |                      |                        |                              |                           | 12.00%           | 299.19                               |                                 |                                 | 299.19                                     | 36.00                                     | 36.00                                      |  |   |
| Federal Bank   |              |                              |            |                      |                        |                              |                           | 12.25%           | 37.50                                |                                 | 18.75                           | 18.75                                      | 3.22                                      | 3.22                                       |  |   |
|  |              |                              |            |                      |                        |                              |                           |                  |                                      |                                 |                                 |  |   |  |  |   |
|  |              |                              |            |                      |                        |                              |                           |                  |                                      |                                 |                                 |  |   |  |  |   |
| Funds from State Government and Institution approved by State Government |              |                              | all        |                      |                        |                              |                           |                  | 0.00                                 | 0.00                            | 0.00                            | 0.00                                       | 0.00                                      | 0.00                                       |  |   |
|  |              |                              |            |                      |                        |                              |                           |                  |                                      |                                 |                                 |  |   |  |  |   |
|  |              |                              |            |                      |                        |                              |                           |                  |                                      |                                 |                                 |  |   |  |  |   |
| Other Secured Loans  |              |                              | all        |                      |                        |                              |                           |                  | 5246.72                              | 1171.00                         | 558.19                          | 5859.54                                    | 688.32                                    | 688.32                                     |  |   |
| REC  |              |                              |            |                      |                        | 3 to 5 yrs                   | 5 to 15 yrs               | 10.50 to 12.00%  | 2420.19                              | 462.28                          | 285.93                          | 2596.54                                    | 347.70                                    | 347.70                                     |  |   |
| PFC  |              |                              |            |                      |                        | 3 yrs                        | 13 years                  | 9.00 to 12.00%   | 536.15                               | 44.27                           | 21.94                           | 558.48                                     | 42.60                                     | 42.60                                      |  |   |
| Syndicate Bank   |              |                              |            |                      |                        | 3 yrs                        | 13 years                  | 11.15 to 11.50%  | 413.24                               |                                 | 60.20                           | 353.04                                     | 43.41                                     | 43.41                                      |  |   |
| CANARABANK   |              |                              |            |                      |                        | 3 yrs                        | 13 years                  | 11.15 TO 11.50%  | 82.83                                |                                 | 17.56                           | 65.27                                      | 11.84                                     | 11.84                                      |  |   |
| State Bank of Hyderabad  |              |                              |            |                      |                        | 3 yrs                        | 13 years                  | 11.70 to 11.75%  | 264.89                               |                                 | 64.59                           | 200.30                                     | 47.42                                     | 47.42                                      |  |   |

|  |  |  |            |  |  |             |              |        |                |                |               |                |               |               |  |  |
|--|--|--|------------|--|--|-------------|--------------|--------|----------------|----------------|---------------|----------------|---------------|---------------|--|--|
| Corporation Bank   |  |  |            |  |  | 3 yrs       | 13 years     | 12.00% | 134.84         |                | 20.00         | 114.84         | 15.28         | 15.28         |  |  |
| Karnataka Bank   |  |  |            |  |  | 2 yrs       | 12 years     | 12.25% | 6.20           |                | 5.56          | 0.64           | 0.31          | 0.31          |  |  |
| JICA   |  |  |            |  |  | 10 years    | 40 years     | 0.65%  | 506.43         | 0.00           |               | 506.43         | 3.04          | 3.04          |  |  |
| FI/Banks   |  |  |            |  |  | 2 to 3 year | 7 to 13 year | 12.00% | 881.95         | 664.45         | 82.40         | 1464.00        | 176.73        | 176.73        |  |  |
| <b>Unsecured Loans</b>   |  |  | all        |  |  |             |              |        | 9.11           | 0.00           | 5.62          | 3.49           | 0.00          | 0.00          |  |  |
| Bonds  |  |  | all        |  |  |             |              |        | 0.00           | 0.00           | 0.00          | 0.00           | 0.00          | 0.00          |  |  |
|  |  |  |            |  |  |             |              |        |                |                |               |                |               |               |  |  |
| Debentures   |  |  | all        |  |  |             |              |        | 0.00           | 0.00           | 0.00          | 0.00           | 0.00          | 0.00          |  |  |
|  |  |  |            |  |  |             |              |        |                |                |               |                |               |               |  |  |
| Borrowings for working capital   |  |  | all        |  |  |             |              |        | 0.00           | 0.00           | 0.00          | 0.00           | 0.00          | 0.00          |  |  |
|  |  |  |            |  |  |             |              |        |                |                |               |                |               |               |  |  |
|  |  |  |            |  |  |             |              |        |                |                |               |                |               |               |  |  |
| Funds from State Government and Institution approved by State Government |  |  | all        |  |  |             |              |        | 9.11           | 0.00           | 5.62          | 3.49           | 0.00          | 0.00          |  |  |
| Govt. Loan   |  |  |            |  |  | 0 to 3 yrs  | 13 to 15 yrs |        | 9.11           | 0.00           | 5.62          | 3.49           |               |               |  |  |
|  |  |  |            |  |  |             |              |        |                |                |               |                |               |               |  |  |
|  |  |  |            |  |  |             |              |        |                |                |               |                |               |               |  |  |
| Other Unsecured Loans  |  |  | all        |  |  |             |              |        | 0.00           | 0.00           | 0.00          | 0.00           | 0.00          | 0.00          |  |  |
|  |  |  |            |  |  |             |              |        |                |                |               |                |               |               |  |  |
|  |  |  |            |  |  |             |              |        |                |                |               |                |               |               |  |  |
| <b>TOTAL</b>   |  |  | <b>all</b> |  |  |             |              |        | <b>5592.52</b> | <b>1171.00</b> | <b>582.56</b> | <b>6180.97</b> | <b>727.54</b> | <b>727.54</b> |  |  |

Year 4

Amount in Rs. Crores

| Loan Type  | Account Code | Loan Agency (Source of Loan) | Loan Code* | Related Project Code | Year of incurring loan | Moratorium Period (in years) | Tenure of Loan (in years) | Rate of Interest | Balance at the beginning of the year | Amount received during the year | Amount redeemed during the year | Balance outstanding at the end of the year | Interest Expense incurred during the year | Interest Expense paid till end of the year | Interest payment defaulted on (if any) | Principle payment defaulted on (if any) |
|--|--------------|------------------------------|------------|----------------------|------------------------|------------------------------|---------------------------|------------------|--------------------------------------|---------------------------------|---------------------------------|--|---|--|--|---|
| <b>Secured Loans</b>   |              |                              | all        |                      |                        |                              |                           |                  | 6177.48                              | 1609.29                         | 648.28                          | 7138.49                                    | 848.29                                    | 848.29                                     |  |   |
| Bonds  |              |                              | all        |                      |                        |                              |                           |                  | 0.00                                 | 0.00                            | 0.00                            | 0.00                                       | 0.00                                      | 0.00                                       |  |   |
|  |              |                              |            |                      |                        |                              |                           |                  |                                      |                                 |                                 |  |   |  |  |   |
|  |              |                              |            |                      |                        |                              |                           |                  |                                      |                                 |                                 |  |   |  |  |   |
| Debentures   |              |                              | all        |                      |                        |                              |                           |                  | 0.00                                 | 0.00                            | 0.00                            | 0.00                                       | 0.00                                      | 0.00                                       |  |   |
|  |              |                              |            |                      |                        |                              |                           |                  |                                      |                                 |                                 |  |   |  |  |   |
|  |              |                              |            |                      |                        |                              |                           |                  |                                      |                                 |                                 |  |   |  |  |   |
| Borrowings for working capital   |              |                              | all        |                      |                        |                              |                           |                  | 317.94                               | 0.00                            | 18.75                           | 299.19                                     | 37.14                                     | 37.14                                      |  |   |
| SBH (CC on Current Assets)   |              |                              |            |                      |                        |                              |                           | 12.00%           | 299.19                               |                                 |                                 | 299.19                                     | 36.00                                     | 36.00                                      |  |   |
| Federal Bank   |              |                              |            |                      |                        |                              |                           | 12.25%           | 18.75                                |                                 | 18.75                           | 0.00                                       | 1.14                                      | 1.14                                       |  |   |
|  |              |                              |            |                      |                        |                              |                           |                  |                                      |                                 |                                 |  |   |  |  |   |
|  |              |                              |            |                      |                        |                              |                           |                  |                                      |                                 |                                 |  |   |  |  |   |
| Funds from State Government and Institution approved by State Government |              |                              | all        |                      |                        |                              |                           |                  | 0.00                                 | 0.00                            | 0.00                            | 0.00                                       | 0.00                                      | 0.00                                       |  |   |
|  |              |                              |            |                      |                        |                              |                           |                  |                                      |                                 |                                 |  |   |  |  |   |
|  |              |                              |            |                      |                        |                              |                           |                  |                                      |                                 |                                 |  |   |  |  |   |
| Other Secured Loans  |              |                              | all        |                      |                        |                              |                           |                  | 5859.54                              | 1609.29                         | 629.53                          | 6839.30                                    | 811.15                                    | 811.15                                     |  |   |
| REC  |              |                              |            |                      |                        | 3 to 5 yrs                   | 5 to 15 yrs               | 10.50 to 12.00%  | 2596.54                              | 454.08                          | 323.76                          | 2726.85                                    | 366.35                                    | 366.35                                     |  |   |
| PFC  |              |                              |            |                      |                        | 3 yrs                        | 13 years                  | 9.00 to 12.00%   | 558.48                               | 29.51                           | 10.97                           | 577.02                                     | 43.65                                     | 43.65                                      |  |   |
| Syndicate Bank   |              |                              |            |                      |                        | 3 yrs                        | 13 years                  | 11.15 to 11.50%  | 353.04                               |                                 | 60.20                           | 292.84                                     | 36.75                                     | 36.75                                      |  |   |
| CANARABANK   |              |                              |            |                      |                        | 3 yrs                        | 13 years                  | 11.15 TO 11.50%  | 65.27                                |                                 | 17.56                           | 47.71                                      | 9.85                                      | 9.85                                       |  |   |
| State Bank of Hyderabad  |              |                              |            |                      |                        | 3 yrs                        | 13 years                  | 11.70 to 11.75%  | 200.30                               |                                 | 64.59                           | 135.71                                     | 39.88                                     | 39.88                                      |  |   |
| Corporation Bank   |              |                              |            |                      |                        | 3 yrs                        | 13 years                  | 12.00%           | 114.84                               |                                 | 20.00                           | 94.84                                      | 12.88                                     | 12.88                                      |  |   |

|  |  |  |            |  |  |             |              |        |                |                |               |                |               |               |  |  |
|--|--|--|------------|--|--|-------------|--------------|--------|----------------|----------------|---------------|----------------|---------------|---------------|--|--|
| Karnataka Bank   |  |  |            |  |  | 2 yrs       | 12 years     | 12.25% | 0.64           |                | 0.00          | 0.64           | 0.00          | 0.00          |  |  |
| JICA   |  |  |            |  |  | 10 years    | 40 years     | 0.65%  | 506.43         | 0.00           |               | 506.43         | 3.04          | 3.04          |  |  |
| FI/Banks   |  |  |            |  |  | 2 to 3 year | 7 to 13 year | 12.00% | 1464.00        | 1125.70        | 132.44        | 2457.25        | 298.76        | 298.76        |  |  |
| <b>Unsecured Loans</b>   |  |  | all        |  |  |             |              |        | 3.49           | 0.00           | 3.49          | 0.00           | 0.00          | 0.00          |  |  |
| Bonds  |  |  | all        |  |  |             |              |        | 0.00           | 0.00           | 0.00          | 0.00           | 0.00          | 0.00          |  |  |
|  |  |  |            |  |  |             |              |        |                |                |               |                |               |               |  |  |
| Debentures   |  |  | all        |  |  |             |              |        | 0.00           | 0.00           | 0.00          | 0.00           | 0.00          | 0.00          |  |  |
|  |  |  |            |  |  |             |              |        |                |                |               |                |               |               |  |  |
| Borrowings for working capital   |  |  | all        |  |  |             |              |        | 0.00           | 0.00           | 0.00          | 0.00           | 0.00          | 0.00          |  |  |
|  |  |  |            |  |  |             |              |        |                |                |               |                |               |               |  |  |
|  |  |  |            |  |  |             |              |        |                |                |               |                |               |               |  |  |
| Funds from State Government and Institution approved by State Government |  |  | all        |  |  |             |              |        | 3.49           | 0.00           | 3.49          | 0.00           | 0.00          | 0.00          |  |  |
| Govt. Loan   |  |  |            |  |  | 0 to 3 yrs  | 13 to 15 yrs |        | 3.49           | 0.00           | 3.49          |                |               |               |  |  |
|  |  |  |            |  |  |             |              |        |                |                |               |                |               |               |  |  |
|  |  |  |            |  |  |             |              |        |                |                |               |                |               |               |  |  |
| Other Unsecured Loans  |  |  | all        |  |  |             |              |        | 0.00           | 0.00           | 0.00          | 0.00           | 0.00          | 0.00          |  |  |
|  |  |  |            |  |  |             |              |        |                |                |               |                |               |               |  |  |
|  |  |  |            |  |  |             |              |        |                |                |               |                |               |               |  |  |
| <b>TOTAL</b>   |  |  | <b>all</b> |  |  |             |              |        | <b>6180.97</b> | <b>1609.29</b> | <b>651.77</b> | <b>7138.49</b> | <b>848.29</b> | <b>848.29</b> |  |  |

Year 5

Amount in Rs. Crores



| Loan Type  | Account Code | Loan Agency (Source of Loan) | Loan Code* | Related Project Code | Year of incurring loan | Moratorium Period (in years) | Tenure of Loan (in years) | Rate of Interest | Balance at the beginning of the year | Amount received during the year | Amount redeemed during the year | Balance outstanding at the end of the year | Interest Expense incurred during the year | Interest Expense paid till end of the year | Interest payment defaulted on (if any) | Principle payment defaulted on (if any) |
|--|--------------|------------------------------|------------|----------------------|------------------------|------------------------------|---------------------------|------------------|--------------------------------------|---------------------------------|---------------------------------|--|---|--|--|---|
| <b>Secured Loans</b>   |              |                              | all        |                      |                        |                              |                           |                  | 7138.49                              | 1679.70                         | 773.28                          | 8044.91                                    | 1004.73                                   | 1004.73                                    |  |   |
| Bonds  |              |                              | all        |                      |                        |                              |                           |                  | 0.00                                 | 0.00                            | 0.00                            | 0.00                                       | 0.00                                      | 0.00                                       |  |   |
|  |              |                              |            |                      |                        |                              |                           |                  |                                      |                                 |                                 |  |   |  |  |   |
| Debentures   |              |                              | all        |                      |                        |                              |                           |                  | 0.00                                 | 0.00                            | 0.00                            | 0.00                                       | 0.00                                      | 0.00                                       |  |   |
|  |              |                              |            |                      |                        |                              |                           |                  |                                      |                                 |                                 |  |   |  |  |   |
|  |              |                              |            |                      |                        |                              |                           |                  |                                      |                                 |                                 |  |   |  |  |   |
| Borrowings for working capital   |              |                              | all        |                      |                        |                              |                           |                  | 299.19                               | 0.00                            | 0.00                            | 299.19                                     | 36.00                                     | 36.00                                      |  |   |
| SBH (CC on Current Assets)   |              |                              |            |                      |                        |                              |                           | 12.00%           | 299.19                               |                                 |                                 | 299.19                                     | 36.00                                     | 36.00                                      |  |   |
|  |              |                              |            |                      |                        |                              |                           |                  |                                      |                                 |                                 |  |   |  |  |   |
|  |              |                              |            |                      |                        |                              |                           |                  |                                      |                                 |                                 |  |   |  |  |   |
| Funds from State Government and Institution approved by State Government |              |                              | all        |                      |                        |                              |                           |                  | 0.00                                 | 0.00                            | 0.00                            | 0.00                                       | 0.00                                      | 0.00                                       |  |   |
|  |              |                              |            |                      |                        |                              |                           |                  |                                      |                                 |                                 |  |   |  |  |   |
|  |              |                              |            |                      |                        |                              |                           |                  |                                      |                                 |                                 |  |   |  |  |   |
| Other Secured Loans  |              |                              | all        |                      |                        |                              |                           |                  | 6839.30                              | 1679.70                         | 773.28                          | 7745.72                                    | 968.73                                    | 968.73                                     |  |   |
| REC  |              |                              |            |                      |                        | 3 to 5 yrs                   | 5 to 15 yrs               | 10.50 to 12.00%  | 2726.85                              | 392.40                          | 357.66                          | 2761.60                                    | 373.81                                    | 373.81                                     |  |   |
| PFC  |              |                              |            |                      |                        | 3 yrs                        | 13 years                  | 9.00 to 12.00%   | 577.02                               | 0.00                            | 25.42                           | 551.60                                     | 85.32                                     | 85.32                                      |  |   |
| Syndicate Bank   |              |                              |            |                      |                        | 3 yrs                        | 13 years                  | 11.15 to 11.50%  | 292.84                               |                                 | 60.20                           | 232.64                                     | 29.99                                     | 29.99                                      |  |   |
| CANARABANK   |              |                              |            |                      |                        | 3 yrs                        | 13 years                  | 11.15 TO 11.50%  | 47.71                                |                                 | 17.56                           | 30.15                                      | 7.87                                      | 7.87                                       |  |   |
| State Bank of Hyderabad  |              |                              |            |                      |                        | 3 yrs                        | 13 years                  | 11.70 to 11.75%  | 135.71                               |                                 | 64.59                           | 71.12                                      | 32.30                                     | 32.30                                      |  |   |
| Corporation Bank   |              |                              |            |                      |                        | 3 yrs                        | 13 years                  | 12.00%           | 94.84                                |                                 | 20.00                           | 74.84                                      | 10.48                                     | 10.48                                      |  |   |

|  |  |  |            |  |  |             |              |        |                |                |               |                |                |                |  |  |
|--|--|--|------------|--|--|-------------|--------------|--------|----------------|----------------|---------------|----------------|----------------|----------------|--|--|
| Karnataka Bank   |  |  |            |  |  | 2 yrs       | 12 years     | 12.25% | 0.64           |                | 0.00          | 0.64           | 0.00           | 0.00           |  |  |
| JICA   |  |  |            |  |  | 10 years    | 40 years     | 0.65   | 506.43         |                | 0.00          | 506.43         | 3.04           | 3.04           |  |  |
| FI/Banks   |  |  |            |  |  | 2 to 3 year | 7 to 13 year | 12.00  | 2457.25        | #####          | 227.85        | 3516.70        | 425.92         | 425.92         |  |  |
|  |  |  |            |  |  |             |              |        |                |                |               |                |                |                |  |  |
| <b>Unsecured Loans</b>   |  |  | all        |  |  |             |              |        | 0.00           | 0.00           | 0.00          | 0.00           | 0.00           | 0.00           |  |  |
| Bonds  |  |  | all        |  |  |             |              |        | 0.00           | 0.00           | 0.00          | 0.00           | 0.00           | 0.00           |  |  |
|  |  |  |            |  |  |             |              |        |                |                |               |                |                |                |  |  |
| Debentures   |  |  | all        |  |  |             |              |        | 0.00           | 0.00           | 0.00          | 0.00           | 0.00           | 0.00           |  |  |
|  |  |  |            |  |  |             |              |        |                |                |               |                |                |                |  |  |
| Borrowings for working capital   |  |  | all        |  |  |             |              |        | 0.00           | 0.00           | 0.00          | 0.00           | 0.00           | 0.00           |  |  |
|  |  |  |            |  |  |             |              |        |                |                |               |                |                |                |  |  |
|  |  |  |            |  |  |             |              |        |                |                |               |                |                |                |  |  |
| Funds from State Government and Institution approved by State Government |  |  | all        |  |  |             |              |        | 0.00           | 0.00           | 0.00          | 0.00           | 0.00           | 0.00           |  |  |
|  |  |  |            |  |  |             |              |        |                |                |               |                |                |                |  |  |
|  |  |  |            |  |  |             |              |        |                |                |               |                |                |                |  |  |
| Other Unsecured Loans  |  |  | all        |  |  |             |              |        | 0.00           | 0.00           | 0.00          | 0.00           | 0.00           | 0.00           |  |  |
|  |  |  |            |  |  |             |              |        |                |                |               |                |                |                |  |  |
|  |  |  |            |  |  |             |              |        |                |                |               |                |                |                |  |  |
| <b>TOTAL</b>   |  |  | <b>all</b> |  |  |             |              |        | <b>7138.49</b> | <b>1679.70</b> | <b>773.28</b> | <b>8044.91</b> | <b>1004.73</b> | <b>1004.73</b> |  |  |