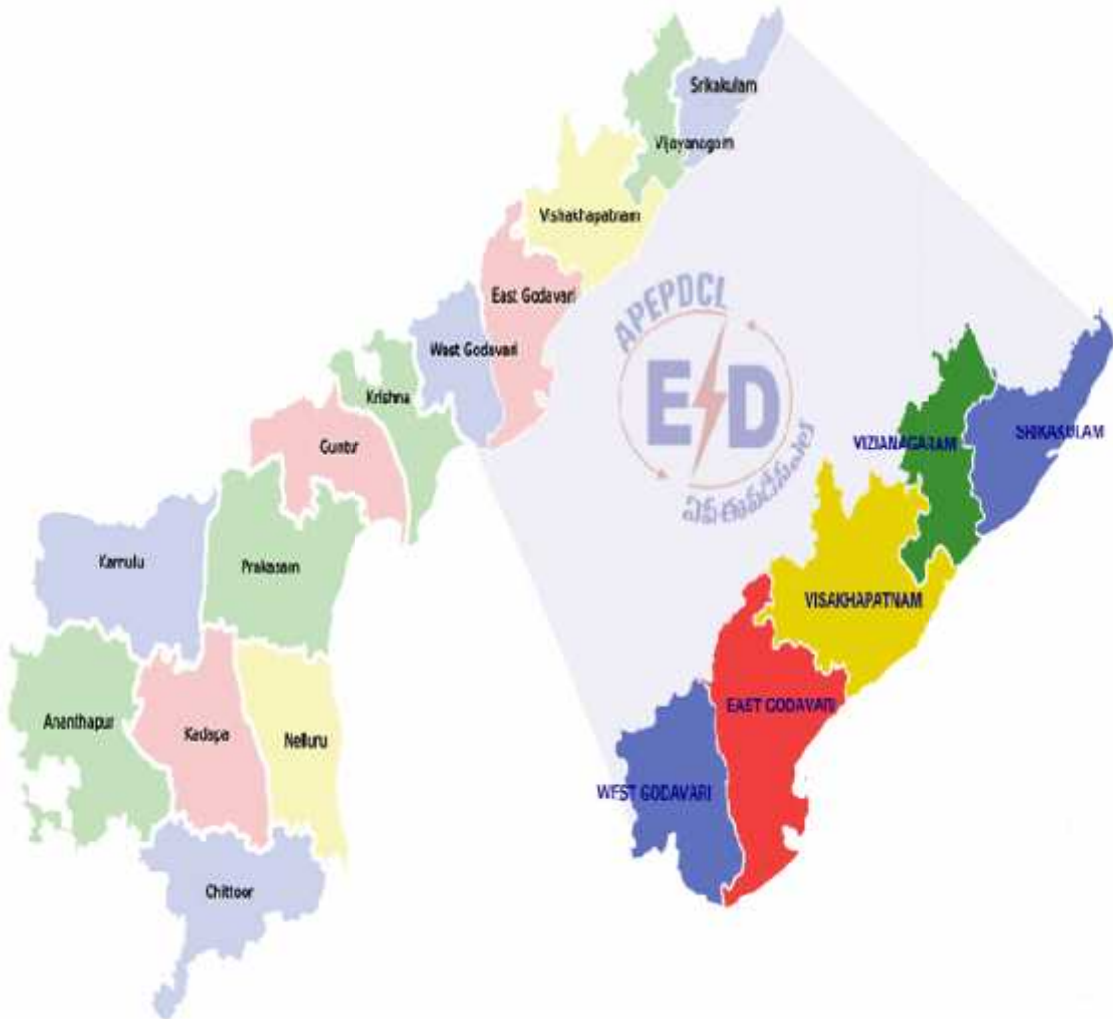




# Eastern Power Distribution Company of A.P. Ltd

ఆంధ్ర ప్రదేశ్ తూర్పు ప్రాంత విద్యుత్ పంపిణీ సంస్థ



**Aggregate Revenue Requirement for the Retail Supply  
Business for FY: 2017-18**

**30<sup>th</sup> November 2016**

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# 1 Introduction

## 1.1 Filings based on Multi-Year Tariff (MYT) Principles

The Andhra Pradesh Electricity Regulatory Commission framed the “Terms and Conditions for determination of Tariff for Wheeling and retail supply of electricity” Regulation 4 of 2005 and First Amendment Regulation 2014 (“Regulation”), lays down the principles for determination of Aggregate Revenue Requirement (ARR) for (a) Distribution Business and (b) Retail Supply Business of the licensees. The ARR so determined for each of the businesses will form the basis for fixation of charges for wheeling and for retail sale of electricity.

In the Regulation, the Commission has also laid down the procedures for filing under multi-year tariff principles. The multi-year period is defined as the Control Period and the first Control Period is defined as the three year period starting from financial year 2006-07 and continuing till the end of financial year 2008-09. The second control period was defined as the five year period starting from FY 2009-10 to FY 2013-14. The current filing pertains to the third Control Period (FY 2014-15 to FY 2018-19). The Commission has specified in Para 6.2 of the Regulation the following procedure for ARR filing for the distribution and retail supply business:

*“The ARR filing for the Distribution business shall be for the entire Control Period. For the Retail Supply business the ARR filing will be on annual basis .....”*

The current filing follows the principles laid down under this Regulation for determination of the ARR for the retail supply business for the year FY 2017-18, which is the fourth year of the Third Control Period.

## 1.2 Filing Contents

The filing is structured in the following way:

a) *Section 2* provides analysis of expected performance for current year for Retail supply Business comprising

- Operating Performance
- Financial Performance

A brief analysis of the financial and operational performance of the licensee during the previous year (2015-16) and the current year (2016-17) is given.

b) *Section 3* provides the ARR for Retail Supply Business for fourth year of the Third Control Period and the basis of projections of the expense and revenue items comprising:

- Expenditure Projections
  - Power Purchase Cost

- Transmission and PGCIL Charges
- SLDC Charges
- Distribution Cost
- Interest on Consumer Security Deposits
- Supply Margin
- Other Costs
- Aggregate Revenue Requirement for Retail Supply Business
- Revenue Projections
  - Sales Forecast
  - Revenue from Current Tariffs
  - Non-tariff Income at Current Charges
  - Revenue at Current Tariffs and Charges
  - Revenue Gap
  - Revenue Deficit / Surplus at Current Tariff and Charges

The sales forecast is used to determine the revenue from tariff from retail sale of electricity for the fourth year of the third control period and the energy input required for meeting the demand. The power procurement plan is based on the availability of the generation sources during the ensuing year, the cost (fixed, variable and others) and the merit order dispatch of various sources to meet the demand expected during various months.

## 2 Analysis of expected performance for Current Year 2016-17 for Retail Supply Business

### 2.1 Introduction

This chapter analyses the performance of the licensee during the Current Year as compared to the previous year & also with the Tariff Order 2015-16. Only the key operating and financial parameters have been considered for this analysis.

### 2.2 Operating Performance

#### 2.2.1 Energy Balance

Particulars	2015-16		2015-16		2016-17		Revised Estimate for 2016-17	
	APERC Order		Actuals		APERC Order			
	MU	%	MU	%	MU	%	MU	%
1) Total Metered Sales	14,574	81.67%	12,820	79.69%	14,902	80.23%	13,806	80.20%
a) EHT sales	4,364	24.46%	3,024	18.80%	3,830	20.62%	3,382	19.65%
b) HT sales	4,009	22.46%	3,492	21.70%	4,303	23.16%	3,525	20.48%
c) LT Metered sales	6,201	34.75%	6,304	39.19%	6,769	36.44%	6,899	40.07%
<b>II) LT Agricultural Sales</b>	1,936	10.85%	2,149	13.36%	2,281	12.28%	2,066	12.00%
<b>III) Total Sales</b>	<b>16,510</b>	<b>92.52%</b>	<b>14,969</b>	<b>93.05%</b>	<b>17,183</b>	<b>92.51%</b>	<b>15,872</b>	<b>92.20%</b>
<b>IV) ADD: Distribution Losses</b>								
Distribution Losses (Incl. EHT sales)	1,335	7.48%	1,118	6.95%	1,392	7.49%	1,343	7.80%
Distribution Losses (Excl. EHT sales)	1,335	9.90%	1,118	8.56%	1,392	9.46%	1,343	9.70%
<b>V) DISCOM Power purchase</b>								
a) Discom Input (Excl EHT sales)	13,481		13,063		14,712		13,844	
b) Discom input (Incl EHT sales) and excluding Transmission losses	17,845	100.00%	16,088	100.00%	18,575	100.00%	17,215	100.00%

## 2.2.2 Distribution Loss

Year	Loss Target as per APERC		Actual		No. of 11 KV T&MHQ feeders for which energy audit done	Additional 33/11 KV sub-stations charged
	Excl. EHT	Incl. EHT	Excl. EHT	Incl. EHT		
2009-10	11.14%	8.82%	10.43%	8.45%	640	59
2010-11	10.80%	8.81%	8.75%	6.96%	650	27
2011-12	10.54%	8.55%	10.37%	8.40%	655	15
2012-13	10.41%	8.42%	12.17%	9.38%	697	52
2013-14	10.21%	8.26%	11.72 %	9.18%	718	19
2014-15	10.21%	8.26%	10.74%	8.46%	742	9
2015-16	9.91%	7.48%	8.56%	6.95%	801	62
2016-17	9.46%	7.49%	9.92%(Up to Sept-16)	7.96%(Up to Sept-16)		

It is expected to reduce the losses further with the implementation of the following measures.

- i) Reduction of both technical and commercial losses by vigorously conducting 11 KV feeder wise energy audits.
- ii) During the year 2015-16, only 801 Nos. 11 KV Town, MHQ & industrial feeders were considered for energy audit whereas during the year 2016-17, 820 Nos. feeders are available for which energy audit is done on regular basis at corporate office level.
- iii) For the year 2015-16, 62 Nos. 33/11 KV sub-stations were charged and For the year 2016-17, 70 Nos. 33/11 KV sub-stations are proposed out of this 3 Nos. were already charged to reduce over loaded 33 KV & 11 KV lines and to maintain good voltage profiles up to the consumers end.

## 2.2.3 Metered Sales

As can be seen from the table above, in 2015-16, the percentage of metered sales is lower than the Tariff Order level by 1.20 %. The reduction is mainly due to reduction in EHT& Ferro alloys consumption nearly 1340 MU. In 2016-17, the metered sales are expected to increase by about 986 MU over 2015-16 levels.

### Agricultural Sales

In the previous year 2015-16 the actual Agriculture Consumption is 2149.49 MU as against the approved 1936.33MU. In the current year 2016-17 during the first half of the year the agriculture consumption is 1022.03 MU and the sales projection for second half of FY 2016-17 for this category are 1043.75MU.



## 2.3 Financial Performance

### 2.3.1 Financial Performance of previous Year FY 2015-16

#### 2.3.1.1 Revenues from sale of electricity

Total Revenue from tariffs and charges against the Tariff Order Targets for Previous Year FY 2015-16 is as shown in the following Table:

Revenue from current tariff and charges for FY2015-16(Rs. Crs.)		
Category	2015-16	
	APERC Target	2015-16 (Actual)
<b>LT Category</b>	<b>2,894</b>	<b>2,957</b>
Domestic	1,436	1,536
Non-domestic/Commercial	695	781
Industrial	553	458
Cottage Industries	0.88	0.99
Irrigation& Agriculture	35	11
Local Bodies, St. Lighting & PWS	139	133
General Purpose	34	34
Temporary Supply	0.76	1.75
<b>HT Category</b>	<b>5,307</b>	<b>4,297</b>
HT I : General	4,098	3,156
HT II: Others	610	594
HT III: Airports, Bus Stations and Railway Stations	12.55	11.19
HT IV Government LIS & Agriculture	36	61
HT V: Railway Traction	497	442
HT VI: Townships & Residential Colonies	22	20
HT VII: Green Power	-	-
HT VIII: Temporary	-	-
Category: RESCOs	31	13
<b>Total (LT+HT)</b>	<b>8,201</b>	<b>7,253</b>

Total actual revenue is Rs. 7150 Crs. and Non-Tariff Income (NTI) is Rs. 103 Crs. Hence total actual Revenue including Non-Tariff Income is Rs. 7253 Crs.

### 2.3.1.2 Revenue Surplus / Deficit of FY 2015-16

For the period 2015-16, the Licensee incurred a loss of Rs.471.85Cr, due to lower than approved HT Sales growth, higher power purchase costs, increase in employee cost due to pay revision.

The financial performance on the actual for the FY: 2015-16 are as under.

Particulars (Rs. Crs)	APERC (2015-16)	Actuals audited (2015-16)	Variation
<b>Network and SLDC Cost</b>	<b>1,691</b>	<b>2,022</b>	<b>331</b>
Transmission Cost	341	368	27
SLDC Cost	10.97	11.89	0.92
Distribution Cost	1,217	1,480	263
PGCIL Expenses	119	159	40
ULDC Charges	2.88	2.24	(0.64)
<b>Supply Cost</b>	<b>7,377</b>	<b>7,116</b>	<b>(253)</b>
Power Purchase / Procurement Cost	6,866	7,032	166
Interest on Consumer Security Deposits	92	79	(13)
Supply Margin in Retail Supply Business	4.83	4.83	-
Energy Efficiency Project cost	8.29		
Other Costs,(True-Up FY 2014-15)	406		(406)
<b>Aggregate Revenue Requirement</b>	<b>9,068</b>	<b>9,138</b>	<b>69</b>
<b>Total Revenue</b>	<b>9,068</b>	<b>8,666</b>	<b>(403)</b>
Revenue from Current Tariffs	8,055	7,150	(905)
(Net of incentives & incl. CMC)			-
Other income		545	545
Revenue subsidies and grants	868	868	-
Non-tariff income	146	104	(43)
<b>Revenue Deficit (-) / Surplus(+) at Current Tariffs</b>	<b>-</b>	<b>472</b>	<b>472</b>
<b>Revenue - Cost Coverage (%)</b>	<b>100%</b>	<b>95%</b>	

# Note: Other income includes Delayed payment surcharge Rs. 154 Crs, DD-sales Rs.185 Crs, Cross Subsidy Rs.15 Crs, UI Charges revenue Rs. 15 Cr.s, Recoveries from theft of Energy Rs.11Cr., Interest from Bank Deposits Rs.15 Crs, and Miscellaneous revenue for Rs.150 Crs.

For FY 2015-16, the Hon'ble Commission allowed Rs16.97 Crs towards Return on Equity considering 14% rate of return and Rs.4.83 Crs towards Retail Supply Margin. The total Regulatory Margin allowed in the revenue a/c is Rs. 22 Crs. However, during the year 2015-16 the company incurred a Revenue deficit of Rs. 471.85 Crs. due to lower than approved HT Sales growth, increase in employee cost due to pay revision.

## 2.3.2 Financial performance of current year FY 2016-17:

### 2.3.2.1 Revenues from sale of electricity:

The actual revenue for FY 2015-16 excluding NTI is Rs.7149.61 Crs. and for FY: 2015-16 it is estimated to be Rs.7890.64 Crs.

For the key categories, the licensee has estimated the revenue as below:

<b>Category Wise Revenue:(Figures shown in Rs. Crs)</b>		
<b>Category</b>	<b>2015-16 (Actual)</b>	<b>2016-17 ( Revised Estimate )</b>
<b>LT Category</b>	<b>2,914</b>	<b>3,225</b>
Domestic	1,514	1,706
Non-domestic/Commercial	770	881
Industrial	452	455
Cottage Industries, DhobiGhats& Others	0.98	0.91
Irrigation& Agriculture	11.03	19.28
Local Bodies, St. Lighting & PWS	131	120
General Purpose	34	41
Temporary Supply	1.72	0.84
<b>HT Category</b>	<b>4,235</b>	<b>4,557</b>
HT I : General	3,110	3,313
HT II: Others	586	599
HT III: Airports, Bus Stations and Railway Stations	11.03	37
HT IV Government LIS & Agriculture.	60	141
HT V: Railway Traction	436	424
HT VI: Townships & Residential Colonies	20	21
HT VII: Green Power	-	-
HT VIII: Temporary	-	0
Category: RESCOs	12	22
<b>Total (LT+HT)</b>	<b>7,150</b>	<b>7,782</b>

### 2.3.2.2 Revenue Surplus / Deficit of current year FY 2016-17

For the period 2016-17, the Licensee projects that it might incur a loss of Rs.659 Crs, due to lower than approved HT Sales growth because of Open Access consumption, no sale of surplus power as envisaged in the tariff order and higher variable cost of thermal stations than approved.

Particulars	2016-17 Revised Estimate (Rs. Crs.)
Supply Margin	5.28
ROCE / Interest	132
<b>Total Financing Cost</b>	<b>137</b>
Power purchase	6,812
Transmission charges	252
PGCIL / ULDC Charges	134
SLDC Charges	11.99
O&M (Gross)	1,088
Depreciation	343
Interest on consumer deposits	89
True up adj of 2nd control period	-
Other Expenses (Special appropriation & taxes on income)	18
Other cost	50
<i>Less: Expenses capitalised</i>	199
<b>ARR</b>	<b>8,736</b>
<b>Total Revenue</b>	<b>7,955</b>
Non-tariff Income (Distribution Business)	
Revenue at Current Tariffs (incl NTI)	7,891
Revenue from cross subsidy surcharge	64
Revenue from Trading	
<b>Regulatory Gap/ (Surplus)</b>	<b>(781)</b>
Subsidy	136
<b>Net Regulatory Gap/ (Surplus)</b>	<b>(645)</b>

### 3 Power Purchase Cost for Current Year (FY 2016-17) Second Half and Ensuing Year (FY 2017-18)

#### 3.1 Basis of Estimation of Quantity and Cost of Power Purchase

This section discusses the methodology and assumptions considered for estimating the quantum and corresponding cost of power purchase of the Licensee for the second half of the Financial Year ending March 31, 2017 and for the Financial Year ending March 31, 2018.

As per section 92 read with the Twelfth Schedule of the Andhra Pradesh Reorganization Act, 2014 for bifurcation of united Andhra Pradesh (Central Act No. 6 of 2014, dated 01.03.2014), the districts of Anantapur and Kurnool which was within the jurisdiction of the erstwhile Andhra Pradesh Central Power Distribution Company Ltd. (APCPDCL, now Southern Power Distribution Company of Telangana Limited (TSSPDCL)) was reassigned to the Andhra Pradesh Southern Power Distribution Company Ltd. (APSPDCL). The proportionate share of power was transferred from the allocated share of the erstwhile APCPDCL to APSPDCL.

Before the bifurcation of united Andhra Pradesh, with the implementation of Multi-Buyer Model (MBM) in the state from June 9, 2005, each of the four Discoms of united Andhra Pradesh had been allocated a certain share of the generating stations contracted by APTRANSCO. According to G.O.Ms. No. 20 (dated 08.05.2014), based on the last 5 years' average consumption of Anantapur and Kurnool districts, 17.45% of power earlier allocated to the erstwhile APCPDCL has to be transferred to APSPDCL. Power allocation percentages for Andhra Pradesh Discoms and Telangana Discoms have been modified accordingly. Andhra Pradesh has been allocated a percentage of 46.11% of the erstwhile Andhra Pradesh share. The revised power allocation percentages for the two Discoms of Andhra Pradesh (APEPDCL and APSPDCL) are mentioned below.

S. No.	Name of the Distribution Company	Allocation Percentage
1	APEPDCL	15.80 %
2	APSPDCL	30.31 %

#### 3.2 PP allocation:

- Allocation percentage for existing APGENCO thermal stations, CGS stations and Gas IPPs is 46.11% of united AP share (based on the last 5 years' average consumption of Anantapur and Kurnool districts).
- Power from GENCO (APGENCO and TSGENCO) hydel stations have been allocated based on their geographical location.
- 100% share of the upcoming APGENCO station, RTPP-IV has been considered for Andhra Pradesh.
- The two mini-power plants LVS and Srivathsa have been allocated to APEPDCL.

- The erstwhile GVK Phase-I has been acquired by APDISCOMs on 22<sup>nd</sup> April 2016 and 100% share has been allocated to Andhra Pradesh
- Non-conventional Energy sources have been allocated to the DISCOMs as per the PPA
- Entire energy available from Hinduja thermal power plant has been allocated to Andhra Pradesh.
- Month-wise surplus has been estimated based on the availability and requirement.
- The energy deficit in each Discom (if any) is then met through procurement through bilateral sources and D-D Sales.

In the following paragraphs, the capacities and availabilities of all the generating sources have been described. The actual energy availability in MU for each Discom has been projected based on the above allocation principles.

### 3.3 Installed Capacity of Major Generating Stations

#### 3.3.1 GENCO (Andhra Pradesh Genco & Telangana State Genco)

The table below shows the projected capacities of the Thermal and Hydel generating stations of GENCO including the share in the interstate projects..

##### 3.3.1.1 APGENCO

Energy allocation for existing APGENCO thermal stations has been considered as 46.11% of united Andhra Pradesh share as per G.O. Ms. No. 20.

While 100% has been considered from Damodaram Sanjeevaiah TPP I & II and RTPP IV. For APGENCO Hydel stations allocation is as per geographical location (100%).

Allocation for interstate hydel projects have been taken as per G.O.Ms. No. 20.

<i>Source</i>	<b>Projected erstwhile AP share (MW)</b>	<b>Projected AP share (MW)</b>
<b>THERMAL</b>		
Dr. NTPPS ( I, II, III)	1,260	581
Dr. NTPPS – IV	500	231
RTPP-I	420	194
RTPP-II	420	194
RTPP- III	210	97
RTPP- IV (New Station)	600	600
Damodaram Sanjeevaiah TPP I	800	800
Damodaram Sanjeevaiah TPP II	800	800
<b>TOTAL THERMAL</b>	<b>4,410</b>	<b>2,896</b>
<b>HYDEL</b>		

<i>Source</i>	<b>Projected erstwhile AP share (MW)</b>	<b>Projected AP share (MW)</b>
<b>Interstate projects:</b>		
Machkund, Orissa (AP share 70%)	84	39
T.B. Station, Karnataka (AP share 80%)	58	27
<b>State projects:</b>		
Donkarayi	25	25
Upper Sileru	240	240
Lower Sileru	460	460
Srisailem right bank PH	770	770
Nagarjuna Sagar right canal PH	90	90
PABM	20	20
Mini hydro	1	1
Nagarjuna Sagar Tail Pond	50	50
<b>TOTAL HYDEL</b>	<b>1,798</b>	<b>1,721</b>
<b>TOTAL APGENCO</b>	<b>6,208</b>	<b>4,617</b>

### 3.3.1.2 TSGENCO

Energy allocation for existing TSGENCO stations has been considered as 46.11% of united Andhra Pradesh share as per G.O. Ms. No. 20.

No availability considered from new TSGENCO station, KTPP Stage II.

For TSGENCO hydel stations allocation is as per geographical location (0%).

<i>Source</i>	<b>Projected erstwhile AP share (MW)</b>	<b>Projected AP share (MW)</b>
<b>THERMAL</b>		
Kothagudem-(A,B,C)	720	332
Kothagudem-D	500	231
Kothagudem-VI	500	231
Ramagundam-B	63	29
KTPP -I	500	231
<b>TOTAL THERMAL</b>	<b>2,283</b>	<b>1,054</b>
<b>TOTAL TSGENCO</b>	<b>2,283</b>	<b>1,054</b>

### 3.3.2 Central Generating Stations

AP Discoms have Power Purchase Agreements with Central Generating Stations to purchase power from NTPC (SR), NTPC (SR) Stage-III, NTPC -Talcher-II, NTPC Simhadri-I &II, Vallur (JV) Power Project, Tuticorin Thermal Power Plant (upcoming), Neyveli Lignite Corporation Ltd (“NLC”), Madras Atomic Power Station (“MAPS”) and Kaiga Atomic Power Station (“KAPS”). Allocation percentage for CGS stations has been considered as 46.11% of united AP share (based on the last 5 years’ average consumption of Anantapur and Kurnool districts as per G.O.Ms. No. 20).

Name of the Station	Total Installed Capacity	Projected erstwhile AP share		Projected AP share	
	(MW)	(MW)	% (of Total Installed Capacity)	(MW)	% (of Total Installed Capacity)
NTPC-(SR) Ramagundam I & II	2,100	679	32.32	313	14.91
NTPC-(SR) Stage – Ramagundam- III	500	170	33.92	78	15.68
NTPC-Talcher-II	2,000	400	20.01	184	9.22
NTPC Simhadri Stage I	1,000	1,000	100.00	461	46.11
NTPC Simhadri Stage II	1,000	460	46.01	212	21.21
NLC TS II Stage-I	630	116	18.33	53	8.49
NLC TS II Stage-II	840	204	24.33	94	11.20
NPC-MAPS	440	44	9.90	20	4.61
NPC-Kaiga 1 & 2	440	136	30.82	63	14.25
NPC-Kaiga 3 & 4	440	144	32.64	66	15.09
Vallur (JV) NTPC with TANGEDCO	1,500	221	14.75	102	6.79
NLC-TNPL Tuticorin	1,000	255	25.46	118	11.76
NTPC-Kudigi*	2,400	419	17.5	201	8.36
<b>TOTAL CGS</b>	<b>14,290</b>	<b>3,829</b>	<b>26.8</b>	<b>1,965</b>	<b>13.75</b>

\* 2400 MW (3x800 MW) Thermal Power Project is being setting up by M/s. NTPC Ltd at Kudigi, Karnataka. The then APDiscoms have signed a PPA with NTPC on 23.09.2010. Power shall be allocated as per the Gadgil formula. However, the same is yet to allocate by MoP, GoI. Tentatively, as per the Gadgil formula, the residuary A.P may get 8.36% power i.e. 200.62 MW from the said Power Project. Based on the existing power position scenario in AP, Ministry of Power (MOP), Government of India (GOI) was requested that the allocation may either be cancelled to AP or to defer the scheduled COD for 2 more years via Lr. No. 683/16, Dt. 29/10/2016. The reply from MOP, GOI is yet to be received.



### 3.3.3 AP Gas Power Corporation Ltd (“APGPCL”): Joint Sector

APGPCL is a joint sector gas-based power project. The allocation of power from this project is in proportion to the equity share capital of participating industries. The total installed capacity of the project along with the DISCOMs share is as given below:

Source	Installed Capacity (MW)	Projected erstwhile AP Share (MW)	Erstwhile AP Share (%)	Projected AP Share (MW)	AP Share (%)
Stage I	100	16	16%	9	9%
Stage II	172	43	25%	25	14%
<b>Total</b>	<b>272</b>	<b>59</b>	<b>22%</b>	<b>34</b>	<b>12%</b>

### 3.3.4 Independent Power Producers (IPPs)

The following IPPs are under commercial operation in the Andhra Pradesh:

- 216.82 MW gas-based plant at Jegurupadu by GVK Industries (“GVK”); Up on the expiry of PPA on 20.06.2015, APDISCOMs have issued Buyout notice to M/s GVK-I and M/s GVK-I is scheduling entire power only to APDISCOMs w.e.f. 20.06.2015. Further, APDISCOMs have bought out GVK-Phase I (now known as Godavari Gas Power Plant) on 22<sup>nd</sup> April 2016.
- 208.31 MW gas-based plant at Kakinada by Spectrum Power Generation Ltd.,
- 355 MW (ISO) gas-based plant at Vijayawada by Lanco Kondapalli Power Ltd (“Lanco Kondapalli”); the present PPA gets expired by 01.01.2016 and the negotiations for renewal of PPA is under progress.
- 220 MW gas based plant at Samalkota, East Godavari District by M/s. Reliance Power Ltd. (formerly M/s. BSES).

The Plant Load Factor (PLF) of above four IPPs has been considered at 40% for the second half of FY 16-17 and FY17-18

Energy allocation for gas-based IPPs has been taken as 46.11% of united Andhra Pradesh share as per G.O. Ms. No. 20. After expiry of PPA, Energy allocation from Godavari Gas Power Plant (previously M/s GVK), Spectrum has been taken as 100% to Andhra Pradesh. Projected erstwhile Andhra Pradesh share and residuary Andhra Pradesh share are as mentioned below.

Source	Projected erstwhile AP share (MW)	Projected AP share (MW)
Godavari Gas Power Plant	216	216
Spectrum	205	205
Lanco Kondapalli (Gas)	362	167
Reliance BSES	220	101
<b>TOTAL GAS-BASED IPPs</b>	<b>1002</b>	<b>689</b>

GVK Extension (220 MW), GMR Vemagiri (370 MW), Gowthami (464 MW), and Konaseema (444.08 MW) are the new IPPs which have been commissioned during the years 2006 (Vemagiri), 2009 (GVK Extension, Gowthami) and 2010 (Konaseema).

APDISCOMs have not entered into PPAs with aforesaid projects under Phase- IV E-bid RLNG scheme for the period from 01.10.2016 to 31.03.2017. Further as on date no communication has been received from Ministry of Petroleum & Natural Gas (MoP&NG) regarding extension of E-bid RLNG scheme for FY 2017-18. Hence no generation under e-bid RLNG scheme has been considered for FY 2017 -18.

Project Name	Installed Capacity (MW)	AP share under e-bid RLNG scheme for FY 2015-16(H2)	AP share under e-bid RLNG scheme for FY 2016-17	Remarks
GVK Extension (IPP)	220.00	0	0	46.11% as per G.O.Ms. No 20
GMR Vemagiri (IPP)	370.00	0	0	-do-
Gautami (IPP)	464.00	0	0	-do-
Konaseema (IPP)	444.08	0	0	-do-
LKPL (MPP)*	1108.00	0	0	---
GREL (MPP)**	768.00	0	0	----

The aforesaid IPPs have requested for approval of APDISCOMs to supply power with available natural gas from Deep Water fields of ONGC. APDISCOMs have decided not to permit the aforesaid IPPs to generate power and supply to DISCOMs with Natural Gas sourced from Deep water, ultra deep water and high pressure and high temperature as the said gas price is much higher than the domestic gas. Moreover any Natural Gas for KG basin shall be allocated by MoP&NG to the aforesaid IPPs. As such the availability declared by M/s. GMR Vemagiri was rejected.

The Natural gas supplies from RIL KG D-6 fields to the aforesaid IPPs became zero from 01.03.2013 onwards. Hence there is no generation under long term PPA with gas from RIL KG D-6 fields.

### 3.3.5 Non-Conventional Energy (NCE) Sources

The installed capacities of NCE projects in Andhra Pradesh projected for FY 2016-17 2<sup>nd</sup> half and FY 2017-18 are as given below. NCE based projects have been allocated to the AP Discoms based on their geographical presence/location (NCE projects have signed PPAs with Discoms where they are located. Hence the entire power is allocated to that Discom).

Wind:

1. The installed capacity of Wind by end of H1 FY 2016-17 is 1,989 and addition of around 1000MW is considered for FY 2017-18 as per data inputs received from NREDCAP.

Solar:

1. The installed capacity of Wind by end of H1 FY 2016-17 is 1010 MW, an addition of around 1000 MW from solar parks is considered for FY 2017-18 based on the target time lines envisaged in the Power Purchase agreements entered by the solar developers with DISCOMs.
2. Further, GoAP also targeted to set up 4000 MW solar capacity through Solar Parks in Kurnool, Kadapa and Anantapur districts with the support of Govt. of India. As a part of this, GoAP has entered MoU with NTPC on 16.09.2014 for setting up of 1000MW solar park in Anantapur dist. Subsequently as per the directions of GoAP, AP DISCOMs had entered PPAs with M/s NTPC for purchase of solar power from the proposed 250 MW (Phase-1) solar park at NP Kunta, Anantapur

Dist. on 24.04.2015 and the 250 MW (Phase-1) was commissioned on 29.07.2016. Out of the remaining capacity of 750 MW (Phase-2) will be commissioned by 31.3.2018.

3. APEPDCL and APSPDCL have signed the PPA with M/s NTPC for 1000 MW Mega Solar Power Park at Gani in Kurnool District in the ratio of 34.27% and 65.73% respectively. The solar park is expected to be commissioned in April, 2017. APDISCOMs have signed the PPA with M/s SECI for 500 MW solar park in Kurnool District. The plant is expected to be commissioned in January, 2018.
4. Apart from the above 1 MW Solar project on canal top implemented by NREDCAP was commissioned on 10.8.2016 and 5 MW solar power project on canal bund implemented by APGENCO in West Godavari District as a pilot project was commissioned on 19.11.2016.

#### Mini Hydel:

Capacity in MWs indicated for the FY: 2016-17 (H2) and FY: 2016-17 is actual installed capacity commissioned under Power Purchase Agreements and anticipated capacity as per the information given by the NREDCAP.

#### Bio-Mass & Bagasse:

1. Capacity in MWs indicated for the FY 2016-17 (H2) and FY 2017-18 is actual installed capacity commissioned under Power Purchase Agreements.
2. Upcoming projects in these categories are nil.

Type of Project	Projected AP Share (MW) - FY 2016-17	Projected AP Share (MW) - FY 2017-18
Bio Mass Power Projects including Co-gen	141	141
Bagasse Cogeneration Projects.	105.20	105.20
Wind Power Projects	1988.55	3,000
Mini Hydel Power Projects	42.50	57.5
Industrial Waste Based Power Projects	21.66	21.66
Municipal Waste Based Power Projects	0	0
NCL Energy Ltd. (TB Dam)	6.6	6.6
Solar Power Projects	760	760
Solar Parks	250	1,375
<b>Total</b>	<b>3,315.51</b>	<b>4,454.01</b>

#### 3.3.6 Mini-Power Plants

APTRANSCO had entered into a Power Purchase Agreement with Srivathsa (17.20 MW) power plant. This project has been allocated completely to APEPDCL. A petition has been filed before the Hon'ble High Court of Andhra Pradesh to declare the Power Purchase Agreement with LVS (36.8 MW) as unenforceable by law.

### **3.3.7 HNPCL**

GoAP directed the then AP Discoms as the successor entities of erstwhile APSEB to enter into a continuation agreement to the PPA dated 15.04.1998 which was entered by erstwhile APSEB with HNPCL. As such, a memorandum of agreement (MoA) was entered between the then AP Discoms and HNPCL on 17.05.2013. As per the directions of GoAP and MoA dated 17.05.2013, the preparation of amendments to the PPA dated 15.04.1998 is under finalization and it would be signed, shortly, by two DISCOMs of residuary A.P. The 1<sup>st</sup> and 2<sup>nd</sup> units (520 MW each) achieved the COD on 11.01.2016 and 03.07.2016 respectively. Project COD was declared on 03.07.2016. As per the projections in ARR for FY 2016-17 filed by AP Discoms and the same was approved by APERC in its Retail Tariff Order for FY 2016-17, the entire energy available from HNPCL Thermal Power Plant has been considered for Andhra Pradesh.

### **3.3.8 Long Term and Medium Term Purchases**

#### **3.3.8.1 Long Term – Thermal Power Tech Corporation India Limited**

AP Discoms and Telangana Discoms have signed a Power Purchase Agreement with M/s. Thermal Power Tech Corporation India Limited (TPCIL) for a contracted capacity of 500 MW under long term basis through Case-I bidding route for a period of 25 years. AP Discoms have been allocated a share of 46.11% (as per G.O. Ms. No. 20) i.e. 231 MW out of the total contracted capacity of 500 MW.

#### **3.3.8.2 Long Term – 600MW DBFOO Bidding**

APERC has accorded approval on 16.09.2016 for Procurement of 600 MW power for immediate requirement from FY 2016-17. Due to change in ownership request made by M/s Meenaksi Energy Private Limited (L1 Bidder), the power supply agreement (PSA) for 200 MW has not been signed by APDISCOMS. This request is under examination by APDISCOMS as per the bidding document. Meanwhile, APDISCOMS have initialed the Power Supply Agreement (PSA) with M/s Simhapuri Energy Limited for procurement of 400 MW on 23.11.2016 under long term on DBFOO basis (12 Years). As per the initialed PSA, the COD/Supply date is from 01.01.2017 subject to approval for adopting of the tariff by APERC. The said supply date may be extended by 90 days with mutual agreement of both the parties. Hence, the energy from these sources is considered from February'2017 at an energy availability of 85 % PLF.

#### **3.3.8.3 Medium Term KSK Mahanadi**

In the recently concluded medium term bidding for 3 years i.e. up to 15<sup>th</sup> June 2016, the AP & Telangana Discoms have signed the Power Purchase Agreement with KSK Mahanadi for 400 MW and are availing power since 14.08.2013. AP Discoms have been allocated a share of 46.11% (as per G.O. Ms. No. 20) i.e. 184 MW out of the total contracted capacity of 400 MW.

AP DISCOMS have signed the Power Purchase Agreement with KSK Mahanadi for 400MW for 100% of its share from 15<sup>th</sup> June 2016 to March 31<sup>st</sup> 2017. APERC has accorded approval for the plan under Agreement with M/s KSK Mahanadi vide O.P. No.03 of 2015 on 19.08.2015.

The licensees had also signed a PPA with Corporate Power for 150 MW, but the energy would not be available from the source due to non-allocation of transmission capacity by PGCIL.

### 3.4 Basis of Estimation of Power Availability for H2 FY 2016-17 and FY 2017-18

#### 3.4.1 GENCO (Andhra Pradesh GENCO & Telangana State GENCO)

##### 3.4.1.1 Thermal Energy:

The Energy availability for H2 of FY 2016-17 has been projected based on the actual performance of the plants up to September 2016 and projected performance estimated by GENCO from October 2016 to March 2017. For FY 2017-18, the energy availability has been projected based on the projected performance estimated by GENCO and maintenance schedules of the plants.

RTPP-IV (600 MW) has been assumed to be commissioned from 1<sup>st</sup> October 2017

<b>GENCO Thermal (Net Energy Availability- MUs)</b>			
<b>S. No.</b>	<b>Station Name</b>	<b>H2 FY 2016-17</b>	<b>FY 2017-18</b>
<b>APGENCO</b>			
1	Dr. NTPPS-I,II,III	2,030	3,715
2	Dr. NTPPS-IV	806	1,495
3	RTPP-I	677	1,235
4	RTPP-II	677	1,235
5	RTPP-III	338	618
6	RTPP-IV	-	1,960
7	Damodaram Sanjeevaiah Thermal Station-I	2,796	5,242
8	Damodaram Sanjeevaiah Thermal Station-II	2,796	5,242
	<b>Total APGENCO</b>	<b>10,119</b>	<b>20,742</b>
<b>TSGENCO</b>			
1	KTPS-(A,B,C)	1,160	2,101
2	KTPS-D	806	1,495
3	KTPS-VI	806	1,495
4	RTS-B	101	184
5	KTPP-I	806	1495
	<b>Total TSGENCO</b>	<b>3,678</b>	<b>6,768</b>
	<b>Total</b>	<b>13,796</b>	<b>27,510</b>

##### 3.4.1.2 Hydro Energy:

The hydro energy availability for H2 FY 2016-17 is expected to be 1,477.53 MU and 2,579.09 MU for FY 2017-18. Energy allocation for hydel stations is based on geographical location and therefore, energy availability from TS GENCO stations has not been considered.

Nagarjuna Sagar Tail Pond Dam Power House (50 MW) is expected to be commissioned from October'2016.

It has been observed over the past few years that the actual availability from hydel stations has been consistently lower than the value approved in the Tariff Orders issued by APERC. The table below shows the actual hydro energy availability from FY 2002-03 to FY 2013-14 (for erstwhile AP).

Over the past 2 years, Hydel stations have generated lower energy than approved values because of increasing use of Hydel stations as Irrigation Projects. The same has been factored in projecting the availability for FY 2017-18.

Year	Approved hydro energy availability in MU (As per Tariff Orders)	Actual hydro energy availability in MU	Variation between Approved and Actual hydro energy availability (%)
2002-03	6,999	3,337	-52%
2003-04	6,757	2,959	-56%
2004-05	6,423	5,267	-18%
2005-06	5,979	7,873	32%
2006-07	7,586	9,328	23%
2007-08	8,592	9,566	11%
2008-09	9,046	7,729	-15%
2009-10	8,969	5,499	-39%
2010-11	7,662	6,751	-12%
2011-12	8,238	6,221	-24%
2012-13	6,407	3,171	-50%
2013-14	7,057	6,761	-37%

Year	Approved hydro energy availability in MU (As per Tariff Orders)	Actual hydro energy availability in MU	Variation between Approved and Actual hydro energy availability (%)
2014-15	-	3,408	-
2015-16	3,404	2,320	-32%

The following table shows the station-wise projected availability for H2 FY 2016-17 and FY 2017-18:

APGENCO Hydel ( Net Energy Availability-MUs)			
S. No.	Station Name	H2 FY 2016-17	FY 2017-18
1	MACHKUND PH AP Share	73	204
2	TUNGBHADRA PH AP Share	15	46
3	USL	324	462
4	LSR	673	997
5	DONKARAYI	80	92
6	SSLM (Right Bank)	253	579
7	NSRCPH	32	37
8	PABM	3	8
9	Mini hydro(Chettipeta)	1	2
10	Nagarjuna sagar tail pond dam PH	24	152
	<b>Total</b>	<b>1,478</b>	<b>2,579</b>

### 3.4.2 Central Generation Stations

CGS Stations Existing – The energy availability for H2 of FY 2016-17 has been projected based on the actual performance up to September 2016 as well as the projections received from CGS generators. For FY 17-18, the energy availability has been projected based on the projected performance estimated by CGS and maintenance schedules of the plants and also based on the details of energy availabilities received from respective generators.

CGS Stations Upcoming – The Kudigi Thermal Power Plant has a total installed capacity of 2,400 MW. In this project, the residuary A.P is likely to get a share of 8.36% i.e. 200.62 MW. Now, the Project is in advanced stage of construction. Based on the availability power position for FY H2 16-17 & FY 17-18, in the AP, Ministry of Power, GOI was requested to cancel the firm allocation to AP from Kudigi Power Project or to direct NTPC to defer the scheduled COD for 2 more years. So, the availability from Kudigi has not considered in the availability for FY 2017-18. However, actual power availability is subjected to consideration of request of AP by MOP, GOI. The reply from MOP, GOI is yet to be received.

Energy availability projections from CGS for H2 FY 2016-17 and FY 2017-18 are tabulated below:

<b>Central Generating Stations ( Net Energy Availability - MUs )</b>			
<b>S. No.</b>	<b>Station Name</b>	<b>H2 FY 2016-17</b>	<b>FY 2017-18</b>
1	NTPC-(SR) Ramagundam I & II	1082	2127
2	NTPC-(SR) Stage – Ramagundam- III	233	550
3	NTPC-Talcher-II	661	1345
4	NTPC- Simhadri Stage-I	1655	3437
5	NTPC- Simhadri Stage –II (Unit 3 &4)	683	1528
5	NLC TS II Stage-I	109	254
6	NLC TS II Stage-II	256	473
7	NPC-MAPS	57	120
8	NPC-Kaiga 1 & 2	200	467
9	NPC-Kaiga 3 & 4	249	468
11	Bundled Power under JVNSM	165	339
10	Vallur (JV) NTPC with TANGEDCO	345	561
11	Tuticorin Thermal Power Plant	465	822
13	NTPC - Kudigi	0	0
	<b>TOTAL</b>	<b>6,161</b>	<b>12,490</b>

### 3.4.3 APGPCL

The projections for APGPCL – I and APGPCL – II are as shown below. The actuals till September, 2016 have been factored while estimating energy availability for H2 FY 2016-17. The PLF has been assumed as per the projections of the generator for FY 2017-18.

<b>APGPCL Allocated Capacity (Energy Availability- MUs )</b>			
<b>S. No.</b>	<b>Station Name</b>	<b>H2 FY 2015-16</b>	<b>FY 2016-17</b>
1	APGPCL I - Allocated capacity	13.1	28.81
2	APGPCL II - Allocated capacity	46.86	103.16
	<b>Total</b>	<b>59.96</b>	<b>131.97</b>



### 3.4.4 IPPS

The availability of power from the generating stations of GVK, Spectrum, Lanco Kondapalli and Reliance (BSES) have been projected based on the current gas supply levels. Actual energy availability till September, 2016 has been factored while estimating energy availability for H2 FY 2016-17. For FY 2017-18 40% PLF has been assumed. The PPA subsisting with M/s GVK Phase-I expired on 20.06.2015 and M/s GVK-I is scheduling entire power only to APDISCOMs w.e.f. 20.06.2015 as there is no share for TSDISCOMs up on expiry of PPA in respect of M/s GVK. M/s GVK was bought out by APDISCOMs on 22<sup>nd</sup> April 2016 and has been now renamed as Godavari Gas Power Plant. The PPA subsisting with M/s SPGL is going to expire by 18.04.2016. The APDISCOMs would opt for either Renewal of PPA or Buyout of the project as per the terms of PPA. M/s LANCO PPA would expired on 1<sup>st</sup> January 2016, but the projections have been furnished expecting that the PPA would get renewed. The proposals for renewal of PPA will be submitted to Hon'ble APERC on receipt of the permission from Government of Andhra Pradesh. The entire capacity of LANCO is being scheduled to AP DISCOMs with effect from 01.01.2016

Old IPPs (Energy Availability-MU)			
S. No.	Station Name	H2 FY 2016-17	FY 2017-18
1	Godavari Gas Power Plant	365.70	730.37
2	Spectrum	415.98	696.05
3	Lanco Kondapalli (Gas)	679.54	922.60
4	Reliance BSES	88.62	346.57
	<b>Total</b>	<b>1,549.83</b>	<b>2,695.59</b>

Energy availability from the New IPPs viz; GVK Extn, GMR Vemagiri, Gautami & Konaseema is considered to be zero based on the Natural gas supplies from RIL KG D-6 fields.

S.No	New IPPs	FY 2016-17 H2 (MU)	FY 17-18 (MU)
1	GVK Extension Project	0	0
2	Vemagiri Power Generation Ltd	0	0
3	Gautami Power Ltd	0	0
4	Konaseema EPS Oakwell Power Ltd.	0	0
5	Lanco Kondapalli Power Ltd.	0	0
6	GMR Rajahmundry Energy Ltd.	0	0

### 3.4.5 Non-Conventional Energy (NCE) Sources

#### 3.4.5.1 Wind:

1. For the existing Projects Monthly generation for FY: 16-17 (H2) & FY: 17-18 is assumed in proportion to the actual monthly generation values of FY15-16 (H2) & FY: 16-17 (H1).
2. For the newly commissioned & to be commissioned wind projects energy is anticipated based on the threshold PLF of 23.5% considered in APERC Regulation 1 of 2015.

#### 3.4.5.2 Solar:

1. For the newly commissioned & to be commissioned solar power projects energy is anticipated based on the threshold PLF of 19%.



2. Monthly generation for FY 17-18 is assumed in proportion to the actual monthly generation values of H2 FY15-16 and H1 FY 16-17.

### 3.4.5.3 Mini Hydel:

1. For the existing Projects anticipated energy for the FY 2016-17 (H2) & FY 2017-18 has been arrived based on the PLFs for the actual energy supplied for the FY 2015-16 & FY 2016-17 (H1).
2. For upcoming Mini hydel projects energy is anticipated @ 32% PLF.

### 3.4.5.4 Biomass, Bagasse, Industrial Waste & Municipal Solid Waste:

3. For all the existing Projects anticipated energy for the FY 2016-17 (H2) & FY 2017-18 has been arrived based on the PLFs for the actual energy supplied for the FY 2015-16 & FY 2016-17 (H1).

Energy availability projections for H2 FY 2016-17 and FY 2017-18 from various NCE sources is as summarized in the following table:

<b>Non-Conventional Energy Sources ( Net Energy Availability - MUs )</b>			
<b>S. No.</b>	<b>Station Name</b>	<b>H2 FY 2016-17</b>	<b>FY 2017-18</b>
	Bio Mass Power Projects including Co-gen	175	339
	Bagasse Cogeneration Projects.	36	100
	Wind Power Projects	1,335	6,191
	Mini Hydel Power Projects	42	98
	Industrial Waste Based Power Projects	17	34
	Municipal Waste Based Power Projects	-	-
	NCL Energy Ltd.	4	11
	Solar Power Projects	626	1,261
	Solar Parks	207	2,282
	<b>Total</b>	<b>2,443</b>	<b>10,317</b>

### 3.4.5.5 Mini Power Plants

The energy availability projections for Srivathsa for FY 2016-17 H2 and FY 2017-18 have been projected as declared by the station at 27% and 40% PLFs respectively. However, for LVS, a petition has been filed before the Hon'ble High court to declare the PPA as inadmissible and hence no availability has been considered for H2 FY 2016-17 and FY 2017-18.

Mini-Power Plants Allocated to EPDCL (Energy Availability-MUs)			
S, No.	Station Name	FY 2016-17 H2	FY 2017-18
1	Srivathsa	20.10	57.86
2	LVS	0	0
	Total	20.10	57.86

### 3.4.6 *Hinduja National Power Corporation Limited*

Currently, HNPCL is able to operate at an average PLF of around 50% due to coal shortage. This is due to congestion in the railway linkage and consequent transportation of coal through road network. The licensees expect the similar situation to continue in FY 2017-18 also and hence have considered the availability of only one unit of HNPCL in FY 2017-18. Due to coal transportation issues the licensees have considered only one unit for generation at any point of time. Energy availability of 3,380 MU and 3,389 MU has been considered from Hinduja power plant for H2 of FY 2016-17 and FY 2017-18 respectively considering 80% PLF for one unit.

### 3.4.7 *Long Term and Medium Term Purchases*

#### 3.4.7.1 **Long Term – Thermal Power Tech Corporation India Limited**

The licensees (AP & Telangana Discoms) have signed a Power Purchase Agreement with M/s. Thermal Power Tech Corporation India Limited (TPCIL) for a contracted capacity of 500 MW under long term basis through Case-I bidding route for a period of 25 years. The energy availability projected from this plant for Andhra Pradesh has been considered as 856 MU for H2 FY 2016-17 and 1,716 MU for FY 2017-18.

#### 3.4.7.2 **Long Term – 600MW DBFOO Bidding**

Energy availability of 722 MU and 4,468 MU (excluding transmission loss i.e. around 2% of 600 MW) has been considered from 600MW DBFOO bidding for H2 of FY 2016-17 and FY 2017-18 respectively considering 85% PLF.

#### 3.4.7.3 **Medium Term – KSK Mahanadi**

AP and Telangana Discoms have signed PPA's with KSK Mahanadi and Corporate Power for supply of power through medium term basis starting from June 2013 for a period of 3 years. But, the energy from Corporate Power has not been considered as the PGCIL has not granted its transmission access. 80% PLF (1,342 MU for H2 FY 2016-17 and 2,593 MU for FY 2017-18) has been considered from KSK Mahanadi.

### 3.4.8 *Short Term and Bilateral/ Inter-State purchases*

#### 3.4.8.1 **Short Term Purchases**

The short term purchases made during the period from FY 2014-15 to FY 2016-17 is as follows:

Period	Energy (MU)
FY 2014-15	8,119.18
FY 2015-16	6,822.67
FY H1 2016-17	1,079.63

From the above, it can be seen that the short term purchases are in decreasing trend from FY 2014-15 to FY 2016-17. During FY 2016-17 H1, power had to be purchased from the short-term market till May as per the existing contract for which approval was already accorded by the Hon'ble commission. Moreover, purchases

were also made due to intermittent power shortages and owing to the lower costs prevailing in the short-term markets by correspondingly backing down high variable costs stations.

APDISCOMs are presently experiencing surplus conditions and hence no purchases from short term sources have been assumed in FY 2016-17 H2 and FY 2017-18.

### 3.4.9 Summary

A summary of the source wise current estimate of energy available for H2 FY 2016-17 and FY 2017-18 is presented below.

Generating Station	Energy Availability (MU)	
	H2 FY 2016-17	FY 2017-18
Genco (APGenco & TSGenco)- Thermal	13,797	27,510
Genco (APGenco & TSGenco)- Hydel	1,477	2,579
CGS	6,161	12,490
APGPCL	60	132
IPPS	1,550	2,696
NCEs	2,443	10,317
Mini Power Plants	20	58
HNPCL	3,379	3,389
Long Term (DBFOO, TPCIL) & Medium Term (KSK Mahanadi)	4,352	8,777
Short Term & Bilateral Purchases	-	-
<b>Total</b>	<b>31,807</b>	<b>67,948</b>

## 3.5 Power Purchase Cost

### 3.5.1 GENCO (Andhra Pradesh Genco & Telangana State Genco)

The annual fixed costs for all existing APGENCO stations for FY 2016-17 have been considered as approved by APERC in its order dated 26.03.2016 in OP No.3/2006 filed by APGENCO for determination of tariff for FY 2014-19.

The tariffs for SDSTPS and RTPP-IV have not yet been determined by the Hon'ble APERC. The licensee has estimated the fixed costs based on CERC norms and the details provided by APGENCO and APPDCL. As per the time-lines specified in Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014, the time for completion should not exceed 44 months for a 500/600 MW power plant and 52 months for a 660/800 MW power plant, with additional six months for subsequent units. However, RTPP-IV and SDSTPS have exceed their normative time-periods by 32 months and 34 months respectively. Hence, the licensee has considered the capital costs and Interest during construction (IDC) applicable only for the normative months for the computation of fixed costs. Moreover, APGENCO has swapped high cost loans with low interest loans and the benefit of the same has also been factored for the computation of fixed cost. A summary of the same is provided in the following table:

Station	Capital Costs (Rs. Cr.)		Fixed Cost (Rs. Cr.)
	Generator Projections	Considered for ARR	

		<b>FY 2017-18</b>	
SDSTPS	12,630	10,599	1,959
RTPP-IV	4,290	3,781	704

The total fixed costs for all the GENCO thermal and hydel stations<sup>1</sup> including both existing and new stations is Rs. 2,086.16 Crs for H2 of FY 2016- 17 and Rs. 4,069.21 Crs for FY 2017-18. The fixed costs for GENCO Thermal and Hydel stations have been tabulated below:

<b>Station</b>	<b>Fixed Costs for FY 2016-17 H2 (Rs. Cr.)</b>	<b>Fixed Costs for FY 2017-18 (Rs. Cr.)</b>
<b>APGENCO-Thermal</b>		
VTPS I	50.42	103.52
VTPS II	50.42	103.52
VTPS III	50.42	103.52
VTPS IV	108.57	210.56
RTPP I	61.72	125.15
RTPP Stage-II	97.98	191.06
RTPP Stage-III	65.67	127.68
RTPP Stage-IV	-	351.21
Damodaram Sanjeevaiah Thermal power station - I	310.30	979.31
Damodaram Sanjeevaiah Thermal power station - II	310.30	979.31
<b>APGENCO Thermal Total</b>	<b>1,378.05</b>	<b>3,274.84</b>
<b>TSGENCO-Thermal</b>		
KTPS A	25.41	71.13
KTPS B	25.41	71.13
KTPS C	25.41	71.13
KTPS D	47.66	104.75
KTPS Stage VI	135.88	252.00
RTS B	9.14	23.43
Kakatiya Thermal Power Plant Stage I	136.26	251.84
<b>TSGENCO Thermal Total</b>	<b>405.29</b>	<b>845.40</b>
<b>Total Thermal</b>		
<b>APGENCO –Hydel</b>		
MACHKUND PH AP Share	6.98	14.14
TUNGBHADRA PH AP Share	4.78	9.69
USL	52.19	107.09
LSR	27.23	55.88
DONKARAYI	2.84	5.82
SSLM	83.82	168.89
NSRCPH	8.84	17.74
PABM	5.18	10.45
Mini hydro	0.38	0.77
Nagarjuna sagar tail pond dam PH	24.13	48.26
<b>Total Hydro</b>	<b>216.37</b>	<b>438.73</b>
<b>TOTAL GENCO</b>	<b>1,727.46</b>	<b>4,558.97</b>

<sup>1</sup>The fixed costs for TSGENCO hydel stations have not been mentioned because energy availability from only APGENCO hydel stations have been considered (allocation based on geographical location).

For TSGENCO stations, fixed charges have been considered as the AP share of the fixed charges approved by the Hon'ble TSERC in the Tariff order for FY 2016-17.

With respect to APGENCO Thermal Stations, the FCA bills for FY 2016-17(H1) has not been raised so far. Currently, since there is no tariff order for SDSTPS-I & II, an ad-hoc payment of Rs. 3.63 Rs/kwh is being admitted for FY 2016-17 and the same has been assumed for H2 FY 2016-17. (Rs. 2.52 Rs/kwh towards Variable Cost and Rs. 1.11 Rs/kwh towards fixed cost).

For the determination of variable cost for FY 2017-18 for APGENCO stations various considerations were made. The energy availability in the power exchange has increased over the last few years, leading to a reduction in the exchange prices. Hence, there is a direct competition between the APGENCO stations and the power exchange for despatch.

Moreover, it has been observed that there would be around 10,930 MU of surplus energy in Andhra Pradesh in FY 2017-18 which makes the procurement of coal from the costlier Rail Sea Rail (RSR) mode unnecessary. The entire procurement is projected to be from All Rail Route (ARR) mode. Moreover, the Indian Railways has also agreed to provide extra rakes for APGENCO stations perusal. With sufficient coal available to the APGENCO stations, there is no need to procure costly imported coal.

Considering, these cost reduction measures the landed cost of coal is expected to be around Rs. 3,340/MT leading to reduction in variable cost of power from APGENCO stations. Also, since RTPP-IV is in the same location as RTPP-I-III, the variable cost for RTPP-IV has been assumed to be the same as for RTPP I-III. Hence, considering the above, and the norms stated by the Hon'ble APERC, the variable costs for APGENCO stations for FY 2017-18 have been estimated as shown in the following table:

<b>Station</b>	<b>Variable rate (Rs./kWh) H2 FY 2016-17</b>	<b>Variable rate (Rs./kWh) FY 2017-18</b>
<b>APGENCO Stations</b>		
VTPS (I, II, III)	3.20	2.59
VTPS-IV	2.99	2.34
RTPP-I	3.79	3.05
RTPP-II	3.79	3.05
RTPP-III	3.79	3.05
RTPP - IV	-	3.05
Damodaram Sanjeevaiah TPS-I	2.52	2.17
Damodaram Sanjeevaiah TPS-II	2.52	2.17
<b>TSGENCO Stations</b>		
KTPS (A, B, C)	2.73	2.73
KTPS- D	2.02	2.02
KTPS-VI	2.02	2.02
RTS- B	3.10	3.10
KTPP-I	2.12	2.12

The variable charges for TSGENCO stations have been considered as per the variable costs approved by the Hon'ble TSERC in the tariff order of FY 2016-17.

The incentives for GENCO thermal stations are calculated based on APERC Regulation No 1 of 2008, at a flat rate of 25 paisa/kWh for ex-bus scheduled energy corresponding to scheduled generation in excess of ex-bus energy corresponding to target Plant Load Factor.

### **3.5.2 CGS:**

#### **3.5.2.1 NTPC (SR) (2100 MW)**

CERC had notified the terms & conditions of tariff regulations for the control period FY 2014-19 i.e., for a period of 5 years and the regulations, 2014 was published by CERC by end of February 2014. CERC had modified the terms & conditions for determination of fixed charges as well as energy charges to the ensuing control period for inter-state generating stations. CERC provided the Regulations,2014 stating that beneficiaries would pay the fixed charges for FY 2017-18 and energy charges to the Inter-State Generating stations based on the approved charges for FY 2013-14 and energy charges norms as per the Regulations,2009 till the finalization of orders for the respective inter-state generating station i.e., NTPC & NLC, JV. Due to non-availability of orders of CERC, the fixed charges were considered based on the CERC approved charges for FY 2013-14. The incentives payable had been considered as 50 paisa per unit based on the actual PLF above threshold level of 85% as per the prevailing regulations of CERC, 2014. In the orders of CERC for FY 2013-14, the income tax was grossed up in ROE component as per the regulations, 2009 and hence, the fixed charges determined for H2 FY 2016-17 and FY 2017-18 are inclusive of income tax. Based on the availability projections, the fixed charges along with payable incentives are computed for H2 FY 2016-17 and FY 2017-18 for Ramagundam I & II. AP has a share of 14.91% from Ramagundam I & II. Variable cost per unit for H2 FY 2016-17 has been considered same as actual per unit variable cost for the month of August, 2016 and for FY 2017-18 also. The recoverable PLF of fixed charges are 83% only based on the availability of generating station subject to any coal shortages occur, as per new Regulations, 2014. Due to non-finalization of fixed charges in every year of the control period FY 2014-19, the prevailing fixed charges for FY 2013-14 had been recovered by NTPC by considering 83% PLF on availability. NTPC had submitted the tariff petition of Ramagundam I & II as per Regulations, 2014 before Hon'ble CERC for determination of fixed charges to the control period 2014-19. The orders of CERC is under finalization for RSTPS I & II.

#### **3.5.2.2 NTPC (SR) STAGE-III (500 MW)**

CERC had notified the terms & conditions of tariff regulations for the control period FY 2014-19 i.e., for a period of 5 years and the Regulations,2014 was published by CERC by end of February 2014. CERC had modified the terms & conditions for determination of fixed charges as well as energy charges to the ensuing control period for inter-state generating stations. CERC provided the Regulations,2014 stating that beneficiaries would pay the fixed charges for FY 2017-18 and energy charges to the inter-state generating stations based on the approved charges for FY 2013-14 and energy charges norms as per the Regulations,2009 till the finalization of orders for the respective inter-state generating station i.e., NTPC & NLC, JV. Due to non-availability of orders of CERC, the fixed charges were considered based on the CERC approved charges for FY 2013-14. The incentives payable had been considered as 50 paisa per unit based on the actual PLF above threshold level of 85% as per the prevailing regulations of CERC, 2014. In the orders of CERC for FY 2013-14, the income tax was grossed up in ROE component as per the regulations, 2009 and hence, the fixed charges determined for H2 FY 2016-17 and FY 2017-18 are inclusive of income tax. Based on the availability projections, the fixed charges along with payable incentives are computed for H2 FY 2016-17 and FY 2017-18 in case of Ramagundam III. AP has a share

of 15.68% from Ramagundam III. Variable cost per unit for H2 FY 2016-17 has been considered same as actual per unit variable cost as per August, 2016 and for FY 17-18 also. The recoverable PLF of fixed charges are 83% only based on availability of generating station subject to any coal shortages occur, as per new regulations, 2014. Due to non-finalization of fixed charges in every year to the control period 2014-19, the prevailing fixed charges for FY 13-14 had been recovered by NTPC by considering 83% PLF on availability. NTPC had submitted the tariff petition of Ramagundam III as per Regulations, 2014 before Hon'ble CERC for determination of fixed charges to the control period 2014-19. The orders of RSTPS III is yet to be finalized by CERC

### **3.5.2.3 NTPC-TALCHER -II (2000 MW)**

CERC had notified the terms & conditions of tariff regulations for the control period FY 2014-19 i.e., for a period of 5 years and the Regulations,2014 was published by CERC by end of February 2014. CERC had modified the terms & conditions for determination of fixed charges as well as energy charges for the ensuing control period for inter-state generating stations. CERC provided the Regulations,2014 stating that beneficiaries would pay the fixed charges for FY 2017-18 and energy charges to the inter-state generating stations based on the approved charges for FY 2013-14 and energy charges as per the Regulations,2009 till the finalization of orders for the respective inter-state generating station i.e., NTPC & NLC, JV. Due to non-availability of orders of CERC, the fixed charges were considered based on the CERC approved charges for FY 2013-14. The incentives payable had been considered as 50 paise per unit based on the actual PLF above threshold level of 85% as per the prevailing regulations of CERC, 2014. In the orders of CERC for FY 2013-14, the income tax was grossed up in ROE component as per the Regulations, 2009 and hence, the fixed charges determined for H2 FY 2016-17 and FY 2017-18 are inclusive of income tax. Based on the availability projections, the fixed charges along with payable incentives are computed for H2 FY 2016-17 and FY 2017-18 for Talcher-II. AP has a share of 9.22% from Talcher-II. Variable cost per unit for H2 FY 2016-17 has been considered same as actual per unit variable cost of August, 2016 and for FY 17-18 also. The recoverable PLF of fixed charges are 83% only based on availability of generating station subject to any coal shortages occur, as per new regulations, 2014.

Due to non-finalization of fixed charges in every year of the control period FY 2014-19, the prevailing fixed charges for FY 2013-14 had been recovered by NTPC by considering 83% PLF on availability. NTPC had submitted the tariff petition of Talcher II as per Regulations, 2014 before Hon'ble CERC for determination of fixed charges to the control period 2014-19. The fixed charges to the control period 2014-19 is yet to be determined by Hon'ble CERC.

### **3.5.2.4 NTPC SIMHADRI STAGE-I (1000 MW)**

CERC had notified the terms & conditions of tariff regulations for the control period FY 2014-19 i.e., for a period of 5 years and the Regulations,2014 was published by CERC by end of February 2014. CERC had modified the terms & conditions for determination of fixed charges as well as energy charges to the ensuing control period for inter-state generating stations. CERC had determined the fixed charges to the control period 2014-19 based on the regulations on terms& conditions of Tariff, 2014. NTPC had reconciled the fixed charges as well as variable charges for the period from 1.4.2014 to 31.7.2016 as per the new orders and prevailing norms for adjustment of variable charges. The incentives payable had been considered as 50 paise per unit based on the actual PLF above threshold level of 85% as per the prevailing regulations of CERC, 2014. In the orders of CERC for the control period 2014-19, the income tax was grossed up in ROE component as per the regulations, 2014 and hence, the fixed charges determined for H2 FY 2016-17 and FY 2017-18 are inclusive of income tax. Based on the availability projections, the



fixed charges along with payable incentives are computed for H2 FY 2016-17 and FY 2017-18 in case of Simhadri Stage-I. AP has a share of 46.11% from Simhadri Stage-I. Variable cost per unit for H2 FY 2016-17 has been considered same as actual per unit variable cost as per August, 2016 and for FY 2017-18 also. The recoverable PLF of fixed charges are 83% only based on availability of generating station subject to any coal shortages occur, as per new Regulations, 2014.

#### **3.5.2.5 NTPC- Simhadri II (1000 MW)**

CERC had notified the terms & conditions of tariff regulations for the control period FY 2014-19 i.e., for a period of 5 years and the regulations, 2014 was published by CERC by end of February 2014. CERC had modified the terms & conditions for determination of fixed charges as well as energy charges to the ensuing control period for inter-state generating stations. CERC had determined the fixed charges to the control period 2014-19 based on the regulations on terms& conditions of Tariff, 2014. NTPC had reconciled the fixed charges as well as variable charges for the period from 1.4.2014 to 31.7.2016 as per the new orders and prevailing norms for adjustment of variable charges. The incentives payable had been considered as 50 paise per unit based on the actual PLF above threshold level of 85% as per the prevailing regulations of CERC, 2014. In the orders of CERC for the control period 2014-19, the income tax was grossed up in ROE component as per the regulations, 2014 and hence, the fixed charges determined for H2 FY 2016-17 and FY 2017-18 are inclusive of income tax. Based on the availability projections, the fixed charges along with payable incentives are computed for H2 FY 2016-17 and FY 2017-18 in case of Simhadri Stage-II. AP has a share of 21.11% from Simhadri Stage-II. Variable cost per unit for H2 FY 2016-17 has been considered same as actual per unit variable cost as per August, 2016 and for FY 2017-18 also. The recoverable PLF of fixed charges are 83% only based on availability of generating station subject to any coal shortages occur, as per new regulations, 2014

#### **3.5.2.6 NLC Stage –I (630 MW)**

For the APDISCOMs share of 8.49 % of 630 MW, the payable fixed charges and lignite cost for the Control Period of FY 2014-19 is considered as per the petition filed by NLC before CERC. The fixed charges to the control period for FY 14-19 and lignite rate is yet to be determined by CERC. However, NLC has presently been claiming the fixed charges and lignite rates as per prevailing approvals of CERC for FY13-14 i.e., in line with the regulations of CERC Terms & Conditions of Tariff, 2014. The lignite costs for the Control Period of FY 2014-19 is yet to be determined by Ministry of Coal, GOI. Variable cost per unit for H2 FY 2016-17 has been considered based on the lignite rate approval from CERC as mentioned in the petition by NLC to the control period for FY 14-19 before CERC.

#### **3.5.2.7 NLC Stage –II (840 MW)**

For the APDISCOMs share of 11.20 % of 840 MW, the payable fixed charges and lignite cost for the Control Period of FY 2014-19 is considered as per the petition filed by NLC before CERC. The fixed charges to the control period for FY 14-19 and lignite rate is yet to be determined by CERC. However, NLC has presently been claiming the fixed charges and lignite rates as per prevailing approvals of CERC for FY13-14 i.e., in line with the regulations of CERC Terms & Conditions of Tariff, 2014. The lignite costs for the Control Period of FY 2014-19 is yet to be determined by Ministry of Coal, GOI. Variable cost per unit for H2 FY 2016-17 has been considered based on the lignite rate approval from CERC as mentioned in the petition by NLC to the control period for FY 14-19 before CERC.



### 3.5.2.8 Kaiga Atomic Power Stations 1 & 2 (440 MW) and 3 & 4 (440MW):

The AP share from Kaiga 1 & 2 is 14.25% and from Kaiga 3 & 4 is 15.09%. The tariff for Kaiga 1&2 and Kaiga 3&4 for H2 FY 2016-17 has been considered same as the tariff as per August,2016 claim of NPCIL and for FY 17-18 also.

### 3.5.2.9 Vallur Thermal JV Power Project (NTPC & TANGEDCO):

Ministry of Power, GOI had allocated firm share of 11.87% from total capacity of 1500 MW to erstwhile AP and 12.25% was considered for erstwhile AP inclusive unallocated power. Presently, Units 1, 2 & 3 are under generation and 93 MW is being availed by AP Discoms from this power project. NTECL had made filings before CERC for determination of tariff for the control period 2014-19 for this JV Project and provisional orders were yet to be issued by CERC for payment of fixed charges. The fixed charges for H2 FY 2016-17 and FY 2017-18 are computed based on the 85% of AFC (for units 1, 2&3) as approved by CEO(NTECL) pending tariff order from Hon'ble CERC to the control period FY 2014-19 for Vallur power project. Variable cost per unit for H2 FY 2016-17 has been considered same as actual per unit variable cost of August, 2016 and for FY 17-18 also. The incentives payable have been factored into the fixed charges. In the orders of CERC, the income tax was grossed up in ROE component as per the regulations, 2009 and hence, the fixed charges determined for H2 FY 2016-17 and FY 2017-18 are inclusive of income tax. As per the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009, incentives are also part of fixed charges which are to be computed every month based on the formulae provided in the Regulations. Based on the availability projections, the fixed charges along with payable incentives are considered for H2 FY 2016-17 and FY 2017-18.

### 3.5.2.10 NLC-NTPL Tuticorin

A joint venture power project of NLC and TNEB had implemented at Tuticorin with an installed capacity of 1000MW. Both the units were declared the COD and presently, AP is availing 118 MWs from this power project. M/s NTPL had filed the tariff petition before Hon'ble CERC for determination of fixed charges to the control period 2014-19. Based on these filings, CERC had issued the provisional orders. Variable cost per unit for H2 FY 2016-17 has been considered same as actual per unit variable cost as per Aug'16 and for FY 17-18 also. The payable incentives were computed by considering the regulations, 2014 i.e., 50 paise per unit above the threshold PLF of 85%.

### 3.5.2.11 NTPC-Kudigi

After thorough examination of power supply position for H2 FY 16-17 and for FY 17-18, Ministry of Power, Government of India was requested by APDISCOMs that firm allocation from Kudigi Power Project either be cancelled or to direct NTPC to defer commissioning of this project 2 more years. Due to this no availability of energy from this project is shown in ARR. MOP, GOI reply is yet to be received.

The fixed and variable charges considered for CGS stations are mentioned in the following table:

Costs for CGS Stations for H2 FY 2016-17 and FY 2017-18				
Station	Fixed Charges (Rs. Cr.)		Variable Charges (Rs/kWh)	
	H2 FY 2016-17	FY 2017-18	H2 FY 2016-17	FY 2017-18
NTPC – SR	56.42	112.84	2.12	2.12
NTPC – SR Stage III	23.21	46.43	2.09	2.09
NTPC Talcher Stage-II	47.75	95.50	1.63	1.63
NLC Stage – I	10.65	22.04	3.47	3.75

<b>Costs for CGS Stations for H2 FY 2016-17 and FY 2017-18</b>				
<b>Station</b>	<b>Fixed Charges (Rs. Cr.)</b>		<b>Variable Charges (Rs/kWh)</b>	
	<b>H2 FY 2016-17</b>	<b>FY 2017-18</b>	<b>H2 FY 2016-17</b>	<b>FY 2017-18</b>
NLC Stage – II	18.62	39.93	3.47	3.75
NPC MAPS	-	-	2.16	2.16
NPC – Kaiga Unit I & II	-	-	3.13	3.13
NPC – Kaiga Unit III & IV	-	-	3.13	3.13
NTPC Simhadri Stage I	148.44	296.89	2.60	2.60
NTPC Simhadri Stage II	112.57	225.13	2.60	2.60
Vallur Thermal Power Plant	43.84	87.68	2.14	2.14
NLC-NTPL Tuticorin	76.10	139.80	2.32	2.32
<b>Total CGS</b>	<b>557.21</b>	<b>1,066.24</b>	<b>-</b>	<b>-</b>

### 3.5.3 APGPCL

The power purchase cost incurred by APDISCOMs for procurement from APGPCL for H2 FY 2016-17 and FY 2017-18 are as per the projections given by APGPCL.

The calculations were done on the basis of availability of 0.65 MSCMD of Natural Gas with the usage of part load i.e., about 172 MW (out of 272 MW). As a result, about 100 MW was kept as idle for want of Natural Gas. Consequently, the fixed cost has gone up steeply.

<b>Cost components for H2 FY 2016-17 and FY 2017-18</b>		
<b>Particulars</b>	<b>H2 FY 2015-16</b>	<b>FY 2016-17</b>
<u>Stage-I</u>		
Fixed cost (Rs. Crs.)	1.42	1.05
Variable cost (Rs. / kWh)	2.50	2.34
<u>Stage –II</u>		
Fixed cost (Rs. Crs.)	2.45	4.25
Variable cost (Rs. / kWh)	2.18	2.09

During FY 2015-16, Natural Gas dollar rate had been drastically increased from USD 62.00 to USD 67.00. Proposed gas cost is USD 2.50 per MMBTU which is effective from October 2016.

<b>S. No</b>	<b>Particulars</b>	<b>H2 FY 2015-16</b>	<b>FY 2016-17</b>
1	Gas Availability in SCMD	6,50,000	6,50,000
2	Gas Rate - per MMBTU	2.50 USD	2.50 USD
3	Exchange Dollar Rate [\$]	66.94	66.94
4	Variable Cost Unit Rate : Rs.		
	Stage-I	2.50	2.34
	Stage-II	2.18	2.09

As plants are running with part load, the SFC (Specific Fuel Consumption) is also more which is contributing to the increase in the variable cost and fixed cost.

### 3.5.4 IPPs:

#### 3.5.4.1 GVK Jegurupadu Power Project (Godavari Gas Power Plant)

The PPA with GVK Phase-I expired on 20.06.2015 and subsequently the APDISCOMs bought out GVK-

Phase I project on 22<sup>nd</sup> April 2016. The project was renamed to Godavari Gas Power Plant. The variable charge of H2 FY 2016-17 is considered same as the actual value of H1 FY 2016-17 i.e. Rs 3.11/ kWh (which includes advance payment of Rs. 9.51 Cr. to GAIL in lieu of LC) and 3% escalation on H1 2016-17 actuals has been considered for FY 2017-18 i.e. Rs. 3.20/kWh.

The generator is scheduled to carry out R&M and other inspections in the plant and is slated to spend around Rs. 146 Cr. for the same. This cost has been considered while projecting the fixed costs for H2 FY 2016-17 and FY 2017-18. The fixed costs for H2 FY 2016-17 has been considered as Rs. 38.84 Cr. and Rs. 123.87 Cr. for FY 2017-18.

#### **3.5.4.2 SPECTRUM**

The fixed cost is fully recoverable at 68.50 % PLF. The variable charge of H2 FY 2016-17 is considered same as the actuals of H1 FY 2016-17 value of Rs 2.55/kWh and 3% escalation on the actual value of H1 FY 2016-17 has been considered for FY 2017-18.

The estimated fixed cost for Andhra Pradesh is Rs. 54.20 Crs for H2 FY 2016-17 and Rs. 113.58 Crs for FY 2017-18. The PPA with M/s Spectrum expired on 18<sup>th</sup> April 2016 and since then the generator is scheduling its entire energy to Andhra Pradesh. However, APDISCOMs are yet to decide whether to renew the PPA or buy-out the generator.

The actual fixed cost as settled by the licensee may be different from the estimates as presented above on account of the monthly Foreign Exchange Rate Variation (FERV). The licensee submits to the Hon'ble Commission to allow the licensee to subsequently claim the change in fixed cost on account of FERV.

Deemed / Notional generation claims will be payable to the generator up to 85% PLF as per the incentive formulae provided in the PPA.

Computation of incentive has been carried out based on the formula provided in the PPA. As there is gas deficit the expected PLF for H2 FY 2016-17 and for FY 2017-18 is 40%, Hence incentive may not be applicable for H2 FY 2016-17 and FY 2017-18.

Incentive payment = Equity x (PLF - 68.50) x 0.004 (if PLF > 68.50 < 80.50);

Incentive payment = Equity x (PLF - 68.50) x 0.005 (if PLF > 80.50 < 85.50);

Incentive payment = Equity x (PLF - 68.50) x 0.006 (if PLF > 85.50);

Equity (considered provisionally) = Rs. 117.92 Crs;

Projected incentive for H2 FY 2016-17 is Rs. 0.00 Crs and for FY 2017-18 is Rs. 0.00 Crs (as there is deficit of gas).

#### **3.5.4.3 LANCO KONDAPALLI**

The PPA with M/s LANCO expired on 1<sup>st</sup> January 2016. The plant is being operated on ad-hoc arrangement to schedule the entire capacity to APDISCOMs on the same terms and conditions as the expired PPA, and the costs would be trued up/down subject to the approval of Hon'ble APERC. The proposal for the renewal of the PPA will be submitted to the Hon'ble APERC upon the receipt of the permission from the Government of Andhra Pradesh. The variable charge of H2 2016-17 has been considered as Rs. 2.496/kWh and Rs. 2.30/kWh for FY 2017-18.

The estimated fixed costs for H2 FY 2016-17 is Rs. 89.30 Cr. and Rs. 180.08 Cr. for FY 2017-18.

#### **3.5.4.4 RELIANCE INFRASTRUCTURE LTD. (BSES)**

The fixed charge is fully recoverable at 85 % PLF. No fixed and variable charges have been paid to the company for H1 FY 2016-17 as there has been no generation. Variable charges have been considered at Rs. 2.10/kWh for H2 FY 2016-17 and FY 2017-18 as per the natural gas pricing. However, availability of 20% has been considered for H2 FY 2016-17 and 40% for FY 2017-18.

Based on the formula provided in the PPA and considering 46.11% of the fixed cost for erstwhile Andhra Pradesh (as per G.O. Ms. No. 20), the fixed costs are being paid. Since payment of FDSC component got over by December 2013 and only OFC is payable, fixed charges are being paid as per the actual PLF achieved during the month as there is no alternate fuel facility. Hence the fixed charges for H2 FY 2016-17 is Rs. 6.35 Cr. and Rs. 26.14 Cr. for FY 2017-18.

In case the plant achieves a PLF (I) greater than 85% for a tariff year, then the incentive (as a percentage of the other fixed charges) payable for any additional unit of actual generation in excess of a PLF (I) of 85 %. The incentive structure is as shown below:

<b>PLF (I) %</b>	<b>Incentive (%)</b>
Up to 85 %	Nil
Above 85 % and up to 90 %	2 % for every 1 % increase in PLF(I) (i.e. for a PLF(I) of 90 %, the Incentive will be 10 % of the Other Fixed Charge
Above 90 %	Same as for 90% i.e. 10 % of the Other Fixed Charge.

Projected incentive for H2 FY 2016-17 is Rs. 0.00 Crs and for FY 2017-18 is Rs. 0.00 Crs. The licensee shall not bear the tax on incentives payable to the generator.

#### **3.5.4.5 New IPPs & Merchant Plants**

No fixed and variable charges are considered from the new IPP plants as the plants were not operated due to non-availability of Natural Gas.

#### **3.5.5 NON CONVENTIONAL ENERGY (NCE) SOURCES:**

The Commission issued orders on 20.03.2004, fixing power purchase price applicable for NCE Projects (Biomass/Industrial Waste, Bagasse & Mini Hydel) from 01.04.2004 to 31.03.2009. The NCE Project Developers filed cases before the Appellate Tribunal against the APERC orders. The Appellate tribunal set aside APERC Orders dated. 20.03.2004. APTRANSCO and APDISCOMs filed Appeals before Supreme Court against ATE Orders. The Hon'ble Supreme Court passed Orders dated. 08.07.2010 setting aside ATE Orders. The Supreme Court remanded the matter to APERC with a direction to hear NCE Project developers afresh and determine /fix tariff/power purchase price. APERC has initiated the public hearing in this matter from 28.09.2010 and passed three divergent orders vide its order DT: 12.09.2011. The APERC orders were challenged before Appellate Tribunal for Electricity by NCE developers & APDISCOMs.

The Appellate Tribunal in its order DT: 20.12.2012, while fixing the parameters, directed APERC to fix the tariff accordingly to be payable to Non-conventional Energy Developers for the period 2004-2009. Aggrieved by the APTEL order dt: 20.12.2012, APDISCOMs filed Civil Appeals No's 1376-1385 of 2013 before Hon'ble Supreme Court. The apex court admitted the appeals and are pending for disposal.

The APDISCOMs filed an application I.A. No.22 of 2013 in O.P. No.1075 of 2000 praying the APERC to defer the hearing of the remand proceedings on NCE tariff cases as ordered by the Appellate Tribunal for Electricity in order dt:20.12.2012 till the final disposal of civil appeals (1376 to 1385) filed before Hon'ble Supreme Court. The APERC dismissed the I.A. No.22 of 2013 with the opinion that DISCOMs cannot ask for deferment of the tariff order to give effect to the APTEL order on the plea that the petition has been filed before Hon'ble Supreme Court and the same is admitted for hearing. The APERC issued order dt: 22.06.2013, pursuant to APTEL order dt: 20.12.2012, determining the tariff payable to NCE developers for the period 01.04.2004 to 31.03.2009. The DISCOMs filed Special Leave Petition in the Hon'ble Supreme Court against the order dated 22.6.2013 passed by the APERC vide SLP (Civil) No. 30416 to 30428 of 2013.

APERC issued suo-motu order dt:6.8.13 determining variable cost tariff in respect of Bagasse & Biomass (including Industrial Waste) projects giving consequential effect to the order dated 31.03.2009 in O.P No.5 of 2009 based on Hon'ble APTEL order dated 20.12.2012 & 30.04.2013. DISCOMs filed SLP against APERC order dated 06.08.2013 in the Hon'ble Supreme Court vide SLP (Civil) No. 19508 of 2013.

The Special Leave Petitions (Civil) 30416-28 filed against APERC order dt:22.6.13 & 19508 filed against APERC order dt:06.08.13 came up for admission on 28.10.2013 and the Lordships were not inclined to grant permission to file Special Leave Petitions directly against the orders of APERC and directed to withdraw the Special Leave Petitions. Accordingly, the Special Leave Petitions were withdrawn.

As such, IAs were filed in C.A 1376-85 of 2013 before Hon'ble Supreme Court requesting for grant of stay of APERC orders dt:22.06.2013 & 06.08.2013 and Appeal Nos. 83 & 84 of 2014 were filed before APTEL against APERC orders dt:22.06.2013 & 06.08.2013. The same were dismissed by APTEL vide order dt: 21.07.2014 as not maintainable. Subsequently, appeals 10448 & 10499 are filed before Hon'ble Supreme Court against the orders of APTEL dt: 21.07.2014. The appeals are tagged with CA 1376-85 of 2013 and are likely to be listed on 20.01.2016.

About Rs. 406 Crs was already paid to the NCE developers in accordance with the various court orders (in the united Andhra Pradesh state).

However, upon the directions of Hon'ble Supreme Court dt: 16.12.2013, APDISCOMs are implementing tariff to the NCE developers as per APERC order dt: 22.06.2013 from the date of order, viz., 22.06.2013.

Further, vide orders dt:11.03.2014 & 13.03.2014, Hon'ble Supreme Court of India directed to release 50% amount due to the NCE developers. Accordingly, the NCE developers were paid Rs.214.96 Crs in erstwhile Andhra Pradesh.

APERC determined the variable cost for the control period FY 2014-19 vide APERC order dt: 16.05.2014. Further, APERC determined the fixed cost tariff for the Biomass, Bagasse, Mini Hydel & Industrial Waste projects for beyond 10 years of operation vide APERC orders dt:19.07.2014, 05.08.2014, 23.08.2014 & 01.09.2014 respectively. The fixed cost & variable cost are adopted as per the above orders for cost projections for H2 FY 2016-17 and FY 2017-18. However, review petitions have been filed by APDiscoms on APERC orders dt: 19.07.2014, 05.08.2014, 23.08.2014 & 01.09.2014. The Hon'ble Commission dismissed/rejected these review petitions vide common order dated: 07.02.2015. Hence, appeals DFR Nos. 645 & 646 of 2015 were filed before APTEL. Subsequently, APTEL numbered the DFR No's 645 as 224 of 2015 & 646 as 42 of 2016. Further, appeal No 224 of 2015 filed by APDISCOMs against APERC order dated: 07.02.2015 was dismissed by APTEL.

Further, the Biomass developers filed appeals No 284 & 250 of 2014 before APTEL on APERC order dt: 16.05.2014 & 19.07.2014 wherein APERC determined variable cost tariff for FY 2014-19 & fixed cost tariff for biomass projects beyond 10 years of operation respectively. Also, bagasse developers preferred appeal No 297 of 2014 before APTEL against APERC orders dt: 16.05.2014. Appeal No 42 of 2016 filed by APDISCOMs against APERC order dated: 19.07.2014 are posted for hearing on 30.11.2016 along with appeal NOs 284, 250 & 297 of 2014.

The Mini Hydel developers preferred appeal No 268 of 2014 before APTEL against APERC order dt: 23.08.2014. The APTEL vide its order dated: 20.01.2016 in the said appeal remanding the matter to APERC towards fixation of tariff beyond 10 years of operation to appellant's viz., M/s PMC Power Private Limited, M/s Bhavani Hydro Power Projects Private Limited and M/s NCL Industries Limited. Accordingly, the three mini hydel developers filed petition No.8, 9 & 10 of 2016. Subsequently, APERC vide orders dated: 18.06.2016 determined project specific tariff to M/s PMC Power Private Limited, M/s Bhavani Hydro Power Projects Private Limited and M/s NCL Industries Limited from 11<sup>th</sup> to 20<sup>th</sup> year of operation and issued separate orders in the above petitions. Aggrieved by the APERC orders dated: 18.06.2016, APDISCOMs filed appeal Nos.246, 247 & 248 of 2016 before the APTEL. The matter is posted for hearing on 05.12.2016.

The Commission vide its order dt: 31.03.2009 fixed single part tariff for existing Wind and Municipal waste projects for the period from 1.4.2009 to 31.3.2014. Further APERC issued orders dt: 15.11.2012 duly fixing new tariff @Rs 4.70/unit for upcoming wind power projects upto 31.03.2015. The said tariff order was extended till 31.07.2015. Vide order dt:26.03.2016, APERC determined the tariff for the upcoming wind projects for FY2016-17 @ Rs.4.84/unit without AD and @Rs.4.25/unit with AD based on the regulation no 1 of 2015 pertaining to terms and conditions for tariff determination for wind projects in the state of AP for the period from FY 2015-16 to 2019-20. Also, as per the clause 20 of Regulation 1 of 2015, "*the commission shall take into consideration any incentive or subsidy offered by the Central or State government, including accelerated depreciation (AD) benefit, if availed by the generating company, for the Wind power projects while determining the tariff under these regulations*". Hence, we have considered a reduction in the levelized tariff by Rs. 0.50/ kWh for getting the weighted average tariff for Wind Power for FY 2017-18.

Tariff for solar projects taken as per the PPA and the same was adopted by APERC.

GoAP issued the G.O.Ms No. 46, dated: 27.11.2012 for purchasing solar power of 1000MW through competitive bidding route. Accordingly AP Discoms had initiated the bidding process for procurement of 1000 MW of solar power during 2012-13 and PPA's were entered with solar power developers for a capacity of 33 MW at the tariff of Rs. 6.49/kWh for 20 years. Out of the PPA capacity of 33 MW, 30 MW was commissioned.

Further, GoAP issued the G.O Ms. No.8, dated: 12.02.2015 and directed APDISCOMs for procurement of 1000 MW Solar Power through competitive bidding process. Accordingly bidding process conducted by APPCC/APSPDCL for procurement of 500 MW solar power in phase-1, the minimum first year tariff obtained was Rs. 5.25/unit and the cut-off first year tariff considered was Rs.5.999/unit. This tariff will be escalated at the rate of 3% per year till 10th year and the 10th year tariff will be continued for the remaining 15 years. The corresponding minimum levelized tariff is Rs. 6.17/unit and maximum Rs. 7.05/unit and APDISCOMs entered PPAs for a capacity of 619 MW with consent of APERC. Out of 619 MW, 512 MW has been commissioned.



Tariff for the upcoming mini-hydel projects is assumed as Rs. 4/unit since the APERC yet to determine the tariff for new Mini Hydel projects.

Presently, Mini hydel developers are being paid APERC tariff which is exclusive of Electricity Duty, Royalty charges and MAT/Income Tax. As and when claimed by the developers, the same needs to be reimbursed.

Presently, the Biomass, Bagasse, Industrial Waste & Municipal Solid Waste developers are being paid APERC tariff which is exclusive of Electricity Duty and MAT/Income Tax. As and when claimed by the developers, the same needs to be reimbursed.

The weighted average costs per unit (or Tariff Order rates) for NCE sources considered for FY 2017-18 are shown in the table below:

Project Type	Weighted average Cost / Tariff Order Rate Considered for H2 FY 2016-17 (Rs. / kWh)	Weighted average Cost / Tariff Order Rate Considered for FY 2017-18 (Rs. / kWh)
NCE – Bio-mass including Co - Gen	5.84	6.60
NCE – Bagasse	4.21	4.60
NCE – Municipal Waste to Energy		
NCE – Industrial Waste based power project	5.77	6.39
NCE – Wind Power	4.66	4.36
NCE – Mini Hydel	2.42	3.18
NCE – NCL Energy Ltd.	1.81	1.81
NCE – Solar Power	5.89	5.76
NCE – Solar Parks	5.96	4.95

### 3.5.6 Mini Power Plants

#### 3.5.6.1 SRIVATHSA POWER PROJECTS LTD (17.202 MW)

The recovery of fixed charges is limited to the delivery of 110 MU energy units. The fixed cost payable is Rs. 0.99 Crs for H2 FY 2016-17 and Rs. 3.00 Crs for FY 2017-18. The variable tariff for H2 FY 2016-17 has been considered based on the Natural Gas Pricing Guidelines-2014. The variable cost for FY 2017-18 has been considered to be the same as for H2 FY 2016-17.

Incentives: In case the project achieves delivered energy in excess of 110 MU in a tariff year, APEPDCL shall pay to the generator, an incentive of Rs.0.05 (Rupees Zero and Five Paise only) / kWh for each additional unit of actual delivery of energy at the Interconnection Point.

#### 3.5.7 HNPCL

M/s. HNPCL has filed an application vide O.P.No. 21/2015 before Hon'ble APERC for determination of tariff of 1,040 MW Coal fired Thermal Power Plant to be set up at Visakhapatnam under cost plus basis and the hearings are under progress. Pending determination of Tariff by APERC, an ad-hoc single part tariff of Rs. 3.57/kWh was being paid in H1 FY 2016-17. The same rate has been considered for H2 FY 2016-17 (with Rs. 2.76/kWh considered towards Variable costs). For FY 2017-18, a normative variable

cost of Rs. 2.21/kWh has been considered for HNPCL considered the normative coal costs and transportation costs. Similar to the methodology for SDSTPS and RTPP-IV, the fixed costs of HNPCL (both units) has been computed to be Rs. 1,217.09 Cr. considering the capital expenditure and IDC only up to the normative months. Moreover, since availability of only one unit has been considered for FY 2017-18, the fixed charge associated with only one unit has been considered i.e. Rs. 608.54 Cr.

### **3.5.8 Long Term & Medium Term**

#### **3.5.8.1 Long Term – Thermal PowerTech Corporation India Limited**

Variable cost per unit of Rs.1.85/kWh have been considered for H2 FY 2016-17 and Rs. 1.90/kWh for FY 2017-18 has been considered. Fixed costs per unit of Rs. 1.76/kWh and Rs.1.78/kWh have been considered for H2 FY 2016-17 and FY 2017-18 respectively. PGCIL charges have been considered as other costs and the value considered is Rs. 53.67 Cr. for H2 FY 2016-17 and Rs. 107.34 Cr. in FY 2017-18 Cr.

#### **3.5.8.2 Long Term – 600MW DBFOO Bidding**

Total cost per unit considered for H2 FY 2016-17 is Rs.4.25/kWh with variable cost of Rs.1.60/kWh. For FY 2017-18, the variable cost has been considered as Rs. 1.61/kWh and fixed cost as Rs. 2.47/kWh.

#### **3.5.8.3 Medium Term – KSK Mahanadi**

Total cost per unit considered for H2 FY 2016-17 and FY 2017-18 is Rs. 3.76/kWh and Rs. 3.67/kWh respectively. PGCIL charges have been considered as other costs and the value considered is Rs. 84.16 Cr. for H2 FY 2016-17 and Rs. 168.31 Cr. in FY 2017-18.

### **3.5.9 Short Term and Bilateral/ Inter-State purchases**

#### **3.5.9.1 Bilateral Purchases/Sale of Surplus Power**

Month-wise surplus has been estimated based on the availability and requirement. However, no sale of surplus power has been assumed in the filings owing to the high variable costs of the un-dispatched energy and the expected low power exchange prices. However, in order to enable the sale of surplus power, the licensees have decided to set-up a “Marketing Cell” within the commercial wing from the existing staff pool who will visit different utilities and tie-up sales arrangement with them.

#### **3.5.9.2 D-D Purchases**

Month-wise availability of each AP Discom has been calculated based on PPA allocation. The requirement of each Discom at APTRANSCO periphery has been calculated, by grossing up the sales with losses. The D-D purchases / sales for each Discom have been estimated after taking into account the respective allocations to each Discom as per the Final Transfer Scheme. The D-D pool price has been considered at Rs. 4.50/kWh for FY 2017-18 (price of energy from bilateral purchases).

## **3.6 Energy Requirement**

Based on the availability shown above and the energy requirement from all the Discoms, the actual energy to be purchased Discom-wise has been projected as follows:



DISCOMS	H2 FY 2016-17	FY 2017-18
	MU	MU
APEPDCL	8,822	19,721
APSPDCL	17,158	37,297
<b>Total</b>	<b>25,980</b>	<b>57,018</b>

The above energy requirement of the licensees has been arrived at by grossing up the sales of the licensee sales with appropriate transmission and distribution losses. The external loss on the power purchased from CGS and KSK Mahanadi only has also been factored in the above energy requirement.

### 3.7 Sale of Surplus Power

Month-wise surplus has been estimated based on the availability and requirement. The surplus energy is sold in the months when the market price is higher than the variable cost of un-despatched energy. With this, the licensee is expected to sell the surplus amount of around 2,208 MUs at an average margin of Rs.0.23/kWh. The estimated revenue from the sale of surplus power is Rs.615 Crs. at an additional cost of Rs.555 Crs. IEX Price of S2 Grid in FY 2016-17 has been considered for FY 2017-18.

S.No.	Particulars	FY 2017-18
A	Energy Requirement of the state (MU)	57,018
B	Energy Availability (MU)	67,948
<b>C = B - A</b>	<b>Surplus (+)</b>	<b>10,930</b>
D	Surplus Energy sold to market (MU)	2,208
<b>E = C - D</b>	<b>Energy Back down (MU)</b>	<b>8,722</b>

### 3.8 Summary of Power Purchase for Current Year H2 FY 2016-17 and Ensuing Year FY 2017-18

Based on the availability, requirement and costs for each source, the summary of power purchase cost for Andhra Pradesh for H2 FY 2016-17 is projected as follows:

Source	2016 -17 H2 Projection			
	Power Purchase (MU) Available	Power Purchase (MU) Despatch	Costs (INR Crs)	PP Cost (INR/kWh)
APGENCO Thermal	10,118.70	6,237.18	2,890.22	4.63
TSGENCO Thermal	3,677.72	2,614.50	1,044.17	3.99
APGENCO Hydel	1,477.53	1,477.53	216.37	1.46
TSGENCO Hydel	0.00	0.00	0.00	0.00
CGS	6,160.54	5,730.84	1,915.50	3.34
APGPCL	59.96	59.96	17.36	2.90
IPPs - Gas	1,549.83	1,256.20	398.77	3.17
NCE	2,443.00	2,443.00	1,271.58	5.20
Others*	6,320.04	6,160.80	2,421.46	3.93
Market	0.00	0.00	0.00	0.00
<b>Total</b>	<b>31,807.32</b>	<b>25,980.00</b>	<b>10,175.43</b>	<b>3.92</b>

\*Others include Srivathsa, Long term and Medium term purchases, Hinduja

Based on the availability, requirement and costs for each source, the summary of power purchase cost for Andhra Pradesh for FY 2017-18 is projected as follows:

Source	FY 2017-18 Projection			
	Power Purchase (MU) Available	Power Purchase (MU) Despatch	Costs (INR Crs)	PP Cost (INR/kWh)
APGENCO Thermal	20,741.72	16,195.59	7,431.94	4.59
TSGENCO Thermal	6,768.26	5,547.41	2,057.61	3.71
APGENCO Hydel	2,579.09	2,579.09	438.73	1.70
TSGENCO Hydel	0.00	0.00	0.00	0.00
CGS	12,490.36	10,044.56	3,428.30	3.41
APGPCL	131.97	127.15	32.47	2.55
IPPs - Gas	2,695.59	2,201.22	990.90	4.50
NCE	10,316.46	10,316.46	4,905.87	4.76
Others*	12,224.37	12,214.73	5,119.87	4.19
Market	0.00	(2,208.34)	(615.20)	2.79
<b>Total</b>	<b>67,947.81</b>	<b>57,017.85</b>	<b>23,790.49</b>	<b>4.17</b>

\*Others include Srivathsa, Long term and Medium term purchases, Hinduja

## 4 Losses

### 4.1 DISCOM losses

The DISCOM losses for H2 FY 2016-17 is taken as per APERC approved values and 10% reduction is considered for FY 2017-18. The below table provides the voltage level losses for projecting the energy requirement for H2 FY 2016-17 and FY 2017-18.

<b>APEPDCL - DISCOM losses</b>		
<b>Voltage Level</b>	<b>H2 FY 2016-17</b>	<b>FY 2017-18</b>
33 kV	3.22%	2.90%
11 kV	3.80%	3.42%
LT	4.74%	4.27%

### 4.2 TRANSCO losses

The Transco losses for H2 FY 2016-17 have been taken as per approved. And for FY 2017-18 Transco losses for FY 2016-17 H1 actuals are considered

<b>Transmission Losses H2 FY 2016-17</b>	<b>Transmission Losses FY 2017-18</b>
3.34%	3.03%

### 4.3 Losses external to APTRANSCO system

The losses external to the APTRANSCO system are considered to be 3.57 % for H2 FY 16-17 and also for FY 2017-18. This is applicable for procurement of power from Central Generating Stations and other medium and short term purchases. However, external losses have not been considered for bilateral / inter-state purchases due to considering average landed power purchase cost at APTransco periphery.

## 5 Expenditure Projections for APEPDCL

### 5.1 Power Purchase and Procurement Cost

The Energy dispatch from various generating stations to APEPDCL is estimated to be 17720 MU for FY 2016-17 and 19721 MU for 2017-18 and the cost of this energy would be Rs.6812 Cr. and Rs. 8194 Crs. respectively.

Particulars	Units	2016-17	2017-18
Power Purchase units from Generators	(in MUs)	17720	19721
Power Purchase Cost from Generators	(in Rs. Crores)	6812	8194

### 5.2 APTransco Transmission Charges

The actual transmission charges for FY 2015-16 is Rs.368.24Crs.

The licensee has considered the Transmission cost for FY 2016-17 as approved in the Tariff Order FY 2016-17. The licensee with the inputs from APTRANSCO has considered adjustment in Transmission Charge of Rs.85.66 Crs. under reimbursement of wheeling charges from APTRANSCO to APEPDCL.

#### FY 2016-17

Name of the Transmission Service Provider	Load not eligible for Open Access			Load Eligible for Open Access			Total Cost (Rs. Crs.)
	MW	Tariff (Rs./kW/month)	Cost (Rs. Crs.)	MW	Tariff Rs./kW/month	Cost (Rs. Crs.)	
APTransco	3334.31	91.36	365.55	596.62	91.36	65.41	430.96
APEPDCL True down adjusted amount			-92.98				-92.98
Reimbursement of wheeling charges from APTRANSCO to APEPDCL Licensee			-85.66				-85.66
<b>Total</b>			<b>186.91</b>			<b>65.41</b>	<b>252.32</b>

The licensee has considered the Transmission cost for FY 2017-18 as approved in the Transmission Tariff Order for 3rd MYT control period (FY 2014-15 to 2018-19) and has projected transmission cost as a proportion of contracted demand of Licensee from the combined state for FY 2017-18. The licensee with the inputs from APTRANSCO expects that the capital expenditure to the tune of APERC Approved values as per Transmission MYT 2014-19 will not be required. Moreover, APTRANSCO is also contemplating swapping of the current high interest loans with low cost loans. Accordingly the licensee has considered savings of around Rs. 29 Crs. in the Transmission costs for FY 2017-18.

**FY 2017-18**

Name of the Transmission Service Provider	Load not eligible for Open Access			Load Eligible for Open Access			Total Cost (Rs. Crs.)
	MW	Tariff (Rs./kW/month)	Cost (Rs. Crs.)	MW	Tariff Rs./kW/month	Cost (Rs. Crs.)	
APTransco	3481.98	95.37	398.49	626.49	95.37	71.70	470.19
Savings from Capex Restriction of APTRANSCO			-9.87				-9.87
Savings from Loan Swapping of APTRANSCO			-19.20				-19.20
<b>Total</b>			<b>369.42</b>			<b>71.70</b>	<b>441.12</b>

**5.3 SLDC Charges**

The actual SLDC charges for 2015-16 are Rs. 11.85 Crs. and for FYs: 2016-17 and 2017-18 it is estimated at Rs.11.99 Crs. and Rs.12.98 Crs. based on the approved SLDC Order for FYs: 2014-15 to 2018-19.

2016-17	Annual Fee			Charges			Total Cost (Rs. Crs.)
	MW	Tariff (Rs./MW/year)	Cost (Rs. Crs.)	MW	Tariff (Rs./MW/month)	Cost (Rs. Crs.)	
Load not eligible for Open Access	3334.54	3533.18	1.18	3334.54	2247.62	8.99	10.17
Load Eligible for Open Access	596.66		0.21	596.66		1.61	1.82
<b>Total</b>	<b>3931.20</b>		<b>1.39</b>	<b>3931.20</b>		<b>10.60</b>	<b>11.99</b>

2017-18	Annual Fee			Charges			Total Cost (Rs. Crs.)
	MW	Tariff (Rs./MW/year)	Cost (Rs. Crs.)	MW	Tariff (Rs./MW/month)	Cost (Rs. Crs.)	
Load not eligible for Open Access	3481.98	3995.39	1.39	3481.98	2300.31	9.61	11.00
Load Eligible for Open Access	626.49		0.25	626.49		1.73	1.98
<b>TOTAL</b>	<b>4108.47</b>		<b>1.64</b>	<b>4108.47</b>		<b>11.34</b>	<b>12.98</b>

## 5.4 PGCIL & ULDC Charges

The PGCIL and ULDC charges have been computed based on the information sought by the licensee from APTransco. For FY 2013-14 to FY 2015-16, the figures shown are actuals. For FY 2016-17, charges approved in the Tariff Order have been adopted and the licensee has projected the PGCIL & ULDC charges for FY 2017-18 with 10% growth. The details of the PGCIL & ULDC charges are as shown in the table below:

Particulars (Rs. Crs.)	2016-17	2017-18
<b>PGCIL Expenses</b>	131.19	144.31
<b>ULDC Charges</b>	2.81	3.09
<b>Total</b>	134.00	147.40

## 5.5 Distribution Costs

The licensee has adopted the Distribution cost for FY 2016-17 & 2017-18 as approved in the Wheeling Tariff Order (Distribution Business Tariff Order) for 3<sup>rd</sup> MYT control period (FY 2014-15 to 2018-19).

With the grants received by the Licensee under IPDS and DDUGJY schemes, the licensee has undertaken network strengthening and augmentation exercise. Hence, the licensee expects that the capital expenditure to the tune of APERC Approved values as per Distribution MYT 2014-19 will not be required accordingly the licensee has considered savings of around Rs. 42 Crs. in Distribution Cost by control of capital expenditure below the approved values for FY 2017-18.

The distribution costs approved for FY 2016-17 is Rs.1382.30 Crs. and for FY: 2017-18 is Rs. 1565.33 Crs. against which savings from Capex restriction of Rs.42.39 Crs. is taken for FY 2017-18.

### FY 2016-17

Name of the Distribution Service Provider	Cost for Load not eligible for Open Access (Rs. Crs)	Cost for Load Eligible for Open Access	Total Cost (Rs. Crs.)
APEPDCL	<b>1341.07</b>	41.23	<b>1382.30</b>
<b>Total</b>	<b>1341.07</b>	41.23	<b>1382.30</b>

### FY 2017-18

Name of the Distribution Service Provider	Cost for Load not eligible for Open Access (Rs. Crs)	Cost for Load Eligible for Open Access	Total Cost (Rs. Crs.)
APEPDCL	1517.34	47.99	<b>1565.33</b>
Savings from Capex Restriction of APDISCOMS	-42.39		<b>-42.39</b>
<b>Total</b>	1474.95	47.99	<b>1522.94</b>

The details of the Distribution cost considered in present retail supply filing for the current year 2016-17 and the ensuing year 2017-18 are as below

Distribution Cost Breakup Particulars (in Rs. Crs.)	2016-17	2017-18
Operation & Maintenance Charges	1088.08	1235.62
Return on capital employed	131.93	143.11
Depreciation	343.26	384.74
Other Expenditure	0.65	0.57
Taxes on income	12.19	13.22
Special Appropriations	5.00	5.00
True up adjustment of 1st control period Revenue		
Less: IDC/Expenses capitalized	38.53	41.18
Less: Wheeling Revenue		
Less: NTI	160.28	175.76
Less: Savings from Capex Restriction of APDISCOMS		42.39
<b>Net Distribution Cost</b>	<b>1382.30</b>	<b>1522.94</b>

## 5.6 Interest on Consumer Security Deposits

The details showing the interest on Consumer Security Deposit is as below.

Revenue Requirement Item (Rs. Crs.)		For Control Period				
		Base Year	2014-15	2015-16	2016-17	2017-18
A	Opening Balance	856.66	924.62	933.17	1151.73	1392.15
B	Additions during the Year	119.68	116.32	270.87	297.96	327.76
C	Deductions during the Year	51.73	107.77	52.31	57.54	63.29
D	Closing Balance	924.62	933.17	1151.73	1392.15	1656.62
E	Average Balance ((A+D)/2)	890.64	928.90	1042.45	1271.94	1524.38
F	Interest @ % p.a. #	8.38	8.31	7.60	7.00	6.50
<b>G</b>	<b>Interest Cost (E * F)</b>	<b>74.61</b>	<b>77.20</b>	<b>79.18</b>	<b>89.04</b>	<b>99.09</b>

Interest on consumer security deposits are 8.45% in FY: 2012-13, 8.38% in FY: 2013-14, 8.31% in FY 2014-15 and 7.60% in FY 2015-16. Based on the past trend, the licensee has considered the 7.00% & 6.50% rate of interest for estimation of interest on consumer security deposits for FY 2016-17 and 2017-18.

As per APERC Regulation 6 of 2004 stipulates "Security Deposit amount shall be two months charges in case of monthly billing and 3 months charges for bi-monthly billing".

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"The interest accruing to the credit of the consumer shall be adjusted annually against the amounts outstanding from the consumer to the Licensee as on 1st May of every year and the amounts becoming due from the consumer to the Licensee immediately thereafter."

In this regard, the Licensee would like to submit that the Power Purchase Cost contributes to nearly 80% of the total Retail ARR and certainty in projection of power purchase cost has become very critical. Any deviation in power purchase cost has to be funded through internal sources and to be recovered in subsequent years through ARR. On the other hand, Subsidy from government contributes to be 18% of the Retail ARR. This would mean that Discoms are effectively getting 2 months consumer security deposit on 88% of retail ARR. While payments to generators is being done on a monthly basis, the revenue cycle is nearly 2 months. Hence, the working capital requirement of the Distribution Licensees has become difficult to manage in recent time and hence the Licensee requests the Hon'ble Commission to increase the duration of Security Deposit from the current two month charges to 75 days charges in case of monthly billing while continuing with 3 months charges for bi-monthly billing. This would ensure the Working Capital Requirements of the Licensees are met. This would ensure that the DISCOMs would be able to pending payables to generators.

## 5.7 Supply Margin

Supply margin has been projected as per norms approved by Hon'ble Commission based on RRB approved by Hon'ble APERC in Distribution business Tariff Order for 3<sup>rd</sup> Control Period:

Particulars ( in Rs. Crs)	2016-17	2017-18
Supply Margin Amount	5.28	5.72

## 5.8 Other Costs

The licensee has projected the following expenditure under other costs:

- 1) Amount payable towards DELP to M/s EESL, New Delhi
- 2) Amount payable towards solar pumpsets

### 5.8.1 DELP:

The licensee with the approval of Honourable Commission is distributing 2 Nos. LED bulbs in all the districts of its jurisdiction. In accordance with the approval of the Honourable Commission, the licensee has projected the amounts payable to M/s EESL, New Delhi. Number of LEDs distributed up to end of H1 FY 2016-17 is around 7.54 Cr.

330 Nos. Energy efficient pump sets were energized in the FY 2015-16 , 440 Nos. pump sets were energized in FY 2016-17 (H1) and proposed for releasing in H2 (FY 2016-17) are 410 Nos. and 810 Nos. are proposed in FY 2017-18.

1319 Nos. Solar Agricultural pump sets were energized in the FY 2015-16 , 1429 Nos. pump sets were energized in FY 2016-17 (H1) and expected pump sets to be energized in H2(FY 2016-17) is 3300 Nos., in FY 2017-18 is 5000 No.s.



The following table summarizes the Agricultural demand met through solar off-grid power out of total Agricultural demand of the licensee.

Particulars	FY 2016-17	FY 2017-18
<b>Agricultural Demand met through Grid Power</b>	2,149	2,687
<b>Agricultural Demand met through Solar Pumpsets*</b>	35	65
<b>Total Agricultural Demand</b>	2,184	2,751

\* Each 5HP Pumpset is expected to produce 6000 Units of energy per year

The consumer contribution is 11% of the project cost, the MNRE, Govt. of India provides 33% of the project cost as subsidy and balance 56% is to be borne by the licensee. The following table shows the cost-breakup of solar-pumpsets and Discom's contribution for which it is liable to pay annuity payments to the solar pumpset developers.

Sl. No.	Particulars	5 HP Pumpsets			3 HP Pumpset		August 2016 onwards
		March 2015-December 2015	December 2015-August 2016	August 2016 onwards	March 2015-December 2015	December 2015-August 2016	
1	Discom Contribution	2,73,000	2,12,000	1,52,300	1,83,160	1,99,178	1,52,000
2	Farmer Contribution	55,000	55,000	55,000	40,000	40,000	40,000
3	MNRE Subsidy	1,62,000	1,62,000	1,62,000	97,200	97,200	97,200
4.	Total Cost of Pumpset	4,90,000	4,29,000	3,69,300	3,20,360	3,36,370	2,89,200

The power purchase cost saved by these schemes have already been factored in the power purchase calculations.

The details of Other Costs projected by Licensee for FY 2016-17&FY 2017-18 are as follows:

Particulars	2016-17 Rs Crs	2017-18 Rs Crs
Payments to M/s.EESL towards DELP	34.69	29.34
Payment AGL Solar pumpsets	6.42	20.00
Energy Pump Sets	8.41	8.24
<b>TOTAL</b>	<b>49.52</b>	<b>57.58</b>

## 5.9 Aggregate Revenue Requirement (ARR) for Retail Supply Business

The Aggregate revenue requirement for FY 2015-16(Actuals), FY 2016-17(Revised Estimates) and Projections for FY 2017-18 are as shown below

EXPENDITURE ITEM (Rs. Crs.)		2015-16	2016-17	2017-18
1	Power Purchase / Procurement Cost	7031.57	6811.82	8194.15
2	Transmission Cost	368.24	252.32	441.12
3	PGCIL & ULDC Expenses	161.48	134.00	147.40
4	SLDC Cost	11.85	11.99	12.98
5	Distribution Cost	1216.97	1382.30	1522.94
6	Interest on Consumer Security Deposits	79.18	89.04	99.09
7	Supply Margin in Retail Supply Business	4.83	5.28	5.72
8	Other Costs, if any	2.48	49.52	57.58
	<b>Aggregate Revenue Requirement</b>	<b>8876.60</b>	<b>8736.26</b>	<b>10481</b>

## 6 Revenue Projections

### 6.1 Sales Forecast

The table below is a summary of the sales forecast for FY 2016-17 & FY 2017-18. The trend of sales of FY 2013-14, FY 2014-15 & FY 2015-16 has also been shown:

Category	2013-14	2014-15	2015-16	2016-17	2017-18
<b>LT Category</b>	<b>6,605</b>	<b>7,448</b>	<b>8,454</b>	<b>8,965</b>	<b>9,722</b>
Domestic	3,435	3,709	4,420	4,853	5,381
Non-domestic/Commercial	647	685	831	925	1,030
Industrial	495	622	770	848	938
Cottage Industries, Dhobi Ghats & Others	1.82	1.93	2.21	2.04	2.11
Irrigation & Agriculture	1,752	2,167	2,149	2,066	2,090
Local Bodies, St. Lighting & PWS	236	224	232	213	212
General Purpose	37	39	47	57	68
Temporary Supply	0.65	0.50	1.73	0.82	0.90
<b>HT Category at 11 KV</b>	<b>1,603</b>	<b>1,689</b>	<b>1,973</b>	<b>1,993</b>	<b>2,238</b>
HT I (A): General	830	942	1,016	1,006	1,136
Lights and Fans	21	27	3.42	-	-
Industrial Colonies	2.09	1.44	1.53	1.77	1.96
Seasonal Industries	2.32	3.26	7.18	4.33	4.33
Time of Day Tariffs (6 PM to 10 PM)	146	121	203	198	224
HT I (B): Ferro Alloy Units	-	-	-	-	-
HT I (C): Aquaculture and Animal Husbandry			-	12.65	13.92
HT I (D): Poultry Hatcheries and Poultry Feed Mixing Plants			-	5.24	5.76
HT II: Others	251	248	302	289	312
Time of Day Tariffs (6 PM to 10 PM)	62	58	80	75	86
HT II (B): Religious Places			-	3	3
HT II (C): Function Halls/Auditoriums			-	4	4
HT III: Airports, Bus Stations and Railway Stations	5.98	6.91	6.59	25	28
Time of Day Tariffs (6 PM to 10 PM)	1.66	1.65	1.56	9.17	10.36
HT IV Government LIS	14	19	22	21	21
HT IV Agriculture	-	-	-	0	0
HT IV CPWS	9.31	11	14	18	23
HT VI: Townships & Residential Colonies	21	20	22	22	24
HT VII: Green Power	-	-	-	-	-
HT VIII: Temporary	-	-	-	0	0
Category: RESCOs	235	229	294	300	343
<b>HT Category at 33 KV</b>	<b>1,022</b>	<b>1,236</b>	<b>1,519</b>	<b>1,532</b>	<b>1,733</b>
HT I (A): General	612	765	937	899	1,015
Lights and Fans	4.91	7.42	1.83	-	-
Industrial Colonies	0.76	0.78	0.97	0.88	0.94

Category	2013-14	2014-15	2015-16	2016-17	2017-18
Seasonal Industries	2.46	3.81	6.31	2.36	1.85
Time of Day Tariffs (6 PM to 10 PM)	139	112	229	251	283
HT I (B): Ferro Alloy Units	101	136	117	145	174
HT I (C): Aquaculture and Animal Husbandry			-	0	0
HT I (D): Poultry Hatcheries and Poultry Feed Mixing Plants			-	-	-
HT II: Others	92	113	114	110	127
Time of Day Tariffs (6 PM to 10 PM)	20	22	25	23	26
HT II (B): Religious Places			-	-	-
HT II (C): Function Halls/Auditoriums			-	-	-
HT III: Airports, Bus Stations and Railway Stations	5.58	4.23	4.44	9.71	10.98
Time of Day Tariffs (6 PM to 10 PM)	1.11	0.86	0.97	2.58	2.92
HT IV Government LIS	36	63	73	78	78
HT IV Agriculture	-	-	-	-	-
HT IV CPWS	-	-	-	-	-
HT VI: Townships & Residential Colonies	7.02	7.87	9.79	10.56	12.23
HT VII: Green Power	-	-	-	-	-
HT VIII: Temporary	-	-	-	0	0
Category: RESCOs	-	-	-	-	-
<b>HT Category at 132 KV</b>	<b>2,889</b>	<b>3,145</b>	<b>3,024</b>	<b>3,382</b>	<b>4,002</b>
HT I (A): General	627	993	1,132	1,272	1,438
Lights and Fans	46	50	2	-	-
Industrial Colonies	67	59	69	38	31
Seasonal Industries	-	-	-	-	-
Time of Day Tariffs (6 PM to 10 PM)	188	158	307	227	256
HT I (B): Energy Intensive Industries	1,270	1,172	739	930	1,116
HT I (C): Aquaculture and Animal Husbandry			-	-	-
HT I (D): Poultry Hatcheries and Poultry Feed Mixing Plants			-	-	-
HT II: Others	58	62	101	121	144
Time of Day Tariffs (6 PM to 10 PM)	13	13	22	22	26
HT II (B): Religious Places			-	-	-
HT II (C): Function Halls/Auditoriums			-	-	-
HT III: Airports, Bus Stations and Railway Stations	-	-	-	-	-
Time of Day Tariffs (6 PM to 10 PM)	-	-	-	-	-
HT IV Government LIS	-	10	-	137	353
HT IV Agriculture	-	-	-	-	-
HT IV CPWS	-	-	-	-	-
HT V: Railway Traction	620	628	652	635	638
HT VI: Townships & Residential Colonies	-	-	-	-	-
HT VII: Green Power	-	-	-	-	-

Category	2013-14	2014-15	2015-16	2016-17	2017-18
HT VIII: Temporary	-	-	-	0	0
Category: RESCOs	-	-	-	-	-
<b>Total (LT + HT)</b>	<b>12,119</b>	<b>13,518</b>	<b>14,969</b>	<b>15,872</b>	<b>17,695</b>

### 6.1.1 Trend Method

For the purpose of Sales Forecast for H2 of FY 2016-17 and for FY 2017-18 Trend Method has been followed.

This 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 and hence the forecast for electricity is also based on the assumption that the past trend in consumption of electricity will continue in the future. The strength of this method, when used with balanced judgment, lies in its ability to reflect recent changes and therefore is probably best suited for a short-term projection as used for the ARR/ Tariff filing. However, the trend-based approach has to be adjusted for judgment on the characteristics of the specific consumer groups/ categories. For example, while this method may provide a better estimate of consumption by the domestic and commercial categories of consumers, it may not be very suitable for the industrial category because of the high dependence of demand on the end-use and also on the macroeconomic variables.

In any case, the forecasts arrived at by using the trend method need to be modified for impact of any other considerations like increasing commercialization/ development in certain districts/ regions to incorporate the impact of econometric variables and the load reliefs issued in the past. The Licensee has projected the category wise sales based on the modified trend approach. Sales Forecast for the ensuing year has been developed primarily based on analysis of historical data for the period FY 2010-2011 to H1 of FY 2016-17.

The following inputs have been taken to arrive at sales projections for H2 of FY 2016-17 and FY 2017-18. Actual Sales till September 2016 have been taken.

- Actual Load Relief imposed during H2 of FY2015-16 and H1 of FY 2016-17 were considered for projection of H2 of FY 2016-17 & FY 2017-18 sales. Due to the surplus scenario in the state as well as in the open market, the licensee is not considering any load relief in H2 FY 2016-17 and FY 2017-18
- Category wise Sales Forecast for FY 2016-17 has been developed based primarily on Sales growth of H1 of FY 2016-17.
- Category wise Sales Forecast for FY 2017-18 has been developed based primarily on analysis of historic data for the period FY 2014-15 to FY 2016-17. The ARR for the retail supply business is being filed for the FY 2017-18.

### 6.1.2 LT – Sales Forecast

#### 6.1.2.1 Forecasting Sales: LT-I Domestic Category

For the year FY 2017-18, the licensee has projected sales using an appropriate growth rate over 2016-17 projected sales. The licensee has projected the unrestricted sales for FY 2017-18, as it would like to plan no load restriction measures for FY 2017-18. The unrestricted sales projected for FY 2017-18 for this category is 5,381 MU. The growth rate of sales for FY 2016-17 over FY 2015-16 is 9.80 % and for FY 2017-18 over FY

2016-17 is 10.88%.

The actual sales for FY 2013-14, FY 2014-15, FY 2015-16 and first half (H1) of FY 2016-17 and projected sales for H2 of FY 2016-17 & FY 2017-18 are as given below:

Actual (Sales in MU)				Projection (Sales in MU)		
2013-14	2014-15	2015-16	2016-17(H1)	2016-17 H2	2016-17 (H1+H2)	2017-18
3434.58	3708.53	4419.66	2575.11	2277.97	4853.08	5381.03

### 6.1.2.2 Forecasting Sales: LT-II Commercial Category

For the year FY 2017-18, the licensee has projected sales using an appropriate growth rate over 2016-17 projected sales. The licensee has projected the unrestricted sales for FY 2017-18, as it would like to plan no load restriction measures for FY 2017-18. The unrestricted sales projected for FY 2017-18 for this category is 1.030 MU. The growth rate of sales for FY 2016-17 over FY 2015-16 is 11.32 % and for FY 2017-18 over FY 2016-17 is 11.31%.

The Actual sales for FY 2013-14, FY 2014-15, FY 2015-16 and first half (H1) of FY 2016-17 and projected sales for H2 of FY 2016-17 & FY 2017-18 are as given below:

Actual (Sales in MU)				Projection (Sales in MU)		
2013-14	2014-15	2015-16	2016-17(H1)	2016-17 H2	2016-17 (H1+H2)	2017-18
647.41	684.83	830.90	469.20	455.76	924.96	1029.55

### 6.1.2.3 Forecasting Sales: LT III – Industrial

For the year FY 2017-18, the licensee has projected sales using an appropriate growth rate over 2016-17 projected sales. The licensee has projected the unrestricted sales for FY 2017-18, as it would like to plan no load restriction measures for FY 2017-18. The unrestricted sales projected for FY 2017-18 for this category is 938 MU. The growth rate of sales for FY 2016-17 over FY 2015-16 is 10.19 % and for FY 2017-18 over FY 2016-17 is 10.53%.

The Actual sales for FY 2013-14, FY 2014-15, FY 2015-16 and first half (H1) of FY 2016-17 and projected sales for H2 of FY 2016-17 & FY 2017-18 are as given below:

Actual (Sales in MU)				Projection (Sales in MU)		
2013-14	2014-15	2015-16	2016-17(H1)	2016-17 H2	2016-17 (H1+H2)	2017-18
494.51	622.44	770.03	400.24	448.22	848.47	937.78

#### 6.1.2.4 Forecasting Sales: LT IV – Cottage Industries

For the year FY 2017-18, the licensee has projected sales using an appropriate growth rate over 2016-17 projected sales. The licensee has projected the unrestricted sales for FY 2017-18, as it would like to plan no load restriction measures for FY 2017-18. The unrestricted sales projected for FY 2017-18 for this category is 2 MU. The growth rate of sales for FY 2016-17 over FY 2015-16 is -7.44 % and for FY 2017-18 over FY 2016-17 is 3.34%.

The Actual sales for FY 2013-14, FY 2014-15, FY 2015-16 and first half (H1) of FY 2016-17 and projected sales for H2 of FY 2016-17 & FY 2017-18 are as given below:

Actual (Sales in MU)				Projection (Sales in MU)		
2013-14	2014-15	2015-16	2016-17(H1)	2016-17 H2	2016-17 (H1+H2)	2017-18
1.82	1.93	2.21	1.04	1.00	2.04	2.11

#### 6.1.2.5 Forecasting Sales: LT V (Agriculture)

The Energy demand was observed to be consistent for the past three years due to positive climatic changes. Further in view of new initiatives like solar Agl. pumpsets and Energy efficient pumpsets have been taken up and emphasis on DSM Measures was made, the projections of 1% only was considered in the ensuing year.

##### Process of Estimation:

In compliance to the directive of the Hon'ble APERC with regard to estimation of Agriculture consumption in the service area of APEPDCL, the Agriculture consumption in all the 5 circles are being worked out. Meters were fixed on L.V. side of sampled DTRs feeding exclusively agricultural services in each Mandal. In EPDCL, there are about 2,12,806 number of Agricultural services existing at the end of October 2016. There are 3856 Meters existing at the LV side of the DTRs to gauge the agricultural consumption as shown in the following table.

Name of the Circle	No. of Mandals having agricultural services	The mandals having sampled DTRs as per TF-2.10	DTRs metered
Srikakulam	38	30	180
Vizianagaram	34	30	307
Visakhapatnam	43	25	299
Rajahmundry	59	36	1290
Eluru	46	29	1780
<b>Total</b>	<b>220</b>	<b>150</b>	<b>3856</b>

The monthly meter readings of all the agricultural DTRs are collected from the five circles and the consumptions are arrived. The consumptions recorded at LV side of the DTRs will be netted off by a pre specified percentage to take care of LT network losses. The instruction of the Commission in qualifying a particular type of LT feeder based on Line Length, Loading pattern to a certain percentage pre specified losses is followed. The specific Agriculture consumption per HP is estimated for all the DTRs existing in that Mandal and the same is extrapolated to all other Agriculture Pump sets spread across the Mandal to arrive at Mandal wise estimated consumption.

The Distribution Licensee humbly request the Hon'ble Commission to accept the actual agriculture sales filed by the Licensee based on the old methodology. The Licensee will adopt the ISI methodology to measure actual agriculture sales in the future.

According to GoAP policy of releasing new agriculture connections in the year 2017-18, the target for EPDCL during the year is to release 13,300 new connections. The consumption from these new connections (addition in agriculture pumpsets) has also been taken into consideration while projecting the sales.

For the year FY 2017-18, the licensee has projected sales using an appropriate growth rate over 2016-17 projected sales. The licensee has projected the unrestricted sales for FY 2017-18, as it would like to plan no load restriction measures for FY 2017-18. The unrestricted sales projected for FY 2017-18 for this category is 2,090 MU. The growth rate of sales for FY 2016-17 over FY 2015-16 is -3.89 % and for FY 2017-18 over FY 2016-17 is 1.19%.

The agricultural demand met through Off-Grid Solar pumpsets (Around 65 MUs) is adjusted to the Agricultural demand for the Licensee.

The energy savings due to replacement of conventional pumpsets with energy efficient pumpset has also been considered and adjusted to the Agricultural Demand for the Licensee.

The licensee has assumed 7 hours of supply to agricultural consumers, in its projections, considering the present power supply situation in the state. The deficit situation is expected to continue in all months of FY 2016-17 as per current estimates.

The final abstract is as follows:

<b>Year</b>	<b>H1 (in MU)</b>	<b>H2 (in MU)</b>	<b>TOTAL(in MU)</b>	<b>APERC Target (in MU)</b>
2012-13	747.07	781.34	1528.41	1714.02
2013-14	855.61	896.83	1752.45	1714.02
2014-15	989.41	1,177.51	2,166.92	1714.02
2015-16	1062.27	1087.22	2149.49	1936.33
2016-17	1022.03 (Actuals)	1043.75 (Revised Estimate)	2,372.34 (Projection)	2281.16
2017-18(Projections)	1036.25	1054.02	2090.27	



### 6.1.2.6 Forecasting Sales: LT VI (Street lighting & PWS)

This category has witnessed (–) ve growth rate due to fall in consumption by implementing Energy Conservation measures like replacement of existing SV/MV lamps with LED bulbs etc.,

For the year FY 2017-18, the licensee has projected sales using an appropriate growth rate over 2016-17 projected sales. The licensee has projected the unrestricted sales for FY 2017-18, as it would like to plan no load restriction measures for FY 2017-18. The unrestricted sales projected for FY 2017-18 for this category is 212 MU. The growth rate of sales for FY 2016-17 over FY 2015-16 is -8.51% and for FY 2017-18 over FY 2016-17 is -0.26%.

The Actual sales for FY 2013-14, FY 2014-15, FY 2015-16 and first half (H1) of FY 2016-17 and projected sales for H2 of FY 2016-17 & FY 2017-18 are as given below:

Actual (Sales in MU)				Projection (Sales in MU)		
2013-14	2014-15	2015-16	2016-17(H1)	2016-17 H2	2016-17 (H1+H2)	2017-18
236.10	224.08	232.30	98.82	113.70	212.52	211.97

### 6.1.2.7 Forecasting Sales: LT VII – General Purpose

For the year FY 2017-18, the licensee has projected sales using an appropriate growth rate over 2016-17 projected sales. The licensee has projected the unrestricted sales for FY 2017-18, as it would like to plan no load restriction measures for FY 2017-18. The unrestricted sales projected for FY 2017-18 for this category is 68 MU. The growth rate of sales for FY 2016-17 over FY 2015-16 is 20.24% and for FY 2017-18 over FY 2016-17 is 20.15%.

The Actual sales for FY 2013-14, FY 2014-15, FY 2015-16 and first half (H1) of FY 2016-17 and projected sales for H2 of FY 2016-17 & FY 2017-18 are as given below:

Actual (Sales in MU)				Projection (Sales in MU)		
2013-14	2014-15	2015-16	2016-17(H1)	2016-17 H2	2016-17 (H1+H2)	2017-18
37.22	38.94	47.30	27.68	29.19	56.87	68.33

### 6.1.3 HT – Sales Forecast

#### 6.1.3.1 HT IA - Industrial Segregated:

For the year FY 2017-18, the licensee has projected sales using an appropriate growth rate over 2016-17 projected sales. The licensee has projected the unrestricted sales for FY 2017-18, as it would like to plan no load restriction measures for FY 2017-18. The unrestricted sales projected for FY 2017-18 for this category is 4,413 MU. The growth rate of sales for FY 2016-17 over FY 2015-16 is 0.04 % and for FY 2017-18 over FY

2016-17 is 12.63%.

For the year FY 2017-18, the licensee has assumed that the open access consumption is through the retail business and accordingly no cross-subsidy surcharge revenue has been projected.

The Actual sales for FY 2013-14, FY 2014-15, FY 2015-16 and first half (H1) of FY 2016-17 and projected sales for H2 of FY 2016-17 & FY 2017-18 are as given below:

Voltage	Actual (Sales in MU)				Projection (Sales in MU)		
	2013-14	2014-15	2015-16	2016-17(H1)	2016-17 H2	2016-17 (H1+H2)	2017-18
11 KV	1001.95	1095.18	1231.24	613.15	614.47	1227.62	1386.08
33 KV	758.81	888.26	1174.93	573.56	578.87	1152.43	1301.37
132 KV	927.61	1260.08	1509.81	827.29	710.35	1537.63	1725.16

#### 6.1.4 Forecasting Sales: HT IB (Ferro Alloys)

This category has witnessed (–) ve growth rate during 2014-15 and FY 2015-16 due to most of the Ferro Alloy Industries are not operative due to poor market. In view of encouragement given by the Govt. by providing Rs.1.50 per unit subsidy, all Units have started production which is observed in the sales of H2. Considering the same a growth rate of 26% for FY 2016-17 and for projections of FY 2017-18, a growth rate of 20% has been adopted for forecasting sales.

The Actual sales for FY 2013-14, FY 2014-15, FY 2015-16 and first half (H1) of FY 2016-17 and projected sales for H2 of FY 2016-17 & FY 2017-18 are as given below:

Voltage	Actual (Sales in MU)				Projection (Sales in MU)		
	2013-14	2014-15	2015-16	2016-17(H1)	2016-17 H2	2016-17 (H1+H2)	2017-18
33 KV	101.49	135.91	117.14	72.51	72.51	145.02	174.01
132 KV	1270.37	1171.54	738.59	464.82	464.82	929.64	1115.57

#### 6.1.5 Forecasting Sales: HT II (Others):

For the year FY 2017-18, the licensee has projected sales using an appropriate growth rate over 2016-17 projected sales. The licensee has projected the unrestricted sales for FY 2017-18, as it would like to plan no load restriction measures for FY 2017-18. The unrestricted sales projected for FY 2017-18 for this category is 727 MU. The growth rate of sales for FY 2016-17 over FY 2015-16 is 0.36 % and for FY 2017-18 over FY 2016-17 is 12.42%.

For the year FY 2017-18, the licensee has assumed that the open access consumption is through the retail business and accordingly no cross-subsidy surcharge revenue has been projected.

The Actual sales for FY 2013-14, FY 2014-15, FY 2015-16 and first half (H1) of FY 2016-17 and projected sales for H2 of FY 2016-17 & FY 2017-18 are as given below:

Voltage	Actual (Sales in MU)				Projection (Sales in MU)		
	2013-14	2014-15	2015-16	2016-17(H1)	2016-17 H2	2016-17 (H1+H2)	2017-18
11 KV	313.27	306.70	381.94	195.84	175.12	370.96	403.94
33 KV	112.00	135.14	138.68	63.29	69.47	132.76	152.67
132 KV	70.99	75.08	123.39	48.81	93.80	142.61	169.98

#### 6.1.6 Forecasting Sales: HT III (Aviation activity at airport)

The Actual sales for FY 2013-14, FY 2014-15, FY 2015-16 and first half (H1) of FY 2016-17 and projected sales for H2 of FY 2016-17 & FY 2017-18 are as given below:

Voltage	Actual (Sales in MU)				Projection (Sales in MU)		
	2013-14	2014-15	2015-16	2016-17(H1)	2016-17 H2	2016-17 (H1+H2)	2017-18
11 KV	7.65	8.56	8.16	17.49	16.41	33.90	38.31
33 KV	6.69	5.10	5.41	6.18	6.11	12.29	13.90

#### 6.1.7 Forecasting Sales: HT IVA (Govt. Lift Irrigation Schemes)

The Licensee has collected the likely commissioning dates of the upcoming lift irrigation schemes in consultation with irrigation department and projected the sales for FY 2017-18.

The existing scheme Pattiseema has come into operation in full capacity and the new scheme purushotapuram will come up in the ensuing year. Considering the same the following are the details of additional MU required.

S. No	Name of the Scheme	Name of the District	Addl. Mu requirement per annum	Status of the scheme
1	Pattiseema LIS 132 KV	West Godavari	108	Existing
2	Purushotapatnam LIS 132KV	East Godavari	107.52	New scheme

The Actual sales for FY 2013-14, FY 2014-15, FY 2015-16 and first half (H1) of FY 2016-17 and projected sales for H2 of FY 2016-17 & FY 2017-18 are as given below:

Voltage	Actual (Sales in MU)				Projection (Sales in MU)		
	2013-14	2014-15	2015-16	2016-17(H1)	2016-17 H2	2016-17 (H1+H2)	2017-18
11 KV	14.35	18.84	21.76	7.72	13.18	20.90	20.90
33 KV	36.37	63.42	72.62	26.14	52.20	78.34	78.34
132KV	0	9.78	0	68.52	68.52	137.04	353.02

#### 6.1.8 Forecasting Sales: HT IV B (Agriculture) & HT IV C (Composite Water Supply Schemes)

The voltage wise actual and projected sales for HT IV (B) & HT IV(C) is shown below

Voltage	Actual (Sales in MU)				Projection (Sales in MU)		
	2013-14	2014-15	2015-16	2016-17(H1)	2016-17 H2	2016-17 (H1+H2)	2017-18
11 KV	9.31	10.91	13.85	8.50	9.43	17.93	22.87

#### 6.1.9 Forecasting Sales: HT V (Railway Traction)

The actual growth rate for FY 2015-16 is 4% and estimated growth rate of -3 % estimated for FY 2016-17 has been considered based on the H1 of FY 2016-17. Considering the same, the a growth rate of 1% is considered for FY 2017-18.

The Actual sales for FY 2013-14, FY 2014-15, FY 2015-16 and first half (H1) of FY 2016-17 and projected sales for H2 of FY 2016-17 & FY 2017-18 are as given below:

Voltage	Actual (Sales in MU)				Projection (Sales in MU)		
	2013-14	2014-15	2015-16	2016-17(H1)	2016-17 H2	2016-17 (H1+H2)	2017-18
132KV	620.20	628.18	652.44	313.73	321.18	634.91	638.30

### 6.1.10 Forecasting Sales: HT VI – Townships & Residential Colonies

The Actual sales for FY 2013-14, FY 2014-15, FY 2015-16 and first half (H1) of FY 2016-17 and projected sales for H2 of FY 2016-17 & FY 2017-18 are as given below:

Voltage	Actual (Sales in MU)				Projection (Sales in MU)		
	2013-14	2014-15	2015-16	2016-17(H1)	2016-17 H2	2016-17 (H1+H2)	2017-18
11 KV	20.94	20.00	22.43	11.72	10.59	22.31	23.56
33 KV	7.02	7.87	9.79	5.33	5.23	10.56	12.23

### 6.1.11 Forecasting Sales: HT- RESCOS:

There are two RESCOs in EPDCL area, one at Anakapalli (Visakhapatnam circle), and another at Cheepurupalli (Vizianagaram circle). The growth rate estimated for FY 2016-17 is 2%. For the year 2017-18, APEPDCL has estimated the power consumption by this category at 342.63MU, taking into account actual sales till September 2016.

The licensee has considered an appropriate 14% growth-rate for projecting the sales 2017-18.

The Actual sales for FY 2013-14, FY 2014-15, FY 2015-16 and first half (H1) of FY 2016-17 and projected sales for H2 of FY 2016-17 & FY 2017-18 are as given below:

Voltage	Actual (Sales in MU)				Projection (Sales in MU)		
	2013-14	2014-15	2015-16	2016-17(H1)	2016-17 H2	2016-17 (H1+H2)	2017-18
11KV	235.30	229.20	293.65	142.67	156.98	299.65	342.63

## 6.2 Gross Revenue

### 6.2.1 Revenue from Current Tariffs (Excl. Non-Tariff Income)

The computation of revenue at current tariff for FY 2016-17 and FY 2017-18 for each customer category is carried out as follows:

Revenue from Tariffs =

- Energy Estimate \* Approved Energy Charges ... (a)
- + Demand Estimate \* Approved Demand Charges ..... (b)
- + Incremental Revenue on account of Monthly Minimum Charges ('MMC') ... (c)
- + Customer Charges (d)
- + Other Charges ----- (e)

#### Energy charges:

For customer categories having telescopic energy tariffs, the energy estimates have been apportioned into the slabs and then have been multiplied with the corresponding slab tariff. The apportionment has been based on the historical break up of telescopic consumption into the various slabs as captured in the billing information database. The energy charges are calculated as per the billing parameters i.e., KWH and KVAH for the category and the existing tariff rates of that category

**Demand/Fixed Charges:** The estimate of demand has been made in "HP/KW" or in "MVA" as the case maybe. Billing demand has been assumed to grow in proportion to the growth of sales in FY 2017-18. Additional demand due to additional load has been added to arrive at final demand for the year FY 2017-18.

**Monthly Minimum charges (MMC):** The 'incremental' revenue due to MMC for each category is the difference between cost of units recorded and computed units billed at the relevant tariff in respect of HT categories. In respect of LT categories, it is the difference between the cost of units recorded and monthly minimum charges notified in the tariff order.

**Customer Charges:** Customer charges are as approved in tariff Order for each of the category of consumers. As per the revised regulatory formats income from customer charges is considered as part of revenue from tariffs.

**Other Charges:** These are the charges other than the above charges.

The gross revenue from current tariffs (excl. NTI) estimated for FY 2016-17& FY 2017-18 are tabulated below:

Category	2016-17 estimated	2017-18 projected
<b>LT I: Domestic*</b>	1,706	1,971
<b>LT II: Non-Domestic/Commercial</b>	881	983
<b>LT III: Industry</b>	455	499
<b>LT IV: Cottage Industries</b>	0.91	0.94
<b>LT V: Agriculture</b>	19	18
<b>LT VI: Street Lighting &amp; PWS</b>	120	118
<b>LT VII: General</b>	41	49
<b>LT VII: Temporary Supply</b>	0.84	0.92
<b>Total LT</b>	<b>3,225</b>	<b>3,641</b>
<b>HT I (A): General</b>	2,790	3,170
<b>HT I (B): Energy Intensive Industries</b>	523	628
<b>HT II: Others</b>	599	669
<b>HT III: Public Infrastructure and Tourism</b>	37	44
<b>HT IV: Government LIS</b>	141	264
<b>HT V: Railway Traction*</b>	424	316
<b>HT VI: Townships &amp; Residential Colonies</b>	21	23
<b>HT VII: Green Power</b>	-	-
<b>HT VIII: Temporary</b>	0.43	0.43
<b>Category: RESCOs</b>	22	25
<b>Total HT</b>	<b>4,557</b>	<b>5,139</b>
<b>Total LT+HT</b>	<b>7,782</b>	<b>8,779</b>

### **LT I: Domestic Category**

To overcome the drawbacks in the tariff structure continued up to FY 2015-16, a new simplified tariff structure of domestic category was introduced in the tariff order for FY 2016-17 by grouping the consumers based on FY 2015-16 annual consumption. The licensee would like to propose the same grouping structure for FY 2017-18 as per the filings made by the licensee in FY 2016-17 filings based on the annual consumption of FY 2016-17.

- Group A: Only Domestic consumers with annual consumption upto 600 Units ( upto 50 units/month)
- Group B: Only Domestic consumers with annual consumption greater than 600 Units and upto 2,400 Units



- Group C: Domestic consumers with annual consumption more than 2,400 Units and three phase consumers.

### HT Cat-V: Railway Traction

The licensee would like to mention that, Railways has floated a tender for procurement of 200 MW in the State of Andhra Pradesh for the period from 01.07.2016 to 28.02.2017. Being a deemed distribution licensee, railways is not liable to pay cross-subsidy surcharge to the Discoms with the current norms. Hence, Railways have called tender for medium term open access for purchase of 200 MW from FY 2017-18 onwards. Hence, as it is huge revenue loss to APDISCOMs when Railways opts for Open Access, hence APDISCOMs have considered a tariff of Rs. 4.95/kWh for computation of revenue at current tariff for FY 2017-18 which is the rate close to the price discovered by Railways in the tender.

### 6.2.2 Non-tariff Income at Current Charges

Items of Non - Tariff Income (Rs. in crores)	2015-16	2016-17	2017-18
Recoveries from theft of power or malpractices	0.00	0.00	0.00
Interest Income from Bank Deposits / Investments etc.	14.44	15.16	15.92
Interest income from staff advances and loans	2.61	2.74	2.88
Power Purchase Rebates earned	25.05	26.31	27.62
Securitisation benefits	0.00	0.00	0.00
Miscellaneous / Other Receipts	22.94	24.09	25.29
R.C.fees	20.18	21.19	22.25
L.T.Application fees	1.28	1.35	1.42
Compensation from power traders	17.12	17.98	18.88
<b>Total Non-tariff income</b>	<b>103.64</b>	<b>108.82</b>	<b>114.26</b>

#### 6.2.2.1 Revenue from Theft of Power or malpractices:

The licensee would like to state that it is not appropriate to include this item in the ARR. This is because the forecasts are made assuming that there will be no theft or malpractice. The Discom has been provided a distribution loss target under the MYT and this is the basis of ARR computation. Any instances of theft or malpractice will have a bearing on the loss target achievement and since that is not subject to true-up, revenue from theft and malpractice should not be considered.

#### 6.2.2.2 Interest income from Bank Deposits / investments

Interest income from bank deposits has been estimated at Rs. 15.16Crs.,Rs. 15.92Crs. for the Financial Years 2016-17 and 2017-18 respectively. The estimate is made considering the existing deposits and their maturity periods and also considering the financial position of the company to make fixed deposits in the coming two years.

### 6.2.2.3 Power Purchase Rebates earned:

It is estimated that Power Purchase Rebates will be earned to the extent of Rs.26.31Cr. for FY: 2016-17 and Rs.27.62Cr. for FY: 2017-18.

### 6.2.2.4 Miscellaneous /Other Receipts:

Miscellaneous receipts for retail supply business comprise mainly of the following receipts-

- a) Capacitor Surcharge
- b) Penalties from suppliers
- c) Others

Miscellaneous receipts for FY 2016-17 is estimated as Rs.24.09Cr. based on first half of FY 2016-17 and for FY 2017-18 based on past trend it was estimated as Rs.25.29 Crores .

### 6.2.2.5 R.C.fees and Application fees:

Taking into consideration of the past trend, R.C.fees and Application fees are projected at Rs. 21.19Cr. and Rs. 22.25Cr. for FY 2016-17 and FY 2017-18.

## 6.2.3 Revenue at Current Tariffs and Charges

The revenue from current tariffs estimated for FY 2017-18 is tabulated as under:

Consumer Categories	Net Revenue including NTI (Rs. Crores)
<b>Low Tension</b>	<b>3,703</b>
<b>LT I: Domestic</b>	<b>2,006</b>
<b>Group A: All consumers with annual consumption &lt;= 900 Units</b>	<b>318</b>
0-50	194
51-100	95
101-200	17
Above 200	13
<b>Group B: All consumers with consumption (&lt;=2700 and &gt; 900 units)</b>	<b>1,153</b>
0-50	377
51-100	311
101-200	290
201-300	128
Above 300	47
<b>Group C: All consumers with annual consumption &gt;2700 units</b>	<b>534</b>
0-50	41
51-100	54
101-200	132
201-300	127
301-400	81

Consumer Categories	Net Revenue including NTI (Rs. Crores)
401-500	37
Above 500 units	62
<b>LT II: Non-Domestic/Commercial</b>	<b>990</b>
<b>LT II (A): Upto 50 Units/Month</b>	<b>64</b>
0-50	64
<b>LT II (B): Above 50 Units/Month</b>	<b>918</b>
0-50	97
51-100	89
101-300	181
301-500	93.52
Above 500	459
<b>LT II (C): Advertisement Hoardings</b>	<b>1.20</b>
<b>LT II (D) : Function Halls / Auditoriums</b>	<b>6.30</b>
<b>LT III: Industry</b>	<b>505</b>
Industries (General)	277
Seasonal Industries (off season)	8.75
Aquaculture and Animal Husbandry	213
Sugarcane crushing	0.62
Mushroom and Rabbit farms	0.01
Floriculture in Green House	1.62
Poultry Hactcheries& Poultry Feed mixing plants	3.70
<b>LT IV: Cottage Industries</b>	<b>0.95</b>
Cottage Industries upto 10HP	0.84
Agro Based Activities	0.11
<b>LT V: Agriculture</b>	<b>31</b>
<b>LT V (A): Agriculture with DSM Measures</b>	<b>25</b>
Corporate Farmers & IT Assesses	1.52
Wet Land Farmers (Holdings >2.5 acre)	2.25
Dry Land Farmers (Connections > 3 nos.)	0.90
Wet Land Farmers (Holdings <= 2.5 acre)	1.53
Dry Land Farmers (Connections <= 3 nos.)	19
<b>LT V (B): Agriculture without DSM Measures</b>	<b>5.79</b>
Corporate Farmers & IT Assesses	0.17
Wet Land Farmers (Holdings >2.5 acre)	3.85
Dry Land Farmers (Connections > 3 nos.)	0.77
Wet Land Farmers (Holdings <= 2.5 acre)	0.36
Dry Land Farmers (Connections <= 3 nos.)	0.63
<b>LT V (C): Others</b>	<b>0.09</b>
Salt farming units with CL upto 15HP	0.02
Rural Horticulture Nurseries with connected load upto 15HP	0.07
<b>LT VI: Street Lightng&amp; PWS</b>	<b>119</b>
<b>LT VI (A): Street Lighting</b>	<b>52</b>

Consumer Categories	Net Revenue including NTI (Rs. Crores)
Panchayats	34
Municipalities	5.64
Municipal Corporations	12.52
<b>LT VI (B): PWS Schemes</b>	<b>67</b>
Panchayats	59
Municipalities	4.69
Municipal Corporations	3.62
<b>LT-VI (C): NTR SujalaPadhakam</b>	<b>0.36</b>
<b>LT VII: General</b>	<b>50</b>
<b>LT VII (A): General Purpose</b>	<b>43</b>
<b>LT VII (B): Religious Places</b>	<b>6.68</b>
(i) Religious Places (CL > 2kW)	6.68
(ii) Religious Places (CL <= 2kW)	-
<b>LT VII: Temporary Supply</b>	<b>0.93</b>
<b>Total LT</b>	<b>3,703</b>
<b>High Tension</b>	
<b>HT Category at 11 kv</b>	<b>1,620</b>
<b>HT I (A): General</b>	<b>937</b>
Lights and Fans	-
Industrial Colonies	1.21
Seasonal Industries	3.23
Time of Day Tariffs (6 PM to 10 PM)	162
<b>HT I (B): Energy Intensive Industries</b>	<b>-</b>
<b>HT I (C): Aquaculture and Animal Husbandry</b>	<b>5.45</b>
<b>HT I (D): Poultry Hatcheries and Poultry Feed Mixing Plants</b>	<b>3.52</b>
<b>HT II: Others</b>	<b>329</b>
Time of Day Tariffs (6 PM to 10 PM)	73
<b>HT II (B): Religious Places</b>	<b>1.58</b>
<b>HT II (C): Function Halls/Auditoriums</b>	<b>4.18</b>
<b>HT III: Public Infrastructure and Tourism</b>	<b>25</b>
Time of Day Tariffs (6 PM to 10 PM)	8.46
HT IV Government LIS	11.99
HT IV Private Irrigation and Agriculture	0.07
HT IV CPWS	10.90
<b>HT VI: Townships &amp; Residential Colonies</b>	<b>15.06</b>
<b>HT VII: Green Power</b>	<b>-</b>
<b>HT VIII: Temporary</b>	<b>0.06</b>
<b>Category: RESCOs</b>	<b>27</b>
<b>HT Category at 33 kv</b>	<b>1,243</b>
<b>HT I (A): General</b>	<b>767</b>
Lights and Fans	-

Consumer Categories	Net Revenue including NTI (Rs. Crores)
<b>Industrial Colonies</b>	<b>0.58</b>
<b>Seasonal Industries</b>	<b>1.26</b>
Time of Day Tariffs (6 PM to 10 PM)	192
<b>HT I (B): Energy Intensive Industries</b>	<b>92</b>
<b>HT I (C) : Aquaculture and Animal Husbandry</b>	<b>0.02</b>
<b>HT I (D) : Poultry Hatcheries and Poultry Feed Mixing Plants</b>	<b>-</b>
<b>HT II: Others</b>	<b>106</b>
Time of Day Tariffs (6 PM to 10 PM)	20
HT II (B): Religious Places	-
HT II (C) : Function Halls / Auditoriums	-
<b>HT III: Public Infrastructure and Tourism</b>	<b>8.31</b>
Time of Day Tariffs (6 PM to 10 PM)	2.20
HT IV Government LIS	44
HT IV Agriculture	-
HT IV CPWS	-
<b>HT VI: Townships &amp; Residential Colonies</b>	<b>7.68</b>
<b>HT VII: Green Power</b>	<b>-</b>
<b>HT VIII: Temporary</b>	<b>0.17</b>
<b>HT Category at 132 kv</b>	<b>2,327</b>
<b>HT I (A): General</b>	<b>942</b>
Lights and Fans	-
Industrial Colonies	19
Seasonal Industries	-
Time of Day Tariffs (6 PM to 10 PM)	163
<b>HT I (B): Energy Intensive Industries</b>	<b>544</b>
<b>HT I (C) : Aquaculture and Animal Husbandry</b>	<b>-</b>
<b>HT I (D): Poultry and Hatcheries and Poultry Feed Mixing Plants</b>	<b>-</b>
<b>HT II: Others</b>	<b>119</b>
Time of Day Tariffs (6 PM to 10 PM)	20
HT II (B): Religious Places	-
HT II (C) : Function Halls / Auditoriums	-
<b>HT III: Public Infrastructure and Tourism</b>	<b>-</b>
Time of Day Tariffs (6 PM to 10 PM)	-
HT IV Government LIS	200
HT IV Agriculture	-
HT IV CPWS	-
<b>HT V: Railway Traction</b>	<b>320</b>
<b>HT VI: Townships &amp; Residential Colonies</b>	<b>-</b>
<b>HT VII: Green Power</b>	<b>-</b>
<b>HT VIII: Temporary</b>	<b>0.20</b>
<b>Total HT</b>	<b>5,190</b>
<b>TOTAL( LT + HT)</b>	<b>8,894</b>

## 7 Average Revenue Realized vs Average CoS break up for APEPDCL in FY 2017-18

- Average Revenue Realized (ARR) for FY 2017-18 is Rs.5.03/kWh
- Average Cost of Supply (CoS) for APEPDCL - Rs. 5.92/kWh
- Average CoS break-up (per unit of Sales) for APEPDCL is as follows

	<b>FY 16-17 Approved (Rs./Unit)</b>	<b>FY 16-17 Projected (Rs./Unit)</b>	<b>FY 17-18 Projected (Rs./Unit)</b>
Power purchase cost	3.68	3.84	4.16
T&D Loss Cost	0.47	0.44	0.48
Network	1.09	1.12	1.20
Other Cost	0.03	0.09	0.09
<b>Cost of Service</b>	<b>5.26</b>	<b>5.50</b>	<b>5.92</b>

- The estimated revenue gap for the licensee for FY 2017-18 is as follows:

<b>S.No.</b>	<b>Particulars</b>	<b>FY 2017-18</b>
A	Total Revenue at current tariffs (Rs Crs)	<b>8,894</b>
B	Aggregate Revenue Requirement (Rs. Crs.)	10,481
<b>C = A - B</b>	<b>Revenue (Deficit) / Surplus at Current Tariffs (Rs. Crs.)</b>	<b>(1,587)</b>

## 8 Energy Conservation measures taken by APEPDCL

1. APEPDCL comprising of 5 districts namely Srikakulam, Vizianagaram, Visakhapatnam, East Godavari and West Godavari with approximately 55.23 lakhs consumers having an average demand of 1500MW per day comprises Domestic sector 39%, Commercial 14%, Industrial 23%, AGL 18% and Others 6% .
2. As part of Energy Conservation week APEPDCL organized the following activities to create awareness on Energy Conservation, Energy Efficiency and Renewable Energy Sources i.e Solar etc.,
  - ✓ Rally is conducted for creating awareness
  - ✓ Painting Competitions were conducted for School going children in Sub Junior, Junior & Senior Categories on the Topic Energy Conservation & Solar Energy.
  - ✓ Technical quiz conducted for school going children to create awareness on Energy Resources and Energy Conservation.
  - ✓ Solar Expo conducted from 22nd to 24th August 2015 with Solar panel vendors and other energy efficient devices suppliers to promote Roof top solar Energy.
  - ✓ Work shop conducted for creating awareness on Energy Conservation for general public and Engineering College Students.

### 8.1 Energy Conservation Initiatives taken by APEPDCL

1. As a part of Loss Reduction and Energy Conservation Measures the following initiatives are taken
  - a. **Erected BEE 5 Star rated DTRs**
    - APEPDCL is the first power utility in procurement of DTRs with BEE 5 star rating among all power utilities in India.
  - b. **Erected Capacitor Banks**
    - 119 No's of 1MVAR and 03 No's 2MVAR Capacitor Banks totaling to 125 MVAR were erected.
    - 184Nos. 600 KVAR capacitor banks totaling 110.4 MVAR erected on 11 kV Agriculture feeders for improving power factor and consequent reduction of load current on the feeders.
  - c. **Distribution of LED Bulbs to each domestic consumer**
    - Implemented DELP (DSM Based Efficient Lighting Programme) scheme in APEPDCL wherein which 2 Nos. LED Bulbs are distributed to each domestic service at free of cost and about 75.41lakh bulbs were distributed. Expected energy savings per month is 48.92MU.
  - d. **Implemented Domestic Efficient Fan Programme (DEFP) in Narasapuram**
    - APEPDCL implemented the Domestic Efficient Fan Programme (DEFP) in Narasapuram revenue division in West Godavari District through M/s. EESL for

distribution of 1,00,000 Nos. BEE 5 star rated fans on upfront basis @ Rs1100/- per fan and in Installment basis @Rs.1250/- per fan within 24 installments. The estimated energy savings per annum is 14.70 MU.

- APEPDCL filed a petition for extending the program in all areas of APEPDCL in similar method for distribution of 12 Lakh fans. The estimated energy savings per annum is 126 MU.

**e. Installed Ag DSM Project**

- APEPDCL has initiated implementation of Ag DSM based project at Rajanagaram Mandal in East Godavari District on ESCROW model with M/s EESL. Under this project 2000 inefficient agricultural Pump sets are being replaced with energy efficient pumps (EEPS) and the total estimated energy savings per annum is about 21.37 MU.

Due to the above and various other activities the Energy loss of APEPDCL has got reduced to 5.48%. If it is further reduced by 1%, Approx. 170MU of power can be saved annually cost of which is Rs/- 70 crores and hence loss reduction activities are being continuously monitored.

**2. Solar Roof Top Project**

- 10KW Roof top Solar Project were installed at ATC building and circuit house / Visakhapatnam during the year 2012.
- Encouraging consumers for Solar Power generation and net metering by installing grid connected roof top Solar PV system by individual consumer with 30% subsidy on the project cost. 296 No's Solar Roof top units commissioned with a total capacity of 5230 KW in APEPDCL.

**3. Solar Agriculture Pump sets**

- a. As a measure to reduce power purchase cost especially in Agriculture which is the highest loss potential pocket ,3000 Nos. solar Agriculture Pump sets were installed and about 800 No's works are under progress.

**4. NEW IT INITIATIVES IN APEPDCL**

EPDCL explore various modes to utilize technological developments for improving operational efficiency and customer care. Some of the highlights of the areas in which the basic work is completed and is expected to Go-Live by mid of next financial year are as follows:

- Implemented E-Office and E-stores successfully.
- Generated Daily Defaulters list and provided facility for updation of the action taken and developed various reports on the same.
- Developed a module for release of services under Rural Electrification (RE) Component under DDUGJY Scheme and developed reports for monitoring the progress.
- Implemented revised load approval process which has reduced the no. of work orders to be operated by AE-Operations.
- Provision for uploading Documents during registration in Call centers which has reduced the dependency of hard copies for release of services by the operations staff.
- Facility for uploading test reports after release of new services & meter change slips after meter changes has reduced the delay in the process of acceptance by AAO-ERO.
- Online registration for New Service Application.
- Online registration for Solar roof top (Net metering)



- Development of mobile applications
- Eastern Power' mobile application: Consumer mobile app has been completely in-house initiative and successfully developed where in the consumer can view/pay bills, know their power supply status, Register a complaint, know the status of complaint, etc.
  - Inspection of Sub-stations
  - Inspections of 33KV lines
  - Inspection of 11KV lines
  - Inspection of DTRs and
  - Inspection of LT lines
- Development and Implementation of e-Project Monitoring System (e-PMS) which enables to monitor the status of all projects/ schemes such that these are executed efficiently within timelines specified.
- Development of Application for monitoring the replacement of failed Distribution Transformers using Vehicle Tracking System (VTS).
- SAP logins have been given up to the cadre of AEs and a module for closing of work orders has been developed with a dashboard. Closing of Work orders can be monitored at different levels so that they are closed immediately after work completion for capitalization of Assets.
- Developed CM dashboard web application.
- Development of LMC dashboard with the following features:
  - 11 KV feeder interruptions with cause-wise analysis.
  - Loads and Power factor of all 11 KV feeders.
  - DTR Loads in all R-APDRP towns.
  - SAIDI-SAIFI Analysis with graphical representation up to section level.
  - Load Curve indicating Schedules Vs Actuals.

## 9 Performance Reports

<b>Details of Compensation awarded to consumers and penalties imposed and disciplinary action proposed on department staff</b>						
<b>ABSTRACT (2015-16)</b>						<b>( Rs. Lakhs )</b>
<b>Sl. No</b>	<b>Circle</b>	<b>Total No. of Cases</b>	<b>No. of Cases Penalties imposed/ Compensation awarded</b>	<b>Penalties imposed/ Compensation Awarded</b>	<b>No. of cases disciplinary action proposed</b>	<b>No. of cases both Penalty/ DC action proposed</b>
1	Srikakulam	1	1	8.154	0	0
2	Vizianagaram	0	0	0	0	0
3	Visakhapatnam	0	0	0	0	0
4	Rajamahendravaram	3	3	23.806	0	0
5	Eluru	2	0	0	0	0
<b>Total</b>		<b>6</b>	<b>4</b>	<b>31.960</b>	<b>0</b>	<b>0</b>

<b>DETAILS OF COMPENSATION AWARDED TO CONSUMERS AND PENALTIES IMPOSED AND DISCIPLINARY ACTION PROPOSED ON DEPARTMENT STAFF</b>						
<b>ABSTRACT (April-16 to Sept-16)</b>						<b>( Rs. Lakhs )</b>
<b>Sl. No</b>	<b>Circle</b>	<b>Total No. of Cases</b>	<b>No. of Cases Penalties imposed/ Compensation awarded</b>	<b>Penalties imposed/ Compensation Awarded Amount (Rs.)</b>	<b>No. of cases disciplinary action proposed</b>	<b>No. of cases both Penalty/ DC action proposed</b>
1	Srikakulam	0	0	0	0	0
2	Vizianagaram	0	0	0	0	0
3	Visakhapatnam	0	0	0	0	0
4	Rajamahendravaram	0	0	0	0	0
5	Eluru	0	2	15.54	0	0
<b>Total</b>		<b>0</b>	<b>2</b>	<b>15.54</b>	<b>0</b>	<b>0</b>

<b>Non-departmental Fatal Electrical Accidents (Human) occurred during 2015-16 and amount of Ex-gratia paid</b>						
<b>Sl. No.</b>	<b>District</b>	<b>No. of accidents occurred</b>			<b>No. of cases for which ex-gratia paid</b>	
		<b>Due to Dept. Faults (Snapping of conductor, defective appliances etc.,)</b>	<b>Not due to Dept. Faults (unauthorized work etc.,)</b>	<b>Total</b>	<b>No. of cases</b>	<b>Amount in Rs Lakhs</b>
1	Srikakulam	4	9	13	5	14.00
2	Vizianagaram	9	12	21	16	31.00
3	Visakhapatnam	5	30	35	9	19.00
4	East Godavari	15	31	46	20	39.00
5	West Godavari	16	20	36	16	29.50
<b>EPDCL</b>		<b>49</b>	<b>102</b>	<b>151</b>	<b>66</b>	<b>132.50</b>

**Note: Ex-gratia sanctioned including previous years accidents cases also.**

<b>Non-departmental Fatal Electrical Accidents (Human) occurred during the period 04/16 to 09/16 and amount of Ex-gratia paid</b>						
<b>Sl. No.</b>	<b>District</b>	<b>No. of accidents occurred</b>			<b>No. of cases for which ex-gratia paid</b>	
		<b>Due to Dept. Faults (Snapping of conductor, defective appliances etc.,)</b>	<b>Not due to Dept. Faults (unauthorized work etc.,)</b>	<b>Total</b>	<b>No. of cases</b>	<b>Amount in Rs Lakhs</b>
1	Srikakulam	7	8	15	3	6.00
2	Vizianagaram	0	6	6	2	6.00
3	Visakhapatnam	6	22	28	1	4.00
4	East Godavari	11	35	46	6	12.00
5	West Godavari	8	11	19	10	25.00
<b>EPDCL</b>		<b>32</b>	<b>82</b>	<b>114</b>	<b>22</b>	<b>53.00</b>
<b>Note : Payment of Ex-gratia for the balances cases could not be made due to non-receipt of necessary documents required for payment viz.</b>						

<b>Departmental Fatal Electrical Accidents occurred during 2015-16</b>				
<b>Sl. No.</b>	<b>District</b>	<b>Total</b>	<b>No. of cases for which compensation paid during 2015-16</b>	
			<b>No. of cases</b>	<b>Amount in Rs. Lakhs</b>
1	Srikakulam	1	1	8.154
2	Vizianagaram	0	0	0
3	Visakhapatnam	0	0	0
4	Rajamahendravaram	3	3	23.806
5	Eluru	2	0	0
<b>EPDCL TOTAL</b>		<b>6</b>	<b>4</b>	<b>31.960</b>

**Note: In Eluru Circle – 2 No cases accident occurred in 2015-16, but sanction accorded in 2016-17 after proposals received**

<b>Departmental Fatal Electrical Accidents occurred during 01-04-2016 TO 30.09.2016</b>				
<b>Sl. No.</b>	<b>District</b>	<b>Total</b>	<b>No. of cases for which compensation paid 2016-17 (Upto Sep.)</b>	
			<b>No. of cases</b>	<b>Amount in Rs</b>
1	Srikakulam	0	0	0
2	Vizianagaram	0	0	0
3	Visakhapatnam	0	0	0
4	Rajamahendravaram	0	0	0
5	Eluru	0	2	15.54
<b>EPDCL TOTAL</b>		<b>0</b>	<b>2</b>	<b>15.54</b>

**Note: In Eluru Circle – 2 No. cases accident occurred in 2015-16, but sanction accorded in 2016-17 after proposals received**

No. of DTRs failed & erected during 2015-16 and 2016-17 (upto 30.09.16)								
Sl. No.	Name of the Circle	No. of DTRs existing as on 31-03-2015	No. of DTRs erected during 2015-16	No. of DTRs failed during 2015-16	No. of DTRs existing as on 31-03-2016	No. of DTRs erected during 2016-17 (upto 30.09.16)	No. of DTRs failed during 2016-17 (upto 30.09.16)	No. of DTRs existing as on 30-09-16
1	SKLM	12585	1979	1167	14564	332	1123	14896
2	VZM	12036	1559	1248	13595	592	905	14187
3	VSP	23493	1463	800	24956	763	678	25719
4	RJY	41232	2622	2490	43854	609	1404	44463
5	ELR	62101	3905	4262	66006	2254	2689	68260
<b>EPDCL</b>		<b>151447</b>	<b>11528</b>	<b>9967</b>	<b>162975</b>	<b>4550</b>	<b>6799</b>	<b>167525</b>

DTR COMPLAINTS RECEIVED DURING FY: 2015-16, ATTENDED AND BALANCE AT CALL CENTERS AS ON 31-03-16									
S.No.	Circle	No. Of DTR Complaints to be attended as on 01-04-16		No. of DTR Complaints Received during FY: 2015-16	No. of DTR Complaints attended during FY: 2015-16		No. of Complaints Rejected	Balance No.of DTR complaints to be attended as on 31-03-16	
		WRT	BRT		WRT	BRT		WRT	BRT
1	<b>SRIKAKULAM</b>	0	0	1167	1111	54	2	0	1
2	<b>VIZIANAGARAM</b>	0	0	1248	1095	153	0	0	0
3	<b>VISAKHAPATNAM</b>	0	0	800	732	67	1	1	0
4	<b>RAJAHMUNDRY</b>	0	0	2490	2376	114	0	0	0
5	<b>ELURU</b>	0	0	4262	4057	203	2	0	0
<b>Total</b>		<b>0</b>	<b>0</b>	<b>9967</b>	<b>9371</b>	<b>591</b>	<b>5</b>	<b>1</b>	<b>1</b>

**DTR COMPLAINTS RECEIVED DURING FY: 2016-17, ATTENDED AND BALANCE  
AT CALL CENTERS AS ON 30-09-16**

S.No.	Circle	No. Of DTR Complaints to be attended as on 1-04-16		No. of DTR Complaints Received during FY; 2016-17 (upto Sep.)	No. of DTR Complaints attended during FY: 2016-17 (up to Sep.)		No. of Complaints Rejected during FY: 2016-17 (upto Sep.)	Balance No. of DTR complaints to be attended as on 30-09-16	
		WRT	BRT		WRT	BRT		WRT	BRT
1	<b>SRIKAKULAM</b>	0	0	1123	1061	62	1	0	0
2	<b>VIZIANAGARAM</b>	0	0	905	786	119	0	2	0
3	<b>VISAKHAPATNAM</b>	0	0	678	566	112	1	1	0
4	<b>RAJAHMUNDRY</b>	0	0	1404	1300	104	8	0	0
5	<b>ELURU</b>	0	0	2689	2620	69	3	1	0
<b>Total</b>		<b>0</b>	<b>0</b>	<b>6799</b>	<b>6333</b>	<b>466</b>	<b>13</b>	<b>4</b>	<b>0</b>

**FUSE OF CALLS RECEIVED DURING FY: 2015-16, ATTENDED AND BALANCE  
AT CALL CENTERS AS ON 31.03.2016**

S. No.	Circle	No. of FOC complaints to be attended as on 01-04-2015		No. of FOC complaints received during FY 2015-16	No. of FOC complaints attended during FY 2015-16		No. of Complaints Rejected	Balance No. of FOC complaints to be attended as on 31.03.2016	
		WRT	BRT		WRT	BRT		WRT	BRT
1	<b>SRIKAKULAM</b>	7	1	9536	9375	156	0	9	4
2	<b>VIZIANAGARAM</b>	11	1	4837	4562	283	0	4	0
3	<b>VISAKHAPATNAM</b>	43	11	66396	65856	545	0	47	2
4	<b>RAJAHMUNDRY</b>	34	2	45882	45141	736	0	38	3
5	<b>ELURU</b>	53	10	36482	35732	787	0	18	8
<b>Total</b>		<b>148</b>	<b>25</b>	<b>163133</b>	<b>160666</b>	<b>2507</b>	<b>0</b>	<b>116</b>	<b>17</b>

**FUSE OF CALLS RECEIVED DURING FY: 2016-17, ATTENDED AND BALANCE  
AT CALL CENTERS AS ON 30.09.2016**

S. No.	Circle	No. of FOC complaints to be attended as on 01-04-2016		No. of FOC complaints received during FY 2016-17 (upto Sep.)	No. of FOC complaints attended during FY 2015-16 (upto Sep.)		No. of Complaints Rejected during FY 2016-17 (upto Sep.)	Balance No. of FOC complaints to be attended as on 30.09.2016	
		WRT	BRT		WRT	BRT		WRT	BRT
1	<b>SRIKAKULAM</b>	9	4	6671	6305	349	0	25	5
2	<b>VIZIANAGARAM</b>	4	0	2934	2671	258	0	8	1
3	<b>VISAKHAPATNAM</b>	47	2	45556	45018	479	0	106	2
4	<b>RAJAHMUNDRY</b>	38	3	24941	24314	622	0	43	3
5	<b>ELURU</b>	18	8	14461	13742	683	0	57	5
<b>Total</b>		<b>116</b>	<b>17</b>	<b>94563</b>	<b>92050</b>	<b>2391</b>	<b>0</b>	<b>239</b>	<b>16</b>

**DETAILS OF CIRCLE WISE AND CATEGORY WISE BURNT METERS IN APEPDCL AS ON  
30.09.2016**

S. No.	Circle	I	II	III	IV	V	VI	VII	Others	Total
1	Srikakulam	329	66	15	0	6	38	11	0	465
2	Vizianagaram	366	48	12	0	3	24	8	0	461
3	Visakhapatnam	418	87	11	3	18	645	11	0	1193
4	Rajamahendravaram	566	150	41	1	44	183	17	0	1002
5	Eluru	446	118	92	0	18	167	8	0	849
<b>Total for APEPDCL</b>		<b>2125</b>	<b>469</b>	<b>171</b>	<b>4</b>	<b>89</b>	<b>1057</b>	<b>55</b>	<b>0</b>	<b>3970</b>

**DETAILS OF CIRCLE WISE AND CATEGORY WISE STUCK-UP METERS IN APEPDCL AS ON  
30.09.2016**

<b>S. No.</b>	<b>Circle</b>	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>	<b>V</b>	<b>VI</b>	<b>VII</b>	<b>VIII</b>	<b>Others</b>	<b>Total</b>
1	Srikakulam	3480	252	31	1	4	37	54	0		3859
2	Vizianagaram	2481	305	41	1	1	54	32	0		2915
3	Visakhapatnam	5596	629	31	4	5	141	39	0		6445
4	Rajamahendravaram	5723	688	128	4	35	278	85	0		6941
5	Eluru	3863	501	227	2	24	275	72	0		4964
<b>Total for APEPDCL</b>		<b>21143</b>	<b>2375</b>	<b>458</b>	<b>12</b>	<b>69</b>	<b>785</b>	<b>282</b>	<b>0</b>		<b>25124</b>



**Frequency and voltage at various levels of interface over the period Apr - 2015 to Sep - 2016**

CIRCLE	132KVSS	33KVSS	Parameter	Apr -15	May -15	Jun -15	Jul -15	Aug -15	Sep -15	Oct -15	Nov -15	Dec -15	Jan -16	Feb -16	Mar -16	Apr -16	May -16	Jun -16	Jul -16	Aug -16	Sep -16	
SKLM	PALASA SS	PALASA SS	AVG VOLTAGE	34.00	33.00	34.00	32.00	34.00	33.00	31	32	32	31	32	33	34	33	34	34	32	33	
			FREQ.	49.98	49.58	49.68	49.68	49.35	49.40	49.42	49.25	49.4	49.25	49.61	49.56	49.51	49.25	49.98	49.98	49.52	49.52	
	CHILAKAPALEM SS	SRIKAKULAM SS	AVG VOLTAGE	11.05	11.00	11.05	11.05	11.05	11.50	11.25	11.25	11.25	11.05	11.05	11.05	11.05	11.05	11.5	11.05	11.05	11.05	11.05
			FREQ.	49.50	49.62	49.80	49.59	49.58	49.60	49.52	49.9	49.67	49.9	49.58	49.69	49.97	49.68	49.68	49.51	49.69	49.85	
	TEKALI SS	SANTHABOMMALI SS	AVG VOLTAGE	34.00	33.00	34.00	33.00	33.00	31.00	32	32	31	31	31	33	34	34	34	34	33	33	32
			FREQ.	49.89	49.74	49.68	49.75	49.56	49.10	49.2	49.15	49.57	49.69	49.57	49.89	49.91	49.5	49.45	49.51	49.65	49.75	
VZM	BOBBLI	PARVATHIPURAM SS	AVG VOLTAGE	33.25	33.75	33.50	33.50	33.25	33.50	33.75	33.75	34.5	33.25	33.75	34.25	33.75	33.5	33.25	33.25	32.25	33.75	
			FREQ.	49.20	49.50	49.50	49.20	49.90	49.80	49.80	49.2	49.5	49.5	49.5	49.7	49.7	49.2	49.5	49.5	49.5	49.7	
		SALURU SS	AVG VOLTAGE	33.75	33.75	33.25	33.50	33.50	33.75	33.50	33.25	33.25	33.5	33.25	33.25	33.75	33.25	33.25	33.25	33.25	33.5	33.5
			FREQ.	49.50	49.50	49.50	49.70	49.70	49.20	49.50	49.5	49.5	49.7	49.4	49.5	49.5	49.7	49.7	49.7	49.2	49.2	49.5
	PARAVATHIPURAM	NAGURU SS	AVG VOLTAGE	33.25	33.75	33.50	33.75	34.25	33.25	33.75	33.5	33.75	34.25	33.5	33.5	33.75	33.5	33.75	33.5	33.5	33.5	33.25
			FREQ.	49.90	49.80	49.80	49.20	49.50	49.50	49.50	49.7	49.5	49.5	49.5	49.7	49.7	49.5	49.7	49.7	49.2	49.5	
		KOMARADA SS	AVG VOLTAGE	33.50	33.50	33.25	33.25	33.50	33.75	33.50	33.5	33.25	33.25	34.25	33.5	33.5	33.75	33.25	33.25	33.25	33.25	33.75
			FREQ.	49.50	49.50	49.70	49.40	49.50	49.50	49.70	49.7	49.2	49.5	49.5	49.5	49.7	49.2	49.5	49.5	49.2	49.2	49.2
	VONTITHADI	RAJAPULOVA SS	AVG VOLTAGE	33.75	34.50	33.50	34.25	33.25	34.25	33.75	33.75	33.75	33.25	33.5	33.5	33.75	33.5	33.25	33.25	33.5	33.5	33.5
			FREQ.	49.50	49.50	49.70	49.70	49.50	49.50	49.50	49.2	49.9	49.8	49.7	49.4	49.5	49.5	49.7	49.7	49.2	49.2	49.5
		T.B.VARA SS	AVG VOLTAGE	33.25	33.50	33.50	33.25	33.25	33.75	33.75	33.75	33.75	34.25	33.5	33.5	33.75	33.5	33.25	33.25	33.25	33.25	33.5
			FREQ.	49.20	49.20	49.50	49.50	49.70	49.70	49.20	49.5	49.5	49.2	49.9	49.8	49.8	49.2	49.5	49.5	49.5	49.5	49.4
RJY	R.C.PURAM SS	33 KV Tallarevu SS	AVG VOLTAGE	36.1	36.1	37.4	36.5	36.4	36.4	35.9	37.4	36.8	36.8	35.8	35.8	36	36.7	36.2	36.9	36.8	36.8	
			FREQ.	49.9	49.9	49.9	49.9	49.9	49.9	49.9	49.9	49.9	49.9	49.9	49.9	49.9	49.9	49.9	49.9	49.9	49.9	49.9
	PEDDAPURAM SS	33KV DIVILI SS	AVG VOLTAGE	35.5	35.6	35.6	35.5	35.7	35.6	35.6	36.5	36.5	36.9	35.6	35.5	35.4	35.6	35.5	40.3	36.4	35.2	
			FREQ.	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
ELURU	NIDADAVOL SS	33KV NIDADAVOL SS	AVG VOLTAGE	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	
			FREQ.	49.92	49.28	48.31	49.28	49.32	50.01	49.94	49.14	48.86	49.36	49.32	50.01	49.94	49.14	48.86	49.36	49.32	49.84	
	J.R.GUDEM SS	33KV J.R.GUDEM SS	AVG VOLTAGE	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	
			FREQ.	48.5	48	48.3	48.7	48	48.5	48.3	49	48	48.6	49	48.3	48	48.5	48.5	48	49	48.5	
	P.T.PALLI SS	33KV P.T.PALLI SS	AVG VOLTAGE	32.8	32.7	32.9	32.2	33.2	33.2	32.8	32.8	32.6	32.8	32.9	32.5	33.1	33.8	33.2	33.4	33	33.2	
			FREQ.	49.8	49.8	49.8	49.9	49.8	49.9	49.8	49.8	49.9	50	50	49.9	49.8	49.9	49.8	50	49.8	49.9	
VSP	132KV Anandapuram SS	33KV Anandapuram SS	AVG VOLTAGE	32.5	33	33.5	33.7	33	32.5	32	33.5	33.5	32.5	32.5	32.8	33.4	34	33.4	33.4	35	34.7	
			FREQ.	49.5	50	49	48.9	49	50	49.5	48.8	50	48.8	49.5	49.2	49	49	49	49	49	49	
		33KV Bheemli SS	AVG VOLTAGE	31.5	32	33	32	32	31.5	33	33	33.5	31.5	32	33.4	32	32	33	33.5	33.6	33.6	
			FREQ.	50	49.5	48.9	49	49	49.2	49	49.5	49	49.5	49	49	49.5	49.5	49.5	49.5	49	49.5	

<b>Break Downs &amp; Interruptions in Power supply to Rural Consumers for FY: 2015-16</b>					
<b>S. No.</b>	<b>Circle</b>	<b>Breakdowns</b>		<b>Interruptions</b>	
		<b>Nos</b>	<b>Duration (Hrs:min:sec)</b>	<b>Nos</b>	<b>Duration (Hrs:min:sec)</b>
1	Srikakulam	120	208:29	479	688:45:00
2	Vizianagaram	448	859:22	2367	3146:02:00
3	Visakhapatnam	392	739:20	2191	3882:28:00
4	Rajahmundry	424	950:09	2839	4956:58:00
5	Eluru	838	1751:00	4458	7869:45:00
<b>DISCOM</b>		<b>2222</b>	<b>4508:20</b>	<b>12334</b>	<b>20543:58</b>

<b>Break Downs &amp; Interruptions in Power supply to Rural Consumers for FY: 2016-17 (upto 30-09-16)</b>					
<b>S. No.</b>	<b>Circle</b>	<b>Breakdowns</b>		<b>Interruptions</b>	
		<b>Nos</b>	<b>Duration (Hrs:min:sec)</b>	<b>Nos</b>	<b>Duration (Hrs:min:sec)</b>
1	Srikakulam	126	272:41	298	565:31:00
2	Vizianagaram	415	1015:24	1714	3023:38:00
3	Visakhapatnam	371	723:14	2542	4267:26:00
4	Rajahmundry	547	1024:31	2419	3800:13:00
5	Eluru	813	2015:17	3790	6826:15:00
<b>DISCOM</b>		<b>2272</b>	<b>5051:07</b>	<b>10763</b>	<b>18483:03</b>

**Break Downs & Interruptions in Power supply to Urban Consumers for FY:2015-16**

S. No.	Circle	Breakdowns		Interruptions	
		Nos	Duration (Hrs:min:sec)	Nos	Duration (Hrs:min:sec)
1	Srikakulam	22	28:46	134	188:24:00
2	Vizianagaram	89	137:41	935	954:23:00
3	Visakhapatnam	541	674:34	3595	4214:00:00
4	Rajahmundry	128	203:51	1421	2250:39:00
5	Eluru	87	131:07	1541	2044:25:00
<b>DISCOM</b>		<b>867</b>	<b>1175:59</b>	<b>7626</b>	<b>9651:51:00</b>

**Break Downs & Interruptions in Power supply to Urban Consumers for FY: 2016-17 (upto 30-09-16)**

S. No.	Circle	Breakdowns		Interruptions	
		No.s	Duration (Hrs:min:sec)	No.s	Duration (Hrs:min:sec)
1	Srikakulam	13	20:06	47	83:22:00
2	Vizianagaram	69	113:29	528	762:20:00
3	Visakhapatnam	599	670:16	3987	3423:36:00
4	Rajahmundry	147	231:18	802	1095:50:00
5	Eluru	48	82:14	773	951:28:00
<b>DISCOM</b>		<b>876</b>	<b>1117:23</b>	<b>6137</b>	<b>6316:36:00</b>

<b>Services released from 1-APR-2015 TO 31-MAR-2016 in APEPDCL</b>									
CATEGORY	OPENING BALANCE		REGISTERED	RELEASED		REJECTED	BALANCE	CB_WRT	CB_BRT
	WRT	BRT		WRT	BRT				
PWS Schemes	288	200	994	336	389	52	705	232	473
Cottage Industries	18	4	114	62	30	8	36	15	21
Industrial Normal	471	87	1835	1073	375	162	783	428	355
Agriculture	3150	2048	9436	2162	3744	1111	7617	3154	4463
Domestic	7717	1781	345267	257205	23329	4291	69940	65436	4504
General Purpose	46	22	900	697	134	19	118	42	76
Commercial	1546	1016	35226	26778	5637	1102	4271	2182	2089
Street Lights	76	75	872	251	160	43	569	131	438
Industrial Optional	0	0	0	0	0	0	0	0	0
Temporary	17	36	357	181	15	25	189	23	166
<b>TOTAL</b>	<b>13329</b>	<b>5269</b>	<b>395001</b>	<b>288745</b>	<b>33813</b>	<b>6813</b>	<b>84228</b>	<b>71643</b>	<b>12585</b>

<b>Services released from 1-APR-2016 TO 30-SEP-2016 in APEPDCL</b>									
CATEGORY	OPENING BALANCE		REGISTERED	RELEASED		REJECTED	BALANCE	CB_WRT	CB_BRT
	WRT	BRT		WRT	BRT				
PWS Schemes	231	185	616	176	167	21	668	177	491
Cottage Industries	15	7	27	20	10	2	17	3	14
Industrial Normal	424	148	1888	793	284	121	1262	768	494
Agriculture	3118	3064	7302	1420	1900	705	9459	1953	7506
Domestic	65285	3077	89306	94997	10584	2022	50065	44349	5716
General Purpose	41	36	955	793	79	9	151	58	93
Commercial	2146	1367	19102	14100	3711	637	4167	2106	2061
Street Lights	131	154	217	40	192	20	250	70	180
Industrial Optional	0	0	0	0	0	0	0	0	0
Temporary	22	162	80	35	5	8	216	29	187
<b>TOTAL</b>	<b>71413</b>	<b>8200</b>	<b>119493</b>	<b>112374</b>	<b>16932</b>	<b>3545</b>	<b>66255</b>	<b>49513</b>	<b>16742</b>

Amounts realized through intensive inspections by field staff							
Sl. No.	Name of the circle	FY 2015-16			FY 2016-17 (upto Sep-16)		
		No. of services inspected	No. of cases booked	Amount realized in Rs. Lakhs	No. of services inspected	No. of cases booked	Amount realized in Rs. Lakhs
1	Srikakulam	2066	570	24.18	2337	368	5.7
2	Vizianagaram	11254	373	8.66	5591	334	6.76
3	Visakhapatnam	121647	1588	105.36	21647	1806	47.57
4	Rajahmundry	79137	3085	182.78	23619	909	31.08
5	Eluru	103568	3927	224.58	69784	2993	137.01
6	DPE/ VSP	58694	10588	1891.16	34250	7196	1134.1
<b>EPDCL</b>		<b>376366</b>	<b>20131</b>	<b>2436.72</b>	<b>157228</b>	<b>13606</b>	<b>1362.22</b>

No. of cases filed in respect of pilferage of power by DPE wing							
S.No	Circle	Amounts Assessed in Rs. Lakhs					
		2015-16			2016-17 (upto 9/16)		
		No. of services inspected	No. of pilferage cases booked	Amount realized in Rs. Lakhs	No. of services inspected	No. of pilferage cases booked	Amount realized in Rs. Lakhs
1	Srikakulam	10123	1304	213.66	6183	832	73.96
2	Vizianagaram	14966	3084	281.97	8144	1880	144.95
3	Visakhapatnam	12555	2547	295.54	7372	1943	252.78
4	Rajahmundry	8085	1579	517.02	5077	999	246.97
5	Eluru	11783	1855	322.17	6665	1299	277.48
6	DPE/HT SD/VSP	892	129	260.80	415	78	77.227
7	DPE/HT SD/RJMV	290	90	0	394	165	60.739
<b>TOTAL</b>		<b>58694</b>	<b>10588</b>	<b>1891.16</b>	<b>34250</b>	<b>7196</b>	<b>1134.10</b>

<b>LT Court cases involving the Licensee as on 30-09-2016</b>			
<b>S. No.</b>	<b>Name of the Circle</b>	<b>No. of Cases</b>	<b>Amount involved in Rs. Lakhs.</b>
1	Srikakulam	10	82.68
2	Vizianagaram	7	11.58
3	Visakhapatnam	8	20.16
4	Rajamahendravaram	14	21.19
5	Eluru	51	121.46
<b>APEPDCL</b>		<b>90</b>	<b>257.07</b>

<b>HT Court cases involving the Licensee as on 30-09-2016</b>			
<b>S. No.</b>	<b>Name of the Circle</b>	<b>No. of Cases</b>	<b>Amount involved in Rs. Lakhs.</b>
1	Srikakulam	35	2539.38
2	Vizianagaram	30	5971.56
3	Visakhapatnam	61	20092.73
4	Rajamahendravaram	104	4552.77
5	Eluru	97	14211.51
<b>APEPDCL</b>		<b>327</b>	<b>47367.96</b>

**DETAILS OF CAPITAL INVESTMENTS AS APPROVED IN TARIFF ORDER AND ACTUAL EXPENDITURE INCURRED FOR FY 2015-16 & 2016-17  
( Rs. Crores)**

<b>Sl. No.</b>	<b>Name of the Investment Plan Head</b>	<b>Inv. Plan for FY 2015-16 as per APERC Tariff Order</b>	<b>Actual base capital expenditure during FY 2015-16</b>	<b>Inv. Plan for FY 2016-17 as per APERC Tariff Order</b>	<b>Actual base capital expenditure during FY 2016-17 (Upto31.07.2016 as per data available)</b>
<b>I</b>	<b>Load Growth &amp; Network Strengthening ( Base Capex )</b>	<b>331.00</b>	<b>473.80</b>	<b>380.00</b>	<b>117.24</b>
Ia	SS Unit Additions	55.00	77.66	50.00	15.35
Ib	PTR Additions	21.00	29.65	17.00	5.22
Ic	Feeder Additions	5.00	13.52	3.00	1.52
Id	DTR Additions	250.00	352.98	310.00	95.16
<b>II</b>	<b>AT &amp; C Loss Reduction</b>	<b>53.00</b>	<b>3.05</b>	<b>51.00</b>	<b>5.55</b>
<b>III</b>	<b>Reliability Improvement &amp; Contingency Schemes</b>	<b>10.00</b>	<b>0.57</b>	<b>11.00</b>	<b>1.20</b>
<b>IV</b>	<b>Renovation &amp; Modernization</b>	<b>1.00</b>	<b>3.36</b>	<b>1.00</b>	<b>1.35</b>
<b>V</b>	<b>Technology Up-gradation</b>	<b>16.00</b>	<b>5.27</b>	<b>20.00</b>	<b>0.39</b>
<b>VI</b>	<b>New Consumer Capex</b>	<b>12.00</b>	<b>78.88</b>	<b>13.00</b>	<b>38.28</b>
<b>VII</b>	<b>Civil Infrastructure Development</b>	<b>5.00</b>	<b>16.78</b>	<b>5.00</b>	<b>6.74</b>
<b>Total Investment Requirement ( Includes Contingency+duties+taxes )</b>		<b>428.00</b>	<b>581.71</b>	<b>481.00</b>	<b>170.75</b>

Details of LT consumers Arrears over Rs. 50000 pending for over 6 months													
Sl. No	Particulars	SKLM		VZM		VSP		RJY		ELR		TOTAL	
		SCs	Amount (Rs.in lakhs)	SCs	Amount (Rs.in lakhs)	SCs	Amount (Rs.in lakhs)	SCs	Amount (Rs.in lakhs)	SCs	Amount (Rs.in lakhs)	SCs	Amount (Rs.in lakhs)
1	Court Cases/Disputed /BIFR	10	82.68	6	10.69	6	14.73	11	18.43	33	90.40	66	216.93
2	Govt./ Local bodies	3468	4668.21	1152	1424.54	3964	7433.45	4987	12580.87	5170	15759.28	18741	41866.34
3	UDC Services	1	0.54	2	1.56	5	6.85	9	14.76	18	21.16	35	44.87
4	Dismantled / Bill Stopped	26	32.47	35	44.77	27	38.48	61	92.39	39	96.01	188	304.11
5	Instalments/ Others	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	<b>TOTAL</b>	<b>3505</b>	<b>4783.89</b>	<b>1195</b>	<b>1481.57</b>	<b>4002</b>	<b>7493.51</b>	<b>5068</b>	<b>12706.44</b>	<b>5260</b>	<b>15966.85</b>	<b>19030</b>	<b>42432.26</b>

Details of HT consumers Arrears over Rs. 50000 pending for over 6 months													
Sl. No	Particulars	SKLM		VZM		VSP		RJY		ELR		TOTAL	
		SCs	Amount (Rs.in lakhs)	SCs	Amount (Rs.in lakhs)	SCs	Amount (Rs.in lakhs)	SCs	Amount (Rs.in lakhs)	SCs	Amount (Rs.in lakhs)	SCs	Amount (Rs.in lakhs)
1	Court Cases/Disputed /BIFR	34	2539.20	27	5899.04	57	20078.82	93	4549.28	88	13986.86	299	47053.22
2	Govt./ Local bodies	27	198.46	11	252.83	4	40.08	38	533.74	24	919.51	104	1944.62
3	UDC Services	0	0.00	0	0.00	1	1.91	0	0.00	1	3.36	2	5.27
4	Dismantled / Bill Stopped	11	71.27	17	1101.62	20	709.43	35	687.22	11	86.06	94	2655.60
5	Instalments/ Others	3	1546.72	11	7791.61	4	735.62	1	25.85	3	268.74	22	10368.54
	<b>TOTAL</b>	<b>75</b>	<b>4355.65</b>	<b>66</b>	<b>15045.10</b>	<b>86</b>	<b>21565.87</b>	<b>167</b>	<b>5796.09</b>	<b>127</b>	<b>15264.53</b>	<b>521</b>	<b>62027.24</b>



## **10 Cost of Service for FY 2017-18**

### **10.1 Introduction**

This report presents the estimated cost of service for various consumer categories of the Eastern Power Distribution Company Limited (APEPDCL), for the year starting on April 1, 2017 and ending on March 31, 2018. The objective of this report is to classify the costs into demand; energy and customer related components and then apportion the same to various customer categories.

#### **The steps involved in the analysis are:**

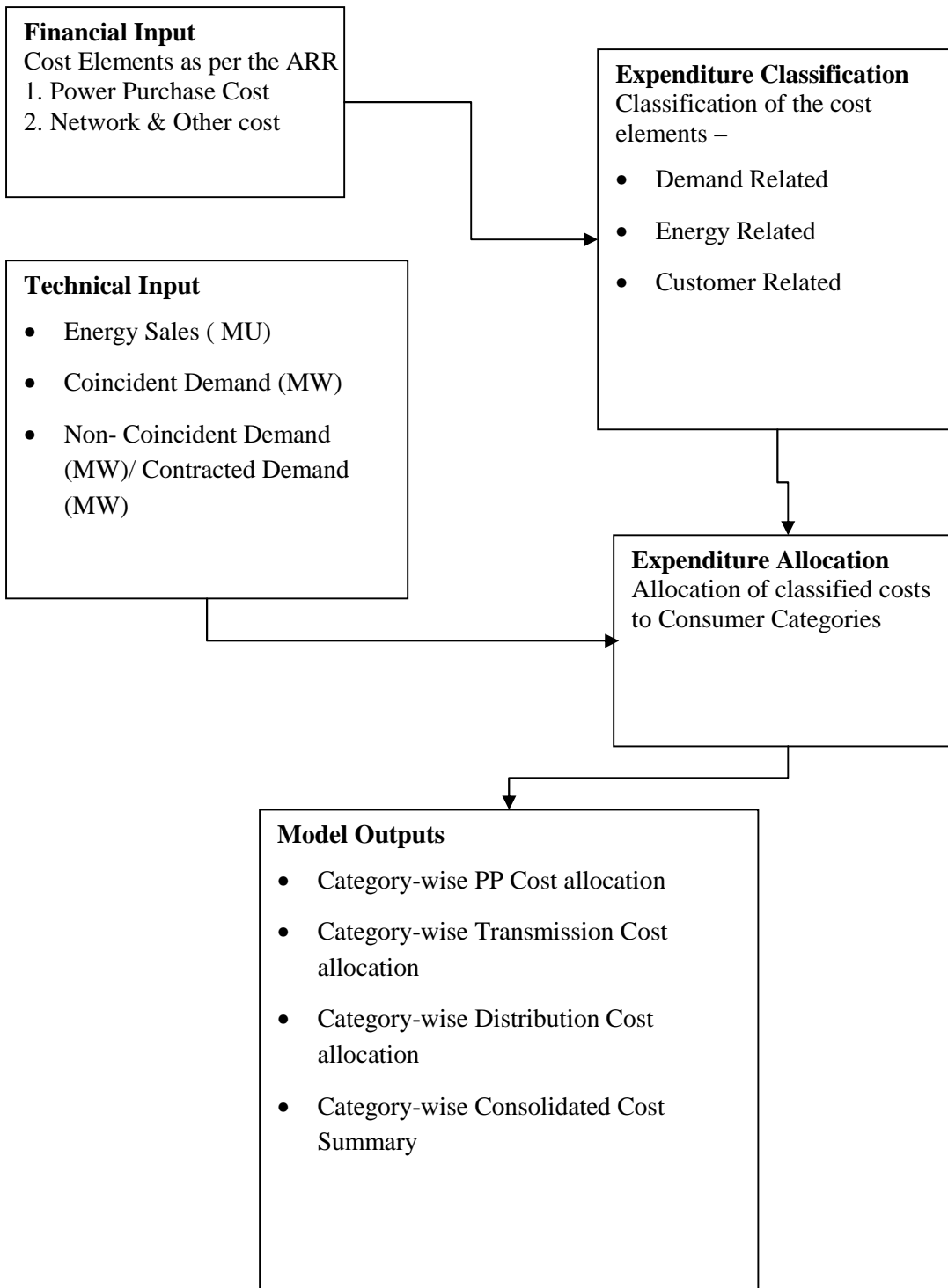
- Forecasting the energy and peak demand requirements for the power system in the year under consideration;
- Forecasting the energy and peak demand requirements at the transmission-distribution interface in that year;
- Estimating the energy and peak demand requirements for each customer category for that year;
- Estimating the costs of providing the energy and peak demand required for each customer category; and
- Classifying and allocating the above costs to various consumer categories of APEPDCL at the retail level.

### **10.2 COST OF SERVICE MODEL FOR APEPDCL**

The cost of service calculations are based on the cost of service model developed for EPDCL. The model, as currently used, calculates the cost of serving all customers categories of APEPDCL.

All financial input into the model is as per the ARR for the year 2017-18, including revenue, and expenditure data.

The following section gives a brief overview of the Cost of Service model developed for APEPDCL



### **10.2.1 Financial Input Sheet**

This forms the base for the income and expenses data for the APEPDCL. The values are as per the ARR for the year 2017-18.

### **10.2.2 Technical Input Sheet**

This part includes the system data required for the cost of service calculation. The energy handled, load shapes, losses and number of customers are captured as part of technical input sheet. The percentage loss stated is the loss in the distribution system and hence accounts for the energy that is unavailable for sale to the retail customers.

APEPDCL customers are segregated into LT and HT customers which includes EHT (220 kV and 132 kV), Sub-transmission (33kV) and distribution (11kV and LV). The EHT customers are included as APEPDCL customers, even though they may be connected at 220 kV or 132 kV. The total losses are apportioned to all the voltage levels.

The HT customer categories in the APEPDCL system are;

#### **HT Customers**

- Industrial – Cat- I (11KV, 33KV and 220/132 KV)
- HT Others – Cat- II (11KV, 33KV and 220/132 KV)
- Irrigation and Agriculture – Cat-IV (11KV, 33KV and 220/132KV)
- Railway Traction – Cat V (132KV)
- RESCOs Cat – VI (11KV & 33 KV)
- Temporary
- Colony Consumption ( 11KV, 33KV)

The LT (400 Volts) customer categories in the APEPDCL system are;

#### **LT Customers**

- Domestic – category I
- Non-domestic – category II
- Industrial – category III
- Cottage industries – category IV
- Irrigation and Agriculture – category V
- Public lighting – category VI
- General purpose – category VII
- Temporary – category VIII

Energy Sales in MU, Non- coincident demand and coincident demand data is entered for the above customer categories.

The coincident demand is the estimated contribution of each category to the system peak demand and the non-coincident demand has been estimated from system load shapes derived and represents the peak demand of

each customer category, irrespective of the time of occurrence of system peak.. Values used in this analysis are shown in Table 2-1.

**Table 2-1**

<b>Coincident Factors and Load Factors used</b>	<b>Coincidence Factor</b>	<b>Class Load Factor</b>
<i>Low Tension Supply</i>	<b>Average Peak</b>	
Domestic - Category I	<b>88.8%</b>	<b>77.6%</b>
Non-domestic Supply - Category II	<b>86.8%</b>	<b>73.9%</b>
Industrial Supply - Category III	<b>88.4%</b>	<b>89.2%</b>
Cottage Industries - Category IV	<b>88.4%</b>	<b>89.2%</b>
Irrigation and Agriculture - Category V	<b>81.0%</b>	<b>112.0%</b>
Public Lighting - Category VI	<b>87.2%</b>	<b>77.8%</b>
General Purpose - Category VII	<b>87.2%</b>	<b>77.8%</b>
Temporary - Category VIII	<b>87.2%</b>	<b>77.8%</b>
<i>High Tension Supply</i>		
Industrial Segregated - Cat- I (11KV)	<b>88.1%</b>	<b>89.8%</b>
Industrial Segregated - Cat- I (33KV)	<b>96.8%</b>	<b>93.6%</b>
Indusl. Segregated - Cat-I (220/132KV)	<b>98.2%</b>	<b>96.5%</b>
Indusl. Non-Segregated - Cat- II (11KV)	<b>75.6%</b>	<b>71.5%</b>
Indusl. Non-Segregated - Cat- II (33KV)	<b>93.8%</b>	<b>88.7%</b>
Indusl. Non-Segre - Cat-II (220/132KV)	<b>90.1%</b>	<b>88.1%</b>
Irrigation and Agriculture - Cat-IV (11KV)	<b>41.9%</b>	<b>60.4%</b>
Irrigation and Agriculture - Cat-IV (33KV)	<b>87.3%</b>	<b>86.8%</b>
Irrigation and Agriculture - Cat-IV (132KV)	<b>0.0%</b>	<b>86.8%</b>
Railway Traction - Cat V (132KV)	<b>95.7%</b>	<b>91.5%</b>
Colony Consumption (11KV)	<b>87.8%</b>	<b>0.0%</b>
Colony Consumption (33KV)	<b>87.8%</b>	<b>0.0%</b>
Temporary	<b>87.8%</b>	<b>0.0%</b>
RESCOs Cat - VI (11KV)	<b>87.8%</b>	<b>0.0%</b>

The DISCOM peak demand, both coincident and non-coincident are estimated using basic load shape synthesis model. Load shapes of different categories of consumers are constructed based on the Load Shapes data collected from feeder sample, covering different consumer categories. The following tabulation provides a derivation of the coincident peak demand, along with the assumptions for APEPDCL used in that derivation:

<b>EPDCL</b>	<b>Energy (MU)</b>	<b>Average Coincident Demand (MW)</b>
Sales	<b>17,695</b>	<b>1,983</b>
Loss as % of input	7.00%	7.00%
Losses	1,307	158
Sub Total	19,002	2,141

The load factor and coincidence factor included in the Model for each category are assumed based on a review of the characteristics of the loads and load mix in APEPDCL. One of the key assumptions is on the assessment of the timing of the system peak in the test year and this has a significant bearing on the coincidence factor for each of the customers. Recent data indicate that:

- The system peak demand of APEPDCL is occurring during Morning hours due to Agricultural loads.
- During the morning peak occurrence , the coincidence factor of agriculture is 100% and the same is reduced to zero at the time of evening peak

Based on above considerations, it is felt that average demand method would be suitable for allocation of costs to consumer categories since it allocates the cost equitably on all consumer categories based on morning and evening peak loads. In the average demand method, as the name suggests, average of coincident morning peak and coincident evening peak is taken. In the model there is provision to calculate the cost based on the coincident morning peak, evening peak and average. The current option selected in the model is the average method.

### ***10.2.3 Expenditure Functionalization***

The new model is developed keeping in view the unbundled nature of the power sector in A.P, hence the expenditure pertaining to EPDCL is taken as per the ARR in the financial input sheet.

- 
- Power Purchase Cost
  - Transmission & SLDC Charges
  - Repairs and maintenance
  - Employee costs
  - Administration and general expenses
  - Depreciation
  - Interest and financial charges
  - Other expenses
- 

### ***10.2.4 Expenditure Classification***

This section classifies the expenditure into demand, energy and customer related items. The options with respect to classification are;

- 
- Demand
  - Energy
  - 80% Demand , 20% Customer
  - Customer
  - Manual entry
- 

The fixed costs in the power purchase are treated as demand related expense and the variable cost of power purchase is treated as energy related expense.

Entire transmission cost is considered to be a demand related expense. The O & M expenditure in distribution

is classified into demand and customer related in the ratio of 80:20. The same has been arrived at based on subjective judgment, as it is felt that some portion of the assets and employee expenses are used for catering to the needs of the customer such as customer service/call centers. The other cost elements in distribution viz ROCE, depreciation and other costs have been fully considered under demand related costs.

#### ***10.2.5 Expenditure Allocation***

The expenditures which have been classified into demand, energy and consumer related are apportioned to the individual customer categories.

#### ***10.2.6 Power Purchase Cost Allocation:***

Demand related costs of Power Purchase are primarily driven by the system peak. Hence they are allocated to customer categories based on the Coincident Demand. Energy costs in Power Purchase are allocated based on the loss-adjusted category energy consumption.

#### ***10.2.7 Transmission Cost Allocation:***

The transmission costs (including PGCIL and ULDC) are considered as demand related cost and the same is allocated to LT categories based on Non-coincident demand and contracted demand (CMD) for HT categories

#### ***10.2.8 Distribution Cost Allocation:***

##### **a) Operation and Maintenance Expenditure**

The demand related portion of O & M expenses are allocated to LT consumer categories based on non-coincident demand and contracted demand (CMD) for the HT consumer categories.

The customer related costs are allocated to customer categories based on the number of customers in each category.

##### **b) ROCE**

Return on capital employed is driven by assets and it is fully considered as demand related expense. ROCE is allocated to LT consumer categories based on non-coincident demand and contracted capacity for the HT consumer categories.

##### **c) Depreciation**

Depreciation expense is driven by the level of fixed assets in the utility and is entirely considered under demand related expenses. Depreciation is allocated to LT consumer categories based on non-coincident demand and contracted capacity for the HT consumer categories.

##### **d) Interest on Consumer Security Deposit**

This is allocated to consumer categories based on the energy consumption grossed up for losses.

A summary of the results of the model are the outputs and these are discussed in the next section and a comparison of revenues and costs by customers is made in this part of the computation.

### 10.3 Results

The following tabulation summarizes the results of the process:

- APEPDCL needs to handle 19002 MU, which consist of sale of 17695 MU to its customers and losses of 1307 MU.
- Average Peak demand required by APEPDCL is 2141 MW, which consist of 1983 MW to serve the customers, and 158 MW of losses in the system.
- The average unit cost of supplying the customers of APEPDCL is estimated at Rs.5.92 /kWh.

<b>Cost of Service Model - Eastern Power Distribution Company Limited</b>					
<b>Financial Year</b>	<b>2017-18</b>	<b>Nature of expected Peak Demand</b>		<b>Average</b>	
<b>CONSUMER CATEGORIES</b>	<b>Revenue from Sale of Power</b>		<b>Non- Tariff Income</b>	<b>Cost of Service</b>	
	<b>Revenue from Sale of Power</b>	<b>Average realisation per unit (paise/kWh)</b>		<b>Allocated Expenditure (Rs/Cs)</b>	<b>Cost of Service</b>
<b>Low Tension Supply</b>					
Domestic - Category I	1,971.3	3.66	67.0	3,668.4	6.82
Non-domestic Supply - Category II	983.4	9.55	8.1	711.3	6.91
Industrial Supply - Category III	499.3	5.32	3.5	566.2	6.04
Cottage Industries - Category IV	0.9	4.45	0.0	1.4	6.45
Irrigation and Agriculture - Category V	17.6	0.08	9.1	985.5	4.71
Public Lighting - Category VI	117.9	5.56	1.3	155.4	7.33
General Purpose - Category VII	49.3	7.22	0.7	51.8	7.58
Temporary - Category VIII	0.9	10.17	0.0	0.7	7.24
<b>Total Low Tension Supply</b>	<b>3,640.6</b>	<b>3.74</b>	<b>90</b>	<b>6,141</b>	<b>6.32</b>
<b>High Tension Supply</b>					
Industrial - Cat- I	1,104.0	7.97	4.4	818.6	5.91
Industrial Segregated - Cat- I (33KV)	1,043.9	7.08	4.6	831.0	5.63
Indusl. Segregated - Cat-I (220/132KV)	1,649.6	5.81	8.5	1,440.1	5.07
HT Others - Cat-II	438.9	9.92	1.4	291.2	6.58
Indusl. Non-Segregated - Cat- II (33KV)	136.3	8.18	0.5	93.1	5.59
Indusl. Non-Segre - Cat-II (220/132KV)	137.9	8.11	0.5	93.0	5.47
Irrigation and Agriculture - Cat-IV	22.7	5.18	0.1	28.9	6.60
Irrigation and Agriculture - Cat-IV (33KV)	43.9	5.60	0.2	61.1	7.80
Irrigation and Agriculture - Cat-IV (132KV)	197.7	5.60	1.1	137.7	3.90
Railway Traction - Cat V (132KV)	316.0	4.95	1.9	356.8	5.59
Colony Consumption (11KV)	14.9	6.33	0.1	14.0	5.95
Colony Consumption (33KV)	7.6	6.21	0.0	6.7	5.44
Temporary	0.1	1.12	0.0	3.8	73.97
RESCOS Cat VI	24.9	0.73	1.1	164.3	4.80
<b>Total High Tension Supply</b>	<b>5,138.3</b>	<b>6.44</b>	<b>25</b>	<b>4,340</b>	<b>5.44</b>
<b>TOTAL</b>	<b>8,778.94</b>	<b>4.96</b>	<b>114.26</b>	<b>10,480.80</b>	<b>5.92</b>

CONSUMER CATEGORIES	Cost to Serve
	Rs /KWH
<b><i>Low Tension Supply</i></b>	
Domestic - Category I	6.82
Non-domestic Supply - Category II	6.91
Industrial Supply - Category III	6.04
Cottage Industries - Category IV	6.45
Irrigation and Agriculture - Category V	4.71
Public Lighting - Category VI	7.33
General Purpose - Category VII	7.58
Temporary - Category VIII	7.24
<b><i>Total Low Tension Supply</i></b>	<b>6.32</b>
<b><i>High Tension Supply</i></b>	
Industrial - Cat- I (11KV)	5.91
Industrial Segregated - Cat- I (33KV)	5.63
Indusl. Segregated - Cat-I (220/132KV)	5.07
HT Others - Cat-II (11 KV)	6.58
Indusl. Non-Segregated - Cat- II (33KV)	5.59
Indusl. Non-Segre - Cat-II (220/132KV)	5.47
Irrigation and Agriculture - Cat-IV	6.60
Irrigation and Agriculture - Cat-IV (33KV)	7.80
Irrigation and Agriculture - Cat-IV (132KV)	3.90
Railway Traction - Cat V (132KV)	5.59
Colony Consumption (11KV)	5.95
Colony Consumption (33KV)	5.44
Temporary	73.97
RESCOS Cat VI	4.80
<b><i>Total High Tension Supply</i></b>	<b>5.44</b>
<b>TOTAL</b>	<b>5.92</b>



## **11 Retail Supply Business True-up for FY 2015-16 & FY 2016-17**

As per Regulation 1 of 2014, Licensee is entitled to claim true-up for Retail supply business on an annual basis - subject to deviations related to power purchase cost and interest cost for previous years. However, under UDAY Scheme Government of Andhra Pradesh has taken over short term liabilities as on September 30<sup>th</sup> 2015 which would have material impact on True-up for FY 2015-16. Hence, Licensee humbly requests the Honourable Commission to grant additional time to file True-up for FY 2015-16 and provisional True-up for FY 2016-17.

## **12 Tariff Proposals and Revenue at Proposed Tariff for FY 17-18**

Ministry of Power has constituted a committee for simplification of tariff structure / reduction of tariff categories of consumers.

The committee, on the outset, has suggested that the tariff schedule may comprise of the following major categories:

- a) Domestic: To cater to residential consumers (possibly net revenue neutral category)
- b) Non-Domestic: To cater to the existing commercial and industrial category of consumers (net subsidizing category)
- c) Agriculture: To cater to the existing agriculture consumers (net subsidized by other categories or through direct State Govt. subsidies)
- d) Institutions: To cater to other institutions such as Public water Works, Street Lighting, Hospitals etc. (net revenue neutral category)

In these lines, Hon'ble APERC Commission invited comments / suggestions / views of all stakeholders on the proposal of Ministry of Power, Government of India, New Delhi, for simplification of tariff structure / reduction of tariff categories of consumers.

Hence, the licensees have started evaluating various options for simplification of Tariff Structure and assessing the revenue impact for each category/ consumer. The licensee is contemplating to incorporate some of these tariff options as part of the tariff proposals for FY 2017-18. Hence, Licensee humbly requests the Honourable Commission to grant additional time to file tariff proposal and revenue at proposed tariffs.

## **13 Cross Subsidy Surcharge and Additional Surcharge for FY 17-18**

Cross subsidy surcharge, additional surcharge depends on proposed categories and tariffs. Hence, Licensee requests Honourable commission to permit to file Cross Subsidy Surcharge and Additional Surcharge along with the tariff proposals and revenue at proposed tariff.

## **14 Prayer**

Based on the information available, the Applicant has made sincere efforts to comply with the Regulation of the Honourable Commission and discharge its obligations to the best of its abilities. However, should any further material information become available in the near future, the Applicant will file such additional

information and consequently amend/ revise the application.

The licensee humbly requests the Honourable Commission to take the ARR application on record and treat it as complete; True-up filing, Tariff proposals, Cross Subsidy Surcharge and Additional Surcharge will be filed at a later date.