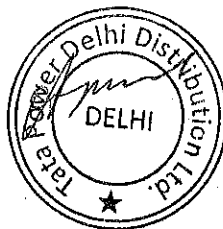


# **Chapter - 5**

## **ARR for FY 2018-19**



**Projected Energy Sales & Billed Revenue for FY 2018-19**

To estimate the energy sales for next year, the Petitioner has considered previous year's available growth trends and further assumed that the underlying factors which drive the demand for electricity are expected to follow the same growth trend in future year also. Therefore, demand forecast is based on the assumption that the past consumption growth trend will continue in the future also.

The assumptions considered for forecasting category wise sales are discussed below:

1. The category wise and year wise Compounded Annual Growth Rate (CAGR) has been calculated for the past sales pattern.
2. For those categories where CAGR/ past growth trends are not showing any particular type of movement then the demand has been forecasted based on recent consumption pattern.
5. Impact of replacement of existing conventional streetlight points to LED has also been considered while forecasting the public lighting sales. It is assumed that there would be approx. 25% reduction in street light consumption in next year.

**Table 5.1: Projected Energy Generated Streetlight due to LED impact**

Category	FY 18-19
Estimated Consumption for FY 2018-19	160
Less Reduction in consumption due to use of LED bulbs 25%	40
Net projected consumption	120

6. Nil consumption has been considered by Railway as it has initiated process of open Access.
7. Previous year trends are given below:

**Year on Year Category wise billed Sale from FY 2011-12 onwards is given below**

In the last 5 years, there has been an annual growth of 4.28% in billed units (i.e. from the level of 6699 MUs to 8261 Mus.)

**Table 5.2 : Category wise summary of units sold from FY 12 to FY 17**

Sl. No.	Category	FY12 Sales (MU)	FY13 Sales (MU)	FY14 Sales (MU)	FY15 Sales (MU)	FY16 Sales (MU)	FY17 Sales (MU)
1	Domestic	2,844.98	2,948.78	3,074.90	3,313.25	3,404.47	3,770.50
2	Non Domestic	1,184.34	1,240.21	1,278.25	1,343.24	1,403.58	1,463.16
3	Industrial	2,012.00	2,105.08	2,192.14	2,278.71	2,349.25	2,313.12



Sl. No.	Category	FY12 Sales (MU)	FY13 Sales (MU)	FY14 Sales (MU)	FY15 Sales (MU)	FY16 Sales (MU)	FY17 Sales (MU)
4	Agriculture & Mushroom Cultivation	14.16	11.68	11.86	12.82	13.32	12.64
5	Street Lighting	97.31	108.95	124.07	143.78	148.28	148.00
6	Delhi Jal Board	172.12	203.48	204.15	218.82	228.83	238.74
7	Railway	56.92	49.58	45.51	46.21	46.16	48.06
8	DMRC	162.93	159.76	133.71	140.07	149.45	149.50
9	Advertisement & Hoarding	-	0.60	0.62	1.54	0.97	1.18
10	Others**	154.52	139.78	122.19	117.47	109.97	115.61
	<b>Total</b>	6,699.28	6,967.90	7,187.40	7,615.91	7,854.29	8,260.52

\* As per Form 2.1a for respective years, all subcategory are merged into one main category, hence figures at some places are not matched with information provided in table B1.2 (iii).

\*\* Others includes Staff, Temporary, Theft & Misuse and Own consumptions

**Table 5.3: CAGR of Units Billed based on Main Category wise consumption**

Sl. No.	Category	CAGR for 5 years	CAGR for 4 years	CAGR for 3 years	CAGR for 2 years	CAGR for 1 years
1	Domestic	5.79%	6.34%	7.03%	6.68%	10.75%
2	Non Domestic	4.32%	4.22%	4.61%	4.37%	4.24%
3	Industrial	2.83%	2.38%	1.81%	0.75%	-1.54%
4	Agriculture & Mushroom Cultivation	-2.24%	2.00%	2.14%	-0.72%	-5.14%
5	Street Lighting	8.75%	7.96%	6.05%	1.46%	-0.19%
6	Delhi Jal Board	6.76%	4.08%	5.36%	4.45%	4.33%
7	Railway	-3.33%	-0.77%	1.84%	1.99%	4.12%
8	DMRC	-1.71%	-1.65%	3.79%	3.31%	0.03%
9	Advertisement & Hoarding				-12.27%	21.68%
	<b>Total</b>	4.28%	4.35%	4.75%	4.15%	5.17%

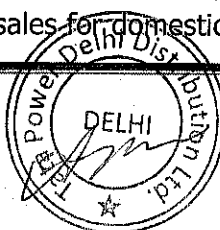
### **Domestic**

The consumption of energy by domestic consumers constitutes substantial part of total sales of the Petitioner.

Based on the actual sales of 3771 MU for FY 2016-17, the Petitioner has computed the given below CAGR over a period of one year to five years. The minimum range of CAGR comes to 5.79% (i.e. 5 year CAGR) and maximum comes to 10.75% (i.e. growth for one years).

CAGR for 5 years	CAGR for 4 years	CAGR for 3 years	CAGR for 2 years	CAGR for 1 year
5.79%	6.34%	7.03%	6.68%	10.75%

Considering the available trends of CAGR, the Petitioner has considered a growth rate of 5.79%, (i.e. 5 year CAGR) to estimate the energy sales for domestic consumers.



Based on above the projected consumption for domestic consumers is computed as below:

**Table 5.4: Projected billed energy for FY 2018-19**

Sl. No.	Category	FY 18 Sales (MU)	Growth	FY 19 Sales (MU)
I	Domestic	4,047	5.79%	4,275

### **Non-Domestic**

The consumption of energy by non-domestic consumers constitutes reasonable share of total sales of the Petitioner.

Based on the actual sales of 1463 MU for FY 2016-17, the Petitioner has computed the given below CAGR over a period of one year to five years. The minimum range of CAGR comes to 4.22% (i.e. four year CAGR) and maximum comes to 4.61% (i.e. three year CAGR).

CAGR for 5 years	CAGR for 4 years	CAGR for 3 years	CAGR for 2 years	CAGR for 1 years
4.32%	4.22%	4.61%	4.37%	4.24%

Considering the available trends of CAGR, the projections for next year is envisaged considering a growth rate of 4.32%, (i.e. 5 year CAGR) to estimate the energy sales for Non-domestic consumers.

Based on above projected consumption for non-domestic consumers is computed as below

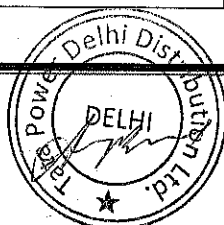
**Table 5.5: Projected billed energy for FY 2018-19**

Sl. No.	Category	FY 18 Sales (MU)	Growth (%)	FY 19 Sales (MU)
i	Non-Domestic	1518	4.32%	1577

### **Industrial**

The consumption of energy by Industrial consumers constitutes approx. 1/3<sup>rd</sup> part of total sales of the Petitioner. Based on the actual sales of 2313 MU for FY 2016-17, the Petitioner has computed the given below CAGR over a period of one year to five years. The minimum range of CAGR comes to -1.54% (i.e. one year CAGR) and maximum comes to 2.83% (i.e. five year CAGR).

CAGR for 5 years	CAGR for 4 years	CAGR for 3 years	CAGR for 2 years	CAGR for 1 years
2.83%	2.38%	1.81%	0.75%	-1.54%



Considering the available trends of CAGR, the Petitioner has considered a growth rate of 2.83%, (i.e. 5 year CAGR) to estimate the energy sales for Industrial consumers.

Based on above projected consumption for Industrial consumers is computed as below

**Table 5.6: Projected billed energy for FY 18-19**

Sl. No.	Category	FY 18 Sales (MU)	Growth	FY 19 Sales (MU)
I	Industrial	2316	2.83%	2380

### **Agriculture and Mushroom Cultivation**

The consumption of energy by Agriculture & Mushroom cultivation consumers constitutes a very little portion of total sales of the Petitioner.

The Petitioner based on the actual sales of 12.64 MU for FY 2016-17 has computed the given below CAGR over a period of one year to five years.

CAGR for 5 years	CAGR for 4 years	CAGR for 3 years	CAGR for 2 years	CAGR for 1 years
-2.24%	2.00%	2.14%	-0.72%	-5.14%

The minimum range of CAGR comes to -5.14% (i.e. one year CAGR) and maximum comes to 2.14% (i.e. three year CAGR). Therefore, the Petitioner has considered the CAGR of 4 Year i.e. 2% growth for projecting the agriculture & mushroom cultivation consumption.

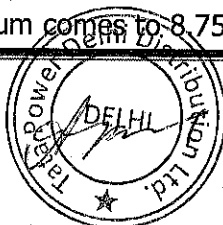
**Table 5.7: Projected billed energy for FY 18-19**

Sl. No.	Category	FY 18 Sales (MU)	Growth	FY 19 Sales (MU)
Agriculture & Mushroom				
I	Agriculture & Mushroom	13.08	2%	13.34

### **Street/Public lighting**

The consumption of energy towards public lighting constitutes 2% of total sales of the Petitioner.

Based on the actual sales of 148 MU for FY 2016-17, the Petitioner has computed the given below CAGR over a period of one year to five years. The minimum range of CAGR comes to -0.19% (i.e. one year CAGR) and maximum comes to 8.75% (i.e. five year CAGR).



CAGR for 5 years	CAGR for 4 years	CAGR for 3 years	CAGR for 2 years	CAGR for 1 years
8.75%	7.96%	6.05%	1.46%	-0.19%

Under the DSM initiative it has been proposed to the civic agencies to replace the existing bulbs with LED bulbs. The civic agency has agreed to the proposal and tender has been floated.

Considering the above, the Petitioner has considered 50% decrease in consumption of public lighting for FY 2018-19. Moderate growth of 1.50% is considered while forecasting the sales of public lighting.

Based on above projected consumption for Street Light is computed as below

**Table 5.8: Projected billed energy for FY 2018-19**

Sl. No.	Category	FY 19 Sales (MU)
	Street Lighting	
I	Estimated Consumption Metered	
	Less- Reduction due to LED Bulb(25% Approx) under DSM initiatives	85
	Net Consumption	

### **Delhi Jal Board (DJB)**

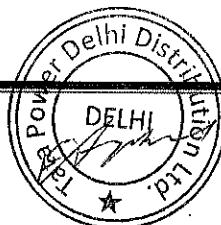
The consumption of energy by Delhi Jal Board constitutes 3% of total sales of the Petitioner.

Based on the actual sales of 239 MU for FY 2016-17, the Petitioner has computed the given below CAGR over a period of one year to five years. The minimum range of CAGR comes to 4.08% (i.e. four year CAGR) and maximum comes to 6.76% (i.e. Five year CAGR).

CAGR for 5 years	CAGR for 4 years	CAGR for 3 years	CAGR for 2 years	CAGR for 1 years
6.76%	4.08%	5.36%	4.45%	4.33%

Considering the available trends of CAGR, the Petitioner has considered a growth rate of 4.08%, (i.e. 4 year CAGR) to estimate the energy sales for Delhi Jal Board. Further it is assumed that approx. 3 mus are reduced due to adoption of solar generation by DJB.

Based on above projected consumption for Delhi Jal Board consumers is computed as below:



**Table 5.9: Projected billed energy for FY 2018-19**

Table D.11 Projected billed energy for FY 2018-19				
Sl. No.	Category	FY 18 Sales (MU)	Growth	FY 19 Sales (MU)
Delhi Jal Board				
i	Delhi Jal Board	243	4.08%	249

### **Delhi Metro Rail Corporation (DMRC)**

The consumption of energy by Delhi Metro Rail Corporation as a key consumer constitutes 2% of total sales of the Petitioner.

Based on the actual sales of 150 MU for FY 2016-17, the Petitioner has computed the given below CAGR over a period of one year to five years.

CAGR for 5 years	CAGR for 4 years	CAGR for 3 years	CAGR for 2 years	CAGR for 1 years
-1.71%	-1.65%	3.79%	3.31%	0.03%

The energy sale to the DMRC has shown fluctuating trend over the last five years.

Following are the reasons for increase/ decrease in Sales to DMRC.

1. The consumption by DMRC increased due to induction of new lines in Licensees area.
2. In the last few years, DMRC has taken steps to reduce the power by using alternative renewal source of energy, hence the trends has shown negative growth.

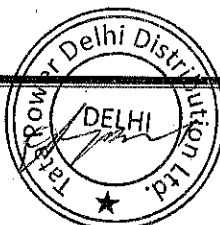
Based on above projected consumption for DMRC is computed as below

**Table 5.10: Projected billed energy for FY 2018-19**

Table 3.10: Projected billed energy for FY 2018-19				
Sl. No.	Category	FY 18	Growth	FY 19
		Sales (MU)		Sales (MU)
DMRC				
I	DMRC	150		150

### **Own Consumption**

The Hon'ble Commission in its Business Plan Regulations, 2017 has stated that normative Own consumption of DISCOM's shall be considered @ 0.25% of billed sales of the respective year. Based on the same Tata Power-DDL has seeking Own consumption as computed below:



**Table 5.11: Projected energy from FY 19**

Sl. No.	Category	FY 18
		Sales (MU)
I	Billed sale other than own consumption	8831.94
II	Normative Consumption @ 0.25% of Billed Sale	22.08

### **Adv. & Hoardings**

The consumption of energy by Adv. & Hoardings consumers constitutes a very little portion of total sales of the Petitioner.

Based on the actual sales of 0.97 MU for FY 2015-16, the Petitioner has computed the given below CAGR over a period of one year to three years.

CAGR for 3 years	CAGR for 2 years	CAGR for 1 years
17.47%	24.87%	-36.74%

Since there is no trend in the last three years sales growth and the quantum is also very less, Tata Power-DDL has considered a growth rate of 5% to project the energy sales for Adv. & Hoardings.

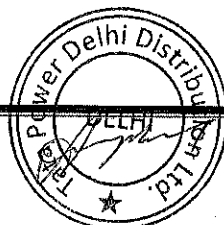
**Table 5.12: Projected energy for FY 2018-19**

Sl. No.	Category	FY 18	Growth	FY 19
		Sales (MU)	Rate	Sales (MU)
I	Adv. & Hoardings	1.58	5.00%	1.66

### **Others Consumers- Staff, Misuse and Theft, E-Rickshaw)**

Based on the below mentioned assumption, the Petitioner has projected following consumption towards consumer categories for Staff, Misuse and Theft etc.

- The consumption growth of Staff category is considered similar to the growth considered for Domestic Consumers
- No Growth is considered in sale on account of Misuse and Theft.
- It is estimated that approx. 10,000 new connection will be issued for charging of E-Rickshaw and approx. 10.95 Mus will be consumed.





Based on the above assumptions and explanations, the category wise estimated summary of billed sale for next year is given below:

**Table 5.13: Projected Sales (MU) for FY 2018-19**

Sl. No	Category	FY 2018-19 (Projections)
A	Domestic	
	Domestic - Others than CGHS	4,247.03
	Single delivery point for CGHS	28.14
B	Non -Domestic	
	Non -Domestic Low Tension (NDLT)	1,139.25
	Non -Domestic High Tension (NDHT)	437.72
C	Industrial	
	Small Industrial Power (SIP) [less than 200kW/215kVA]	2,072.55
	Industrial Power on 11 kV Single Point Delivery for Group of SIP Consumers	0.33
	Large Industrial Power (LIP) (Supply at 11kV and above)	306.70
D	Agriculture	13.29
E	Mushroom Cultivation	0.04
F	Public Lighting	
	Metered	81.04
	Unmetered	3.69
G	Delhi Jal Board (DJB)	
	Supply at LT	18.32
	Supply at 11kV and above	230.34
H	DIAL	-
I	Railways Traction	-
J	DMRC	150.05
K	Adv. & Hoardings	1.66
L	Temporary Supply	61.03
M	Own Consumption	22.08
M	Others*	40.66
	Total	8,854.02

\*Others includes Staff, E-Rickshaw, Theft & Misuse

### **Estimated Consumers for next year**

The Petitioner has projected approx. 17 lacs consumers for FY 2018-19. Category wise breakup of Consumers is given below:



**Table 5.14: Given below is the projected number of consumers for Next year**

Sl. No.	Category	Numbers
A	Domestic	1,397,563
B	Non –Domestic	234,037
C	Industrial	34,755
D	Agriculture & Mushroom Cultivation	4,479
E	Public Lighting	4,405
F	Delhi Jal Board (DJB)	745
G	DMRC	4
H	Others*	32750
	<b>Total</b>	<b>17,08,738</b>

\*Other includes Staff, Misuse, E-Rickshaw and Own Consumption

### **Estimated Consumer Load for next year**

For the purpose of computing fixed charges, the Petitioner has projected load of 6471 MW for FY 2018-19. Category wise break up of consumers load is given below:

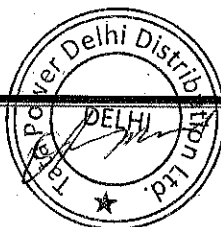
**Table 5.15: Given below is the projected number of consumer's load for Next year**

Sl. No.	Category	(MW)
A	Domestic	3,100
B	Non –Domestic	1,434
C	Industrial	1,612
D	Agriculture	30
E	Public Lighting	115
F	Delhi Jal Board (DJB)	74
G	DMRC	38
H	Others*	68
	<b>Total</b>	<b>6471</b>

\* Others include Staff, Own Consumption and Misuse

### **Estimated Revenue at existing Tariff for next year**

The Hon'ble Commission has followed two-part tariff principle for each consumer category (except for E-Rickshaw) consisting of fixed/ demand charges as well as energy charges. The fixed/ demand charges are specified for different categories as a fixed amount per month or as a fixed amount per kW of sanctioned load per month. The energy charges, on the other hand, are always usage-based and are specified per unit of electricity consumed.



It is further clarified that the Hon'ble Commission vide its Tariff Order dated July, 2012 has introduced 8% Deficit recovery surcharge which is directly linked with the aforesaid two part tariff. The aforesaid surcharge has been imposed for recovery of previous years accumulated Revenue Gap and carrying cost which otherwise has to be met through increase in two- part tariff. The Hon'ble Commission has instead of increase in basic two part tariff introduced additional surcharge directly linked to the fixed charges/ demand charges and energy charges. It is also clarified that the Hon'ble Commission has introduced another surcharge of 3.70% to meet the liability of Pension Trust with effective from 1<sup>st</sup> Sep, 2017.

### **Methodology for Computation of Fixed Charges for Domestic Consumers**

The revenue from fixed charges is calculated by multiplying the existing applicable fixed charge with the load (in kW/kVAh) of the respective category.

### **Methodology for Computation of Energy Charges for Domestic Consumers**

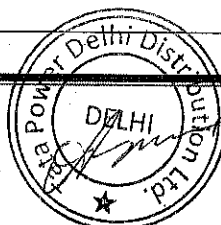
For calculation of revenue from energy charges, the actual usage is multiplied by the applicable tariff slab of the respective category.

It is further clarified that wherever the tariff is specified in kVA/kVAh terms, the relevant kW/kWh projection is divided by the Power Factor in order to obtain the corresponding kVA/kVAh projection. Thereafter, revenue from demand charges is calculated by multiplying the demand charge of each tariff slab with the sanctioned load of that slab, while revenue from energy charges is calculated by multiplying the energy charges specified for each tariff slab with the energy consumption projected for that slab.

The actual Power Factor considered by the Petitioner for different categories is shown below:

**Table 5.16: Summary of Power factor**

Consumer slab	Power Factor
<b>Non-Domestic</b>	
Upto 10 KW	0.94
Above 10 KW	0.94
Non-Domestic High Tension (NDHT)	1.00
<b>Industrial</b>	
Small Industrial Power (SIP)	
Upto 10 KW	0.97



Consumer slab	Power Factor
Above 10 KW	0.97
Large Industrial Power	0.98
<b>Delhi Jal Board</b>	0.97
<b>DMRC</b>	1.00

Based on the above factors i.e. energy billed, no. of consumers, consumer load, power factor, the Petitioner has estimated revenue at existing retail supply Tariff for next year.

Category wise estimated Revenue Billed for respective year of control period is given below:

**Table 5.17: Estimated Billed Revenue for FY 18-19**

(Rs Cr)

Categories	FY 2018-19			
	Billed Units(MU)	Fixed Charges	Energy Charges	Total Revenue
Domestic	4,275.17	121.76	2,235.32	2,357.07
Non Domestic	1,577.07	219.49	1,411.14	1,630.63
Industrial	2,379.59	249.08	1,945.03	2,194.11
Irrigation & Agriculture	13.34	0.72	3.68	4.40
Street Lighting	84.72	-	62.03	62.03
Delhi Jal Board	248.65	11.75	186.09	197.84
DMRC	150.05	5.96	93.64	99.60
Own Consumption	22.08			0.00
Others	103.35	8.34	76.45	84.80
<b>Total</b>	<b>8,854.02</b>	<b>617.11</b>	<b>6,013.38</b>	<b>6,630.49</b>
8% Deficit Revenue Surcharge				<b>527.74</b>

### **Collection efficiency**

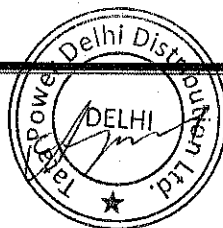
The Hon'ble Commission has approved collection target of 99.50% for 3<sup>rd</sup> MYT Control period vide Regulations 26(1) of Delhi Electricity Regulatory Commission Business Plan Regulation, 2017.

Relevant extract of the same is given below:

### **26. TARGET FOR COLLECTION EFFICIENCY**

(1) The targets for Collection Efficiency for FY2017-18 to FY2019-20 of the Distribution Licensees shall be 99.50%.

Based on above, collection efficiency at 99.50% level is considered for FY 2018-19.



**Table 5.18: Estimated Energy Collection**
**(Rs. Cr)**

Sl. No.	Particulars	Amount	Remark
A	Estimated Billing at Current Tariffs –without DRS	6,630.49	Table 5.17
B	Collection Efficiency	99.50%	
C	Estimated Collection	6,597.34	(A*B)

### **Target for Distribution Loss Level**

The Hon'ble Commission in its Business Plan Regulations, 2017 has approved distribution loss reduction targets as mentioned in table below in terms of Regulation 4(9)(a) of the DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017 :

**Table 5.19: Distribution loss level for 3<sup>rd</sup> MYT Control Period**

Category	FY 2017-18	FY 2018-19	FY 2019-20
Approved Distribution Target Loss level	8.38%	8.19%	8.00%
Year on Year reduction in distribution loss level		0.19%	0.19%

Based on above table, distribution loss level of 8.19% for FY 2018-19 is considered and corresponding energy requirement at TPDDL periphery comes to 9,643.85 MU for FY 2018-19.

**Table 5.20: Estimated Energy Requirements for FY 18-19**

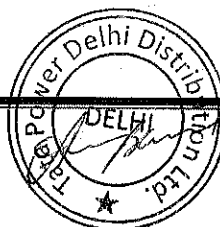
Sl. No.	Particulars	UoM	Amount	Remark
A	Expected Sales	MU	8,854.02	Table 5.13
B	Distribution Loss	%	8.19%	Table 5.19
C	Energy Input (at TPDDL periphery)	MU	9,643.85	$((A/(1-B))*100)$
D	Distribution Loss	MU	789.83	

### **Power Purchase Projections for FY 18-19**

Power purchase cost is the single largest component of ARR for a distribution company and hence the same is being submitted as part of MYT Regulations considering power from both existing as well as future renewable power stations.

### **Allocation of Power from Central and State Generating Stations**

- Delhi has a firm allocated share in Central Sector Generating Stations (CSGS), State Generating Stations (SGS) and other stations. For the purpose of projecting the units, the Latest allocation order for the allocations has been considered.



- Further, allocation from RPH has been considered NIL, as PPA of Rajghat has already been expired and has been disallowed by the Hon'ble Commission in tariff order of FY 2015-16.
- It is further clarified that no power from unallocated quota has been considered for projection purposes.

### **Energy Availability from the Central Sector, State Sector and Other Generating Stations**

The Energy availability in MUs for the purpose of projections has been computed as below

#### **State Generating Stations**

- The generation expected from Own Solar installed capacity of 1.65 MW @ 15% CuF.
- The Fixed Cost of BTPS has been considered for the period April, 2018 to July, 2018.
- Energy Charges has been considered based on actual prevailing rate of FY 2017-18 for coal/thermal power stations which was further increased by 5%.

Based on the above assumption, projected power purchase from State Generating Stations is given below:

**Table 5.21: Projected Power Purchase From State Generating Stations for FY 2018-19**

Sl. No.	Stations	Petitioner Share (MU)	Fixed Charge (Rs Cr)	Variable Charge (Rs Cr)	Total Charge (Rs Cr)	Average Rate (Rs./kWh)
1	2	3	4	5	6=4+5	7=6/3
<b>A</b>	<b>State Generating Stations</b>					
I	BTPS	0.00	14.57	0.00	14.57	!
II	Pragati	158.99	42.34	51.25	93.59	5.89
III	GT	53.00	69.61	15.92	85.53	16.14
IV	Pragati III	367.92	308.40	100.09	408.49	11.10
	<b>Total SGS</b>	<b>579.91</b>	<b>434.92</b>	<b>167.27</b>	<b>602.19</b>	<b>10.38</b>

#### **Central Sector Generating Stations**

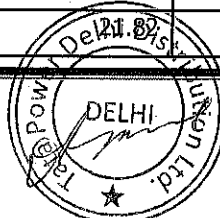
- Thermal Plants: The estimates for energy availability from coal based plants are based on the normative availability (PAFM) of the stations.
- Energy from Nuclear Stations: Energy from nuclear stations (NAPS and RAPS) is taken as per actual energy scheduled during previous years.



- Hydro Plant: The estimation is based on the month wise design energy of each plant prorated for the Petitioner share.
- Energy Charges has been considered based on actual prevailing rate of FY 2017-18 for coal/thermal power stations which was further increased by 5%.
- Fixed charges has been considered based on CERC tariff orders.

**Table 5.22: Projected Power Purchase from Central Generating Stations**

Sl. No.	Stations	Petitioner Share (MU)	Fixed Charge (Rs Cr)	Variable Charge (Rs Cr)	Total Charge (Rs Cr)	Average Rate (Rs./kWh)
1	2	3	4	5	6=4+5	7=6/3
	<b>NTPC</b>					
I	Anta Gas Power Station	32.10	7.11	8.34	15.45	4.81
II	Auraiya Gas Power Station	21.74	10.05	6.98	17.03	7.83
III	Dadri Gas Power Station	49.34	11.76	14.50	26.26	5.32
IV	FARAKKA	30.75	4.17	9.23	13.40	4.36
V	KAHALGAON - I	106.00	11.29	27.38	38.67	3.65
VI	NCPP - DADRI	0.00	0.00	0.00	0.00	
VII	RIHAND - I	210.74	18.13	28.97	47.09	2.23
VIII	RIHAND - II	271.29	22.95	37.17	60.12	2.22
IX	RIHAND - III	0.00	0.00	0.00	0.00	
X	SINGRAULI	319.09	20.91	46.67	67.58	2.12
XI	UNCHAHAAR - I	32.26	5.47	10.01	15.48	4.80
XII	UNCHAHAAR - II	63.22	9.97	19.63	29.60	4.68
XIII	UNCHAHAAR - III	39.01	8.26	12.07	20.33	5.21
XIV	KAHALGAON - II	338.79	37.53	87.40	124.93	3.69
XV	DADRI EXTENSION	0.00	0.00	0.00	0.00	
XVI	ARAVALI	3058.11	715.61	944.68	1660.29	5.43
	<b>Sub-Total NTPC</b>	4572.42	883.19	1253.03	2136.23	4.67
	<b>NHPC</b>					
I	BAIRA SIUL	26.30	2.50	2.74	5.24	1.99
II	CHAMERA - I	40.34	4.59	4.85	9.44	2.34
III	CHAMERA - II	61.34	6.00	6.39	12.39	2.02
IV	CHAMERA - III	42.44	8.60	9.54	18.13	4.27
V	DHAULIGANGA	45.99	3.98	7.36	11.34	2.47
VI	DULHASTI	75.06	19.56	21.96	41.52	5.53
VII	SALAL	0.00	0.00	0.00	0.00	
VIII	TANAKPUR	17.77	1.82	3.08	4.91	2.76
IX	URI	87.64	5.67	7.56	13.23	1.51
X	SEWA -II		5.55	6.18	11.74	5.38



Sl. No.	Stations	Petitioner Share (MU)	Fixed Charge (Rs Cr)	Variable Charge (Rs Cr)	Total Charge (Rs Cr)	Average Rate (Rs./kWh)
1	2	3	4	5	6=4+5	7=6/3
XI	Uri – II	46.38	9.16	11.70	20.86	4.50
XII	Parbati – III	36.52	5.10	10.45	15.55	4.26
	<b>Sub-Total NHPC</b>	501.60	72.54	91.81	164.35	3.28
	<b>NCPD</b>					
I	RAPS – 5 & 6	74.69	0.00	27.40	27.40	3.67
II	NPCIL – NAPS	97.15	0.00	25.54	25.54	2.63
	<b>Sub-Total Nuclear</b>	171.85	0.00	52.94	52.94	3.08
	<b>Other Stations</b>					
I	TEHRI HEP	51.20	12.56	15.33	27.88	5.45
II	SJVNL	174.91	24.81	24.20	49.01	2.80
III	KOTESHWAR	34.93	6.82	9.85	16.67	4.77
IV	Mejia unit - 6	217.02	31.36	52.96	84.32	3.89
V	DVC Chandrapur (Ext. 7 & 8)	651.06	109.21	133.17	242.38	3.72
VI	Haryana CLP Jhajjar (LT-5)	570.35	93.25	198.40	291.66	5.11
VII	MPL	2088.60	372.57	420.40	792.97	3.80
VIII	Tala HEP	30.13	0.00	6.84	6.84	2.27
IX	Sasan UMPP	956.65	16.26	115.52	131.78	1.38
	<b>Others Total</b>	<b>4774.86</b>	<b>666.84</b>	<b>976.67</b>	<b>1643.51</b>	3.44
	<b>Grand Total</b>	<b>10,020.72</b>	<b>1,622.57</b>	<b>2,374.45</b>	<b>3,997.03</b>	3.99

• **Future Capacity Addition**

a) **Capacity addition from NTPC - Unchahar IV TPS:** The Petitioner for the FY 2018-19 has considered capacity addition of only Unchahar IV TPS of NTPC Plant.

**Table 5.23: Projected Power Purchase From Central Generating Stations**

Sr. No.	Particulars	Energy (MU)	Fixed Cost (Rs. Cr.)	Variable Cost (Rs. Cr.)	Total Charges (Rs. Cr.)	Avg. Rate (Rs./kWh)
I	Unchahar 4	65.70	20.62	20.33	40.95	6.23





• **Renewable Power Purchase Obligations for FY 2018-19**

The Hon'ble Commission in its Business Plan Regulations, 2017 has notified year wise solar and non-solar renewable obligations for next control period which is given as below:

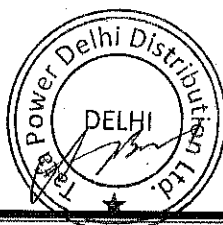
**Table 5.24: Targets for Renewable Power Purchase Obligation**

Sr. No.	Distribution Licensees	FY 2017-18	FY 2018-19	FY 2019-20
1	Solar Target	2.75%	4.75%	6.75%
2	Non Solar Target	8.75%	9.50%	10.25%
3	Total	11.50%	14.25%	17.00%

Therefore, in order to comply with above regulations, the Petitioner while projecting RPO compliance for next year has considered the same ratio i.e. for Solar RPO – 4.75% and Non Solar RPO – 9.50%, a total of 14.25%.

**Table 5.25: RPO Compliance for FY 18-19**

Sl. No.	Particulars	UoM	FY 18-19	
			Solar	Non Solar
A	Projected Energy sale for FY 2018-19	MU	8,854.02	
B	RPO target–Solar	%	4.75%	9.50%
C	RPO target –Solar	MU	420.57	841.13
D	RPO Compliance through	MU		
	Purchase from TPDDL Solar*	MU	2.17	
	Purchase from SECI Solar**	MU	40.30	
	Purchase form Bawana W2E***	MU		42.99
	Purchase from Small Hydro^	MU		159.65
	Purchase from TOWMCL****	MU		49.93
E	Excess/ (Shortfall)= (C-D)	MU	(378.10)	(588.57)
F	Inter head adjustment	MU		
G	Requirement to be met through purchase of REC		(378.10)	(588.57)
H	REC rate	Rs/kWh	2.40	1.50
I	Cost for REC purchase	Rs Cr	90.74	88.28
	Total REC		179.03	



**Table 5.26: Power Purchase from solar and non-solar generating stations**

Sl. No.	Stations	Petitioner Share (MU)	Fixed Charge (Rs Cr)	Variable Charge (Rs Cr)	Total Charge (Rs Cr)	Average Rate (Rs./kWh)
1	2	3	4	5	6=4+5	7=6/3
<b>A</b>	<b>Solar</b>					
*	TPDDL Solar	2.17	-	3.17	3.17	14.64
**	SECI Solar	40.30	-	23.27	23.27	5.78
	<b>Sub-Total</b>	<b>42.46</b>	<b>-</b>	<b>26.44</b>	<b>26.44</b>	<b>6.23</b>
<b>B</b>	<b>Non-Solar</b>					
***	Bawana W2E	42.99	-	31.73	31.73	7.38
****	TOWMCL	49.93	-	33.74	33.74	6.76
	<b>Sub-Total</b>	<b>92.92</b>	<b>0.00</b>	<b>65.47</b>	<b>65.47</b>	<b>7.05</b>
	<b>Total</b>	<b>135.39</b>	<b>0.00</b>	<b>91.91</b>	<b>91.91</b>	<b>6.79</b>

**a) Capacity addition from Small Hydro**

TPDDL is in the process of sourcing Small hydro Power in FY 2018-19 to meet RPO Obligations.

**Table 5.27: Power Purchase from small hydro generating stations**

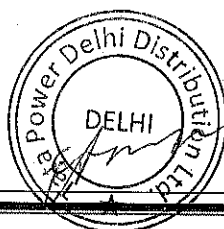
Sl. No.	Stations	Petitioner Share (MU)	Fixed Charge (Rs Cr)	Variable Charge (Rs Cr)	Total Charge (Rs Cr)	Average Rate (Rs./kWh)
1	2	3	4	5	6=4+5	7=6/3
^	Small Hydro	159.65	0.00	66.99	66.99	4.20

**b) Capacity addition from Sun-Edison been considered as 'NIL'**

On account of the uncertainty linked with the Sun Edison project, the same has not been considered in the Capacity additions

**Power Purchase estimation from Other Sources: Intra State, Short Term Bilateral & Banking**

No short term power purchase has been considered, except the return of power banked units done/ or to be done in previous years. As the power banking is done on the normative rate of Rs. 4.00/unit therefore at the time of return the same normative price of Rs 4.00/unit considered by the Petitioner.



**Table 5.28: Projected Units purchase**

Other Sources	Projection FY 18-19		
	MUs	(Rs Cr)	Av. Rate
<b>Power Purchase from Other Sources</b>			
Inter-State Bilateral Purchase			
Intra-State Power Purchase			
<b>Other Purchases Total</b>	<b>520.00</b>	<b>206.00</b>	<b>3.96</b>

### **Short Term Sale**

Based on the energy requirement and energy availability, TPDDL has projected 1385.40 MU of surplus power @ rate of 3.00 per unit. The short term surplus power was sold through available mechanisms i.e. banking, bilateral sale, exchange and UI.

**Table 5.29: Short Term Power Sale**

Source	Amount
Sale of Surplus Power – MU	1,385.40
Revenue from Sale of Surplus Power	415.62
Per unit Rate- Rs/kWh	3.00

### **Transmission Losses**

0.98% losses have been considered for intrastate transmission i.e. for DTL network and for Inter State Transmission losses 3.20% has been considered for FY 2018-19.

**Table 5.30: Transmission Losses for FY 18-19**

Source	Amount
Inter-State Transmission	356.67
Intra-State Transmission (DTL)	95.45
<b>Total Transmission Losses (MU)</b>	<b>452.12</b>

### **Transmission Cost for FY 2018-19**

- (i) Transmission charges for PGCIL and DTL has been considered equivalent to the charges applicable for FY 2017-18
- (iii) STOA charges of Rs 0.50/unit has been factored as a part of transmission cost.



Based on above transmission charges (in Rs Cr.) is given below:

**Table 5.31: Transmission Charges (Rs Cr.) for FY 18-19**

Source	Amount
PGCIL Charges	384.00
DTL & SLDC Charges	360.37
Other Transmission charges, LDC charges	17.13
STOA Charges	69.27
Total (excluding Pension Trust)	830.76

### **Normative Rebate**

MYT Regulations, 2011 provided that normative rebate has to be considered on net power purchase cost. Based on the same normative rebate of Rs 106.87 Cr has been projected.

**Table 5.32: Computation of Normative Rebate**

Gencos	Maximum rebate %	Amount (in Rs Cr)
<b>State Generating Stations</b>		
Delhi State Gencos	2%	12.04
<b>Central Generating Stations</b>		
NTPC	2%	42.72
NHPC	2%	3.29
NPCIL	2.00%	1.06
Others	2%	32.87
<b>Transmission</b>		
Transmission	2%	14.89
<b>Total</b>		<b>106.87</b>

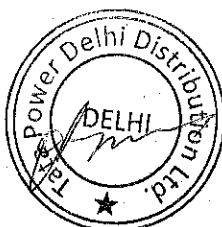


**Estimated Power Purchase Cost for FY 2018-19**

Based on the above submission Power Purchase cost for FY 2018-19 works out as given below:

**Table 5.33: Energy Balance Summary and Power Purchase Cost for FY 18-19**

Sr. No.	Particulars	FY 2018-19		
		Quantity (MU)	Amount (Rs. Crore)	Average Cost (Rs./kWh)
1	Power Purchase from CSGS including Unchahar IV –TPS (Table 5.22,5.23)	10086.42	4037.98	4.00
	Short Term Power Purchase (Table 5.28)	520.00	206.00	
2	PGCIL Losses & Charges (*Table 5.31)	356.67	*384.00	
3	Power Purchase from SGS (Table 5.21)	579.91	602.19	10.38
4	Renewable Energy Plants and small Hydro	295.03	158.90	5.39
5	Cost towards Renewable Energy Certificates (Table 5.25)		179.03	
6	Power Available at Delhi Periphery (cost excluding RECs)	11,124.69	5568.10	5.01
7	DTL Loss & Transmission Charges (Table 5.31)	95.45	446.76	
8	Power Purchase Rebate @ 2% (Table 5.32)		91.98	
9	Rebate on Transmission Charges @ 2% (Table 5.32)		14.89	
10	Power Available to DISCOM	11,029.25	5907.99	5.36
11	Sales	8854.02		
12	Distribution Loss	789.83		
13	Net Power Purchase cost including Transmission charges and REC	9,643.85	5,492.38	5.70
14	Net Surplus Power (Table 5.29)	1,385.40	415.62	3.00



**Operation & Maintenance Expenses for FY 2018-19**

The Hon'ble Commission in its Business Plan Regulations, 2017 has notified norms for operation and maintenance expenses in terms of Regulation 4(3).

Based on network the Petitioner is seeking O&M Expenses for FY 2018-19 as given in table below:

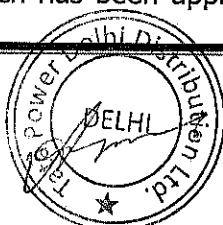
**Table 5.34: Approved O&M Expenses for FY 2018-19**

Particulars	*Capacity as on 31.03.2019	O&M Expenses Per Unit		(Rs Cr) O&M Expenses (Rs. Crore)
66 kV Line (kms)	981	Rs. Lakh/Ckt. Km	3.482	34.16
33 kV Line (kms)		Rs. Lakh/Ckt. Km	3.482	
11 kV Line (kms)	6119.41	Rs. Lakh/Ckt. Km	0.91	55.69
LT Lines system (kms.)	7029.86	Rs. Lakh/Ckt. Km	6.73	473.11
66/11 kV Grid sub-station (MVA)	5113.5	Rs. Lakh/MVA	0.979	50.06
33/11 kV Grid sub-station (MVA)		Rs. Lakh/MVA	0.979	
11/0.4 kV DT (MVA)	5912.79	Rs. Lakh/MVA	1.4	82.78
Total (excluding impact of any statutory pay revision)				695.79
Add- Provisional Impact of 7th Pay Commission*	<b>Subject to True up on Actual Basis</b>			44.26
Add- Payparity for Non FRSR				22.92
Add- Impact of GST				9.00
Add- Impact of Minimum wages				14.00
Add- Legal Expenses	To be allowed on Normative Basis			15.88
Total O&M Expenses				801.86

It is further mentioned that the \*capacity considered for computation of O&M expenses are subject to change based on actual capitalization.

**Interim Relief for FRSR Employees**

In addition to above, the Hon'ble Commission in its Business Plan Regulations has clearly specified that change in O&M expenses due to statutory requirement like 7<sup>th</sup> Pay Commission impact will be trued up on actual basis. In order to comply with the recommendations of Wage Revision Committee for disbursement of Interim Relief w.e.f. 01.01.2016 and for payment of other allowance w.e.f. 01-07-2017, which has been approved by the Govt. of NCT of Delhi,



Department of Power vide their Order No. F.11(62)/2015/Power/Pt-I/2116 dated 26-07-2017 (copy attached as Annexure A-10 in Volume II of the Petition), the Petitioner in FY 2017-18 has paid interim relief to FRSR employees. In addition to Interim pay relief the petitioner has made a corresponding provision towards such increase in leave salary contribution and pension contribution.

The Petitioner has sought Rs 44.26 Cr for 2018-19 subject to true up on actual basis, out of which Rs. 28.06 Cr towards payment of additional monthly compensation and balance Rs 16.20 Cr towards provision for increase in leave salary and pension contribution.

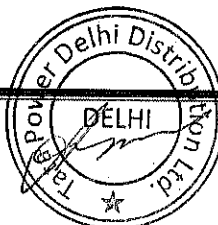
### **Pay parity for Non FRSR Employees**

Power sector is a specialised/technical sector for which efficient and trained manpower is generally not available in the market as is available for other businesses; hence poaching manpower from the same sector/ industry entails higher costs. The impact should be considered so that efficiency manpower can be retained within the organisation. Thus in order to maintain principle of pay parity, correction in Salary of Non- FRSR employees is required in line with recommendation of 7th Pay Commission applicable to FRSR employees. As it can be one of the reason to lure employee to look out for job outside.

It is also important to maintain harmony among employees and health working environment for better performance of the Company. Differential pay structure can also create a lack of motivation in employees and effect their performance towards company. It is also seen that compensation packages, its components, and pay parity are significant factors in enhancing and maintain job satisfaction level among the employees. Thus the Petitioner is requesting to the Hon'ble Commission to approve an amount of Rs. 22.92 Cr on adhoc basis subject to actual true up.

### **Impact of GST**

It is further mentioned that GST has been implemented since 1<sup>st</sup> July, 2017 and considering the impact of the same on distribution business, the Petitioner is seeking GST impact of approx. Rs 9 Cr approx. for FY 2018-19 subject to true up of the same.



**Minimum Wages Impact**

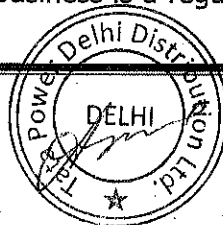
Govt. of Delhi has issued the Delhi Gazette notification No. 85 dated 03.03.2017 (Notification attached as Annexure A-11 in Volume II of the Petition) and has revised the minimum wages for various Employment Categories effective 03.03.2017. The increase in minimum wages is substantial to the tune of 37% approx. A meeting was also called at Delhi Secretariat by Power Minister, Mr. Gopal Rai and Labour Commissioner wherein representatives from BAs and other organizations like Tata Power- DDL were also called. In the meeting, it was stressed by the Govt. to comply with the revised minimum wages with immediate effect. This unprecedented increase in minimum wages has an impact on all the service contracts issued by the Petitioner and in force, because such increase was unprecedented and not factored in the contract prices. The impact is more severe on the manpower intensive contracts and puts the sustainability of such contracts at risk. Business Associates have also started to represent for incorporating suitable increase in the monthly charges payable in respective contracts. Therefore the Petitioner is requesting to the Hon'ble Commission to allow provisionally an amount of Rs 14 Cr for FY 2018-19.

**Legal Expenses**

The Hon'ble Commission in its "Statement of Reason on Business Plan Regulations 2017" has provided the treatment of Legal Expenses in its Explanatory Memorandum as follows:

*"(43) The Commission has not considered the expenditure incurred on account of legal fee. Further, the Commission is of the view that legal expenses incurred on cases filed against the decisions of the Commission in any of the Courts and Forums shall not be allowed as pass through in the ARR. The legal expenses incurred on cases other than aforesaid, shall be claimed by the DISCOMs in Tariff petitions which may be allowed separately after prudence check in true-up order for respective year."*

With respect to above, the Petitioner would like to mention that legal expenses incurred shall be allowed without any distinction. Non allowance of some legal expenses amounts to curtailment of Statutory Right of the Petitioner to challenge the decisions of the Commission and is against the principle of natural justice as well the same is against Article 14 of the Constitution of India. The distribution business is a regulated business under the aegis of this





Commission. The majority of issues in Distribution Business will arise out of orders/ directions issued by the Commission. In all such case, TPDDL and other utilities have right to challenge the same before the Hon'ble Appellate Tribunal for Electricity and Hon'ble Supreme Court thereafter. The final Judgment passed at the Appellate stage will be binding on both the DISCOM as well as the Hon'ble Commission. Therefore, all legal expenses without any distinction should be allowed as an expense in the ARR. The Petitioner further request to the Hon'ble Commission to allow normative figure of Rs. 15.88 Cr. (i.e. Estimated Rs. 14.88 Cr for FY 17-18 along with increase of approx. 6.7%) over and above the normative O&M expenses, so that the Petitioner has not to face any liquidity problem.

### **CAPEX PLAN FOR FY 2018-19**

To achieve the anticipated load growth and targeted Distribution loss reduction, TATA POWER-DDL has carried out a detailed analysis of CAPEX required for FY 2018-19. The analysis is based on various technical and physical audits carried out by TATA POWER-DDL staff followed by discussions at various departments and review by senior management.

TATA POWER-DDL's CAPEX Plan is worked out after amalgamating the requirement at various departments.

The deployment of CAPEX is proposed under the following benefit centers:

1. Distribution Loss Reduction
2. Quality Improvement (System Improvement)
3. Growth Development Plan to meet the load growth
4. Creation of infrastructure facilities, Buildings and related civil works

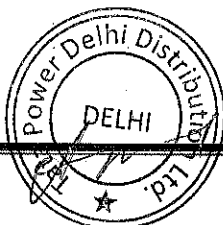
For each of the above benefit centers, the investment has been broken into the following sub-centers:

#### **1. Distribution Loss Reduction**

- a) Meter Replacement (Distribution)
- b) Meter Replacement (Smart Meters)
- c) Reactive Power Compensation

#### **2. Quality Improvement**

- a) Automation



- b) Protection & Testing
- c) Safety related
- d) 11 kV Sick Cable Replacement
- e) 11 kV System Improvement
- f) EHV System Improvement-EHV Lines & Grid Equipment

**3. Growth Development Plan to meet the load growth**

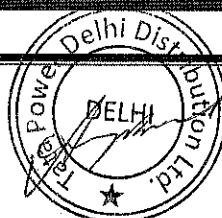
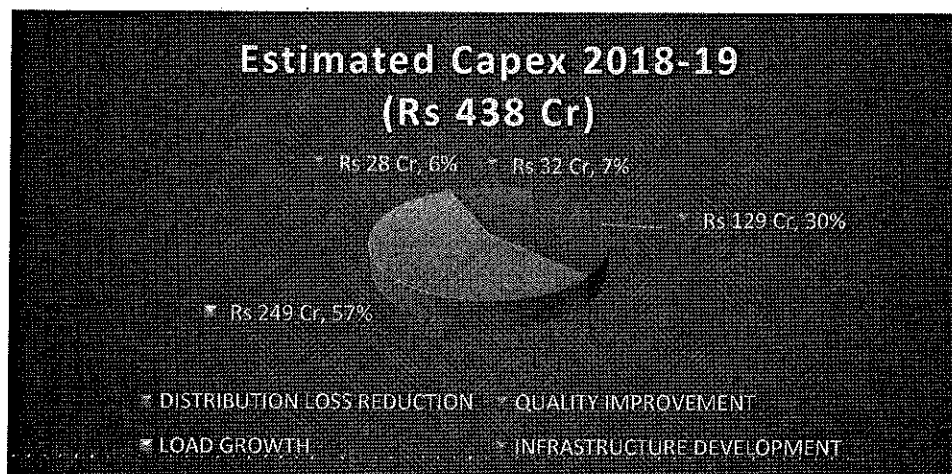
- a) 66 & 33 KV Addition/Augmentation Of Bays/Transformers
- b) 66 & 33 kV Lines and Cables
- c) Augmentation of 11 kV network
- d) New Meters (Distribution)
- e) New Meters (Smart Meters)

**4. Creation of Infrastructure Facilities, Buildings and related civil works.**

- a) Administration support
- b) Civil Infrastructure
- c) Information Technology

**I. TARGET AREA-WISE DISTRIBUTION OF CAPEX**

For improving the performance of TATA POWER-DDL in terms of meeting the load growth, reduction of Distribution losses and Quality of supply, a detailed CAPEX Plan for Rs 438 Cr has been worked out for FY 2018-19.



**Table No. 5.35: Capex Plan for FY 2018-19**

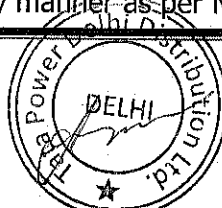
Budget Head	S NO.	Sub-category	Estimated Capex 2018-19 (Rs Cr)
DISTRIBUTION LOSS REDUCTION	a	METER REPLACEMENT (DISTRIBUTION)	12.20
	b	SMART METERS REPLACEMENT	19.44
	c	REACTIVE POWER COMPENSATION	0.50
<b>DISTRIBUTION LOSS REDUCTION Total</b>			<b>32.14</b>
QUALITY IMPROVEMENT	a	AUTOMATION	26.76
	b	PROTECTION & TESTING	0.88
	c	SAFETY RELATED	11.50
	d	SICK CABLE REPLACEMENT	5.00
	e	11 KV SYSTEM IMPROVEMENT SCHEMES	15.00
	f	EHV SYSTEM IMPROVEMENT SCHEMES	46.00
<b>QUALITY IMPROVEMENT Total</b>			<b>129.14</b>
LOAD GROWTH	a	66 & 33 KV ADDITION/AUGMENTATION OF BAYS/TRANSFORMERS	8.00
	b	66 & 33 KV LINES & CABLES	56.00
	c	11 KV SYSTEM AUGMENTATION	110.00
	d	NEW METERS (DISTRIBUTION)	28.30
	e	SMART METERS NEW	47.00
<b>LOAD GROWTH Total</b>			<b>249.30</b>
INFRASTRUCTURE DEVELOPMENT	a	ADMINISTRATION SUPPORT	13.69
	b	CIVIL	1.00
	c	INFORMATION TECHNOLOGY	13.20
<b>INFRASTRUCTURE DEVELOPMENT Total</b>			<b>27.88</b>
<b>Grand Total</b>			<b>438.45</b>

Note:

1. CAPEX for deposit works will be as per requirement.
2. Above CAPEX does not include IDC and inflation factor.
3. The details of ongoing projects that may spill into subsequent control period is being shared with Hon'ble Commission on quarterly basis vide Quarterly Progress Report.
4. The zone-wise/scheme-wise estimate shall be framed along with Cost Benefit Analysis in subsequent control periods which shall be submitted to Hon'ble Commission for approval.

### 1. CAPEX FOR DISTRIBUTION LOSS REDUCTION

For FY 2018-19, TATA POWER-DDL proposes Capital expenditure of Rs 32 Cr for Distribution Loss Reduction Schemes to sustain existing Distribution loss level and further to reduce the same in a timely manner as per Management directions:



**Table No. 5.36: Estimated Capex for Distribution Loss Reduction**

Budget Head	S NO.	Sub-category	Nos.	Estimated Capex 2018-19 (Rs Cr)
DISTRIBUTION LOSS REDUCTION	a	METER REPLACEMENT (DISTRIBUTION)	1	12.20
	b	SMART METERS REPLACEMENT	1	19.44
	c	REACTIVE POWER COMPENSATION	1	0.50
<b>DISTRIBUTION LOSS REDUCTION Total</b>			<b>3</b>	<b>32.14</b>

**a) METER REPLACEMENT (DISTRIBUTION)**

Some of the existing meters are required to be replaced for the following reasons:

- i. Meters booked under enforcement
- ii. Faulty/Burnt meters
- iii. Temper prone meters.

The estimated Capex for Meter replacement for FY 2018-19 is as under:

**Table No. 5.37: Estimated Capex for Meter Replacement**

S No.	Proposal (Brief Description)	Estimated Capex 2018-19 (Rs Cr)	Purpose of Investment	Scheduled Completion Time
1	METER REPLACEMENT ON ACCOUNT OF BURNT/FAULTY/REGULATIONS/THEFT	12.20	Replacement of Existing Assets	APR'2019

**b) METER REPLACEMENT SMART METERS**

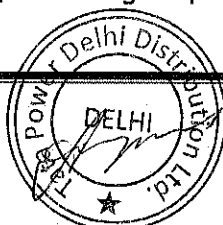
As per approval from Hon'ble Commission regarding installation of Smart meters, following investment in FY 2018-19 is proposed:

**Table No. 5.38: Estimated Capex for Meter Replacement / Smart Meters**

S No.	Proposal (Brief Description)	Estimated Capex 2018- 19 (Rs Cr)	Purpose of Investment	Scheduled Completion Time
1	Replacement Drive	19.44	Replacement of Existing Assets	APR'2019

**c) REACTIVE POWER COMPENSATION**

In order to comply to Voltage Regulations, Following Proposal is required under Capex 2018-19:



**Table No. 5.39: Estimated Capex for installation of LT Pole for reactive power**

S No.	Proposal (Brief Description)	Estimated Capex 2018-19 (Rs Cr)	Purpose of Investment	Scheduled Completion Time (DAYS)
1	LT Pole Capacitor for reactive power compensation	0.50	Reactive Power Compensation	Mar'2019

## II. CAPEX FOR QUALITY IMPROVEMENT

TATA POWER-DDL proposes to further strengthen the network, upgrade technologies to enhance customer satisfaction in terms of safe reliable and quality power supply of electricity.

**Table No. 5.30: Estimated Capex for Quality Improvement**

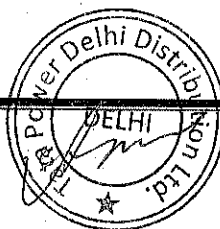
Budget Head	S NO.	Sub-category	Nos.	Estimated Capex 2018-19 (Rs Cr)
QUALITY IMPROVEMENT	a	AUTOMATION	16	26.76
	b	PROTECTION & TESTING	3	0.88
	c	SAFETY RELATED	5	11.50
	d	SICK CABLE REPLACEMENT	1	5.00
	e	11 kV SYSTEM IMPROVEMENT SCHEMES	2	15.00
	f	66 & 33 KV LINES & CABLES	1	46.00
	g	GRID EQUIPMENT	1	24.00
<b>QUALITY IMPROVEMENT Total</b>			<b>29</b>	<b>129.14</b>

### a) AUTOMATION IMPLEMENTATION

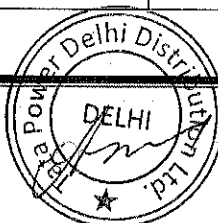
Following works are proposed under this head for FY 2018-19:

**Table No. 5.31: Estimated Capex for Automation Implementation**

S No.	Proposal (Brief Description)	Estimated Capex 2018-19 (Rs Cr)	Purpose of Investment	Scheduled Completion Time (Days/Target)
1	Solar SCADA system & software	6.00	Establishment of renewable energy control centre	547.5



S No.	Proposal (Brief Description)	Estimated Capex 2018-19 (Rs Cr)	Purpose of Investment	Scheduled Completion Time (Days/Target)
2	Street Light automation system	3.00	Real time monitoring & control of Street light management system	730
3	SFRA Kit	0.10	Improvement in Quality & Reliability of Supply	182.5
4	RTU & Ethernet switch replacement	0.90	Replacement of Existing Assets	365
5	BCU ,PU with BCPU	6.00	Replacement of Existing Assets	1095
6	PQM	0.20	Improvement in Quality & Reliability of Supply in renewable generation	182.5
7	Network management system	0.30	reliability & availability of IED	365
8	IED diagnostic tool	0.25	real time energy reading	365
9	Integrated RF lab for testing of DA equipment.	0.12	Integrated RF laboratory for OT for the first time across Power Utilities in India for NHMS of IED and RF testing.	365
10	Integration of distribution IED,FPI,SF6 Manometers over RF mesh	0.13	Improvement in Quality & Reliability of Supply	730
11	Obsolete IED (like WIC1, VIP-35 etc.) of the RMU to be replaced with communicable relay.	0.40	Improvement in Quality & Reliability of Supply	730
12	To avoid distribution transformer from oil theft along with advance DT health monitoring analytics	0.50	Improvement in Quality & Reliability of Supply	730
13	To enhance reliability of network through Distribution Automation	8.00	Improvement in Quality & Reliability of Supply	1095
14	For real time alert of SF6 pressure for old automated RMU	0.06	Safety of Equipment and manpower.	730
15	For real time fault location of distribution feeder	0.50	Improvement in Quality & Reliability of Supply	730
16	Replacement of obsolete older version controller panels and electronic cards of Autoreslosers and Sectionalizers.	0.30	Replacement of Existing Assets	Mar'2019
	<b>TOTAL</b>	<b>26.76</b>		



## b) PROTECTION & TESTING INSTRUMENTS

Following works are proposed under this head for FY 2018-19:

**Table No. 5.32: Estimated Capex for Protection & Testing Equipment's**

S No.	Proposal (Brief Description)	Estimated Capex 2018-19 (Rs Cr)	Purpose of Investment	Scheduled Completion Time (Days/Target)
1	online Partial Discharge test kit for Power Cable	0.30	Improvement in Quality & Reliability of Supply	180
2	2 Nos. Riser Bond Equipment for Cable Signature Analysis	0.08	Improvement in Quality & Reliability of Supply	180
3	Special Purpose Vehicle for Maintenance activity at site equipped with crane, thermo scanning, ultrasound and testing equipment	0.50	Improvement in Quality & Reliability of Supply	Mar'2019
	<b>TOTAL</b>	<b>0.88</b>		

### 1. Online Partial Discharge test kit for Power Cable

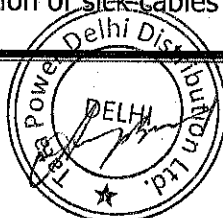
This equipment is a diagnostic tool for cable health assessment. Being an online PD monitoring kit, we will be able to measure the Partial Discharge of a cable online i.e. without affecting the supply or making the feeder switched off. This will also be an effective tool for identification of sick cables in our network.

**Completion time:** 6 Months (Effective from approval grant) for procurement cycle time inclusive of specification finalization.

(Once procured, it will be a day to day usage equipment i.e. an ongoing process for PD measurement in cables without having any completion time like any project closure.)

### 2. Riser Bond Equipment for Cable Signature Analysis

This equipment is also a diagnostic tool for cable health measurement. This basically gives us the impedance characteristic throughout the entire length of the cable i.e. a typical impedance Vs. length characteristic of the underground cable. This is already used in TATA POWER-DDL as an effective tool for identification of sick cables in our network. However we



are having only 2 Nos. of this equipment's presently which is not sufficient to cover up our entire network within stipulated timeline.

**Completion time:** 6 Months (Effective from approval grant) for procurement cycle time inclusive of specification finalization.

(Once procured, it will be a day to day usage equipment i.e. an ongoing process for Signature capturing & further analysis of cables without having any completion time like any project closure.)

### 3. Special Purpose Vehicle for Maintenance activity at site equipped with crane, thermoscanning, ultrasound and testing equipment.

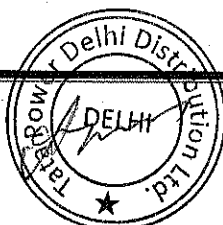
Capex is required to expedite maintenance to reduce outage time for maintenance for overall reduction in consumer hour interruption.

#### C) SAFETY RELATED

TATA POWER-DDL proposes following works under this category:

**Table No. 5.33: Estimated Capex for Safety**

S No.	Proposal (Brief Description)	Estimated Capex 2018-19 (Rs Cr)	Purpose of Investment	Scheduled Completion Time)
1	Schemes for mitigation of unsafe situations in field	10.00	Safety of Personnel and Consumers	JUN'2019
2	Purchase of new Fire Extinguishers and replacement of old fire extinguishers (age 10 years)	0.20	Replacement of Existing Assets	JUN'2019
3	Replacement of old fire alarm system (beyond 8 years) with new advanced and intelligent fire alarm and detection system.	0.25	Replacement of Existing Assets	JUN'2019
4	Animation Movies for Safety awareness	0.05	Safety of Personnel and Consumers	JUN'2019
5	Installation of Fire Protection System in the buildings - four district Office.	1.00	Safety of Personnel and Consumers	JUN'2019
	<b>TOTAL (Rs Lacs)</b>	<b>11.50</b>		





**d) SICK CABLE REPLACEMENT**

TATA POWER-DDL has envisaged following investment under this category.

**Table No. 5.34: Estimated Capex for Fy 2018-19**

S No.	Proposal (Brief Description)	Estimated Capex 2018-19 (Rs Cr)	Purpose of Investment	Scheduled Completion Time (DAYS)
1	11 KV SICK CABLES REPLACEMENT	5.00	Replacement of Existing Assets	JUN'2019

**e) 11 KV SYSTEM IMPROVEMENT SCHEMES**

TATA POWER-DDL has envisaged an investment of Rs 15 Cr for FY 2018-19:

**Table No. 5.35: Estimated Capex for 11 KV system improvement schemes**

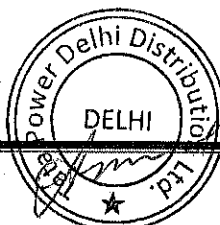
S No.	Proposal (Brief Description)	2018-19 (Rs Cr.)	Purpose of Investment	Scheduled Completion Time (DAYS)
1	RMU/Autorecloser SCHEMES	5.00	Improvement in Quality & Reliability of Supply	JUN'2019
2	sick DTs (age more than 25 years) replacement	10.00	Replacement of Existing Assets	JUN'2019
	TOTAL	15.00		

**f) EHV SYSTEM IMPROVEMENT SCHEMES**

TATA POWER-DDL has envisaged an investment of Rs 70 Cr for FY 2018-19:

**Table No. 5.36: Estimated Capex for EHV projects**

S No.	Proposal (Brief Description)	2018-19 (Rs Cr.)	Purpose of Investment	Scheduled Completion Time (DAYS)
1	Replacement of Old and worn out conductor to ensure safety and improve reliability	46.00	To improve Reliability	JUN'2019
2	Replacement of Old and aged equipment to improve reliability of the system and ensure safety of the Operation.	24.00	To improve Reliability	JUN'2019
	TOTAL	70.00		



### III. CAPEX FOR LOAD GROWTH

Load Growth Schemes proposals have been categorized into following heads.

**Table No. 5.37: Estimated Capex for Load Growth Schemes**

Budget Head	S NO.	Sub-category	Estimated Capex 2018-19 (Rs Cr)
LOAD GROWTH	A	66 & 33 KV ADDITION/AUGMENTATION OF BAYS/TRANSFORMERS	8.00
	B	66 & 33 KV LINES & CABLES	56.00
	C	11 KV SYSTEM AUGMENTATION	110.00
	D	NEW METERS (DISTRIBUTION)	28.30
	E	SMART METERS NEW	47.00
<b>LOAD GROWTH Total</b>			<b>249.30</b>

#### a) 66 & 33 KV ADDITION/AUGMENTATION OF BAYS/TRANSFORMERS

Following investment plan has been proposed under this head for FY 2018-19

**Table No. 5.38: Estimated Capex for 66 & 33 KV addition/augmentation of bays/ transformers**

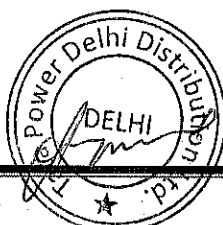
S No.	Proposal (Brief Description)	Estimated Capex 2018-19 (Rs CR)	Purpose of Investment	Scheduled Completion Time
1	Addition / Augmentation of Power Transformers	8.00	Meeting Load Growth	JUN'2019

#### b) 66 & 33 KV LINES & CABLES

Following investment plan has been proposed under this head for FY 2018-19.

**Table No. 5.39: Estimated Capex for FY 2018-19**

S No.	Proposal (Brief Description)	Estimated Capex 2018-19 (Rs Cr)	Purpose of Investment	Scheduled Completion Time
1	Addition of 66KV & 33KV Lines / cables to meet the Load demand.	56.00	Meeting Load Growth	JUN'2019



**c) 11 KV SYSTEM AUGMENTATION WORKS**

The brief details of proposals are as under.

**Table No. 5.40: Estimated Capex for 11 KV System Augmentation**

S No.	Proposal (Brief Description)	Estimated Capex 2018-19 (Rs Cr)	Purpose of Investment	Scheduled Completion Time
1	NEW 11 KV FEEDERS	15.00	Meeting Load Growth	JUN'2019
2	NEW 11 KV INTERCONNECTORS	15.00	Meeting Load Growth	JUN'2019
3	DT ADDITION/AUGMENTATION	20.00	Meeting Load Growth	JUN'2019
4	11 kv feeder schemes related to EHV planning	10.00	11 KV network to evacuate the power from new Grid/transformer	JUN'2019
5	Schemes for HCB/HRB /Agricultural Connections	25.00	For releasing HRB /HCB connections	JUN'2019
6	Providing peripheral network for unauthorised colony	25.00	Augmentation of network for releasing new connections in un-authorised area	JUN'2019
	<b>TOTAL</b>	<b>110.00</b>		

**d) NEW METERS (DISTRIBUTION)**

The budget estimated is Rs 28 Cr for FY 2018-19.

**Table No. 5.41: Estimated Capex for new meter installation**

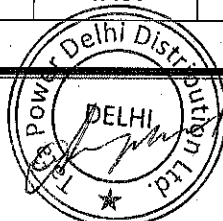
S No.	Proposal (Brief Description)	Estimated Capex 2018-19 (Rs Cr)	Purpose of Investment	Scheduled Completion Time
1	NEW METERS INSTALLATION	28.30	Meeting Load Growth	APR'2019

**e) NEW METERS (SMART METERS)**

TATA POWER-DDL proposes following estimate for Smart Meters:

**Table No. 5.42: Estimated Capex for Smart Meter**

S No.	Proposal (Brief Description)	Estimated Capex 2018-19 (Rs Cr)	Purpose of Investment	Scheduled Completion Time
1	New Connections	47.00	Meeting Load Growth	APR'2019



#### IV. CAPEX FOR CREATION OF INFRASTRUCTURE FACILITIES, BUILDINGS AND RELATED CIVIL WORKS

The details of proposed investment are as under:

**Table No. 5.43: Estimated Capex for Infrastructure**

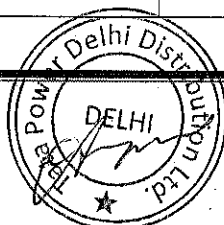
Budget Head	S NO.	Sub-category	Estimated Capex 2018-19 (Rs Cr)
INFRASTRUCTURE DEVELOPMENT	a	ADMINISTRATION SUPPORT	13.69
	b	CIVIL	1.00
	c	INFORMATION TECHNOLOGY	13.20
<b>INFRASTRUCTURE DEVELOPMENT Total</b>			<b>27.88</b>

##### a) ADMINISTRATION SUPPORT

The details of proposed investment are as under:

**Table No. 5.44: Estimated Capex for Administration support**

S No.	Proposal (Brief Description)	Estimated Capex 2018-19 (Rs Cr)	Purpose of Investment	Scheduled Completion Time
1	Standalone Acs (WAC / SAC)	0.75	Infrastructure Development	APR'2019
2	Water Cooler	0.24	Infrastructure Development	APR'2019
3	RO System	0.02	Infrastructure Development	APR'2019
4	Chairs	0.50	Infrastructure Development	APR'2019
5	Office Table	0.10	Infrastructure Development	APR'2019
6	Almirah	0.06	Infrastructure Development	APR'2019
7	File Rack	0.18	Infrastructure Development	APR'2019
8	Projector	0.05	Infrastructure Development	APR'2019
9	Digital Camera	0.03	Infrastructure Development	APR'2019
10	Refrigerator	0.03	Infrastructure Development	APR'2019
11	Microwave oven	0.04	Infrastructure Development	APR'2019
12	Fan	0.05	Infrastructure Development	APR'2019
13	TV	0.03	Infrastructure Development	APR'2019
14	Miscellaneous (Heater/Fan/Exhaust Fan/Geyser/TV etc.)	0.15	Infrastructure Development	APR'2019
15	Attendance Machines	0.07	Infrastructure Development	APR'2019
16	Photocopier Machines	0.02	Infrastructure Development	APR'2019



S No.	Proposal (Brief Description)	Estimated Capex 2018-19 (Rs Cr)	Purpose of Investment	Scheduled Completion Time
17	Mobile Hand Set (Standard)	0.06	Infrastructure Development	APR'2019
18	Telephone instrument for Extn. Lines	0.21	Infrastructure Development	APR'2019
19	Company owned vehicle	0.60	Infrastructure Development	APR'2019
20	Company owned vehicle	10.00	Infrastructure Development	APR'2019
21	Tower Wagons- 2 nos @25Lacs each.	0.50	Infrastructure Development	180 Days
	<b>TOTAL</b>	<b>13.69</b>		

**b) CIVIL INFRASTRUCTURE**

The details of proposed investment are as under:

**Table No. 5.44: Estimated Capex for Civil Infrastructure**

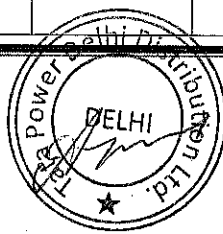
S No.	Proposal (Brief Description)	Estimated Capex 2018-19 (Rs Cr)	Purpose of Investment	Scheduled Completion Time
1	CIVIL INFRASTRUCTURE PROJECTS	1.00	Infrastructure Development	APR'2019

**c) INFORMATION TECHNOLOGY**

The details of proposed investment are as under:

**Table No. 5.45: Estimated Capex for IT**

S No.	Proposal (Brief Description)	Estimated Capex 2018-19 (Rs Cr)	Purpose of Investment	Scheduled Completion Time (DAYS)
1	Tertiary Data Center	4.19	Disaster Management Plan	730
2	Disk based backup appliances (Rohini)	0.35	Data Security	365
3	SAN switch Replacement at DC-1 (More than 6-7 Years)(35000008384)	0.36	Replacement of Existing Assets	365
4	Replacement of E-mail Filtering solution older than Seven Years	0.40	Replacement of Existing Assets	365
5	DG set (3500003597)	0.20	Replacement of Existing Assets	365



S No.	Proposal (Brief Description)	Estimated Capex 2018-19 (Rs Cr)	Purpose of Investment	Scheduled Completion Time (DAYS)
6	Printers & scanners	0.25	Replacement of Existing Assets	730
7	Laptops/ desktops older than 6 years	2.00	Replacement of Existing Assets	365
8	Office Automation Equipment like Projection system, IP phones, VC, etc.	0.20	Replacement of Existing Assets	365
9	Network Equipment for newly connected locations	1.00	To enable IT/OT services at new locations	365
10	Enablement of remote offices to utilise multiple systems at a time	3.75	Integration of upcoming applications like DER, Electric vehicles, BESS, etc.	365
11	Microwave link up gradation for uninterrupted data flow between critical locations	0.25	Data Centre Reliability	180
12	Development software and tools like TOAD, VISIO, WEBEX, etc.	0.25	To enable developers to ease debugging and analysis of software code	300
	<b>TOTAL</b>	<b>13.20</b>		

A brief summary for the above IT schemes is given below:

### 1. Tertiary Datacenter

TATA POWER-DDL has established two data centers (DC-1 and DC-2) for running above mentioned IT systems. In normal scenarios IT systems run from DC-1. In case of failure of any system at DC-1, it can be run from DC-2. Both data centers DC-1 and DC-2 are in Delhi i.e. in same seismic zone. In case of any disaster in Delhi, both DC-1 and DC-2 may be down. This will hamper TATA POWER-DDL's critical business processes like operations, metering, billing, collection etc.

National Critical Information Infrastructure Protection Center (NCIIPC), Govt. of India, also recommended implementing Tertiary Data Center, after they conducted a survey on Information Security at TATA POWER-DDL.



**2. Disk based Backup Appliances for DC-2**

It is proposed to purchase disk based backup appliance for storing user data for distributed locations. In this kind of backup, all important data like Microsoft office, word, pdf and all other official information will be backed up.

**3. Replacement of SAN Switches older than Seven Years**

It is required to procure 2 nos. of SAN Switches for replacing old SAN Switches so as to have better performance, better reliability, higher scalability & maximizing availability of connectivity between storage & Servers.

**4. Replacement of E-mail Filtering solution older than Seven Years**

It is required to procure e-mail filtering solution with latest technology in replacement of old Cisco Ironport so as to have better security, better reliability, maximum availability of mailing services.

**5. Replacement of DG set older than Seven Years**

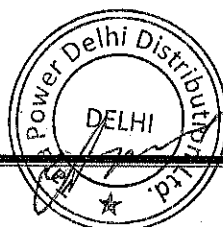
In order to maintain a backup for power supply to datacenter equipment, DG sets are being used in both datacenters. These 140KVA DG sets were procured in 2009 and installed at DC2, Moti Nagar. These DG sets are more than ten years old, and in recent past several issues have been faced. Thus older DG sets are to be replaced with new DG sets of more capacity to accommodate upcoming hardware.

**6. Printers & Scanners**

TATA POWER-DDL is required to procure approx. 90 numbers of printers, 1 no. plotter and 30 numbers of scanners to cater to new requirement / replacement of old non-repairable devices.

**7. Laptops / Desktops**

It is proposed to procure 500 new Desktops/Laptops with 3 years warranty in FY 2018-19 to replace the Desktops/Laptops which are older than 6 years and to cater to new requirement.





**8. Office Automation Equipment like Projectors, IP Phones etc.**

It is proposed to procure 5 new LED screens and 130 new IP enabled phones for various offices of TATA POWER-DDL.

**9. Network Equipment for newly connected locations**

To support business growth, new offices have been opened up at various locations of TATA POWER-DDL. Users are also increased at existing locations due to automation of business processes. These locations are connected to TATA POWER-DDL IT Network through temporary arrangement like HUB, Media Convertors etc. Network connectivity at these locations is required to enable employees to perform business critical processes like metering, billing, collection, power outage management and meeting performance assurance timelines. These HUBs and Media convertors are unmanaged devices leading to unreliable and insecure network. Unavailability of network will increase the restoration time of power outage and delay in providing other critical services to consumers thereby impacting the consumer satisfaction. Hence network connectivity at these locations are required to be enabled through network equipment like Routers and Switches.

**10. Enablement of remote offices to utilize multiple technology systems at a time**

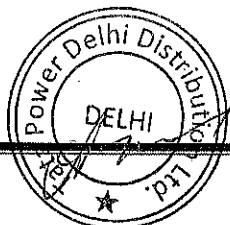
It is proposed to integrate all zones/back offices with TATA POWER-DDL backbone network nearest District or 33/66 KV grid substation. Approx. 25 nos. of zones and back offices are planned to be connected through existing WAN network.

**11. Microwave link up gradation for uninterrupted data flow between critical locations**

It is proposed to upgrade 2 nos. of Microwave links between critical locations in Core network to higher capacity for ensuring complete redundancy in case of multiple OFC cuts in network.

**12. Licenses for various software (.net, SQL Server 2016, etc.) & misc. software (IT/10000/00066)**

It is proposed to procure following licenses.





1. Visual Studio (Prof.): Currently we have 5 developer licenses. However, with penetration of many more technologies like mobility, AMI and more and more automation of processes like recruitment, joining kit, transfer, separation, internal audit, Enterprise risk Management, Engineering Request Management, Training, Biometric attendance, etc., we have groomed around 25 developers, who need to work on these and support the applications. Therefore, additional 20 Visual Studio (Prof.) licenses are required.
2. SQL Server Enterprise 2016 (2 core): Database for many of the above applications is SQL Server. Currently we have Qty 8 License for 2 core servers. With increase in applications, we need to enhance the No. of cores and hence 2 x 2 core additional licenses is required. Two core is minimum step size.
3. PDF Extractor: During application development, many times need is felt within application to extract data from PDF file. Currently we do not have license for same and hence it is to be procured.
4. PL/SQL Debugger: With proliferation of many homegrown applications, for proficient debugging work, this tool with 5 user pack is need of the hour as same would be shared, used by pool of 20+ developers. Currently we have nil licenses of this product.
5. Balance 2.5L is for meeting any contingency need of any development tool.



### **Capitalization**

The Hon'ble Commission in its Business Plan Regulations, 2017 has approved tentative capitalization of Rs 430 Cr. for FY 2018-19 (excluding Rs. 50 Cr towards Capital Deposit).

**Table 5.46: Approved Capitalization for FY 2018-19**

Particulars	Rs. Crore
Capitalization	414
Smart Meter	66
Total Capitalization with deposit work	430
Add: Deposit Work	50
<b>Total</b>	<b>480</b>

It is worth to mention that deposit work is also treated as a part of capitalization, hence the capitalization for FY 2018-19 is considered as given below:

**Table 5.47: Capitalization considering Deposit work for FY 2018-19**

Particulars	Rs. Crore
Capitalization without deposit work	364
Smart Meter	66
Deposit Work	50
<b>Total</b>	<b>480</b>

Considering the capitalization of Rs. 480 Cr, gross block of fixed assets works out as follows:

**Table 5.48: Capitalization of Fixed Assets**

(Rs Cr)

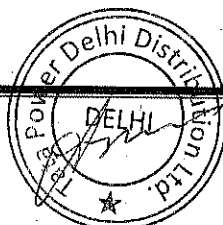
Sl. No.	Particulars	Amount	Remark
A	Opening Balance	6,325.01	Table 4.15
B	Addition during the year	480.00	Table 5.47
C	Deletion during the year*		
D	Closing Balance	6,805.01	(A+B-C)
E	Average Balance of Fixed Assets	6,565.01	((A+D)/2)

\*No deletion has been considered

### **Contributions, Grants, subsidies towards cost of Capital Assets**

The contribution towards cost of capital assets is transferred to sources of funds in the balance sheet when the assets for which such contribution is received are capitalized.

It is estimated that Rs 50 Cr will be capitalized towards consumer contribution for FY 18-19 and thereafter.



**Table 5.49: Estimated Consumer Contribution capitalized**
**(Rs Cr)**

Sl. No.	Consumer Contribution/Grant	Amount	Remarks
A	Opening Balance	900.45	Table 4.16
B	Capitalized during the year	50.00	
C	Closing Balance	950.45	(A+B)
D	Average Cumulative Capitalized Consumer Cont.	925.45	(A+C)/2

### **Depreciation and provision of depreciation**

The Hon'ble Commission in its 3<sup>rd</sup> MYT Regulation's has changed its methodology for allowance of Depreciation. Based on the said regulations the Petitioner has changed depreciation rate in its books of account. Therefore considering such change in rate of depreciation the effective rate for HI comes to 5.20% (based on 6 months actual audited financial statement of FY 2017-18) which includes one-time impact of opening assets. Excluding the one-time impact of FY 2017-18, it is estimated that Depreciation rate would be around 5.06% for FY 2018-19.

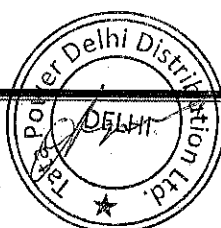
<b>Table 5.50: Revised Depreciation for FY 2018-19 (Rs. Crore)</b>		
Particulars	Amount	Remark/Ref
Opening GFA	6,325.01	Table 4.15
Net Additions to Asset during the year	480.00	Table 5.48
Closing GFA	6,805.01	Table 5.48
Average GFA	6,565.01	Table 5.48
Less: Average Consumer Contribution	925.45	Table 5.49
Average GFA net of CC	5,639.56	
Average rate of depreciation	5.06%	
Depreciation for the year	285.24	
Opening Depreciation	2,306.77	Table 4.17
Closing Depreciation	2,592.01	
Average Depreciation	2,449.39	

### **Working Capital Requirement**

The Petitioner has computed working capital requirement as per Regulation 84 (4) Delhi Electricity Regulatory Commission (Terms and Conditions for Determination of Tariff) Regulations, 2017. The relevant extract of the Regulation is as follows:

"84. The Commission shall calculate the Working Capital requirement for:

(4) Distribution Licensee as follows:



- (i) Working capital for wheeling business of electricity shall consist of ARR for two months of Wheeling Charges.
- (ii) Working Capital for Retail Supply business of electricity shall consist of:
- ARR for two months for retail supply business of electricity;
  - Less: Net Power Purchase costs for one month;
  - Less: Transmission charges for one month: "

Based on the above formula computation of working capital is given below:

**Table 5.51: Computation of Change in Working Capital**

(Rs Cr)

Sl. No.		Particulars		Amount		Remark
				FY 18-19		
A	Annual revenues requirement	7,487.86				Table 5.58
B	Receivables equivalent to 2 months ARR			1,247.98		A/12*2
C	Power Purchase expenses	5,492.38				Table 5.33
D	Add: 1/12th of power purchase expenses			457.70		C/12
E	Total working capital			790.28		B-E
F	Opening working capital			778.95		Table 4.18
G	Change in working capital			11.33		(E-F)

### **Means of Finance**

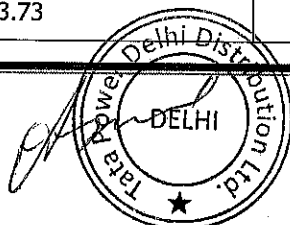
The Petitioner has submitted that the Regulation 63 of the Tariff Regulations 2017 provided that for determination of Tariff, the debt-equity ratio for any project or scheme under commercial operation shall be considered as 70:30.

Sl. No.	Particulars	Amount	Remarks
A	Capitalization	480.00	
B	Less- Consumer Contribution Capitalized during the year	50.00	
C	Funding Requirement	430.00	
D	Through- Debt @ 70%	301.00	
	Through Equity @ 30%	129.00	

**Table 5.52 Computation of Equity/ Debt balance for FY 2018-19**

(Figures in Rs. Cr.)

Financial year	Opening Equity	Addition Equity	Working Capital Equity*	Closing Equity	Opening Debt	Addition	Repayment	Working capital Debt*	Closing Debt
Revised Opening Balance	1599.23	129.00		1728.23	2298.58	301.00	285.24	11.33	2325.66
Average		1663.73					2317.78		



### Regulated Rate Base

RRB is computed as per formula specified in MYT Tariff Regulations, 2017.

**Table 5.53: Computation of Regulated Rate Base**

(Rs Cr)

Sl. No.	Particulars	Amount	Remarks
A	Opening Balance of OCFA	6,325.01	Table 4.15
B	Opening Balance of Accumulated Depreciation	2,306.77	Table 4.17
C	Opening Balance of Accumulated Consumer Contribution	900.45	Table 4.16
D	Opening balance of working capital	778.95	Table 4.18
<b>E</b>	<b>RRB – Opening</b>	<b>3,896.74</b>	
F	Capitalization during the year	480.00	Table 5.47
G	Depreciation for the year (Including AAD)	285.24	Table 5.50
H	Consumer Contribution, Grants,	50.00	Table 5.49
I	Change in Working Capital	11.33	Table 5.51
<b>J</b>	<b>ΔAB (Change in Regulated Base)</b>	<b>83.71</b>	
<b>K</b>	<b>RRB – Closing</b>	<b>4,052.83</b>	
<b>L</b>	<b>RRB(i)</b>	<b>3,980.45</b>	

### Computation of WACC

The Hon'ble Commission in its Business Plan Regulations, 2017 has approved Rate of Return on Equity computed at base rate of 14% on post-tax basis for wheeling business and base rate of 2% on post-tax basis for retail business.

Further in the Tariff Order August, 2017 the Hon'ble Commission has approved rate of weighted average interest on loans @ 9.73% for FY 2017-18. The same rate has been considered for FY 2018-19 also.

Considering the above cost of debt and rate of return on equity, weighted average cost of capital has been computed by considering the average actual equity and average actual debt (net of repayment) for FY 2018-19. The said treatment is in line with the Hon'ble APTEL Judgments explained above in true up chapter of FY 2016-17.



**Table 5.54: Weighted Average Cost of Capital (WACC) sought for FY 2018-19**

Sl. No.	Particulars	Amount	Remark/Ref
A	Equity	1663.73	Table 5.52
B	Debt	2317.78	Table 5.52
C	Return on Equity	16%	
D	Income Tax Rate	33.99%	
E	Grossed up Return on Equity	24.24%	
F	Rate of Interest	9.73%	
G	Weighted Average Cost of Capital	15.79%	

Considering the above computed WACC of 15.79% the Petitioner has sought revised ROCE for FY 18-19 as follows:

**Table 5.55: Computation of Return on Capital Employed**

		(Rs Cr)	
Sl. No.	Particulars	Amount	Reference
A	RRB (i)	3,980.45	Table 5.53
B	WACC	15.79%	
C	Return on Capital Employed	628.62	(A*B)

### **Non-Tariff Income**

The Petitioner has kept Non-tariff income of Rs 111.12 Cr. for FY 2018-19 at the same level as offered by the petitioner for true up of FY 2016-17. In addition to this an amount of Rs 12 Cr. approx. has been estimated towards open access charges and offered as Non Tariff Income.

**Table 5.56 Non-Tariff Income**

		(Rs Cr)
Sl. No.	Particulars	FY 18-19
A	Non-Tariff Income/Interest on Security Deposit	111.12
B	Additional Open Access charges	12.00
C	Total	123.12

### **Computation of Carrying cost Rate**

The Hon'ble Commission has approved Return on Equity in terms of Regulations 2(16) of the DERC (Terms and Conditions for Determination of Tariff) Regulations, 2017 for computation of weighted average rate of interest for funding of Regulatory Assets/ accumulated Revenue Gap through Debt and Equity shall be considered at 14% on pre-tax basis in its Business Plan Regulations, 2017.



Further, the rate of interest has been approved at 9.68% (i.e margin of 1.68% over 1 year MCLR of SBI) for FY 2018-19 for funding revenue gap in line with cost of debt approved for FY 2017-18.

Based on the above, the carrying cost rate for FY 2018-19 computed as follows.

**Table 5.57: Computations of carrying cost**

		(Rs Cr)
Sl. No.	Particulars	FY 2018-19
A	Rate of Return on Equity	14.00%
B	Rate of Interest on Loan	9.68%
C	Rate of Carrying Cost	10.98%

### **Computation of Aggregate Revenue Requirement**

Based on the above submission the Petitioner has sought ARR for FY 2018-19 as below.

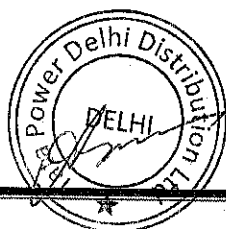
**Table 5.58: Summary of Aggregate Revenue Requirement**

		(Rs Cr)	
Sl. No.	Particular	FY 18-19 Amount	Remarks
A	Cost of Power Purchase	5,492.38	Table 5.33
B	O&M Expenses	801.86	Table 5.34
C	Depreciation	285.24	Table 5.50
D	Return on Capital Employed	628.62	Table 5.55
E	Carrying Cost	402.88	Table 5.60
F	Less: Non-Tariff Income/ Interest on consumer security deposit	123.12	Table 5.56
H	<b>Annual Revenue Requirement</b>	<b>7,487.86</b>	

From the above table it can be seen that estimated ARR for FY 2018-19 comes to Rs. 7,487.86 Cr.

### **Revised computation of Revenue (Gap)/surplus without carrying cost & DRS for FY 2018-19**

Based on the above submission, the Petitioner has computed Revenue Gap of Rs. 487.65 Cr for FY 2018-19.



**Table 5.59 Computations of Revenue (Gap) for the year without carrying Cost (Rs. Cr)**

Sl. No.	Particular	FY 2018-19 Estimated	Remarks
A	Aggregate Revenue Requirement for the year without carrying cost	7,084.99	
B	Revenue available for the year without DRS	6,597.34	Table 5.18
C	Revenue (Gap)/surplus for the year	(487.65)	(B-A)

**Computation of Closing Revenue Gap along with Carrying Cost**

The summary of addition in opening Revenue Gap along with carrying cost (net of 8% Deficit Recovery Surcharge) is given below:

**Table 5.60 Computations of Closing Revenue Gap (Rs. Cr)**

Sl. No.	Particular	FY 2018-19 Estimated	Remarks
A	Opening Revenue Gap	(3,426.68)	Table 4.27
B	Revenue (Gap)/Surplus for the year	(487.65)	Table 5.59
C	Closing Revenue (Gap)	(3,914.33)	(A+B)
D	Carrying Cost Rate	10.98%	
E	Carrying Cost	(402.88)	(A+B/2)*D
F	Recovery of carrying cost from 8% Deficit Revenue Recovery Surcharge	525.10	
G	Closing Revenue Gap (including carrying cost)	(3,792.10)	(A+B+E+F)

