

5. ARR for FY 2019-20

Projected Energy Sales & Billed Revenue for FY 2019-20

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.

Previous year trends are given below:

Year on Year Category wise billed Sale from FY 2012-13 onwards is given below

In the last 5 years, there has been an annual growth of 4.39% in billed units (i.e. from the level of 6,968 MUs to 8,638 Mus.)

Table 5.1: Category wise summary of units sold from FY 13 to FY 18

S. No	Category	FY13 Sales (MU)	FY14 Sales (MU)	FY15 Sales (MU)	FY16 Sales (MU)	FY17 Sales (MU)	FY18 Sales (MU)
1	Domestic	2,948.78	3,074.90	3,313.25	3,404.47	3,770.50	3,946.72
2	Non Domestic	1,240.21	1,278.25	1,343.24	1,403.58	1,463.16	1,527.96
3	Industrial	2,105.08	2,192.14	2,278.71	2,349.25	2,313.12	2,432.50
4	Agriculture & Mushroom Cultivation	11.68	11.86	12.82	13.32	12.64	13.04
5	Street Lighting	108.95	124.07	143.78	148.28	148.00	153.99
6	Delhi Jal Board	203.48	204.15	218.82	228.83	238.74	242.83
7	Railway	49.58	45.51	46.21	46.16	48.06	51.44
8	DMRC	159.76	133.71	140.07	149.45	149.50	155.19
9	Advertisement & Hoarding	0.60	0.62	1.54	0.97	1.18	0.91
10	Others**	139.78	122.19	117.47	109.97	115.61	113.5
	Total	6,967.90	7,187.40	7,615.91	7,854.29	8,260.52	8,638.07

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

S. No	Category	CAGR for 5 years	CAGR for 4 years	CAGR for 3 years	CAGR for 2 years	CAGR for 1 years
1	Domestic	6.00%	6.44%	6.01%	7.67%	4.67%
2	Non Domestic	4.26%	4.56%	4.39%	4.34%	4.43%
3	Industrial	2.93%	2.64%	2.20%	1.76%	5.18%
4	Agriculture & Mushroom Cultivation	2.23%	2.40%	0.57%	-1.06%	3.16%
5	Street Lighting	7.17%	5.55%	2.31%	1.91%	4.05%
6	Delhi Jal Board	3.60%	4.43%	3.53%	3.01%	1.71%
7	Railway	0.74%	3.11%	3.64%	5.56%	7.03%
8	DMRC	-0.58%	3.79%	3.48%	1.90%	3.81%
9	Advertisement & Hoarding	8.69%	10.07%	-16.08%	-3.14%	-22.88%
	Total	4.39%	4.70%	4.29%	4.87%	4.57%

Domestic

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

Based on the actual sales of 3947 MU for FY 2017-18, 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 year
6.00%	6.44%	6.01%	7.67%	4.67%

Considering the available trends of CAGR, the Petitioner has considered a growth rate of 6.00%, (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 5.3: Projected billed energy for FY 2019-20

S. No	Category	FY 19 Sales (MU)	Growth	FY 20 Sales (MU)
I	Domestic	4,216	6.00%	4,469

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 1528 MU for FY 2017-18, 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
4.26%	4.56%	4.39%	4.34%	4.43%

Considering the available trends of CAGR, the projections for next year is envisaged considering a growth rate of 4.26%, (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 5.4: Projected billed energy for FY 2019-20

S. No	Category	FY 19 Sales (MU)	Growth (%)	FY 20 Sales (MU)
I	Non-Domestic	1622	4.26%	1691

Industrial

The consumption of energy by Industrial consumers constitutes approx. 1/3rd part of total sales of the Petitioner. Based on the actual sales of 2432 MU for FY 2017-18, 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
2.93%	2.64%	2.20%	1.76%	5.18%

Considering the available trends of CAGR, the Petitioner has considered a growth rate of 2.93%, (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 5.5: Projected billed energy for FY 19-20

S. No	Category	FY 19 Sales (MU)	Growth	FY 20 Sales (MU)
I	Industrial	2633	2.93%	2710

Agriculture and Mushroom Cultivation

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

The Petitioner based on the actual sales of 13 MU for FY 2017-18 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
2.23%	2.40%	0.57%	-1.06%	3.16%

The Petitioner has considered the CAGR of 5 Year i.e. 2.23% growth for projecting the agriculture & mushroom cultivation consumption.

Table 5.6: Projected billed energy for FY 19-20

S. No	Category	FY 18 Sales (MU)	Growth	FY 19 Sales (MU)
Agriculture & Mushroom				
I	Agriculture & Mushroom	18	2.23%	19

Street/Public lighting

Under the DSM initiative the civic agencies has already replaced its existing bulbs with LED bulbs ultimately showing reduction trend in FY 2018-19. Considering the same the Petitioner has projected street light consumption of 121 Mu as below

Table 5.7: Projected billed energy for FY 2019-20

S. No	Category	FY 20 Sales (MU)
	Street Lighting	
I	Estimated Consumption Metered	
	Less- Reduction due to LED Bulb(25% Approx.) under DSM initiatives	121
	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 243 MU for FY 2017-18, 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
3.60%	4.43%	3.53%	3.01%	1.71%

Considering the available trends of CAGR, the Petitioner has considered a growth rate of 3.60%, (i.e. 5 year CAGR) to estimate the energy sales for Delhi Jal Board. Further it is assumed that approx. 3.49 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 5.8: Projected billed energy for FY 2019-20

S. No	Category	FY 19	Growth	FY 20
		Sales (MU)		Sales (MU)
Delhi Jal Board				
I	Delhi Jal Board	243	3.60%	248

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.

DMRC has shown interest in buying power of 24 MW through open access from FY 2019-20 onwards. Hence, the Petitioner has considered load of 10 MW and assumed that the energy consumption for FY 2019-20 would be in range of 82 Mus.

Table 5.9: Projected billed energy for FY 2019-20

S. No	Category	FY 19	Growth	FY 20
		Sales (MU)		Sales (MU)
DMRC				
I	DMRC	211		82

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 5.10: Projected energy from FY 2019-20

S. No	Category	FY 20
		Sales (MU)
I	Billed sale other than own consumption	9444.91
II	Normative Consumption @ 0.25% of Billed Sale	23.61

Adv. & Hoardings

The consumption of energy by Adv. & Hoardings consumers constitutes a very little portion of total sales of the Petitioner. The Petitioner has considered normal growth of 5% and estimated 0.94 MUs for FY 2019-20.

Table 5.11: Projected energy for FY 2019-20

S. No	Category	FY 19	Growth	FY 20
		Sales (MU)		Sales (MU)
I	Adv. & Hoardings	0.74	5%	0.94

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
- Normal growth of 5% has been considered for E- Rickshaws

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

Table 5.12: Projected Sales (MU) for FY 2019-20

S. No	Category	FY 2019-20
A	Domestic	
i	Domestic - Others than CGHS	4,442.91
ii	Single delivery point for CGHS	26.31
B	Non -Domestic	1690.65
C	Industrial	2709.87
D	Agriculture	18.56
E	Public Utilities	
i	Delhi Jal Board	247.79
ii	DMRC	82.00
iii	Public Lighting	120.93
F	Adv. & Hoardings	0.94
G	Temporary Supply	64.42
H	Own Consumption	23.61
I	E- Rickshaw	3.56
J	Others	36.96
	Total	9,468.52

Estimated Consumers for next year

The Petitioner has projected approx. 16.71 lacs consumers for FY 2019-20. Category wise breakup of Consumers is given below:

Table 5.13: Given below is the projected number of consumers for Next year

S. No	Category	Numbers
A	Domestic	1,371,214
B	Non –Domestic	234,616
C	Industrial	33,937
D	Agriculture & Mushroom Cultivation	4,330
E	Public Lighting	4,565
F	Delhi Jal Board (DJB)	354
G	DMRC	4
H	Others	22268
	Total	1,671,288

Estimated Consumer Load for next year

For the purpose of computing fixed charges, the Petitioner has projected load of 6243 MW for FY 2019-20. Category wise break up of consumers load is given below:

Table 5.14: Given below is the projected number of consumer's load for Next year

S. No	Category	(MW)
A	Domestic	3,120
B	Non –Domestic	1,354
C	Industrial	1,494
D	Agriculture	28
E	Public Lighting	94
F	Delhi Jal Board (DJB)	68
G	DMRC	10
H	Others	74
	Total	6,243

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.

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 kWh/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 5.15: Summary of Power factor

Consumer slab	Power Factor
Non-Domestic	0.94
Industrial	
Small Industrial Power (SIP)	0.97
Large Industrial Power	0.98
Delhi Jal Board	0.97
DMRC	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 5.16: Estimated Billed Revenue for FY 19-20

(Rs Cr)

Categories	FY 2019-20			
	Billed Units(MU) Table 5.12	Fixed Charges	Energy Charges	Total Revenue
Domestic	4,469	549	1,905	2,453.45
Non Domestic	1,691	406	1,404	1,810.08
Industrial	2,710	448	2,057	2,505.48
Irrigation & Agriculture	19	4	3	7.02
Street Lighting	121	28	70	97.73
Delhi Jal Board	248	20	144	164.52
DMRC	82	3	47	49.72
Railway	0	0	0	0.00
Own Consumption	24	0	0	0.00
Advertisement	1	0	1	0.84
E- Rickshaw	4	0	2	2.04
Others	101	15	56	70.80
Total	9,468.52	1,474.14	5,687.54	7,161.68
8% Deficit Revenue Surcharge				572.93

Collection efficiency

The Hon'ble Commission has approved collection target of 99.50% for 3rd 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 FY 2017-18 to FY 2019-20 of the Distribution Licensees shall be 99.50%.

Based on above, collection efficiency at 99.50% level is considered for FY 2019-20.

Table 5.17: Estimated Energy Collection

(Rs. Cr)

S. No	Particulars	Amount	Remark
A	Estimated Billing at Current Tariffs –without DRS	7,161.68	Table 5.16
B	Collection Efficiency	99.50%	
C	Estimated Collection	7,125.88	(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 5.18: Distribution loss level for 3rd 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 8.00% for FY 2019-20 has been considered and corresponding energy requirement at TPDDL periphery comes to 10,291.87 MU for FY 2019-20.

Table 5.19: Estimated Energy Requirements for FY 19-20

S. No	Particulars	UoM	Amount	Remark
A	Expected Sales	MU	9,468.52	Table 5.12
B	Distribution Loss	%	8.00%	Table 5.18
C	Energy Input (at TPDDL periphery)	MU	10,291.87	$((A/(1-B))*100)$
D	Distribution Loss	MU	823.35	

Power Purchase Projections for FY 19-20

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 along with the revised allocation made by the Hon'ble Commission order dated 27th March 2018.

Further, allocation from BTPS has been considered as 'NIL' with no fixed cost and no Energy Charges

- It is further clarified that no power from unallocated quotas 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

- Maximum of ECR's for the period FY 2016-17, 17-18 & 18-19(Q1), considered for calculating Energy charges.
- FC as per the AFC being billed and our allocations.
- Bawana has been considered as 100 MW for April to October and 60 MW for November to March and AFC considered for the full quantum

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

Table 5.20: Projected Power Purchase from State Generating Stations for FY 2019-20

S. No	Stations	Petitioner Share	Fixed Charge	Variable Charge	Total Charge	Average Rate
		(MU)	(Rs Cr)	(Rs Cr)	(Rs Cr)	(Rs./kWh)
1	2	3	4	5	6=4+5	7=6/3
A	State Generating Stations					
I	BTPS	0.00	0.00	0.00	0.00	0.00
II	Pragati	414.36	36.17	168.00	204.17	4.93
III	GT	81.91	40.09	29.34	69.43	8.48
IV	Pragati III	731.69	235.58	234.87	470.45	6.43
	Total SGS	1,227.95	311.84	432.21	744.05	6.06

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.
- Maximum of ECR's for the period FY 2016-17, 17-18 & 18-19(Q1), considered for calculating Energy charges.
- Fixed charges has been considered as per the AFC being billed and our allocations.
- 30.68 MW of Meja Urja has been considered for the entire FY 2019-20 at Rs. 5 per unit.
- Plants having ECR > Rs. 3.25 per unit has been backed down to 55% with exception of Hydro, Gas, Nuclear Stations, Delhi Gencos and Renewable Sources.

Table 5.21: Projected Power Purchase from Central Generating Stations

S. No	Stations	Petitioner Share	Fixed Charge	Variable Charge	Total Charge	Average Rate
		(MU)	(Rs Cr)	(Rs Cr)	(Rs Cr)	(Rs./kWh)
1	2	3	4	5	6=4+5	7=6/3
	NTPC					
I	Anta Gas Power Station	32.10	7.03	11.54	18.58	5.79
II	Auraiya Gas Power Station	21.74	10.30	7.14	17.44	8.02
III	Dadri Gas Power Station	49.34	11.80	15.82	27.62	5.60
IV	FARAKKA	47.52	4.05	12.11	16.16	3.40
V	KAHALGAON - I	106.00	11.29	26.43	37.73	3.56
VI	NCPP - DADRI	45.66	6.96	14.97	21.93	4.80

S. 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
VII	RIHAND - I	210.74	18.01	28.57	46.58	2.21
VIII	RIHAND - II	271.29	19.24	36.69	55.93	2.06
IX	RIHAND - III	-	-	-	-	#DIV/0!
X	SINGRAULI	319.09	20.90	45.56	66.47	2.08
XI	UNCHAHAH - I	49.85	5.47	14.12	19.59	3.93
XII	UNCHAHAH - II	97.70	9.90	27.70	37.60	3.85
XIII	UNCHAHAH - III	60.29	8.22	17.06	25.29	4.19
XIV	KAHALGAON - II	338.79	39.69	82.57	122.26	3.61
XV	DADRI EXTENSION	74.15	10.75	22.80	33.55	4.52
XVI	ARAVALI	2,801.99	705.16	929.85	1,635.01	5.84
	Sub-Total NTPC	4526	889	1293	2182	4.67
	NHPC					
I	BAIRA SIUL	26.30	2.50	2.61	5.11	1.94
II	CHAMERA - I	40.34	4.59	4.62	9.21	2.28
III	CHAMERA - II	61.34	6.00	6.08	12.09	1.97
IV	CHAMERA - III	42.44	8.60	9.09	17.68	4.17
V	DHAULIGANGA	45.99	3.98	7.01	10.99	2.39
VI	DULHASTI	75.06	19.56	20.91	40.48	5.39
VII	SALAL	-	-	-	-	#DIV/0!
VIII	TANAKPUR	17.77	1.82	2.94	4.76	2.68
IX	URI	87.64	5.53	7.02	12.55	1.43
X	SEWA -II	21.82	5.55	5.89	11.44	5.24
XI	Uri - II	46.38	9.23	11.24	20.47	4.41
XII	Parbati - III	36.52	3.79	7.40	11.19	3.06
	Sub-Total NHPC	501.60	71.16	84.80	155.96	3.11
	NCPP					
I	RAPS - 5 & 6	115.44	-	48.14	48.14	4.17
II	NPCIL - NAPS	97.15	-	31.34	31.34	3.23
	Sub-Total Nuclear	212.59	-	79.48	79.48	3.74
	Other Stations					
I	TEHRI HEP	51.20	12.56	14.60	27.15	5.30
II	SJVNL	174.91	24.81	23.05	47.86	2.74
III	KOTESHWAR	34.93	6.82	9.39	16.20	4.64
IV	Meja unit - 6	207.88	27.06	52.23	79.29	3.81
	Meja Urja	228.44	46.40	68.53	114.93	5.03
V	DVC Chandrapur (Ext. 7 & 8)	623.65	95.36	121.06	216.42	3.47

S. 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
VI	Haryana CLP Jhajjar (LT-5)	597.43	93.25	195.97	289.22	4.84
VII	MPL	2,088.60	331.02	344.05	675.07	3.23
VIII	Tala HEP	30.13		6.83	6.83	2.27
IX	Sasan UMPP	129.81	16.26	15.67	31.93	2.46
	Others Total	4,167.00	653.54	851.38	1,504.92	3.61
	Grand Total	9,407.42	1,613.48	2,308.60	3,922.08	4.17

• **Renewable Power Purchase Obligations for FY 2019-20**

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 5.22: Targets for Renewable Power Purchase Obligation

S. 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 – 6.75% and Non Solar RPO – 10.25%, a total of 17.00%.

In order to comply with RPO obligation the Petitioner has contracted with the following additional renewable power generating stations.

- 180 MW of Sun Edison has been considered from October 2019 at Rs. 3.96 per unit at 20% Cuf.
- 50 MW of SECI wind has been considered from January 2020 at Rs. 2.59 per unit at 20% Cuf.
- 13 MW of Taranda Small Hydro has been considered from February 2020 at Rs. 4.29 per unit at 45% Cuf.

Considering all the available source RPO obligation for FY 2019-20 are going to meet as follows:

Table 5.23: Cost of REC to be purchase for FY 19-20

S. No	Particulars	UoM	FY 19-20	
			Solar	Non Solar
A	Projected Energy sale for FY 2018-19 (net of Hydro)	MU	8,675.75	
B	RPO target-Solar	%	6.75%	10.25%
C	RPO target -Solar	MU	585.61	889.26
D	RPO Compliance through	MU		
i	Purchase from TPDDL Solar*	MU	2	
ii	Purchase from SECI Solar**	MU	35	
iii	Sun Edison		157	
iv	Purchase form Bawana W2E***	MU		37
v	Purchase from Small Hydro^	MU		144
vi	Purchase from TOWMCL****	MU		43
E	Excess/ (Shortfall)= (C-D)	MU	391.16	665.17
F	Inter head adjustment	MU		
G	Requirement to be met through purchase of REC	MU	391.16	665.17
H	REC rate	Rs/kWh	1.12	1.12
I	Cost for REC purchase	Rs Cr	43.81	74.50
	Total REC		118.31	

Table 5.24: RPO Compliance (Rs. Cr.) for FY 19-20

S. No	Stations	Petitioner Share	Fixed Charge	Variable Charge	Total Charge	Average Rate
		(MU)	(Rs Cr)	(Rs Cr)	(Rs Cr)	(Rs./kWh)
1	2	3	4	5	6=4+5	7=6/3
A	Solar					
i	TPDDL Solar	2		3.20	3.20	14.74
ii	SECI Solar	35		20.24	20.24	5.78
iii	Sun Edison	157		62.27	62.27	3.96
	Sub-Total	194	0	85.70	85.70	4.41
B	Non-Solar					
i	Bawana W2E	43		31.73	31.73	7.38
ii	TOWMCL	37		24.86	24.86	6.76
iii	Suryakanta Hydro	55		22.02	22.02	3.99
iv	Nanati Hydro	53		23.97	23.97	4.50
v	Singrauli SHP (NTPC)	6		3.19	3.19	5.29
vi	SECI Wind	22		5.59	5.59	2.59
vii	Taranda Hydro	8		3.55	3.55	4.29
	Sub-Total	224	0	115	115	5.13
	Total	419	0	201	201	4.79

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. 4.11 unit therefore at the time of return the same normative price of Rs 4.11/unit considered by the Petitioner.

Table 5.25: Projected Units purchase

Particulars	Projection FY 19-20		
	MUs	(Rs Cr)	Av. Rate
Power Purchase from Other Sources			
Total	888	364.97	4.11

Short Term Sale

Based on the energy requirement and energy availability, TPDDL has projected 1,253.45 MU of surplus power @ rate of 3.75 per unit which is approximately 5% lower than the previous year rate. The short term surplus power was sold through available mechanisms i.e. banking, bilateral sale, exchange and UI.

Table 5.26: Short Term Power Sale

Source	Amount
Sale of Surplus Power – MU	1,253.45
Revenue from Sale of Surplus Power	470.04
Per unit Rate- Rs/kWh	3.75

Transmission Losses

0.84% losses have been considered for intrastate transmission i.e. for DTL network.

Table 5.27: Transmission Losses for FY 19-20

Particulars	(Rs Cr.)
	Amount
Inter-State Transmission	396.60
Intra-State Transmission (DTL)	
Total Transmission Losses (MU)	396.60

Transmission Cost for FY 2019-20

- (i) Transmission charges for DTL and PGCIL kept equal to the charges approved by the Hon'ble Commission for FY 2018-19.
- (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 5.28: Transmission Charges for FY 19-20

(Rs Cr.)

Particulars	Amount
PGCIL Charges	467.00
DTL & SLDC Charges	329.59
Other Transmission charges, LDC charges	13.71
STOA Charges	70.87
Total (excluding Pension Trust)	881.17

Normative Rebate

MYT Regulations, 2017 provided that normative rebate has to be considered on the net power purchase cost. Based on the same maximum normative rebate of Rs 109.25 Cr has been projected.

Table 5.29: Computation of Normative Rebate

(Rs. Cr.)

Particulars	Maximum rebate %	Amount
State Generating Stations		
Delhi State Gencos	2%	14.88
Central Generating Stations		
NTPC	2%	43.63
NHPC	2%	3.12
NPCIL	2.00%	1.59
Others	2%	30.10
Transmission		
Transmission	2%	15.93
Total		109.25

Estimated Power Purchase Cost for FY 2019-20

Based on the above submissions, The Petitioner has worked out Power Purchase cost of Rs. 5.49/unit for FY 2019-20. Detailed information is given in table below:

Table 5.30: Energy Balance Summary and Power Purchase Cost for FY 19-20

S. No	Particulars	FY 2019-20		
		Quantity (MU)	Amount (Rs. Crore)	Average Cost (Rs./kWh)
1	Power Purchase from CSGS (Table 5.21)	9,407.42	3,922.08	4.17
2	Short Term Power Purchase (Table 5.25)	888.00	364.97	4.11
3	Power Purchase from SGS (Table 5.20)	1,227.95	744.05	6.06
4	Renewable Energy Plants and small Hydro (Table 5.24)	418.55	200.62	4.79
5	Cost towards Renewable Energy Certificates (Table 5.24)		118.31	
6	Power Available at Delhi Periphery (cost excluding RECs)	11,941.92	5,350.03	4.48
7	PGCIL Losses & Charges (Table 5.27 & Table 5.28)	(396.60)	467.00	
8	DTL Loss & Transmission Charges (Table 5.27 & Table 5.28)		414.17	
9	Power Purchase Rebate @ 2% (Table 5.29)		93.52	
10	Rebate on Transmission Charges @ 2% (Table 5.29)		15.93	
11	Power Available to DISCOM	11,545.32	6,121.94	5.30
12	Sales (Table 5.12)	9,468.52		
13	Distribution Loss (Table 5.19)	823.35		
14	Net Power Purchase cost including Transmission charges and REC	10,291.87	5,651.90	5.49
15	Net Surplus Power (Table)	1,253.45	470.04	3.75

Operation & Maintenance Expenses for FY 2019-20

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 2019-20 as given in table below, further the Petitioner has computed additional expenses based on additional esp. sought for FY 2018-19 grossed up with inflation:

Table 5.31: Approved O&M Expenses for FY 2019-20

(Rs Cr)

Particulars	*Capacity as on 31.03.2020 (as submitted in Business Plan)	O&M Expenses Per Unit		O&M Expenses
66 kV Line (kms)	1064	Rs. Lakh/Ckt. Km	3.678	39.13
33 kV Line (kms)		Rs. Lakh/Ckt. Km	3.678	
11 kV Line (kms)	6244.41	Rs. Lakh/Ckt. Km	0.961	60.01
LT Lines system (kms.)	7099.86	Rs. Lakh/Ckt. Km	7.107	504.59
66/11 kV Grid sub-station (MVA)	5283.50	Rs. Lakh/MVA	1.034	54.63
33/11 kV Grid sub-station (MVA)		Rs. Lakh/MVA	1.034	
11/0.4 kV DT (MVA)	6007.79	Rs. Lakh/MVA	1.479	88.86
Total				747.22
Add- Statutory levies / Taxes Based on Additional Expense sought in FY 2018-19 grossed up with inflation	To be trued up on actual basis (computed based on estimated expenses for FY 2018-19)			134.60
Total O&M Expenses				881.82

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

CAPEX PLAN FOR FY 2019-20

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 2019-20. 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 requirements of 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
- b) Technical Loss Reduction
- c) Installation of Capacitor Banks

1. 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 Schemes
- g) Replacement of old Power Transformers

2. Growth Development Plan to meet the load growth

- a) New Grid Substations excluding Deposit Works
- b) 66 & 33 KV Addition/Augmentation Of Bays/Transformers
- c) 66 & 33 kV Lines and Cables
- d) Augmentation of 11 kV network
- e) New Meters

3. Creation of Infrastructure Facilities, Buildings and related civil works.

- a) Administration support
- b) Civil Infrastructure
- c) Information Technology
- d) Data Security & Safety

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 394 Cr has been worked out for FY 2019-20.

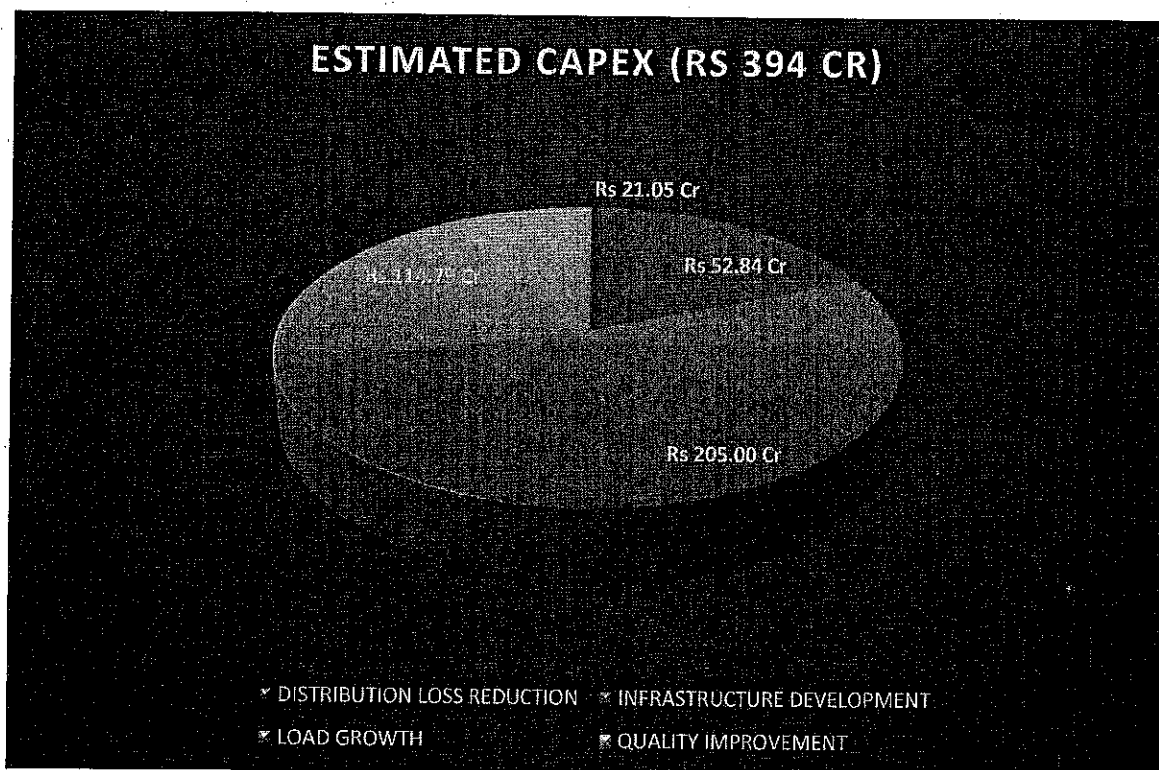


Table No. 5.32: Capex Plan for FY 2019-20

(Rs. Cr.)

Budget Head	S No.	Sub-category	Amount
DISTRIBUTION LOSS REDUCTION	a	METER REPLACEMENT	11.00
	b	TECHNICAL LOSS REDUCTION	10.00
	c	INSTALLATION OF CAPACITOR BANKS	5.45
DISTRIBUTION LOSS REDUCTION Total			21.05
QUALITY IMPROVEMENT	a	AUTOMATION IMPLEMENTATION	21.75
	b	PROTECTION & TESTING	4.34
	c	SAFETY RELATED	8.70
	d	SICK CABLE REPLACEMENT	20.00
	e	11 KV SYSTEM IMPROVEMENT SCHEMES	45.00
	f	66 & 33 KV LINES & CABLES	7.00
	g	OLD POWER TRANSFORMERS	8.00
QUALITY IMPROVEMENT Total			114.79
LOAD GROWTH	a	NEW GRID SUBSTATIONS EXCLUDING DEPOSIT WORKS	20.00
	b	66 & 33 KV ADDITION/AUGMENTATION OF BAYS/TRANSFORMERS	15.00
	c	66 & 33 KV LINES & CABLES	59.00
	d	11 KV SYSTEM AUGMENTATION	90.00
	e	NEW METERS (DISTRIBUTION)	21.00
LOAD GROWTH Total			205.00
INFRASTRUCTURE DEVELOPMENT	a	ADMINISTRATION SUPPORT	14.28
	b	CIVIL	1.72
	c	INFORMATION TECHNOLOGY	36.23
	d	DATA SECURITY AND SAFETY	0.60
INFRASTRUCTURE DEVELOPMENT Total			52.84
Grand Total			393.68

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.
5. The scheduled Completion time mentioned in the subsequent document commence from the date of 'in-principle' approval from Hon'ble Connection.

1. CAPEX FOR DISTRIBUTION LOSS REDUCTION

For FY 2019-20, the Petitioner proposes Capital expenditure of Rs 21 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 5.33: Estimated Capex for Distribution Loss Reduction

			(Rs. Cr.)
Budget Head	S No.	Sub-category	Amount
DISTRIBUTION LOSS REDUCTION	a	METER REPLACEMENT	11.00
	b	TECHNICAL LOSS REDUCTION	10.00
	c	INSTALLATION OF CAPACITOR BANKS	0.5
DISTRIBUTION LOSS REDUCTION Total			21.05

a) METER REPLACEMENT (DISTRIBUTION)

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

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

The estimated Capex for Meter replacement for FY 2019-20 is as under:

Table 5.34: Estimated Capex for Meter Replacement

				(Rs. Cr.)
S No.	Proposal (Brief Description)	Amount	Purpose of Investment	Scheduled Completion Time
1	METER REPLACEMENT ON ACCOUNT OF BURNT/FAULTY/REGULATIONS/THEFT	11.00	Replacement of Existing Assets	As per PA Timelines

b) TECHNICAL LOSS REDUCTION

We propose laying of new feeders/interconnectors in order to reduce technical losses:

Table 5.35: Estimated Capex for Meter Replacement / Smart Meters

				(Rs. Cr.)
S No.	Proposal (Brief Description)	Amount	Purpose of Investment	Scheduled Completion Time
1	New 11kV Feeder/Interconnector for Technical Loss reduction	10.00	Reducing Technical Loss	365

c) INSTALATION OF CAPACITOR BANK

In order to improve power factor, Following Proposal is required under Capex 2019-20:

Table 5.36: Estimated Capex for installation of LT Pole for reactive power (Rs. Cr.)

S No.	Proposal (Brief Description)	Amount	Purpose of Investment	Scheduled Completion Time (DAYS)
1	Installation of Capacitor Banks on LT Network for improvement of Power Factor	0.0545	Technical Loss Reduction	300

II. CAPEX FOR QUALITY IMPROVEMENT

The Petitioner proposes to further strengthen the network, upgrade technologies to enhance customer satisfaction in terms of safe reliable and quality power supply of electricity.

Table 5.37: Estimated Capex for Quality Improvement (Rs. Cr.)

Budget Head	S NO.	Sub-category	Amount
QUALITY IMPROVEMENT	a	AUTOMATION IMPLEMENTATION	21.75
	b	PROTECTION & TESTING	4.34
	c	SAFETY RELATED	8.70
	d	SICK CABLE REPLACEMENT	20.00
	e	11 KV SYSTEM IMPROVEMENT SCHEMES	45.00
	f	66 & 33 KV LINES & CABLES	7.00
	g	OLD POWER TRANSFORMERS	8.00
QUALITY IMPROVEMENT Total			114.79

a) AUTOMATION IMPLEMENTATION

Following works are proposed under this head for FY 2019-20:

Table 5.38: Estimated Capex for Automation Implementation (Rs. Cr.)

S No.	Proposal (Brief Description)	Amount	Purpose of Investment	Scheduled Completion Time (Days/Target)
1	SMS based automation system for 11KV & LT network(RTCFI)	0.15	Improvement in Quality & Reliability of Supply	365
2	Old obsolete IED replacement at RMU with communicable relay	0.30	Replacement of Existing Assets	730
3	RTU & Ethernet switch replacement	1.00	Replacement of Existing Assets	730
4	BCU ,PU with BCPU	2.00	Replacement of Existing Assets	730

S No.	Proposal (Brief Description)	Amount	Purpose of Investment	Scheduled Completion Time (Days/Target)
5	Advanced Testing equipment-SFRA, Tan delta, Advanced secondary injection kit with testing in IEC61850 environment using Goose and SV simulation functionality	0.60	Improvement in Quality & Reliability of Supply	365
6	SCADA for Distributed Energy Resource Management(DERM)	15.00	Improvement in Quality & Reliability of Supply	730
7	Remote relay diagnostic tool	2.50	Improvement in Quality & Reliability of Supply	365
8	IEC 61850 diagnosis and application testing tool	0.20	Improvement in Quality & Reliability of Supply	365
	TOTAL	21.75		

b) PROTECTION & TESTING INSTRUMENTS

Following works are proposed under this head for FY 2019-20:

Table 5.39: Estimated Capex for Protection & Testing Equipment's

(Rs. Cr.)

S No.	Proposal (Brief Description)	Amount	Purpose of Investment	Scheduled Completion Time (Days/Target)
1	Installation of Neutral Grounding Resistance (NGR) in Power Transformers for the reduction of Fault Current level.	0.7744	COS	Improvement in Quality & Reliability of Supply
2	Replacement of older version controller with obsolete IEDS used in PTCC panel of section liser & Auto reclosers under Capex	0.564	COS	Improvement in Quality & Reliability of Supply
3	Advanced relay coordination in TPDDL distribution network with the help of state of the art Fuse Saver for rapid reduction of fault SAIDI.	3.00	PROT. & AUT.	Improvement in Quality & Reliability of Supply
	TOTAL	4.3384		

c) SAFETY RELATED

The Petitioner proposes following works under this category:

Table 5.40: Estimated Capex for Safety

S No.	Proposal (Brief Description)	Amount	Purpose of Investment	Scheduled Completion Time
1	Schemes for mitigation of unsafe situations in field	5.00	Safety of Personnel and Consumers	300

S No.	Proposal (Brief Description)	Amount	Purpose of Investment	Scheduled Completion Time)
2	Purchase of new Fire Extinguishers and replacement of old fire extinguishers (age 10 years)	0.25	Replacement of Existing Fire extinguishers which have crossed their service life of 10 years as per IS 2190 with a tentative total quantity of approx. 700 of different types & sizes as per requirement	180
3	Replacement of old Fire Detection System (Service Life of 10 years or more) with new advanced fire alarm and detection system in Grid Substations.	1.05	Replacement of old fire alarm system having crossed their service Life of 10 years or more with new advanced fire alarm and detection system in Grid Substations.	365
4	Replacement of old fire alarm system (Service Life of 10 years or more) with new advanced fire alarm and detection system in Office buildings.	0.40	Replacement of old fire alarm system having crossed their service Life of 10 years or more with new advanced fire alarm and detection system in Office buildings	365
5	Aerosol Based fire extinguishing system for Record Rooms	0.40	Aerosol Based fire extinguishing system for Record Rooms in conjunction with existing fire detection systems for enhanced fire safety measures.	300
6	Ground Penetrating Radar	0.84	Ground Penetrating Radar for Identification of underground utilities like electrical cables, gas pipelines, water lines, telecom fibre, etc.	180
7	Full Body harness, fall arrestor	0.11	Fall protection measures in O&M activities while working at height for reduction in the fatalities occurring due to fall from height	180
8	Audio Visual Vans	0.10	For creating mass Safety Awareness amongst General Public on electrical safety, safety while flying kites, encroachment hazards, benefits of ELCB, energy efficiency, etc.	300
9	Lock Out Tag Out (LOTO)	0.05	For avoiding accidental charging of the equipment.	180
10	Touch Proof Welding Machine	0.04	Touch Proof Welding Machine for elimination of electrocution hazard	180
11	FRP Ladder	0.40	FRP ladders for working in grid substation yards & on LT/ HT poles	180
12	Oil Trough for Transformer workshop	0.06	Oil troughs in all Zonal locations for containment of used transformer oil in compliance to Hazardous Waste Management Rules under EPA Act.	300
	TOTAL	8.70		

d) **SICK CABLE REPLACEMENT**

The Petitioner has envisaged following investment under this category.

Table 5.41: Estimated Capex for FY 2018-19

S No.	Proposal (Brief Description)	Estimated Capex 2019-20	Purpose of Investment	Scheduled Completion Time (DAYS)
1.	11 KV SICK CABLES REPLACEMENT	20.00	Replacement of Existing Assets	365

e) **11 KV SYSTEM IMPROVEMENT SCHEMES**

The Petitioner has envisaged an investment of Rs 45 Cr for FY 2019-20:

Table 5.42: Estimated Capex for 11 KV system improvement schemes

S No.	Proposal (Brief Description)	2019-20 (Rs Cr.)	Purpose of Investment	Scheduled Completion Time (DAYS)
1	RMU/Interconnector Schemes for Customer segregation & Improving Reliability	30.00	Improvement in Quality & Reliability of Supply	300
2	A/R, Sectionaliser, O/H FPI, DA and other Reliability Improvement Scheme	10.00	Improvement in Quality & Reliability of Supply	300
3	Replacement of Sick DTs & Faulty SWGR	5.00	Replacement of Existing sick Assets	300
	TOTAL	45.00		

f) **EHV SYSTEM IMPROVEMENT SCHEMES**

The Petitioner has envisaged an investment of Rs 7 Cr for FY 2019-20:

Table 5.43: Estimated Capex for EHV projects

S No.	Proposal (Brief Description)	2019-20 (Rs Cr.)	Purpose of Investment	Scheduled Completion Time (DAYS)
1	Old & dilapidated ckt. revamping of SMB FC - WZP2, WZP3-SMB KHOSLA & 220KV SMB - SMB Khosla	7.00	To improve Reliability	365
	TOTAL	7.00		

g) REPLACEMENT OF OLD POWER TRANSFORMERS

The Petitioner has envisaged an investment of Rs 8 Cr for FY 2019-20:

Table 5.44: Estimated Capex for EHV projects

S No.	Proposal (Brief Description)	2019-20 (Rs Cr.)	Purpose of Investment	Scheduled Completion Time (DAYS)
1	Replacement of Sick and Old PTRs at 4 Grid substations	8.00	To Improve Reliability	365
	TOTAL	8.00		

III. CAPEX FOR LOAD GROWTH

Load Growth Schemes proposals have been proposed as per past trends of load growth, these are categorized into following heads.

Table 5.45: Estimated Capex for Load Growth Schemes

Budget Head	S NO.	Sub-category	Estimated Capex 2019-20 (Rs Cr)
LOAD GROWTH	A	NEW GRID SUBSTATIONS EXCLUDING DEPOSIT WORKS	20.00
	B	66 & 33 KV ADDITION/AUGMENTATION OF BAYS/TRANSFORMERS	15.00
	C	66 & 33 KV LINES & CABLES	59.00
	D	11 KV SYSTEM AUGMENTATION	90.00
	E	NEW METERS (DISTRIBUTION)	21.00
LOAD GROWTH Total			205.00

a) NEW GRID SUBSTATIONS EXCLUDING DEPOSIT WORKS

Following investment plan has been proposed under this head for FY 2019-20

Table 5.46: Estimated Capex for 66 & 33 KV addition/augmentation of bays/ transformers

S No.	Proposal (Brief Description)	Estimated Capex 2019-20 (Rs CR)	Purpose of Investment	Scheduled Completion Time
1	Construction of a 66/11 KV, 2 x 25 MVA PTR RUN (Rajasthan Udyog Nagar) Grid	20.00	Meeting Load Growth	365

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

Following investment plan has been proposed under this head for FY 2019-20

Table 5.48: Estimated Capex for 66 & 33 KV addition/augmentation of bays/ transformers

S No.	Proposal (Brief Description)	Estimated Capex 2019-20	Purpose of Investment	Scheduled Completion Time
1	PTR Bay Addition at 3 Grid substation	15.00	Meeting Load Growth	365

b) 66 & 33 KV LINES & CABLES

Following investment plan has been proposed under this head for FY 2019-20.

Table 5.49: Estimated Capex for FY 2019-20

S No.	Proposal (Brief Description)	Estimated Capex 2019-20 (Rs Cr)	Purpose of Investment	Scheduled Completion Time
1	LILO of both 66kV JHP-SGTN Ckt-1&2 at RUN Grid	20.00	Meeting Load Growth	300
2	LILO of JHP - BHALASWA Ckt-1&2 at 220KV SGTN Grid.	6.00	Meeting Load Growth	300
3	Double Ckt from 66KV SGTN to 220KV SGTN	3.00	Meeting Load Growth	300
4	LILO of RG03 - Prashant Vihar at 220KV SMB	4.00	Meeting Load Growth	300
5	Construction of a 66/11 KV, 2 x 31.5 MVA PTR BHALASWA 2 Grid	25.00	Meeting Load Growth	300
6	LILO of both 66kV BHALASWA - DJB BURARI Ckt-1&2 at BHALASWA 2 Grid	1.00	Meeting Load Growth	300
	Total	59.00		

c) 11 KV SYSTEM AUGMENTATION WORKS

The brief details of proposals are as under.

Table 5.50: Estimated Capex for 11 KV System Augmentation

S No.	Proposal (Brief Description)	Estimated Capex 2019-20	Purpose of Investment	Scheduled Completion Time
1	NEW 11 KV FEEDERS for Overload & N-1 mitigation of Lines	20.00	Meeting Load Growth	300
2	NEW 11 KV INTERCONNECTORS for Overload & N-1 mitigation of Lines	15.00	Meeting Load Growth	300
3	DT ADDITION/AUGMENTATION	20.00	Meeting Load Growth	300

S No.	Proposal (Brief Description)	Estimated Capex 2019-20	Purpose of Investment	Scheduled Completion Time
4	11 kV feeder schemes related to EHV planning	5.00	Meeting Load Growth	300
5	Schemes for HCB/HRB /Agricultural Connections & Un-electrified areas	30.00	Meeting Load Growth	300
	TOTAL	90.00		

d) NEW METERS

The budget estimated is Rs 21 Cr for FY 2018-19.

Table 5.51: Estimated Capex for new meter installation

S No.	Proposal (Brief Description)	Estimated Capex 2019-20 (Rs Cr)	Purpose of Investment	Scheduled Completion Time
1	NEW METERS INSTALLATION	21.00	Meeting Load Growth	300

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

The details of proposed investment are as under:

Table 5.52: Estimated Capex for Infrastructure

Budget Head	S No.	Sub-category	Estimated Capex 2019-20 (Rs Cr)
INFRASTRUCTURE DEVELOPMENT	a	ADMINISTRATION SUPPORT	14.28
	b	CIVIL	1.72
	c	INFORMATION TECHNOLOGY	36.23
	d	DATA SECURITY AND SAFETY	0.60
INFRASTRUCTURE DEVELOPMENT Total			52.84

a) ADMINISTRATION SUPPORT

The details of proposed investment are as under:

Table 5.53: Estimated Capex for Administration support

S No.	Proposal (Brief Description)	Estimated Capex 2019-20 (Rs Cr)	Purpose of Investment	Scheduled Completion Time
1	Procurement Standalone ACs (WAC / SAC)	0.80	Infrastructure Development	300
2	Procurement Water Cooler	0.12		180

S No.	Proposal (Brief Description)	Estimated Capex 2019-20 (Rs Cr)	Purpose of Investment	Scheduled Completion Time
3	Procurement RO System	0.03		180
4	Procurement Chairs	0.50		180
5	Procurement Co. owned vehicles under Co. Car Policy (For DGM & Above)	5.00		180
6	Procurement Admin pool vehicles	0.40		180
7	Procurement Almirah	0.04		180
8	Procurement of Sofa	0.015		180
9	Procurement of Projector	0.05		300
10	Procurement of Microwave	0.0040		180
11	Procurement of Refrigerator	0.0070		180
12	Procurement of TV	0.025		180
13	Procurement of Tables	0.05		180
14	Procurement of Tandem Chairs	0.02		180
15	Procurement of Attendance Machines	0.075		180
16	Procurement of Photocopier Machines	0.20		180
17	Procurement of Mobile Hand Set (Standard)	0.06		180
18	Procurement of EPABX System	0.10		180
19	Procurement of Telephone instrument for Extn. Lines/IP phones	0.35		180
20	Procurement of Tel. Instrument (2 way Comm.)	0.0085		180
21	Procurement of INTRUSION DETECTION SYSTEM	0.15	Safety of Personnel and Consumers	180
22	Procurement of HIRING OF VEHICLES FOR DOOR DELIVERY	4.50	STORE LOGISTIC	180
23	Procurement of MOBILE SHELVING SYSTEM AND RACKING (COMPACTOR)	0.18	Records storage system	180
24	Procurement of ROOF PLATE CHANGE IN ALL SHED INCLUDING NARELA STORE	0.30	Civil Work	180
25	Procurement of Multipurpose Fire Tender vehicle	0.40	Fire Safety	180
26	Procurement of WI-FI SYSTEM BARCODE SYSTEM	0.30	Barcode System	180
27	Procurement of CCTV camera for RG-6	0.05	Safety	180
28	Procurement of Smoke Detector for RG-6	0.02	Safety	180
29	Procurement of Tablets	0.03	For E-Gate Pass	180
30	Procurement of Procurement of Tower Wagon - 02 No.	0.50	customer service improvement	300
	TOTAL	14.2845		

b) CIVIL INFRASTRUCTURE

The details of proposed investment are as under:

Table 5.54: Estimated Capex for Civil Infrastructure

(Rs. Cr.)

S No.	Proposal (Brief Description)	Amount	Purpose of Investment	Scheduled Completion Time
1	Civil Infrastructure Projects	1.00	Infrastructure Development	365
2	Emergency staircases in office bldgs. PAN TPDDL	0.7235	Infrastructure Development	365

c) **INFORMATION TECHNOLOGY**

The details of proposed investment are as under:

Table 5.55: Estimated Capex for IT (Rs Cr.)

S No.	Proposal (Brief Description)	Amount	Purpose of Investment	Scheduled Completion Time (DAYS)
1	Up gradation of existing network Infrastructure for 10G at Data centres (switches with cabling)	0.70	Upgrade existing landscape	365
2	Replacement of hardware older than 7 years	4.01	Replacement of existing asset	365
3	Improvement in Work Processes through Use of Artificial Intelligence	3.05	Improve operational efficiency	730
4	Improvement in Commercial & Operational Processes through IoT	5.00	Improvement in Reliability, Cost reduction	1095
5	Augmentation of Office Automation Equipment like Projection system, IP phones, VC, etc.	0.50	Replacement of Existing Assets	365
6	Laptops/ desktops older than 6 years	2.73	Replacement of Existing Assets	365
7	Printers & scanners	1.00	Replacement of Existing Assets	365
8	Bandwidth Enhancement of IP/MPLS Communication Network for Smart Grid Applications	2.66	To ensure sufficient communication bandwidth for smart grid applications	730
9	Replacement of Old Microwave Towers to improve Backup Connectivity	0.23	To improve backup communication connectivity for business critical applications	1095
10	Migration of SAP to S4 HANA	10.00	Technology Migration & Efficiency Improvement	1095
11	Auto Dialler and Predictive Dialler	0.25	Increase outbound call productivity and recovery calling effectiveness	365
12	Email Management Software	0.10	Proper Email management within team (auto allocation / MIS generation / tracking of pendency)	365
13	Call Management Solution	1.00	Better IVRS management / Better skill management / Overall easy to operate than BCM	365
14	Pilot Projects for new emerging technologies like developing EV charging infrastructure, Renewables, Micro Grid, Battery storage and Power Quality	5.00	Exploring Emerging Technology	730
	TOTAL	36.23		

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

Up gradation of existing network infrastructure for 10G at Data Centers (switches with cabling)

With growing needs of consumers & operations, several new initiatives have been taken by TATA Power-DDL, in last 2 years. Implementation of these initiatives has resulted in growth of infrastructure by 30 % & to house the new infrastructure our core network has been used. To bring symmetry into the datacenter network it is required to migrate the newly connected infrastructure on 10G network. Thus it is proposed to procure additional modules of 10G to enhance the capacity of core switches.

Upgrading entire network will give a uniform bandwidth across the network with improved application performance.

Replacement of Hardware older than 7 years

As per OEM's recommendations, hardware equipment have an maximum life of 7 years thus older hardware is to be replaced to avoid unplanned shutdown of IT Equipment. For this IT Infrastructure such as Servers, Storage etc. are to be replaced for reliable & better performance.

Improvement in Work Processes through Use of Artificial Intelligence

We would like to improve Customer New Connection process, Outage management process, Meter Reading Process, Inventory management & planning process etc. by using AI in the transaction System as well as the Big Data System with R-Python based deployments. We shall also use some cognitive API Cloud Services from best breed technology suppliers.

Improvement in Commercial & Operational Process through IOT

TATA POWER-DDL implemented SCADA, an early version of the IoT to supervise the operation and processes of power distribution and fault detection. It is also implementing Smart meters to monitor real-time consumption of electricity and connect/disconnect consumers remotely.

In continuation of this, it is proposed to implement IoT for Outage Detection at LV Network, Distribution Transfer Monitoring, Switching and monitoring of LV network, Commercial Loss Reduction etc.

Augmentation of Office Automation Equipment

Office automation equipment are required at various offices of TATA POWER-DDL. High Standard display panels are required for important meetings, presentations, knowledge sharing etc. It is proposed to provision LED display screens in a phased manner in the meeting/discussion rooms.

TATA POWER-DDL has its own Optical Fiber Network which is also being used for voice communication using IP Telephones at few offices. From these offices, old traditional EPABX system has been removed. Now IP Telephone is the means of voice communication at these offices. New users have joined these offices and are not having IP Phones. In order to perform business critical processes they require IP Phone facility. It is proposed to provide IP Phones to critical users at these locations. It is proposed to procure new LED screens and IP enabled phones for various offices of TATA POWER-DDL.

Laptops/ Desktops Older than 6 years

Useful life of end user devices like desktop, laptop, etc. is three years. Since these devices are being used for almost eight hours per day, after three years, devices starts giving hardware problems and are also not suitable to work on updated versions of operating system and applications. Frequent failures coupled with un-availability of spare parts for obsolete technology hampers the running of business processes. Desktops & laptops outlive their Technical Life in a period of three to four years as technically superior device supersede the old device. As an example, Windows 10 (the latest version) cannot be installed on desktop/laptops purchased 3-4 years back and Microsoft has discontinued support for Windows XP. Also running the systems on older version of OS poses Cyber Security threats, latest example being Wannacry Ransom ware introduced through Windows XP machines.

It is proposed to procure new Desktops/Laptops with 3 years warranty in FY 2019-20 to replace the Desktops/Laptops which are older than 6 years and to cater to new requirement.

Printer & Scanners

TATA POWER-DDL has established various Consumer Care Centers and Cash Collection Centers in order to facilitate resolution of consumers' problem and bill payments. Latest Supply Code, has stringent PA timelines for providing various services to the consumers, for which decentralized documents checking and scanning activities are being started, so requires

additional scanners, printers & laptops. All these locations are equipped with PCs, Printers, Scanners, and Plotters etc. These devices are being used for following purposes:

- Duplicate bill printing
- Payment receipt printing
- Cheque printing for Business Associates
- Printing of various reports for Regulator (DERC) and other stake holders
- Scanning of documents related to PA timelines for sending to Regulator
- Printing of Finance data
- Other official work
- Plotter is used for printing of large GIS maps in GIS department

TATA POWER-DDL is required to procure printers, scanners to replace the old printers and scanners to cater to new requirements.

Bandwidth Enhancement of IP/MPLS Communication Network for Smart Grid Applications

Existing bandwidth capacity of communication network is 10G at Core ring and 1G at Sub Rings. Various Smart Grid related applications like Automated Metering Infrastructure (AMI), Field Force Automation (FFA), Document Management System (DMS), Big Data Analytics, Integrated Security Solution (ISS), Electric Vehicle (EV) Charging, Renewable Energy integration, Home Automation, etc. are under implementation. These applications will utilize the bandwidth of IP/MPLS Communication Network. To ensure sufficient bandwidth for these smart grid applications, communication network bandwidth is required to be enhanced to 100G at Core Ring and 10G at Sub Rings.

Replacement of Old Microwave Towers to Improve Backup Connectivity

Microwave links were installed at various locations of TATA Power-DDL to provide backup connectivity for Communication network for running business critical applications. With the passage of time, Microwave Tower gets rusted and becomes weak. Also high-rise trees have grown and high rise buildings have been constructed which are obstructing the line of sight leading to Microwave link fluctuation and unstable backup connectivity. Thus it is proposed to replace these Microwave towers with the new high rise towers in phased manner to ensure the 24X7 availability of backup connectivity for business critical applications.

Migration of Legacy SAP to S4 HANA

Enterprise application platforms, like SAP-ERP, were created long back (early 2000) when none of the new age technologies existed and hence these platforms are not intrinsically geared up to support and enable transformation that we are witnessing now, especially in the area of mobility, analytics, machine learning and big data [like, social feeds]

SAP HANA as a database was launched in the year 2011 with the initial capabilities of merging transactional and analytical systems of an enterprise. Starting as an in-memory computing platform, with columnar storage capability, SAP HANA proved to be a major beneficiary for organizations, looking for real time analytics. Over the next few years, the platform was further augmented with all the new capabilities, which started to address mainstream business requirements. In 2013, SAP launched Business Suite on HANA (SOH), which made the Business Suite (SAP ERP and other components) available on HANA. It followed this with the launch of SAP S/4HANA in 2015, when the complete business suite got re-written by leveraging the capabilities of HANA in the code line of SAP ERP.

In that sense, SAP S/4HANA is a new enterprise platform which fundamentally transforms the way enterprise systems are used through in-built capabilities to leverage machine learning and artificial intelligence

For running SAP S/4 HANA it is required to upgrade the DB. SAP application at Tata Power-DDL is running on Oracle DB and with an intention to migrate our SAP landscape to SAP S/4 HANA, it is pertinent to do away with ORACLE DB and move to SOH (Suit on HANA).

Auto Dialler and Predictive Dialler

Auto Dialler will play auto dues message. Predictive dialler will help in increasing the productivity by 10-15%.

Email Management Software

With increase in emails inflow from 50 to 250+ per day, it is now very much required to have some robust email management software to ensure tracking and reporting of email pendency. Productivity is also expected to improve by 10%.

SAP Product ERMS was tried but got failed. Need to have some other standard products available in market.

Call Management Solution

Existing BCM have limited call management capability. While, IT shall be taking up with SAP to depute a BCM expert to provide the required flexibility, in worst case scenario, we may have to formalize a plan to deploy other products like "Avaya" who is an industry leader in call management solution.

d) DATA SECURITY AND SAFETY

The details of proposed investment are as under:

Table 5.56: Estimated Capex for IT

(Rs. Cr.)

S No.	Proposal (Brief Description)	Amount	Purpose of Investment	Scheduled Completion Time (Days/Target)
1	Cyber Security	0.60	Cyber Security	365

With the constant technology innovation and movement towards digitization, cloud-based applications, cyber risks are also increasing exponentially. It has been predicted that by 2020, 60% of information/asset will get digitized and can be vulnerable for the organizations worldwide. Therefore, it is utmost important to secure our network from the cyber threats/crimes. TATA POWER-DDL proposed for cyber security solution for its IT and OT devices to prevent security breach and cyber-attacks in Tata Power – DDL premises.

Capitalization

The Hon'ble Commission in its Business Plan Regulations, 2017 has approved tentative capitalization of Rs 430 Cr. for FY 2019-20 (excluding Rs. 50 Cr towards Capital Deposit).

Table 5.57: Approved Capitalization for FY 2019-20

(Rs. Cr.)

Particulars	Amount
Capitalization including deposit work	414
Smart Meter	66
Total Capitalization without deposit work	430
Add: Deposit Work	50
Total	480

It is worth to mention that deposit work is also treated as a part of capitalization, hence the capitalization for FY 2019-20 is considered as given below:

Table 5.58: Capitalization considering Deposit work for FY 2019-20

(Rs. Cr.)

Particulars	Amount
Capitalization without deposit work	364
Smart Meter	66
Deposit Work	50
Total	480

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

Table 5.59: Capitalization of Fixed Assets

(Rs Cr)

S. No	Particulars	Amount	Remark
A	Opening Balance	5,554.49	Table 4.16
B	Addition during the year	480.00	Table 5.58
C	Deletion during the year*		
D	Closing Balance	6,034.49	(A+B-C)
E	Average Balance of Fixed Assets	5,794.49	((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 19-20 and thereafter.

Table 5.60: Estimated Consumer Contribution capitalized

(Rs Cr)

S. No	Consumer Contribution/Grant	Amount	Remarks
A	Opening Balance	868.26	Table 4.17
B	Capitalized during the year	50.00	
C	Closing Balance	918.26	(A+B)
D	Average Cumulative Capitalized Consumer Cont.	893.26	(A+C)/2

Depreciation and provision of depreciation

The Hon'ble Commission in its 3rd 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. Thus, for the purpose of computation of Deprecation for FY 2019-20, the Petitioner has considered Deprecation rate of 4.98% equivalent to the rate considered for FY 2018-19

Table 5.61: Revised Depreciation for FY 2019-20 (Rs. Crore)		
Particulars	Amount	Remark/Ref
Opening GFA	5,554.49	Table 5.59
Net Additions to Asset during the year	480	Table 5.59
Closing GFA	6,034.49	
Average GFA	5,794.49	
Less: Average Consumer Contribution	893.26	Table 5.60
Average GFA net of CC	4,901.22	
Average rate of depreciation	4.98%	Table 3.51
Depreciation for the year	244.08	
Opening Depreciation	2,161.31	Table 4.18
Closing Depreciation	2,405.39	
Average Depreciation	2,283.35	

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:

(a) ARR for two months for retail supply business of electricity;

(b) Less: Net Power Purchase costs for one month;

(c) Less: Transmission charges for one month: "

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

Table 5.62: Computation of Change in Working Capital

(Rs Cr)

S. No	Particulars	Amount		Remark
		FY 19-20		
A	Annual revenues requirement	7,648.66		Table 5.69
B	Receivables equivalent to 2 months ARR		1,274.78	A/12*2
C	Power Purchase expenses	5,651.90		Table 5.30
D	Add: 1/12th of power purchase expenses		470.99	C/12
E	Total working capital		803.79	B-E
F	Opening working capital		766.91	Table 4.19
G	Change in working capital		36.88	(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.

Table 5.63: Computation of Change in Working Capital

(Rs Cr)

S. No	Particulars	Amount	Remarks
A	Capitalization	480.00	Table 5.58
B	Less- Consumer Contribution Capitalized during the year	50.00	Table 5.60
C	Funding Requirement	430.00	
D	Through- Debt @ 70%	301.00	
	Through Equity @ 30%	129.00	

Regulated Rate Base

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

Table 5.64 Computation of Regulated Rate Base

(Rs Cr)

S. No	Particulars	Amount	Remarks
A	Opening Balance of OCFA	5,554.49	Table 4.21
B	Opening Balance of Accumulated Depreciation	2,161.31	Table 4.21
C	Opening Balance of Accumulated Consumer Contribution	868.26	Table 4.21
D	Opening balance of working capital	766.91	Table 4.21
E	RRB – Opening	3,291.82	
F	Capitalization during the year	480.00	Table 5.58

G	Depreciation for the year (Including AAD)	244.08	Table 5.61
H	Consumer Contribution, Grants,	50.00	Table 5.60
I	Change in Working Capital	36.88	Table 5.62
J	ΔAB (Change in Regulated Base)	129.84	
K	RRB – Closing	3,440.86	
L	RRB(I)	3,421.66	

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 Mar, 2018 the Hon'ble Commission has approved rate of weighted average interest on loans @ 9.73% for FY 2018-19. The same rate has been considered for FY 2019-20 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 2019-20.

Table 5.65: Weighted Average Cost of Capital (WACC) sought for FY 2019-20

S. No	Particulars	Amount	Remark/Ref
I	Opening Equity	1,329.34	Table 4.22
II	Addition	129.00	Table 5.63
III	Closing Equity	1,458.34	(I+II)
A	Average Equity	1,393.84	(I+III)/2
B	Average Debt	2,027.82	Balancing Figure
C	Return on Equity	16%	
D	Income Tax Rate	34.94%	
E	Grossed up Return on Equity	24.59%	
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 19-20 as follows:

Table 5.66: Computation of Return on Capital Employed

(Rs Cr)

S. No	Particulars	Amount	Reference
A	RRB (I)	3,421.66	Table 5.64
B	WACC	15.79%	Table 5.65
C	Return on Capital Employed	540.11	(A*B)

Non-Tariff Income

The Petitioner has kept the same Non-tariff income of Rs. 91.78 Cr. for FY 2019-20 as considered for truing up of FY 2017-18.

Table 5.67: Non-Tariff Income

(Rs Cr)

S. No	Particulars	FY 19-20
C	Non-Tariff Income	91.78

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% for FY 2019-20 for funding revenue gap.

Based on the above, the carrying cost rate for FY 2019-20 computed as follows.

Table 5.68: Computations of carrying cost

(Rs Cr)

S. No	Particulars	Amount
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 2019-20 as below.

Table 5.69: Summary of Aggregate Revenue Requirement

		(Rs Cr)	
S. No	Particular	Amount	Remarks
A	Cost of Power Purchase	5,651.90	Table 5.30
B	O&M Expenses	881.82	Table 5.31
C	Depreciation	244.08	Table 5.61
D	Return on Capital Employed	540.11	Table 5.66
E	Carrying Cost	422.54	Table 5.71
F	Less: Non-Tariff Income/ Interest on consumer security deposit	91.78	Table 5.67
H	Annual Revenue Requirement	7,648.66	

From the above table it can be seen that estimated ARR for FY 2019-20 comes to Rs. 7,648.66 Cr.

Revised computation of Revenue (Gap)/surplus without carrying cost & DRS for FY 2019-20

Based on the above submission, the Petitioner has computed Revenue Gap of Rs. 100.25 Cr for FY 2019-20.

Table 5.70: Computations of Revenue (Gap) for the year without carrying Cost

		(Rs. Cr)	
S. No	Particular	Amount	Remarks
A	Aggregate Revenue Requirement for the year without carrying cost	7,226.12	Table 5.69
B	Revenue available for the year without DRS	7,125.88	Table 5.17
C	Revenue (Gap)/surplus for the year	(100.25)	(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 5.71: Computations of Closing Revenue Gap

		(Rs. Cr)	
S. No	Particular	Amount	Remarks
A	Opening Revenue Gap	(3,799.56)	Table 4.28
B	Revenue (Gap)/Surplus for the year	(100.25)	Table 5.70
C	Closing Revenue (Gap)	(3,899.81)	(A+B)

S. No	Particular	Amount	Remarks
D	Carrying Cost Rate	10.98%	Table 5.68
E	Carrying Cost	(422.54)	$(A+B/2)*D$
F	Recovery of carrying cost from 8% Deficit Revenue Recovery Surcharge	570.07	99.50% of 8% DRS as given in Table 5.16
G	Closing Revenue Gap (including carrying cost)	(3,752.28)	$(A+B+E+F)$