



**TELANGANA STATE ELECTRICITY REGULATORY
COMMISSION, HYDERABAD**

**Aggregate Revenue Requirement (ARR) and
Determination of Transmission Charges for
the Balance Period of 3rd Control Period
FY 2017-18 and FY 2018-19**

For

**Transmission Corporation of Telangana
Limited (TSTransco)**

1st May, 2017

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ABBREVIATIONS

A&G Exp	Administration & General Expenses
ACT	Electricity Act 2003
APERC	Andhra Pradesh Electricity Regulatory Commission
APGenco	Andhra Pradesh Power Generation Corporation Limited
APTransco	Transmission Corporation of Andhra Pradesh Limited
ARR	Aggregate Revenue Requirement
CAPEX	Capital Expenditure
Ckt KM	Circuit Kilo Meter
Crs	Crores
CWIP	Capital Work in Progress
DISCOM	Distribution Company
EHT	Extra High Tension
FY	Financial Year
GFA	Gross Fixed Asset
GIS	Gas Insulated Substation
GOI	Government of India
IDC	Interest During Construction
IPP	Independent Power Producer
KM	Kilo Meter
KVA	Kilo Volt Ampere
kW	Kilo Watt
KWH	Kilo Watt Hour
MoP	Ministry of Power
MU	Million Unit
MVA	Mega Volt Ampere
MW	Mega Watt
MYT	Multi Year Tariff
NTPC	National Thermal Power Corporation
O&M Exp	Operation & Maintenance Expenses
O.P No	Original Petition Number
OCFA	Original Cost of Fixed Assets
p.a	Per Annum
PFC	Power Finance Corporation
PGCIL	Power Grid Corporation of India Limited
PPA	Power Purchase Agreement
R&M	Repair & Maintenance
RoCE	Return on Capital Employed
RoE	Return on Equity
RRB	Regulated Rate Base
SERC	State Electricity Regulatory Commission
TPS	Thermal Power Station
TSERC	Telangana State Electricity Regulatory Commission
TSGenco	Telangana State Power Generation Corporation Limited
TSNPDCL	Northern Power Distribution Company of Telangana Limited
TSSPDCL	Southern Power Distribution Company of Telangana Limited
TSTransco	Transmission Corporation of Telangana Limited
WACC	Weighted Average Cost of Capital

**TELANGANA STATE ELECTRICITY REGULATORY COMMISSION
HYDERABAD**

In the matter of:

Determination of Aggregate Revenue Requirement (ARR) and Transmission Tariff for the balance period of 3rd Control Period FY 2017-18 and FY 2018-19

And

Transmission Corporation of Telangana Limited - **Petitioner**
(Herein after referred to as TSTransco)

Present

Sri. Ismail Ali Khan, Chairman

Sri. H. Srinivasulu, Member

O.P. No. 24 of 2016

Order

Dated: 01.05.2017

The Transmission Corporation of Telangana Limited (TSTransco), the Petitioner has filed their petition before the Commission on 30th November, 2016 for approval of its Aggregate Revenue Requirement (ARR) and Proposed Transmission Tariff (Transmission Charges) for FY 2017-18 and FY 2018-19 (balance period of the 3rd Control Period) for its Transmission business u/s 26(5) of the Andhra Pradesh Electricity Reform Act, 1998 (Reform Act) read with section 61 to 64 of the Electricity Act, 2003 read with Regulation No. 5 of 2005.

This filing came up for public hearing before consumers, the representatives of various consumer organisations, generators, political parties and other stakeholders on 09.02.2017 (Thursday) at Hyderabad and having stood over for consideration till this day, the Commission passed the following:

1. This Commission having been established under Section 82 (1) of the Electricity Act, 2003 (Herein after referred to as 'The Act') is required to exercise the powers and functions vested in it in terms of Section 86 and Section 62(1) of the Act to determine the tariff for (1) Supply of electricity by a generating company to a Distribution Licensee (2) Transmission of electricity (3) Wheeling of electricity and (4) Retail Sale of Electricity, as the case may be, within the state of Telangana.
2. Consequent to formation of the state of Telangana, the Government of Telangana established the Commission vide G. O. Ms. No. 3 dated 26.07.2014 and constituted the Commission vide G.O. Ms. No. 13 dated 22.10.2014 by appointing the Chairman and the Members. The Commission after it became functional on 03.11.2014 had issued its first regulation, Regulation No. 1 of 2014, on 10.12.2014 being Telangana State Electricity Regulatory Commission (Adoption) Regulation, 2014. Clause 2 of the Regulation states as follows:

“All regulations, decisions, directions or orders, all the licenses and practice directions issued by the erstwhile Andhra Pradesh Electricity Regulatory Commission (Regulatory Commission for States of Andhra Pradesh and Telangana) as in existence as on the date of the constitution of the Telangana State Electricity Regulatory Commission and in force, shall mutatis-mutandis apply in relation to the stakeholders in electricity in the State of Telangana including the Commission and shall continue to have effect until duly altered, repealed or amended, any of Regulation by the Commission with effect from the date of notification as per Notification issued by the Government of Telangana in G.O.Ms.No.3 Energy(Budget) Department, dt.26-07-2014 constituting the Commission.”

3. In accordance with the above Regulation, all the regulations framed by the erstwhile APERC shall continue to apply for the state of Telangana.
4. **Transmission Corporation of Telangana Limited (TSTransco)**
Consequent upon formation of the State of Telangana with effect from 02.06.2014, the then Government of Andhra Pradesh has established Transmission Corporation of Telangana Limited Vide GO Ms No. 25 dated 29.05.2014. The Commission

(APERC) has issued a deemed licence to TSTransco with licensee No. 1 of 2014 Vide proceedings No. APERC/Sey/160/2014, dated 11.07.2014.

On formation of TSTransco, the opening balances of assets and liabilities pertaining to TSTransco as on 2nd June, 2014 are yet to be finalised. In the absence of separate approved ARR for TSTransco, the expenditure approved for composite APTransco as per Tariff Order for 3rd MYT Control Period (FY 2014-15 to FY 2018-19) by APERC has been segregated based on power allocation ratio of 53.89% to TSDISCOMs has been apportioned to TSTransco (notified by GoAP Vide G.O Ms No. 20, dated 08.05.2014) and compared with actuals for FY 2014-15 to FY 2015-16.

5. As per provisions of Section 64 of the Act, it is incumbent upon the Licensee to make an application to the Commission for determination of tariff in such manner and upon such terms as may be specified by the Regulations framed by the Commission.

The Licensee has to file ARR & proposals for determination of Transmission Tariff for the remaining period of the third Control Period i.e., FY 2017-18 and FY 2018 19.

6. Regulation 5 of 2005 lays down that the licensee is required to file tariff application on or before 30th November of each year before the Commission so as to enable the Commission to pass order within 120 days determining the tariff for the ensuing financial year beginning from 1st of April of the succeeding calendar year. Accordingly the Licensees were expected to file the necessary petitions for the approval of ARR and tariff for FY 2017-18 and FY 2018-19 by 30th November 2016. In accordance with the Regulations the licensee has filed the petition on 30th November, 2016.

The petition for approval of ARR and Transmission Tariff for FY 2017-18 and FY 2018-19 submitted by the Licensee was scrutinized and found to be generally in order as per the adopted regulations of TSERC vide its Regulation 1 of 2014 (Conduct of Business). The Commission admitted the Petition and the same was taken on record by assigning Petition number as OP. No. 24 of 2016 of TSTransco.

Data Gaps and Licensee's responses

7. Based on the scrutiny of the ARR and tariff proposals submitted by the Licensee, the Commission identified certain data gaps/additional information requirement in the Petition. Accordingly, following additional information/clarifications from the Petitioner were sought by the Commission.
- Submission of all filled in forms related to ARR and Tariff in workable excel formats with formulae and linkages.
 - Generation capacities – Station-wise
 - Investments
 - Transmission Loss trajectory
 - Components of Revenue Requirement
 - Audited accounts for FY 2014-15 and FY 2015-16 along with supplementary audit report of C&AG.
 - Justification for the discrepancy in numbers with reconciliation of numbers in different formats.
 - Current Status of New Projects from which the power procurement has been proposed in FY 2017-18 and FY 2018-19.

The Licensee submitted most of the information sought by the Commission which has been considered by the Commission while analyzing the ARR for FY 2017-18 and FY 2018-19.

Overview of stakeholders' consultation process

8. The Licensee, as directed by the Commission, published a public notice in two English newspapers (in English), two Telugu newspapers (in Telugu) and two Urdu newspapers (in Urdu) on 27.12.2016. The notice was to inform the general public that the licensee has filed its ARR and Tariff proposals in respect of their Transmission Tariff/Charges for FY 2017-18 and FY 2018-19 before the Commission.
9. The filings made by the licensee along with supporting material were made available to the public at large through the offices of the Chief Engineer and the Superintending Engineer of TSTransco. The filings and supporting material were

also made available on the websites of the Commission and the Licensees.

10. It was also notified in the public notice (Annexure - B) that, objections / suggestions on the ARR filings and tariff proposals may be filed with the licensee by 23.01.2017 with a copy marked to the Commission.
11. In response to the public notice, four (4) numbers of objections / suggestions were received (Annexure - C) by the Commission both in writing as well as oral during the public hearing.
12. The Licensee was also directed to reply to all the written objections received by 31.01.2017 by sending the same to the respective objector with a copy to the Commission before the scheduled date of public hearing by the concerned Licensee. The replies were also required to be posted on the respective websites.
13. The Commission has conducted the public hearing at Hyderabad on 09.02.2017 on the ARR filings made by TSTransco. During the hearing, the Licensee made a brief presentation on their ARR filings and the Commission heard all those objectors desiring to be heard in person. At the end, as directed by the Commission, the Licensee responded on the issues raised by the objectors during the said hearing. The licensee was directed to furnish written replies / submissions where there are issues which could not be replied immediately.
14. The Commission places on record its deep appreciation for the awareness and public participation spirit exhibited in the form of objections / suggestions made both in writing as well as oral submission on the ARR proposals made by the licensee. While all the views and opinions expressed by the consumers / objectors might not have been specifically reflected in this order, the Commission has made every effort to address the spirit and essence of the objections / suggestions. Earnest attempts were made to respond to the objected issues wherever necessary the issues being germane to the determination of the ARR and the tariff.

15. This order is organized into Seven (7) chapters
- a) Chapter - 1: Summary of Tariff Petition.
 - b) Chapter - 2: Stakeholders' Consultation
 - c) Chapter - 3: Operational Performance of TSTransco
 - d) Chapter - 4: Investments for the balance Control Period
 - e) Chapter - 5: Mid-term Review for FY 2014-15 and FY 2015-16
 - f) Chapter - 6: Aggregate Revenue Requirement (ARR) and Transmission Tariff for FY 2017-18 and FY 2018-19.
 - g) Chapter- 7: Directives

1. Summary of the Petition

Pending finalization of segregation of assets and liabilities, based on provisional accounts for FY 2014-15 and FY 2015-16 and proposed investment for FY 2016-17, FY 2017-18 and FY 2018-19, TSTransco has filed the following.

- True – up Analysis of Performance for FY 2014-15 and FY 2015-16
- Summary of Resource Plan for remaining period of Third Control Period
- Multiyear Aggregate Revenue Requirement (ARR) for the remaining period of third control period i.e., FY 2017-18 and FY 2018-19.
- Transmission charges and Transmission system Availability during the remaining period of third control period

The summary of each of the above is given below:

1.1 True up Analysis of performance for FY 2014-15 and FY 2015-16

Pending segregation of assets and liabilities of composite AP Transco between the two entities, TSTransco compiled its provisional accounts for FY 2014-15 (02-06-2014 to 31-03-2015) and FY 2015-16, based the provisional balance of assets and the liabilities as per the draft demerger plan communicated by APTransco, which are subject to audit by statutory / AG auditors. The summary of true-up analysis from the 3rd MYT order and the actuals is as follows.

Table 1.1: True-up analysis - (Tariff Order vis-a-vis Actuals)

(Rs. Crs)

Particulars	FY 2014-15 (02.06.2014 to 31.03.2015)			FY 2015-16			Grand Sum		
	Tariff Order	Actuals	Deviation	Tariff order	Actuals	Deviation	Tariff Order	Actuals	Deviation
Expenditure	542.29	544.84	2.55	793.94	719.41	-74.53	1336.23	1264.25	-71.98
O&M Costs	294.71	293.06	-1.65	385.30	386.71	1.41	680.01	679.77	-0.24
O&M Carrying Costs	0	0	0	0	0	0	0	0	0
Depreciation	251.59	211.22	-40.37	370.00	272.76	-97.24	621.59	483.98	-137.61
Taxes	23.71	39.56	15.85	38.63	58.49	19.86	62.35	98.05	35.70
Special Appropriation	(27.72)	0	27.72	0	0	0	(27.72)	0	27.72
Other Expenses	0	1	1	0	1.45	1.45	0	2.45	2.45
Less: O&M Exp. Capitalized	68.75	66.02	(2.73)	90.82	74.14	(16.68)	159.58	140.16	(19.42)

Particulars	FY 2014-15 (02.06.2014 to 31.03.2015)			FY 2015-16			Grand Sum		
	Tariff Order	Actuals	Deviation	Tariff order	Actuals	Deviation	Tariff Order	Actuals	Deviation
Net Expenditure	473.53	478.82	5.29	703.12	645.27	(57.85)	1176.65	1124.09	(52.56)
Add: Return on capital Employed (ROCE)	341.28	206.65	(134.63)	556.10	320.48	(235.62)	897.38	527.13	(370.25)
Gross ARR	814.81	685.47	(129.34)	1259.22	965.75	(293.47)	2074.03	1651.22	(422.81)
Non Tariff Income	57.90	31.55	(26.35)	72.90	55.74	(17.16)	130.80	87.29	(43.51)
Revenue from Tariff	756.91	812.08	55.17	1186.32	1356.28	169.96	1943.23	2168.36	225.13
Total Revenue	814.81	843.63	28.82	1259.22	1412.02	152.80	2074.03	2255.65	181.62
Surplus/(Deficit)	0.00	158.16	158.16	0.00	446.27	446.27	0.00	604.43	604.43

1.2 Resource Plan

The Capital investment plan during the balance period of 3rd Control Period (FY 2016-17 to FY 2018-19) is as given below:

Table 1.2: Capital Investment plan during the balance period of third Control Period

Particulars	(Rs. Crs)		
	FY 2016-17	FY 2017-18	FY 2018-19
CWIP Opening Balance (A)	2232.99	2000.82	4555.06
Capital Investment During the year (B)	2522.38	5284.91	2640.23
400kV Schemes	1232.22	1340.19	1622.31
220kV Schemes	1017.71	1135.98	463.81
Renovation & Modernization Improvement	50.11	50.11	50.11
Lift Irrigation Schemes	222.34	2758.63	504.00
Total Base Capital Investment (C)	416.88	409.99	316.80
Add: Interest During Construction	328.74	278.30	222.57
Add: Expenses Capitalised	88.14	131.69	94.23
Total Capital Investment during the year (A to C)	5172.25	7695.72	7512.09
Less: Assets Capitalised during the year	3171.44	3140.66	5381.44
CWIP Closing Balance	2000.82	4555.06	2130.65

1.3 Multi-year Aggregate Revenue Requirement (ARR) for the remaining part of third Control Period

The net Aggregate Revenue Requirement for FY 2017-18 and FY 2018-19, is as given in the Table below:

Table 1.3: ARR for FY 2017-18 and FY 2018-19

Particulars	(Rs. Crs)	
	FY 2017-18	FY 2018-19
Operation and Maintenance Charges	605.62	661.90
Depreciation	568.52	740.82
Advance Against Depreciation	0.00	0.00

Particulars	FY 2017-18	FY 2018-19
Taxes on Income	120.34	157.33
Other Expenditure	0.00	0.00
Special Appropriations	(302.21)	(302.22)
Total Expenditure	992.27	1257.83
Less: O&M expenses capitalized	131.69	94.23
Net Expenditure	860.59	1163.61
Add: Return on Capital Employed	812.07	1061.70
Less; Non- Tariff Income (if any)	50.00	50.00
Total Revenue Requirement transferred to Retail supply business	1622.65	2175.31

1.4 Transmission Charges

In the ARR filing, the Transmission charges are computed by dividing the net ARR of each year with the total contracted capacity of the respective year on monthly basis, for FY 2017-18 and FY 2018-19, as given below:

Table 1.4: Transmission charges for FY 2017-18 & FY 2018-19

Proposed Transmission Tariff	2017-18	2018-19
ARR of Transmission Business (Rs. Crs)	1622.65	2175.31
Transmission Contracted Capacity (MW)	14376.59	15021.59
Transmission Charges (Rs./kW/Month)	94.06	120.68

1.5 Target of Transmission loss range and system Availability

Target of Transmission loss range and system availability in respect of each year of balance period of the control period is as follows.

Table 1.5: Target for balance period of 3rd Control Period

Particulars	FY 2017-18	FY 2018-19
Target Transmission Loss Range (%)	3.10 +/-0.2	3.09 +/-0.2
Target System Availability (%)	99.9%	99.9%

2. Stakeholders' Consultation

2.1 Public response to the petition:

To elicit the views/objections/suggestions of the Stakeholders, the Licensee has caused the Publication of public notice on 27.12.2016 indicating inter alia,

- a) availability of the copies of the filings in print and electronic form and
- b) Views/objections/suggestions are allowed to be submitted to the Commission /Licensee by 5 PM on or before 23.01.2017. The said filings are also made available for the Stakeholders on the websites of Licensee and the Commission.

In response to the Public Notice inviting objections/suggestions from Stakeholders on the petition filed by TSTransco, four consumers/Organizations have filed their objections /suggestions. Details of consumers/organizations who have filed their objections are provided in the Table below:

Table 2.1 List of Objectors

Sl. No.	Name of the Objector
1	Sri M. Venugopal Rao, Senior Journalist and Convener, Centre for Power Studies, Hyderabad.
2	Sri M. Thimma Reddy, Convener, People's Monitoring Group on Electricity Regulations, Hyderabad.
3	Sri P. Chandrakanth Sharma, Management Consultant & Advocate, Waddepally, Hanamakonda, Warangal District.
4	Sri G.R. Karunakar, Bharatiya Janata Party, Hyderabad, Telangana.

2.2 A public hearing was held at the Commission's office at 10 AM on 9th February, 2017 to enable the objectors to present their views in the presence of the Commission and the Licensee. All the above mentioned objectors have attended the public hearing. TSTransco made a brief presentation of ARR filed by it. The objectors have orally reiterated their objections/suggestions and replied by Licensee.

2.3 The views /suggestions submitted by various objectors, replies given by the Petitioner and the views of the Commission (objector-wise) are summarized below:

A. Name of the Objector/Stakeholder: Sri M. Venugopala Rao, Senior Journalist & Convener, Centre for Power Studies has raised the following issues:

Issue 1: Non-submission of True up claims for the second control period:

The TSTransco has stated that the assets and liabilities of erstwhile AP Transco have not yet been bifurcated between APTransco and TSTransco. Pending segregation of assets and liabilities of composite AP Transco between the two entities, the TSTransco has compiled its provisional accounts for FY 2014-15 and FY 2015-16 based on the provisional opening balance of assets and liabilities as per the draft demerger plan communicated by AP Transco. The Commission is requested to consider the following:

- a. TS Transco should have filed true up claims for the second control period based on the draft demerger plan.
- b. Since the second control period pertains to pre-bifurcation of the undivided AP, APERC had already given its order on true up claims of APTransco for the second control period, after holding public hearing, pending bifurcation of assets and liabilities between TSTransco and APTransco which would not make any material change for true up claims for the second control period.
- c. For the year 2016-17, the TS Discoms are entitled to get a refund of Rs.317.13 Crs from TSTransco from the revenue surplus accrued during the second control period, as per APERC's order in O.P.No.13 of 2015 dated 07.11.2015.
- d. There is no justification for TSTransco under any pretext even after completion of the first three years of the third control period to retain the huge sum of Rs.317.13 Crs for itself at the cost of TS Discoms and their consumers of power.
- e. The Commission is therefore requested to adopt the said order of APERC on true up claims of APTransco for the second control period and direct TSTransco to refund Rs.317.13 Crs to TS Discoms forthwith, subject to review as and when TSTransco submits its true up for the second control period after approval of demerger plan duly holding public hearing thereon.

TSTransco Response:

The 2nd Control Period from FY 2009-10 to FY 2013-14 pertains to composite APTransco (prior to formation of TSTransco). The information with regard to Tariff Order and Actuals for the said period are available with composite APTransco only. Further, Hon'ble APERC has already issued Order dated 7th November, 2015 for True Up of Transmission Business for the Second Control Period (FY 2009-10 to FY 2013-14) based on the true up application made by APTransco vide O.P.No.13 of 2015. While issuing True Up Order, the Commission approved the total surplus amount at Rs.588.47 Crs (to be passed on to consumers) for composite APTransco and indicated the share of TSTransco at Rs.317.13 Crs.@53.89%. Since, the 2nd Control Period pertains to composite APTransco and in the absence of segregated balances for the said Period as well as actuals for FY 2009-10 to 2013-14, TSTransco has requested Hon'ble TSERC to communicate its decision on the True Up order issued by the Hon'ble APERC, whether to adjust the surplus amount of Rs. 317.13 Crs towards the share of TSTransco. The decision of Hon'ble Commission shall be implemented.

Commission's View:

The Commission examined the issue and the surplus of Rs. 317.13 Crs as share of TSTransco, after True up of 2nd control period is to be considered for adjustments during the balance years of 3rd control period.

Issue 2: Reduction in Transmission Loss

- 1) Transmission loss (excluding PGCIL loss) has been reduced from 3.59% in FY 2013-14 to 3.13% in FY 2015-16. The reduction of transmission loss from FY 2014-15 (3.18%) to FY 2015-16 (3.13%) is 0.05% only, after incurring net expenditure of Rs.645.27 Crs during FY 2015-16. The targets of transmission loss determined by APERC in its tariff order for the third control period are 4.01 % for FY 2016-17, 3.98% for FY 2017-18 and 3.95% for FY 2018-19. TSTransco has claimed that *"the maintenance of transmission network availability has improved from 99.902% in FY 2014-15 to 99.867% in FY 2015-16"*. To maintain transmission network availability at

such levels over many years is a proof of exemplary performance and commendable.

- 2) Sri M. Thimma Reddy, Convenor, Peoples Monitoring Group has also suggested to examine whether the transmission network availability can be achieved at lesser cost to reduce tariff burden on consumers.**

TSTransco Response:

TSTransco is adopting the state of the art Technologies for maintaining the Transmission network in the State, which has contributed to achieve System Availability at 99.9% and Transmission losses of the order of 3.13%. In this regard it may be noted that the main objective of network expansion by any Transmission Utility is to ensure the timely evacuation of the Generation Capacity added, and to cater to the load growth in its area of operation. As such, the view point of the objector to look at the proposed investments, purely for Transmission loss reduction is not appropriate. However TSTransco will strive hard to maintain lowest losses and highest capacity availability in future as well.

Commission's View:

The response of TSTransco is noted. The TSTransco shall examine the suggestion made by the objector

Issue 3: Treatment of surplus after Truing down for the years FY 2014-15 and FY 2015-16.

TSTransco has shown a net expenditure of Rs.1124.09 Crs against Rs.1176.65 Crs approved in the tariff order for the period from 02.06.2014 to the 31st March, 2016. During the same period total revenue of TSTransco is shown as Rs.2255.65 Crs against Rs.2074.03 Crs approved in the tariff order. During the said period, while net expenditure is less by Rs.52.56 Crs and Non- tariff income was less by Rs.43.51 Crs. Thus the revenue is more by Rs.225.13 Crs. On the whole, TSTransco has shown a surplus of Rs.604.43 Crs, after claiming return on capital employed (RoCE) at Rs.527.13 Crs during the said period. It is stated that the surplus of Rs.605 Crs is being passed on to the consumers as a negative element during FY

2017-18 (Rs.302.21 Crs) and FY 2018-19 (Rs.302.22 Crs). Such a surplus has to be trued down as per applicable Regulations.

TSTransco Response:

The licensee being a small company having ARR of around Rs.1500 Crs per annum, reduction of revenue to the tune of Rs.605 Crs in one year may have impact on finances/working capital. As such, the licensee has proposed for adjustment in two years i.e., for FY 2017-18 & FY 2018-19.

Commission's View:

The Commission shall allocate the surplus equally while finalizing the transmission charges for FY 2017-18 and FY 2018-19.

Issue 4: Additions to Gross Fixed Assets

The actual addition to the gross fixed assets is lower by Rs.1045 Crs which is mainly due to delay in completion of projects. RoCE has been calculated by adding interest on term loans at actuals plus 14% return on equity on 25% of regulated rate base. Since Transco has not given details of rates of interest on term loans, the same needs to be examined to ascertain whether such rates are prevailing during the said period. The interest rate of 12% permitted by APERC in its tariff order for the third control period itself is on the higher side.

TS Transco Response:

The weighted average cost of debt for FY 2014-15 and FY 2015-16 works out to 10.76% p.a and 10.31 %p.a. respectively. The funding agency-wise interest rates on the term loans for FY 2014-15(Actuals) and FY 2015-16 (Actuals) are furnished in the Petition.

Commission's View:

The effective rate of interest at 10.76% and 10.30% is found to be prevailing in the market. However, the interest rate at 9.95% is considered for FY 2017-18 and FY 2018-19, as communicated by the utility after negotiations with PFC/REC.

Issue 5: Employee Cost

The net operation and maintenance expenses have increased by Rs.19.17 Crs mainly due to wage revision with effect from 1.4.2014, as explained by TSTransco. Pending final allocation of employee cost between APTransco and TSTransco, no actuarial valuation towards employee terminal benefits has been taken up and Pension & Gratuity contribution has been provided provisionally, excluding leave encashment. The O&M expenditure claimed by TSTransco during the said period needs to be examined and determined by the Commission after due verification.

TSTransco Response:

As stated, pending final allocation of employees between the two entities, actuarial valuation to evaluate the liability towards terminal benefits could not be taken up. However, Pension & Gratuity contribution has been provided provisionally in the accounts for FY 2014-15 and FY 2015-16. Provision towards leave encashment could not be calculated.

Commission's View:

TSTransco may pursue with the concerned for allocation of employees between the two entities and provide for terminal benefits on actuarial valuation basis.

Issue 6: Inflated Transmission Charges

- a) The contention of TSTransco that actual revenue of Rs. 181.62 Crs. accrued from transmission charges is due to increase of revenue from open access customers is untenable. Since the ERC has determined transmission charges in the tariff order based on all approved expenditure, capitalization of assets and growth in generation capacity, demand and contracted capacity, including that of open access customers, it can be reasonably asserted that the transmission charges have turned out to be inflated due to lack of periodical review of actual performance.
- b) Delay in completion of projects, as admitted by TSTransco, would result in under-creation of projected capacity and under-utilization of transmission capacity.

- c)
- i. APERC, in its tariff order for the third control period, has pointed out that *"if the cumulative actual cost is less than 90 percent of cumulative approved cost at the beginning of the financial year starting from 2015-16, the Commission may require the Transco to explain the reasons for cost variations."*
 - ii. The Commission also directed that *"Transco shall file the actual costs and revenues in the last week of quarter every year for the previous quarter in the format prescribed for this purpose by the Commission."* One of the directives given by APERC, in its tariff order for the third control period, is that *"the Licensee shall take all possible measures to ensure that the Projects/Schemes taken up are completed as per schedule. The Commission also clarified that it will not allow any interest during construction for delays exceeding one month and three months in respect of completion of projects/schemes with the completion schedules of up to one year and more than one year, respectively, unless the Commission's approval for extension is obtained in advance"* (page 83 of tariff order).
 - iii. Since TSTransco has admitted that there is delay in completion of projects, the particulars of such delays project/scheme-wise, and cost escalation, including interest, during periods of such delays should be furnished and examined in order to determine permissible expenditure during FY 2014-15 and FY 2015-16. The Commission is requested to direct Transco to provide the same information to the Objector.

TSTransco Response:

- a. Since, the TSTransco's ARR is a fixed cost by nature, TSTransco has raised bills on DISCOMs towards transmission charges for the capacity approved for the year by the Hon'ble Commission to recover its fixed costs. However, the transmission charges collected, if any, from the Open Access Consumers has been proposed for true-up by way of Special Appropriation by the licensee.

- b. The main reason for delay in execution of projects is Right of Way (RoW) problems, delay in getting land acquisition/clearances from Government Authorities like land allotment, road cutting etc., The details of 400 kV Projects are explained in Annexure to the Petition.
- c. With regard to submission of quarterly cost and revenues, it is to be stated that consequent to formation of TSTransco, the assets and liabilities of composite APTransco between residuary APTransco and TSTransco are not yet finalized. Pending segregation of final opening balances of TSTransco, TSTransco could not calculate certain expenses like Depreciation on fixed asset balances, interest charges on term loans, income on investments etc. As such, TSTransco could not file its cost and revenues from time to time.

Commission's View:

TSTransco may pursue with concerned for bifurcation of assets and liabilities between the two entities. The TSTransco shall provide the information as pointed to the Commission with a copy to the objector concern and the particulars for each project/scheme-wise time delays, and the corresponding cost escalation, including (IDC) interest during construction for such time-delays should be furnished to Commission so that appropriate treatment for such escalated costs be made at the time of finalisation of 3rd Control period true-up on account of such delay in completion of projects.

Issue 7: Cost of debt and swapping loans

Cost of debt is projected by TSTransco at 12% for the years FY 2016-17, FY 2017-18 and FY 2018-19. This is inflated and needs to be pruned. Transco also may explore the possibility of swapping of loans to extend benefit of relatively lower interest rates.

TSTransco Response:

The weighted average cost of debt for FY 2014-15 and FY 2015-16 works out to 10.76% p.a. and 10.31% p.a. respectively. However, there are certain outstanding loans carrying higher interest rate @ 14% p.a., TSTransco has been making efforts from time to time by negotiating with Banks/Financial

Institutions to reduce the rate of interest according to the prevailing market conditions. Recently, M/s Rural Electrification Corporation and M/s Power Finance Corporation have consented to reduce the interest rates on term loans to 10.03% p.a. for the upcoming schemes. The Hon'ble Commission may take a view.

Commission's View:

The response of TSTransco is noted and the reduced interest rates shall be considered.

Issue 8: Additions to existing Generation and Transmission capacities

TSTransco has projected transmission contracted capacity as 14376 MW for 2017-18 and 15021MW for 2018-19. It has projected additions of generation capacity of 3974.488 MW for FY2016-17, 4583.6 MW for FY 2017-18 and 2011.1 MW for FY 2018-19. Based on these projections, Transco has proposed total capital investment of Rs.2939.26 Crs for FY 2016-17, Rs. 5694.91 Crs for FY 2017-18 and Rs. 2957.03 Crs for FY 2018-19. The anticipated addition of generation capacity of 4583.6 MW for FY 2017-18 is overambitious vis-a-vis the projected requirement of energy of 54756 mu and a surplus of 11,320 MU for both the TSDiscoms for the same year. The surplus works out to 20.67% against the projected requirement. Moreover, availability of 807.31 MW as the share of TSDiscoms (53.89%) from the four new IPPs (GVK extension, GMR Vemagiri, Konaseema and Gauthami with a total installed capacity of 1499 MW) is not considered by them in their ARR projections for the year 2017-18 on the ground that natural gas will continue to be unavailable to these projects. As and when supply of natural gas is recommended to these projects, TS Discoms will get additional 5657.62 MU as their share from these projects with a PLF of 80%. In other words, in such an eventuality, the available surplus will be 16,977 MU or 31 % of projected requirement for the year 2017-18. Keeping in view of the above facts:

- a) The proposed additions of generation capacity and transmission capacity would lead to disastrous consequences of imposing heavy and avoidable burden

on consumers of power with a considerable part of capacities created remaining stranded.

TSTransco Response:

The Transmission contracted capacities with Discoms were arrived based on the information submitted by concerned Discom and Gas based Project capacities as per TS share.

- b) Even addition of generation capacity from projects like Bhadradi and Yadadri and a part of non-conventional energy units, as projected in the submission of TS Transco, is doubtful for various reasons.

TS Transco Response:

The generation capacities of Bhadradi and Yadadri were not added in contracted capacities of Discoms. All the capacities of non-conventional energy units were added as per the information provided by Discoms. These plants include those units which are already commissioned and expected to be commissioned in the years 2017-18 and 2018-19.

- c) While TSTransco has shown addition of anticipated generation capacity of 800 MW from Kothagudem Thermal Station Stage-VII and 270 MW from Bhadradi TPS Manuguru during 2017-18, the TS Discoms have not shown availability of any power from these two projects in their ARR submissions for FY 2017-18.

TSTransco Response:

TSTransco also has not included the addition of anticipated generation capacity of 800 MW from KTPS stage-VII and 270 MW from Bhadradi TPS during FY 2017-18 as per TSDISCOMs projections.

- d) While Transco has shown addition of anticipated generation capacity of 2513 MW of non-conventional energy during 2017-18 alone (in addition to 1588.70

MW during FY 2016-17), the Discoms have projected availability of total installed capacities of NCE units during FY 2017-18 at 2984.30 MW.

TSTransco Response:

The Transmission capacity contracted by TSTransco with the TSDISCOMs will be covering 132 kV and above voltage levels whereas TSDISCOMS network capacity will include 33 kV level and 11 kV level also. Hence, there exists difference in Contracted capacities.

- e) Bhadradi Thermal Power Plant's construction has been on hold for several months following the order of the National Green Tribunal, which has pointed out serious environmental issues. The NGT directed to prosecute officials of TSGenco for undertaking the project work in an unlawful manner as the Ministry of Environment & Forests has not given environmental clearance to the project on the ground that it is using subcritical technology.

TSTransco Response:

The capacity of Bhadradi TPS has not been considered in contracted capacities of Discoms.

- f) On Yadadi Thermal Power Plant, TSGenco has been directed to conduct an EIA and the public hearing again.

TSTransco Response:

The issue relates to TSGenco.

- g) The Thermal Power Project of NTPC at Ramagundam, proposed to be taken up under AP. Re-organization Act, exclusively for Telangana, is not shown under anticipated generation capacity additions during the next two financial years by TS Transco as the project has its environmental and other problems.

TSTransco Response:

The 1600 MW (2X800MW) of NTPC new thermal station is expected to be completed during FY 2020-21. Hence its capacity has not been considered in Discoms contracted capacities for the years 2017-18 and 2018-19.

- h) Creation of addition of transmission capacity for projects concerned should be undertaken and completed in time in such a way that it can be put to use after performance acceptance tests of those projects.

TSTransco Response:

The erection of new Transmission lines and sub-stations are generally delayed due to ROW issues like land acquisition etc. But once this process was completed, the asset would be put into service as the Transmission grid operates in an integrated manner.

- i) Projected availability of surplus energy of 11,320 MU (16,977 MU as explained under main objection above) for year 2017-18 shows that the earlier load forecast presented for a period of five years ending FY 2018-19 by TS Discoms to the Commission and the way they have been proceeding with entering into PPAs and the way Commission has been giving approvals have gone awry and hence there is an imperative need for a realistic appraisal of load forecast, resources and procurement plans on a long-term basis.

TSTransco Response:

TSTransco considered the capacity as projected by TSDISCOMs.

Commission's View:

The above views of the Objectors/Stakeholders and the response of TSTransco are noted.

Issue 9: Need based long-term load forecast to ensure reasonable tariff to consumers

The Commission is requested to direct both the Discoms and TSTransco to confine their projections and plans and investments for required energy,

purchases and capacity additions and give its approval accordingly to ensure reasonable tariffs to consumers and also to restrict capital investment, revenue requirement and transmission charges proposed by TSTransco for the next two financial years keeping in view the applicable Regulations and parameters.

TSTransco Response:

This comes under the purview of the Hon'ble Regulatory Commission.

Commission's View:

The Commission conducted a prudence check and appropriate decisions are taken strictly in accordance with need and Tariff Regulations.

B. M.Thimma Reddy, Convenor, People's Monitoring Group on Electricity Regulation

Issue 10: Investment on evacuation of power from KTPS-VII (800 MW) and Bhadradri Power Plant (270 MW)

TSTransco listed KTPS VII (800MW) and Bhadradri Thermal Power Plant (270MW) under anticipated capacity addition during FY 2017-18. But these power plants do not figure in TSDISCOMs' list of power plants from which they are planning to procure power during 2017-18. Any investment on evacuation of power from these plants appears premature and will entail additional expenditure without commensurate availability of power. Similarly, while TSTransco projects capacity addition of 2,513.60 MW under Non-conventional energy sources TSDISCOMs account for 1,584 MW during FY 2017-18. As TSDISCOMs estimates are nearer to ground reality the same shall be taken into account, instead of TSTransco's estimates, to approve new and additional capital expenditure during the coming period.

TSTransco Response:

Since TSGenco has already taken up construction of the KTPS Stage-VII (1x800 MW), Bhadradri TPS (4x270 MW) by placing orders on BHEL for supply of plant and equipment and balance of plant and equipment, the TSTransco has to erect the 400 kV Transmission lines & sub-stations before the commissioning of these Generating stations. As the erection of Transmission lines is an

herculean task due to many ROW issues/Land acquisition clearance from Local authorities/ Railway authorities etc., this activity has to be started earlier to Generating stations for evacuation of Power. Thus the capacity of NCE projects as projected by DISCOMs have been considered.

Commission's View:

The Commission will examine the proposals of TSTransco keeping in view the scheduled dates of the commissioning of generating stations and take appropriate decision.

Issue 11: Execution of LI Schemes

TSTransco lists 11 Nos. lift irrigation schemes (LIS) at 400 kV level and 4 LIS at 220 kV level as coming up during 2016-17 and 2017-18. But these schemes do not figure in TSDISCOMs' estimation of power requirement by LIS during the ensuing year. Some of the LIS units may not come up at all. Power Transmission Lines meant for these LIS must be taken up based on ground situation. More than 50% of the capital investment during FY 2017-18 is planned to be spent on LIS related Transmission works. This magnitude of investment on LIS related transmission works demands critical scrutiny.

TSTransco Response:

- a. In ARR filings TSTransco lists only 7 Nos. Lift Irrigation Schemes at 400kV level, 3 Nos. LI Schemes at 220 kV level and 9 Nos. LI Schemes at 132 kV level are coming up during FY2016-17 to FY 2018-19. Out of these LI Schemes, works are completed in respect of BhaktaRamadasu LIScheme in Khammam Dist., and 11 kV XLPE cable works at Gangadhara SS in Karimnagar Dist. Most of the LI Scheme works are awarded and under progress.
- b. The pump house works of all LI Schemes are commenced by I&CAD Dept., GoTS and are under progress.
- c. The construction of 400/220kV Asupaka SS under Indira Sagar Rudramakota LIS scheme was taken up before bifurcation of the state and the works are completed.

Commission's View:

TSTransco shall take up execution of LIS scheme on need basis in consultation with I&CAD Department, GoTS.

Issue 12: Assessment of need for Sub-stations at different voltage levels to ensure power

TSTransco's ARR and tariff filing lists a large number of substations at different voltage levels as coming up in different parts of the state. The Commission has to assess whether these new substations are needed to evacuate and transmit power during the remaining part of the 3rd Control Period.

TSTransco Response:

TSTransco proposed the substations as per the load growth assessed by Discoms and anticipated Power evacuation schemes.

Commission's View:

The response of TSTransco is noted.

Issue 13: Difference in transmission capacity estimated during FY 2017-18

While TSTransco estimated the transmission capacity during FY 2017-18 at 14,376 MW, TSDISCOM's estimated the transmission capacity at 14,012 MW during this period. Difference in estimates between the two agencies need to be taken into account.

TSTransco Response:

TS DISCOMs considered the Transmission requirement capacity as per the MYT order issued by APERC in combined state. TSTransco re-assessed the same as per the latest load projections considering the power sharing allocation ratio on the approved 53.89% capacities in MYT order given by Discoms.

Commission's View:

The Commission considers prudence check for transmission capacity and shall take appropriate decision.

Issue 14: Review of expenditure on RoE, Interest and Depreciation

The capital expenditure along with related expenditures like return on equity, interest burden and depreciation claimed by TSTransco need to be reviewed to avoid unnecessary burden on electricity consumers in the state.

TSTransco Response:

It is under the purview of Hon'ble Commission.

Commission's View:

The expenses proposed are approved after due prudence check.

Issue 15: Payment of compensation to farmers in field for erection of substations, towers etc.

Erection of substations, high voltage transmission towers and drawing of high voltage transmission lines is leading to consternation among farmers from whom huge chunks of land is being acquired for these installations. Farmers are not being compensated adequately, as allowed under the existing rules and regulations. Farmers are being made to run from pillar to post to claim their legitimate compensation. The Commission is requested to see that farmers are not harassed and that they get their compensation at the earliest in accordance with rules of Central Government.

TSTransco Response:

The compensation to the land owners during the execution of Transmission lines construction are being paid as per the assessment made by the Revenue Authorities.

Commission's View:

The response of TSTransco is noted.

C. Sri P. Chandrakanth Sharma, Management Consultant & Advocate

Issue 16: Increase in Transmission Charges

Transmission capacity is going to increase from 14376 MW (2017-18) to 15021 MW (2018-19). An increase of 4.48%.

But the proposal for increase in transmission charges in the same period Rs.94.06/kW/month to Rs.120.68, an increase of 28.3% when capacity utilisation improves, the transmission charges should come down. Why such an increase?

TSTransco Response:

The financial figures for FY 2016-17 are not given as the Financial Year is not yet completed. Investment proposals in Transmission system are submitted to Hon'ble Commission duly considering the load growth but not merely considering one year period. Further, additional load growth requires additional transmission capacity provision, which in-turn requires additional investments. The ARR will also increase substantially. Hence, there will be higher Transmission charges.

Commission's View:

The response of TSTransco is noted. The proposed expenses are approved after prudence check.

Issue 17: Integrated approach for fixation of tariff

There should be an integrated approach for deciding tariffs. The three companies Genco, Transco and Discoms shouldn't put up individual versions. They should present a mutually agreed total figure. The customer pays only to the Discoms. The Discom tariff includes share of TSTransco and TSGenco.

TSTransco Response:

Power Procurement by the TSDISCOMs are mostly from TSGenco stations, central generating stations and other Private Generators. CAPEX Plans will be different for Genco/Transco/DISCOMs. However, the Commission examines all these issues while finalizing ARR/Tariff proposals.

Commission's View:

The proposals of TSGenco, TSTransco and DISCOMs are approved after due prudence check.

Issue 18: Suggestion for reduction of Tariff

In wind power also, there is decline of tariffs. In such a situation, some benefit has to be passed on to consumers also. Hence, it is proposed to consider one of

the following alternatives for tariff (2017-18 to 2018 -19) which can be accepted by consumers & peoples representatives.

- A) No change in Tariff in next 2 years (FY 2017-18 & FY 2018-19)
- B) Marginal reduction, say 5%, for lowest slab, say upto 100 kWh/month because, there is decline in energy prices.

TSTransco Response:

This is under the purview of Hon'ble Commission.

Commission's View:

Keeping in view the suggestions made, the Commission will take suitable action at the time of Tariff finalisation for wind power.

3. Operational Performance of TSTransco

3.1 Transmission Capacity

TSTransco has furnished the following available generation capacities in its petition to be evacuated to the load centres in the jurisdiction of two DISCOMs i.e., TSSPDCL and TSNPDCL.

Sl. No	Type of Generation	Total Capacity (MW)	DISCOMs Share (MW)	
			FY 2017-18	FY 2018-19
1	Genco Thermal Generations	5969.79	3063.47	3823.47
2	Genco Hydro stations	2546.47	2481.83	2481.83
3	Central Sector stations	4476.59	2412.43	2412.43
4	Joint Sector stations	57.32	24.51	24.51
5	IPPs	1666.54	898.10	783.10
6	Others	3198.00	2967.45	2967.45
7	Non conventional (NCE) with OA	2527.80	2528.80	2528.80
	Total	20442.51	14376.59	15021.59

The source-wise generation capacities, share of TS DISCOMs are indicated in Annexure –D (i). The Generation capacity to be met by TSTransco for FY 2017-18 and FY 2018-19 are 14376.59 MW and 15021.59 MW respectively. TSTransco has subsequently submitted that generation capacity of 1080 MW is being added from Bhadradi thermal generation station by FY 2018-19 and TSTransco has made transmission facility to meet this load and this capacity is required to be included.

Power system details of TSTransco

Details of EHV Lines as on 31.03.2016

Particulars	No. of Lines	Length (Ckt KM)
400kV Transmission lines	15	2173.34
220kV Transmission lines	96	5859.38
132kV Transmission lines	359	9458.03
Total	470	17490.75

Details of Sub-stations as on 31.03.2016

Particulars	No. of Sub-stations
400kV Sub-stations	6
220kV Sub-stations	63
132kV Sub-stations	188
Total	257

Transformation Capacity

Voltage ratio	Transformation Capacity (MVA)
400/220kV	5355
220/132kV	14420
220/33kV	103
220/11KV	941
220/6.6kV	239
132/66kV	40
132/33kV	18292.50
132/11kV	672
Total	40062.50

Commission's View:

The Commission considers the transmission capacities as follows:

Table 3.1: Transmission Capacities approved for FY 2017-18 and FY 2018-19

Year	Transmission Capacities (MW)	
	Projected	Approved
FY 2017-18	14376.59	14376.59
FY 2018-19	15021.59	*16047.59

*15021.59 MW as projected by the Petitioner + (Bhadradri Plant Capacity 1080MW- Auxliary Consumption of Bhadradri Plant 54 MW)= Net addition 1026 MW for the FY 2018-19.

3.2 Transmission Availability

TSTransco has projected transmission availability for the balance control period as follows:

Year	Transmission Availability
FY 2017-18	99.9%
FY 2018-19	99.9%

On direction from the Commission, TSTransco has provided the detailed calculation for actual transmission availability for 2015-16 for 400 kV, 220 kV transmission lines, 400 kV and 220 kV substations as follows:

400 kV Lines	99.98%
220 kV Lines	99.96%
400 kV Sub-stations	99.99%
220 kV Sub-stations	99.99%

Commission's View:

The Commission considers the transmission availability of PGCIL system from annual report for FY 2015-16 and the transmission availability of their system as given below:

Year	Transmission availability (%)
FY 2015-16	99.72
FY 2014-15	99.78
FY 2013-14	99.92

The Commission has also considered the transmission availability in Karnataka and Gujarat States and the same are given below for the purpose of comparison:

State	Year	Transmission availability (%)
Karnataka	FY 2014-15	99.50
Gujarat	FY 2015-16	99.42

Based on the above comparison, the projected transmission availability by Transco for FY 2017-18 and FY 2018-19 at 99.9% is found to be more than PGCIL Network and Two other states system availability.

The Commission approves the transmission system availability for FY 2017-18 and FY 2018-19 as given in the Table below:

Table 3.2: Transmission Availability approved for FY 2017-18 and FY 2018-19

Year	Transmission Availability	
	Projected	Approved
FY 2017-18	99.9%	99.9%
FY 2018-19	99.9%	99.9%

3.3 Transmission Losses

TS Transco has projected transmission losses at 3.10 % and 3.09% for FY 2017-18 and FY 2018-19 respectively in this Petition.

These projected losses are less than the losses approved by APERC for the 2nd control period for FY 2017-18 and FY 2018-19.

Approved figures in APERC order dated 19 th May, 2014	FY 2017-18	3.98%
	FY 2018-19	3.95%

TS Transco has provided the detailed calculation for arriving at the Transmission losses for FY 2014-15 and FY 2015-16 indicating month-wise energy received from various sources into the system, energy draws at the periphery of DISCOMs. The calculation indicated the losses as follows:

Year	Transmission Losses (%)
FY 2014-15	3.18
FY 2015-16	3.13

Commission’s View:

As per the data furnished by Transco for FY 2014-15 and FY 2015-16, the total input into Transco System and output to DISCOMs is as follows:

Year	Input Energy (MU)	Output Energy (MU)	Loss (MU)	Loss (%)
FY 2014-15	39232.68	37986.95	1245.73	3.18
FY 2015-16	48544.40	47025.28	1519.12	3.13

Considering the data furnished by the Licensee as above, the Commission approves the transmission losses for FY 2017-18 and FY 2018-19 as given in the Table below:

Table 3.3: Transmission Losses approved for FY 2017-18 and FY 2018-19

Year	Transmission Losses	
	Projected	Approved
FY 2017-18	3.10%	3.10%
FY 2018-19	3.09%	3.09%

4. Investments for balance Control Period

4.1 Investment Plan

TSTransco filed its investment plan for the balance period of 3rd Control Period (i.e FY 2017-18 and FY 2018-19) based on the resource plan incorporated as mentioned hereunder:

Table 4.1: Capital Investment plan during the balance period of 3rd Control Period

(Rs. Crs)			
Particulars	FY 2016-17	FY 2017-18	FY 2018-19
CWIP Opening Balance	2232.99	2000.82	4555.06
Capital Investment During the year			
400kv Schemes	1232.22	1340.19	1622.31
220kv Schemes	1017.71	1135.98	463.81
Renovation & Modernization Improvement Scheme	50.11	50.11	50.11
Lift Irrigation Schemes	222.34	2758.63	504.00
Total Base Capital Investment	2522.38	5284.91	2640.23
Add: Interest During Construction	328.74	278.30	222.57
Add: Expenses Capitalised	88.14	131.69	94.23
Total Capital Investment during the year	2939.26	5694.91	2957.03
Less: Assets Capitalised during the year	3171.44	3140.66	5381.44
CWIP Closing Balance	2000.82	4555.06	2130.65

Source Table 17 of Petition

The list of the works against capital expenditure for 400 kV, and 220 kV or 132 kV lines, for R&M and improvement of existing Transmission system and for augmentation of PTR works as furnished by the licensee is given below:

A. Plans for capital expenditure for 400 kV

- i. Bhadradri Thermal power Transmission scheme (ongoing)
- ii. KTPS VII stage (1x800 MW) power Transmission scheme (ongoing)
- iii. Erection of 400 kV sub-station at Dindi in Mahaboobnagar District and Connected line for 9 Hrs agricultural supply during day.
- iv. 765 kV Wardha – Hyderabad Link Transmission scheme.
- v. 400 kV augmentation scheme
- vi. Nirmal Power Transmission scheme.
- vii. Wind Power Evacuation scheme (ongoing)
- viii. Jaipur Power Transmission scheme (To evacuate power from 2x600MW power SCCL plant) (ongoing scheme)

- ix. Erection of 400/200/132 kV Suryapet substation, in Nalgonda District and connected net work under transmission improvement on standalone basis (ongoing)
- x. Reactor scheme –III (ongoing scheme)
- xi. Telangana STPP –I (2x800 MW) power evacuation scheme (new scheme)
- xii. Yadadri power evacuation scheme.

B. Plans for capital Expenditure for 220 kV and 132 kV schemes.

- i. Schemes under PFC funding
- ii. Schemes under REC funding
- iii. Schemes under JICA funding
- iv. Schemes funded by other financial institutions

C. Plans for capital Expenditure for Renovation and Modernization Improvement of Existing Transmission system, which have served more than 25 years service.

- i. Replacement of old and obsolete substation equipment
- ii. Replacement of 220 kV 132 kV Towers, 220 kV and 132 kV line conductors earth wire and total replacement of 132 kV line.

D. Augmentation of Power Transformers

- i. 7 Nos. at 220 kV level 29 Nos. at 132 kV level during FY 2017-18
- ii. 1 No. at 220 kV level and 15 Nos. at 132 kV level during FY 2018-19

The details of all the above works are given in **Annexure-G**.

4.2 Additional Substations and Lines

TSTransco has projected their requirement of year wise additions of substation and lines as given in the Table below:

Table 4.2: Year wise substations and lines projected for the balance of control period

Sl. No	Year	No. of substation proposed			Length of Lines proposed CKM		
		400 kV	220 kV	132 kV	400 kV	220 kV	132 kV
1	2017-18	10	13	15	689	734	321.80
2	2018-19	8	6	6	2440	299	154.10

4.3 Commission’s View

The Details of the Commission’s analysis on the above proposals are given in the Para 6.3 of this Order.

5. Mid-term review for FY 2014-15 and FY 2015-16

5.1 Introduction

Paras 10.5 to 10.8 of Regulation 5 of 2005, specify that gains and losses for uncontrollable and controllable items in a Control Period, shall be claimed in the subsequent Control Period, depending on the availability of data.

In the present petition, Licensee has submitted the true up analysis of performance for FY 2014-15 (02-06-2014 to 31-3-2015) and FY 2015-16., the first two years of the 3rd (present) Control Period, based on the provisional accounts. This analysis is discussed here under.

5.2 Provisional True up Analysis of Performance for FY 2014-15 & FY 2015-16

5.2.1 Basis on which the analysis is submitted

Petitioner's submission

Since formation, TSTransco has been providing Transmission System in the State of Telangana and collecting Transmission Charges from the Customers as per the Tariff Order issued by Hon'ble APERC for 3rd Multi Year Tariff Control Period (FY 2014-15 to FY 2018-19).

In the absence of separate approved ARR for TSTransco, the expenditure approved for composite APTransco as per the Tariff Order for 3rd MYT Control period (FY 2014-15 to FY 2018-19) by the APERC has been segregated based on power allocation ratio @53.89% to TS DISCOMs (notified by GoAP vide G.O.Ms.No.20, Dt. 08.05.2014) and considered to compare with Actuals for FY 2014-15 and FY 2015-16.

Further, pending segregation of assets and liabilities of composite APTransco between two entities, TSTransco has compiled its provisional accounts for FY 2014-15 (02.06.2014 to 31.03.2015) and for FY 2015-16 based on the provisional opening balance of assets and liabilities as per the draft demerger plan communicated by APTransco. The same are subject to Statutory / A.G. Audit.

This provisional True up filing is made by the Transmission Licensee, TRANSMISSION CORPORATION OF TELANGANA LIMITED (TSTransco) as per Clause 17 of the Andhra Pradesh Electricity Regulatory Commission (Terms and Conditions for determination of tariff for Transmission of Electricity) Regulation No. 5 of 2005 for corrections of Controllable and Uncontrollable items and as well as sharing of gains/losses for the FY 2014-15 (02.06.2014 to 31.03.2015) and FY 2015-16:

- Statement of variance with the Tariff Order for each item in the Aggregate Revenue Requirement and reasons for variation.
- Actual Aggregate Revenue Requirement (ARR) for each year computed based on actual investments, actual interest and other costs.
- The Surplus/Deficit for each year arrived based on actual revenue for the respective years.

Commission's Analysis

The Commission considers the analysis of the petition for the various items as Mid-Term Review of the MYT order for 3rd Control Period for the years FY 2014-15 and FY 2015-16 as given below:

5.2.2 Operation and Maintenance (O&M) Expenses:

Petitioner's submission

The O&M Expenses of the licensee are driven by the length of lines in Circuit Kilometres and No. of Sub-Station Bays. The total O&M Expenditure was allocated to Lines and Sub-Stations in the ratio of 30:70.

Table 5.1: Variance in O&M Expenses

Particulars	FY 2014-15 (02.06.2014 to 31.03.2015)			FY 2015-16			Total		
	Tariff Order	Actuals (Provl.)	Devi-ation	Tariff order	Actuals (Provl.)	Devi-ation	Tariff Order	Actuals (Provl.)	Devi-ation
Gross O&M Costs	294.71	293.06	(1.65)	385.30	386.71	1.41	680.01	679.77	(0.24)
Less: O&M Expenses Capitalised	68.75	66.02	(2.73)	90.82	74.14	(16.68)	159.57	140.16	(19.41)
Net O&M Expenses	225.96	227.04	1.08	294.48	312.57	18.09	520.44	539.61	19.17

(Rs. Crs)

- Net O&M Expenses during FY 2014-15 (02.06.2014 to 31.03.2015) and FY 2015-16 have been increased by Rs. 19.17 Crs.
- Main reason for increase is due to wage revision with effect from 01.04.2014.
- Pending final allocation of employees between APTransco and TSTransco, actuarial valuation towards employee terminal benefits could not be taken up. However, Pension & Gratuity Contribution has been factored provisionally. The actuals does not include provision towards Leave Encashment.

Commission’s Analysis:

Pending finalization of audited accounts, and based on provisional accounts the Commission considers the O&M expenses for FY 2014-15 and FY 2015-16 for the purpose of Analysis. The O&M expense are controllable element, Licensee shall file Audited Accounts for appropriate treatment in the True-up exercise.

5.2.3 Depreciation

Petitioner’s Submission

Depreciation is a claim towards recovery of cost of fixed assets. Depreciation has been calculated for every year on all the fixed assets capitalized upto the previous year considering the rates notified by the Ministry of Power, Govt of India.

Table 5.2: Variance in depreciation

(Rs. Crs)

Particulars	FY 2014-15 (02.06.2014 to 31.03.2015)			FY 2015-16			Total		
	Tariff Order	Actuals	Devi-ation	Tariff order	Actuals	Devi-ation	Tariff Order	Actuals	Devi-ation
Depreciation	251.59	211.22	(40.37)	370.00	272.76	(97.24)	621.59	483.98	(137.61)

There is a decrease of Rs. 137.61 Crs towards Depreciation. This is mainly due to lesser capitalization of fixed assets than approved in the Tariff Order concern.

Commission’s Analysis:

Pending finalization of audited accounts, and based on provisional accounts, the commission considers the depreciation cost for FY 2014-15 of FY 2015-16 as submitted by the Licensee for the purpose of Analysis. The provisional accounts are

prepared for 10 months in FY 2014-15, proportionate depreciation shall be apportioned for True up.

5.2.4 Taxes on Income

Petitioner's Submission

Table 5.3: Taxes on Income

(Rs. Crs)

Particulars	FY 2014-15 (02.06.2014 to 31.03.2015)			FY 2015-16			Total		
	Tariff Order	Actuals	Devi-ation	Tariff order	Actuals	Devi-ation	Tariff Order	Actuals	Devi-ation
Income Tax	23.71	39.56	15.85	38.63	58.49	19.86	62.35	98.05	35.70

Taxes on income is calculated at current rate of corporate tax on the return on equity @ 14% on 25% of actual Regulated Rate Base.

Commission's Analysis

Pending finalization of audited accounts, and based on provisional accounts, the Commission considers the taxes on income for FY 2014-15 and FY 2015-16 as submitted by the Licensee for the purpose of analysis.

5.2.5 Return on Capital Employed (RoCE)

Petitioner's Submission

Return on Capital Employed (RoCE) is to cover the interest charges on the debt portion towards fixed assets and Return on Equity investment of Licensee.

The licensee has computed the actual Return on Capital Employed (RoCE) for FY 2014-15 (02.06.2014 to 31.03.2015) and FY 2015-16 as per the methodology prescribed by the Hon'ble Commission vide Regulation 5 of 2005. The actual additions to the fixed assets are Rs. 611 Crs during FY 2014-15 (02.06.2014 to 31.03.2015) and Rs. 1860 Crs during FY 2015-16. The depreciation during FY 2014-15 (02.06.2014 to 31.03.2015) and FY 2015-16 has been calculated for each year separately considering the rates notified by the Ministry of power, Government of India. Return on Capital Employed (RoCE) has been calculated by adding the actual interest expenditure (Net of IDC) and Return of Equity (RoE) at @14% on 25% of Regulated Rate Base.

Table 5.4: Return on capital Employed (RoCE)

Particulars	FY 2014-15 (02.06.2014 to 31.03.2015)			FY 2015-16			(Rs. Crs) Total		
	Tariff Order	Actuals	Deviation	Tariff order	Actuals	Deviation	Tariff Order	Actuals	Deviation
Assets	7331.24	5366.46	-1964.78	9680.51	7225.99	-2454.52	17011.75	12592.45	-4419.30
Original Cost of Fixed Assets (OCFA)	6164.23	4755.06	-1409.17	7331.24	5366.46	-1964.78	13495.47	10121.52	-3373.95
Additions to OCFA	1167.00	611.40	-555.60	2349.28	1859.53	-489.75	3516.28	2470.93	1045.35
Depreciation	2703.59	2334.23	-369.36	3073.59	2606.99	-466.60	5777.19	4941.22	-835.97
Opening Balance	2401.69	2123.01	-278.68	2703.59	2334.23	-369.36	5105.28	4457.24	-648.04
Depreciation during the year	301.90	211.22	-90.68	370.00	272.76	-97.24	671.91	483.98	-187.93
Consumer Contributions	1111.50	690.38	-421.12	1320.45	739.09	-581.36	2431.95	1429.47	-1002.48
Opening Balance	813.39	671.19	-142.20	1111.50	690.38	-421.12	1924.90	1361.57	-563.33
Additions during the year	298.11	19.19	-278.92	208.95	48.71	-160.24	507.06	67.90	-439.16
Working Capital	43.60	43.52	-0.08	47.50	47.68	0.17	91.11	91.20	0.09
Change in Rate Base	283.50	190.50	-93.00	885.16	769.03	-116.13	1168.66	959.53	-209.13
Regulated Rate Base	3276.25	2194.88	-1081.37	4448.81	3158.56	-1290.25	7725.06	5353.44	-2371.63
Return on Capital Employed (RoCE)	341.28	206.65	-134.63	556.10	320.48	-235.62	897.38	527.13	-370.25

- The actual addition to the Gross Fixed Assets is lower by Rs. 1045 Crs. This is mainly due to delay in completion of projects.
- Return on Capital Employed (RoCE) as per the Tariff Order was considered proportionately for the period from 02.06.2014 to 31.03.2015. In respect of actual, ROCE has been calculated by adding interest on term loans at actuals plus 14% Return on Equity on 25% of Regulated Base.

Commission's Analysis:

Pending finalization of audited accounts, and based on provisional accounts, the Commission considers the RoCE for FY 2014-15 and FY 2015-16 as submitted by the petitioner for the purpose of analysis. The accounts for FY 2014-15 are prepared for 10 months period; the RoCE shall be apportioned for True up exercise limited to 10 months.

5.2.6 Revenue

Petitioner's Submission

The following is the position of Revenue during FY 2014-15 (02.06.2014 to 31.03.2015) and FY 2015-16:

Table 5.5: Revenue during FY 2014-15(02.06.2014 to 31.03.2015) and FY 2015-16
(Rs. Crs)

Particulars	FY 2014-15 (02.06.2014 to 31.03.2015)			FY 2015-16			Total		
	Tariff Order	Actuals	Deviation	Tariff order	Actuals	Deviation	Tariff Order	Actuals	Deviation
Revenue from Transmission charges	756.91	812.08	55.17	1186.32	1356.28	169.96	1943.23	2168.36	225.13
Other Income	57.90	31.55	-26.35	72.90	55.74	-17.16	130.80	87.29	-43.51
Total	814.81	843.63	28.82	1259.22	1412.02	152.80	2074.03	2255.65	181.62

- The Actual Revenue from Transmission Charges during FY 2014-15 (02.06.2014 TO 31.03.2015) and FY 2015-16 are at Rs. 2168 Crs as against Rs. 1943 Crs approved by the Commission. Additional income of Rs. 225 Crs mainly due to increase of revenue from Open Access consumers.

Commission's Analysis

Pending finalization of audited accounts, and based on provisional accounts, the Commission considers the Revenue realized for FY 2014-15 and FY 2015-16 as submitted by the Licensee for the purpose of analysis. The additional Revenue shall be accounted as Non Tariff Income for True up.

5.2.7 Aggregate Revenue Requirement (ARR) and Surplus/ (Deficit)

Petitioner's Submission

The Total Aggregate Revenue Requirement (ARR) approved by the Commission for FY 2014-15 (02.06.2014 to 31.03.2015) and FY 2015-16 is at Rs. 2074 Crs, as against which actual ARR amounted at Rs. 1651 Crs, thereby there is a reduction of Rs. 423 Crs in ARR. Further, there is additional revenue to tune of Rs.182 Crs due to increase in revenue realisation revenue over the Tariff Order approved amount resulting in a total surplus of Rs. 604.43 Crs and the same shall be considered as true down from the ARR of FY 2017-18 and FY 2018-19.

Table 5.6: ARR Deviation – (Tariff Order vis-à-vis Actual)

Particulars	FY 2014-15 (02.06.2014 to 31.03.2015)			FY 2015-16			(Rs. Crs) Total		
	Tariff Order	Actuals	Deviation	Tariff order	Actuals	Deviation	Tariff Order	Actuals	Deviation
Expenditure	542.29	544.84	2.55	739.94	719.41	-74.53	1336.23	1264.25	-71.98
O&M Costs	294.71	293.06	-1.65	385.30	386.71	1.41	680.01	679.77	-0.24
O&M Carrying Costs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Depreciation	251.59	211.22	-40.37	370.00	272.76	-97.24	621.59	483.98	-137.61
Taxes	23.71	39.56	15.85	38.63	58.49	19.86	62.35	98.05	35.70
Special appropriation	-27.72	0.00	27.72	0.00	0.00	0.00	-27.72	0.00	27.72
Other Expenses	0.00	1.00	1.00	0.00	1.45	1.45	0.00	2.45	2.45
Less: O&M Exp. Capitalized	68.75	66.02	-2.73	90.82	74.14	-16.68	159.58	140.16	-19.42
Net Expenditure	473.53	478.82	5.29	703.12	645.27	-57.85	1176.65	1124.09	-52.56
Add: Return on capital Employed (RoCE)	341.28	206.65	-134.63	556.10	320.48	-235.62	897.38	527.13	-370.25
Gross ARR	814.81	685.47	-129.34	1259.22	965.75	-293.47	2074.03	1651.22	-422.81
Non-Tariff Income	57.90	31.55	-26.35	72.90	55.74	-17.16	130.80	87.29	-43.51
Revenue from Tariff	756.91	812.08	55.17	1186.32	1356.28	169.96	1943.23	2168.36	225.13
Total Revenue	814.81	843.63	28.82	1259.22	1412.02	152.80	2074.03	2255.65	181.62
Surplus/(Deficit)	0.00	158.16	158.16	0.00	446.27	446.27	0.00	604.43	604.43

The above analysis shows a surplus of Rs. 604.43 Crs for FY 2014-15 and FY 2015-16 together, which was proposed to be adjusted while determining the ARR for FY 2017-18 and FY 2018-19.

Commission’s Analysis:

The Licensee has arrived at a surplus of Rs. 604.43 Crs on the True-up analysis for FY 2014-15 and FY 2015-16 and requested to be adjusted in the projected ARR for the balance control period (i.e) FY 2017-18 and FY 2018-19 equally.

Paras 10.5 to 10.8 of Regulation 5 of 2005 specify that gains and losses for uncontrollable and controllable items in a control period shall be claimed in the subsequent control period, depending on availability of data.

A final True-up for the period shall be done after the segregation of assets and liabilities of composite AP Transco between two entities and after the audited accounts are made available. Meanwhile, it is considered appropriate to adjust the surplus of Rs. 634.60 Crs after due verification of figures vis-a vis tariff order and

actuals submitted in the ARR filings over the balance control period i.e., FY 2017-18 and FY 2018-19 equally, in order to avoid carrying cost, if any, claimed by the beneficiaries/Stakeholders. Any variations will be considered later after finalization of segregation of assets and liabilities and audited accounts are made available.

The relevant calculation made by the Commission is tabulated below:

Provisional True-Up calculation for the mid-term period FY 2014-15 & FY 2015-16							
S.No	Details	(2/06/2014 to 31/3/2015) @ 53.89%			FY 2015-16 @53.89%		
		T.O	Actuals/ Claimed	Reguln/ Apprvd	T.O	Actuals/ Claimed	Reguln/ Apprvd
1	Expenditure (2 to 8)	542.29	544.84	516.12	793.9398	719.41	717.96
2	Operation & Maintenance Costs	294.71	293.06	293.06	385.30	386.71	386.71
3	O&M Carrying Costs	0	0	0		0	0
4	Depreciation	251.59	211.22	211.22	370.00	272.76	272.76
5	Advance Against Depreciation	0	0	0		0	0
6	Income Tax	23.71	39.56	39.56	38.63	58.49	58.49
7	Special Apprtn. (True-up of 1st CP)	-27.72	0	-27.72		0	0
8	Other expenses	0	1	0		1.45	0
9	Expenses Capitalized (12 & 13)	68.75	66.02	66.02	90.82	74.14	74.14
10	IDC Capitalized	0	0	0		0	0
11	O&M Expenses Capitalized	68.75	66.02	66.02	90.82	74.14	74.14
12	Net Expenditure (1 - 11)	473.54	478.82	450.10	703.119	645.27	643.82
13	Return on Capital Employed	341.28	206.65	206.65	556.10	320.48	320.48
14	Non Tariff Income	57.90	31.55	31.55	72.90	55.74	55.74
15	Net Revenue Requirement (14+15-16)	756.92	653.92	625.20	1186.318	910.01	908.56
16	Tariff & Revenue realised	756.91	812.08	812.08	1186.32	1356.3	1356.3
17	surplus/Deficit	-0.01	158.16	186.88	0.00	446.27	447.72

Amount of True-up recoverable for two years	As per Filings	As per Commission
For FY 2014-15	158.16	186.88
For FY 2015-16	446.27	447.72
Amount of Recoverable True-up value	604.43	634.60

5.2.8 The Honourable APERC, in its Tariff order for 3rd Control Period (FY 2014-15 to FY 2018-19) had determined the Transmission charges at a sum of Rs.91.36/kW/Month for FY 2016-17 and this Commission adopts the same as final segregation of Assets and Liabilities is pending. The license shall submit the revenue realised and actual costs incurred during FY 2016-17 in the next MYT (Multi Year Tariff) filing to this Commission. Any surplus/deficit arising from the operation shall be adjusted in the next MYT Order.

6. Aggregate Revenue Requirement (ARR) and Transmission Tariff for FY 2017-18 & FY 2018-19

The Licensee has filed Petition for approval of Aggregate Revenue Requirement (ARR) and Determination of Transmission Charges for FY 2017-18 and FY 2018-19. The following are the ARR elements filed for approval of the Commission.

Table 6.1: Projected ARR for FY 2017-18 and FY 2018-19

Particulars	FY 2017-18	FY 2018-19
Operation and Maintenance Charges	605.62	661.90
Depreciation	568.52	740.82
Advance Against Depreciation	0.00	0.00
Taxes on Income	120.34	157.33
Other Expenditure	0.00	0.00
Special Appropriations	(302.21)	(302.22)
Total Expenditure	992.27	1257.83
Less: O&M expenses capitalized	131.69	94.23
Net Expenditure	860.59	1163.61
Add: Return on Capital Employed	812.07	1061.70
Less: Non- Tariff Income (if any)	50.00	50.00
Total Revenue Requirement transferred to Retail supply business	1622.65	2175.31

The Commission during the validation session held on 25.02.2017 directed the Licensee to file best estimates and realistic projections for the balance 3rd Control Period i.e., FY 2017-18 and FY 2018-19 in view of the fact that the actual performance for the initial three years period FY 2014-15 to FY 2016-17 has been reported to be shortfall of approved ARR.

The Licensee in response to the Commission's directions has filed revised Capital investment plan and Capitalisation of assets data on 20.03.2017.

6.1 Operation and Maintenance (O&M) Expenses

Petitioner's Submission:

The O&M Expenses of the licensee are driven by the length of lines in Circuit Kilometres and No. of Sub-Station Bays. The total O&M Expenditure was allocated to Lines and Sub-Stations in the ratio of 30:70. As per the latest provisional (un audited) accounts for FY 2015-16, the Net O&M expenses are Rs.312.57 Crs. Out of Rs. 312.57 Crs, an amount of Rs.93.77 Crs was allocated to Lines and an amount of

Rs.218.80 Crs was allocated to Sub- stations. Based on the line length in Ckt KM and number sub-stations bays, O&M Cost per Ckt KM and bay was computed for FY 2015-16. For estimating the O&M Expenses for FY 2017-18 and FY 2018-19 the escalation @4.20% was adopted based on the Multi Year Tariff Order issued by the APERC for 3rd Control Period.

Table 6.2: O&M Expenses projected for FY 2017-18 and FY 2018-19

Particulars	FY 2015 16 (Provl./ Unaudited)	FY 2016-17 (Base Year)	FY 2017-18	FY 2018-19
O&M Cost (Net)	312.57			
O&M Cost (%) for Lines	30%			
O&M Cost (%) for Sub-Stations	70%			
Base Year O&M Costs for Lines (Rs. Crs)	93.77			
Base Year O&M Costs for Sub-stations (Rs. Crs)	218.80			
Lines (Ckt KM)	17899			
No. of Substation Bays (Nos.)	1478			
Base Year O&M Cost for Lines (Rs./KM)	52389			
Base Year O&M Cost for Stations (Rs./Bay)	1480372			
O&M Inflation Factor for MYT Control (Index)Period		4.20%	4.20%	4.20%
O&M Cost for Lines (Rs./KM) [(Base Year * (1+Index))]		54589	56882	59271
O&M Cost for Sub-stations (Rs./Bay) [(Base Year * (1+Index))]		1542548	1607335	1674843
<i>Lines (Ckt KM) for the year</i>		20649	23243	27111
<i>No. of Substation Bays (Nos.) for the year</i>		1830	2126	2430
O&M Cost (Net) (Rs. Crs)		395.01	473.93	567.68

Based on the above, the following are details of O&M Expenses projected for FY 2017-18 and FY 2018-19:

Particulars	(Rs. Crs)	
	FY 2017-18	FY 2018-19
Gross O&M Costs	605.62	661.90
Less: O&M Expenses Capitalised	131.69	94.23
Net O&M Expenses	473.93	567.68

Further, the Licensee submitted that wage revision to the employees is due w.e.f. 01.04.2018. However, the impact of wage revision is not factored in the above projections. The same will be claimed separately based on the actuals.

Commission’s Analysis:

The Commission observed that the capitalisation of O&M expenses for the FY 2017-18 at Rs. 131.69 Crs appears to be not logical when compared with the capitalisation for FY 2018-19 at Rs. 94.23 Crs. However the Net O&M Cost Projection is made within the norms approved in the MYT Order (by APERC).

The Licensee has considered Actual O&M Costs for FY 2015-16 as base year cost. The net O&M cost for FY 2015-16 reported to be Rs. 312.57 Crs. The O&M inflation factor for the balance MYT control period is proposed at 4.20% which is the same as that considered in the MYT Tariff order. The length of lines (Circuit Kilometres) considered by the Licensee for FY 2017-18 and FY 2018-19 are 23243 KMs and 27111 KMs respectively. But as per the additional information furnished by the Petitioner, the Ckt KM of lines added during FY 2017-18 are 2676.62 KMs and during FY 2018-19 at 3823 KMs. Based on this additional data the length of lines for FY 2017-18 and FY 2018-19 are considered as 23326 KMs and 27149 KMs respectively, as depicted in the **Table 6.3**.

Similarly, the Commission considers the number of bays for FY 2017-18 and FY 2018-19 as 2186 and 2426 respectively against 2126 and 2430 projected by the Licensee, based on the additional information furnished by the Licensee.

Thus, the O&M costs (net) for FY 2017-18 and FY 2018-19 worked out as follows, for determination of ARR.

Table 6.3: O&M Expenses computed for FY 2017-18 & FY 2018-19

Year		Circuit KM	Rate for Circuit KM (Rs.)	O&M costs for line (Rs. Crs)	No. of Bays	Rate for Bay (Rs.)	O&M cost for SS bays (Rs. Crs)	Total O&M Costs (Rs. Crs)
FY 2017-18	Projected	23243	56882	132.21	2126	1607335	341.72	473.93
	Approved	23326	56882	132.68	2186	1607335	351.36	484.05
FY 2018-19	Projected	27111	59271	160.69	2430	1674843	406.99	567.68
	Approved	27149	59271	160.91	2426	1674843	406.32	567.23

The Licensee projected 21.74% for FY 2017-18 and 14.24% for FY 2018-19 towards capitalization of O&M expenses. The Commission considers the same uniform rate of 14.24% for FY 2017-18 and FY 2018-19 towards capitalization of O&M Expenses, and accordingly, Gross O&M expenses are adjusted for FY 2017-18 maintaining the norm for O&M expenses.

The Commission considers the O&M costs for FY 2017-18 and FY 2018-19 as given in the Table-6.4 given below:

Table 6.4: O&M Expenses approved for FY 2017-18 and FY 2018-19

(Rs. Crs)

Particulars	Projected		Approved	
	FY 2017-18	FY 2018-19	FY 2017-18	FY 2018-19
Gross O&M costs	605.62	661.90	564.45	661.46
Less: O&M Expenses capitalized	131.69	94.23	80.40	94.23
Net O&M Expenses	473.93	567.68	484.05	567.23

6.2 Working Capital Expenses

Petitioner's Submission:

The working capital expenses for FY 2017-18 and FY 2018-19 is claimed at Rs. 74.67 Crs and Rs. 81.60 Crs by the licensee.

Commission's Analysis:

As per clause-13 of Regulation 5 of 2005, Working Capital expenses shall be considered equivalent to 45 days of O&M expenses requirement as needed for the year. As per the Regulation, the Commission computed 45 days of O&M expenses requirement. Accordingly, the Commission approves the working capital expenses, as given in the Table 6.5 given below:

Table 6.5: Working Capital Expenses approved for FY 2017-18 and FY 2018-19

(Rs. Crs)

Particulars	Projected		Approved	
	FY 2017-18	FY 2018-19	FY 2017-18	FY 2018-19
O&M Expenses	473.93	567.68	484.04	567.23
Working capital expenses	74.67	81.60	59.68	69.93

6.3 Capital Investment

Petitioner's Submission:

The Capital investment and capitalization proposed by the petitioner during FY 2017-18 and FY 2018-19 are furnished in Table below:

Table 6.6: Projected Capital Investment and Capitalization for FY 2017-18 and FY 2018-19

Particulars	(Rs. Crs)	
	FY 2017-18	FY 2018-19
CWIP Opening Balance	2000.82	4555.06
Capital Investment During the Year		
400kV Schemes	1340.19	1622.31
220kV Schemes	1135.98	463.81
Renovation & Modernization Improvement Schemes	50.11	50.11
Lift Irrigation Schemes	2758.63	504.00
Total Base Capital Investment	5284.91	2640.23
Add: Interest During Construction	278.30	222.57
Add: Expenses Capitalized	131.69	94.23
Total Capital Investment during the year	5694.91	2957.03
Less: Assets Capitalized during the year	3140.66	5381.44
CWIP Closing Balance	4555.06	2130.65

Commission's Analysis:

During Public hearing held on 9th February, 2017 it is stated that the transmission works relating to proposed Yadadri Plant and NTPC plant are not taken up and requested to delete from the proposed capital investment. Accordingly the capital investment and IDC pertaining to the above works proposed during FY 2017-18 and FY 2018-19 are not considered as detailed in Table 6.7 below:

Table 6.7: Capital Investment not considered by the Commission for FY 2017-18 and FY 2018-19

Sl. No	Name of the Project	(Rs. Crs)			
		FY 2017-18		FY 2018-19	
		Investment	IDC	Investment	IDC
1	Yadadri Power Evacuation	194.08	11.64	582.24	58.22
2	TSTPP	143.38	8.60	430.12	43.01
3	Total	337.46	20.24	1012.36	101.23

After deducting the above amounts the position of capital investment and capitalization are as detailed in Table 6.8 below:

**Table 6.8: Capital investment and capitalization approved for FY 2017-18 and FY 2018-19
(Rs. Crs)**

Sl. No.	Particulars	Projected		Approved	
		FY 2017-18	FY 2018-19	FY 2017-18	FY 2018-19
A	CWIP Opening Balance	2000.82	4555.06	2000.82	4246.18
B	Capital Investment During the Year	5284.91	2640.23	4947.45	1627.87
	400kV Schemes	1340.19	1622.31	1002.73	609.95
	220kV Schemes	1135.98	463.81	1135.98	463.81
	Renovation & Modernization Improvement Schemes	50.11	50.11	50.11	50.11
	Lift Irrigation Schemes	2758.63	504.00	2758.63	504.00
C	Total Base Capital Investment	409.99	316.8	338.46	215.58
	Add: Interest During Construction	278.3	222.57	258.06	121.35
	Add: Expenses Capitalized	131.69	94.23	80.40	94.23
D	Total Capital Investment during the year (A+B+C)	7695.72	7512.09	7286.73	6089.63
E	Less: Assets Capitalized during the year	3140.66	5381.44	3040.55	2017.73
F	CWIP Closing Balance (D-E)	4555.06	2130.65	4246.18	4071.90

As per the revised data furnished on 20.03.2017 and as discussed supra, the Commission approves the capital investment and capitalization as detailed in the above Table-6.8.

6.4 Gross Fixed Assets

Petitioner's Submission:

The petitioner has furnished the opening balance of gross fixed assets and additions during FY 2016-17, FY 2017-18 and FY 2018-19 as detailed in Table 6.9 to 6.11 below:

Table 6.9: Projected Gross Fixed Assets for FY 2016-17**(Rs. Crs)**

Sl. No.	Asset Particulars	Opening Balance on 31.3.2016	Additions Net of retirements FY 2016-17	Closing Balance as on 31.3.2017
1	Land and Rights	19.13	9.51	28.64
2	Buildings	105.60	53.91	159.51
3	Other Civil Works	8.85	3.17	12.02
4	Plant & Machinery	3316.49	1522.29	4838.78
5	Lines & Cable network	3748.88	1569.86	5318.74
6	Vehicles	1.11	0.63	1.74
7	Furniture & Fixtures	1.38	0.63	2.01
8	Office Equipment	24.55	11.42	35.97
	Total	7225.99	3171.42	10397.41

Table 6.10: Projected Gross Fixed Assets for FY 2017-18**(Rs. Crs)**

Sl. No.	Asset Particulars	Opening Assets as on 31.3.2017	Additions During FY 2017-18	Closing Assets 31.3.2018
1	Land and land Rights	28.64	9.42	38.06
2	Buildings	159.51	53.39	212.90
3	Other civil works	12.02	3.14	15.16
4	Plant & Machinery	4838.78	1507.52	6346.30
5	Lines & Cable Network	5318.74	1554.63	6873.37
6	Vehicles	1.74	0.63	2.37
7	Furniture & fixtures	2.01	0.63	2.64
8	Office equipment	35.97	11.30	47.27
	Total	10397.41	3140.66	13538.07

Table 6.11: Projected Gross Fixed Assets for FY 2018-19**(Rs. Crs)**

Sl. No.	Asset Particulars	Opening Balance as on 31-3-2018	Additions During FY 2018-19	Closing Balance as on 31-3-2019
1	Land and land Rights	38.06	16.14	54.20
2	Buildings	212.90	91.48	304.38
3	Other Civil works	15.16	5.38	20.54
4	Plant & Machinery	6346.30	2583.09	8929.39
5	Lines and Cable network	6873.37	2663.81	9537.18
6	Vehicles	2.37	1.08	3.45
7	Furniture & fixtures	2.64	1.08	3.72
8	Office equipment	47.27	19.37	66.64
	Total	13538.07	5381.43	18919.50

Commission's analysis

As per the revised data furnished on 20.03.2017, the opening balance of FY 2016-17 is adopted as projected at Rs. 7225.99 Crs. The Licensee has been directed to furnish an audit certificate for the provisional accounts. Pending submission of final audit report and further scrutiny, the Commission provisionally approves the opening balance of assets for Financial Year 2015-16 and the same is given in the Table 6.12 below:

Table 6.12: Approved Gross Fixed Assets for FY 2016-17 to FY 2018-19

(Rs. Crs)								
Sl. No.	Asset Particulars	Opening Balance on 31.3.2016	Additions Net of retirements FY 2016-17	Closing Balance as on 31.3.2017	Additions During FY 2017-18	Closing Assets 31.3.2018	Additions During FY 2018-19	Closing Balance as on 31-3-2019
1	Land and Land Rights	19.13	8.98	28.11	9.12	37.23	6.05	43.28
2	Buildings	105.60	50.87	156.47	51.69	208.16	34.30	242.46
3	Other Civil Works	8.85	2.99	11.84	3.04	14.88	2.02	16.90
4	Plant & Machinery	3316.49	1436.28	4752.77	1459.46	6212.23	968.51	7180.74
5	Lines & Cable network	3748.88	1481.17	5230.05	1505.07	6735.12	998.77	7733.89
6	Vehicles	1.11	0.60	1.71	0.61	2.32	0.40	2.72
7	Furniture & Fixtures	1.38	0.60	1.98	0.61	2.59	0.40	2.99
8	Office Equipment	24.55	10.77	35.32	10.95	46.27	7.26	53.53
	Total	7225.99	2992.25	10218.24	3040.55	13258.79	2017.73	15276.52

TSTRANSCO has submitted the Resource Plan for FY 2016-17 to FY2023-24 on 22nd October 2016 before the Commission. The same is verified with the Investment plan submitted by the TSTRANSCO in the ARR filings made under MYT frame work for the balance period of 3rd Control Period vide Op No.24 of 2016 for the financial years 2017-18 and 2018-19. It is observed that the project requirements and estimations indicated in the Resource plan are totally not in line with those indicated in the ARR filings for the balance period of 3rd Control Period. The projects need and requirements as indicated in the ARR filings is staggered to different years when compared with those indicated in the Resource Plan submitted earlier. There are some additional projects contemplated in the ARR filings which were not there in the Resource Plan submitted in the October 2016. Under these circumstances, the investment plan as stated in the ARR filings for the 3rd Control Period balance period would be the latest and more relevant from the point of view of the license and the same was also explicitly expressed by their officials during the discussions made in the process of examination and scrutiny of the submitted Resource plan.

Eventually, the Commission felt it more relevant to consider the investment plan as stated in the ARR filings for, the balance period of 3rd Control Period, as it is more

comprehensive and reflecting the future needs and necessities linked to the load-growth and expansion activities as contemplated by the Licensee besides their on-going efforts in bring down the loss reduction efforts contemplated by them in the ensuing two years period of FY 2017-18 and FY2018-19. Hence, the as far the investment plan is concerned, the Commission is of the opinion to advise the licensee to take back the Resource plan submitted and incorporate suitable modifications to the Resource plan for 4th control period and resubmit the same once again and the investment plan for the FY 2017-18 and FY 2018-19 shall be as per the approved values indicated in this tariff order against the ARR filing values.

6.5 Depreciation

Petitioner's Submission:

The petitioner has furnished depreciation for FY 2017-18 and FY 2018-19 as detailed in Table 6.13 below:

Table 6.13: Projected depreciation for FY 2017-18 and FY 2018-19

(Rs. Crs)

Particulars	FY 2017-18	FY 2018-19
Land & land rights	0.00	0.00
Buildings	6.65	8.67
Other civil works	0.18	0.24
Plant & Machinery	344.32	448.67
Line Cable Network	212.86	277.37
Vehicles	0.35	0.45
Furniture & Fixtures	0.28	0.36
Office Equipment	3.88	5.06
Total	568.52	740.82

Commission's analysis:

TSTransco has furnished the details of calculation of Deprecation on various categories of assets. The same is verified and found that the depreciation is worked out on opening balance of the year as per the depreciation rates notified by MoP, GoI, duly limiting the depreciation upto 90% of the value of GFA. The depreciation as considered by the commission duly deducting depreciation on the assets funded through consumer contribution and capital subsidy/grants are indicated in the tables (Table-6.14 to 6.16) below:

Table 6.14: Depreciation considered by the Commission as projected for base year FY 2016-17

(Rs. Crs)							
Sl. No	Asset Particulars	At the beginning of the year	Additions during the year	Adjustment & deductions	At the end of the year	Depreciation	Grants and Consumer Contributions
1	Land & land rights	19.13	8.98		28.11	0.00	
2	Buildings	105.60	50.87		156.47	3.19	
3	Other civil works	8.85	2.99		11.84	0.26	
4	Plant & Machinery	3316.49	1436.28		4752.77	184.10	392.16
5	Line Cable Network	3748.88	1481.17		5230.05	184.86	346.93
6	Vehicles	1.11	0.60		1.71	0.10	
7	Furniture & Fixtures	1.38	0.60		1.98	0.18	
8	Office Equipment	24.55	10.77		35.32	4.69	
	Total	7225.99	2992.25		10218.24	377.38	739.09

The Commission, considering the base year data for depreciation of FY 2016-17 as given in the Table above, the computed depreciation for FY 2017-18 and FY 2018-19 is given in the Tables below:

Table 6.15: Depreciation approved for FY 2017-18

(Rs. Crs)										
Sl. No	Asset Particulars	At the beginning of the year	Additions during the year	Adjustment & deductions	At the end of the year	Depreciation	Grants and Consumer Contributions			Net Depreciation
							Addition During 2016-17	Cumulative GCC	Depreciation on GCC	
1	Land & land rights	28.11	9.12		37.23	0.00				0.00
2	Buildings	156.47	51.69		208.16	4.73				4.73
3	Other civil works	11.84	3.04		14.88	0.35				0.35
4	Plant & Machinery	4752.77	1459.46		6212.23	296.70	85.71	477.87	37.47	259.23
5	Line Cable Network	5230.05	1505.07		6735.12	262.92	88.38	435.31	22.94	239.98
6	Vehicles	1.71	0.61		2.32	0.30				0.30
7	Furniture & Fixtures	1.98	0.61		2.59	0.26				0.26
8	Office Equipment	35.32	10.95		46.27	6.07				6.07
	Total	10218.24	3040.55		13258.79	571.33	174.09	913.18	60.41	510.92

Table 6.16: Depreciation approved for FY 2018-19

(Rs. Crs)

Sl. No	Asset Particulars	At the beginning of the year	Additions during the year	Adjustment & deductions	At the end of the year	Depreciation	Grants and Consumer Contributions			Net Depreciation
							OB	Addition During 2017-18	Depreciation on GCC	
1	Land & land rights	37.23	6.05		43.28	0.00				0.00
2	Buildings	208.16	34.30		242.46	6.29				6.29
3	Other civil works	14.88	2.02		16.90	0.44				0.44
4	Plant & Machinery	6212.23	968.51		7180.74	411.12	477.87	1343.35	142.78	268.34
5	Line Cable Network	6735.12	998.77		7733.89	342.24	435.31	1385.33	95.95	246.29
6	Vehicles	2.32	0.40		2.72	0.50				0.50
7	Furniture & Fixtures	2.59	0.40		2.99	0.34				0.34
8	Office Equipment	46.27	7.26		53.53	7.47				7.47
	Total	13258.79	2017.73		15276.52	768.40	913.18	2728.68	238.73	529.67

The Commission approves the depreciation for FY 2017-18 and FY 2018-19 after subtracting the amount of depreciation on those assets created using consumer contributions as detailed in Table below:

Table 6.17: Depreciation approved by the Commission for FY 2017-18 & FY 2018-19

(Rs. Crs)

Particular	Years	Projected	Approved
Depreciation	FY 2017-18	568.52	510.92
	FY 2018-19	740.82	529.67

6.6 Special Appropriations

Petitioner's Submission:

Based on provisional/un-audited accounts, the surplus amount of Rs.605 Cores gained by the licensee during FY 2014-15 (02.06.2014 to 31.03.2015) and FY 2015 16 has proposed to pass it on to their consumers in the form of negative element in their ARR during FY 2017-18 and FY 2018-19.

Table 6.18: Special Appropriations submitted for FY 2017-18 and FY 2018-19

(Rs. Crs)

Particulars	FY 2017-18	FY 2018-19	Total
Special Appropriation	-302.21	-302.22	-604.43

Commission's Analysis:

The True up order for the 2nd Control Period of FY 2009-10 to FY 2013-14 pertaining to composite APTransco (prior to formation of TSTransco) was issued by APERC in OP. No. 13 of 2015 dated 07.11.2015. In the True-up order a surplus of Rs. 588.47 Crs was approved for the combined State and indicated Rs. 271.34 Crs towards share of APTransco @46.11% and TSTransco has been allocated Rs. 317.13 Crs.

being 53.89% as surplus. The Commission considers it relevant adjust the above surplus amount in ARR of FY 2017-18 of the balance period of 3rd Control Period.

Pending segregation of assets and liabilities of composite APTransco between two entities and finalisation of Audited Accounts, the Commission considers the special appropriation of Rs. 634.60 Crs as Mid-term review for the two financial years FY 2014-15 and FY 2015-16 with suitable corrections where felt needed and arrived at the surplus and adjusted as claw back amount equally as Rs.317.30 Crs and Rs.317.30 Crs in the FY 2017-18 and FY 2018-19 respectively.

Based on the above, the special appropriation approved for FY 2017-18 and FY 2018-19 are as given in the Table-6.19 below:

Table 6.19: Special appropriation approved for FY 2017-18 and FY 2018-19

(Rs. Crs)

Sl. No	Particulars	Special appropriation			
		Projected		Approved	
		FY 2017-18	FY 2018-19	FY 2017-18	FY 2018-19
1	Surplus of ARR based on True up orders of APERC for the 2 nd Control Period	-	-	-317.13	-
2	Surplus of ARR based on Mid-Term review for FY 2014-15 and FY 2015-16	-302.21	-302.22	-317.30	-317.30
3	Total Special Appropriation	-302.21	-302.22	-634.43	-317.30

6.7 Return on Capital Employed (RoCE):

Petitioner's submission:

Return on Capital Employed (RoCE) is to cover the interest charges on the debt portion towards fixed assets and Return on Equity invested by TSTransco. The licensee has prepared a detailed investment plan for FY 2017-18 and FY 2018-19 based on Resource Plan submitted to the TSERC by making comprehensive analysis of Transmission Network existing in the state and load conditions/growth in the ensuing two years at 765kV/400kV/220kV and 132kV voltages is tabulated below:

Table 6.20: Projected Regulated Rate Base and RoCE

(Rs. Crs)

Sl. No.	Particulars	Projected	
		FY 2017-18	FY 2018-19
1	Assets (1.1 + 1.2)	13538.09	18919.53
	1.1 Opening balance of OCFA	10397.43	13538.09
	1.2 Additions during the year	3140.66	5381.44
2	Depreciation (2.1 + 2.2)	3552.59	4293.41
	2.1 Opening balance	2984.07	3552.59
	2.2 Depreciation during the year	568.52	740.82
3	Consumer Contribution & Grants	3641.81	4145.81
	3.1 Opening Balance	913.18	3641.81
	3.2 Additions	2728.63	504.00
4	Working Capital	74.67	81.60
	4.1 O& M (45 days of net O&M Exp)	74.67	81.60
	4.2 O& M Stores Inventory	0.00	0.00
5	Change in Rate Base (1.2-2.2-3.2)/2	-78.25	2068.31
6	Regulated Rate base (1.1-2.1-3.1+4+5)	6496.61	8493.60
7	Capital structure		
	7.1 Debt (Percent)	75.00%	75.00%
	7.2 Equity (Percent)	25.00%	25.00%
8	Cost of funds		
	8.1 Cost of Debt (Percent)	12.00%	12.00%
	8.2 Return on Equity (Percent)	14.00%	14.00%
9	WACC (7.1 X 8.1) + (7.2 X 8.2)	12.50	12.50
10	Return on Capital Employed (6X9)	812.08	1061.70

While arriving at the Return on Capital Employed (RoCE), Debt portion is considered notionally at 75% of Regulated Rate Base (RRB) with a weighted average interest cost of 12% p.a and notional Equity at 25% of RRB with a rate of return of 14% p.a. As such, the weighted average cost of Capital (WACC) works out to 12.50% to be applied on RRB.

Commission's Analysis:

In the present trend as the interest rates have come down significantly, the Commission directed TSTransco to make efforts to get interest rates reduced from their lenders. Accordingly, TSTransco has negotiated with PFC and REC for reduction of interest rates and yielded positive result. Based on response from the PFC/REC the TSTransco has agreed to revise the rates to 9.95% from 12% in their ARR filings. Accordingly, the revised interest rate of 9.95% is considered by the Commission in determination of transmission tariff.

The Commission approves the Regulated Rate base and return on Capital Employed as given in Table below:

Table 6.21: Approved Regulated Rate base and Return on Capital Employed

Sl. No.	Particulars	Projected		Approved	
		FY 2017-18	FY 2018-19	FY 2017-18	FY 2018-19
1	Assets (1.1 + 1.2)	13538.09	18919.53	13258.79	15276.52
	1.1 Opening balance of OCFA	10397.43	13538.09	10218.24	13258.79
	1.2 Additions during the year	3140.66	5381.44	3040.55	2017.73
2	Depreciation (2.1 + 2.2)	3552.59	4293.41	3555.70	4324.10
	2.1 Opening balance	2984.07	3552.59	2984.37	3555.70
	2.2 Depreciation during the year	568.52	740.82	571.33	768.40
3	Consumer Contribution & Grants	3641.81	4145.81	3641.86	4145.86
	3.1 Opening Balance	913.18	3641.81	913.18	3641.86
	3.2 Additions	2728.63	504.00	2728.68	504.00
4	Working Capital	74.67	81.60	59.68	69.93
	4.1 O& M (45 days of net O&M Exp)	74.67	81.60	59.68	69.93
	4.2 O& M Stores Inventory	0.00	0.00	0.00	0.00
5	Change in Rate Base (1.2-2.2-3.2)/2	-78.25	2068.31	-129.73	372.66
6	Regulated Rate base (1.1-2.1-3.1+4+5)	6496.61	8493.60	6250.64	6503.82
7	Capital structure				
	7.1 Debt (Percent)	75.00%	75.00%	75.00%	75.00%
	7.2 Equity (Percent)	25.00%	25.00%	25.00%	25.00%
8	Cost of funds				
	8.1 Cost of Debt (Percent)	12.00%	12.00%	9.95%	9.95%
	8.2 Return on Equity (Percent)	14.00%	14.00%	14.00%	14.00%
9	WACC (7.1 X 8.1) + (7.2 X 8.2)	12.50	12.50	10.96%	10.96%
10	Return on Capital Employed (6X9)	812.08	1061.70	685.23	712.98

6.8 Taxes on Income

Petitioner's Submission:

The Income Tax component on the Return on Equity @14% on 25% of Regulated Rate Base has been computed adopting the current rate of Corporate Tax.

Table 6.22: Taxes on Income projected for FY 2017-18 and FY 2018-19

Particulars	(Rs. Crs)	
	FY 2017-18	FY 2018-19
Taxes on Income	120.34	157.33

Commission's Analysis:

The Commission approves Tax on Income at Rs. 46.69 Crs and Rs. 48.58 Crs for FY 2017-18 and FY 2018-19 respectively.

Table 6.23: Taxes on Income computed for FY 2017-18 and FY 2018-19
(Rs. Crs)

Particulars	FY 2017-18	FY 2018-19
Regulated Rate Base(RRB) as approved	6250.64	6503.82
Equity component at 25% of RRB	1562.66	1625.96
RoE @ 14% on 25% of RRB	218.77	227.63
Taxes on Income at 21.34%	46.69	48.58

Table 6.24: Taxes on Income approved for FY 2017-18 and FY 2018-19
(Rs. Crs)

Particulars	Projected		Approved	
	FY 2017-18	FY 2018-19	FY 2017-18	FY 2018-19
Taxes on Income	120.34	157.33	46.69	48.58

6.9 Non-Tariff Income

Petitioner's submission:

The major components of other income include interest income on staff loans and advances, income from investments, rebate on payment of suppliers' bills etc. Based on the past trend, the Non-Tariff Income for FY 2017-18 and FY 2018-19 is estimated as detailed in the Table below:

Table 6.25: Non-Tariff Income projected for FY 2017-18 and FY 2018-19
(Rs. Crs)

Particulars	FY 2017-18	FY 2018-19
Interest income on loans and advances to Staff	0.20	0.20
Income from investments	13.00	13.00
Delayed payment charges from consumers	0.10	0.10
Miscellaneous Receipts	36.70	36.70
Total Non-Tariff Income	50.00	50.00

Commission's Analysis:

The Clause 19 of Regulation 5 of 2005 is reproduced as below:

" All income being incidental to transmission business and derived by the Licensee from sources, including but not limited to profit derived from disposal of assets Income from investments , rents, penalties for over/under utilisation of transmission system and any other miscellaneous receipts from users, shall constitute non-tariff income"

TSTransco has projected the non-tariff income at Rs. 50.00 Crs each for FY 2017-18 and FY 2018-19. As per the provisional Accounts for FY 2015-16, the Non tariff

income (vide schedule 1, sub-total II) is reported at Rs. 43.53 Crs which includes SLDC charges, Intra state Open Access charges from IEX/PX, Intra state operating charges from long & Medium term open access consumers, interstate open access SLDC charges, SLDC charges from open access generators and also annual fees and SLDC open access charges received from WRLDC, SRLDC and ERLDC.

Apart from the Non-tariff income, the Licensee had received Rs. 57.05 Crs towards interest on staff loans, income from investments, supervision charges fines and penalties recovered and Miscellaneous receipts etc as other income during FY 2015-16 (Schedule-5). But the Licensee has not filed the above details in the petition.

The Non-tariff income including the following incomes as per the provisional accounts available for FY 2015-16:

(Rs.Crs)

Non-tariff Income	FY 2015-16
Other Income	57.05
SLDC/EX/PX	43.53
Total Non-Tariff Income	100.58

The Commission considering the above FY 2015-16 Non-tariff income including all other incomes has estimated the non tariff income including other income at Rs. 110 Crs, Rs. 121 Crs and 133 Crs adopting a 10% escalation year on year for FY 2016-17, FY 2017-18 and FY 2018-19 respectively

The Non-Tariff Income approved by the Commission for the FY 2017-18 and FY 2018-19 are indicated in the Table below:

Table 6.26: Non-Tariff Income approved for FY 2017-18 and FY 2018-19

(Rs. Crs)

Particulars	Projected		Approved	
	FY 2017-18	FY 2018-19	FY 2017-18	FY 2018-19
Non-Tariff Income	50.00	50.00	121.00	133.00

6.10 Aggregate Revenue Requirement

Summing up the foregoing paragraphs, the Commission approves the Aggregate Revenue Requirement (ARR) for FY 2017-18 and FY 2018-19, as given in the Table below:

Table 6.27: Aggregate Revenue Requirement approved for FY 2017-18 & FY 2018-19
(Rs. Crs)

Sl. No.	Particulars	Projected		Approved	
		FY 2017-18	FY 2018-19	FY 2017-18	FY 2018-19
1	O&M Expenses	605.62	661.90	564.45	661.46
2	Depreciation	568.52	740.82	510.92	529.67
3	RoCE	812.07	1061.70	685.23	712.98
4	Income Tax	120.34	157.33	46.69	48.58
5	Total Expenses	2106.55	2621.75	1807.28	1952.69
7	Less: O&M Expenses capitalised	131.69	94.23	80.40	94.23
8	Less: Non-Tariff Income	50.00	50.00	121.00	133.00
9	Gross ARR	1924.86	2477.52	1605.88	1725.46
10	Less: Spl. Appropriations				
	(i) True-up pertaining to 2 nd Control Period			317.13	
	(ii) Mid-Term review for FY 2014-15 and FY 2015-16	302.21	302.22	317.30	317.30
11	Total Net ARR	1622.65	2175.31	971.45	1408.16

6.11 Transmission charges

Petitioner's Submission:

The DISCOMs have projected the Installed Capacity as their Contracted Capacity. The demand from Open Access Consumers has been estimated and added to the total contracted demand of DISCOMs.

The transmission charges are computed by dividing the net ARR of each year with the total contracted capacity of the respective year. As such, the following are the transmission charges for FY 2017-18 to FY 2018-19:

Table 6.28: Transmission Charges projected for FY 2017-18 and FY 2018-19

Particulars	FY 2017-18	FY 2018-19
ARR of Transmission Business (Rs. Crs)	1622.65	2175.31
Transmission Contracted Capacity (MW)	14376.59	15021.59
Transmission Charges(Rs./kW/Month)	94.06	120.68

Commission's Analysis

Taking into consideration the Transmission capacity as 14376.59 MW and 16047.59 MW for FY 2017-18 and FY 2018-19 respectively and considering approved ARR, the Commission approves Transmission charges as given below:

Table 6.29: Transmission Charges approved for FY 2017-18 and FY 2018-19

Particulars	Projected		Approved	
	FY 2017-18	FY 2018-19	FY 2017-18	FY 2018-19
ARR of Transmission Business (Rs. Crs)	1622.65	2175.31	971.45	1408.16
Transmission contracted capacity (MW)	14376.59	15021.59	14376.59	16047.59
Transmission charges (Rs./kW/month)	94.06	120.68	56.3099	73.1243

6.12 Summary

On detailed examination of the petition, further information/data submitted subsequently by the Licensee and also taking into consideration the objections/suggestions of stakeholders, the Commission approves the ARR and Transmission Tariff for FY 2017-18 and FY 2018-19 as shown in the Tables below:

Aggregate Revenue Requirement (ARR) approved for FY 2017-18 and FY 2018-19 (Rs. Crs)

Sl. No.	Particulars	Projected		Approved	
		FY 2017-18	FY 2018-19	FY 2017-18	FY 2018-19
1	O&M Expenses	605.62	661.90	564.45	661.46
2	Depreciation	568.52	740.82	510.92	529.67
3	RoCE	812.07	1061.70	685.23	712.98
4	Income Tax	120.34	157.33	46.69	48.58
5	Total Expenses	2106.55	2621.75	1807.28	1952.69
7	Less: O&M Expenses capitalised	131.69	94.23	80.40	94.23
8	Less: Non-Tariff Income	50.00	50.00	121.00	133.00
9	Gross ARR	1924.86	2477.52	1605.88	1725.46
10	Less: Appropriations				
	(i) True-up pertaining to 2 nd Control Period			317.13	
	(ii) Mid-Term review for FY 2014-15 and FY 2015-16	302.21	302.22	317.30	317.30
11	Total Net ARR	1622.65	2175.31	971.45	1408.16

Transmission Charges approved for FY 2017-18 and FY 2018-19

Particulars	Projected		Approved	
	FY 2017-18	FY 2018-19	FY 2017-18	FY 2018-19
ARR of Transmission Business (Rs. Crs)	1622.65	2175.31	971.45	1408.16
Transmission contracted capacity (MW)	14376.59	15021.59	14376.59	16047.59
Transmission charges (Rs./kW/month)	94.06	120.68	56.3099	73.1243

7. Directives

The following Directives issued by the Commission may be complied with.

1. The segregation of assets and liabilities of composite AP Transco between the two entities (AP Transco and TS Transco) may be completed in consultation with AP Transco and a compliance report to be submitted by 30.06.2017.
2. The Audited accounts for FY 2014-15 and FY 2015-16 may be submitted to the Commission by 30.09.2017.
3. The provisional accounts for FY 2016-17 may be submitted by 30.06.2017 with a certificate from the concerned Auditors and the audited accounts by 30.09.2017.
4. The Transmission works relating to LIS schemes may be executed duly coordinating with the needs and requirements arising from Irrigation Department.
5. Transmission works required for the purpose Yadadri power station and 2x800 MW NTPC power station may be arranged to be executed based on the needs arising from the respective stations.
6. In future, Petition for fixation of transmission charges shall be submitted duly filling all the prescribed formats following guidelines for Revenue and Tariff filing for Transmission Licensee with all supporting documents in the ensuing MYT. Tables prepared shall be numbered with suitable captions. Details of capitalization considered for asset additions should be tallied with details of lines and sub-station charged and taken into service.
O & M expenses claims in this petition should tally with length of lines and no of bays. The names of lines with length, names of sub-stations with no of bays of each SS shall be indicated.

The Transmission charges approved are applicable from 1st May 2017 for the FY 2017-18 and from 1st April 2018 for FY 2018-19.

This Order is signed on the 1st day of May 2017.

Sd/-

H. Srinivasulu
MEMBER

Sd/-

Ismail Ali Khan
CHAIRMAN

Annexure - A: Transmission Tariff Schedule for the balance Control Period

Year	Transmission Charge (Rs./kW/Month)	Transmission Loss (%)
FY 2017-18	56.3099	3.10
FY 2018-19	73.1243	3.09

Notes on Transmission Tariff:

1. In line with Government Policy there shall be no Transmission Charges for Non-Conventional Energy generators of using Wind, Solar and Mini Hydel.
2. The users of the transmission system shall pay transmission charge and also bear the transmission loss in kind for both energy and capacity as indicated above.
3. The Transmission charges payable and the energy losses to be borne shall be related to the contracted capacity in KW, at the entry point.
4. The other conditions applicable for levy and collection of these charges shall be as per the provisions of the Andhra Pradesh Electricity Regulatory Commission (Terms and conditions of Open Access to Intra-State Transmission and Distribution networks), Regulation, 2005 (No.2 of 2005) and the Balancing and settlement code, in force.
5. The transmission tariff/charges are to be levied as per the terms and conditions approved by the Commission from time to time.

Annexure - B: Copies of Public Notice published in daily newspapers on 27.12.2016 by TSTRansco.

English



BEFORE THE HONOURABLE
TELANGANA STATE ELECTRICITY REGULATORY COMMISSION (TSERC)
 D.No. 11-4-660, 5th Floor, Singareni Bhavan, lakdi-ka-pool, Red Hills, HYDERABAD - 500 004.

TRANSMISSION CORPORATION OF TELANGANA LIMITED

PUBLIC NOTICE

1. Notice is hereby given to all that the Transmission Corporation of Telangana Limited (TSTRANSCO) filed before the Telangana State Electricity Regulatory Commission (TSERC) for determination of ARR and tariff for Transmission business of TSTRANSCO for the period of 2017-18 to 2018-19. These filings have been taken on record by the Hon'ble Commission in O.P.No. 24 of 2016
2. Copies of the filings and proposals referred are available in the Office of the Chief Engineer (Planning, Commercial & Coordination, Room No.455, A-Block, Vidyut Soudha, Khairatabad, Hyderabad-500 082) at Corporate Office, TSTRANSCO, Vidyut Soudha, Hyderabad and the Chief Engineer / TSTRANSCO (Hyderabad Metro Zone, Hyderabad Rural Zone and Warangal Zone) and The Superintending Engineers /OMC / TSTRANSCO (Khammam, Nizamabad, Adilabad, Karimnagar Nalgonda, Mahabubnagar, Warangal, Metro East, Metro West, Metro Central and Sangareddy located at Hyderabad).
3. Interested person(s) may inspect/peruse the said ARR and tariff proposals and take note thereof during office hours at any of the said offices at free of cost. These proposals are also available on **Website : transco.telangana.gov.in** and the same may be accessed at www.tserc.gov.in. A copy of these filings can be obtained from the above offices from 27.12.2016 onwards on payment of Rs. 200/- by cash.
4. Objections/ Suggestions if any, on the said filings together with supporting material may be sent to the Chief Engineer (Planning, Commercial & Coordination, Room No.455, A-Block, Vidyut Soudha, Khairatabad, Hyderabad-500082) at Corporate Office, TSTRANSCO, Vidyut Soudha, Hyderabad in person or through Registered Post so as to reach on or before **23.01.2017 by 5.00 PM**. A copy of the same must also be filed with the Commission Secretary, TSERC at the address mentioned above. The objections/suggestions should be duly signed and should carry full name and postal address of the person(s) sending the objections/suggestions. If the objections/suggestions are filed on behalf of any organization or any category of consumers, it should be clearly mentioned. If the objector also wants to be heard in person it may also be specifically mentioned. The objections/suggestions should accompany the following statement as an overleaf-

Name and full address of the Objector	Brief details of objection(s)/ suggestion(s)	Objections against filings by TSTRANSCO for determination of ARR and Tariff for its Transmission business for the period of 2017-18 and 2018-19	Whether copy of objection and proof of delivery at TSTRANSCO's office enclosed (Yes/No)	Whether objector wants to be heard in person (Yes/No)

5. The ARR and proposed Tariffs for the Transmission business proposed by TSTRANSCO for the period 2017-18 to 2018-19 are indicated in the **Schedule-I** below.
6. Telangana Electricity Regulatory Commission intends to conduct a **Public Hearing at Court Hall, TSERC, #11-4-660, 5th Floor, Singareni Bhavan, Red Hills, Hyderabad-4** on **09.02.2017** from 10.30 Hrs. onwards.

Date : 27.12.2016
Place : Hyderabad

Sd/-
CHAIRMAN & MANAGING DIRECTOR
TSTRANSCO

SCHEDULE-I

TRANSMISSION CORPORATION OF TELANGANA LIMITED

DETAILS	2017 - 18	2018 - 19
ARR of Transmission Business (Rs. Crores)	1822.85	2176.91
Transmission Contracted Capacity (MW)	14376	15021
Transmission Charges (Rs./KW/Month)	94.06	120.88

R.O.No. : 55/16

Telugu



తెలంగాణ రాష్ట్ర విద్యుత్ సరఫరా కమిషన్ (TSERC) సమక్షమున

D.No. 11-4-660, 5వ అంతస్తు, సింగరేణి భవన్, లక్ష్మీకాపురం, రెడ్ హిల్స్, హైదరాబాద్-500004.

ట్రాన్సిమిషన్ కార్యదేష్ టిఎస్ తెలంగాణ విభాగం

బహిరంగ ప్రకటన

1. ట్రాన్సిమిషన్ కార్యదేష్ టిఎస్ తెలంగాణ లిమిటెడ్ (TSTRANSCO) దారు 2017-18 నుండి 2018-19 కాలవ్యవస్థ కొరకు ట్రాన్సిమిషన్ వ్యాపారం కొరకు ARR మరియు టారిఫ్ యొక్క వివరాల కొరకు తెలంగాణ స్టేట్ ఎలక్ట్రిసిటీ రెగ్యులేటరీ కమిషన్ (TSERC) సమక్షమున ఫైల్ చేయాలని దిశానిర్దేశాలను అందించిన తరువాత నోటీసు ఇచ్చినట్లు. పతరు ఫైలింగ్ O.P.No. 24 టిఎస్ 2016 నుంచి గౌరవనీయ కమిషన్ ద్వారా దిద్దుబాటు చేయబడినది.
2. పైన వివరించిన ఫైలింగ్ మరియు ప్రతిపాదనల యొక్క కాపీలు కార్యదేష్ టిఎస్, డి.ఎస్. ట్రాన్స్మిట్, విద్యుత్ సౌధ, హైదరాబాద్ వద్ద డిప్యూటీ సెక్రటరీ (ఫైనాన్స్, కమర్షియల్ & టి టి ఆర్) వద్దకు రూం నం 455, ఎ-బ్లాక్, విద్యుత్ సౌధ, హైదరాబాద్ - 500 082) కార్యాలయం నుంచి మరియు డిప్యూటీ సెక్రటరీ / డి.ఎస్. ట్రాన్స్మిట్ (హైదరాబాద్ మెట్రో జోన్, హైదరాబాద్ రూరల్ జోన్ మరియు పరమగల్ జోన్) మరియు నూపరించబడినట్లుగా దిశానిర్దేశాలను అందించిన ట్రాన్స్మిట్ (అమ్రావతి, సజానూరాద్, అదిలాబాద్, కరీంనగర్, వల్సర్, మహబూబ్ నగర్, వరంగల్, హైదరాబాద్ వద్ద గల మెట్రో జోన్, మెట్రో వల్సర్, మెట్రో సెంట్రల్ మరియు సునారెడ్డి) వద్ద అందిస్తారు.
3. అదే క్రింద వున్న (వ్యక్తులు) పతరు ARR మరియు టారిఫ్ ప్రతిపాదనలను పతరు కార్యాలయాల వద్ద కార్యాలయం నుంచి వెళ్ళాల్సి వచ్చినట్లు తెలియజేయబడినట్లు / పరిశీలించబడినట్లు. పతరు ప్రతిపాదనల వెబ్సైట్: transco.telangana.gov.in పై కూడా అందిస్తారు మరియు వారిని www.taerc.gov.in వద్ద పొందవచ్చును. ఈ ఫైలింగ్ యొక్క కాపీ నగదు రూపంలో రూ. 200/- ల కట్టించుకుంటే: 27.12.2016 నుండి ఎగువ కార్యాలయాల నుండి పొందవచ్చు.
4. పతరు ఫైలింగ్ పై ఒక వేరే ఏదోవి అభ్యంతరములు / సూచనలు ఉన్నాయని వారిని వెబ్సైట్ పై పోస్టులో పొమ్మగా తేది: 29.01.2017 వ తేది 5.00 గంటలకు లేదా అదేకంటే వేరు విధంగా డిప్యూటీ సెక్రటరీ, కమర్షియల్ & టి టి ఆర్ వద్దకు, రూం నం. 455, ఎ-బ్లాక్, విద్యుత్ సౌధ, హైదరాబాద్, హైదరాబాద్ - 500 082) వారికి స్వయంగా అని లేదా రిజిస్టర్డ్ టోపు ద్వారా కాపీ పంపగలరు. వారికి సందించినట్లు ఒక కాపీ కూడా పై వివరించిన విధానాన్ని వద్ద కమిషన్ సెక్రటరీ, TSERC వద్దకు ఫైల్ చేయవలసిందిగా అభ్యంతరములు / సూచనల చిత్రాలు పూర్తి చేయాలని మరియు వినియోగదారుల సౌకర్యాలను సులభం చేయాలని ఉంది. మరియు అభ్యంతరములు / సూచనల చిత్రాలను వ్యక్తి (వ్యక్తులు) ఏదోవి సంస్థ లేదా ఏదోవి గ్రూపులు యొక్క ఏదోవి కేటగిరీ తరఫున పై వివరించినట్లు పతరు విషయం స్పష్టంగా వివరించగలరు. అభ్యంతరం తెలియజేయవచ్చునట్లు పతరు అభ్యంతరమును స్పష్టంగా తెల్పాలని భావించిన యెడల పతరు విషయాన్ని కేసు రిజిస్ట్రేషన్ వివరించాల్సి ఉంటుంది. ఏదోవి పతరుచేయవలసిన స్టేట్ మెంట్ రూపం అభ్యంతరములు / సూచనలను అతిపరచాలి

అభ్యంతరం తెలియజేయవచ్చునట్లు మరియు పూర్తి చేయవలసిన విధానం	అభ్యంతరము(లు) సూచన(ల) సంబంధించిన వివరాలు	2017-18 మరియు 2018-19 కాలవ్యవస్థ కొరకు టిఎస్ ట్రాన్సిమిషన్ యొక్క వ్యాపారం కొరకు ARR మరియు టారిఫ్ యొక్క వివరాల కొరకు డి.ఎస్. ట్రాన్స్మిట్ ద్వారా ఫైలింగ్ పై అభ్యంతరములు	ఒక వేరే అభ్యంతరం యొక్క కాపీ మరియు డి.ఎస్. ట్రాన్స్మిట్ కార్యాలయం వద్ద అభ్యంతరం అందించిన రూపం అతిపరచవలసిందిగా (అమ్రావతి / కాపీ)	అభ్యంతరం తెలియజేయవచ్చునట్లు ఒక వేరే స్వయంగా వెబ్సైట్ నుండి తెలుసుకోవాలి (అమ్రావతి / కాపీ)
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5. 2017-18 నుండి 2018-19 కాలవ్యవస్థ కొరకు డి.ఎస్. ట్రాన్స్మిట్ ద్వారా ప్రతిపాదించబడిన ట్రాన్సిమిషన్ వ్యాపారం కొరకు ARR మరియు ప్రతిపాదించబడిన టారిఫ్ రేటుల వెబ్సైట్ నంబర్ నుండి సూచించబడినది.
6. తెలంగాణ ఎలక్ట్రిసిటీ రెగ్యులేటరీ కమిషన్ తేది: 09.02.2017 నుండి 10.30 గంటల నుండి కోర్టు హాలు, TSERC, 411-4-660, 5వ అంతస్తు, సింగరేణి భవన్, రెడ్ హిల్స్, హైదరాబాద్-5 వద్ద బహిరంగ విచారణ నిర్వహిస్తుంది.
తేది: 27.12.2016
ప్రకటన : హైదరాబాద్

షెడ్యూల్ - I

ట్రాన్సిమిషన్ కార్యదేష్ టిఎస్ తెలంగాణ విభాగం

వివరములు	2017-18	2018-19
ట్రాన్సిమిషన్ వ్యాపారం యొక్క ARR (రూ. కోట్లు)	1622.65	2175.31
ట్రాన్సిమిషన్ కాలక్టర్ల కేటగిరీ (MW)	14376	15021
ట్రాన్సిమిషన్ ఛార్జీలు (రూ. /KW/ నెం.)	84.06	120.88

R.O.No. : 55/18

Annexure - C: List of Registered Objectors

Sl. No.	Name of the Objector
1	Sri M.Venugopal Rao, Senior Journalist and Convener, Centre for Power Studies, Hyderabad.
2	Sri M.Thimma Reddy, Convener, People's Monitoring Group on Electricity Regulations, Hyderabad.
3	Sri P.Chandrakanth Sharma, Management Consultant & Advocate, Waddepally, Hanamakonda, Warangal District.
4	Sri G.R. Karunakar, Bharatiya Janata Party, Hyderabad, Telangana.

Annexure - D(i): Contracted Capacities filed for the balance Control Period**(MW)**

Generating Station/Source	Total Capacity	TSDISCOMS Share		TSSPDCL	TSNPDCL	TSSPDCL	TSNPDCL
		2017-18	2018-19	2017-18	2017-18	2018-19	2018-19
VTPS I	383.25	206.53	206.53	145.71	60.82	145.71	60.82
VTPS II	383.25	206.53	206.53	145.71	60.82	145.71	60.82
VTPS III	383.25	206.53	206.53	145.71	60.82	145.71	60.82
VTPS IV	462.50	249.24	249.24	175.84	73.40	175.84	73.40
RTPP I	382.20	205.97	205.97	145.31	60.66	145.31	60.66
RTPP II	382.20	205.97	205.97	145.31	60.66	145.31	60.66
RTPP III	191.10	102.98	102.98	72.66	30.33	72.66	30.33
KTPS A	216.72	116.79	116.79	82.40	34.39	82.40	34.39
KTPS B	216.72	116.79	116.79	82.40	34.39	82.40	34.39
KTPS C	216.72	116.79	116.79	82.40	34.39	82.40	34.39
KTPS D	455.00	245.20	245.20	172.99	72.21	172.99	72.21
KTPS VI	462.50	249.24	249.24	175.84	73.40	175.84	73.40
RTS B	56.88	30.65	30.65	21.63	9.03	21.63	9.03
KTPP I	462.50	249.24	249.24	175.84	73.40	175.84	73.40
KTPP II	555.00	555.00	555.00	391.55	163.45	391.55	163.45
KTPS VII	760.00	0.00	760.00	0.00	0.00	536.18	223.82
Total Thermal	5969.79	3063.47	3823.47	2161.28	902.19	2697.46	1126.01
Manchkund PH AP share	83.16	44.81	44.81	31.62	13.20	31.62	13.20
Tungabhadra PH AP share	57.02	30.73	30.73	21.68	9.05	21.68	9.05
SSLM LCPH	891.00	891.00	891.00	628.60	262.40	628.60	262.40
NSPH	807.44	807.44	807.44	569.65	237.79	569.65	237.79
NSLCPH	59.40	59.40	59.40	41.91	17.49	41.91	17.49
Pochampad PH	26.73	26.73	26.73	18.86	7.87	18.86	7.87
Nizamsagar PH	9.90	9.90	9.90	6.98	2.92	6.98	2.92
Singur	14.85	14.85	14.85	10.48	4.37	10.48	4.37
Priyadarshini Jurala HES	231.66	231.66	231.66	163.44	68.22	163.44	68.22
Pochampad II	8.91	8.91	8.91	6.29	2.62	6.29	2.62
Lower Jurala HE	237.60	237.60	237.60	167.63	69.97	167.63	69.97
Pulichintala	118.80	118.80	118.80	83.81	34.99	83.81	34.99
Total Hydro	2546.47	2481.83	2481.83	1750.93	730.90	1750.93	730.90
Total Genco	8516.26	5545.30	6305.30	3912.21	1633.09	4448.39	1856.91
NTPC(SR) Ramagundam U1-U6	629.78	339.39	339.39	239.44	99.95	239.44	99.95
NTPC(SR) Ramagundam U7	158.58	85.46	85.46	60.29	25.17	60.29	25.17
NLC TS-II Stage-I	103.93	56.01	56.01	39.51	16.49	39.51	16.49
NLC TS-II Stage-II	183.93	99.12	99.12	69.93	29.19	69.93	29.19
NPC-MAPS	38.99	21.01	21.01	14.82	6.19	14.82	6.19
Talcher Stage 2	374.00	201.55	201.55	142.19	59.36	142.19	59.36
NTPC-Simhadri Stage I	940.00	506.57	506.57	357.38	149.18	357.38	149.18
NTPC-Simhadri Stage II	432.49	233.07	233.07	164.43	68.64	164.43	68.64
Kaiga (Nuclear) Plant I & II	121.37	65.41	65.41	46.14	19.26	46.14	19.26
Kaiga (Nuclear) Plant	128.54	69.27	69.27	48.87	20.40	48.87	20.40

Generating Station/Source	Total Capacity	TSDISCOMS Share		TSSPDCL	TSNPDCL	TSSPDCL	TSNPDCL
		2017-18	2018-19	2017-18	2017-18	2018-19	2018-19
III & IV							
Vallur Thermal Power Plant	206.87	111.48	111.48	78.65	32.83	78.65	32.83
Kalpakkam	116.16	62.60	62.60	44.16	18.44	44.16	18.44
Tuticorn	234.23	126.23	126.23	89.05	37.17	89.05	37.17
Kudgi I & II	703.12	378.91	378.91	267.32	111.59	267.32	111.59
Neyveli	104.60	56.37	56.37	39.77	16.60	39.77	16.60
Total Central Sector	4476.59	2412.43	2412.43	1701.97	710.46	1701.97	710.46
APGPCL-I	15.60	6.67	6.67	4.71	1.96	4.71	1.96
APGPCL-II	41.72	17.84	17.84	12.59	5.25	12.59	5.25
Total Joint Sector	57.32	24.51	24.51	17.29	7.22	17.29	7.22
BSES	213.40	115.00	0.00	81.13	33.87	0.00	0.00
GVK Extension	213.40	115.00	115.00	81.13	33.87	81.13	33.87
Vemagiri	358.90	193.41	193.41	136.45	56.96	136.45	56.96
Gowthami	450.08	242.55	242.55	171.12	71.43	171.12	71.43
Konaseema	430.76	232.14	232.14	163.77	68.36	163.77	68.36
Total IPPs	1666.54	898.10	783.10	633.61	264.49	552.48	230.62
Singareni TPP	1128.00	1128.00	1128.00	795.80	332.20	795.80	332.20
Chhattisgarh Power	1000.00	1000.00	1000.00	705.50	294.50	705.50	294.50
Thermal Power Tech I	500.00	269.45	269.45	190.10	79.35	190.10	79.35
Thermal Power Tech	570.00	570.00	570.00	402.14	167.87	402.14	167.87
Total Others	3198.00	2967.45	2967.45	2093.54	873.91	2093.54	873.91
Bagasse	42.00	42.00	42.00	0.00	42.00	0.00	42.00
Bio Mass	24.00	24.00	24.00	0.00	24.00	0.00	24.00
Municipal/Industrial Waste	8.00	8.00	8.00	0.00	8.00	0.00	8.00
Mini Hydel	7.00	7.00	7.00	0.00	7.00	0.00	7.00
Solar	2346.00	2346.00	2346.00	1297.00	1049.00	1297.00	1049.00
Wind	100.80	100.80	100.80	100.80	0.00	100.80	0.00
Total Non Conventional	2527.80	2527.80	2527.80	1397.80	1130.00	1397.80	1130.00
Discom Total		14375.59	15020.59	9756.42	4619.17	10211.46	4809.13
Open Access				1.00		1.00	
Grand Total				14376.59		15021.59	

Annexure - D(ii): Approved Contracted Capacities for the balance Control Period of FY 2017-18 and 2018-19.

Generating Station/Source	Total Capacity	(MW)					
		TSDISCOMS Share		TSSPDCL	TSNPDCL	TSSPDCL	TSNPDCL
		2017-18	2018-19	2017-18	2017-18	2018-19	2018-19
VTPS I	383.25	206.53	206.53	145.71	60.82	145.71	60.82
VTPS II	383.25	206.53	206.53	145.71	60.82	145.71	60.82
VTPS III	383.25	206.53	206.53	145.71	60.82	145.71	60.82
VTPS IV	462.50	249.24	249.24	175.84	73.40	175.84	73.40
RTPP I	382.20	205.97	205.97	145.31	60.66	145.31	60.66
RTPP II	382.20	205.97	205.97	145.31	60.66	145.31	60.66
RTPP III	191.10	102.98	102.98	72.66	30.33	72.66	30.33
KTPS A	216.72	116.79	116.79	82.40	34.39	82.40	34.39
KTPS B	216.72	116.79	116.79	82.40	34.39	82.40	34.39
KTPS C	216.72	116.79	116.79	82.40	34.39	82.40	34.39
KTPS D	455.00	245.20	245.20	172.99	72.21	172.99	72.21
KTPS VI	462.50	249.24	249.24	175.84	73.40	175.84	73.40
RTS B	56.88	30.65	30.65	21.63	9.03	21.63	9.03
KTPP I	462.50	249.24	249.24	175.84	73.40	175.84	73.40
KTPP II	555.00	555.00	555.00	391.55	163.45	391.55	163.45
KTPS VII	760.00	0.00	760.00	0.00	0.00	536.18	223.82
Bhadradri TPS	1080.00		1026.00			723.84	302.16
Total Thermal	7049.79	3063.45	4849.45	2161.30	902.17	3421.32	1428.15
Manchkund PH AP share	83.16	44.81	44.81	31.62	13.20	31.62	13.20
Tungabhadra PH AP share	57.02	30.73	30.73	21.68	9.05	21.68	9.05
SSLM LCPH	891.00	891.00	891.00	628.60	262.40	628.60	262.40
NSPH	807.44	807.44	807.44	569.65	237.79	569.65	237.79
NSLCPH	59.40	59.40	59.40	41.91	17.49	41.91	17.49
Pochampad PH	26.73	26.73	26.73	18.86	7.87	18.86	7.87
Nizamsagar PH	9.90	9.90	9.90	6.98	2.92	6.98	2.92
Singur	14.85	14.85	14.85	10.48	4.37	10.48	4.37
Priyadarshini Jurala HES	231.66	231.66	231.66	163.44	68.22	163.44	68.22
Pochampad II	8.91	8.91	8.91	6.29	2.62	6.29	2.62
Lower Jurala HE	237.60	237.60	237.60	167.63	69.97	167.63	69.97
Pulichintala	118.80	118.80	118.80	83.81	34.99	83.81	34.99
Total Hydro	2546.47	2481.83	2481.83	1750.95	730.89	1750.95	730.89
Total Genco	9596.26	5545.28	7331.28	3912.25	1633.06	5172.27	2159.04
NTPC(SR) Ramagundam U1-U6	629.78	339.39	339.39	239.44	99.95	239.44	99.95
NTPC(SR) Ramagundam U7	158.58	85.46	85.46	60.29	25.17	60.29	25.17
NLC TS-II Stage-I	103.93	56.01	56.01	39.51	16.49	39.51	16.49
NLC TS-II Stage-II	183.93	99.12	99.12	69.93	29.19	69.93	29.19
NPC-MAPS	38.99	21.01	21.01	14.82	6.19	14.82	6.19
Talcher Stage 2	374.00	201.55	201.55	142.19	59.36	142.19	59.36
NTPC-Simhadri Stage I	940.00	506.57	506.57	357.38	149.18	357.38	149.18
NTPC-Simhadri	432.49	233.07	233.07	164.43	68.64	164.43	68.64

Generating Station/Source	Total Capacity	TSDISCOMS Share		TSSPDCL	TSNPDCL	TSSPDCL	TSNPDCL
		2017-18	2018-19	2017-18	2017-18	2018-19	2018-19
Stage II							
Kaiga (Nuclear) Plant I & II	121.37	65.41	65.41	46.14	19.26	46.14	19.26
Kaiga (Nuclear) Plant III & IV	128.54	69.27	69.27	48.87	20.40	48.87	20.40
Vallur Thermal Power Plant	206.87	111.48	111.48	78.65	32.83	78.65	32.83
Kalpakkam	116.16	62.60	62.60	44.16	18.44	44.16	18.44
Tuticorn	234.23	126.23	126.23	89.05	37.17	89.05	37.17
Kudgi I & II	703.12	378.91	378.91	267.32	111.59	267.32	111.59
Neyveli	104.60	56.37	56.37	39.77	16.60	39.77	16.60
Total Central Sector	4476.59	2412.45	2412.45	1701.95	710.46	1701.95	710.46
APGPCL-I	15.60	6.67	6.67	4.71	1.96	4.71	1.96
APGPCL-II	41.72	17.84	17.84	12.59	5.25	12.59	5.25
Total Joint Sector	57.32	24.51	24.51	17.30	7.21	17.30	7.21
BSES	213.40	115.00	0.00	81.13	33.87	0.00	0.00
GVK Extension	213.40	115.00	115.00	81.13	33.87	81.13	33.87
Vemagiri	358.90	193.41	193.41	136.45	56.96	136.45	56.96
Gowthami	450.08	242.55	242.55	171.12	71.43	171.12	71.43
Konaseema	430.76	232.14	232.14	163.77	68.36	163.77	68.36
Total IPPs	1666.54	898.10	783.10	633.60	264.49	552.47	230.62
Singareni TPP	1128.00	1128.00	1128.00	795.80	332.20	795.80	332.20
Chhattisgarh Power	1000.00	1000.00	1000.00	705.50	294.50	705.50	294.50
Thermal Power Tech I	500.00	269.45	269.45	190.10	79.35	190.10	79.35
Thermal Power Tech	570.00	570.00	570.00	402.14	167.87	402.14	167.87
Total Others	3198.00	2967.45	2967.45	2093.54	873.92	2093.54	873.92
Bagasse	42.00	42.00	42.00	0.00	42.00	0.00	42.00
Bio Mass	24.00	24.00	24.00	0.00	24.00	0.00	24.00
Municipal/Industrial Waste	8.00	8.00	8.00	0.00	8.00	0.00	8.00
Mini Hydel	7.00	7.00	7.00	0.00	7.00	0.00	7.00
Solar	2346.00	2346.00	2346.00	1297.00	1049.00	1297.00	1049.00
Wind	100.80	100.80	100.80	100.80	0.00	100.80	0.00
Total Non Conventional	2527.80	2527.80	2527.80	1397.80	1130.00	1397.80	1130.00
Discom Total		14375.59	16046.59	9756.44	4619.15	10935.33	5111.26
Open Access				1.00		1.00	
Grand Total				14376.59		16047.59	

Annexure - E: Approved Regulated Rate Base and Return on Capital Employed

(Rs. Crs)

Sl. No.	Particulars	Projected		Approved	
		FY 2017-18	FY 2018-19	FY 2017-18	FY 2018-19
1	Assets (1.1 + 1.2)	13538.09	18919.53	13258.79	15276.52
	1.1 Opening balance of OCFA	10397.43	13538.09	10218.24	13258.79
	1.2 Additions during the year	3140.66	5381.44	3040.55	2017.73
2	Depreciation (2.1 + 2.2)	3552.59	4293.41	3555.70	4324.10
	2.1 Opening balance	2984.07	3552.59	2984.37	3555.70
	2.2 Depreciation during the year	568.52	740.82	571.33	768.40
3	Consumer Contribution & Grants	3641.81	4145.81	3641.86	4145.86
	3.1 Opening Balance	913.18	3641.81	913.18	3641.86
	3.2 Additions	2728.63	504.00	2728.68	504.00
4	Working Capital	74.67	81.60	59.68	69.93
	4.1 O& M (45 days of net O&M Exp)	74.67	81.60	59.68	69.93
	4.2 O& M Stores Inventory	0.00	0.00	0.00	0.00
5	Change in Rate Base (1.2-2.2-3.2)/2	-78.25	2068.31	-129.73	372.66
6	Regulated Rate base (1.1-2.1-3.1+4+5)	6496.61	8493.60	6250.64	6503.82
7	Capital structure				
	7.1 Debt (Percent)	75.00%	75.00%	75.00%	75.00%
	7.2 Equity (Percent)	25.00%	25.00%	25.00%	25.00%
8	Cost of funds				
	8.1 Cost of Debt (Percent)	12.00%	12.00%	9.95%	9.95%
	8.2 Return on Equity (Percent)	14.00%	14.00%	14.00%	14.00%
9	WACC (7.1 X 8.1) + (7.2 X 8.2)	12.50	12.50	10.96%	10.96%
10	Return on Capital employed (6X9)	812.08	1061.70	685.23	712.98

Annexure - F(i): Transmission Charges/Rate as filed by TSTransco

(Rs. Crs)

S. No.	Particulars	Projected by the Petitioner	
		FY 2017-18	FY 2018-19
1	O&M Expenses	605.62	661.90
2	Depreciation	568.52	740.82
3	RoCE	812.07	1061.70
4	Income Tax	120.34	157.33
5	Total Expenses	2106.55	2621.75
7	Less: O&M Expenses capitalised	131.69	94.23
8	Less: Non Tariff Income	50.00	50.00
9	Gross ARR	1924.86	2477.52
10	Less: Appropriations		
	(i) As per True up of 2nd Control period	-	-
	(ii) Based on True up performance analysis for FY 2014-15 and FY 2015-16	302.21	302.22
11	Total Net ARR	1622.65	2175.31
12	Transmission Contracted Capacity (MW)	14376.59	15021.59
13	Transmission Tariff (Rs./kW/Month)	94.06	120.68

Annexure - F(ii): Transmission Charges/Rate Approved by the Commission

(Rs. Crs)

Sl. No.	Particulars	Projected		Approved	
		FY 2017-18	FY 2018-19	FY 2017-18	FY 2018-19
1	O&M Expenses	605.62	661.90	564.45	661.46
2	Depreciation	568.52	740.82	510.92	529.67
3	RoCE	812.07	1061.70	685.23	712.98
4	Income Tax	120.34	157.33	46.69	48.58
5	Total Expenses	2106.55	2621.75	1807.28	1952.69
7	Less: O&M Expenses capitalised	131.69	94.23	80.40	94.23
8	Less: Non-Tariff Income	50.00	50.00	121.00	133.00
9	Gross ARR	1924.86	2477.52	1605.88	1725.46
10	Less: Appropriations				
	(i) True-up pertaining to 2 nd Control Period			317.13	--
	(ii) Mid-Term review for FY 2014-15 and FY 2015-16	302.21	302.22	317.30	317.30
11	Total Net ARR	1622.65	2175.31	971.45	1408.16
12	Transmission Contracted Capacity (MW)	14376.59	15021.59	14376.59	16047.59
13	Transmission Tariff (Rs./kW/Month)	94.06	120.68	56.3099	73.1243

Annexure - G: Plans for Capital Expenditure

A. Plans for Capital Expenditure for 400kV

1. Bhadradri Thermal Power Transmission Scheme (on- going):

- The scheme consists of erection of 400/220 kV SS at Julurupadu along with the associated 400 kV & 220 kV Transmission Net Work.
- i. Erection of 400 kV Quad Moose DC Line from Manuguru TSGENCO plant Switchyard to proposed 400/220kV Julurupadu (Bommanapalli) SS – 100 kMs.
- ii. Erection of 400 kV Quad Moose DC Line from proposed 400/220kV Julurupadu (Bommanapalli) SS to existing 400kV Khammam (PGCIL) SS – 50 kMs.
- iii. Erection of 400 kV Quad Moose DC Line from proposed 400/220kV Julurupadu (Bommanapalli) SS to upcoming 400/220/132 kV Suryapeta SS – 125 kMs.
- iv. Erection of 400/220kV Julurupadu (Bommanapalli) SS with 2 x 315 MVA capacity.
- v. Erection of 400 kV Bay extensions at Suryapet 400/220 /132 kV SS.
- vi. Erection of 400 kV Bay Extensions at 400 kV Khammam (PGCIL) SS.
- vii. Erection of 220/132/33kV Kallur SS with 2 x 100 + 2 x 50 MVA capacity.
- viii. Erection of 132/33kV Chandragonda SS with 2 x 31.5 MVA capacity.
- ix. Erection of 220 kV Single Moose DC Line from proposed 400/220kV Julurupadu (Bommanapalli) SS to proposed 220/132/33kV Kallur SS – 70kMs.
- x. Erection of 132 kV DC Line from proposed 220/132kV Peddagopati to existing 132/33kV SS Madira - 40kMs.
- xi. Erection of 132 kV line with Multi-Circuit towers for making LILO of existing 132kV Budidampadu – Penubali & 132kV Thallada- Penuballi DC Line- 4 kMs.
- xii. Erection of 132 kV DC Line from proposed 220/132kV Peddagopati to 132/33kV SS Thallad - 30kMs.
- xiii. Erection of 132 kV Line with Multi-Circuit towers for making LILO of existing 132kV Khammam-Chilakallu DC line to proposed 220/132kV Peddagopat -30kMs.
- xiv. Erection of 132 kV Single Zebra DC/SC Line from proposed 220/132/33kV Kallur to proposed 132/33kV Chandragonda SS - 30kMs.
- xv. Erection of 132kV Bay extensions at Madira 132/33kV SS. xvi. Erection of 132kV Bay extensions at Tallada 132/33kV SS.
- Administrative approval is accorded vide T.O.O.(CE-Construction) Ms.No.103,

Dt:05-06-2015 with an estimated cost of the scheme of Rs.1,280.73 Crs (including IDC of Rs. 101.12 Crs)

- The revised Admin approval was issued on 29.04.16 with an estimated cost of Rs.1200.95 Crs and IDC of Rs.103.41 Crs due to change in scope of downstream works.
- The scheme is programmed for completion during 2018-2019.

2. **KTPS VII Stage (1 X800MW) Power Transmission Scheme (on going)**

- The scheme consists of erection of 400/220 kV SS at Jangoan along with the associated 400 kV, 220 kV and 132 kV Transmission Net Work.
 - i. Erection of 400/220kV Sub-Station at Jangaon, Warangal District with 3 X 500MVA.
 - ii. KTPS Stage – VII Switchyard to proposed 40/220/132kV Julurupadu (Bommanapalli) Sub-Station by Quad Moose DC line – 39 kms.
 - iii. 400kV Quad Moose DC line from proposed Julurupadu Bommanapalli (400/220/132kV SS) to proposed 400/220kV Sub-Station at Jangaon, Warangal District – 170kms.
 - iv. 400kV Quad Moose DC line from proposed 400/220kV Sub-Station at Jangaon to proposed 400kV Tippapur LI SS – 70 kms.
 - v. Up gradation of 132/33kV Jangaon Sub Station to 220/132/33kV Jangaon Sub Station with 2X100 MVA in Warangal Dist.
 - vi. Erection of 220/132/33kV Sub-Station at Husnabad with 2 X 100MVA and 2X 50 MVA in Warangal Dist.
 - vii. 220kV Single Moose DC line from proposed 400/220kV Jangaon SS to upcoming 220/132/33kV Jangaon Sub-Station – 15 kms.
 - viii. 220kV Single Moose DC line from proposed 400/220kV Jangaon SS to proposed 220/132/33kV Husnabad Sub-Station – 60 kms.
 - ix. 220kV Single Moose DC line from proposed 400/220kV Jangaon SS to existing 220kV Sub-Station , Bhongiri in Nalgonda. – 70 kms.
 - x. Proposed 220/132/33 kV Husnabad SS to the existing 132/33kV Husnabad in Warangal Dist – 10 kms.
 - xi. 400kV Quad Bay Extensions at Proposed 400/220/132 kV Bommanapalli SS for Jangaon 400kV SS – 2 Nos.

xii. 400 KV Quad Bay Extensions at Proposed 400kV Tippaur LI Sub Station for Jangaon 400 KV Sub Station.- 2 Nos.

xiii. 220kV Bay Extensions at Bhongir 220kV SS at Nalgonda – 2 Nos. ix. 132kV Bay Extensions at Husnabad 132 kV SS – 2 Nos.

- Administrative approval is accorded vide T.O.O.(CE-Construction) Ms.No.107, Dt:18.06.2015 and approximate cost of the scheme is Rs.1134.14 Crs (including IDC of Rs.101.14 Crs).
- The revised Admin approval was issued on 24.10.16 with an estimated cost of Rs.1307.53 Crs (including IDC of Rs.82.39 Crs), due to change in line length of 400 kV line covered under Item (ii) and (iii).
- The scheme is programmed for completion during 2018-2019.

3. Erection of 400kV Substation at Dindi in Mahaboobnagar District and connected network for 9 Hrs. Agricultural Supply During Day.

- The scheme consists of erection of 400 kV SS at existing 220 kV Dindi switching station along with the associated 400 kV and 220 kV system.

i. 400/220kV Dindi Sub-Station – 2x315 MVA

ii. 400kV LILO Line of Srisailam – Mamidipally DC Line to 400kVSS Dindi. – 15 KM

iii. 400kV LILO Line of NagarjunaSagar – Gooty SC Line to 400kVSS Dindi. – 10 KM

iv. Erection of 220 kV features at 132/33 kV Sub-Station at Nagarkurnool – 2x100 MVA

v. 220kV DC Line from proposed 400kVSS Dindi to existing 220 kV Kondamallepally Sub-Station. - 35 KM

vi. 220kV DC Line from proposed 400kVSS Dindi to proposed 220 kV Nagarkurnool Sub-Station–43 KM.

- Administrative approval is accorded vide T.O.O.(CE-Projects-I) Ms.No.116, Dt:2.7.2015 with an estimated cost of Rs.379.23 Crs (including IDC of Rs.44.70 Crs).
- The revised Admin approval was issued on 19.1.16 with a estimate cost of Rs.321.54 Crs (including IDC of Rs.34.92 Crs) due to certain modification in downstream net work of 400/220kV SS at Dindi.
- The scheme is programmed for completion during 2017-18.

4. 765kV Wardha - Hyderabad Link Transmission Scheme

- The scheme consists of erection of 400 kV Sub-station at Maheshwaram and Kethireddypalli along with the associated 400 kV and 220 kV Transmission Net Work.
- i. 400/220kV Maheshwaram Substation – 2 x 315 MVA.
- ii. 400kV Quad Moose DC Line from proposed Maheshwaram 400/220kV Substation to Maheshwaram 765/400kV (PGCIL) SS -1.5 kM.
- iii. 400kV Twin Moose DC Line from proposed Maheshwaram 400/220kV Substation to Shankarapally 400 kV SS (to be established by re-alignment of the „LILo of Srisailam – Mamidipalli at Shankarpalli“ and re-instating the Srisailam – Mamidipalli 400kV DC line)- 6.5 kM
- iv. Bay extensions at Maheshwaram 765/400kV (PGCIL) SS – 2 Nos.
- v. 400/220/132kV Kethireddypalli (Manikonda) SS – 2 x 315 MVA.
- vi. LILo of both Circuits of Suryapeta -Shankarpally Quad Mooose D/C Line to Manikonda 400/220 kV SS-25 kM.
- vii. LILo of both circuits of 220kV Dindi- Bongulur at Proposed Maheshwaram 400/220kV SS on 220kV Multi-Circuit Towers – 10 kM.
- viii. 220kV features at existing 132/33kV Madgula Sub Station – 2x100 MVA.
- ix. LILo of both circuits of 220kV Dindi- Bongulur at Proposed Madgula 220kV SS on Multi Circuit Towers-4 kM.
- x. 220kV DC line from Proposed Maheshwaram 400/220kV SS to Fabcity 220kV SS – 22 kM.
- xi. Part of 220kV DC line from Proposed Maheshwaram 400/220kV SS to Fab city 220kV SS on Narrow based Multi Circuit Towers-4 kM.
- xii. Erection of 220kV Bays at 220/132kV Sub-station at Fab city - 2 Nos.
- xiii. 220/132/33 kV Kothur Sub Station-2 x 160 + 2 x 80 MVA.
- xiv. LILo of one circuit of 220kV Mamidipally - Shadnagar at Proposed Kothur 220kV SS – 3KM
- xv. LILo of one circuit 220kV Shamshabad - proposed 400/220/132kV Kethireddypalli (Manikonda) SS at Proposed Kothur 220kV SS-13 kM.
- xvi. LILo of one circuit of 220kV Shamshabad - Yeddumailaram and 220kV Shadnagar - Shankarpally to proposed 400/220/132kV Kethireddypalli (Manikonda) SS on 220kV Multi-Circuit Towers -3 kM.

- xvii. Erection of 132/33kV SS Kanakamamidi with Automation Panels with all provisions of 220kV except 220kV incoming feeder Bays and 220/132kV Power Transformer Bays – 2 x 80.
- xviii. 220kV DC line from proposed 400/220/132kV Kethireddypalli (Manikonda) SS to 132/33kV Kanakamamidi SS on 220kV Narrow Based Multi Circuit Towers –5 KM.
- xix. 220/132kV Sub-Station at Banswada – 2 x 100 MVA.
- xx. 220kV DC line from 400/220kV SS Dichpally to proposed 220/132kV SS Banswada – 60 KM.
- xxi. Erection of 220kV Bays at 400/220kV Sub-station at Dichpally - 2 Nos.
- xxii. 220kV DC line from 400/220kV SS Dichpally to 220/132kV SS Kamareddy –65KM
- xxiii. Erection of 220kV Bays at 220/132kV Sub-station at Kamareddy – 2 Nos.
- xxiv. LILO of one circuit of proposed DC line from 400/220kV SS Dichpally to proposed 220/132kV SS Banswada at proposed 220/132kV Renzal SS – 25KM
- Administrative approval is accorded vide T.O.O.(CE-Construction) Ms.No.146, Dt:5.8.2015 with an estimated cost of Rs.786.34 Crs (including IDC of Rs.90.95 Crs).
 - The revised Admin approval was issued on 4.10.16 with a estimate cost of Rs.1069.92 Crs (including IDC of Rs.97.50 Crs) due to certain modification in down stream Net Work.
 - The scheme is programmed for completion during 2018-2019.

5. 400kV Augmentation Scheme:

- The scheme proposes augmentation of 315 MVA power transformer at 400 kV Dichpalli SS and Veltoor (Mahaboobnagar) SS to cater load demand and to provide uninterrupted power to Agriculture Sector 9 hrs day supply and extension of power supply to pumphouses under Telangana Water Grid Project.
- i. Augmentation of 315 MVA, 400/220 kV auto transformr at Dichpalli SS –1 No.
- ii. Augmentation of 315 MVA, 400/220 kV auto transformr at Veltoor SS – 1 No.
- Administrative approval is accorded vide T.O.O.(CE-Projects-I) Ms.No.20, Dt:29.8.2015 with an estimated cost of Rs.58.71 Crs.
 - The scheme is programmed for completion during 2016-2017.

6. Nirmal Power Transmission Scheme

- The scheme consists of erection of 400 kV substation at Nirmal along with associated 400 kV and 220 kV Transmission Net Work system for evacuation of Power from M/s STPP (3x600 MW) as an alternate source.
- i. Erection of 400/220kV SS at Nirmal with 3 x 315MVA Transformers.
 - ii. Erection of 220/132kV SS at Renzal with 2x100MVA Transformer (up gradation from 132/33kV SS).
 - iii. 220/132 kV SS at Indravelly with 2x100 MVA Transformers.
 - iv. Erection of 400kV Quad Moose DC line from 400kV SCCL to the proposed 400/220kV Nirmal SS – 145 km.
 - v. Erection of 220kV DC line from the proposed 400/220kV Nirmal SS to the existing 220kV Jagityal SS – 100 km.
 - vi. Erection of 220kV DC line from the proposed 400/220kV Nirmal SS to the existing 220kV Nirmal SS – 10 km.
 - vii. Erection of 220kV DC line from the proposed 400/220kV Nirmal SS to the proposed upgraded 220/132kV Renzal SS – 100 km.
 - viii. Erection of 220kV DC line from the proposed 400/220kV Nirmal SS to the proposed 220/132kV Indravelly SS – 87 km.
 - ix. Erection of 132kV DC line from the proposed 220/132 kV Indravelly SS to the proposed 132/33kV Utnoor SS – 15 km.
 - x. Erection of 132kV DC line from the proposed 220/132kV Indravelly SS to the proposed 132/33 kV Asifabad SS on 220 kV Multi circuit towers – 74 km.
 - xi. LILO of Adilabad – Pochampad and Adilabad – Ichoda to proposed 220/132 kV Indravelly SS with multi circuit line with four ckts
 - xii. Erection of 220kV Bay Extensions at 220kV Jagityal SS – 2 Nos.
 - xiii. Erection of 220kV Bay Extensions at 220kV Nirmal SS – 2 Nos.
 - xiv. 132 kV Bay extensions – Utnoor – 2 Nos, Asifabad – 2 Nos.
 - xv. Procurement of Emergency Restoration System – 1 No.
 - An Administrative approval is accorded by erstwhile APTRANSCO vide T.O.O.(CE-Construction/ 400KV) Ms.No.161, Dated. 21-08-2012 with an estimated cost of Rs. 604.34 Crs, including interest during construction (IDC).

- The first revision of Administrative approval is accorded vide T.O.O.(CE-Construction) Ms.No.6, Dt:24.03.2015 with an estimated cost of is Rs.924.19 Crs (including IDC of Rs. 70.04 Crs) due to request of M/s SCCL as they were planning to add 600 MW unit to the proposed 2x600 MW units.
- The second revision of Administrative approval was accorded due to modification in downstream net work as per Field recommendations and Revised Administrative approval is accorded vide T.O.O.(CE-Projects-I) Ms.No.18, Dt:16.05.2016 with an estimated cost of Rs.1136.34 Crs (including IDC of Rs. 60.78 Crs)
- The scheme is programmed for completion during 2018-2019.

7. Wind Power Evacuation Scheme (ongoing):

- The scheme consists of erection of 400 kV, 220 kV and 132 kV works and most of them are being executed by APTRANSCO. A portion of 400 kV Quad DC line from Veltoor 400 kV SS to Urvakonda 400 kV SS (Interstate line-197 KM) i.e. Veltoor - Tungabhadra River Crossing Point (75 km) and connected bays at Veltoor are being taken by TSTRANSCO. The works are programmed for completion in 2016-17.

8. Jaipur Power Transmission Scheme (To evacuate power from 2x600 MW Power SCCL Plant) (ongoing Scheme):

- The scheme consists of the following:
 - i. Erection of 400/ 220 /132 kV Substation at Narsapur (3x315 MVA and 2x100 MVA)
 - ii. Erection of 400kV Quad Moose DC Line from Jaipur TPP – Gajwel 400kV Substation - 163 kM.
 - iii. LILO both circuts of 400 KV Yeddumailaram (Shankarpalli) SS – Gajwel 400 kV SS to the propose Narsapur SS – 12 KM.
 - iv. 4 Nos. 400kV Bay Extensions at Gajwel 400kV SS (2 Nos.-Quad;2 Nos.: Twin)
 - v. Erection of Shapurnagar Extension SS with 6 Nos. 220kV Bays
 - vi. Erection of interconnection to 220kV Shapurnagar Extension SS from Shapurnagar existing SS with Single moose with 220 KV 1000 Sqmm XLPE UG cable - 0.5 kM

- vii. Erection of 220kV Single moose DC line from 400kV Narsapur SS – 220kV Shapurnagar Extension SS – 35 kM
- viii. Shifting of 220 kv Shapurnagar – Miyapur lines to the 220 KV Shapur Nagar extension SS with 220 KV 1000 Sqmm XLPE UG cable – 0.5 KM.
- ix. Erection of shifting of 220kV Shapurnagar – Miyapur lines to the 220kV Shapurnagar Extension SS – 0.5 kM
- x. Erection of 220kV single moose line from 400kV Narsapur SS to 220kV Bachupally/Miyapur SS – 45 kM (Single Moose DC).
- xi. Erection of 132 kV DC line from proposed 400 KV Narsapur SS to existing 132 kV Gummadidala SS – 17.25 kM
- xii. Erection of LILO of 132kV Narsapur –Koudipalli SC line to proposed 400 kV Narsapur SS – 17.25 kM.
- xiii. Erection of Bay Extensions at 132 kV Gummadidala Substation – 2 Nos.
 - The administrative approval was issued by erst while APTRANSCO on 23.05.2012, an estimated cost of Rs.963.07 Crs and Rs.122.30 Crs towards Interest During Construction (IDC).
 - The Revised administrative approval was issued on 2.05.2014, an estimated cost of Rs.831.90 Crs (including IDC of Rs. 54.22 Crs).
 - Administrative approval once again revised due to space constraint at Shapoor Nagar SS as informed by field officers and revised administrative approval was issued on 4.12.2014, an estimated cost of Rs.842.39 Crs (including IDC of Rs. 61.59 Crs)
 - The scheme is programmed for completion during 2017-2018.

9. Erection of 400/220/132kV Suryapet substation, in Nalgonda District and connected network under transmission system improvement, on stand alone basis (on going).

- The scheme consists the following:
 - i. Erection of 400/220/132kV Substation at Suryapet- (2x315 & 2x100 MVA)
 - ii. Erection of LILO of both circuits of 400kV VTS – Malkram DC line to the proposed 400/220/132kV Suryapet Substation – 10 kM
 - iii. Erection of 400kV Quad Moose DC line from 400/220kV Kamavarapukota SS- Suryapet 400/220/132kV SS – 212 kM.

- iv. Erection of 400kV Quad Moose DC line from (Yeddumailaram) Sankarpalli SS – Proposed 400kV Suryapet SS – 240 kM
- v. Erection of LILO of one Circuit of 220kV Chillakallu – Narkatpally DC line to the proposed 400/220/132kV Suryapet Substation – 21 kM
- vi. Erection of LILO of (Ckt-I&II) of 220kV Khammam – Miriyalaguda DC line to the proposed 400/220/132kV Suryapet Substation – 30 kM
- vii. Erection of 132kV DC line from proposed 400/220/132kV Suryapet to 132kV existing Suryapet Substation – 7 kM.
- viii. Erection of 132kV DC/SC line from proposed 400/220/132kV Suryapet to 132kV existing Shaligowraram Substation – 35 kM
- ix. Erection of 132kV DC/SC line from proposed 400/220/132kV Suryapet to 132kV existing Thungathurthy Substation – 30 kM
- x. Erection of 400kV (Quad) Bay Extensions at Shankarapalli SS – 2 Nos.
- xi. Erection of 400kV (Twin) Bay Extensions at Suryapet SS – 4 Nos.
- xii. Erection of 132kV Bay Extensions at existing 132kV Suryapet SS – 2Nos.
- xiii. Erection of 132kV Bay Extensions at existing 132kV Shaligowraram SS–1No.
- xiv. Erection of 132kV Bay Extensions at existing 132kV Thungathurthy SS – 1No.
 - Administrative approval accorded vide T.O.O.(CE-Construction/400kV-II) Ms.No. 01, date: 17-01-2014. With an estimated cost of IDC as Rs.1757.36 Crs including IDC.
 - Revised administrative approval was accorded vide T.O.O.(CE-Construction) Ms.No.49 Date:04-12-2014 with the total cost of the scheme including IDC as Rs.1738.03 Crs. The scheme is once again revised and revised Admn. Approval was accorded on 15.03.16 with an estimated cost of Rs.1767.48 Crs including IDC.
 - The scheme is programmed to be completed in 2016-17.

10. Reactor Scheme –III: (on going scheme)

- The installation of 5 Nos. 125 MVAR reactor at different 400kV Substations namely, Mamidipally, Shankarapalli, Gajwel, Malkaram, and Mahaboobnagar.
- The administrative approval was issued on 19.3.2014 an estimated cost of Rs.80.74 Crs.
- The scheme is programmed for completion during 2017-18.

11. Telangana STPP-I (2X800 MW) Power Evacuation Scheme (New Scheme)

- The scheme is proposed for evacuation of power from Telangana STPP Phase-I (2x800 MW)
- The scheme consists of construction of 400/220/132kV Sub Station at Nedunuru, and 400/220 kV GIS SS Ramachandrapuram, alongwith associated Transmission Network.
- The scheme consists of the following:
 - i. Erection of 400/220/132 kV Sub-Station at Nedunuru, Karimnagar District with 2 X 500 + 2X 100 MVA.
 - ii. Erection of 400/220 kV Sub-Station at Ramachandrapuram, Ranga Reddy District with 2 X 500 MVA
 - iii. 400kV Quad Moose DC line from proposed Telangana STPP(2X800 MW) to proposed 400/220/132 kV Nedunuru SS - 60 kms
 - iv. LILO of both circuits of 400kV Upcoming Jangoan SS - 400kV Upcoming Tippapur LI SS Quad Moose DC line to proposed 400/220/132 Nedunuru SS - 30 kms
 - v. 400 kV Quad Moose DC line from proposed Telangana STPP (2X800MW) to upcoming 400 kV Narsapur SS-170 kms
 - vi. 400 kV Quad Moose DC line from upcoming 400 kV Narsapur SS to proposed 400/220kV RC Puram SS in RangaReddy District-60 kms
 - vii. LILO of 220kV Durshed - Siddipet DC line to proposed 400/220/132kV Nedunuru SS-10 kms
 - viii. 220 kV UG cable from Proposed 400kV RCPuram SS to existing 220 kV Gachibowli SS– 10 kms
 - ix. 220 kV UG cable from Proposed 400kV RCPuram SS to existing 220 kV Raidurg SS-10 kms
 - x. 220 kV Single Moose DC line from proposed 220kV Borampet SS to existing 220 kV Miyapur SS-35 kms
 - xi. 220 kV Single Moose DC line from proposed 220kV Borampet SS to existing 220 kV Shahpurnagar SS-35 kms
 - xii. 220 kV Bay Extensions at 220 kV Miyapur SS and Shapurnagar SS - 4 nos.

- The scheme is programmed is completion during 2020-21.

12. YADADRI POWER EVACUATION SCHEME:

- It is proposed for evacuation of power from Yadadri Thermal Power Plant (5x800 MW).
- Scheme approved by Standing committee in MOM dt:18.02.2016 with following works:
 - i. Erection of 400/220/132kV Choutuppal SS with 3x500MVA + 2x100MVA.
 - ii. 400kV Quad Moose DC Line from Damaracherla Switchyard to Proposed 400/220/132 kV Choutuppal SS – 150KM
 - iii. 400kV Quad Moose DC Line from Damaracherla Switchyard to Proposed 400/220 kV Dindi SS – 140KM
 - iv. 400kV Quad Moose DC Line from Damaracherla Switchyard to upcoming 400/220 kV Maheshwaram (TSTRANSCO) SS – 155KM
 - v. 400kV Quad Moose DC Line from Damaracherla Switchyard to upcoming 400/220 kV Jangoan SS – 155KM
 - vi. 220kV Single Moose DC line from Proposed 400/220/132kV Choutuppal SS to Upcoming 220/33kV Hayatnagar SS.
 - vii. Erection of 2x125MVA Bus Reactor at Damaracherla Switchyard.
 - The proposed completion of the scheme is during FY 2017-2020.

B. Plans for Capital Expenditure for 220kV and 132kV Schemes

Capital works are being taken up for Evacuation of power from the up-coming Generating Stations, Strengthening of the Transmission System and to improve the system voltage profile and also to enhance the reliability of the system. In order to cope with the above, a number of new 220 kV & 132 kV substations are being erected with the funding from REC/PFC/JICA/Commercial Banks and Internal Funding under Normal Plan.

1. SCHEMES UNDER PFC FUNDING:

The works for erection of 220 kV Switching Station at Thimmajipet are completed and is scheduled for commissioning in Nov / Dec 2016. The works for erection of 132/33 kV

substation at Gudur and 132/33 kV substation at Kamanpur are completed and commissioned.

The work in respect of 132/33 kV substation at NIMS under PFC Funding is commissioned on 25.09.2016.

2. SCHEMES UNDER REC FUNDING:

So far 1 No. 220/132/33 kV substation at Nagole & 6 Nos., under REC Funding are commissioned and 14 Nos 132/33 kV substations are programmed for completion during the year 2016-17.

3. SCHEME UNDER JICA FUNDING:

To develop the Transmission Network in the twin cities of Hyderabad & Secunderabad, so as to cope up with the load growth in the twin cities and to provide quality & reliable power supply and to avoid low voltage problem, a Scheme for erection of 3 Nos. 220 kV substations (2 Nos. conventional & 1 No. GIS) and 5 Nos. 132 kV GIS substations along with connected XLPE UG Cable lines & bay extensions was proposed and was approved by the erstwhile APTRANSCO at an estimated cost of Rs. 1195.50 Cr. Since all the proposed substations are located in highly populated areas of the twin Cities where availability of required land and necessary clearances for takeoff for overhead transmission lines is very difficult due to the right of way problems & non availability of corridors, hence it is proposed to erect SF6 Gas Insulated Switchgear (GIS) substations and connected lines by laying of 220 kV or 132 kV Under Ground XLPE cables.

The above works are being taken with financial assistance from M/s. Japan International Co-operation Agency. The works of erection of all the substations under JICA funding are nearing completion and are proposed to be commissioned by March"2017.

4. SCHEME FUNDED BY OTHER FINANCIAL INSTITUTIONS:

- For system improvement in twin cities, a scheme was formulated for erection of 2 Nos. 132 kV GIS substations at Fever Hospital and Narayanaguda with XLPE UG cable lines and 1 No. 220 kV substation at Miyapur (Bachupalli) along with connected XLPE UG cable lines to meet the load demand of Hyderabad Metro Rail,

IT Parks in and around the Miyapur. The estimated cost is Rs. 152.23 Cr. The works are nearing completion and are programmed to be commissioned by March 2017.

- TRANSCO has approved for erection of 220/132 kV sub-station at Huzurnagar along with connected 220 kV and 132 kV lines for evacuation of power from Pulichintala and to meet Industrial loads at a total scheme cost of Rs. 52.49 Cr. The works are programmed to be completed by May 2017.
- Further, various 132 kV and 220 kV substations in 2016-17 to 2018-19 are proposed to meet the growing load demand in rural and urban areas and are being funded by various financial institutions / Banks.

Details of the proposed lines and substations pertaining to 220 KV and 132 kV Schemes during Third control period are mentioned below.

Description	FY 2016-17	FY 2017-18	FY 2018-19
220 kV lines (in CKM)	914.03	734.00	299.00
220 kV Substations	13 Nos.	6 Nos.	3 Nos.
132 kV lines (in CKM)	440.52	321.80	54.10
132 kV Substations	46 Nos.	26 Nos.	14 Nos.

C. Plans for Capital Expenditure for Renovation and Modernization and Improvement of Existing Transmission System & Augmentation of PTR Works

- The RMI Scheme for 2nd control period i.e. FY 2009-14 was prepared for procurement of substation and line material for replacement of aged / obsolete equipment.
- An amount of Rs.493.09 Cr Capital expenditure was projected for Renovation and Modernization of old assets (RMI schemes) in the ARR of 2nd control period (FY 2009-14) and Hon'ble commission has accorded approval for Rs.250 Cr (Rs.50.00 Cr for each of FY) in its tariff order.
- The RMI Scheme for 3rd control period i.e. FY 2014-19 was prepared in united Andhra Pradesh State for procurement of substation and line material for replacement of aged / obsolete equipment.
- An amount of Rs.984.58 Cr capital expenditure was projected for Renovation and Modernization of old assets (RMI schemes) in the ARR of 3rd control period (FY 2014-19) and Hon'ble commission has accorded approval for Rs.492.20 Crs in its tariff order

dt.09.05.2014 (Page No.30).

Sl. No.	Financial Year	Renovation and Modernization	
		Filing	APERC approved scheme
1	2014-15	147.60	73.80
2	2015-16	196.91	98.50
3	2016-17	196.66	98.30
4	2017-18	197.02	94.40
5	2018-19	246.39	123.20
	Total	984.58	492.20

- v. Due to implementation of RMI Scheme, outages of substation equipment have reduced, improving reliability and stability of Transmission System.
- vi. In view of the above, RMI Scheme for balance 3rd Control Period for FY:2016-2019 is also prepared as a part of preparation of Resource Plan for replacement of old and obsolete equipment in phased manner which have served for more than 25 years. Based on the above, the following activities are proposed to be carried out in next 3 year plan (2016-17 to 2018-19) under RMI Scheme.
- Replacement of old & obsolete substation equipment as per Table-1.
 - Replacement of old 220KV & 132KV towers, 220KV & 132KV line conductors, earth wire and total replacement of 132KV line as per Table-2.

Table-1:

List of substation equipment that have served for above 25 years and proposed for replacement under RMI scheme.

Sl. No.	Name of the Sub-station equipment	Unit	400K V	220KV	132KV	33KV	11KV	Total	Proposed to replace in the RMI scheme
1	Circuit Breakers	Nos.	0	18	102	123	2	245	114
2	CTs	Nos.	0	68	247	171	0	486	244
3	PTs	Nos.	0	24	115	70	0	209	51
4	CVTs	Nos.	0	40	137	5	0	182	37
5	LAs	Nos.	0	82	423	249	0	754	310
6	Isolators	Nos.	0	78	421	336	2	837	385
7	Conductors	Km.	0	3.6	14.26	2.63	0	20.49	20.49
8	Relays	Nos.	0	5	88	82	0	175	175
9	C&R Panels PTRs	Nos.	0	0	25	9	0	34	34
10	Feeders C&R panels	Nos.	0	2	54	58	0	114	30
11	Capacitor bank	Nos.	0	0	9	23	0	32	32

Table-2:

List of line equipment that have served for above 25 years and proposed for replacement under RMI scheme.

B	Lines Equipment	Unit	220KV	132KV	33KV	Total	Proposed to replace in the RMI scheme
1	Zebra ACSR Conductor	Km.	1445.22	54.8	0	1500.02	148.50
2	Panther ACSR Conductor	Km.	0	6510.41	0	6510.41	148.00
3	Moose ACSR Conductor	Km.	16.2	362.7	0	378.9	16.20
4	Panther AAAC Conductor	Km.	0	540	0	540	170.00
5	Insulators	Nos.	52114	192359	4417	248890	9931.00
6	GI steel wire	Km.	211.5	1166.5	0	1378	120.00
7	HTGS steel wire	Km.	382.1	1004.76	53.28	1440.14	175.68
8	Towers	Nos.	1484	6527	0	8011	91.00

In view of the above, the investment required for carrying out the above Renovation & Modernization schedules is consolidated:

Sl. No.	Financial Year	Proposed RMI
1	2016-17	50.12
2	2017-18	50.09
3	2018-19	50.13
Total for FY 2016 to 19:		150.34

System improvement will be achieved through following plans:

- Voltage optimization through reactive power compensation (Installation of Capacitor banks) at 33KV and 132KV level and reactors at 400KV level.
- Adoption of GIS technology on wide scales.
- High transmission operating voltages.
- Up Gradation of Protection System of all 220KV and 400KV Voltage level substations with numerical relay with compatible to ICE 61850 protocols.
- Replacement existing Non-ABT 0.2 class with high accuracy ABT electronic energy meters of 0.2s class.
- Installation of CC cameras at all 400KV substations for better operation & Maintenance purpose.
- Replacement of aged conductors in a phased manner, since conductor snapping and jumper failures are found to be the major causes for interruptions.
- Replacement of old and failed insulators on existing lines.
- Replacement of the conductor of overloaded lines, periodical tree cutting work to

prevent falling of branches with conductor, conducting quarterly inspection of lines and timely rectification of defects noticed.

- Breakdown staff attending supply interruptions is arranged round the clock.
- Emergency vehicles are kept ready for breakdown staff round the clock to facilitate quick and timely deployment of staff and minimize the duration of interruptions.
- Safety appliances such as gloves, safety shoes, helmets, earthing rods are also provided to the breakdown staff with necessary T&P.
- Providing of Rolling Stock of important equipments like CTs, PTs, Circuit breaker spares and PTRs to meet the emergencies and reduce the downtime.
- Use of Thermo Vision cameras in EHT switchyard to detect hot spots and taking remedial actions on war foot basis.
- Use of off line signature preventive maintenance and line fault locators for locating the fault on lines during breakdowns.
- TSTRANSCO is carrying out the hot line works very effectively in the live line maintenance from 132KV to 400KV lines and substations by adopting hot stick method – using insulated sticks, bare hand technique – using conductive suit along with insulated ladder. Like replacement of damaged insulators, tightening of bolts and nuts of jumpers, shoe clamp, tension clamp and bay to bay jumpers connection etc.,

At present, some of the 220KV and 132KV EHT Substations & Transmission Lines are in service for the Last 40 years. The full life of the equipment is already completed. Hence in addition to the above, the following steps are proposed to improve the performance and monitoring.

- Renovation and Modernization Scheme is prepared for Rs. 150 Crs for procurement of substation and line materials for replacement of aged / obsolete equipment.
- Replacement of MOCB's ABCB etc., with SF6 type circuit breakers.
- Automation of the Substation for load shedding.
- Replacement of equipment with "latest state of art" making new provision as a modernization process.
- Up Grading of existing conductors with high temperature low sag conductors Viz., AL-59, INVAR, ACCC etc.,

- Dispensing off group contact breakers for PTRs with individual breakers.

D. Brief Write Up On Augmentation Of Power Transformers

- 1) Augmentation of Power Transformers works for 6 Nos. at 132KV Voltage level were taken up to meet the demand at an estimated cost of Rs. 5.46 Crs during 2014-15.
- 2) Augmentation of Power Transformers works for 23 Nos. at 220KV Voltage level and 169 Nos. at 132KV Voltage level were taken up at an estimated cost of Rs. 258.29 Crs during 2015-16 for providing 9 Hrs. agricultural supply during day time.
- 3) Augmentation of Power Transformers works for 10 Nos. at 220KV Voltage level and 34 Nos. at 132KV Voltage level were taken up at an estimated cost of Rs. 106.17 Crs during 2016-17 for providing 9 Hrs. agricultural supply during day time and also to meet the load demand in GHMC area.
- 4) Augmentation of Power Transformers works for 7 Nos. at 220KV Voltage level and 29 Nos. at 132KV Voltage level were proposed at an estimated cost of Rs. 97.47 Crs during 2017-18 for meeting the load demand.
- 5) Augmentation of Power Transformers works for 1 No. at 220KV Voltage level and 15 Nos. at 132KV Voltage level were proposed at an estimated cost of Rs. 53.31 Crs during FY 2018-19 for meeting the load demand.