Before the

MAHARASHTRA ELECTRICITY REGULATORY COMMISSION

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Case No.168 of 2011

IN THE MATTER OF

Approval of the Multi Year Tariff Business Plan of Tata Power Company Limited- Transmission Business for the Second Control Period from FY 2012-13 to FY 2015-16

Shri V. P. Raja, Chairman

Shri Vijay L. Sonavane, Member

Date: 28 June, 2012

ORDER

Upon directions from the Maharashtra Electricity Regulatory Commission (Commission or MERC), The Tata Power Company Ltd.'s Transmission Business (TPC-T), submitted its application for approval of the Multi Year Tariff (MYT) Business Plan for its Transmission Business for the second Control Period from FY 2011-12 to FY 2015-16, under affidavit.

The Commission, in its First Amendment to Maharashtra Electricity Regulatory Commission (Multi Year Tariff) Regulations, 2011 [MERC MYT Regulations] dated 21 October, 2011, has specified that for the Generating Company or Transmission Licensee or Distribution Licensee for whom there is no Order of exemption under Regulation 4.1 and if the Commission is satisfied that there is a difficulty in giving effect to the determination of tariff with effect from 1 April, 2011 under these Regulations and in the event tariff is required to be determined from 1 April, 2012 or any further period under these Regulations, the repealed Regulations in respect of the said tariff determination shall continue to be in-force, and the provisions of these Regulations shall not apply to the determination of tariff for the period till 1 April, 2012 or such further period.

Further, pursuant to the First Amendment to the MERC MYT Regulations, 2011 the Commission, through its letter dated 4 November, 2011 also directed TPC-T to submit its Petition for approval of ARR for FY 2011-12, as per the MERC (Terms and Conditions of Tariff) Regulations, 2005 latest by 30 November, 2011. However, TPC-T is yet to submit the same as on date of issuance of this Order.

In view of the above, the Commission, in exercise of the powers vested in it under Section 61 and Section 62 of the Electricity Act, 2003 (EA 2003) and all other powers enabling it in this behalf, and after taking into consideration all the submissions made by TPC-T, issues raised during the Public Hearing, and all other relevant material, approves the MYT Business Plan for TPC-T for the second Control Period from FY 2012-13 to FY 2015-16 as under.

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List of Abbreviations

A&G	Administrative and General
APR	Annual Performance Review
ARR	Aggregate Revenue Requirement
ATE	Appellate Tribunal for Electricity
BCPU	Bay Control Protection Unit
COD	Date of Commercial Operation
CSR	Corporate Social Responsibility
CST	Central Sales Tax
DPR	Detailed Project Report
FY	Financial Year
GFA	Gross Fixed Assets
GIS	Gas Insulated Substation
HOSS	Head Office and Support Services
ICB	International Competitive Bidding
IDC	Interest During Construction
IDFC	Infrastructure Development Finance Company
InSTS	Intra-State Transmission System
IPTC	Independent Private Transmission Company
IWC	Interest on Working Capital
JV	Joint Venture
kV	kilo Volt
LS	Lump Sum
MAT	Minimum Alternate Tax
MERC	Maharashtra Electricity Regulatory Commission
MMR	Mumbai Metropolitan Region
MSETCL	Maharashtra State Electricity Transmission Company Limited
MSLDC	Maharashtra State Load Despatch Centre
MW	Mega Watt
MYT	Multi Year Tariff
O&M	Operation and Maintenance
PGCIL	Power Grid Corporation of India Limited
PMU	Phasor Measurement Unit
R&M	Repair and Maintenance
REL/RInfra	Reliance Energy Limited/Reliance Infrastructure Limited
ROE	Return On Equity

RoW	Right Of Way
Rs.	Indian Rupees
SBI-PLR	State Bank of India-Prime Lending Rate
SCADA	Supervisory Control And Data Acquisition
SLDC	State Load Despatch Centre
STU	State Transmission Utility
SWOT	Strengths Weaknesses Opportunities Threats
TPC-T	Tata Power Company Ltd.-Transmission Business
TTSC	Total Transmission System Cost
TVS	Technical Validation Session
VAT	Value Added Tax

1 BACKGROUND AND BRIEF HISTORY

A Petition has been filed by The Tata Power Company Limited (TPC), for approval of the MYT Business Plan for its Transmission Business (TPC-T) for the second Control Period from FY 2011-12 to FY 2015-16, under Sections 61 to Section 64 of the Electricity Act, 2003 and Regulation 7 of the MERC MYT Regulations, 2011.

TPC was established in the year 1919. On 1 April, 2000, the Tata Hydro-Electric Power Supply Company Limited (established in 1910) and The Andhra Valley Power Supply Company Limited (established in 1916), were merged into TPC to form one unified entity.

1.1 EVOLUTION OF REGULATORY REGIME FOR TRANSMISSION PRICING

The Commission, in exercise of the powers conferred by the Electricity Act, 2003, notified the Maharashtra Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2005, on 26 August, 2005. Subsequently, the Commission, considering the requests made by the Utilities, vide its Order dated 20 December, 2005 in the matter of Applicability of Multi Year Tariff Framework granted a special dispensation for all the Utilities in Maharashtra from implementation of MYT framework for FY 2006-07. The Commission, in the said Order, stated that the Commission would determine the tariff under a Multi Year Tariff framework with effect from 1 April, 2007 instead of 1 April, 2006 as stipulated in MERC (Terms and Conditions of Tariff) Regulations, 2005 and accordingly, the first Control Period for MYT framework shall be the three financial years from 1 April, 2007 to 31 March, 2010. The Commission, at the start of the first Control Period issued the MYT Order for each Utility in the State, approving their ARR for each year during the Control Period. The Commission subsequently issued the Annual Performance Review (APR) Orders for each Utility in each year of the Control Period which included truing up of the ARR of the past year or $(n-1)^{th}$ year, provisional truing up of the ARR of current year or n^{th} year and determination of revised ARR/tariff for the ensuing year or $(n+1)^{th}$ year. The Transmission Utilities for which such Orders were issued include Maharashtra State Electricity Transmission Co. Ltd (MSETCL), Transmission Business of The Tata Power Co. Ltd (TPC-T) and Transmission Business of Reliance Infrastructure Ltd (RInfra-T) that constituted the Intra-State Transmission System (InSTS) of Maharashtra. In addition, the principles of Transmission Pricing framework in the State for the first Control Period were stipulated vide the Commission’s Order dated 27 June, 2006 in Case No. 58 of 2005. Accordingly, the Intra-State Transmission Tariffs were determined for the respective years on the basis of Total Transmission System Cost (TTSC), which were derived based on pooling of the ARRs of each Transmission Utility of the State. The said pooled cost for Intra-State Transmission System (InSTS) within Maharashtra, hereinafter referred to as Total Transmission System Cost (TTSC) has been recovered from the Transmission System Users in the State, which mainly constituted the DISCOMs of the State. The Commission has issued Orders determining such Transmission Tariff from time to time on an annual basis.

1.2 MERC MYT REGULATIONS

The Commission, in exercise of the powers conferred by the EA 2003, notified the Maharashtra Electricity Regulatory Commission (Multi Year Tariff) Regulations, 2011, (hereinafter referred as the MERC MYT Regulations) on 4 February, 2011. These Regulations are applicable for the second Control Period starting from FY 2011-12 to FY 2015-16. The said Regulations were amended vide notification dated 21 October, 2011 called Maharashtra Electricity Regulatory Commission (Multi Year Tariff) (First Amendment) Regulations, 2011.

As per the said Amendment, the Commission has specified that for the Generating Company or Transmission Licensee or Distribution Licensee for whom there is no Order of exemption under Regulation 4.1 and if the Commission is satisfied that there is a difficulty in giving effect to the determination of tariff with effect from 1 April, 2011 under these Regulations and in the event tariff is required to be determined from 1 April, 2012 or any further period under these Regulations, the repealed Regulations in respect of the said tariff determination shall continue to be in-force, and the provisions of these Regulations shall not apply to the determination of tariff for the period till 1 April, 2012 or such further period.

1.3 PETITION FOR MYT BUSINESS PLAN APPROVAL, ADMISSION OF THE MYT BUSINESS PLAN PETITION AND PUBLIC PROCESS

Pursuant to notification of MERC MYT Regulations on 4 February, 2011, the Commission vide letter dated 25 March, 2011 directed all Licensees and Generating Companies to submit their MYT Business Plan and MYT Petition for the Second Control Period from FY 2011-12 to FY 2015-16, latest by 31 March, 2011. TPC-T submitted its MYT Business Plan Petition for the second Control Period under affidavit on 9 August, 2011.

A Technical Validation Session (TVS) on the MYT Business Plan Petition was held on 15 December, 2011. The list of individuals, who participated in the Technical

Validation Session, is provided at **Appendix-1**. Subsequently, the Commission vide letter dated 16 December, 2011 communicated the preliminary data gaps identified in the MYT Business Plan Petition and also directed TPC-T to submit additional information and clarifications on the issues raised during the TVS. Further, a second TVS in the matter was held on 11 January, 2012. The list of individuals, who participated in the Technical Validation Session, is provided at **Appendix-2**. TPC-T responded with its replies to the preliminary data gaps and additional clarifications vide its letter dated 21 January, 2012. TPC-T also filed the revised MYT Business Plan Petition vide its letter dated 24 February, 2012, with the following main prayers.

"

a. *Approve the Business Plan for the Transmission Business of the Tata Power Company Ltd for the second control period FY 2011-12 to FY 2015-16.*
b. *Condone any inadvertent omissions/errors/shortcomings and permit Tata Power to add/change/modify/alter this filing and make further submissions as may be required at a future date.*
c. *Any other relief that the Hon'ble Commission may deem fit."*

The Commission admitted the Petition of TPC-T on 5 March, 2012. In accordance with Section 64 of the EA 2003, the Commission directed TPC-T to publish its MYT Business Plan Petition in the prescribed abridged form and manner, to ensure adequate public participation. The Commission also directed TPC-T to reply expeditiously to all the suggestions and objections received from stakeholders on its Petition. TPC-T issued the Public Notice in newspapers inviting suggestions and objections from stakeholders on its MYT Business Plan Petition. The Public Notice was published in Financial Express (English), Hindustan Times (English), Indian Express (English), Loksatta (Marathi) and Maharashtra Times (Marathi) newspapers on 10 March, 2012. The copies of TPC-T's Petition and its summary were made available for inspection/purchase to members of the public at TPC-T's offices and on TPC-T's website (www.tatapower.com). The copy of the Public Notice and Executive Summary of the Petition were also available on the website of the Commission (www.mercindia.org.in) in downloadable format. The Public Notice specified that the suggestions and objections, either in English or Marathi, may be filed in the form of affidavit along with the proof of service on TPC-T.

The Commission did not receive any written suggestions or objections on the said Petition. The Public Hearing was held on 11 April, 2012 at 11:00 hours at the

Commission's Office. The list of persons who participated in the Public hearing is provided in **Appendix – 3.**

The Commission has ensured that the due process as contemplated under the law to ensure transparency and public participation was followed at every stage meticulously and adequate opportunity was given to all the persons concerned to file their say in the matter.

1.4 ORGANISATION OF THE ORDER

This Order is organised in the following six Sections:

- **Section 1** of the Order provides a brief history of the quasi-judicial regulatory process undertaken by the Commission. For the sake of convenience, a list of abbreviations with their expanded forms has been included.
- **Section 2** of the Order summarises the salient features of the MYT Business Plan Petition filed by TPC-T.
- **Section 3** discusses the Business Plan components, Key Issues and Commission's Ruling on the same.
- **Section 4** of the Order details the views of the Commission on the projection of ARR components as submitted by TPC-T for the purpose of Business Plan Approval.
- **Section 5** of the Order approves the Performance Targets for TPC-T for the second Control Period.
- **Section 6** of the Order provides necessary directives to TPC-T for filing MYT Petition for the second Control Period.

2 SALIENT FEATURES OF THE PETITION

2.1 APPLICABILITY OF THIS ORDER TO FY 2012-13 TO FY 2015-16

MERC in its First Amendment to Maharashtra Electricity Regulatory Commission (Multi Year Tariff) Regulations, 2011 dated 21 October, 2011, has specified that for the Generating Company or Transmission Licensee or Distribution Licensee for whom there is no Order of exemption under Regulation 4.1 and if the Commission is satisfied that there is a difficulty in giving effect to the determination of tariff with effect from 1 April, 2011 under these Regulations and in the event tariff is required to be determined from 1 April, 2012 or any further period under these Regulations, the repealed regulations in respect of the said tariff determination shall continue to be in-force, and the provisions of these regulations shall not apply to the determination of tariff for the period till 1 April, 2012 or such further period.

Further, pursuant to the First Amendment to the MERC MYT Regulations, the Commission, through its letter dated 4 November, 2011 also directed TPC-T to submit its Petition for approval of ARR for FY 2011-12, as per the MERC (Terms and Conditions of Tariff) Regulations, 2005 latest by 30 November, 2011. However, TPC-T is yet to submit the same as on date of issuance of this Order. Hence, the Commission directs TPC-T to submit its ARR for FY 2011-12, as per MERC (Terms and Conditions of Tariff) Regulations, 2005 along with its MYT Petition for FY 2012-13 to FY 2015-16. Since, FY 2011 – 2012 is over, the Commission is satisfied that there is a difficulty in giving effect to the determination of tariff with effect from 1 April, 2011 under the MYT Regulations, 2011 and tariff is required to be determined from 1 April, 2012 under the MYT Regulations, 2011. Accordingly, the Commission has approved the MYT Business Plan for TPC-T for the period from FY 2012-13 to FY 2015-16.

2.2 PREMISE FOR THE MYT BUSINESS PLAN PETITION

In view of the directives issued by the Commission, TPC submitted the revised MYT Business Plan Petition for its Transmission Business for the second Control Period for FY 2011-12 to FY 2015-16 as per Regulation 7 of MERC MYT Regulations on 24 February, 2012 The details regarding Business Plan components as submitted by TPC-T and the Commission’s rulings are elaborated in subsequent Sections of this Order. Regulation 7 of the aforesaid MERC MYT Regulations is reproduced below for reference:

> *"7.1 The Generating Company, Transmission licensee and Distribution Licensee shall file a Business Plan, for the Control Period of five (5) financial years from 1 April, 2011 to 31 March, 2016, as directed by the Commission, which shall comprise but not be limited to detailed category-wise sales and demand projections, power procurement plan, capital investment plan, financing plan and physical targets, in accordance with guidelines and formats, as stipulated by the Commission from time to time.*
>
> *7.2 The capital investment plan shall show separately, ongoing projects that will spill into the year under review and new projects (along with justification) that will commence but may be completed within or beyond the tariff period. The Commission shall consider and approve the capital investment plan for which the Generating Company and Transmission Licensee or Distribution Licensee may be required to provide relevant technical and commercial details"*

As part of the MYT Business Plan, TPC-T also submitted its Capital Investment Plan in line with Regulation 58 of MERC MYT Regulations, as reproduced below:

> *"58.1 The Transmission Licensee shall submit a Capital Investment Plan with full details of its proposed capital expenditure projects to the Commission for approval along with the Business Plan:*
> *Provided that the Capital Investment Plan shall be submitted each year of the second control period.*
> *58.2 The Capital Investment Plan shall be a least cost plan for undertaking investments on strengthening and augmentation of intra-state transmission system of the Transmission Licensee*
> *58.3 The Capital Investment Plan shall cover all capital expenditure projects of a value exceeding Rs Ten (10) Crore and shall be in such form as may be stipulated by the Commission from time to time.*
> *58.4* ***The Capital Investment Plan shall be accompanied by such information, particulars and documents as may be required*** *including but not limited to the information such as number of bays, name, configuration and location of grid substations, substation capacity (MVA), transmission line length (ckt-km)* ***showing the need for the proposed investments, alternatives considered, cost/benefit analysis and other aspects that may have a bearing on the transmission charges." (emphasis Added)***

2.3 SUMMARY OF THE MYT BUSINESS PLAN PETITION

TPC-T, in the present Petition has broadly submitted its MYT Business Plan for the second Control Period under two heads, namely Strategic Plan and Operation Plan. The Strategic Plan covers aspects such as Human Resource Plan, Training and Recruitment Plan, Use of new technology, Market Assessment, SWOT Analysis, Risk Analysis and Risk Mitigation Plans and other Environmental and Social Responsibility initiatives. The Capital Investment Plan and forecast of ARR Components have been presented under the Operational Plan. Further, the Capital Investment Plan has been categorised under two heads; additional capital investment for new transmission capacity and capacity augmentation of existing transmission infrastructure. A brief summary of the various major Plans submitted by TPC-T is given below:

Strategic Plan

a) **Human Resource Plan**: TPC-T has submitted its Recruitment Policy, HR Development Plan and Employee Reward Policy envisaged for the new Control Period. It has been submitted that TPC-T has chalked out detailed manpower plans based on realistic projection of growth envisaged in its Transmission infrastructure over the Control Period.

b) **Future Business Opportunities**: TPC-T has submitted that in order to ease the financial burden and share the responsibilities of building evacuation lines, it would consider entering into Joint Ventures (JV) with MSETCL to implement some of the transmission schemes. Further, TPC-T shall also consider bidding through IPTC route.

c) **Technological Plan:** TPC-T has submitted new technologies being pursued by TPC-T in its operations and construction of transmission infrastructure. TPC-T also highlighted the steps envisaged to bring about improvements in O&M.

d) **Risk Mitigation Plan**: TPC-T has identified various types of risks and their mitigation plans. TPC-T has broadly classified the risks into Operational risks, Safety and Security risks.

e) **Environmental initiatives and CSR initiatives**: Under this part of the MYT Business Plan, TPC-T has detailed various initiatives it wishes to undertake as part of its Environmental and Social Responsibility. TPC-T mainly wishes to undertake developmental initiatives such as public safety awareness programmes in the villages surrounding its Transmission project to prevent electrical accidents and fatalities. TPC also plan to conduct medical camps and health awareness programmes in schools and villages.

Operational Plan

a) **Capital Expenditure Plan:** In order to assess the requirement for additional capital investment for new Transmission infrastructure and for capacity augmentation of the existing Transmission infrastructure during the Control Period from FY 2011-12 to FY 2015-16, TPC-T submitted that it had conducted a study for demand assessment on the Mumbai Transmission infrastructure based on certain assumptions and considering additional demand drivers expected to come up during FY 2011-12 to FY 2015-16 such as Mumbai International Airport, South Mumbai Mill Land Development, etc. Considering the results of such demand assessment study undertaken for Mumbai Transmission system, TPC-T proposed to execute various Transmission system augmentations, strengthening and growth schemes during the period from FY 2011-12 to FY 2015-16 to cater to the forecasted demand, as detailed in the subsequent sections.

b) **ARR forecast for Second Control Period:** TPC-T has submitted three scenarios, i.e., Optimistic, Pessimistic and Realistic scenarios for its projection of Aggregate Revenue Requirement (ARR) for the period from FY 2011-12 to FY 2015-16. TPC-T has proposed to consider ARR projected under "Optimistic scenario" as part of the Business Plan Petition. The Realistic Scenario has been projected after considering the need to phase out several Capital Expenditure schemes owing to issues pertaining to land acquisition, and thus, considering a reduced Capital Expenditure outlay compared to the projected Optimistic scenario during the second Control Period. Further, the Pessimistic scenario has been projected considering a Capital Expenditure equivalent to 85% of that considered for Realistic scenario. The ARR projections under the three Scenarios, as submitted by TPC-T are shown below:

Table: ARR projection under three scenarios as submitted by TPC-T (Rs. Crore)

Particulars	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16
Optimistic Scenario	355.61	460.57	591.67	814.17	1190.97
Realistic Scenario	355.63	421.30	514.70	624.20	797.70
Pessimistic Scenario	355.61	411.88	492.77	587.68	737.53

2.4 KEY ASSUMPTIONS MADE BY TPC-T

TPC-T submitted that in order to assess the requirement for additional transmission schemes such as development of new substation or transmission line or capacity augmentation of existing substation or interchange corridor, it conducted a study in FY 2009-10 for projection of load assessment on all the feeders of TPC and thus arrived at the total transmission capacity requirement and the total capital investment requirement to satisfactorily manage the envisaged load growth. The aggregate demand for every Ward has been evaluated for the base year (FY 2010-11) and projected till FY 2015-16 using the following assumptions:

a) Railway load is assumed to be evenly distributed across all wards.
b) The growth rates for different category of the loads are as follows:
   i. Residential-5.36%
   ii. Commercial-7.97%
   iii. Industrial-2.29%
   iv. Railways-6.15%
   v. MSEB load growth of 4.84%.

In addition, TPC-T has also considered special demand drivers in the form of large loads, which may have significant impact on the transmission system, as under:

a) Mumbai International Airport
b) South Mumbai Mill Land Development
c) Slum Rehabilitation Schemes
d) North East Mumbai
e) Central Mumbai
f) North Mumbai
g) Monorail (Additional demand is also expected from Metro Rail but for the purpose of this study, they were not considered)

Accordingly, the projections of overall demand incident on Mumbai transmission system, as submitted by TPC-T is shown in the Table below:

Table: Load (MW) on Mumbai Transmission System

Sl. No.	Particulars	FY 2010-11	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16
A	**Load on Mumbai system**	**2882**	**3077**	**3287**	**3510**	**3754**	**4010**
	Load of Wards	2196	2328	2472	2623	2792	2967
	Load of 110 kV Chola Kalya	69	73	77	82	87	92
	Load of OFA	6	6	6	6	6	6
	Estimated Mumbai Load met through Rinfra 22 and 33 kV system	850	908	970	1037	1108	1184
	Less MSEDCL Load	(238)	(238)	(238)	(238)	(239)	(239)
B	**Additional Specific known loads**	**-**	**80**	**115**	**155**	**185**	**225**
	Load due to HDIL demand driver	-	-	10	15	20	25
	Load due to Mumbai international airport	-	60	65	80	85	90
	Load due to Dharavi	-	-	-	-	-	10
	Load due to Godrej	-	20	40	60	80	100
C	**Total Demand for Mumbai (A+B)**	**2882**	**3157**	**3402**	**3665**	**3939**	**4235**
	Total Demand for Mumbai –Ex Bus (Transmission loss at 4.85%)	**3029**	**3318**	**3576**	**3852**	**4140**	**4451**
	At generator terminals (Aux Consumption at approx. 3.25%)	**3131**	**3429**	**3696**	**3981**	**4279**	**4600**
D	**Overall Total Transmission System Demand (including MSEB load fed through Tata Power Transmission System)**	**3389**	**3688**	**3955**	**4239**	**4538**	**4860**

Considering the demand assessment, as shown in the table above, TPC-T has proposed various system augmentation, system strengthening and growth schemes. TPC-T also submitted that the decision for augmentation of existing receiving station were based on the “Trigger Capacity”, which is assumed to be about 70% of the firm capacity of the receiving station at that voltage. Considering the same, TPC-T had proposed augmentation plan at various Receiving Stations, as detailed in subsequent sections of this Order. Upon seeking rationale for the Trigger Capacity being considered as 70%, TPC-T clarified that the same has been arrived at considering the past experience of the time taken for approvals, resource mobilisation, inputs from Discoms and time for actual commissioning of the enhanced capacity of equipment (from the time load reaches 70% capacity of the equipment) and the load growth during the lead time.

Further, the decision for augmentation of transmission lines and interchange corridors is based on the adequacy of current carrying capacity of TPC-T transmission lines and the inter connecting lines with MSETCL in light of stagnant generation capacity within Mumbai and growing load. The extent of power to be procured from outside the Mumbai region, as estimated by TPC-T is shown in the Table below:

Table: Power Purchase from Outside Mumbai

	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16
Requirement of Mumbai (MW)	3688	3955	4239	4538	4860
Net Generation Capacity (MW)	2277	2277	2277	2277	2277
Additional Power from Outside Mumbai (MW)	1411	1678	1962	2261	2583

TPC-T submitted that based on the load flow analysis conducted on the basis of above indicative projected load and net generation capacity in Mumbai, it is observed that transmission lines of TPC-T would be operating within the capacity limits. However, the interconnection points with MSETCL would not be capable of handling such quantum of import of power to Mumbai and would be overloaded. Such overloading would be accentuated during the outage of one of the lines ("n-1" criterion). It is therefore, necessary to augment the capacity of the interchange points. In consideration to the same, TPC-T had proposed augmentation plan at various interchange points, as detailed in subsequent sections of this Order.

Further, TPC-T has considered the following principles for projection of ARR for the second Control Period.

a) TPC-T has projected the Return on Equity at the rate of 15.5 % per annum in accordance with the methodology specified in the MERC MYT Regulations.
b) Interest on Long-Term Loans has been projected considering the debt-equity ratio of 70:30 as mentioned in the MERC MYT Regulations and based on the debt requirement estimated.
c) TPC has considered the IDFC Loan of Rs 800 Crore for financing the Capital Expenditure requirements for FY 2011-12 and FY 2012-13 and normative loans for the additional capitalisation, i.e., the capitalisation in the Control Period from FY 2011-12 to FY 2015-16. The terms of such loan have been incorporated while working out the interest expenses for the MYT Business Plan Control Period from FY 2011-12 to FY 2015-16. Further, normative loans have been assumed to be financed at the weighted average rate of interest calculated on the basis of the actual loan portfolio at the beginning of each year.
d) Depreciation has been computed as per the rate specified in the MERC MYT Regulations.
e) The Operations and Maintenance (O&M) Expenses have been projected for the Control Period considering the 'per bay norm' and the 'per circuit

kilometre norm' for O&M expenses specified in the MERC MYT Regulations for TPC-T.

f) Interest on working capital has been computed on normative basis in accordance with the MERC MYT Regulations.

g) Contribution to Contingency reserves has been considered as specified in the MERC MYT Regulations.

h) Non Tariff Income for FY 2011-12 to FY 2015-16 has been projected after considering an escalation of 10% p.a. on recurring type of Non-Tariff income such as rents over the base figures of FY 2010-11. Further, interest income from contingency reserves has been projected at 8% p.a., which is prevailing rate of investments made from contingency reserves. TPC-T has not considered any escalation on non-recurring income heads over the base figures of FY 2010-11.

i) Tax on Income including the applicable education cess and surcharge has been considered at an Income Tax rate of 32.45% and MAT Rate of 20.01%.

j) TPC-T has assumed an addition of Rs 5 Crore p.a. towards Gross Fixed Assets on account of additions made in Head Office and Support Service (HOSS) for addressing the proposed Growth in the Transmission Business.

3 BUSINESS PLAN COMPONENTS

3.1 CAPITAL EXPENDITURE PLAN

Based on the load flow assessment undertaken by TPC-T as detailed in Section 2.4 of this Order, TPC-T has proposed various system augmentation, strengthening and growth schemes during the period from FY 2011-12 to FY 2015-16 to cater to the forecasted demand. TPC-T, in its MYT Business Plan Petition has proposed to undertake total capital expenditure schemes to the tune of Rs 7644.78 Crore over the Control Period. Out of this, the capital expenditure requirement proposed by TPC-T for FY 2011-12 to FY 2015-16 amounts to Rs 5817.96 Crore. Further, TPC-T has proposed a capitalisation of Rs 4897.42 Crore over the said period. The following table presents the summary of the capital expenditure and capitalisation proposed by TPC-T for the period from FY 2011-12 to FY 2015-16.

Table: Capital Expenditure and Capitalisation for FY 2011-12 to FY 2015-16 proposed by TPC-T ***(Rs Crore)***

MERC Approval Status	Capital Expenditure					Capitalisation				
	FY 12	FY 13	FY 14	FY 15	FY 16	FY 12	FY 13	FY 14	FY 15	FY16
Approved DPR	434.68	593.04	637.34	818.88	461.56	151.14	695.97	269.82	960.79	1071.09
Submitted but yet to be approved DPR	0.00	34.19	56.96	21.09	43.20	0.00	6.59	34.31	62.34	18.20
To be submitted DPR	23.50	171.48	679.71	689.68	1042.14	23.00	22.00	147.30	538.93	785.53
Approval Not-Required										
- Non DPR	22.19	34.18	16.49	6.16	6.49	18.93	32.99	20.64	6.36	6.49
- HOSS	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
TOTAL	485.37	837.89	1395.49	1540.81	1558.39	198.07	762.55	477.07	1573.42	1886.31

The major capital expenditure schemes proposed to be undertaken by TPC-T during FY 2011-12 to FY 2015-16 are discussed below:

1. **400 kV Transmission lines and Receiving Stations:** TPC-T submitted that for meeting the growing demand in Mumbai Metropolitan Region, there is a need to develop 400 kV network in Mumbai system, which would help in importing power from outside. For developing the 400 kV network, TPC-T has proposed to construct 400 kV Receiving Stations at Vikhroli and Marve. Power will be brought in by constructing 400 kV Nagothane-Dehrand-Vikhroli transmission lines, MSETCL Kharghar-Vikhroli transmission line, PGCIL New Panvel-Vikhroli transmission line and Boisar-Nallasopara transmission line. TPC-T also submitted that the Commission has approved all

these schemes except 400 kV Receiving Station at Marve and 400 kV Boisar-Nallasopara D/C transmission line. The summary of the 400 kV Schemes, as proposed by TPC-T for FY 2011-12 to FY 2015-16 is shown in the table below:

Table: Capital expenditure for 400 kV Schemes (Rs Crore)

Sr. No.	Particulars	In-Principle approved Cost (Rs Crore)	Capital Cost as submitted by TPC-T (Rs Crore)	Completion Schedule as submitted by TPC-T
1.	400 kV R/S at Vikhroli/ Ghatkopar	846.19	846.19	FY 2016
2.	400 kV GIS at Marve	To be Submitted	515.00*	FY 2018
3	**Sub-Total-I (400 kV Receiving Stations)**	**846.19**	**1361.19**	
4	400 kV Dehrand-Vikhroli transmission line	104.15	104.15	FY 2016
5.	400 kV Dehrand-Nagothane transmission line	128.75	128.75	FY 2016
6.	400kV MSETCL Kharghar-Vikhroli transmission line	115.22	115.22	FY 2016
7.	400 kV S/C Line PGCIL New Panvel-Vikhroli.	66.16	66.16	FY 2016
8.	400 kV Boisar-Nallasopara D/C Transmission Line	To be Submitted	116.00*	FY 2017
9.	**Sub-Total-II (400kV Transmission lines)**	**414.28**	**530.28**	
10.	**TOTAL (Rs Crore)**	**1260.47**	**1891.47**	

(indicates the total capital cost of the scheme. The capitalisation proposed during FY 2011-12 to FY 2015-16 would be lower)*

2. **220 kV Transmission lines and Receiving Stations:** TPC-T, in its MYT Business Plan Petition has proposed various 220 kV Schemes for both Receiving Stations as well as Transmission lines. TPC-T submitted that 220 kV Schemes are intended to augment the existing interchange corridors as well as strengthen the internal transmission system of Mumbai. The summary of the 220 kV Schemes, as proposed by TPC-T for FY 2011-12 to FY 2015-16 is shown in the table below.

Table: Capital Expenditure for 220 kV Schemes ***(Rs Crore)***

Sr. No.	Particulars	In-Principle approved Cost	Capital Cost as submitted by TPC-T	Completion Schedule as submitted by TPC-T
1.	220 kV GIS at Versova	To be Submitted	308.00*	FY 2017
2.	220 kV GIS at Dahisar (East)	To be Submitted	200.00*	FY 2017
3.	220 kV GIS at Saki	195.05	195.05	FY 2013
4.	220 kV GIS at Sahar Airport	167.28	167.28	FY 2014
5.	220 kV GIS at Antop Hill, Wadala	103.73	103.73	FY 2015
6.	220 kV GIS at Vikhroli (W)	To be Submitted	100.00*	FY 2017
7.	220 kV GIS at Chunabhatti	Not yet approved	96.43*	FY 2017
8.	220 kV GIS at Mahalaxmi	63.60	63.60	FY 2014
9.	220 kV R/S at Mira Road-Land	25.00	25.00	FY 2016
10.	220 kV GIS at Goregaon	To be Submitted	381.79	FY 2015
11.	**Sub-Total-I (Receiving Stations)**	**554.66**	**1640.88**	
12.	Saki-Versova 220 kV Cable	To be Submitted	434.00*	FY 2017
13.	Backbay Ring system	330.89	330.89	FY 2013

Sr. No.	Particulars	In-Principle approved Cost	Capital Cost as submitted by TPC-T	Completion Schedule as submitted by TPC-T
14	220kV Trombay Dharavi Salsette line	241.37	241.37	FY 2014
15.	220 kV Kalwa-Salsette (3rd Circuit)	Submitted**	217.42*	FY 2017
16	High-Ampacity conductors for 220kV Kalwa-Salsette (3rd and 4th Circuit)	To be Submitted	45.00	FY 2013
16.	220 kV Borivali(E) to Dahisar (E)	To be Submitted	31.50*	FY 2017
17	220 kV interconnection with MSETCL Borivali	24.72	24.72	FY 2012
18	220 kV interconnection with Versova S/S (TPC) and Versova S/S (R-Infra)	To be Submitted	35.00	FY 2015
19	**Sub-Total-II** **(Transmission lines)**	**596.98**	**1359.90**	

(indicates the total capital cost of the scheme. The capitalisation proposed during FY 2011-12 to FY 2015-16 would be lower)*

*(**Approved by Commission after submission of Business Plan Petition with approved cost as Rs 217.42 Crore)*

3. **145 kV and 110 kV Schemes:** TPC-T, in the present Petition proposed various 145 kV Transmission Schemes, including both the 145 kV Sub-Stations and transmission lines. TPC-T submitted that the proposed schemes are intended to augment the capacity of existing transmission corridor. The summary of the 145 kV Schemes, as proposed by TPC-T for FY 2011-12 to FY 2015-16 is shown in the Table below:

Table: Capital Expenditure for 145 kV Schemes (Rs Crore)

S. No.	Particulars	In-Principle approved Cost (Rs Crore)	Capital Cost as submitted by TPC-T (Rs Crore)	Completion Schedule as submitted by TPC-T
1.	145 kV GIS at BKC	230.50	230.50	FY 2015
2.	145 kV GIS at Powai	161.59	161.59	FY 2013
3	145 kV GIS at Worli	138.69	138.69*	FY 2017
4	145 kV GIS at Wadala	130.82	130.82	FY 2016
5.	145 kV GIS at HDIL	129.68	129.68	FY 2015
6.	145 kV GIS at Versova	101.84	101.84	FY 2015
7.	145 kV GIS at Vikhroli	To be Submitted	86.09*	FY 2017
8	145 kV GIS at Chembur	74.40	74.40*	FY 2017
9	145 kV GIS at Malad	To be Submitted	44.00*	FY 2017
10	145 kV GIS at Dharavi	To be Submitted	60.00	FY 2016
11	145 kV GIS at Carnac	To be Submitted	35.00	FY 2016
12	145 kV GIS at Mahalaxmi	39.00	39.00	FY 2013
12	**Sub-Total-I (Substation)**	**1006.52**	**1231.61**	
13	110 kV Khopoli-Bhivpuri transmission line	To be Submitted	17.32	FY 2014
14.	110 kV S/s IXORA Panvel	34.30	34.30	FY 2013
15.	**Sub-Total –II (Transmission lines)**	**34.30**	**51.62**	
16.	**TOTAL (Rs Crore)**	**1040.82**	**1283.23**	

(indicates the total capital cost of the scheme. The capitalisation proposed during FY 2011-12 to FY 2015-16 would be lower)*

4. **Other Capital Expenditure Schemes**: Apart from the major capital expenditure schemes as stated in the earlier Sections, TPC-T, in its MYT

Business Plan Petition, proposed various other capital expenditure schemes such as Replacement of existing transmission assets, addition of bays, Centralised Operation for Transmission through Automation, Unified SCADA system for transmission network, etc.

5. **Non-DPR and Head Office and Support Services (HOSS) Schemes**: TPC-T, in its MYT Business Plan Petition, has submitted various Non-DPR Schemes of Rs 107.62 Crore. Further, TPC-T submitted that for the purpose of projection of capital cost for HOSS Schemes, it has assumed that Rs 5 Crore per year would be added to the GFA on account of the additions made in the HOSS for addressing the proposed growth in transmission business. The Non-DPR Schemes are further divided into following categories as shown in the Table below:

Table: Non-DPR Schemes and HOSS Schemes (Rs Crore)

S. No	**Particulars**	**Capital cost (Rs Crore)**
1	Growth Schemes	6.00
2	Bottleneck/Corridor Congestion	29.71
3	Employee Welfare	0.23
4	Security/ Safety/ Statutory/ Environmental/ Legal requirement	34.16
5	Strategic	0.50
6	Miscellaneous	8.70
7	Sustenance	28.30
8	**Sub-Total-I**	**107.61**
9.	HoSS Schemes	25.00
10.	**TOTAL (Rs Crore)**	**132.61**

The Commission has verified the projected Capital Investment Plan vis-a-vis in-principle approved schemes and has made certain critical observations in this Order regarding the estimate of capital cost and capitalisation considered for the purpose of MYT Business Plan projections with due consideration to regulatory provisions under MERC MYT Regulations in relation to capital expenditure and subsequent submissions provided by TPC-T during the regulatory process. The relevant provisions of MERC MYT Regulations, viz., Regulation 59, Regulation 27 and Regulation 28, are as under:

"59. Capital Cost: Transmission
59.1 For the purpose of determination of tariff, the Capital Cost for a Transmission Project and additional capitalisation thereof, shall be allowed in accordance with the provisions outlined under Regulation 27 and Regulation 28 respectively."

"27. Capital Cost and Capital Structure
27.1 Capital cost for a project shall include:
(a) the expenditure incurred or projected to be incurred, including interest during construction and financing charges, any gain or loss on account of foreign exchange risk variation on the loan during construction up to the date of commercial operation of the project, ***as admitted by the Commission, after prudence check;***
(b) capitalised initial spares subject to the ceiling rates specified in this Regulation; and
(c) additional capital expenditure determined under Regulation 28:

Provided that the assets forming part of the project but not put to use or not in use, shall be taken out of the capital cost.
27.2 The capital cost admitted by the Commission ***after prudence check shall form the basis for determination of tariff:***

Provided that ***prudence check may include scrutiny of the reasonableness of the capital expenditure, financing plan, interest during construction, use of efficient technology, cost over-run and time over-run, and such other matters as may be considered appropriate by the Commission for determination of tariff.***

27.3 ***The approved Capital Cost shall be considered for determination of tariff and if sufficient justification is provided for any escalation in the Project Cost, the same may be considered by the Commission subject to the prudence check:***

Provided that in case the actual capital cost is lower than the approved capital cost, then the actual capital cost shall be considered for determination of tariff of the Generating Company or Transmission Licensee or Distribution Licensee.

27.4 The actual capital expenditure on COD for the original scope of work based on audited accounts of the company limited to the original cost may be considered subject to the prudence check by the Commission.
27.5 ***The Commission may approve for each year of the Control Period, an additional amount equivalent to 20% of the total capital expenditure approved for respective financial year of the Control Period towards unplanned capital expenditure or the capital expenditure that is included under the Business Plan but is yet to be approved by the Commission. (Emphasis Added)***

"28. Additional Capitalisation
28.1 The following capital expenditure, actually incurred or projected to be incurred, on the following counts ***within the original scope of work, after the date of commercial operation and up to the cut-off date*** *may be admitted by the Commission, subject to the prudence check:*
.....
28.2 ***Impact of additional capitalisation*** *on tariff, if any, shall be considered* ***during Mid-term Performance Review and tariff determination*** *of third Control Period starting from 1 April, 2016." (**emphasis added**)*

In view of the above provisions of MERC MYT Regulations, it is clarified that the detailed scrutiny, review and approval of Capital Cost subject to prudence check would be undertaken separately.. However, the Commission has verified the revised estimate of capital cost as submitted by TPC-T in the present Petition and Commission's views in the matter are elaborated at para 4.2.1 of this Order, which should be duly considered by TPC-T while making the capital cost submissions in its MYT Petition.

Accordingly, for the purpose of MYT Business Plan approval, the Commission has considered the following year-wise capitalisation for the period from FY 2012-13 to FY 2015-16.

Table: Capitalisation considered for MYT Business Plan approval ***(Rs Crore)***

Particulars	Capitalisation			
	FY 13	FY 14	FY 15	FY16
- DPR	702.56	304.13	1025.13	1204.29
- Non DPR	32.99	20.64	6.36	6.49
- HOSS	5.00	5.00	5.00	5.00
TOTAL	**740.55**	**329.77**	**1036.49**	**1215.78**

The capitalisation for FY 2011-12 has not been scrutinised under the present exercise of MYT Business Plan approval, for reasons elaborated in subsequent paragraphs.

3.2 FINANCING PLAN

TPC-T, in the MYT Business Plan Petition, submitted that it proposes to fund the project with a normative debt:equity ratio of 70:30 in accordance with Regulation 30 of MERC MYT Regulations.

Regulation 30 of the MERC MYT Regulations specifies

> *"30.1 For a project declared under commercial operation on or after 1 April, 2011, if the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as normative loan for the Generating Company, Transmission Licensee and Distribution Licensee:*
>
> *Provided that where equity actually deployed is less than 30% of the capital cost of the capitalized asset, the actual equity shall be considered for determination of tariff:*
>
> *…*
>
> *30.3 Any expenditure incurred or projected to be incurred on or after 1 April, 2011, as may be admitted by the Commission as additional capital expenditure for determination of tariff, and renovation and modernization expenditure for life extension, shall be serviced in the manner specified in the Regulation."*

Further, TPC submitted that it has tied up a total loan of Rs 800 Crore for funding the G, T and D businesses of TPC, at a floating interest rate of 11.21% (spread of 1.20% over 1-year IDFC benchmark rate) from IDFC to finance its Capital Expenditure requirements till FY 2012-13. TPC-T submitted that it would not be prudent to tie up the entire loan required for capital expenditure as proposed in the MYT Business Plan Petition at this point of time as the actual capital expenditure would change with passage of time.

In view of the substantial capital expenditure requirements proposed by TPC-T in the MYT Business Plan Petition, the Commission asked TPC-T to submit its financing plan details including source of finance, initiatives taken to tie-up funds for project execution, funding from internal accruals, if any, to fund Capital Expenditure requirements, at least for the capital expenditure and capitalisation planned for FY

2011-12 to FY 2013-14, which shall fall under the short to medium term. TPC-T, in response to the query raised by the Commission submitted that it has only tied up loans of Rs 800 Crore from IDFC for its Mumbai Regulated Business including TPC's Generation Business (TPC-G), TPC-T and TPC's Distribution Business (TPC-D). TPC-T submitted that the same would be sufficient to meet its funding requirement for FY 2011-12 and FY 2012-13. TPC-T further submitted that, as regards tying up additional future funding requirements to meet the proposed capital expenditure in subsequent years, it would be practical to revisit the same at an appropriate time in the future depending upon the then prevailing market conditions for sourcing the required quantum of loans. Hence, it would not be practical to tie up funds for subsequent years at this point of time. Further, TPC-T also submitted the Letter of Intent from IDFC for Rs 800 Crore.

TPC-T, in reply to a specific query raised by the Commission as regards TPC-T's funding arrangement in view of inadequacy of its new loan of Rs 800 Crore from IDFC, to finance the proposed debt requirement of TPC-G, TPC-T and TPC-D combined till FY 2012-13, submitted that IDFC loan would be adequate to finance the debt requirement for FY 2011-12 and some quantum of it shall also be used in FY 2012-13. Hence, the need for tying up additional loans can be assessed only in the middle of FY 2012-13 based on progress of capital expenditure in FY 2012-13 and therefore, no additional new loans are envisaged at this time. TPC-T further submitted that in case there are no actual loans, the same would be funded through normative loans. Further, TPC-T emphasised that it has checked the interest rate in the market and has noted that the interest rates are in line with the interest rate considered for IDFC loan, i.e., 11.21%.

In the absence of a firm tie up for funding arrangement/loan agreements beyond FY 2011-12, the Commission, for the purpose of approval of the present MYT Business Plan is constrained to consider weighted average interest rate based on interest rate of 11.21% from IDFC even for FY 2012-13 to FY 2015-16 as submitted by TPC-T. However, the interest rates considered in the present Order shall be revisited based on actuals, as per the terms of actual long term loans, subject to submission of necessary documentary proofs for the same by TPC-T.

The details of the interest computation considered for approval of the present MYT Business Plan have been elaborated in the subsequent paragraphs of this Order.

3.3 PERFORMANCE PLAN

TPC-T, in the MYT Business Plan Petition, submitted the statistics of system availability it has achieved during the past years starting from FY 2007-08 to FY 2010-11. The Transmission network of TPC-T has shown high level of availability in the past. TPC-T submitted that it proposes to attain an annual availability of 99% for its AC transmission system as compared to 98.71 % in FY 2010-11 and 98.85% in FY 2009-10. To ensure high availability of the network, TPC-T listed the following measures being taken:

a) Close monitoring of performance through:
    i. Availability tracking
    ii. Voltage variation within permissible limits
    iii. Number of trips
b) Capex Proposals for replacement of old switchgear by GIS
c) Outage duration is being monitored and minimised for the equipment having high impact on availability. Example ICTs, 220 kV lines, Cables
d) Overhaul/Replacement of vulnerable old 110 kV breakers in phased manner
e) Root-Cause analysis of repetitive outages
f) 22 kV network will be upgraded to 33 kV network

The Commission has noted the submissions of TPC-T in this regard. Further, to achieving the performance targets in terms of transmission availability, TPC-T should also maintain optimum levels of other parameters such as transmission loss, voltage profile, frequency profile, safety, etc., while operating its transmission system throughout its useful life.

A detailed elaboration on the performance trajectory for TPC-T is provided under Section-5 of this Order.

3.4 HUMAN RESOURCE PLAN

TPC-T, in its MYT Business Plan Petition, submitted that in order to execute its Capital Expenditure plans as well as to meet its performance standards, TPC-T is required to augment its existing staff strength. In this regard, for the purpose of projections of manpower, TPC-T has considered the manpower in four different categories and the requirement was assessed on the basis of the norms arrived at by TPC using its operational experience. The various categories of manpower requirement as considered by TPC-T are as follows:

a) Operation and Maintenance Staff
b) Allied O&M staff
c) Support Service Staff
d) Non-Management or Union Staff

TPC-T submitted that in view of the proposed addition/augmentation of thirteen new Receiving Stations in the MYT Business Plan Control Period, its number of Receiving Stations would reach twenty six by FY 2015-16. TPC-T has nominated three Receiving Stations to constitute a node and three such nodes constitute a Zone. Accordingly, TPC-T submitted that it plans to add 9 nodes and 6 zones from FY 2011-12 to FY 2015-16. The estimation of various categories of manpower requirement, as submitted by TPC-T, is as shown in the Table below:

Table: Human Resource Requirements for FY 2011-12 to FY 2015-16

S. No	Particulars	Existing HR strength	Number of officers proposed by FY 2015-16
1.	Head Transmission	1	1
1.	O&M officers	130	120
2.	Allied O&M officers	20	33
3.	Support Service officers	8	22
4.	Non-Management staff	350	350
5.	Transmission Project	39	122
6.	Other Admin services such as canteen, security etc	Outsourced	
7.	**TOTAL**	**548**	**648**

TPC-T further proposed to hire 25 to 30 Graduate Engineer Trainees (GET) as bench strength to take care of the attritions and retirements.

Further, as regards the Recruitment Policy, TPC-T submitted that it has in place detailed, short and long term recruitment plan through which it aims to serve current and future business manpower needs. TPC-T submitted that a target has been set to hire 50% of its manpower needs as GETs and the remaining as laterals. TPC-T has endeavoured to ensure that talent is sourced in the most cost effective manner.

Further, TPC-T submitted that it follows extensive training and development plan, which includes training programmes, Multi-rater sessions, on the job training, receiving Station simulator training, class room training, seminars and e-learning sessions, etc. TPC-T further stated that its training and development plan emphasise on all-round development for its employees which include programmes related to behavioural, leadership development, management areas, induction and soft skills development. TPC-T also submitted that in order to create a culture of meritocracy, it has instituted holistic compensation philosophy, wherein compensation of all the officers are reviewed annually based on comparator data obtained through a scientific study commissioned through expert consultants.

The Commission has considered the submissions of TPC-T in this regard.

3.5 RISK ANALYSIS AND RISK MITIGATION PLAN

TPC-T, in its MYT Business Plan Petition, submitted that it follows a systematic process for identification of risks and has proposed action plans to mitigate the identified risks. The various risk categories and the respective mitigation plans, as proposed by TPC-T are as follows:

3.5.1 <u>Safety and Security Risks</u>

TPC-T, in the MYT Business Plan Petition submitted the following existing and proposed measures to mitigate Safety and Security Risks:

i) Appointed DuPont, world's renowned expert on safety practices, as consultants for safety initiatives
ii) Focus on safety at all levels in the organisation is being driven through an Apex level Committee comprising of the top management of the organisation
iii) Safety is monitored through indicators such as Numbers and analysis of Safety Observations, near miss incidents, first aid cases, loss work day cases and severity index
iv) Installation of CCTV system, sliding entrance gates and boom barriers, at different divisions of TPC-T.
v) Construction of Boundary walls and placing chain link fencing over the walls at different locations and transmission plots of TPC-T
vi) A security watch tower to be constructed at Backbay Receiving station.
vii) Disaster Management Cell is being activated during monsoon for co-ordination with other Utilities like R-Infra and BEST.

3.5.2 <u>Operational Risk</u>

TPC-T, in its MYT Business Plan Petition identified Operational Risk, which could impact its system availability and cause load shedding in Mumbai on account of outages. The various Operational Risk mitigation measures, as proposed by TPC-T are as follows:

i) Condition Monitoring of switchgear, online breaker analysers have been installed at Dharavi and Salsette Receiving stations
ii) Online transformer hydrogen gas monitoring has been introduced at Mahalaxmi and Saki
iii) Ultra-sonic partial discharge detector for MV switchgear is introduced
iv) Unified SCADA for online monitoring will be commissioned
v) Inspection of Cable terminations and Ultra Sonic Corona Discharge Detectors for Cable terminations
vi) Commissioning of Numerical Relay for faster clearance of faults has been in progress at all the Receiving stations
vii) Installations of bird fault preventive measures are being taken up for prioritising the locations prone for bird faults. New Bird Fault Prevention Measure "Polycarbonate spikes"
viii) Replacement of insulators by Silicon coated insulators of lines in polluted areas to reduce faults due to contamination is in progress.
ix) Formation of a team to co-ordinate and follow up with Government authorities for removal of encroachments under Overhead lines.

The Commission has considered the submissions of TPC-T's as regards Safety and Security Risk and Operational Risk. However, the Commission has few additional observations on the Project implementation risk and financial risk, associated with the transmission schemes to be developed by TPC-T, which have been elaborated below.

3.5.3 <u>Implementation Risk</u>

As part of the data gaps on the MYT Business Plan Petition, the Commission, in view of the significant increase in projected Capital Expenditure, had asked TPC-T to provide its implementation plan and plan for monitoring the progress of execution of Capital expenditure schemes. TPC-T, in response to the query raised by the Commission, submitted that in view of its ambitious capital expenditure plan for the MYT Business Plan Control Period, it has taken various steps for execution and progress monitoring of the proposed capital expenditure schemes as follows:

a) Formed a Corporate Monitoring Group to monitor the project related activities,

b) Usage of latest project management practices and software tools like MS Project, Primavera, etc., for project planning and monitoring,
c) Formulated a separate structure for project execution and monitoring within the organisation
d) Have taken various initiatives for competency development of project personnel to improve the delivery system,
e) Have formed a separate cell for pre-development and follow up with Statutory and Regulatory authorities,
f) Have formed a separate planning wing for forecasting the requirement of the capital expenditure schemes,
g) Have formed a separate Corporate Contracts and procurement organisation for efficient procurement and optimisation of project delivery.

The Commission notes the above submission made by TPC-T. The Commission has following observations regarding the implementation risks for the proposed transmission schemes of TPC-T.

a) As per submissions made before the Standing Committee formed by the Commission for study of Transmission system of Mumbai Metropolitan Region (MMR), the transmission Utilities in consultation with STU have prioritised various transmission schemes, which are required to be carried out in future by Transmission Utilities including TPC-T, for MMR on a short term, medium term and long term basis. The Standing Committee, in its recommendations, has suggested that since several agencies are involved in the development of infrastructure in MMR, it is essential that these agencies are involved in the planning stage itself for the power sector so that requisite clearances and support and coordination from these agencies, viz., MMRDA, SRA, CIDCO, Airport Authority, SEZ, Railways and MCGM is obtained in a timely manner. Thus, the Commission suggests that TPC-T should undertake its planning and implementation activities by involving various regulatory bodies involved in the clearance process.
b) TPC-T, in its MYT Business Plan Petition, has proposed to undertake various transmission schemes during FY 2011-12 to FY 2015-16. However, based on the study of Transmission System in Mumbai Metropolitan Region, the Standing Committee has recommended certain critical Schemes, required to be undertaken by TPC-T on a priority basis, so that future load growth can be met without resorting to load shedding/load restrictions in the MMR. The list of schemes required to be undertaken by TPC-T, as recommended by the Standing Committee is listed below:

i) Second Ckt stringing of 220 kV Borivali (MSETCL)- Borivali (Tata Power) D/C
ii) 220 kV Kalwa-Salsette 3rd and 4th Ckt.
iii) Interconnection of 220 kV Versova (Tata Power)-Versova (R-Infra)
iv) 440 kV Vikhroli Receiving Station
v) 400 kV Kharghar (MSETCL)- Vikhroli D/C line
vi) 400 kV Navi Mumbai (PGCIL)-Vikhroli S/C line
vii) LILO of 220 kV Trombay-Salsette-Saki lines
viii) LILO of MSETCL Trombay-Mulund/Kalwa line
ix) 2x 220kV lines at Godrej and Boyce
x) 440 kV Marve Receiving Station
xi) 400 kV Marve-Vikhroli/Kudus D/C line
xii) 220 kV LILO of R-infra Ghodbunder-Versova at Marve

As regards the same, the Commission had asked TPC-T to ensure that its capital expenditure schemes and capitalisation proposed under its MYT Business Plan are in line with the 5-year Business Plan finalised by the Standing Committee. TPC-T, in response to the query raised by the Commission, submitted that it has reviewed the schemes pointed out in the Standing Committee report and is of the opinion that some of the schemes can be incorporated in the MYT Business Plan while some schemes may not be either required to be executed or would be phased beyond the proposed Control Period of FY 2011-12 to FY 2015-16. Further, out of the twelve identified schemes, TPC-T has not included the following schemes in its MYT Business Plan Petition. The list of the schemes and justification of their non-inclusion, as submitted by TPC-T is as shown below:

i) <u>400 kV Marve – Vikhroli / Kudus D/C Line</u>

TPC-T submitted that this scheme is proposed to be taken up after finalisation of scheme 400 kV GIS at Marve, during the time of mid-term review depending upon the developments in the STU Transmission Plan and is proposed to be included accordingly. Hence, the same has not been considered at present for the purpose of MYT Business Plan projections.

ii) <u>220 kV LILO of R-Infra Ghodbunder – Versova at Marve</u>

This scheme is proposed to be taken up after finalisation of scheme 400 kV GIS at Marve, during the time of mid-term review depending upon the developments in the STU Transmission Plan and is proposed to be included accordingly. Hence, the same is not proposed in the MYT Business Plan at present.

iii) <u>220 KV Trombay –Mulund /Kalwa</u>

TPC-T submitted that the scheme is not envisaged in the Control Period as the same is contingent upon the progress in the transmission projects of MSETCL.

Further to the above, TPC-T has included the following additional schemes in its revised MYT Business Plan Petition. The list of the schemes and justification of their inclusion, as submitted by TPC-T is as shown below:

iv) <u>220 kV Kalwa-Salsette 4th Circuit</u>

TPC-T submitted that it has already got approval of the DPR for 3rd 220 kV Kalwa - Salsette line. However, in view of the Right of Way (ROW) issues on account of mangroves, etc., this line will have to be made partly as transmission cable. The previously estimated value of the Scheme of Rs 34.01 Crore stands revised at Rs 217.42 Crore. Further, in view of the delay in commissioning of the project for the third circuit, it is proposed to uprate the existing 220 kV Kalwa- Salsette conductors by high Ampacity conductors and need for a 4th Circuit will be addressed through the same. TPC-T has included this Scheme in the present MYT Business Plan Petition.

v) <u>Interconnection of 220 kV Tata Power Versova R/S and R-Infra Versova R/S</u>

TPC-T submitted that 220 kV GIS at Versova is one of the schemes proposed in the MYT Business Plan Petition. The interconnection shall be developed along with the commissioning of the said 220 kV GIS at Versova. Thus, TPC-T revised its MYT Business Plan Petition by including this Scheme.

The Commission notes the above submissions made by TPC-T. The Commission observes that although TPC-T has proposed various other Schemes to be undertaken during the MYT Business Plan Control Period, TPC-T should implement the Schemes as prioritised in consultation with STU/Standing Committee.

3.5.4 <u>Financing Risk</u>

TPC-T, in its MYT Business Plan Petition submitted that it has only tied up loans of Rs 800 Crore from IDFC for its Mumbai Regulated Business (including TPC-G, TPC-T and TPC-D). TPC-T submitted that the same would be sufficient to meet its funding requirement for FY 2011-12 and partly for FY 2012-13. Further, for tying up additional future funding requirements to meet the proposed capital expenditure in subsequent years, it would be practical to revisit the same at an appropriate time in the future depending upon the prevailing market conditions for sourcing the required quantum of loans. Hence, it would not be practical to tie up funds for subsequent years at this point of time.

The Commission notes the submission made by TPC-T. However, the Commission has following observations regarding financing risk for the proposed transmission schemes for TPC-T:

a) Based on the substantial Capital Investment proposed by TPC-T during FY 2011-12 to FY 2105-16, the financing requirement for the respective financial year works out as shown in the Table below:

Table: Financing Requirement from FY 2011-12 to FY 2015-16 (Rs Crore)

Particulars	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16
Proposed Capitalisation	284.94*	762.55	477.07	1573.42	1886.31
Equity Funding @ 30%	85.48*	228.76	143.12	472.02	565.89
Debt Funding @ 70%	199.46*	533.78	333.95	1101.40	1320.42

**(Based on latest submission by TPC-T)*

As observed by the Commission, the current tied up loan quantum of Rs 800 Crore by TPC to finance the capitalisation of its Regulated Business in Mumbai Region (including Transmission, Generation and Distribution) would not be sufficient to finance its debt requirements for FY 2011-12 to FY 2015-16. Thus, the Commission directs TPC-T to put in place firm funding arrangement at least for initial two years of the Control Period (FY 2012-13 and FY 2013-14), either from financial institutions or from its internal accruals, to finance its funding requirements for the Business Plan Control Period so as to ensure timely fund availability for achieving capitalisation planned for over the Control Period.

b) In this context, the Commission observes that as risk associated with the transmission business is lower than that of the generation and distribution business, the same should be reflected in interest cost of debt funds when apportioned between TPC-G and TPC-T and TPC-D out of overall loan availed by TPC at estimated interest cost of around 11% p.a. as proposed by

TPC-T. Thus, under its MYT Petition, TPC-T should provide adequate justification in case it proposes the interest rate for transmission business same as that of generation and distribution business.

3.6 ENVIRONMENTAL POLICY AND CORPORATE SOCIAL RESPONSIBILITY INITIATIVES PLAN

TPC-T, in its MYT Business Plan Petition, submitted that most of the line trippings are caused due to lack of public awareness and it further results in public accidents. Thus, in Order create more public awareness, TPC-T conducts public safety awareness campaigns called "Jan Jagruti Abhiyan" for people who stay near the transmission line areas. Further, TPC-T submitted that it conducts medical camps and health awareness programmes in schools and villages.

TPC-T also submitted that it is also committed towards a clean, safe and healthy environment and operates its facilities in an environmentally sensitive and responsible manner. In this regards, various initiatives undertaken by TPC-T are as follows:

a) Complying with requirements and spirit of applicable environmental laws and striving to exceed required levels of compliance wherever feasible (Solar Heaters)
b) Ensuring that the employees are trained to acquire the necessary skills to meet environmental standards. (Solid Waste, e-Waste disposal through MPCB approved vendors)
c) Making business decisions that aim towards sustainable development. (Adoption of Gas Insulated Switchgear)
d) Engaging with stakeholders to create awareness on sustainability. (Energy Conservation programmes with Schools)
e) Conserving natural resources by improving efficiency and reducing wastage. (LED lights, rain water harvesting)

As regards contribution towards Corporate Social Responsibility (CSR), the Commission is of the view that if the Company or the shareholders of the Company wish to contribute/donate towards charitable causes, the same should be contributed from the returns earned out of the business, rather than passing on such costs to the Utility's consumers. Hence, for approval of Business Plan for FY 2012-13 to FY 2015-16, the Commission has not considered the expenses towards CSR, in the form of other expenses, as claimed by TPC-T.

3.7 FUTURE BUSINESS OPPORTUNITIES PLAN

As regards prospective Business Opportunities, TPC-T highlighted two broad categories namely:

a) Joint Venture (JV): TPC-T submitted that it may decide to execute a JV with MSETCL to implement transmission lines in the future.
b) Participate in Independent Private Transmission Company (IPTC) bidding: TPC-T submitted that it may participate in IPTC bidding for transmission schemes.

The Commission has noted the submissions of TPC-T in this regard. Further, keeping in view the provisions of Section 41 of the EA 2003, the Commission is of the opinion that all possible options of generating revenue from other business should be explored by TPC-T, so that the same could be used for reducing the charges for transmission and thus, mitigate the cost burden on the Transmission System Users.

3.8 TECHNOLOGICAL DEVELOPMENT PLAN

As regards the Technological Development Plan, TPC-T highlighted various new technologies, which are being pursued by TPC-T in its operations and construction namely:

a) 33kV GIS with Bay Control Protection Unit (BCPU) along with SCADA controls is being commissioned at Receiving Stations to take care of space constraints.
b) Replacement of conductors by high Ampacity conductors.
c) Installation of Hybrid GIS to enable additional bays in a restricted space.
d) Unified SCADA for centralized control is under implementation.
e) Live line indicators for early warning of live equipment and additional interlocking system for safety purposes are being installed on EHV buses at Receiving Station.
f) Lock Out-Tag Out and use of ARC suit for isolation of indoor switchgear have been implemented for safe operation and maintenance.
g) Ultrasonic meter for measuring ground clearances of transmission lines.
h) Use of Polymeric coat for transmission line towers in creek and polluted area is being studied to prevent rusting.
i) Use of Phasor Measurement Unit (PMU) and SMART Grid technology for monitoring reliability.
j) Transition Joints Technology for jointing old type of EHV oil filled cable and newly laid XLPE cables.

The Commission has considered the submissions of TPC-T in this regard. Further, the Commission is of the opinion that considering growing demand in Mumbai Metropolitan Region (MMR) and the various ROW issues in MMR, TPC-T should explore various advancements in transmission technologies after taking into consideration cost/benefit analysis of various technological options.

4 COMPUTATION OF PROJECTION OF ARR COMPONENTS UNDER MYT BUSINESS PLAN

TPC-T, in its Petition, has given details of its Operational Plan for its transmission business (TPC-T) for FY 2011-12 to FY 2015-16 under various heads, viz., O&M expenses, Depreciation, interest on loans, etc., as per the data formats prescribed by the Commission. In the Guidelines and data Formats stipulated by the Commission for filing the MYT Business Plan, the Commission had also directed the Transmission Utilities to project their ARR based on the projected capital expenditure and O&M expenses, so that the consumers would get an idea of the impact of the Plans proposed by the Licensees. However, application for approval of the ARR of the Transmission Utility would be considered once it is filed after the MYT Business Plan Order is issued. Therefore, excepting according approval to the ARR, this Order analyses the projections of the ARR based on the projected capital expenditure and O&M expenses, so that consumers get an idea of the impact of the Plans proposed by the Licensee. Hence, for completeness of this Order, the Commission has captured the ARR as projected by TPC-T in this Chapter.

As regards treatment of the submissions made by TPC-T for FY 2011-12 under this MYT Business Plan, the Commission vide its letter dated 4 November, 2011 directed TPC-T to submit its ARR and Tariff Petition for FY 2011-12 as per Maharashtra Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2005. However, TPC-T has not complied with this direction and has not filed its Petition for approval of ARR for FY 2011-12, in accordance with Maharashtra Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2005. Hence, the Commission directs TPC-T to submit its ARR for FY 2011-12 as per MERC Tariff Regulations, 2005 as a separate section in its MYT Petition for FY 2012-13 to FY 2015-16 as per MERC MYT Regulations.

In view of the above, while approving the present MYT Business Plan of TPC-T for the second Control Period, the Commission has not given any views regarding the operational expenditure heads for FY 2011-12. For the years from FY 2012-13 to FY 2015-16, the total expenditure under various heads, as projected by TPC-T along with the Commission's views on the same, have been discussed in subsequent Sections.

4.1 OPERATION & MAINTENANCE EXPENSES

The norms for Operation and Maintenance (O&M) expenses for existing and new Transmission licensees for the period from FY 2012-13 to FY 2015-16 have been stipulated on the basis of length of the transmission lines in circuit kilometre and number of bays in the substation of the Transmission licensee. The MERC MYT Regulation specifies the norms for O&M expenses on voltage level basis. Further, O&M norms for higher voltage levels (400 kV and above) as specified for MSETCL and not specified for other existing licensees including TPC-T, shall be applicable norms for transmission assets added by such other existing licensees including TPC-T at these higher voltages.

In accordance with the above provisions of MERC MYT Regulations, 2011, TPC-T, has estimated the O&M expenses based on the year-wise O&M norms as specified for TPC-T in the Regulations, and based on the transmission line length in circuit kilometres and number of bays for FY 2011-12 to FY 2015-16. The O&M expense estimated by TPC-T is shown in the Table below:

Table: O&M Expenses as submitted by TPC-T **(Rs Crore)**

O&M Expenses	Units	2011-12	2012-13	2013-14	2014-15	2015-16
For Line						
Distance of line	Ckt.km					
- 400 kV		0.00	0.00	0.00	0.00	227.60
- >66 kV & <400 kV		1086.10	1145.10	1285.57	1319.17	1356.17
MERC Norms	Rs Lakh/Ckt-km					
- 400 kV		0.53	0.56	0.59	0.63	0.66
- >66 kV & <400 kV		1.09	1.16	1.22	1.29	1.37
For Bay						
No of bays	No.					
- 400 kV		0.00	0.00	0.00	0.00	28.00
- >66kV & <400 kV		289.00	313.00	327.00	375.00	402.00
- 66 kV and Less		696.00	758.00	844.00	1024.00	1079.00
MERC Norms	Rs Lakh/ Bay					
- 400 kV		93.75	99.11	104.78	110.78	117.11
- >66kV & <400 kV		28.49	30.12	31.85	33.67	35.60
- 66 kV and Less		5.96	6.30	6.66	7.04	7.44
O&M Expenses	**Rs Crore**	**135.66**	**155.32**	**176.04**	**215.35**	**276.26**

The O&M expenses for FY 2012-13 to FY 2015-16, after taking into account the years into consideration for the present Business Plan Order along with the respective transmission network parameters and the applicable norms, are summarised in the following table. It may be noted that O&M expenses for Transmission line (Ckt Km) and Bays have to be computed by considering only such schemes that have already been granted in-principle approval or are already submitted before the Commission for grant of in-principle approval.

Table: O&M Expenses as per Norms (Rs Crore)

O&M Expenses	Units	2012-13	2013-14	2014-15	2015-16
For Line					
Distance of line (Average)	Ckt.km				
- 400 kV		0.00	0.00	0.00	114.00
- >66 kV & <400 kV		1115.75	1201.15	1267.45	1285.50
MERC Norms	Rs lakh/ckt-km				
- 400 kV		0.56	0.59	0.63	0.66
- >66 kV & <400 kV		1.16	1.22	1.29	1.37
For Bay					
No of bays (Average)	No.				
- 400 kV		0.00	0.00	0.00	14.00
- >66kV & <400 kV		301.00	319.00	346.50	381.50
- 66 kV and Less		727.00	780.50	870.50	961.00
MERC Norms	Rs Lakh/ Bay				
- 400 kV		99.11	104.78	110.78	117.11
- >66kV & <400 kV		30.12	31.85	33.67	35.60
- 66 kV and Less		6.30	6.66	7.04	7.44
O&M Expenses	**Rs Crore**	**149.40**	**168.24**	**194.28**	**242.07**

4.2 CAPITAL EXPENDITURE AND CAPITALISATION

4.2.1 <u>Capital Expenditure</u>

TPC-T, in its MYT Business Plan Petition, submitted details of capital expenditure for various capital expenditure schemes as detailed in earlier sections of this Order. The summary of capital expenditure, as submitted by TPC-T is shown in the Table below:

Table: Capital Expenditure for FY 2011-12 to FY 2015-16 by TPC-T (Rs Crore)

MERC Approval Status	No. of Schemes	Capital Expenditure				
		FY 12	FY 13	FY 14	FY 15	FY 16
Approved DPR	*45*	434.68	593.04	637.34	818.88	461.56
Submitted but yet to be approved DPR	*7*	0.00	34.19	56.96	21.09	43.20
To be submitted DPR	*43*	23.50	171.48	679.71	689.68	1042.14
Approval Not-Required						
- Non DPR	*103*	22.19	34.18	16.49	6.16	6.49
- HOSS		5.00	5.00	5.00	5.00	5.00
TOTAL	**198**	485.37	837.89	1395.49	1540.81	1558.39

TPC-T, in reply to the query raised by the Commission as regards prioritisation of its Capital expenditure Schemes and submission of realistic projection of its capital expenditure and capitalisation with due consideration to historical performance, submitted that it may not be prudent to prioritise the Schemes of TPC-T as most of the Schemes are imperative for the smooth and efficient functioning of the transmission grid. TPC-T also submitted that it would not be appropriate to compare the past performance for predicting the future, as the execution of many of the Schemes are dependent on the approval of the various Statutory authorities. TPC-T re-iterated that execution of many of its Schemes are outside its purview, as such Schemes require permission from Government Authority, Right of Way and involve digging of roads, permission for which is available in only limited number of months of the year. Thus, TPC-T also submitted the projections of realistic and pessimistic scenario of its Capitalisation after taking into account potential delay scenarios.

TPC-T, in reply to a specific query raised by the Commission as regards consideration of only those Capital expenditure Schemes which have been approved by STU, submitted that since approval from the Commission is preceded by the STU approval, all the Schemes which are approved by the Commission or submitted to the Commission for approval are already approved by STU. Thus, based on its original Business Plan Petition, out of 198 proposed Schemes, it has received STU approvals for 52 Schemes. Further, out of the 44 Schemes for which DPR's are yet to be submitted to the Commission, STU approval is required only for about 30 Schemes, while the balance Schemes are in the form of replacement Schemes and do not require any STU approval.

TPC-T, in reply to a specific query raised by the Commission regarding the basis and justification of HoSS allocation of Rs 25 Crore to TPC-T, submitted that it has assumed an HoSS allocation of Rs 5 Crore every year on the basis of actual allocation of Rs 3 Crore and Rs 5 Crore for FY 2009-10 and FY 2010-11, respectively.

TPC-T, in its MYT Business Plan Petition has proposed to undertake various transmission schemes during the second Control Period. The details of the schemes required to be undertaken by TPC-T, have been discussed in Section 3 of this Order (Business Plan Components).

As discussed in Section 3, of this Order, the Commission observes that although TPC-T has proposed various other Schemes to be undertaken during the Business Plan Control Period, the Commission opines that TPC-T should implement the Schemes as prioritised in consultation with STU/Standing Committee on priority basis.

4.2.2 Capitalisation

The summary of Capitalisation as proposed by TPC-T is presented in the Table below:

Table: Capitalisation submitted by TPC-T ***(Rs Crore)***

MERC Approval Status	No. of DPR/Non DPR schemes	Capitalisation					Total Business Plan
		FY 12	FY 13	FY 14	FY 15	FY16	FY 13-FY16
Approved *DPR*	45	151.14	695.97	269.82	960.79	1071.09	**2997.67**
Submitted but yet to be approved *DPR*	7	0.00	6.59	34.31	62.34	18.20	**121.44**
To be submitted *DPR*	43	23.00	22.00	147.30	538.93	785.53	**1493.76**
Approval Not-Required							
- Non DPR	103	18.93	32.99	20.64	6.36	6.49	**66.48**
- HOSS		5.00	5.00	5.00	5.00	5.00	**20.00**
TOTAL	**198**	**198.07**	**762.55**	**477.07**	**1573.42**	**1886.31**	**4699.35**

As FY 2011-12 is already over, the Commission had asked TPC-T to submit the status of actual capitalisation as on 31 March, 2012. In this context, TPC-T submitted that the actual capitalisation achieved (unaudited) for FY 2011-12 was Rs 284.94 Crore compared to Rs 198.07 Crore estimated earlier. TPC-T provided the scheme-wise details for the revised capitalisation for the period. For the purpose of the current Business Plan approval, the Commission has considered the revised capitalisation as submitted by TPC-T, without scrutiny of the same. The same should not be construed as approval of the capitalisation of FY 2011-12. The same shall be approved as part of a separate Regulatory process to be followed for approval of ARR for FY 2011-12, which the Commission is not taking up as part of the present Business Plan Petition, for reasons explained in the preceding paragraphs of this Order.

As regards capitalisation of DPR schemes submitted by TPC-T for FY 2012-13 to FY 2015-16, the Commission has considered only those schemes, which have already been granted in-principle approval by the Commission and those schemes which have been submitted to the Commission for grant of in-principle approval. The Commission while considering such level of capitalisation of DPR schemes for the new Control Period, recognise the fact that cost of development of transmission assets have gone up in the recent past with adoption of new technologies such as GIS, underground cables, multi-circuit towers to optimise RoW issues, etc., and thus the schemes to be implemented in the future years tend to be of higher capital cost than the earlier ones. In specific, the Commission also observe that TPC-T in the new Control Period have planned for substantial addition of 400 kV network which have resulted in higher capital expenditure planned for the new Control Period.

The Commission for the purpose of Business Plan approval has considered the capitalisation towards HOSS at the levels for each year from FY 2012-13 to FY 2015-16 as submitted by TPC-T.

The Commission, after taking into account the years under consideration for the present Business Plan Order along with the approved capital expenditure, approves the following year-wise capitalisation as summarised in the Table below:

Table: Capitalisation approved by the Commission ***(Rs Crore)***

Type of schemes	No. of Schemes	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	**Total Business Plan**
DPR	53*	702.56	304.13	1025.13	1204.29	**3236.11**

Non DPR and HoSS	103	37.99	25.64	11.36	11.49	**86.48**
Total	156	740.55	329.77	1036.49	1215.78	**3322.59**

**(A scheme 220 KV line Kalwa - Salsette line No.5 (Third Ckt) which was 'yet to be submitted' for in-principle capex approval at the time of submission of the MYT Business Plan have been submitted by TPC-T later and have been granted approval by the Commission in due course. The same has also been considered while allowing capitalisation during the new Control Period)*

4.3 DEPRECIATION

While projecting Depreciation Expenditure for the second Control Period from FY 2011-12 to FY 2015-16, TPC-T submitted that it has computed Depreciation in accordance with Regulation 31 of MERC MYT Regulations and considering the asset-class wise depreciation rates as provided under the MERC MYT Regulations. Further, TPC-T submitted that the depreciation for the second Control Period has been estimated on the basis of the additions to GFA up to 31 March, 2011.

The depreciation expenditure submitted by TPC-T for FY 2011-12 to FY 2015-16 has been summarised in the following Table:

Table: Depreciation as submitted by TPC-T ***(Rs Crore)***

Particulars	**FY 2011-12**	**FY 2012-13**	**FY 2013-14**	**FY 2014-15**	**FY 2015-16**
Depreciation	**51.61**	**79.02**	**109.37**	**161.48**	**251.09**

In addition, while working out the depreciation for years from FY 2012-13 to FY 2015-16, TPC-T has proposed asset retirement to the tune of Rs 1.38 Crore, Rs 1.38 Crore, Rs 6.87 Crore[1], Rs 4.92 Crore and Rs 0.62 Crore, respectively, for each year of the second Control Period.

The Commission, for the purpose of the present Business Plan Order has computed depreciation for the years under consideration of the second Control Period starting from FY 2012-13 as under. The Opening GFA for FY 2012-13 has been reworked based on the closing GFA for FY 2010-11 as approved in the Commission's Order in Case No. 106 of 2011, and considering the GFA addition and retirement during FY 2011-12 as submitted by TPC-T. The GFA addition and retirement during FY 2011-

[1] *The retirement value was initially Rs 6.45 Crore in the Petition, which was restated to Rs 6.87 Crore by TPC-T in replies to queries raised by the Commission*

12 are considered at the same level as submitted by TPC-T solely for arriving at the opening GFA levels of FY 2012-13 and such consideration should not be construed as approval by the Commission under the present Business Plan. Further, the revised approved capitalisation for subsequent years in the Control Period has been considered for the purpose of computation of depreciation.

As regards asset retirement proposed during the Control Period, the Commission has considered the same as submitted by TPC-T for reduction of GFA in the respective years. Proviso (a) to Regulation 31.2 of the MERC MYT Regulations emphasises on reduction of approved original cost of fixed assets retired/ replaced for computation of depreciation of any Transmission Licensee, as reproduced below:

> *"31.2 The Generation Company and Transmission Licensee or Distribution Licensee shall be permitted to recover depreciation on the value of fixed assets used in their respective Business computed in the following manner:*
>
> *(a) The approved original cost of the project/fixed assets shall be the value base for calculation of depreciation:*
>
> *Provided that the depreciation shall be allowed on the entire capitalised amount of the new assets* ***after reducing the approved original cost of the project/fixed assets*** *of retired or replaced assets. (**Emphasis Added**)*

The Commission for the purpose of approval of Business Plan has considered the cost of asset retirement as submitted by TPC-T for computing year-wise reduction in GFA and the corresponding depreciation. TPC-T while submitting the MYT Petition shall consider the original cost of retired assets for working out the depreciation in accordance with the above highlighted provisions of the MYT Regulations.

Table: Depreciation computed by the Commission (Rs Crore)

Depreciation	**FY13**	**FY14**	**FY15**	**FY16**
Opening Gross Fixed Assets (GFA)	1740.80	2479.96	2802.86	3834.43
Addition of Gross Fixed Assets	740.55	329.77	1036.49	1215.78
Asset Retirement	(1.38)	(6.87)	(4.92)	(0.62)
Closing Gross Fixed Assets	2479.96	2802.86	3834.43	5049.59
Depreciation	**77.24**	**104.23**	**141.34**	**202.15**

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4.4 INTEREST ON LONG-TERM LOAN

TPC-T, in its MYT Business Plan Petition, submitted that in the past TPC-T has taken loans from time to time for financing its capital expenditure. However, TPC-T stated that the interest rates on the loans have been changing in the market year on year and accordingly, it was extremely difficult for TPC-T to predict the interest rates for the second Control Period at the time of submission of the MYT Business Plan. TPC-T further submitted that it would not be prudent to tie up the entire loan required for capital expenditure proposed under the MYT Business Plan at this point of time as the actual capital expenditure would change with the passage of time.

TPC-T submitted that it has tied up Rs. 800 Crore from IDFC in FY 2011-12 for funding the debt requirement of the proposed capital expenditure schemes of TPC-G, TPC-T and TPC-D. The salient features of the said funding arrangement with IDFC are as below:

Particulars	Description
Amount	Rs. 800 Crore
Purpose	For financing the Company's capital expenditure requirements in the Mumbai Area Operations
Interest Rate	IDFC 1year Benchmark rate plus 1.20% p.a. p.m. Current rate works out to be 11.20% p.a. p.m. (10%+1.20%)
Interest Reset	12 months from the date of first disbursement. Subsequent Reset shall be after every 12 months from the last Reset Date. The Reset interest Rate will be 1-year IDFC Benchmark Rate prevailing on the Relevant Reset Date plus the Spread of 1.20%.
Repayment	In 44 structured quarterly instalments commencing from the expiry of 24 months from the date of first disbursement, 7.5% every year for the first 10 years and 25% in the last year.

TPC submitted that for the purpose of projection of interest expenses over the Control Period, it has considered the IDFC Loan for meeting the capital expenditure requirements of TPC-T for FY 2011-12 and FY 2012-13 and normative loans for the additional capitalisation, i.e., the capitalisation in the second Control Period of FY 2013-14 to FY 2015-16. TPC-T added that such normative loans have been assumed to be financed at the weighted average rate of interest calculated on the basis of the actual loan portfolio at the beginning of each year. Further, as per Regulation 33 of the MERC MYT Regulations, the repayment is considered on a normative basis equal to depreciation allowed for each year of the Control Period.

Table: Interest on Long Term Loans submitted by TPC-T ***(Rs Crore)***

Particulars	**Ensuing Years**				
	FY12	**FY 13**	**FY 14**	**FY 15**	**FY 16**
Opening Balance of Loan	384.33	471.37	926.14	1150.72	2090.64
Loan Addition	138.65	533.78	333.95	1101.40	1320.42
Loan Repayment	51.61	79.02	109.37	161.48	251.09
Closing Balance of Loan	471.37	926.14	1150.72	2090.64	3159.97
Interest Rate	10.65%	10.83%	11.04%	11.05%	11.05%
Interest Expense	**45.58**	**75.70**	**114.62**	**179.01**	**290.13**

In reply to a query raised by the Commission as regards TPC-T's funding arrangement in view of the observed in-adequacy of its new loan of Rs 800 Crore from IDFC to finance its proposed debt requirement till FY 2012-13, TPC-T submitted that IDFC loan would be adequate to finance the debt requirement for FY 2011-12 and some quantum of it shall also be used in FY 2012-13. Hence, according to TPC-T, the need for tying up additional loans can be assessed only in the middle of FY 2012-13 based on progress of capital expenditure in FY 2012-13 and therefore no additional new loans are envisaged at this time. TPC-T further submitted that in case there are no actual loans, the same would be funded through normative loans for the year FY 2012-13.

In this context, the Commission observes that as risk associated with the transmission business is lower than that of the generation and distribution business, the same should be reflected in interest cost of debt funds when apportioned between TPC-G, TPC-T and TPC-D out of overall loan availed by TPC-T at estimated interest cost of 11.21% p.a. as proposed by TPC-T. Thus, under its MYT Petition, TPC-T should provide adequate justification in case it proposes the interest rate for transmission business same as that of generation and distribution business.

The opening loan for FY 2012-13 has been reworked based on the closing loan for FY 2010-11 as approved by the Commission in its Order in Case No. 106 of 2011, and considering the loan addition and repayment during FY 2011-12 as submitted by TPC-T. The loan addition and repayment during FY 2011-12 are considered at the same level as submitted by TPC-T solely for arriving at the opening loan levels of FY

2012-13 and such consideration should not be construed as approval by the Commission under the present Business Plan.

The Commission have considered debt amount for each year of the Control Period from FY 2012-13 to FY 2015-16 based on the revised capitalisation approved under this Business Plan for the respective years. The IDFC Loan 3 of Rs 800 Crore among TPC-G, TPC-T and TPC-D has been utilised in the following manner based on the capitalisation level as submitted by TPC in respective year for TPC-G, TPC-T and TPC-D, respectively. The same is presented in the following table.

Table: Utilisation of IDFC Loan 3(Rs 800 Crore) (as considered by the Commission)

	TPC-G	TPC-T	TPC-D	Total
FY 2011-12	111.54	199.46	154.70	**465.70**
FY 2012-13	75.00	181.90	77.40	**334.30**
Total				**800.00**

The Commission has considered the impact of retirement of assets as submitted by TPC-T during the respective years of the Control Period to the extent of retirement of loans in the respective years.

Further, the loan repayments have to be considered at the same level as the depreciation for the respective years in accordance with Regulation 33.3 of the MYT Regulations. The rate of interest considered is the weighted average rate of interest calculated on the basis of the actual loan portfolio at the beginning of each year applicable to TPC-T in accordance with the Regulation 33.5 of the MYT Regulations. Similarly, the interest on loan has been calculated on the normative average loan of the year by applying the weighted average rate of interest in accordance with the Regulation 33.6 of the MYT Regulations.

The interest expenses on long-term loan, as computed by the Commission for the years under consideration for the present MYT Business Plan starting from FY 2012-13, in view of the approved Capitalisation, is summarised in the Table below:

Table: Interest on Long Term loans computed by the Commission (Rs Crore)

Particulars	**Ensuing Years**			
	FY13	**FY14**	**FY15**	**FY16**

Particulars	Ensuing Years			
Opening Balance of Loan	474.67	914.85	1,036.64	1,617.40
Loan Addition	518.38	230.84	725.54	851.05
Loan of Retired Assets	(0.97)	(4.81)	(3.45)	(0.43)
Loan Repayment	77.24	104.23	141.34	202.15
Cl. Balance of Loan	914.85	1,036.64	1,617.40	2,265.87
Interest Rate (Weighted Average)	10.50%	10.59%	10.58%	10.56%
Interest Expense	**72.97**	**103.31**	**140.36**	**205.06**

4.5 INTEREST ON WORKING CAPITAL

TPC-T, in its Petition, submitted that the Working Capital requirement has been computed on a normative basis in accordance with the MERC MYT Regulations, which stipulates the components of working capital of the transmission business. TPC-T has considered the normative interest rate of 13.25%, which is the prevailing State Bank Advance Rate (bench-mark interest rate specified in MERC MYT Regulations) as on date of filing of the revised Petition. TPC-T also submitted that for the purpose of contribution of the book value of stores, materials and supplies, it has considered the average amount as considered by it for FY 2009-10 and FY 2010-11. TPC-T projected interest on working capital of Rs 9.18 Crore, Rs 11.13 Crore, Rs 13.53 Crore, Rs 17.65 Crore and Rs 24.56 for FY 2011-12, FY 2012-13, FY 2013-14, FY 2014-15 and FY 2015-16, respectively.

The Commission has computed the total working capital requirement in accordance with the provisions of MERC MYT Regulations in the present MYT Business Plan starting from FY 2012-13, as shown in the Table below:

Table: Interest on Working Capital computed by the Commission ***(Rs Crore)***

Particulars	Ensuing Years			
	FY13	**FY14**	**FY15**	**FY16**
Interest on Working Capital	10.30	12.22	14.71	19.05

4.6 CONTRIBUTION TO CONTINGENCY RESERVES

TPC-T has projected the contribution to contingency reserves as 0.25% of the GFA in line with the MERC MYT Regulations, over the Control Period of FY 2011-12 to FY 2015-16. The contribution to contingency reserves as projected by TPC-T is shown in Table below:

Table: Contribution to Contingency Reserves as submitted by TPC-T (Rs Crore)

Particulars	FY12	FY 13	FY 14	FY 15	FY 16
Contribution to Contingency Reserves	3.91	4.41	6.31	7.51	11.44

The Commission has computed the contribution to contingency reserves at 0.25 % of the GFA in accordance with the provisions of the MERC MYT Regulations and based on the capitalisation projected by the Commission during the years starting from FY 2012-13, as shown in the Table below:

Table: Contribution to Contingency Reserves computed by Commission (Rs Crore)

Particulars	FY13	FY14	FY15	FY16
Contribution to Contingency Reserves	4.35	6.20	7.01	9.59

4.7 RETURN ON EQUITY (ROE)

TPC-T submitted that it has projected the Return on Equity (RoE) in accordance with the MERC MYT Regulations, which stipulates a 15.5% return on equity per annum based on the capital expenditure and capitalisation and debt:equity norm of 70:30. Further, TPC-T has computed RoE on the basis of opening equity, 50% of the equity portion of the capitalisation during the year and reduction in equity on account of de-capitalisation of certain assets. Accordingly, RoE as projected by TPC-T is shown in the Table below:

Table: Return on Equity submitted by TPC-T (Rs Crore)

Particulars	FY12	FY 13	FY 14	FY 15	FY 16
Opening Equity	561.14	620.56	848.91	990.09	1460.64
Additions to equity net of reduction due to replacement of assets	59.42	228.35	141.18	470.55	565.71
Closing balance of Equity	620.56	848.91	990.09	1460.64	2026.35
Return on Regulatory Equity at	86.98	96.19	131.58	153.46	226.40

Particulars	FY12	FY 13	FY 14	FY 15	FY 16
the beginning of the year					
Return on Equity portion of assets capitalised during the year	4.61	17.70	10.94	36.47	43.84
Total Return on Regulatory Equity	**91.58**	**113.88**	**142.52**	**189.93**	**270.24**

The Commission has computed RoE at the rate of 15.5% of the equity, in accordance with the MERC MYT Regulations, on the opening equity of the year and on 50% of the projected levels of asset capitalisation during each year of the Control Period and considering the debt: equity ratio as 70:30.

For the propose of arriving at the Regulatory Equity at the beginning of the year for FY 2012-13, the closing equity at the end of the FY 2010-11 as approved by the Commission in its Order in Case No. 106 of 2011 and the submissions on revised capitalization for FY 2011-12 of TPC-T has been considered. The Commission thus, has not scrutinized the equity levels of TPC-T for FY 2011-12 except for consideration of the revision in equity as per the revised capitalization submitted by TPC-T for the year. As discussed earlier, detailed scrutiny for FY 2011-12 will be taken up as part of a separate Regulatory Process.

The Commission has further considered reduction in equity in respective years to the extent of retirement of assets as submitted by the TPC-T. TPC-T submitted the following table providing the computation on the adjustment to equity based on the retirement of asset envisaged during the Control Period.

Table: Reduction in Equity due to Assets that are retired ***(Rs Crore)***

Particulars	FY13	FY14	FY15	FY16
Acquisition Value of Old Assets retired over the year	1.38	6.87	4.92	0.62
Reduction in Equity due to above retirement	0.42	2.06	1.48	0.19

The computation of RoE by the Commission for the years under consideration under the present MYT Business Plan Order starting from FY 2012-13 is shown in the Table below.

Table: Return on Equity computed by the Commission ***(Rs Crore)***

Particulars	**FY13**	**FY14**	**FY15**	**FY16**
Regulatory Equity at the beginning of the year	618.09	839.84	936.71	1246.18
Equity portion of the assets capitalized	222.16	98.93	310.95	364.73
Reduction in Equity Capital on account of retirement / replacement of assets	(0.42)	(2.06)	(1.48)	(0.19)
Regulatory equity at the end of the year	839.84	936.71	1246.18	1610.73
Return on Regulatory Equity at the beginning of the year	95.80	130.18	145.19	193.16
Return on Equity portion of assets capitalised	17.19	7.51	23.98	28.25
Total Return on Regulatory Equity	**112.99**	**137.68**	**169.17**	**221.49**

4.8 INCOME TAX

The Income Tax estimated by TPC-T for the second Control Period is shown in the Table below:

Table: Income Tax submitted by TPC-T ***(Rs Crore)***

Particulars	**FY12**	**FY 13**	**FY 14**	**FY 15**	**FY 16**
MAT @ 20.01%					
Return on Equity	91.58	113.88	142.52	189.93	270.24
ROE Grossed up	114.49	142.37	178.18	237.44	337.84
MAT	**22.91**	**28.49**	**35.65**	**47.51**	**67.60**
Income Tax @ 32.45%					
ROE	91.58	113.88	142.52	189.93	270.24
Tax Depreciation	88.41	188.18	231.29	432.63	650.93
Book Depreciation	51.61	79.02	109.37	161.48	251.09
Income Tax	**26.32**	**2.27**	**9.90**	**(39.02)**	**(62.26)**
Tax for ARR [higher of MAT or Income Tax]	**26.32**	**28.49**	**35.65**	**47.51**	**67.60**

As regards computation of Income-Tax for FY 2011-12 to FY 2015-16, the MERC MYT Regulations specifies that the Commission may provisionally approve Income

Tax payable for each year of the Control Period based on the actual income tax payable as per the latest audited accounts and the variation between the actual and approved Income Tax shall be reimbursed at the time of Mid Term Performance Review. The said Regulation is reproduced below for reference:

> *"34.1 The Commission in its MYT Order shall provisionally approve Income Tax payable for each year of the Control Period, if any,* ***based on the actual income tax paid on permissible return*** *as allowed by the Commission relating to electricity business regulated by the Commission,* ***as per latest Audited Accounts available for the applicant, subject to prudence check.***
>
> ...
>
> *34.2 Variation between Income Tax actually paid and approved, if any, on the income stream of the regulated business of Generating companies, Transmission licensees and Distribution licensees shall be reimbursed to/recovered from the Generating Companies, Transmission Licensees and Distribution Licensees, based on the documentary evidence submitted at the time of Mid-term Performance Review and MYT Order for the third Control Period, subject to prudence check.*"(***emphasis added***)

In accordance with the above Regulations, the Income Tax for FY 2012-13 to FY 2015-16 will have to be considered at the same level as approved by the Commission for FY 2010-11 (Rs 19.78 Crore), in its Order in Case No. 106 of 2011, since that is the latest year for which audited accounts have been provided and prudence check has been undertaken by the Commission. Further, the true up based on actual Income Tax paid by TPC-T shall be considered at the time of mid-term review by the Commission.

The income-tax considered by the Commission for the years under consideration for the present MYT Business Plan starting from FY 2012-13 to FY 2015-16 is as summarised in the Table below:

Table: Income Tax approved by the Commission (Rs Crore)

Particulars	FY13	FY14	FY15	FY16
Income Tax	19.78	19.78	19.78	19.78

4.9 OTHER EXPENSES

TPC-T, in its MYT Business Plan Petition has not submitted any expenditure towards other expenses except for expenses towards Corporate Social Responsibility activities. TPC-T submitted that the projections of CSR expenses are based on the draft amendment of the Companies Act, 1956. The relevant amendment, as submitted by TPC-T, is cited below:

“ *(5) The Board of every company referred to in sub-section (1), shall make every endeavour to ensure that the company spends, in every financial year, at least two per cent of the average net profits of the company made during the three immediately preceding financial years, in pursuance of its Corporate Social Responsibility Policy:”*

The summary of Expenditure towards Other expenses, as submitted by TPC-T, is shown in the Table below:

Table: Other Expenses as submitted by TPC-T (Rs Crore)

Particulars	**FY12**	**FY 13**	**FY 14**	**FY 15**	**FY 16**
Corporate Social Responsibility	1.83	2.28	2.85	3.80	5.40
Total Other Expenses	**1.83**	**2.28**	**2.85**	**3.80**	**5.40**

The Commission is of the view that these costs are towards TPC-T’s Corporate Social Responsibility. In any case, these expenses should not be passed on to the consumers of TPC-T, and these expenses should be borne by TPC-T. TPC-T is free to incur such expenses from the returns earned out of the business. Thus, for the purpose of the Business Plan, expenses under CSR have not been considered.

4.10 NON TARIFF INCOME

TPC-T submitted that estimation of Non-Tariff Income is quite difficult at this point of time. TPC-T has considered an escalation of 10% p.a. in the rents (recurring type of income) and has considered an income on investment made out of contingency reserves at an interest rate of 8%.

The Non-Tariff income estimated by TPC-T is shown in the Table below:

Table: Non-Tariff Income submitted by TPC-T ***(Rs Crore)***

Particulars	FY12	FY 13	FY 14	FY 15	FY 16
Recurring	**6.48**	**7.12**	**7.95**	**8.91**	**10.22**
Rents	2.95	3.24	3.57	3.92	4.32
Interest on Contingency Reserves	3.53	3.88	4.38	4.98	5.90
Non-Recurring	**6.90**	**6.90**	**6.90**	**6.90**	**6.90**
TOTAL	**13.37**	**14.02**	**14.85**	**15.81**	**17.11**

For the purpose of estimation of Non-Tariff Income under Business Plan exercise for FY 2012-13 to FY 2015-16, the Commission has considered an escalation of 10% p.a. in the rents (recurring type of income) as submitted by TPC-T and has considered an income on investment made out of contingency reserves at an interest rate of 8% as submitted by TPC-T. The Commission observes that over the past years from FY 2007-08 to FY 2010-11, the non-Tariff income in the nature of non-recurring income has increased on an aggregate basis from Rs 12.56 Crore in FY 2007-08 to Rs 14.09 Crore in FY 2010-11, registering a growth rate of 4%. Accordingly, the Commission has considered an escalation of 4% even on the non-recurring income while projecting the Non-Tariff Income rather than considering it constant over the years of the Control Period. In addition to the above, the Commission has considered income from Corporate Treasury gains as considered by the Commission under Non-Tariff income of the the Truing Up Order in Case 106 of 2011, also for the purpose of projection of Non Tariff income over the Control Period with an escalation factor of 4% over the approved level of the past years.

Table: Non-Tariff Income approved by Commission ***(Rs Crore)***

Particulars	FY13	FY14	FY15	FY16
Non-Tariff Income	32.84	34.56	36.39	38.32

4.11 INCENTIVE ON TRANSMISSION AVAILABILITY

TPC-T, in its MYT Business Plan Petition, submitted that it is entitled for an incentive if the transmission line availability is higher than the target availability of 98%, as per Regulation 60 of MERC MYT Regulations. The Regulation is cited below for reference:

> *"60.2 The Transmission Licensee shall be entitled to incentive on achieving annual availability beyond the target availability, in accordance with the following formula:*

Incentive = Annual Transmission Charges x [Annual availability achieved – Target Availability] / Target Availability;
Where,
Annual transmission Charges shall correspond to Aggregate Revenue Requirement for each year of the Control Period for the particular Transmission Licensee within the State":

Considering the above Regulations and assuming Transmission System Availability of 99%, the incentive as projected by TPC-T is shown in the Table below:

Table: Incentive projected for FY 2011-12 to FY 2015-16 ***(Rs Crore)***

Particulars	**Unit**	**FY 2011-12**	**FY 2012-13**	**FY 2013-14**	**FY 2014-15**	**FY 2015-16**
Annual Transmission Charges	Rs Crore	325.97	427.72	550.40	758.92	1112.02
Projected Availability	%	99.00%	99.00%	99.00%	99.00%	99.00%
Target Availability	%	98.00%	98.00%	98.00%	98.00%	98.00%
Incentive (Rs Crore)		**3.33**	**4.36**	**5.62**	**7.74**	**11.35**

The computation of incentive for transmission availability higher than the normative availability has to be undertaken only during Mid-term Performance Review and at the end of the Control Period, as per Regulation 60.2 of the MERC MYT Regulations. The relevant Regulation is cited below for reference:

"60.2

...

Provided further that the computation of incentive/disincentive shall be undertaken during mid-term performance review and at the end of the Control Period" (Emphasis Added)

In view of the above provision, the Commission has not considered any incentive on the higher target availability of its transmission system proposed by TPC-T under the present exercise of Business Plan approval.

4.12 APPROVAL OF BUSINESS PLAN SCENARIO

In the MYT Business Plan Petition, TPC-T submitted three scenarios of its Aggregate Revenue Requirement (ARR) for the second Control Period, i.e., Optimistic Scenario, Realistic Scenario and Pessimistic Scenario. TPC-T has proposed to consider

"Optimistic scenario" to be approved as part of the Business Plan Petition. Further, the Realistic Scenario is projected after considering need to phase out several Capital Expenditure schemes owing to issues pertaining to land acquisition, and thus, considering a reduced Capital Expenditure Outlay compared to the projected Optimistic scenario during the second Control Period. Further, the Pessimistic scenario is projected considering a Capital Expenditure equivalent to 85% of that considered for Realistic scenario. The three scenarios, as projected by TPC-T for FY 2011-12 to FY 2015-16 are reproduced below:

Table: Optimistic Scenario ***Rs. Crore***

Sl. No.	Particulars	FY 12	FY13	FY14	FY15	FY16
1	Operation and Maintenance Expenses including budget for CSR activities	137.49	157.59	178.89	219.15	281.67
2	Depreciation	51.61	79.02	109.37	161.48	251.09
3	Interest on Long-term Loan Capital	45.58	75.70	114.62	179.01	290.13
4	Interest on Working Capital and on consumer security deposits	9.18	11.13	13.53	17.65	24.56
5	Other Finance Charges	0.00	0.00	0.00	0.00	0.00
6	Return on Equity Capital	91.58	113.88	142.52	189.93	270.24
7	Statutory Appropriations	3.91	4.41	6.31	7.51	11.44
8	**Aggregate Revenue Requirement**	**339.34**	**441.74**	**565.25**	**774.72**	**1129.13**
9	Less: Non tariff Income	13.37	14.02	14.85	15.81	17.11
10	**Annual Transmission charges**	**325.97**	**427.72**	**550.40**	**758.92**	**1112.02**
11	Add: Income Tax	26.32	28.49	35.65	47.51	67.60
12	Add: Incentive for higher Transmission Availability	3.33	4.36	5.62	7.74	11.35
13	**Net Aggregate Revenue Requirement from transmission tariff**	**355.61**	**460.57**	**591.67**	**814.17**	**1190.97**

Table: Realistic Scenario ***(Rs. Crore)***

Sl. No.	Particulars	FY 12	FY13	FY14	FY15	FY16
1	Operation and Maintenance Expenses including budget for CSR activities	137.51	155.3	173.8	194.4	217.9
2	Depreciation	51.61	68.8	89.6	115.7	159.8

Sl. No.	Particulars	FY 12	FY13	FY14	FY15	FY16
3	Interest on Long-term Loan Capital	45.58	61.4	87.5	116.8	167.9
4	Interest on Working Capital and on consumer security deposits	9.18	10.5	12.2	14.2	17.3
5	Other Finance Charges	0.00	0.00	0.00	0.00	0.00
6	Return on Equity Capital	91.58	104.8	124.9	149.0	188.7
7	Statutory Appropriations	3.91	4.4	5.3	6.6	8.0
8	**Aggregate Revenue Requirement**	**339.36**	**405.1**	**493.4**	**596.7**	**759.6**
9	Less: Non tariff Income	13.37	14.0	14.8	15.7	16.7
10	**Annual Transmission charges**	**325.99**	**391.1**	**478.6**	**581.0**	**742.9**
11	Add: Income Tax	26.32	26.2	31.2	37.3	47.2
12	Add: Incentive for higher Transmission Availability	3.33	4.0	4.9	5.9	7.6
13	**Net Aggregate Revenue Requirement from transmission tariff**	**355.63**	**421.3**	**514.7**	**624.2**	**797.7**

Table: Pessimistic Scenario

Sl. No.	Particulars	FY 12	FY13	FY14	FY15	FY16
1	Operation and Maintenance Expenses including budget for CSR activities	137.49	155.21	173.71	194.22	217.64
2	Depreciation	51.61	67.38	84.76	106.71	144.15
3	Interest on Long-term Loan Capital	44.47	57.12	78.45	102.41	144.92
4	Interest on Working Capital and on consumer security deposits	9.18	10.30	11.84	13.62	16.35
5	Other Finance Charges	0.00	0.00	0.00	0.00	0.00
6	Return on Equity Capital	90.89	102.10	119.16	139.62	173.34
7	Statutory Appropriations	3.91	4.33	5.12	6.19	7.35
8	**Aggregate Revenue Requirement**	**337.55**	**396.45**	**473.04**	**562.77**	**703.74**
9	Less: Non tariff Income	13.37	14.01	14.75	15.60	16.58
10	**Annual Transmission charges**	**324.18**	**382.43**	**458.29**	**547.17**	**687.16**
11	Add: Income Tax	28.12	25.54	29.81	34.93	43.36

Sl. No.	Particulars	FY 12	FY13	FY14	FY15	FY16
12	Add: Incentive for higher Transmission Availability	3.31	3.90	4.68	5.58	7.01
13	**Net Aggregate Revenue Requirement from transmission tariff**	**355.61**	**411.88**	**492.77**	**587.68**	**737.53**

Based on the analysis detailed in the previous paragraphs, the Commission has computed the following scenario of ARR projections over the second Control Period for the years from FY 2012-13 to FY 2015-16. The final ARR, which shall have a bearing on the transmission tariff during the second Control Period, shall be approved as part of the MYT Order for the second Control Period. The summary of ARR computed by the Commission for the purpose of the present Order is as given in the Table below:

Table: Computation of Aggregate Revenue Requirement of TPC-T based on Business Plan Scenario considered by the Commission (Rs. Crore)

Sl No	Particulars	FY13	FY14	FY15	FY16
1	Operation and maintenance Expenses	149.40	168.24	194.28	242.07
2	Depreciation	77.24	104.23	141.34	202.15
3	Interest on Long-term Loan Capital	72.97	103.31	140.36	205.06
4	Interest on Working Capital	10.30	12.22	14.71	19.05
5	Other Expenses	-	-	-	-
6	Income tax	19.78	19.78	19.78	19.78
7	Contribution to Contingency Reserves	4.35	6.20	7.01	9.59
8	**Total Revenue Expenditure**	**334.05**	**413.97**	**517.48**	**697.70**
9	Add: Return on Equity Capital	112.99	137.68	169.17	221.41
10	**Aggregate Revenue Requirement**	**447.04**	**551.65**	**686.66**	**919.11**
11	Less: Non tariff Income	32.84	34.56	36.39	38.32
12	Less: Income from other business	-	-	-	-
13	**Net Aggregate Revenue Requirement**	**414.20**	**517.09**	**650.27**	**880.79**

5 APPROVAL OF PERFORMANCE TARGETS FOR THE CONTROL PERIOD

TPC-T, in its MYT Business Plan proposed a System Availability of 99% on annualised basis. As per Regulations 9.2 and 18.3 of the MERC MYT Regulations, 2011, the performance trajectory as approved in the Business Plan Order shall form the basis for the MYT Petition to be filed by TPC-T.

5.1 TRANSMISSION AVAILABILITY

Regulation 60.1 of the MERC MYT Regulations specifies a target availability of 98% for AC system of Transmission Licensee for full recovery of its annual transmission charges. Thus, TPC-T has to maintain its Transmission system availability at least at the levels stipulated in the aforesaid Regulations, in Order to be eligible to recover the full fixed charges, i.e., ARR, as determined by the Commission. Any reduction in system availability will lead to pro-rata reduction in recovery of the ARR. TPC-T under the current Petition has proposed to maintain the system availability at 99% on an annual basis. As the trajectory of system availability proposed by TPC-T is higher than the levels achieved by TPC-T in the past years and since it is also above the target levels as specified in the MYT Regulations, the Commission accepts the same.

5.2 TRANSMISSION LOSS

During the first Control Period, the Commission had considered the pooled intra-State Transmission Loss of 4.85% in accordance with the principles outlined under the Transmission Pricing Framework Order dated 27 June, 2006 and Transmission Tariff Order dated 29 September, 2006.

As regards Transmission Losses for the Second Control Period, Regulation 69 of the MERC MYT Regulations specifies as under:

"...

69 Transmission losses

69.1 The energy losses in the transmission system of the Transmission Licensee, as determined by the State Load Despatch Centre and approved by the Commission, shall be borne by the Transmission System Users in proportion to their usage of the intra-State transmission system:

Provided that the Commission may stipulate a trajectory for transmission losses in accordance with Regulation 9 as part of the multi-year tariff framework applicable to the Transmission Licensee.

> *Provided that any variation between the actual level of transmission losses, as determined by the State Load Despatch Centre and the approved level shall be dealt with, as part of the mid-term performance review, in accordance with the mechanisms provided in Regulation 11.*
>
> *…"*

TPC-T being an intra-State Transmission Licensee shall be bound by the pooled intra-State transmission loss approved by the Commission from time to time.

5.3 COMPLIANCE OF OTHER PERFORMANCE PARAMETERS - STANDARDS

Compliance with Standards of Performance parameters

In addition to improving the trajectory of performance parameters such as Transmission System availability, TPC-T should also ensure maintaining optimum levels of performance in respect of parameters such as voltage profile, safety, etc., while operating its transmission system throughout its useful life. Various SERCs have specified Standards of Performance to be complied with by the Transmission Licensees in their respective States. Some of the critical performance parameters pertinent to effective operation of the Transmission System by Licensees identified by States such as Andhra Pradesh, Madhya Pradesh, Rajasthan and Karnataka in their Transmission Licensee's Standards of Performance are listed below.

a) **Voltage Variation Index(VVI)**: Voltage Variation Index representing the degree of voltage variation from nominal value (in %) over a specified period of time shall be computed separately by the State Transmission Utility /Transmission Licensee for higher than nominal system voltage and lower than nominal system voltage

b) **Safety Standards**: IE Rules, 1956 lay down the general safety requirements to be observed by Transmission Licensees for construction, installation, protection, operation and maintenance of electric supply lines and apparatus.

c) **Feeder Availability**: The feeder availability gives the percentage of time during which the feeder remained available for transmission

d) **Substation Availability:** The sub-station availability expressed in percentage is the measure of the extent the power transmission capacity remained available from a sub-station.

e) **Reporting Requirement and Compliance**: Transmission Licensee shall maintain base data like Log sheet, Compliant Registers, and Interruption Registers and relevant load flow studies in respect of system security, etc., such that the same can be furnished for verification and also further shall be used to represent the compliance of the Transmission Licensee to the standard of performance.

While the Commission has not specified any Standards of Performance for the Transmission Licensees in the State, it is desirable that Transmission licensees exhibit high performance standards in respect of above performance parameters. In this context, TPC-T being a part of the intra-State Transmission System should propose its commitment towards achievement of above listed standards of performance parameters during the next Control Period and present such proposal under its MYT Petition for the second Control Period.

5.4 PREPAREDNESS AND COMPATIBILITY FOR EVOLUTIONARY POC BASED TRANSMISSION PRICING METHODOLOGY

The existing framework of transmission pricing of Maharashtra at intra-State level is based on postage stamp method. The mechanism has served the needs of the system well. However, the National Electricity Policy and Tariff Policy mandate that the national Transmission tariff framework should be sensitive to distance, direction and related to quantum of power flow.

CERC, after due consideration of the alternative methodologies for allocation of transmission charges and the comments received from various stakeholders has considered implementation of the Point of Connection (PoC) methodology based on a hybrid method, which brings together the strengths of both the Marginal Participation and the Average Participation Method. Under this framework, any generator node is required to pay a single charge based on its location in the grid to gain access to any demand customer located anywhere in the country. Similarly, any demand node will also be required to pay just one charge and get access to any generator in the grid. This is based on load flow studies conducted for each node, one at a time. The same principle holds for transmission losses that a generator node or demand node has to bear.

The MERC MYT Regulations has necessary enabling provisions for changing the existing transmission pricing framework and introduce one as followed by CERC, during an appropriate time of the next Control Period. The relevant Regulation is reproduced below:

> ***"67 Transmission Pricing Framework***
> *67.1 The Commission may, after conducting a detailed study and due regulatory process, change the existing transmission pricing framework to the one adopted at the Central level, during this Control Period, or afterwards, whenever the Commission may deem appropriate."*

The Point of Connection (POC) method as adopted at the inter-State level by the CERC relies mainly on load flow analysis. For implementation of similar approach at State level, inputs to the proposed Transmission Pricing model, viz., Nodal generation information, Nodal demand information, Transmission circuits between these nodes, Technical characteristics of each network branch: Resistance, Reactance, line charging and capacity of each network branch, and the associated lengths of each line will be required to be obtained systematically from each user of the network and network service provider by the SLDC/STU (or any other agency designated by the Commission for this purpose) for computing the transmission usage charges for each season annually.

Thus, for adoption of POC methodology at the State level, several Intra-State level transmission system data inputs are required.

The POC based method of transmission pricing is data intensive and the accuracy of the transmission charges derived shall depend on the accuracy of the data provided as input to such transmission pricing model. In view of this, all intra-State entities including STU/transmission licensees should take utmost care in making available the required data with desired accuracy and within the desired time limits as may be specified by the Commission at a later point in time, for effective and timely implementation of such framework at the intra-State level.

TPC-T being a transmission licensee, which is a part of the Maharashtra intra-State transmission system, should collect and collate necessary technical data so as to prepare itself to comply with adequate data requirement to be sought by STU/designated agency to develop POC based transmission pricing methodology in Maharashtra.

6 DIRECTIONS FOR FILING MYT PETITION OVER THE CONTROL PERIOD

Through this Business Plan Order, TPC-T is hereby directed to comply with the following directives while filing the MYT Petition for the second Control Period:

a. TPC-T shall submit its ARR for FY 2011-12 as per MERC Tariff Regulations, 2005, as a separate section, in its MYT Petition for FY 2012-13 to FY 2015-16.

b. TPC-T to put in place firm funding arrangement at least for initial two years of the Control Period (FY 2012-13 and FY 2013-14), either from financial institutions or from its internal accruals, to finance its funding requirements for the MYT Business Plan Control Period, so as to ensure timely fund availability for achieving capitalisation planned during the Control Period.

c. TPC-T while submitting the MYT Petition shall submit the description of assets proposed to be retired along with original cost of such assets to be retired over the Control Period.

d. As outlined under para 4.4 of this Order, TPC-T should give due consideration to difference in risk profile of transmission business vis-a-vis its generation and distribution business , which should get reflected in the interest costs and the same should form basis for projection of interest costs under its MYT Petition.

The current approved Business Plan of TPC-T shall form the basis for filing the MYT Petition for the second Control Period. TPC-T shall submit the MYT Petition within 60 days from the date of issuance of this Business Plan Order.

With the above, TPC-T's Petition in Case No. 168 of 2011 stands disposed of.

sd/-	sd/-
(Vijay L. Sonavane)	(V. P. Raja)
Member	Chairman

Appendix-1

List of individuals who attended the Technical Validation held on 15 December, 2011

Sr. No.	Name	Institution
1.	V. H. Wagle	TPC
2.	P.V.Joshi	TPC
3.	Kailash Mali	TPC
4.	Sheetal Khiraiya	TPC
5.	Abhinav Sharma	TPC
6.	Swati Mehendale	TPC
7.	Karthik Krishnan	TPC
8.	Amey Naik	TPC
9.	T. K. Bhaskaran	TPC
10.	V. R. Shrikhande	TPC
11.	Rameshhanan	TPC
12.	M. P. Shevde	TPC
13.	A.S. Kakinde	TPC

Appendix-2

List of individuals who attended the Technical Validation held on 11 January, 2012

Sr. No.	Name	Institution
1.	Manoj Gupte	TPC
2.	V. K. Chaudhari	TPC
3.	Manasvi Sharma	TPC
4.	Amey Naik	TPC
5.	S. R. Mehendale	TPC
6.	R. M. Ranade	TPC
7.	P. V. Joshi	TPC
8.	M. D. Paranjape	TPC
9.	Narayanan V. T	TPC
10.	Vinayak Shinde	TPC
11.	Subhadeep Ghosh	TPC
12.	T. M. Ramakrishnan	TPC
13.	M. N. Nayak	TPC
14.	D. B. Kamath	TPC
15.	Santosh N.	TPC
16.	Rameshhanan	TPC
17.	S. S. Gurjar	Feedback Infra
18.	S. R. Sangan	Feedback Infra
19.	Ashok Pendse	C.R.
20.	N. Ponrathram	Vel Induction/ C. R.

Appendix-3

List of individuals who attended the Public Hearing held on 11 April, 2012

Sr. No.	Name	Institution
1.	Ashok Sethi	TPC
2.	S. R. Mehendale	TPC
3.	Amey Naik	TPC
4.	R. M. Ranade	TPC
5.	P. R. Gadave	TPC
6.	V. K. Chaudhari	TPC
7.	P. Munugan	TPC
8.	D. R. Kamath	TPC
9.	S. R. Warne	TPC
10.	Sheetal Khiraiya	TPC
11.	T. N. Ramakrishnan	TPC
12.	Rameshhanan	TPC
13.	U. K. Mahavir	TPC