

BUSINESS PLAN FOR MYT CONTROL PERIOD

FY 2011-12 to FY 2015-16

Submitted by



Maharashtra State Electricity Transmission Company Limited

27th September 2012

Executive Summary

Maharashtra State Electricity Transmission Company Limited (MSETCL) is a state owned public utility and is responsible to manage the Intra-state transmission planning, development and maintenance of the state transmission network in order to provide safe and secure energy transaction in the state of Maharashtra. MSETCL operates under regulatory regime of the Hon'ble Commission i.e. Maharashtra Electricity Regulatory Commission (MERC). In compliance to the directives of the Hon'ble Commission, MSETCL is submitting a business plan for the second Multi Year Control Period of FY 2011-12 to FY 2015-16.

The Hon'ble commission issued MYT Regulation 2011 applicable for the period FY 2011-12 to FY 2015-16 wherein the Regulation 7.1 directs the Generating Company, Transmission Licensee and Distribution Licensee to file a business plan for the Control Period of five Financial Year from 1st April 2011 to 31st March 2016. MSETCL submitted a Petition seeking exemption from determination of tariff and applicability of the MERC (Multi Year Tariff) Regulations, 2011 for a period of five years

The Hon'ble Commission vide its Order dated 3 November 2011, on the said petition exempted the determination of Tariff for MSETCL under the Multi-Year Tariff framework till March 31, 2013 (i.e., for a period of 2 years).

MSETCL is submitting the current petition for approval of Business plan for the period FY 2011-12 to FY 2015-16, wherein the projections for FY 2011-12 and FY2012-13 are guided by the provisions of Tariff Regulations, 2005 and the projections for the period FY 2013-14 to FY 2015-16 are guided by the provisions of MERC (Multi Year Tariff) Regulations 2011, except where deviations from the Norms and the provisions are sought by MSETCL with adequate justification thereof.

The objective of the Business Plan is to submit a comprehensive set of details covering areas related to the Strategic plan, Human Resource strategy, operational improvement practices, Capital Investment plan and brief of new technologies to be adopted during the period. While covering the above-mentioned areas it's imperative to analyse evolving sector scenario both at the central and state level.

CHAPTER 1 provides the background for the submission of the business plan. It covers the objective, and the approach & methodology used in the Business plan.

CHAPTER 2 provides the Company profile and snapshot of the financial profile of MSETCL

CHAPTER 3 discusses the Strategic plan of MSETCL, which features the company's vision and mission, information on existing transmission capability and system performance. In this chapter, a special focus has been made on the vintage of the transmission asset owned by MSETCL, the current system losses

and efforts made by MSETCL to ensure Intra-state Transmission system availability across the state. In addition to this, the chapter also analyses the financial health of MSETCL for the previous years, which provide a roadmap for financing arrangement for the proposed capital expenditure for the horizon period. This section also features the Risk assessment and Mitigation plan for MSETCL.

CHAPTER 4 discusses the Human Resource development plan for second control period. The emphasis of this section is to analyse the manpower strength, the organisation structure of MSETCL including the primary responsibility of the operating staff. This chapter assesses the training and development system, the recruitment policy and process involved in selection of its employee, and the approach over the control period. MSETCL has recently announced a reward policy linked to maintenance of operational efficiency at the field level and the process involved in selection of the eligible candidates. In addition to this, the chapter also focuses on the Quality Management Policy and Corporate Social Responsibility Policy of MSETCL.

CHAPTER 5 details the market assessment of regulatory framework, demand-supply gap at center and state level, citing importance of transmission activity in both state and in the country.

CHAPTER 6 covers the SWOT analysis of MSETCL that discusses in detail the Strength, Weakness, Opportunities and Threats for MSETCL in the second control period.

CHAPTER 7 highlights the Capital Investment plan, Technology Investment Plan proposed by MSETCL for the second control period. This section not only details out the Capital expenditure and its phasing for the second control period, but also covers the financing plan for catering the financing need of the proposed capital expenditure plan of MSETCL.

The chapter also includes the projection of various expenses and summary of the Annual Revenue Requirement for each year of the second control period. In addition to this MSETCL proposes performance indices for operation during the second control period.

MSETCL submits that though the Business Plan has been prepared with intention to cover all aspects affecting the business of MSETCL for the second MYT control period, however looking into the possibility of revision in the Transmission plan based on load flow analysis over the 5-year period, the related Capital Investment Plan and the Financing structure, are susceptible to external driven factors which may get revised during the horizon period and thus humbly requests the Hon'ble Commission to permit such revisions as and when required.

CHAPTER 8 summarizes the projection of Annual Revenue Requirement for the control period. A section on scenario analysis has also been included in the Chapter.

CHAPTER 9 captures the difficulties faced by MSETCL under MYT Regulations 2011, which need to be addressed by the Hon'ble Commission while approving the Business Plan.

ANNEXURE -1: Technical note supporting the proposed Capital Investment plan of MSETCL

ANNEXURE -2: Copy of MoM of Standing Committee meeting held on August 3, 2012

ANNEXURE - 3: Technical note submitted with Business Plan petition submitted on 29 June 2012

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1. Background

1.1. Objective of the Business Plan

Maharashtra State Electricity Transmission Company Limited (MSETCL) is a state transmission utility with a dedicated responsibility of planning, developing, operating and maintaining the State Transmission System to facilitate transmission of electricity from its source to load centers. In accordance with the provisions of Electricity Act 2003 and MERC (MYT) Regulations, 2011, all state licensees are required to submit the business plan for Commission's approval.

Furthermore, the Approach Paper for MERC on MYT Regulations for the period FY 2011-12 to FY 2015-16, proposed as:

*"It is proposed that **Business Plan for the second Control Period may be filed along with the MYT filings for the second Control Period.** It is proposed that the Utility shall file the Business Plan for the second Control Period on November 30, 2009 for the Commission's approval, along with the MYT Petition for the second Control Period. However, for the third Control Period, the timelines recommended by FOR would be applicable."*

However, with the extension of the 1st MYT Control period by a year to FY 2010-11, the current Business Plan is prepared for the 2nd MYT control period of 5-years from FY 2011-12 to FY 2015-16.

MSETCL understands the Business Plan shall address the following:

"A detailed document that provides roadmap on the future strategic and operational objectives of a company and the corporate and functional strategies developed by the management team to achieve those goals and objectives.

It enumerates information pertaining to the organization, future achievable goals, capex plan and steps initiated by the team attempting to reach those goals. "

Accordingly, MSETCL has attempted to develop this Business plan for the 2nd MYT Control period with a view to chart out the growth strategy after considering the strength and weakness of the company and evaluating its external business environment. The business environment has evolved considerably in a number of ways that affects MSETCL's strategic planning.

The Business Plan is intended to give a comprehensive and an up-to-date picture of the company, its market and the impact of new regulations, and the strategies that MSETCL develops to achieve the company goals, carry out its mission and reach its vision. However, there are number of internal and

external factors which affect the planning of the company and it makes this document a dynamic one which calls for regular reviews of the plan with a view to introduce any mid-term corrections.

1.2. Limitations of the Business Plan

MSETCL is submitting the Business Plan for the period FY 2011-2012 to FY 2015-2016 without prejudice to its rights and contention to the comments and/or suggestions submitted by it on the MERC (MYT) Regulations, 2011.

MSETCL would like to bring to the notice of Hon'ble Commission the uncertainty in the long term projection of data. The Hon'ble Commission will appreciate that it is beyond the control of the transmission licensee to accurately predict changes and trends in the parameters for a long period of five years especially in view of the unpredictable nature of the existing economic factors, changes in technology and change in Government Policy, Rules & Regulations.

MSETCL further submits that the projection of system augmentation requirement is subject to the load forecast and load flow analysis, that are dynamic in nature.

MSETCL humbly submits that the Hon'ble Commission should take cognizance of the fact that the business plan is a dynamic document which may be updated at various intervals to align the growth path of the company with the external business environment and internal factors affecting the business/operations of the company.

1.3. Approach & Methodology

The Financial projections of MSETCL have been prepared considering that it would be operating as transmission service provider and the primary source of its revenue would be that earned in lieu of its service to the users of the transmission network.

The business plan is for the period FY 11-12 to 15-16 considers the following:

- Plan is prepared considering the recent changes in the sector and as well as the growth track projections of MSETCL
- The Transmission investment plan, load forecasting, loss reduction plan, generation plan etc., have been incorporated as provided in the 5-year STU Transmission Plan for the period FY 12-13 to FY 16-17.
- The projections of ARR for FY 2011-12 and FY 2012-13, are in accordance with the MERC (Terms and conditions of Tariff) Regulations 2005, as directed by the Hon'ble Commission

- The projections for FY 13-14 to FY15-16, are based on MERC (MYT) Regulations 2011. The estimate of expense and the working capital requirement have been considered based on the historical trend and as per MERC (MYT) Regulations, 2011. However on few items, MSETCL has relied on proposing the norms that reflects the justified expenses projection to meet the operational needs.

2. Introduction

2.1. Company Profile

Consequent to the implementation of power sector reforms in the State of Maharashtra, where under, the activities of generation, transmission, distribution and retail supply of electricity carried out by erstwhile MSEB have been restructured and transferred to the 3 successor corporate entities, the function of electricity transmission and load despatch has been vested with Maharashtra State Electricity Transmission Company Limited (MSETCL).

The Maharashtra State Electricity Transmission Company Limited is a Company formed under the Government of Maharashtra General Resolution No. ELA- 003/P.K.8588/Bhag-2/Urja-5 dated 24th January 2005 with effect from 6th June 2005, according to the provisions envisaged in the Electricity Act 2003 (EA 2003).

MSETCL has been registered with the Registrar of Companies, Mumbai on May 31, 2005 bearing certificate U40109 MH 2005 PLC 153646 under the Companies Act, 1956

The provisional Transfer Scheme resulted in the creation of following four successor companies from the erstwhile Maharashtra State Electricity Board (MSEB), namely:

- MSEB Holding Company Ltd.
- Maharashtra State Power Generation Company Ltd. (MSPGCL)
- Maharashtra State Electricity Transmission Company Ltd. (MSETCL or MahaTRANSCO)
- Maharashtra State Electricity Distribution Company Ltd. (MSEDCL)

MSETCL is in the business of transmission of electricity within the State of Maharashtra, and has also been notified as the State Transmission Utility (STU) as per Section 39 of the EA 2003.

MSETCL is dedicated to plan, develop, operate and maintain the State Transmission System to facilitate transmission of electricity from its source to load centers in a secure, reliable and economic manner for the best services to the consumers.

2.2. Vision & Mission Statement of the Company

2.2.1. Vision of MSETCL

The vision statement of the MSETCL specific to the transmission business as below, which states that,

“To establish MSETCL as best State Transmission Utility in India with continuous improvement in performance, undertake network development and maintain high service standards”

The key element of the Vision is the focus on provision of efficient transmission services in the state. This has been the vision from the inception of the Company in FY 2005-06 after its unbundling from the erstwhile vertically integrated MSEB.

2.2.2. Mission Statement of MSETCL

The Mission Statement of MSETCL, specific to the business is as below:

- *We, as a STU, dedicate our-self to plan, build-up, operate and maintain the state transmission system, to facilitate transmission of electricity from its source to load centers in a secure, reliable and economical manner; offer enhanced career opportunities to our employees and generate reasonable returns as a licensee*
- *We aim to provide an efficient transmission system in a transparent and non-discriminatory manner by adopting the best practices and standards laid down from time to time.*

2.2.3. Key Actions taken to fulfill the Mission statement

MSETCL has established following corporate objectives to achieve its mission and vision statements:

- To make investment plans for developing an Intra-state transmission system that is reliable and economical, develop best-in-class system study and system planning capacities within the organization
- To ensure safety and stability of the grid
- To develop a State-of-the-art SLDC with corresponding communication, RTU & SCADA systems, information and knowledge management systems as well as operational skills
- To reduce energy losses
- To fulfill all statutory and regulatory codes, standards, directives and targets in relation to planning, network development, operations and services.
- To ensure safety during operations, maintenance and construction activities
- To achieve targets of transformation capacity addition
- To achieve targets of transmission line commissioning
- To keep track of state-of-the-art technology in the areas of sub-station design, construction, protection, communication, maintenance, information systems, diagnostics, repair, restoration and life extension
- To develop a management culture of care, trust, transparency and open communication
- To establish a strong ethos of work culture, quality consciousness and high performance across the organization
- To create a feeling of professional and organizational pride and strong bonding among different functional groups and cadres
- To act with a sense of social responsibility towards consumers, project affected persons, less privileged sections of society and the environment

MSETCL has defined the objectives and goals for each department for implementing efficient and productive practices.

2.3. Operational Performance

2.3.1. Existing Capacity

MSETCL has the prime responsibility of provision of efficient transmission services within the state to the transmission system users. It is the pivotal planner and facilitator of transmission system in the state

that meets the security, quality and performances in compliance with the Grid code and Regulations framed under Electricity Act, 2003.

MSETCL owns a vast network over a diverse topology; it also has an age-old system that needs major up gradation, and the network system comprises of transmission at 66kV to 400kV, a HVDC network and the proposed 765kV network. The existing network of MSETCL can be summarized as under:

Table 1: Transmission Lines in ckt. km

| Particulars | Lines in ckt. Km | | | | | | | | | |
|--------------|------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 | 2006-07 | 2007-08 | 2008-09 | 2009-10 | 2010-11 |
| 500 kV HVDC | 1504 | 1504 | 1504 | 1504 | 1504 | 1504 | 1504 | 1504 | 1504 | 1504 |
| 400 kV | 6230 | 6230 | 6376 | 6376 | 6376 | 6424 | 6505 | 6505 | 6562 | 6816 |
| 220 kV | 10365 | 10838 | 11254 | 11381 | 11478 | 11866 | 12099 | 12250 | 12357 | 12568 |
| 132 kV | 9061 | 9192 | 9331 | 9792 | 10085 | 10245 | 10573 | 10812 | 11065 | 11524 |
| 110 kV | 1629 | 1629 | 1629 | 1629 | 1637 | 1639 | 1657 | 1698 | 1698 | 1700 |
| 100 kV | 635 | 667 | 667 | 678 | 678 | 678 | 678 | 678 | 678 | 686 |
| 66 kV | 3266 | 3266 | 3266 | 3270 | 3270 | 3270 | 3270 | 3270 | 3270 | 3270 |
| Total | 32689 | 33325 | 34026 | 34630 | 35028 | 35626 | 36286 | 36716 | 37133 | 38068 |

Table 2: Number of substations

| Particulars | Number of Sub-stations | | | | | | | | | |
|--------------|------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 | 2006-07 | 2007-08 | 2008-09 | 2009-10 | 2010-11 |
| 500 kV HVDC | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 400 kV | 15 | 15 | 16 | 17 | 17 | 18 | 18 | 18 | 21 | 21 |
| 220 kV | 117 | 124 | 129 | 131 | 134 | 142 | 147 | 148 | 149 | 158 |
| 132 kV | 194 | 200 | 205 | 214 | 217 | 225 | 231 | 245 | 246 | 252 |
| 110 kV | 30 | 30 | 30 | 30 | 31 | 32 | 33 | 33 | 33 | 34 |
| 100 kV | 24 | 25 | 25 | 25 | 25 | 25 | 25 | 35 | 35 | 35 |
| 66 kV | 47 | 47 | 47 | 47 | 42 | 42 | 42 | 34 | 34 | 34 |
| Total | 429 | 443 | 454 | 466 | 468 | 486 | 498 | 515 | 520 | 536 |

Table 3: Number of Bays managed by MSETCL

| Particulars | No of Bays | | | | | | | | |
|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | 2002-03 | 2003-04 | 2004-05 | 2005-06 | 2006-07 | 2007-08 | 2008-09 | 2009-10 | 2010-11 |
| 500 kV HVDC | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| 400 kV | 153 | 153 | 162 | 162 | 164 | 182 | 191 | 207 | 237 |
| 220 kV | 790 | 821 | 856 | 906 | 956 | 1074 | 1137 | 1275 | 1435 |
| 132 kV | 1400 | 1430 | 1458 | 1530 | 1589 | 1453 | 1546 | 1701 | 1802 |
| 110 kV | 118 | 118 | 118 | 118 | 120 | 179 | 190 | 164 | 177 |
| 100 kV | 132 | 141 | 143 | 148 | 152 | 225 | 228 | 249 | 303 |
| 66 kV | 226 | 226 | 226 | 228 | 229 | 256 | 256 | 199 | 206 |
| 33kV | 1262 | 1292 | 1341 | 1418 | 1459 | 2135 | 2198 | 2509 | 2740 |
| 22kV | 577 | 581 | 591 | 619 | 621 | 908 | 915 | 1259 | 1433 |
| 11kV | 1385 | 1385 | 1385 | 1385 | 1385 | 1643 | 1643 | 1595 | 1628 |
| Total | 6047 | 6151 | 6284 | 6518 | 6679 | 8059 | 8308 | 9162 | 9965 |

Table 4: Transformation capacity in MVA

| Particulars | Transformation Capacity in MVA | | | | | | | | | |
|--------------|--------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 | 2006-07 | 2007-08 | 2008-09 | 2009-10 | 2010-11 |
| 500 kV HVDC | 3582 | 3582 | 3582 | 3582 | 3582 | 3582 | 3582 | 3582 | 3582 | 3582 |
| 400 kV | 10090 | 10720 | 11535 | 12035 | 12035 | 12350 | 12350 | 12350 | 13165 | 15180 |
| 220 kV | 18491 | 19241 | 20666 | 21731 | 22711 | 23611 | 25561 | 28049 | 31586 | 35683 |
| 132 kV | 11345 | 11854 | 12144 | 12574 | 12846 | 13554 | 15055 | 16970 | 19852 | 21912 |
| 110 kV | 1623 | 1639 | 1669 | 1710 | 1731 | 1731 | 1888 | 2015 | 2095 | 2549 |
| 100 kV | 1680 | 1718 | 1730 | 1730 | 1730 | 1746 | 1955 | 2014 | 2373 | 2575 |
| 66 kV | 1124 | 1124 | 1124 | 1124 | 1124 | 1139 | 1139 | 1139 | 1139 | 1139 |
| Total | 47934 | 49877 | 52449 | 54485 | 55759 | 57713 | 61530 | 66118 | 73792 | 82620 |

(Note: In tables 1 to 4 above, the information as provided till FY 05-06 pertains to the transmission function of erstwhile MSEB)

MSETCL also has the unique distinction amongst the power transmission utilities operating in the state to own a HVDC line of 750 km from Chandrapur to Padghe in Maharashtra. Hence the company plays a pivotal role in the power sector of the state and also the entire country.

MSETCL's transmission system has catered to a demand of 15976 MW and transmitted 103163 MUs of energy in FY 2010-11. It is expected that the State shall witness a demand of more than 22500 MW in FY 2011-12.

2.3.2. System Performance

An analysis of the existing transmission network along with the operational performance achieved by MSETCL would help the Hon’ble Commission to appreciate the constraints related to operation and maintenance of an age-old system. The useful life of the transmission lines is 35 years and of substations is 25 years. Beyond this life span, the performance of the plants deteriorates gradually. After completion of the normal life, the existing network infrastructure is either to be retired or a major Renovation and Modernization is required to be carried out to restore its performance to a reasonable efficiency level.

In spite of significant portion of its transmission assets crossing their useful life, MSETCL is making all out efforts to improve/ sustain the performance of the system.

2.3.2.1. Vintage of the transmission assets of MSETCL

Vintage of Transmission Lines

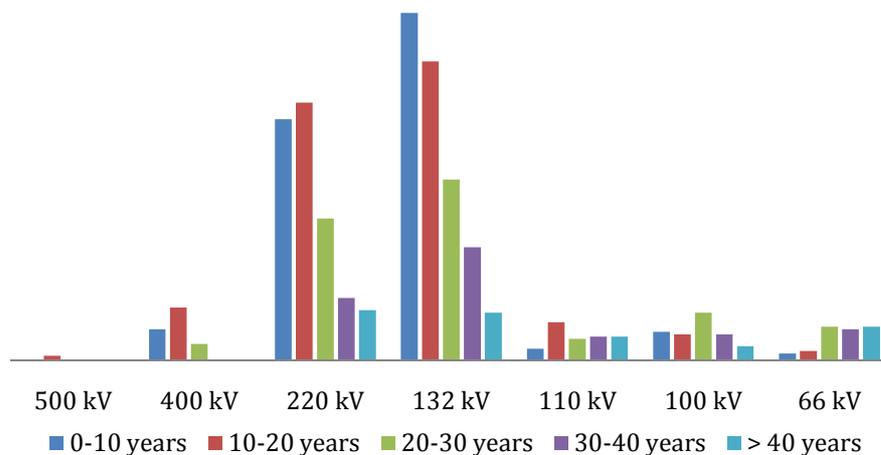


Figure 1: Age of Transmission Lines owned by MSETCL as on 31st March 2010

Vintage of Bays

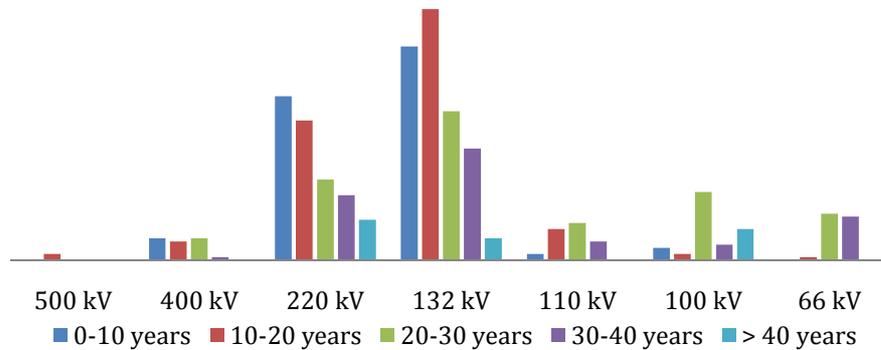


Figure 2: Age of Transmission Bays owned by MSETCL as on 31st March 2010

The above graphs illustrate that the company started its functions by inheriting very old assets with vintage technology and lesser useful life available for a larger portion of its network. However, despite the limitations of technology and given the demand-supply gap in the state, MSETCL makes all out efforts to make available its network.

2.3.2.2. System Availability and Loss reduction by MSETCL

MSETCL has strived for better performance in the benefit of state by continuously improving the system availability. The system availability has increased over the past 4-years i.e. from FY 06-07 onwards, despite increased O&M due to the usage of outdated technology, diverse topology and vintage equipments.

Table 5: System Availability at MSETCL

| Particulars | FY 2006-07 | FY 2007-08 | FY 2008-09 | FY 2009-10 | FY 2010-11 |
|-------------|------------|------------|------------|------------|------------|
| HVAC | 98.80% | 98.99% | 99.29% | 99.48% | 99.63% |
| HVDC | 90.93% | 92.28% | 93.55% | 94.96% | 97.62% |

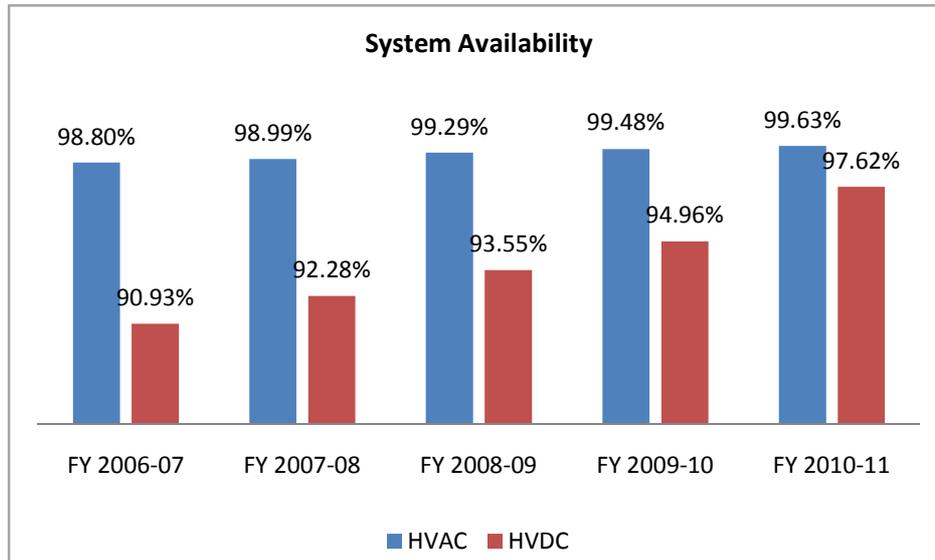


Figure 3: Transmission system Availability of MSETCL over the past 5-years

In addition to the increasing system availability, MSETCL has gradually reduced the transmission loss in the HVAC and HVDC network to the significant level. The transmission loss in the Intra-State network is as under:

Table 6: Transmission Loss in Intra state network

| Particulars | FY 2006-07 | FY 2007-08 | FY 2008-09 | FY 2009-10 | FY 2010-11 |
|-------------------|------------|------------|------------|------------|------------|
| Transmission loss | 5.94% | 4.67% | 4.88% | 4.61% | 4.31% |

MSETCL informs the Hon'ble Commission that over the next five year period it shall strive to meet the following operational norms in its network:

2.3.2.2.1. Availability of Transmission network

Regulation 60 of MERC (MYT) Regulations 2011 has specified the Availability of transmission system as under:

| Particular | Norm |
|--|------|
| Availability of AC system | 98% |
| Availability of HVDC bi pole links | 92% |
| Availability of HVDC back-to-back stations | 95% |

MSETCL shall strive to maintain the availability higher than the normative levels specified in the Regulations.

2.3.2.2.2. Transmission loss

The Hon'ble Commission has approved intrastate loss of 4.85% for FY 10-11. The actual loss in the Intra-State transmission system is 4.31% for FY 10-11. The transmission loss being a function of the quantum of power, direction of power flow in the network and the inherent technical loss present in the wire network, for the next five year period of FY 11-12 to 15-16. The proposed transmission losses also factor the fact that the current load is present on the western side, whereas the generation is predominantly on the eastern side. As this situation is expected to continue in the future, MSETCL humbly requests the Hon'ble Commission to approve the Intra-State Transmission loss as 4.85%, however, it shall strive to maintain the energy loss at less than 4.85%.

2.3.3. Financial Performance

2.3.3.1. Revenue Statement

A brief synopsis of the P&L over the past five years i.e. from FY 2005-06 onwards, is as given below:

| Particulars | FY 2005-06 | | FY 2006-07 | | FY 2007-08 | | FY 2008-09 | | FY 2009-10 | | FY 2010-11 | |
|-----------------------------------|----------------------------|-------------------|----------------|-------------------|-----------------|-------------------|----------------|-------------------|----------------|-------------------|----------------|-------------------|
| | (06-06-2005 to 31-03-2006) | | | | | | | | | | | |
| | Rs. | % of Total Income | Rs. | % of Total Income | Rs. | % of Total Income | Rs. | % of Total Income | Rs. | % of Total Income | Rs. | % of Total Income |
| | Crores | | Crores | | Crores | | Crores | | Crores | | Crores | |
| INCOME | | | | | | | | | | | | |
| Revenue from Transmission Charges | 1182.42 | 99.22% | 1422.93 | 97.28% | 1586.754 | 95.97% | 1869.95 | 96.82% | 1599.73 | 93.66% | 2097.78 | 97.65% |
| Other Income | 9.28 | 0.78% | 39.84 | 2.72% | 66.619 | 4.03% | 61.35 | 3.18% | 108.37 | 6.34% | 50.45 | 2.35% |
| TOTAL | 1191.7 | 100% | 1462.77 | 100% | 1653.373 | 100% | 1931.3 | 100% | 1708.1 | 100% | 2148.23 | 100% |
| EXPENDITURE | | | | | | | | | | | | |
| Employee Cost | 197.18 | 16.55% | 365.81 | 25.01% | 260.368 | 15.75% | 603.58 | 31.25% | 393.97 | 23.07% | 529.04 | 24.63% |
| Repair & Maintenance Expenses | 67.34 | 5.65% | 162.06 | 11.08% | 247.049 | 14.94% | 393.53 | 20.38% | 304.33 | 17.82% | 287.78 | 13.40% |
| Administration & General Expenses | 30.88 | 2.59% | 59.7 | 4.08% | 39.492 | 2.39% | 143.22 | 7.42% | 103.44 | 6.06% | 136.68 | 6.36% |
| Depreciation | 388.37 | 32.59% | 474.11 | 32.41% | 494.651 | 29.92% | 321.75 | 16.66% | 299.62 | 17.54% | 368.64 | 17.16% |
| Other Debits | 3.09 | 0.26% | 1.38 | 0.09% | 0 | 0.00% | 0 | 0.00% | 0 | 0.00% | 0 | 0.00% |
| Interest & Finance Charges | 167 | 14.01% | 198.02 | 13.54% | 221.225 | 13.38% | 256.15 | 13.26% | 209.99 | 12.29% | 283 | 13.17% |
| TOTAL | 853.86 | 71.65% | 1261.08 | 86.21% | 1262.785 | 76.38% | 1718.23 | 88.97% | 1311.35 | 76.77% | 1605.14 | 74.72% |
| Net Profit before Tax | 337.84 | 28.35% | 201.69 | 13.79% | 390.588 | 23.62% | 213.064 | 11.03% | 396.75 | 23.23% | 543.11 | 25.28% |
| Less: Provision for Tax | 29.72 | 2.49% | 22.36 | 1.53% | 97.9 | 5.92% | 79.01 | 4.09% | 123.02 | 7.20% | 190.85 | 8.88% |
| Net Profit after Tax | 308.12 | 25.86% | 179.33 | 12.26% | 292.688 | 17.70% | 134.05 | 6.94% | 273.73 | 16.03% | 352.26 | 16.40% |
| Prior Period Charges (Net) | 0 | 0.00% | -10.47 | -0.54% | -34.48 | -1.79% | 3.46 | 0.18% | -28.71 | -1.68% | -22.93 | -1.07% |
| Profit for the Year | 308.12 | 15.95% | 168.86 | 8.74% | 258.208 | 13.37% | 137.51 | 7.12% | 245.01 | 14.34% | 329.33 | 15.33% |

2.3.3.2. Analysis of Revenue Statement

2.3.3.2.1. Revenue from Transmission Business

- Revenue from Transmission charges has seen the continuous growth since inception of MSETCL, except in FY 08-09 when it reduced when compared to the previous year.
- The revenue from Transmission charges is dependent on the Transmission Pricing Order issued by the Hon'ble Commission on yearly basis. The Non-tariff income is uncontrollable in nature and it varies from year to year

A. Employee Expenses

- This carries the maximum weight in terms of total expenditure incurred by MSETCL in any particular year.
- Employee cost for MSETCL varies in the range of 15%-25% of the total income over the 5-year period, however for the FY 2008-09, it was 31.25% of total revenue in the wake of pay revision.

B. Repair & Maintenance Expenses

- MSETCL owns the most diverse network, operates in varied topology and wide range of voltage profile compared to other utilities. In addition to this, transmission assets of MSETCL have outdated technology in substantial portion of network (when compared to the technology prevalent today), coupled with significant portion of the assets surpassing their useful life.
- Sensitivity to provide safe and secure energy transaction in the state requires frequent repair and maintenance, which reflects in the revenue statement of MSETCL. At the time of inception the R&M expenses was approximately 6% of the total income at Rs. 67.3 Crore, this has over the past three stabilised to about Rs 300 Crore and for FY 10-11 the actual R&M expense incurred is Rs. 287.77 Crore.

C. Interest and Finance Charges

- The interest expense varies between 12% to 14% over the past 6 year period, in FY 10-11 the interest expense is 283 Crore when compared to Rs. 209 crore for FY 09-10
- The increase in interest expense be reasoned because of increased funding required for significant capacity addition.

The table and figure below indicates the financial performance of MSETCL in past five financial years

Table 7: Revenue, O&M and Profit of MSETCL (Rs Crore)

| Particulars | FY 2005-06 | FY 2006-07 | FY 2007-08 | FY 2008-09 | FY 2009-10 | FY 2010-11 |
|-----------------------------------|------------|------------|------------|------------|------------|------------|
| Revenue from Transmission Charges | 1182.42 | 1422.93 | 1586.75 | 1869.95 | 1599.73 | 2097.78 |
| O & M Expenses | 295.40 | 587.57 | 546.91 | 1140.34 | 801.75 | 1004.04 |
| Profit for the Year | 308.12 | 168.86 | 258.21 | 137.51 | 245.01 | 329.34 |

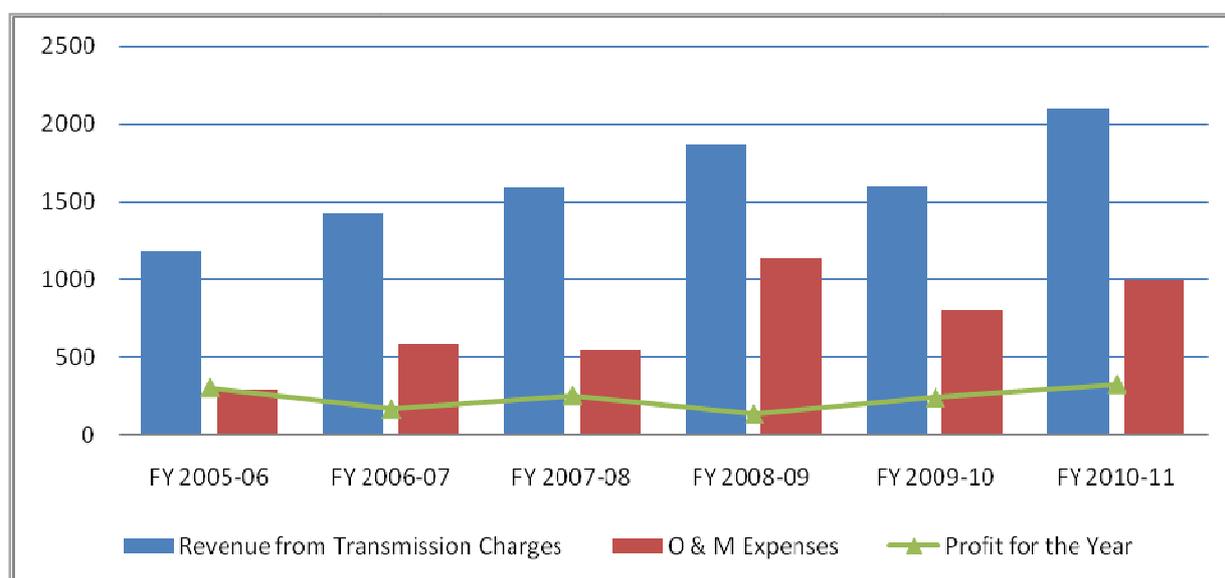


Figure 4: Revenue, O&M and Profit of MSETCL in past five years

2.3.3.3. Balance sheet

An analysis of the Balance sheet over the 5-year period from FY 05-06 to FY 09-10 is as given below:

| Particulars | As on 31st March 2006 | As on 31st March 2007 | As on 31st March 2008 | As on 31st March 2009 | As on 31st March 2010 | As on 31st March 2011 |
|------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Assets | Rs. Crore |
| Net Fixed Assets | 4,359 | 4,215 | 4,568 | 4,831 | 5,700 | 7,746 |
| Work In Progress | 776 | 930 | 1,175 | 1,856 | 3,095 | 3,684 |

| Particulars | As on 31st March 2006 | As on 31st March 2007 | As on 31st March 2008 | As on 31st March 2009 | As on 31st March 2010 | As on 31st March 2011 |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Total Fixed Assets | 5,134 | 5,146 | 5,743 | 6,687 | 8,795 | 11,430 |
| Other Assets | 49.2 | 184.81 | 1.83 | 15.21767 | 28.0077 | 69.43 |
| Current Assets | | | | | | |
| Cash & Bank | 10.02 | 79.37 | 525.023 | 517.69 | 359.08 | 364.25 |
| Stock | 65.83 | 96.32 | 180.8785 | 231.93 | 199 | 213.71 |
| Receivables against Transmission Charges | 265 | 428 | 148 | 169 | 134 | 279.12 |
| Loans & Advances | 62 | 140 | 646 | 839 | 690 | 369.17 |
| Sundry Receivables | 267 | 157 | 0 | 0 | 0 | 0 |
| Total Current Assets | 669.89 | 900.96 | 1499.827 | 1758.119 | 1381.6 | 1226.25 |
| Other Current Liabilities & Provision. | 877 | 988 | 971 | 1,677 | 1,845 | 1,755 |
| Contribution towards Grants, Subsidies towards cost of assets | 28.27 | 129.31 | 377 | 480.04 | 594.69 | 812.69 |
| Total Current Liability | 906 | 1,117 | 1,348 | 2,157 | 2,440 | 2,568 |
| Net Current Assets | -236 | -216 | 152 | -398 | -1,058 | -1,342 |
| Miscellaneous expenditure (to the extent no written off/adjusted) | | | | | | 55 |
| Total | 4947.8 | 5114 | 5896 | 6304 | 7765 | 10159 |
| Liability | Rs. Crores |
| Net Worth | | | | | | |
| Equity | 2,696 | 2,696 | 2,696 | 2,696 | 2,696 | 2,696 |
| Reserves | 308.12 | 477 | 713 | 140.57 | 385.5534 | 715 |
| Total Net worth | 3,004 | 3,173 | 3,409 | 2,837 | 3,082 | 3,411 |
| Long Term Liability | | | | | | |
| Secured Loans | 1,943 | 1,941 | 2,483 | 2,805 | 3,855 | 5,840 |
| Unsecured Loans | 0 | 0 | 4.11 | 4.11 | 111.1163 | 104 |
| Deferred tax | 0 | 0 | 0 | 658.02 | 717.046 | 804 |
| Total Long term Liability | 1,943 | 1,941 | 2,487 | 3,468 | 4,683 | 6,748 |

| Particulars | As on 31st March 2006 | As on 31st March 2007 | As on 31st March 2008 | As on 31st March 2009 | As on 31st March 2010 | As on 31st March 2011 |
|--------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Total | 4,947 | 5,114 | 5,896 | 6,304 | 7,765 | 10,159 |

2.3.3.4. Analysis of Balance Sheet

2.3.3.4.1. Fixed Assets

- In last five years, fixed assets have grown on account of major capacity addition, system augmentation plan carried out by MSETCL to ensure the availability of system for smooth energy transaction across the state. Only in the last two years, the fixed assets have increased to 11.25%, which indicates the comprehensive system augmentation and system strengthening plan carried by MSETCL
- Due to envisaged evacuation scheme proposed and system augmentation requirement for upcoming units in the state, the work in progress amount has also increased

2.3.3.4.2. Net Current Assets

- The total current assets have grown at a CAGR of 19.84% in past five years
- The major portion of current assets is loans and advances which has almost been 40-50% of the total current assets. The reason for higher loans and advances is the as and when required system maintenance works of MSETCL system to ensure safe and secure energy transaction across state network
- Against the total current assets, the current liabilities have also grown at a CAGR of 28.12% in past five years. In the past two years, the current liabilities has rose to higher level because of higher interest rate accrued as well as the amount payable for capital expenditure carried out by MSETCL

2.3.3.4.3. Equity in line with Debt

- To carry out the system augmentation and LE scheme, the debt has increased over the past five years
- Though not much equity participation has been done by MSETCL, however the net worth of MSETCL has grown at a CAGR of 5.76% in past five years

The table and figure below indicates the progress made by MSETCL over the past six years.

Table 8: Asset base and Net worth of MSETCL at year-end (Rs Crore)

| Particulars | 31/03/2006 | 31/03/2007 | 31/03/2008 | 31/03/2009 | 31/03/2010 | 31/03/2011 |
|-----------------|------------|------------|------------|------------|------------|------------|
| Total Assets | 4948 | 5114 | 5896 | 6304 | 7765 | 10159 |
| Total Net Worth | 3004 | 3173 | 3409 | 2837 | 3082 | 3411 |

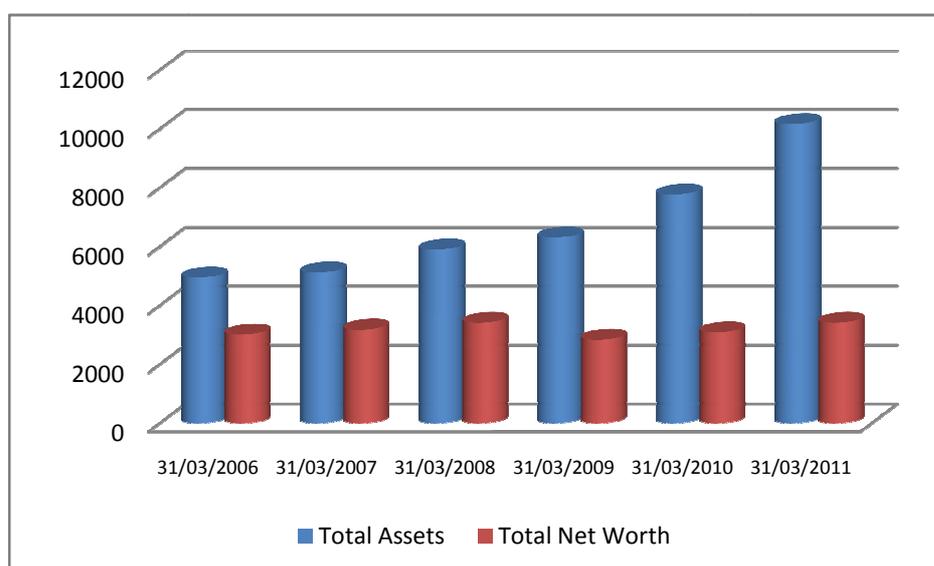


Figure 5: Asset Base of MSETCL in past five years

2.3.3.5. Ratio Analysis

Table 9: Financial Ratio Analysis

| Particulars | FY 2005-06 | FY 2006-07 | FY 2007-08 | FY 2008-09 | FY 2009-10 | FY 2010-11 |
|------------------------------|------------|------------|------------|------------|------------|------------|
| Operating Cost to Sales | 72% | 86% | 76% | 89% | 77% | 75% |
| PAT to Sales | 26% | 12% | 16% | 7% | 14% | 15% |
| Approved RoE over Asset base | 4% | 7% | 7% | 6% | 5% | 5% |
| Debt : Equity | 0.72 | 0.72 | 0.92 | 1.04 | 1.43 | 2.17 |

| Particulars | FY 2005-06 | FY 2006-07 | FY 2007-08 | FY 2008-09 | FY 2009-10 | FY 2010-11 |
|---------------|------------|------------|------------|------------|------------|------------|
| Current Ratio | 0.74 | 0.81 | 1.11 | 0.82 | 0.57 | 0.48 |

Financial Ratio Analysis of MSETCL for past five year is as given below:

- **Operating Cost to Sales:** The operating cost of MSETCL is in the range of 72% to 85% resulting into major impact on the profitability. As can be analysed, the ratio has increased significantly on account of higher employee expenses caused by impact of pay revision.
- **PAT to Sales:** The profit for the FY 2008-09 had dropped significantly due to higher operating expenses contributed by higher O&M expense. The rise in O&M expense is due to the pay revision recommended by the Government of Maharashtra and higher Repair and Maintenance expense on account of maintenance requirement in its network to ensure safe and secure operation of the system.
- **Approved Return on Equity over the Asset base:** Under the MERC (Terms & Conditions of Tariff) Regulations, 2005, a transmission licensee is entitled to earn a Return on Equity of 14% for the year. This varies between 4% to 7% over the past six year period.
- **Debt: Equity:** This ratio has increased depicting the higher financing by debt funds due to major capacity expansion plan carried out by MSETCL. The ratio is increasing which had an impact on the interest cost.
- **Current ratio:** There has been significant variation observed in the current ratio, which ideally should be around unity. The variation is because of higher current liability compared to the current assets.

3. Strategic Plan

3.1. Risk Analysis and Risk Mitigation Plan

Risks are events or conditions that may occur, and whose occurrence, if it does take place, has a harmful or negative impact on the targeted achievements of the organization's business objectives. The exposure to the consequences of uncertainty constitutes a risk. The electricity sector's vulnerability to risks springs from the magnitude of its capital investments, the potential for absorbing regulatory uncertainty and the consumer interface if any. However, for a Transmission licensee the risks would primarily comprise of timely completion of capital investment plan, uncertainties with regard to pricing of equipments, operational risks and competition from new transmission licensees.

Risk Management is the process of systematically identifying, quantifying, and managing all risks and opportunities that can affect achievement of a Utility's strategic and financial goals. Risk Analysis is defined as the overall process of risk assessment and evaluation. Recognizing the nature and kind of risk, the risk can be classified into the following categories:

Table 10: Risk Description for MSETCL

| Risk | Risk Description |
|-------------------------|---|
| Strategic Risk | This includes the range of external and internal events, trends in the sector and policy level uncertainties that may cause adverse impact on a company’s strategic growth trajectory and in-turn affect the stakeholder value. This also includes the uncertainty in alignment of the operational performance and business objectives with the Regulatory and Policy scenario to track the growth path of the company. |
| Business Risk | This includes the risk associated with the internal and external factors related to competition prevalent due to private sector participation, project management of the capital expenditure as envisaged for the horizon period coupled with uncertainties related to sourcing of equipments for implementation of projects. Other factors like difficulties in adoption of new techniques, inability to handle emergencies and inability to meet requirement of skilled & trained manpower may result into a business risk |
| Operational Risk | Operational risk constitutes the uncertainties pertaining to operations of the company in order to attain the normative parameters and managing the operations amidst uncertainties like unpredictable events, force majeure events like grid instability, internal risks like manpower attrition, skill development and training of personnel to adopt new technologies, uncertainties to comply the standard of performance and availability of network & systems, force majeure events leading to delay in project implementation and operational delays, technological obsolescence, etc. |

Table 11: Risk Identification and Risk Mitigation Plan

| S. No. | Risk Identification | Risk Management Possibility | Risk Description and Mitigation Plan |
|-----------|---|-------------------------------|---|
| A. | Strategic Risk | | |
| 1. | Adverse Regulatory Policies and directives | Major Risk (Attention Needed) | <ul style="list-style-type: none"> MSETCL is operating under regulatory regime and the regulatory environment is undergoing a paradigm shift from Cost-plus approach to Performance based approach in future periods. Though for the second control period, one of the major risk, affecting the returns to MSETCL based on performance has been deferred, the company is always exposed to this risk in next control period, which may affect the returns of MSETCL, thus the close monitoring of CERC and MERC norms, in addition to the possibility to improve its regulatory base is needed. Transmission licensees need to operate in a regulatory regime controlled by CERC / MERC, hence any directives of CERC / MERC, as applicable, needs to be complied by MSETCL MSETCL needs to closely monitor future policy developments of CERC and MERC and convey the concerns and negative implications to the Regulators through the regulatory process so as to protect MSETCL interests. |
| 2. | Threat of autonomy of SLDCs and ring-fencing from Transmission Business | Minor Risk (Attention Needed) | <ul style="list-style-type: none"> Under EA-2003, SLDC has been designated as the Nodal agency to perform the critical functions of energy accounting and load management at intra-state level. The recent recommendation of Forum of Regulator to provide autonomy to SLDC and separate reporting framework for expediting open access needs to be complied at the earliest |

| S. No. | Risk Identification | Risk Management Possibility | Risk Description and Mitigation Plan |
|--------|---|-------------------------------|--|
| | | | <ul style="list-style-type: none"> MSETCL may prepare a ring fenced reporting protocol for the SLDC operations to avoid regulatory uncertainties to separate this operational segment |
| 3. | Expenses related to Operation and Maintenance | Major Risk (Attention Needed) | <ul style="list-style-type: none"> MSETCL owns a diverse and geographically wide-spread network inherited from erstwhile MSEB. The equipments spanning this diverse network are of vintage nature and are not technologically upgraded; this calls for uncertain R&M requirement to ensure smooth and secure energy transactions across the states. The regulatory approach for approval of O&M expenses in the past has not been beneficial towards MSETCL. It is observed, any increase in O&M expense is susceptible for comparison with private and other similar utilities across the country, this can be observed based on the precedence established under the regulatory regime wherein the O&M expense of MSETCL are lesser than those permitted to other private licensees that operate in a much smaller terrain and cater to lesser load when compared to MSETCL. Thus, even though expenses could be warranted or unwarranted in nature, it's imperative that MSETCL prepare an internal policy to rationalise the O&M practices in order to control the expenses within permissible limits The MERC (Multi Year Tariff) Regulations, 2011 has proposed O&M expenses for the horizon period of FY 11-12 to 15-16, much lesser than the actual O&M expenses incurred by MSETCL in previous years and even less than that proposed by CERC for Inter-state transmission licensees. MSETCL as part of approval of its business plan has utilised this opportunity by propose norm for |

| S. No. | Risk Identification | Risk Management Possibility | Risk Description and Mitigation Plan |
|-----------|---|-----------------------------------|--|
| | | | approval of O&M expenses based on increase in asset base for the horizon period. |
| 4. | Non compliance with legal framework at center and state level | Major Risk (Attention Needed) | <ul style="list-style-type: none"> In the wake of recent environmental guidelines and strict monitoring of environmental laws both at the central and state level, the timely execution of capex schemes would be dependent on the resolving 'Right of way' related issues in a time bound manner. MSETCL may look into the possibility of conducting the environmental feasibility assessment along with the 'Right of Way' Study well ahead of initiating the actual execution to avoid any non-compliance on matters related to protection of environment, which can potentially lead to delays in project implementation. Delays in project would eventually lead to increase in project cost, existing networks being over loaded followed by capacity constraints in the network. |
| 5. | Institutional Policy Risk | Tolerable Risk (Attention Needed) | <ul style="list-style-type: none"> Large capital projects entail large-scale procurement of equipment and technologies that requires transparent process of technology selection and competitive bidding for procurement of equipment. MSETCL has adopted the competitive bidding route for sourcing equipments for its capital expenditure projects. Further, MSETCL adopts a quality management policy which rules out any possibility to source equipments of sub-standard quality. |
| B. | Business Risk | | |

| S. No. | Risk Identification | Risk Management Possibility | Risk Description and Mitigation Plan |
|--------|--|--------------------------------------|---|
| 1. | Decision making delays | Tolerable Risk (Attention Needed) | <ul style="list-style-type: none"> • Since MSETCL has planned a large capital expenditure in the coming years, any delays in planned expansion of the transmission network would result in aggravating the demand-supply situation in the state. To overcome such situations it may opt for the following approach: <ul style="list-style-type: none"> • <i>Enforce accountability for any delays in decision making</i> • <i>Develop an internal monitoring mechanism for the approval of files or procedure</i> • <i>Identify the key decision points and delays on the critical path. The estimated turnaround time for these decisions and the responsibility centers for decision-making should be clearly specified. Once the system is in place accountability for delays in decision making can be fixed</i> |
| 2. | Private Sector Participation & Competition therein | Tolerable Risk (Attention Needed) | <ul style="list-style-type: none"> • Indian Electricity sector is opening up for market development. Until past few years' transmission was secluded for private participation, but the recent private participation and award of transmission licensee to new entities has opened up the field for private players, though currently it is through the JV or MoU route, however the possibility of full scale private participation can not be ruled out in future. MSETCL may adopt revising the business operations purely on commercial principles to attain the business autonomy and operational excellence to compete against any competition from private players. |
| 3. | Financial Management | Tolerable Risk | <ul style="list-style-type: none"> • MSETCL being a major transmission utility in the state is subject to following |

| S. No. | Risk Identification | Risk Management Possibility | Risk Description and Mitigation Plan |
|--------|---------------------|-----------------------------|---|
| | | (Attention Needed) | <p>kind of financial management uncertainties:</p> <ul style="list-style-type: none"> • <i>Nonalignment of budget priorities with investment plans can make service delivery suboptimal.</i> • <i>Unpredictable budget execution can lead to unplanned reallocations and reduce resources available for priority expenditures.</i> • <i>Weak internal controls on revenue and expenditure management can lead to diversion of funds to unauthorized uses.</i> • <i>Weak accounting systems and record-keeping practices can hamper provision of timely and adequate information on revenue streams, expenditure flows, liquidity, and debt levels or arrears.</i> • <i>Lack of relevant external audits of sector agencies and utility companies can weaken accountability.</i> • <i>A continuing trend of increasing disallowances (payables of utility companies purchasing electricity exceed receivables) can undermine the financial viability of distribution companies</i> <p>• MSETCL already have department wise quality objectives for Finance and Account section and always strives to curtail the above uncertainties. MSETCL may consider appointment of qualified personnel (vis. CA or ICWAI certified employees) at key position involving financial transactions and management of the same to avoid such risk</p> |

| S. No. | Risk Identification | Risk Management Possibility | Risk Description and Mitigation Plan |
|-----------|--|-------------------------------|--|
| | | | <p>MSETCL follows a entry level and department level examination process and have well established transparent recruitment framework for appointment of staffs to various positions, ruling out the possibility for Nepotism</p> <ul style="list-style-type: none"> • <i>Low salaries of utility staff can contribute to deteriorating staff quality and lead to increased attrition in younger employees.</i> <p>MSETCL always strive to retain its employee, being a state PSU, MSETCL is adopting the pay revision recommendations of state government and committees in this regard. To ward of challenges related to attrition, MSETCL has evolved a system of training and skill-development for its working staff. In addition to this MSETCL has also devised a performance based incentive mechanism for low-grade employees directly involved in system maintenance to render good performance.</p> |
| C. | Operational Risks | | |
| 1. | High Sensitivity to Operational Norms of MERC | Major Risk (Attention Needed) | <ul style="list-style-type: none"> • The Commission has set the target availability for transmission system at 98% for HVAC and 92% for HVDC system. Any reduction in target availability would be lead to pro-rata reduction in annual transmission charges. MSETCL has considered this in its organization objectives and past performance and good R&M practices has ensured this as achievable norm. |
| 2. | Compliance to the standard of performance specified by | Tolerable Risk (Attention | <ul style="list-style-type: none"> • The Commission may adopt Standard of Performance norms for transmission licensees in future years, in a manner similar to the SOP applicable for |

| S. No. | Risk Identification | Risk Management Possibility | Risk Description and Mitigation Plan |
|--------|---|-------------------------------|--|
| | MERC | Needed) | distribution companies related to quality of energy transactions across the network. MSETCL may take this as a challenge and identify procedures & systems to comply with the envisaged SoP's. |
| 3. | Diverse, Vintage and Old technology based network | Major Risk (Attention Needed) | <ul style="list-style-type: none"> MSETCL owns a vintage network covering significant geographical spread across the state. MSETCL is entrusted with energy transmission to and from the state, thus the responsibility to provide safe, smooth and secure energy transmission lies with it, which calls for technological up gradation at all voltage level. MSETCL has prepared a System Strengthening and Life Extension plan for replacement of vintage and old technology based equipment to the extent possible to service the responsibility as entrusted. |

4. Human Resource Development Plan

Employees are the most precious asset of an organization and a conducive environment is necessary to encourage creativity, innovation and performance excellence amongst them. The company has focused its efforts to enhance the capabilities of employees to develop competent, trained and multi-disciplinary human capital. MSETCL strongly believes in achieving organizational excellence through human resources and follows “People First” approach to leverage the potential of its employees to fulfill its business plan.

4.1. Manpower Strength

The working staff strength of MSETCL as on March 31, 2012 is 12,686 compared to 12,789 on March 31, 2011. The company has been streamlining functions with an eye on improving efficiency and has focused its efforts on enhancing the capabilities of employees by imparting multi-disciplinary training. The composition of the present work force based on the nature of job that they undertake is shown below:

Manpower strength at MSETCL as on 31st March 2012

| Current Manpower Strength | No of Employees |
|----------------------------------|------------------------|
| Non Technical & Non Managerial | 1326 |
| Technical & Non Managerial | 7310 |
| Non Technical & Managerial | 434 |
| Technical & Managerial | 3616 |
| Total | 12686 |

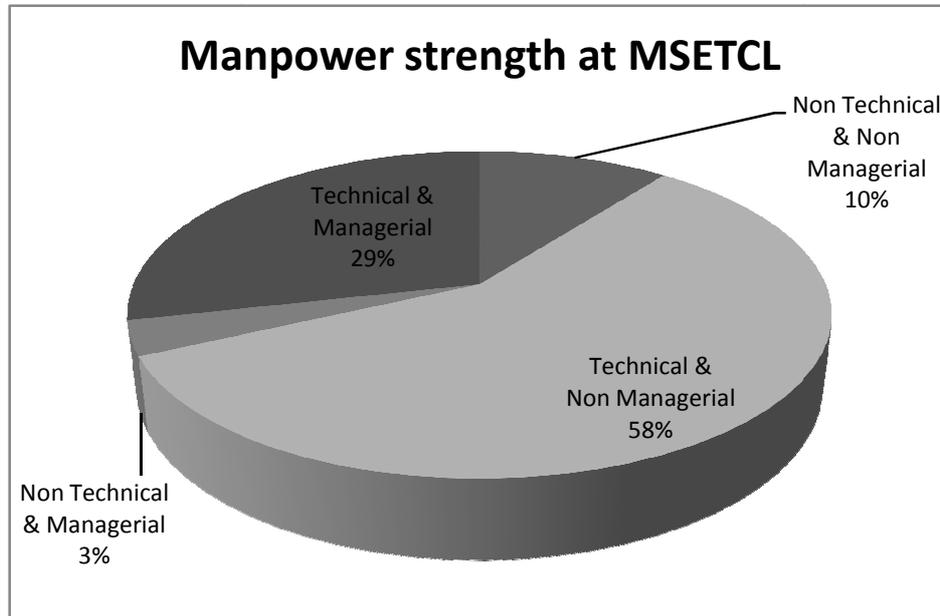
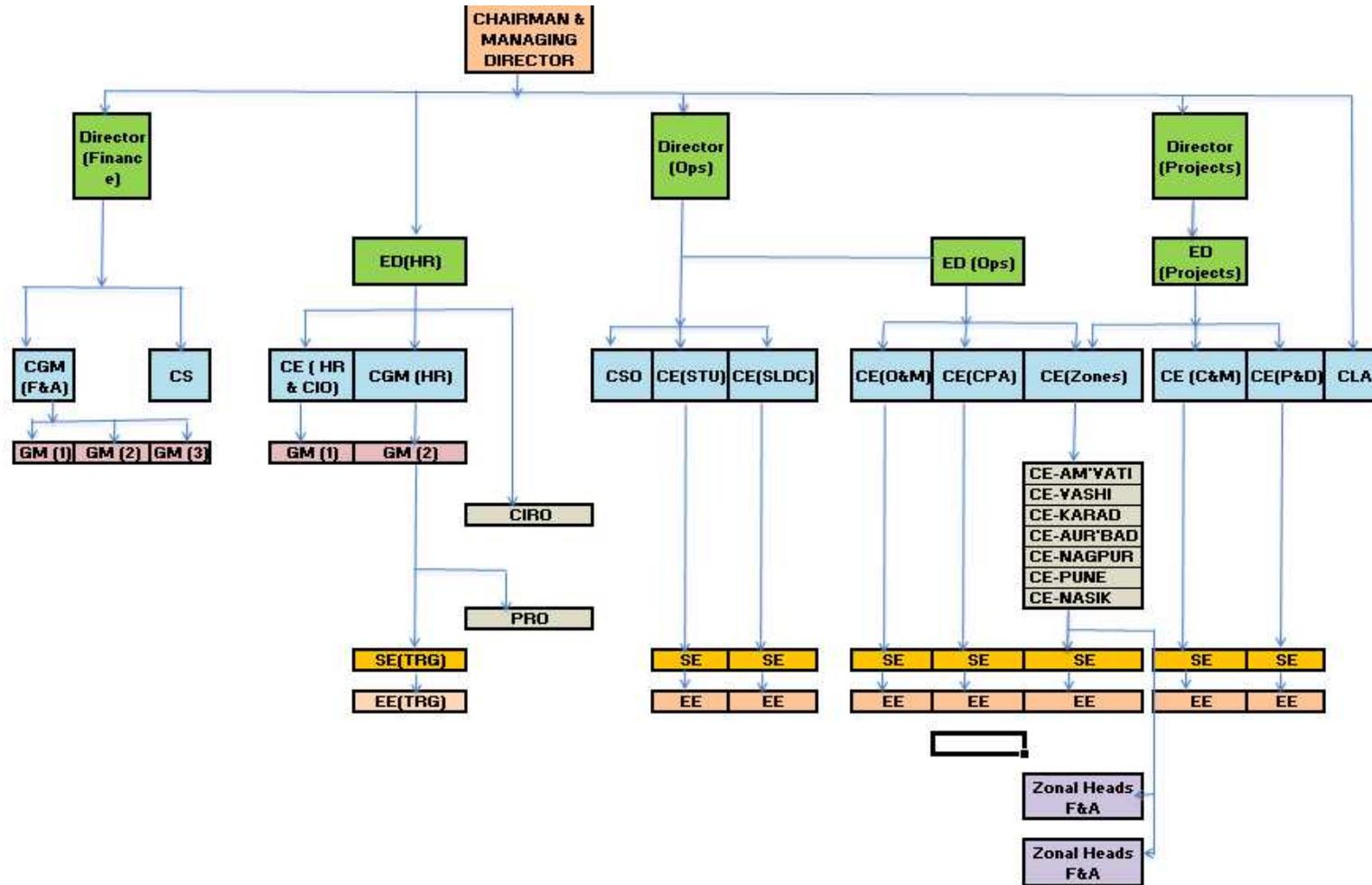


Figure 6: Manpower Strength at MSETCL

From the above chart it can be seen that the company predominantly comprises of Technical staff in non-Managerial category, followed by Technical staff in Managerial posts. The Non-technical staff comprises mainly of the Administration, Finance, Human resources related staff.

MSETCL has sanctioned employee strength of 12686 as on 31st March 2012, working in various departments like EHV Operation & Maintenance, EHV Construction, State Load Dispatch Centre, Civil Construction & Maintenance, Testing & Communication, Planning, Design & Engineering, Finance & Accounts, Procurement and Human Resources.

4.2. ORGANIZATIONAL CHART



The roles and responsibilities delegated to the key representatives as identified in the above organizational chart are as below:

Chairman and Managing Director

- ✓ To provide strategic direction, identify the organization's focus areas and review the progress of the organization to ensure continuous growth
- ✓ To be the chairman of the Management Review Committee
- ✓ To define Vision, mission, quality policy and objectives of the organization
- ✓ To allocate duty and responsibility to the management staff
- ✓ To hold ultimate responsibility for implementation and maintenance of the quality management system
- ✓ To provide adequate resources and funds for various activities at MSETCL Corporate Office Mumbai, he is the ultimate authority for acceptance of solutions to various problems as suggested by the employees with respect to their work area and providing resources for the successful implementation of the solutions
- ✓ To review and approve documents
- ✓ To decide and initiate appropriate corrective and preventive action
- ✓ To maintain mutually beneficial customer supplier relationship
- ✓ To interact with central, state and local bodies

Director [Operations]

- ✓ *To provide strategic direction, identify the organization's focus areas and review the progress of O & M activities to ensure continuous growth*
- ✓ To achieve the objectives and targets set for O & M activities in MSETCL Corporate Office.
- ✓ To monitor corrective action relating to *MSETCL* planning process and quality management system
- ✓ To co-ordinate with statutory and regulatory bodies to comply the related provisions
- ✓ To guide and directing the staff towards estimation and optimum utilization of resources
- ✓ To plan, up gradation of technology within the areas of their control
- ✓ To exercise control on day-to-day work
- ✓ To implement the guidelines / instructions provided as per MSETCL rules and regulations
- ✓ To provide resources as required

Director (Projects)

- ✓ To provide strategic direction, identify the organization's focus areas and review the progress of Project activities to ensure continuous growth
- ✓ To achieve the objectives and targets set for Project activities in MSETCL Corporate Office
- ✓ To monitor corrective action relating to MSETCL planning process and quality management system
- ✓ To co-ordinate with statutory and regulatory bodies to comply the related provisions. Finalize policy on joint ventures with transmission companies
- ✓ To guide and directing the staff towards estimation and optimum utilization of resources
- ✓ To plan, up gradation of technology within the areas of their control
- ✓ To exercise control on day-to-day work
- ✓ To implement the guidelines / instructions provided as per MSETCL rules and regulations
- ✓ To provide resources as required

Director (Finance)

- ✓ To provide strategic direction, identify the organization's focus areas and review the progress of Finance & Account activities to ensure continuous growth
- ✓ To plan the financial requirement of the organization submits financial position of organization to concerned authority
- ✓ To financial tie-ups with financial institutions for new schemes and R&M Schemes
- ✓ To arrange release the payments of suppliers, employees, and purchases
- ✓ To submit all statutory and regulatory reports to concerned authorities regarding legal and statutory requirements
- ✓ To arrange to maintain Boards Accounts
- ✓ To monitor the smooth flow of finance

Executive Director [Projects]

- ✓ To provide strategic direction, identify the organization's focus areas and review the progress of the project activities to ensure continuous growth
- ✓ To achieve the objectives and targets set for project activities
- ✓ To monitor corrective action relating to project activities and quality management system
- ✓ To co -ordinate with statutory and regulatory bodies to comply the related provisions
- ✓ To guide and direct the staff towards optimum utilization of resources
- ✓ To plan up gradation of technology within the areas of his control

- ✓ To exercise control on day-to-day work
- ✓ To implement the guidelines / instructions provided as per MSETCL rules and regulations and higher authorities
- ✓ To hold meetings with the customer to ensure proper understanding of the requirements
- ✓ To ensure optimized cost of Transmission

Executive Director [Operations]

- ✓ To provide strategic direction, identify the organization's focus areas and review the progress of the EHV (O & M) activities to ensure continuous growth
- ✓ To achieve the objectives and targets set for Trans (O & M) activities
- ✓ To monitor the activities and co-ordination between all zones of Trans (O & M), Special projects, Stores (CPA) and quality management system
- ✓ To guide and directing the staff towards estimation and optimum utilization of resources
- ✓ To plan up-gradation of technology in operation and maintenance of transmission assets
- ✓ To implement the guidelines/instructions provided as per MSETCL rules and regulations and higher authorities
- ✓ To hold meetings with the customer to ensure proper understanding of the requirements
- ✓ *To ensure optimized cost of Transmission*
- ✓ To analyze and monitoring corrective action plan for any major system failure

Executive Director [HR]

- ✓ To implement all staff rules and regulations framed by MSETCL for administrative purposes
- ✓ To fulfill the requirement of field and offices for recruiting, promoting and training the staff and changing the administrative controls of staff for better control and output
- ✓ To implement & circulate new revisions related to rules regulations policies etc. within the organization
- ✓ To submit all statutory and regulatory reports to concerned authorities regarding legal and statutory requirements

Chief Engineer [Projects & Designs]

- ✓ To plan and implement the capital investment projects
- ✓ To arrange to procure the material for schemes on turns key projects and new schemes
- ✓ To get the system upgraded to meet the 5 year plan requirements
- ✓ To get all required Statutory and regulatory clearances for new lines/projects

- ✓ To submit all statutory and regulatory reports to concerned authorities regarding legal and statutory requirements
- ✓ To submit proposals for purchasing of materials related to projects
- ✓ To prepare replies for VIP complaints, LAQ's cut motions etc

Chief Engineer [Contracts & Monitoring]

- ✓ To monitor timely projects execution
- ✓ To finalize and process long term transmission contracts
- ✓ To ensure projects evaluation techniques viz. PERT/CPM to avoid cost & time overrun.

Chief Engineer [Transmission O&M]

- ✓ To monitor and approve the activities related to material procurement for O & M schemes
- ✓ To maintain Govt. correspondence
- ✓ To prepare grid disturbance report and occurrence analysis
- ✓ To submit proposals for purchasing materials related to O & M
- ✓ To review maintenance of the lines and substations and equipments
- ✓ To process for R & M schemes and submitting proposals to board of Directors/competent authority
- ✓ To account line losses
- ✓ To prepare reports of availability for substations and lines
- ✓ To analyze occurrences and arrange for non-recurrence of the event

Chief Engineer [State Transmission Utility]

- ✓ To co-ordinate with WRPC, State Government, Generators, licensees on matters related transmission planning for the state
- ✓ To ensure plan and control the statutory and regulatory requirements related to EHV lines and sub stations
- ✓ To exercise control on day-to-day work
- ✓ To implement the guidelines/instructions provided as per MSETCL rules and regulations and higher authorities
- ✓ To hold meetings with the customer to ensure proper understanding of the requirements
- ✓ To ensure optimized cost of Transmission

Chief Engineer (State Load Dispatch Centre)

- ✓ Demand Estimation for day to day operations
- ✓ Scheduling for Merit Order Dispatch
- ✓ Regulating Generation Load Balance
- ✓ Schedule for Central Sector Drawl & bilateral power purchases
- ✓ Maintain system frequency in IEGC range
- ✓ Outage planning and monitoring
- ✓ Restoration procedure planning and implementation
- ✓ Reactive power management and voltage control
- ✓ Load Shedding Implementation and monitoring
- ✓ Coordination with RLDC and other constituents
- ✓ Preparing and issuing Monthly energy accounts for the entire state
- ✓ Monitoring short term and long term PPAs of one or more Discoms
- ✓ Implementation of Intra-state ABT and UI mechanism
- ✓ Allowing Open Access for wheeling power on state transmission system to traders

Chief Engineer [Procurements]

- ✓ To maintain the Co-ordination between stores purchase, Inspection wing and all other department of MSETCL, C.O. and its field offices to meet their requirements
- ✓ To ensure the smooth functioning of indenting, Purchasing, Material delivery, Quality control processes, and availability of material in stores centers
- ✓ To ensure the material delivery and proper scrutiny and payment of the stores bills
- ✓ To communicate and provide an update on the procurement plan with the top management of MSETCL

Chief General Manager [HR]

- ✓ To implement all rules and regulations framed by MSETCL for administrative purposes
- ✓ To fulfill the requirement of field and offices for recruiting, promoting and training the staff and changing the administrative controls of staff for better control and output
- ✓ To implement & circulate the of new revisions within the organization
- ✓ To submit all statutory and regulatory reports to concerned authorities regarding legal and statutory requirements

Chief Engineer (HR & CIO)

- ✓ Deal with manpower review, planning, appointment, Posting, training and development of Technical Personal of MSETCL
- ✓ Deal with promotion, transfers, grant of higher grade benefits to employees and related grievances and legal issues
- ✓ Deal with suggestions of employees and implementation of recommendations and related work
- ✓ Act as a Head of Department for technical establishment & service matters.

Chief General Manager [Finance & Account]

- ✓ To submit financial position of organization to concerned authority
- ✓ To arrange financial tie-ups with financial institutions for new schemes and R&M Schemes
- ✓ To arrange to Release the payments of suppliers, employees, and purchases
- ✓ To submit all statutory and regulatory reports to concerned authorities regarding legal and statutory requirements
- ✓ To arrange to maintain Boards Accounts
- ✓ To monitoring the smooth flow of finance

Chief Vigilance Officer

- ✓ For identification of sensitive areas susceptible to mal-practices and taking preventive measures to ensure integrity and efficiency in the Company functioning
- ✓ To establish preventive vigilance measures in the area of Projects, Contracts, Civil and Electrical Works, Inventory, Finance and H.R.
- ✓ For Scrutiny of complaints and initiation of appropriate inquiry/investigation measures
- ✓ To render independent and impartial advice to the Managing Director and other disciplinary authorities in the cases involving vigilance angle at different stages
- ✓ To make investigations as may be directed by Managing Director when any report about subterfuges, mal-practice, corruption, etc. are received
- ✓ To suggest ways and means of improving the working and the image of the Company
- ✓ For Security related matters

Chief Industrial Relation Officer

- ✓ Deal with all the matters related to Unions/Association including Strike, Agitations etc

- ✓ Ensure compliance of the Labour laws namely Contract Labour Regulation Act, Factories Act, Bombay Shops and Establishments Act, Provident Fund Act, ESI Act, Motor Transport Act, Workman Compensation Act and other applicable Labour Laws
- ✓ Deal with cases related to above
- ✓ Organize Cultural & Welfare activities

Chief Legal Advisor

- ✓ Deal with all legal issues of the company
- ✓ Provide legal advice wherever required

Company Secretary

- ✓ To handle the company law and various other laws applicable to company and their statutory compliances
- ✓ Advisory role to management for maintaining statutory books and records
- ✓ Representative role on the Govt. and other statutory bodies

4.3. Training Need Assessment

Training need analysis has been carried out in all the areas as a basis for devising necessary 'Training System' as its functional structure. Specific areas are identified on the basis of performance appraisal and individuals' feedback such as EHV Operation & Maintenance, Load Management, System Studies and Network Planning, EHV Construction of Sub-stations & Lines, Design & Engineering, Project Tendering, Procurement, Survey & Investigation, Project clearances, Testing and equipments, Civil works, Commercial & Regulatory affairs, Project Management, Information Technology, Finance & Accounts, Human Resources, General Management, Public Relation & Communication, Fire & Safety etc

On directives of the Hon'ble Commission, MSETCL undertook a Manpower Study through its consultants, M/s PWC. The Hon'ble Commission had also imposed a complete ban on recruitment to Pay Gr. III & IV posts as the manpower availability and usage was not in proportion to the requirement.

4.4. Training and Development

Training forms an important tool for Human Resource Development and the National Training Policy also mandates power sector organizations to adopt a formal written training policy to ensure training for all for a minimum period of one week annually for each employee. The Policy mandates that each department of the organisation set apart 1.5% of the salary budget solely for training and it shall not be diverted for use elsewhere. This has been considered by MSETCL while designing a training policy for its employees.

Trained manpower is required at every stage of the tasks. New technology is making every sphere of the electricity industry more and more sophisticated, requiring skilled Engineers, Supervisors, Artisans, and Managers to manage the system. The technical knowledge needs to be supplemented with applied engineering and managerial skills. These skills are to be regularly refreshed and updated to cope with ever progressing and rapidly advancing technologies and practices, being introduced in the transmission sector. The Vision and policy of organization also needs to be percolated to the employees working at the lowest level in the organisation. Thus education and training are vital tools for developing a transmission company like MSETCL in restructured power sector environment.

As the electricity industry is highly capital intensive, it necessitates the operation of the plant / substation equipments / Transmission line in the most safe and efficient manner to minimize the cost of operation and a competitive spirit to achieve higher productivity and customer satisfaction.

MSETCL believes that every employee should be trained to build the required skills for superior performance on the job. Therefore, a comprehensive exercise was undertaken with the help of World Bank project to map the skill requirement of every Job in MSETCL and Job responsibilities.

4.4.1. Training System in MSETCL

With an objective to build capacity in the organisation and enhance the skill sets of its employees at different level, MSETCL has decided to build a two-fold training system. It has decided to establish and operate Regional Training Centre (RTC) at each zone for its Group III & IV employees and a Corporate Training Centre (CTC) for its Group I & II employees along with necessary infrastructure at both the centres.

With the above objective, MSETCL has established 7 regional training centers at Chandrapur, Padghe, Jejuri, Kolhapur, Aurangabad, Nashik and Amravati, one in each zone. Also, a State of the Art training centre is being established at Lonavala. Further, under the corporate social responsibility theme of assisting the communities of near-by areas, MSETCL has adopted five Industrial Training Institutes at places like Kuhi (Nagpur), Surgana (Nashik), Sillod (Aurangabad), Kavthe Mahakal (Karad) and Bhiwandi (Vashi) under the sponsorship of the Govt. of India to create more skilled manpower in the field of power sector.

4.4.1.1. Regional Training Centers for Induction Level Training to Operators & Technicians.

MSETCL recruits Technician (Operators & Technical helpers) on continuous basis for its Group III & IV, to meet the requirement in respective zones.

These operators and technicians are fresh ITI certificate holders having no back ground of works associated with transmission system comprising of substation equipment, Lines, Substation Operation & Maintenance logging, and recording of various substation parameters, issuing work permits to working personnel, reporting of occurrence to substation in charge & other concerned officials and subsequent logging/ recording etc. As such these newly recruited technicians are required to get acquainted with the transmission system so that they can discharge their duties & perform efficiently.

The National Training Policy and guidelines for power sector issued by CEA envisages for need based training to every employee at regular intervals to develop its potential to maximum and contribute to the organization. Besides, as provided in the Indian Electricity Rules 1956, these technicians have to undergo induction level training of one month. Thus, induction level training system established by MSETCL is very significant contribution to the cause of education and training.

4.4.1.2. Induction Level Training for Junior Engineers at YASHADA

MSETCL man power recruitment in Group I & II are made at the level of Junior Engineers and above. As per the rules & recommendation of CEA it is mandatory to impart Induction Training of 26 week duration comprising of 6 weeks class room and 20 weeks on job training in the field.

MSETCL has planned to establish a Corporate Training Centre (CTC) by the year 2011-12 at Lonavala with the capital investment of Rs. 12.72 Crores, which has been approved by the Hon'ble Commission. Till CTC is placed in operation, training is arranged through the renowned institute like "Yashwantrao Chavan Academy of Development Administration, Pune (YASHDA)" since Feb-2007 in with batch strength of 45 participants each. About 17 batches comprising of 668 engineers have completed this training which is specially designed for MSETCL engineers and includes class-room/ field training of six weeks.

After training at YASHADA, the engineers are sent for on Job training covering operational learning and experience of working with various departments in MSETCL like, construction, testing, O&M to gain the work culture / knowledge and confidence among themselves. Clear understanding of the working, handling of power system in crisis and developing a psychological base, problem solving, team work, decision making and leadership development is gained by them.

4.4.1.3. Training at recognized Institutes/Training Centre in India

MSETCL supports the cause of learning, education and training of its personnel as an investment for better performance of the organization.

MSETCL has also arranged residential training of one week to regular employees at YASHADA Pune for courses in MDP (Management Development Programme), PMP (Project Management Programme), and PS&T (Power System & Testing). So far 1148 senior engineers and officials have been trained in the last three years.

4.4.1.4. Special Training on Hot line maintenance at NPTI Bangalore

Hot Line Units are established in MSETCL at all 7 zones to carry out on-line maintenance work in emergency without taking outage of the equipment, bus or line and keeping the system available. Very special training on the hot line maintenance techniques called Bare Hand (BSM) and Hot Stick (HSM) need to be mastered with the use of special T&P. These training courses are arranged by NPTI covering Hot line training and live line maintenance techniques (LLMT) which are fully practical oriented.

MSETCL is delivering this training to hot line employees of various cadres from JE to Dy. EE and technician. So far strength of (86Nos) employees is trained and further 60 more employees are planned to be trained to work in Hot Line Unit

MSETCL is deputing employees to attend seminar, workshop, symposia, or training related to transmission field, arranging lectures of the expert faculties from renowned institutes like IIT, manufacturing PSU line BPCIL, BHEL, ABB, CGL etc.

MSETCL, in addition to meeting the training needs of the employees also contributes to encourage their children by giving scholarship as a regular support to their education.

MSETCL issue a news letter titled 'MahaPareshan Varta' for all its employees through whom various achievements, CMD's message to employee, useful articles, etc. are circulated regularly and shared by all. MSETCL web site also provides for open discussion and communication to registered user by "Techno Forum". All these efforts are to support employee development, their learning, moral, and ownership building

4.4.2. Performance Appraisal

Performance Appraisal is an important tool to evaluate the performance of its employees. It helps the Company to identify the needs for development of each employee and prepare the employees for higher role in the Organisation. The employee also gets an opportunity for self evaluation of Strengths and weakness and thereby setting goals for the future.

MSETCL follows a detailed procedure for evaluating the performance of its employees. On the departmental level, the Company fixes targets. There are individual targets specified at the level of Chief Engineer and above. These targets are further sub-divided for the staff reporting to the Chief Engineers and the targets are decided in joint consultation between the Appraiser and the Appraisee.

The Company also undertakes a Key Performance Assessment exercise annually of its employees, wherein, it assesses qualitative factors like job proficiency, team building, knowledge about the job, etc.

This exercise culminates into the Annual appraisal being conducted for all employees in which the review of the targets, training imparted to the employee and potential assessment for undertaking higher posts is evaluated.

The Performance appraisal is an indicator of the performance of the employees and his potential for taking up increased responsibilities. MSETCL considers the performance for further opportunities for accelerated growth, as and when there are vacancies, the existing staff is considered for such promotions.

4.4.3. Recruitment Policy

For the purposes of recruitment, MSETCL follows a broad classification of services into Technical and Non-Technical Staff. The Technical Staff comprises of Transmission, Civil and Construction. The rest of staff forms the non-Technical staff, viz. Accounts, HR, Fire Fighting, Security and Medical Staff.

Each of the above groups is further divided into three Pay Groups viz. Pay Group I, II and III. In regard to appointment for a post, it is either made by promotion or by direct recruitment. The entry post appointment is always through direct recruitment, but direct recruitment to higher post i.e. Pay group I & II are in the proportion to 1/3rd of the vacancies.

The Recruitment is governed under the Regulation 1961, whereby MSETCL does direct recruitments through independent agency after following a process of advertisement of such posts in order to ensure transparency. In addition, the Recruitment Process adheres to the Governmental norms for Reservation Policies for Scheduled Tribes, Castes and Other Backward Classes. There are Posts intended to be filled in by Departmental promotion from the members of Reserved Categories. In case such persons are not available, then it is filled by way of direct recruitment.

4.4.4. Recruitment Process

MSETCL has chalked out its future manpower requirements for expansion projected and it is proposed that recruitments for the projects during the period 2011 to 2016 will be undertaken and completed at least one year prior to completion of projects and commencement of operations. The number of personnel, both technical and non-technical post will be decided as per the norms laid down by the Hon'ble Commission.

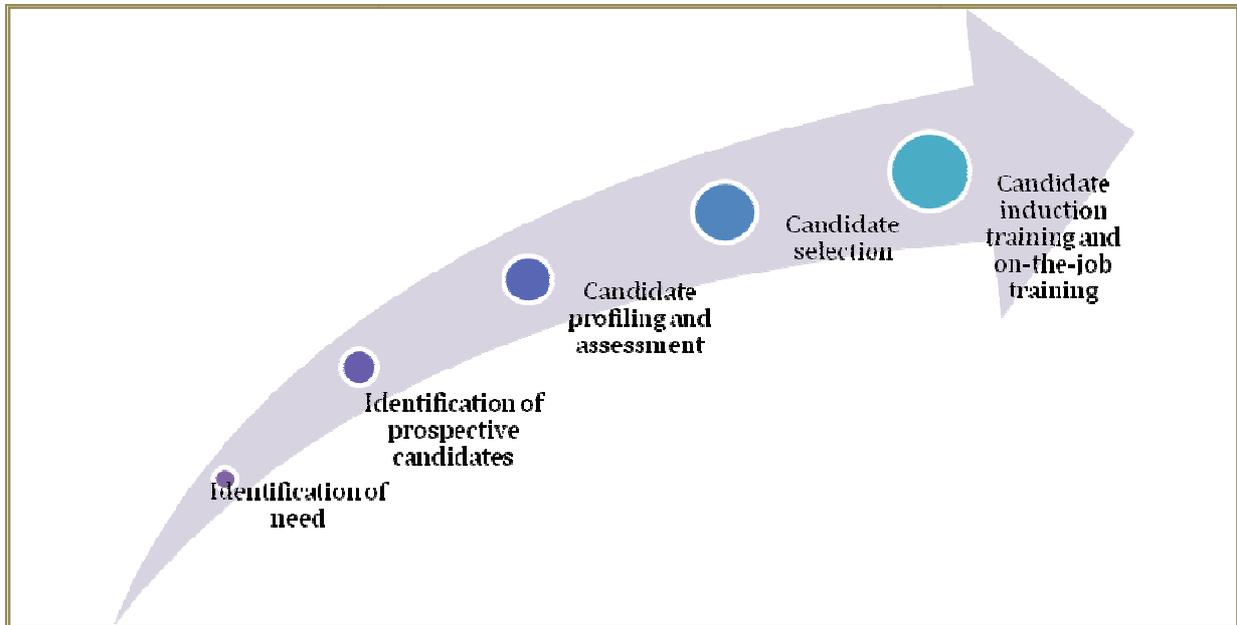


Figure 7: Need based recruitment Process at MSETCL

Step 1: Identification of need

- Each organizational unit will give its requirements of work force based on business growth
- Inputs will be taken from actual retirements and resignations
- Detailed work force plan will be prepared accordingly

Step 2: Identification of prospective candidates

- Through job boards / candidate references / applications for specific job profiles / campus recruitment, etc.

Step 3: Candidate profiling and assessment

- Evaluation of candidate's skills and the fit/match assessment with job requirements
- Evaluation of candidate's experience relevant to the job being applied
- Evaluation of candidate expectations

Step 4: Candidate selection

- Constitution of selection panel

- Various selection methods like trade tests, group discussions, technical screening through written test / interview etc. – the selection method will depend on the requirements of the job
- HR screening to evaluate fit in the organization
- Making the offer and completing related formalities

Step 5: Candidate induction - training and technical training

- Familiarization training to get the candidate acclimatized to the working environment in MSETCL
- Compulsory training of the candidate for minimum 15 to 30 days in the job that he/she is recruited for

Step 6: Candidate placement

- Candidates will be placed only after successful completion of the induction and technical training

Thus, a recruitment policy is in place to cater to the needs of the Company and this policy is linked with the different plans of the company including growth plan, outsourcing plan and career plan.

An analysis of the ageing profile of the employees of MSETCL reveals that almost 40% of the employees are in the age bracket of 50 years and above. It is necessary for a growing organization to have higher proportion of youth as its employees. Recognizing this fact, MSETCL is in the process of reviewing a policy for giving employees the option of Voluntary Retirement and recruiting new talent. The same shall be submitted to the Hon'ble Commission for its approval.

4.4.5. Reward Policy

MSETCL proposes to improve the performance of its field stations and efficiency of operations of its assets as well as, provide incentives to its employees to motivate them for better performance.

The availability and reliability of substations and transmission lines are required to be maintained above 98% as a performance norm decided by MERC, which will be reflected as reduced tripping/breakdown and shutdown of the sub-stations and lines equipment and to install best O&M practices. The reward scheme of MSETCL is rolled out as a first stage of creating a performance oriented work culture to achieve the expectations of MERC for MSETCL. The objectives of the reward scheme are:

- To introduce the concept of performance linked rewards and drive a performance oriented work culture.

- To recognize performance in
 - Operation and Maintenance of Sub-stations
 - Maintenance of EHV Transmission lines
 - Project Execution-Completion of Construction milestones
 - Testing of substation equipment

The reward scheme consists of four independent categories primarily meant for field level staff for the following field offices:

- Sub-stations and Sub-station maintenance sub-divisions (gang)
- Line Maintenance Sub-division /Hot line Maintenance Unit
- Construction divisions and sub-divisions there under
- Testing divisions and Testing units attached to it

All the rewards shall be based on the assessment report by two flier committee constituted as

- ✓ Zonal Committee
- ✓ Corporate Office Committees

Procedures and modalities for implementation of such reward scheme are as follows:

Division Level Performance Evaluation

- Executive Engineer send information on sub-station of each category from his division to the Chief Engineer of Zone along with all information and evaluation report by April 15, every year

Zonal Level Performance Evaluation

- Executive Engineer acting as Secretary at Zonal level will compile the nominations from all division
- Zonal Committee will pay visit to nominated division within 10 days to complete the assessment of the nominated division for different categories
- Zonal Committee based on their assessment nominate the following to the Chief Engineer (O&M) by May 31, every year:
 - *Two top performing 132 kV or below sub-stations*
 - *Two top performing 220 kV sub-stations*
 - *Two top performing Line maintenance unit in sub-stations/divisions*
 - *One top performing Hot line maintenance unit in the zone*

Corporate Office Level Performance Evaluation

- CE(O&M) acting as secretary to the Corporate Office Committee compile the nominations received from zonal CEs and place it before the Corporate Committee
- Corporate Committee will analyse the assessment of nominated sub-stations/sub-divisions prepared by the Zonal Committee and if required pay a visit to the respective sub-stations/sub-divisions to complete the evaluation by July 15, every year

The corporate committee shall finally select for 1st place and 2nd place reward across MSETCL in following categories and submit it to the Managing director for approval. The MD shall declare the 1st and 2nd place reward in respective categories on August 1, every year:

1. 500 kV HVDC
2. 400 kV HVAC
3. 220 kV sub-stations
4. 132 kV and below voltage sub-stations
5. Line maintenance sub-divisions
6. Hot line Maintenance sub-division
7. Construction Divisions
8. Testing Divisions

The rewards will be awarded to the winners on 15th August every year at the time of Independence day function.

4.4.6. Health & Safety Management

MSETCL is of the firm belief that the health and safety of the employees is of paramount importance. MSETCL is committed to identify and assess all types of occupational health and safety risk and takes proactive steps to reduce the significant risk in turn to reduce the occurrences of accidents.

4.4.7. Quality Management Policy

MSETCL has established, documented and implemented a Quality Management System at the Corporate office level, for ensuring that the services provided by it conforms to specified customer requirements and also for providing opportunities for continual improvement in the overall quality as per ISO 9001: 2008 International Standard requirements. It provides a framework for its policies and objectives to achieve continual improvement and customer satisfaction. It ensures that,

- The entire organization focuses on customer requirements and the organizational processes are in place to enable these requirements to be fulfilled.
- The criteria and methods needed to ensure that both the operation and monitoring of these processes are effective.
- The Quality Management System complies with the requirement of ISO- 9001:2008 and other appropriate standards.
- Resources and information necessary to support the operation and monitoring of the processes are available.
- Quality objectives are set and are consistent with our Quality Policy.
- Methods exist to monitor measure and analyze these processes.
- Actions are taken to achieve planned results and continual improvement of these processes

To implement the Quality Management System MSETCL Corporate Office has,

- Identified the processes needed for the quality management system and their application and defined standard procedures for all of these processes, which are called “Quality Procedures” specified in Quality Procedure Document

- Determined the sequence and interaction of these processes as depicted in Annexure II: “Process Interaction Chart” in the Quality Manual
- Determined the criteria and methods required to ensure the effective operation and control of these processes as defined in the “Quality Procedures and Quality Objectives”
- Ensured the availability of information necessary to support the operation and monitoring of these processes as per “Quality Procedures”
- Measured, monitored and analyzed these processes, and implemented actions necessary to achieve planned results and continual improvement of these processes as per quality system procedures “ Management Review Procedure” (MSETCL/CO/QP/06) and corrective and “preventive action procedure” (MSETCL/CO/QP/05)

To ensure the quality management practices in place, MSETCL has established and well communicated the Quality Policy as below:

MSETCL Corporate office pledges to provide Power [Electricity] reliably, with ever-improving value and satisfaction to our customers by:

- Providing prompt, Economical, transmission with lowest possible losses and with minimum interruption by applying innovative and technically superior ideas and services that meet or exceed customer expectations
- Continually improving our organizational performance and capabilities
- Performing our work to the highest level of quality workmanship; following applicable Statutory and regulatory requirements
- Ensuring that our subcontractors and suppliers meet and exceed our quality standards
- Establishing and reviewing key performance indicators, objectives & taking corrective & Preventive action as needed
- Upgrading its infrastructure facilities and monitoring Measuring and communication systems

Adhering to the fact that every policy should have objective to ensure the smooth adaptation of policy, MSETCL too has framed certain Quality objectives as below:

- ✓ To ensure grid safety and stability
- ✓ To reduce energy losses
- ✓ To reduce cost of operation, materials, inventory and project

- ✓ To maintain system availability above 98%
- ✓ To ensure safety of operations
- ✓ To enhance competency and productivity of employees
- ✓ To enhance customer satisfaction
- ✓ To increase actual total MVA installed as a % of total MVA targeted yearly
- ✓ To increase actual total ckt km erected as a % of total ckt-km targeted yearly
- ✓ To facilitate open access
- ✓ To ensure compliance with Standard of Performance in HR and Accounts

The Company has adopted Integrated Management System, Quality Management System and an Environment Management System.

4.5. Environmental Policy

Impact of MSETCL business on environment is minimal. However the company has adopted the Social and Environmental Policy

4.6. Corporate Social Responsibility

The Company's focus is to help enrich the quality of life of the community and preserve ecological balance and heritage through a strong environment conscience. As a constructive partner in the communities in which it operates, MSETCL will be taking concrete action to realize its social responsibility objectives, thereby building value for its stakeholders. The Company respects human rights, values its employees and will invests in innovative technologies and solutions for sustainable energy flow and economic growth.

4.6.1. CSR Policy

“Corporate Social Responsibility Policy of MAHATRANSCO is to integrate social and environmental concerns into business operation in interaction with stakeholders (employees, customers, suppliers, stakeholders, investors, local communities, government), on voluntary basis “

MAHATRANSCO will assess the impact of its activities on all stakeholders and the environment in all aspects of its operation. MAHATRANSCO will voluntarily take steps to improve the quality of life for employees and their families as well as for the local community and society. MAHATRANSCO will

endeavor to make apposite contribution to communities by supporting a wide range of socio-economic and health initiatives.

4.6.2. CSR Vision

“To actively contribute to the social and economic development of the communities within which we operate. In doing so to build a better, sustainable way of life for society and raise the human development index”

The basic trust areas for MSETCL in this regard are environment protection community development and energy conservation. MSETCL believes in up-liftment and empowerment of local communities in and around its project sites, especially concerning their human development index.

4.6.3. CSR Objectives

The detailed objective of CSR would include:

- Measures for community development in the neighborhood areas of Sub-stations with emphasis on vulnerable communities viz., women, children, disabled persons and aged persons
- Attempts towards socio-cultural integration of socially isolated with the mainstream society, so that the former may be helped towards restoring their human dignity
- Effective delivery of community development programmes through appropriate partnership with the concerned stakeholders, through consultations and participation.
- To persistently work towards key factors that promotes community development

MSETCL continue to engage with the environment and social aspect of its CSR activity with an integrated multi –stakeholder approach covering the following:

The environmental concerns include

- Environment Management plans
- Energy Efficiency
- A forestation & beautification of area near sub-station
- Energy conservation

The social concerns include

- Safety
- Health
- Natural Calamity

Direct and indirect employment for local labour (work like painting, gardening, cleaning etc. in Sub-stations) through outsourcing, with preference to co-operatives societies

4.6.4. MSETCL Approach towards Community Development

MSETCL will have a concerted social responsibility program to partner communities in health, family welfare, and environment protection.

With safety, health, environment protection high on its corporate agenda, MSETCL is committed conduct business with attention to protection of the environment, sustainable development, safe work places and enrichment of the quality of the life of its employees, customer and community.

MSETCL, as responsible corporate entity, has been addressing the issue of community development in the neighborhood of its sub-stations.

4.6.5. CSR Initiatives

The community development programs will be identified and formulated based on the specific needs and requirement of particular site. The CSR department should take decisions based on the immediate and long term social and environmental consequences of their activities.

Programmes which can be considered while preparing the annual plans & budgets, for immediate implementation are as follows:

4.6.5.1. Safety

In order to enhance the safety awareness, knowledge and operating practices within the organization and its emerging management preparedness, the following activities will be undertaken:

- i. Safety films on work at height, Use of respiratory equipment and use and maintenance of fire fighting Equipments and appliances be developed.
- ii. Training programmes on safety be conducted.

4.6.5.2. Environment

Data on effluent quality, water Conservation, emissions, Energy Conservation and Green Initiatives will be maintained and efforts made to ensure environmental safety.

4.6.5.3. Health

Health has been identified as primary objective in community development process. Likely healthcare initiatives may include weekly clinics, counseling session's health camps etc. that may be held on regular basis to promote general health and well being in the community.

5. Market Assessment

5.1. Statutory and Regulatory Framework

5.1.1. National Level Framework

Provisions in the Electricity Act 2003

Acts and regulations framed at both the Centre and State levels govern the Electricity Sector as it is listed as a concurrent subject in the Constitution. The Electricity Act 2003 is the guiding Act for all electricity related matter in the country.

Under EA-2003, Section 2(73) defines a ‘Transmission licensee’ as a licensee authorised to establish and operate transmission lines. Further Section 40 of the EA 2003 defines the duties of the transmission licensees as below:

“It shall be the duty of a transmission licensee -

(a) to build, maintain and operate an efficient, co-ordinated and economical inter-State transmission system or intra-State transmission system, as the case may be;

(b) to comply with the directions of the Regional Load Despatch Centre and the State Load Despatch Centre as the case may be;

(c) to provide non-discriminatory open access to its transmission system for use by-

(i) any licensee or generating company on payment of the transmission charges; or

(ii) any consumer as and when such open access is provided by the State Commission under sub-section (2) of section 42, on payment of the transmission charges and a surcharge thereon, as may be specified by the State Commission:

Provided that such surcharge shall be utilised for the purpose of meeting the requirement of current level cross-subsidy.”

Provisions of National Electricity Policy and National Tariff Policy

National Electricity Policy (NEP)

The National Electricity Policy (NEP) notified by Gol, mandates that every state electricity regulatory commission should determine the Transmission Charges by June 2005. NEP, further advocates

nationwide uniformity and consistency in Transmission Pricing in order to facilitate cost effective transmission of power across the country.

Tariff Policy

The Tariff Policy notified by Ministry of Power (MoP), GoI on 6th January 2006, deals with several aspects pertaining to Transmission as under –

- Transmission Planning
- Transmission Pricing
- Infrastructure
- Approach for Transmission Loss
- Other issues in transmission

The Tariff Policy, as far as transmission is concerned, seeks to achieve the following objectives:

- a. Ensure optimal development of the transmission network to promote efficient utilization of generation and transmission assets in the country;
- b. Attract required investments in the transmission sector and provide adequate returns.

5.1.2. State Level Framework

At the State level, transmission of electricity is a regulated business and the State Regulatory Commission is the quasi-judicial body responsible for all Regulatory matters. In Maharashtra, the Maharashtra Electricity Regulatory Commission (MERC) governs the same. The Hon'ble Commission has framed various regulations and is in process to undertake further refinement, improvement and introduction of new Regulations to meet the current market requirements and eventually make the Maharashtra Power Sector function efficiently.

MSETCL has been vested with the function of electricity transmission by the State Government of Maharashtra. The Business of the Company comes under the purview of the legal framework as specified in the Act and includes:

- Transmission of electricity in the State
- Providing evacuation arrangement in synchronisation with the capacity addition
- Prepare a Transmission Plan

- Maintain Grid Stability and Security
- Manage Load dispatch operation in the state

Further, in the state, Tata Power Company and Reliance Infrastructure Limited have transmission entities that cater to transmission requirements of their distribution businesses. The Hon'ble Commission has granted Intra-State Transmission licensees for new entities, vis.:

- (i) Jaigad Power Transco Limited (Transmission licence 1 of 2009)
- (ii) Adani Power Maharashtra limited (Transmission licence no. 2 of 2009)
- (iii) Maharashtra Eastern Grid Power Transmission Company Limited (Transmission licence no 1 of 2010)
- (iv) Sinnar Power Transmission Company limited (Transmission licence no 2 of 2010)
- (v) Amravati Power Transmission Company limited (Transmission licence no 3 of 2010)

Similarly, at the inter-State level the Hon'ble CERC has issued Transmission licenses for operating dedicated lines with the objectives of evacuation of power from generation source or for system strengthening purpose.

5.2. Industry Scenario

5.2.1. Indian Scenario

Economic activity is the primary driver of electricity demand, although the relationship is to some extent two-way. Economic growth stimulates demand for electricity, while the increased supply of electricity contributes to economic growth and development of the region. Empirical analysis confirms that demand for electricity is closely linked to changes in GDP. Over the past 30 years, while the global economy grew by 3.3% per annum on average, electricity demand grew at 3.6%. The relationship is remarkably stable and broadly linear.

For the past two decades, India has had to face increasing supply deficit in power both for meeting its normal energy requirements as well as peak load demand. The problem is acute during peak hours and seasons, that necessitates planned load shedding by many utilities to maintain the grid in a healthy state.

Table 12: Electricity Demand and Supply¹ in India

| FY | Energy | | | | Peak Energy | | | |
|------|---------|--------------|----------|------|-------------|---------|----------|------|
| | (MU) | | | | (MU) | | | |
| | Demand | Availability | Shortage | % | Demand | Met | Shortage | % |
| 1996 | 389,721 | 354,045 | 35,676 | 9.2 | 60,981 | 49,836 | 11,145 | 18.3 |
| 1997 | 413,490 | 365,900 | 47,590 | 11.5 | 63,853 | 52,376 | 11,477 | 18 |
| 1998 | 424,505 | 390,330 | 34,175 | 8.1 | 65,435 | 58,042 | 7,393 | 11.3 |
| 1999 | 446,584 | 420,235 | 26,349 | 5.9 | 67,905 | 58,445 | 9,460 | 13.9 |
| 2000 | 480,430 | 450,594 | 29,836 | 6.2 | 72,669 | 63,691 | 8,978 | 12.4 |
| 2001 | 507,216 | 467,400 | 39,816 | 7.8 | 78,037 | 67,880 | 10,157 | 13 |
| 2002 | 522,537 | 483,350 | 39,187 | 7.5 | 81,555 | 71,262 | 10,293 | 12.6 |
| 2003 | 545,983 | 497,890 | 48,093 | 8.8 | 81,492 | 71,547 | 9,945 | 12.2 |
| 2004 | 559,264 | 519,398 | 39,866 | 7.1 | 84,574 | 75,066 | 9,508 | 11.2 |
| 2005 | 591,373 | 548,115 | 43,258 | 7.3 | 87,906 | 77,652 | 10,254 | 11.7 |
| 2006 | 631,024 | 578,511 | 52,513 | 8.3 | 93,214 | 81,792 | 11,422 | 12.3 |
| 2007 | 693,057 | 624,716 | 68,341 | 9.9 | 100,715 | 86,818 | 13,897 | 13.8 |
| 2008 | 737,052 | 664,660 | 72,392 | 9.8 | 108,866 | 90,793 | 18,073 | 16.6 |
| 2009 | 777,039 | 691,038 | 86,001 | 11.1 | 109,809 | 96,785 | 13,024 | 11.9 |
| 2010 | 830,594 | 746,644 | 83,950 | 10.1 | 119,166 | 104,009 | 15,157 | 12.7 |

The state of Maharashtra has faced acute crisis for meeting the energy shortage and peak demand over the past few years. A similar scenario also persisted in country in FY 2009-10.

Table 13: Regional Demand – Supply Gap in India²

| Regions | Energy Requirement (MU) | % deficit | Peak Demand (MW) | % deficit |
|------------------|-------------------------|------------|------------------|------------|
| North | 254231 | 12% | 37159 | 15% |
| West | 258528 | 14% | 39609 | 18% |
| South | 220576 | 6% | 32178 | 10% |
| East | 87927 | 4% | 13220 | 6% |
| N. East | 9332 | 11% | 1760 | 18% |
| All India | 830594 | 10% | 123926 | 13% |

¹ Source: CEA and IMAcS Analysis

² As on 31.03.2010, Source: CEA

As can be seen from the above, the Western region has an energy deficit of 14%, and a peak deficit of 18% which is the highest in comparison of all regions in the country.

5.2.2. Maharashtra Scenario

Table 14: Demand - Supply Gap in Maharashtra

| Year | Peak Demand (in MW) | Availability (in MW) | Peak Shortfall(-) /Surplus(+) | % Shortfall (-) /Surplus (+) |
|---------|---------------------|----------------------|-------------------------------|------------------------------|
| 2001-02 | 11895 | 10879 | -1016 | -8.54% |
| 2002-03 | 13418 | 10997 | -2421 | -18.04% |
| 2003-04 | 13692 | 11650 | -2042 | -14.91% |
| 2004-05 | 14822 | 11777 | -3045 | -20.54% |
| 2005-06 | 16049 | 11889 | -4160 | -25.92% |
| 2006-07 | 17161 | 13027 | -4134 | -24.09% |
| 2007-08 | 18390 | 12522 | -5868 | -31.91% |
| 2008-09 | 18072 | 13189 | -4883 | -27.02% |
| 2009-10 | 19120 | 14952 | -4168 | -21.80% |
| 2010-11 | 19696 | 15900 | -3796 | -19.27% |

(source: as on 31.03.2010, source: CEA and STU)

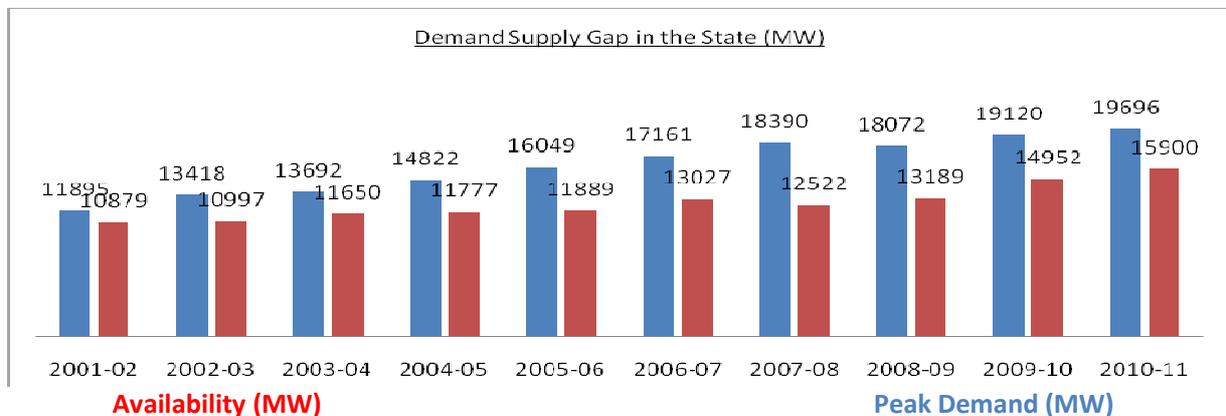


Figure 8: Demand-Supply scenario in Maharashtra

In wake of burgeoning demand-supply gap, the onus to provide secure and safe electricity transactions for the market participants, MSETCL has to be vigilant and active on the operational performance and capital investment in its network.

6. SWOT Analysis

Like any other business, it is very important for MSETCL to evaluate the environment – both internal and external while charting out its growth path. The SWOT analysis comes to the aid while evaluating the same. The aim of any SWOT analysis would be to identify the key internal and external factors that are important to achieving the objective of the company. These come from within the company's unique value chain. The information being used for the SWOT analysis is grouped into two main categories:

- **Internal factors** – The strengths and weaknesses internal to the organization;
- **External factors** – The opportunities and threats presented by the external environment to the organization;

This section provides the analysis of the strength, weakness, opportunities and threats as perceived by MSETCL, which is summarized in the following diagram.

| | Beneficial <i>In achieving the objective</i> | Adverse <i>In achieving the objective</i> |
|---|--|---|
| Internal factors Attributes of the Organisation | STRENGTHS <ul style="list-style-type: none"> ✓ Experienced Manpower ✓ Low Market Risk ✓ Widespread network across the state along with 'Right of Way' | WEAKNESS <ul style="list-style-type: none"> ✓ Old Equipment ✓ Lack of robust H.R. systems to meet the future manpower needs in growing competitive environment ✓ Lack of Integrated Management & Control System |
| External factors Attributes of the Environment | OPPORTUNITIES <ul style="list-style-type: none"> ✓ Joint Ventures and strategic tie-ups ✓ Consulting services to new licensees ✓ Opportunities to participate in O&M of EHV and HVDC lines in different states ✓ Utilise 'Right of Way' as a separate Business Unit / Profit Centre | THREATS <ul style="list-style-type: none"> ✓ High Sensitivity to Operational Variations ✓ Delays in project execution ✓ Constraints in Equipment Supply ✓ Preparedness to comply with SoP ✓ Readiness to meet challenges of Competitive bidding |

Figure 9: SWOT Analysis

6.1. Strength

6.1.1. Experienced Manpower

Trained, skilled and experienced manpower is available at every level, so that the pool of skilled manpower can be used flexibly in the event of a crisis. This expertise has been attained by its personnel who have more than 30 years of operating experience of a transmission system.

The technical knowledge of the available man power is enabling the company to run the old machines which have almost reached the end of their useful life. This experience will also be valuable for future ventures which may include provision of consulting services to transmission licensees operating in the state, for undertaking Project Management and Control (PMC), O&M consulting, etc.

6.1.2. Low Market Risk

MSETCL being the 'STU' and the largest Intra-state transmission licensee in the state, would be secured of its revenues under the Intra-state Transmission pricing framework existing in the State.

6.1.3. Wide spread network across the state

MSETCL has a wide spread network along with the associated 'Right of Way' across the state, It can utilise the network along with the associated 'Right of Way' as a separate Business head or a Profit centre.

6.2. Weaknesses

6.2.1. Old Equipment

Most of the equipments currently in service are very old and use outdated design and technologies. Over a period of time operation, maintenance and services of these equipments would be uneconomical and pose difficulties in availability of systems. With continuation of such vintage equipments, MSETCL would be exposed to risk of under-recovery of costs in a regulated regime due to non-performance in meeting the operational norms fixed by the Hon'ble Commission.

6.2.2. Lack of robust Human Resource practices to meet the manpower needs in growing competitive environment

Inadequate Planning of Manpower Requirement

Recruitment, in the past has not been done in a timely, systematic and planned manner, leading to manpower shortages during periods when a lot of experienced staff retires and new recruits do not get ample time to train and seek guidance from the experienced staff of the organisation. With the network of MSEDCL projected to double over the next five year period and with induction of new technology in the system, Timely recruitment by have an adequate manpower planning system would be vital to face the competitive environment in the future years.

Employee Attrition

MSETCL is also being subjected to attrition in view of the opportunities available in power sector with the opening of the transmission sector to private developers. MSETCL should make all efforts to retain its experienced staff and explore opportunities to address remuneration and/or compensation to meet employees expectations. By having such systems in place it would be able to attract talent and retain employees tin the company.

Scalability Constraints

The large scale expansion in transmission network proposed by MSETCL will need ramp-up of manpower., there would be need for well established systems in place, something which is lacking at present but the same is being looked into seriously and appropriate steps have been initiated. MSETCL is in the process of recruiting persons as well as training of existing staff.

6.2.3. Lack of Integrated Management and Control system

There is a need for an integrated system to be in place for ensuring organization-wide accounting and control measures to be implemented properly. Reporting and flow of information also need to be streamlined. These would also be critical for the company during implementation of systems like International Financing Reporting Standards (IFRS), which have to be adopted by all companies in the near future. Steps have been initiated in this regards with ERP implementation in progress, however, it would be critical to ensure that the migration to ERP system is implemented smoothly and successfully.

6.3. Opportunities

6.3.1. Joint Ventures and strategic partnerships

MSETCL could take advantage of the shifting market characteristics by leveraging its substantial operational experience in forging new JVs and strategic business associations with private developers which have the financial resources but lack vital experience of operation and maintenance of transmission network.

6.3.2. Opportunities to participate in O&M of EHV and HVDC lines in other states

MSETCL could take advantage of the vital experience gained in handling diverse equipment and opt for providing consulting/advisory services to other state utilities intending to operate EHV systems and HVDC facilities.

6.3.3. Right of Way

MSETCL may utilise the 'Right of Way' as a separate business unit / profit centre.

6.4. Threats

6.4.1. Regulatory Risk

Transmission of electricity being a licensed activity under EA-2003, MSETCL has to operate in a Regulated environment. For the past few years, the Hon'ble Commission while adopting an approach to

balance the interest of consumers and utilities has not approved the actual expense incurred by MSETCL. Such disallowance by the Hon'ble Commission leads adversely effects the cash flow of MSETCL.

6.4.2. High Sensitivity to Operational Variations

The target availability for transmission system has been set at 98% for HVAC and 95% for HVDC system. Any reduction in target availability would be lead to pro-rata reduction in annual transmission charges. With MSETCL having a large portion of vintage network in operation, in future years, the maintenance of availability at the normative levels would be a major challenge to it.

6.4.3. Delays in project execution

The delays in various projects executed by MSETCL could lead to overloading of existing networks, increase in losses and thus impact the transmission capacity of the system.

6.4.4. Constraints in Equipment Supply

MSETCL is in the process of huge network addition which coupled with the fact that the expansion would happen in higher voltages and sourcing of advanced technologies from overseas equipment suppliers, such sourcing of equipments/technology could lead to delay in timely completion of projects. The threat needs to be mitigated by MSETCL by adopting the right technology and by undertaking timely execution of projects eventually leading to timely up gradation of the transmission network

6.4.5. Preparedness to comply with Standard of Performance (SoP)

In the future years, the Transmission licensees would also be required to comply with provision of 'Standard of Performance' in manner similar to the SoP norms applicable for Distribution licensees. MSETCL needs to adequate systems and processes in place for compliance with the proposed SoP norms applicable for Transmission licensees.

6.4.6. Competitive bidding

The Tariff based competitive bidding would be applicable for future transmission projects in the state beyond Jan-2011 based on the timelines proposed in NTP-2006. MSETCL needs to initiates the following steps to operate in a competitive environment:

- Creation of a Project team comprising of personnel with Engineering and Commercial background to bid for proposed projects
- Efficiency in entering into EPC contracts at an economical cost
- Emphasis on engineering and optimal sizing of plant and equipment
- Extensive monitoring of projects during the implementation stage

The above measures would mitigate the risks of MSETCL for migration into the competitive bidding environment. MSETCL with its vast experience in Transmission business is in a position to develop adequate systems and procedures in place to operate in a competitive environment.

7. Operational Plan

7.1. Capital Investment Plan (CIP)

7.1.1. Purpose of CIP

The purpose of the CIP is to provide MSETCL with a summary of activities for budgeted for the horizon period FY 11-12 to 15-16. The CIP provides a roadmap for planning and implementation of proposed investments.

7.1.2. Relationship of the CIP with STU Plan

The CIP for the FY 2011-12 to FY 2015-16 funds capital assets necessary to implement outcomes in plans that are more detailed. The CIP provides details of the capex scheme in three categories of Evacuation, System Strengthening and LE schemes, however MSETCL in compliance with the Guidelines issued for approval of the Capex schemes shall also be submitting the Detailed Project Report for each such scheme for in-principal approval from the Hon'ble Commission. MSETCL informs the Hon'ble Commission that the proposed Capex schemes also include the 5-year STU transmission plan from FY 12-13 to FY 16-17.

7.1.3. Proposed Capital Expenditure

MSETCL for the purpose of executing the physical plan has classified the proposed Capex into three categories as given below:

- Evacuation Schemes
- System Strengthening Schemes
 - Sub-Stations
 - Link Lines
 - Transformer Additions
 - Transformer Replacements
- Life Extension Schemes
- Ancillary Schemes including schemes for increasing redundancy

For executing the above-mentioned scheme, MSETCL board has approved the budget allocation as under:

Table 15: Budget Allocation for Capital Expenditure Schemes

Budget Head-wise

Rs Cr

| Particulars | No. of Schemes | Capital Exp. for FY 2011-12 | Capital Exp. for FY 2012-13 | Capital Exp. for FY 2013-14 | Capital Exp. for FY 2014-15 | Capital Exp. for FY 2015-16 |
|-------------------------|----------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| Evacuation | 20 | 521.22 | 470.25 | 682.66 | 842.90 | 742.39 |
| Transformer Addition | 100 | 302.58 | 265.63 | 92.38 | 44.40 | 0.00 |
| Transformer Replacement | 55 | 16.05 | 161.82 | 23.42 | 2.00 | 0.00 |
| Substation | 140 | 1,201.97 | 3,219.72 | 3,134.06 | 3,292.79 | 1,678.58 |
| Link Lines | 119 | 217.63 | 566.54 | 422.62 | 245.44 | 869.48 |
| Life Extension | 77 | 82.13 | 25.52 | 200.00 | 200.00 | 200.00 |
| Ancillary | 85 | 70.01 | 185.52 | 116.76 | 57.00 | 42.00 |
| TOTAL | 596 | 2,411.59 | 4,895.00 | 4,671.90 | 4,684.53 | 3,532.45 |

*The values for FY 2011-12 are based on the actuals (provisional) for MSETCL

Approval-status wise

Rs Cr

| Sr. No. | Particulars | No. of Schemes | Capital Exp. for FY 2011-12 | Capital Exp. for FY 2012-13 | Capital Exp. for FY 2013-14 | Capital Exp. for FY 2014-15 | Capital Exp. for FY 2015-16 |
|---------|---|----------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| 1 | MERC Approved Schemes (DPR Schemes) | 110 | 1,888.08 | 2,971.75 | 1,948.27 | 1,244.56 | 844.48 |
| 2 | MERC Approval Awaited Schemes | 153 | 473.36 | 1,400.76 | 1,524.01 | 1,768.94 | 551.71 |
| 3 | MERC Proposed DPR Schemes | 91 | 1.64 | 329.01 | 1,138.33 | 1,631.07 | 1,852.98 |
| 4 | MSEB Period DPR Schemes | 14 | 6.46 | 2.66 | 0.00 | 0.00 | 0.00 |
| 5 | Schemes sanctioned costing < RS. 10Cr (Non DPR Schemes) | 228 | 42.05 | 190.82 | 61.29 | 39.96 | 283.28 |
| | TOTAL | 596 | 2,411.59 | 4,895.00 | 4,671.90 | 4,684.53 | 3,532.45 |

*The values for FY 2011-12 are based on the actuals (provisional) for MSETCL

(Detailed information of the proposed Capex Scheme is provided at Format 4 (detailed information) of the data format.)

The phasing of the capital expenditure in different categories can be shown as below:

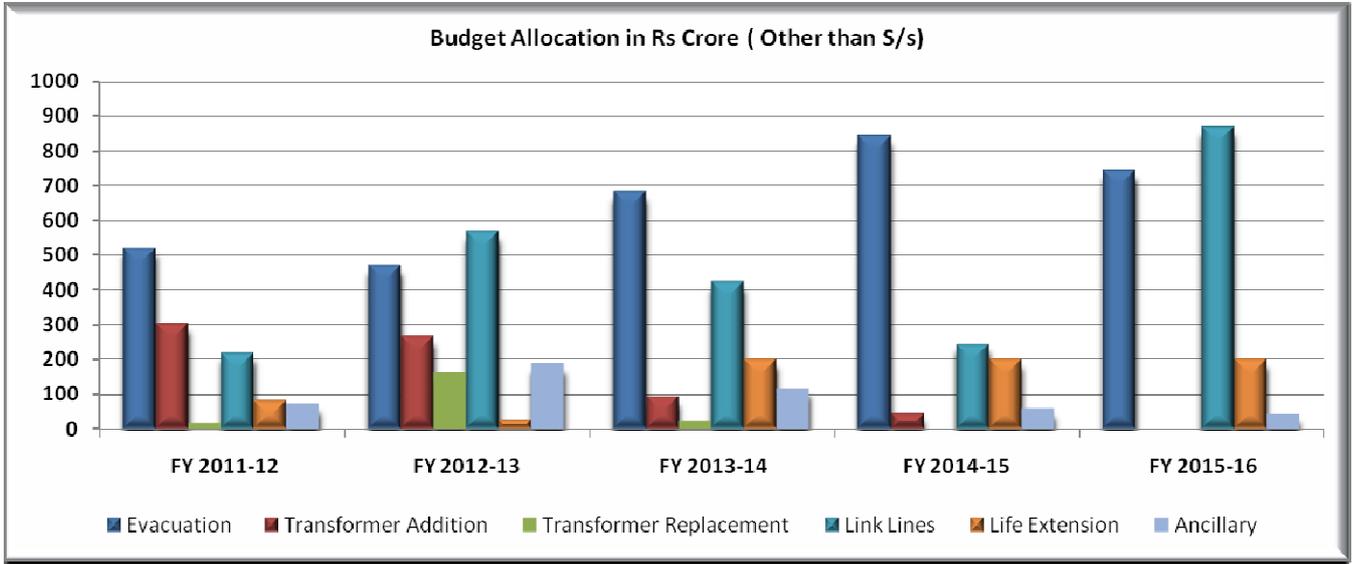


Figure 10: Budget Allocation for Evacuation, TA, TR, LE and Ancillary Schemes

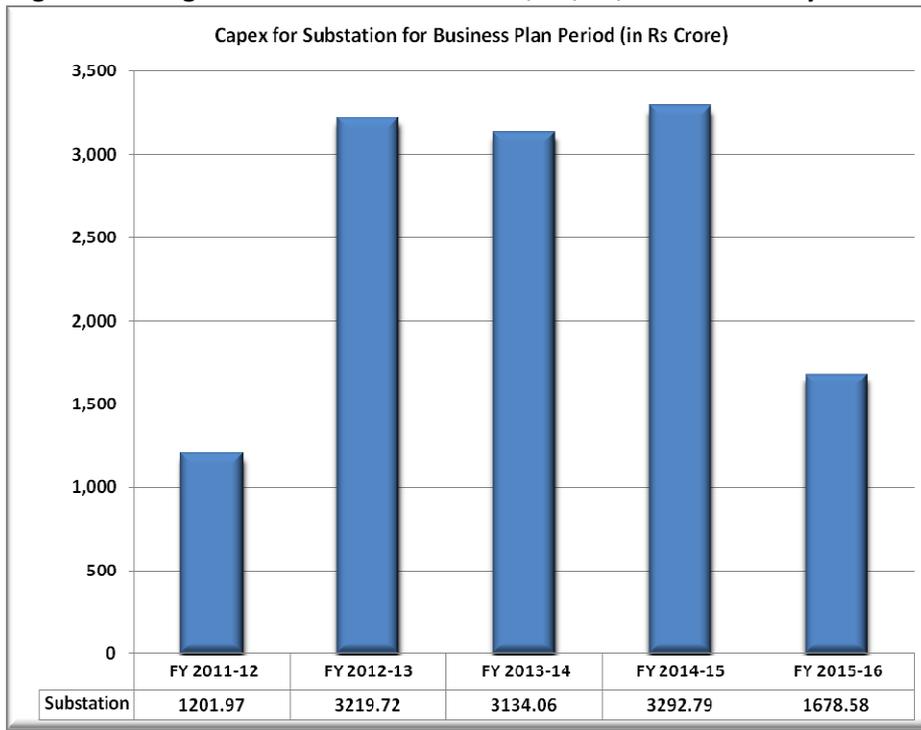


Figure 11: Budget Allocation for Substation Schemes

The capex would lead to addition of bays and transmission lines across various voltage levels as under:

Table 16: Physical Asset Plan of MSETCL

| Particulars | As on April 1, 2011 | Year-wise addition of No. of Bays during control period | | | | | | No of the Bays At the end of the control period |
|--------------|---------------------|---|------------|------------|------------|------------|-------------|---|
| | | 2011-12 | 2012-13 | 2013-14 | 2014-15 | 2015-16 | Total | |
| 765KV | | 0 | 0 | 0 | 12 | 10 | 22 | 22 |
| 500KV | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 400KV | 237 | 4 | 38 | 19 | 31 | 102 | 194 | 431 |
| 220KV | 1435 | 128 | 131 | 194 | 138 | 281 | 872 | 2307 |
| 132KV | 1802 | 107 | 144 | 225 | 223 | 259 | 958 | 2760 |
| 110KV | 177 | 43 | 0 | 0 | 0 | 0 | 43 | 220 |
| 100KV | 303 | 3 | 16 | 0 | 14 | 8 | 41 | 344 |
| 66KV | 206 | 0 | 0 | 0 | 0 | 0 | 0 | 206 |
| 33KV | 2740 | 255 | 170 | 234 | 198 | 236 | 1093 | 3833 |
| 22KV | 1433 | 77 | 43 | 26 | 118 | 42 | 306 | 1739 |
| 11KV | 1628 | 24 | 0 | 0 | 0 | 0 | 24 | 1652 |
| Total | 9965 | 641 | 542 | 698 | 734 | 938 | 3553 | 13518 |

*The values for FY 2011-12 are based on the actuals (provisional) for MSETCL.

| Particulars | As on April 1, 2011 | Year-wise addition of line length in Circuit km during Control Period | | | | | | Line length At the end of the control period |
|--------------|---------------------|---|-------------|-------------|-------------|-------------|--------------|--|
| | | 2011-12 | 2012-13 | 2013-14 | 2014-15 | 2015-16 | Total | |
| 765KV | 0 | 0 | 0 | 0 | 100 | 0 | 100 | 100 |
| 500KV | 1504 | 0 | 0 | 0 | 0 | 0 | 0 | 1504 |
| 400KV | 6816 | 370 | 264 | 310 | 1160 | 545 | 2649 | 9465 |
| 220KV | 12568 | 651 | 1041 | 1471 | 1438 | 2024 | 6625 | 19193 |
| 132KV | 11524 | 651 | 811 | 1418 | 1861 | 1660 | 6401 | 17925 |
| 110KV | 1700 | 24 | 0 | 0 | 8 | 20 | 52 | 1752 |
| 100KV | 686 | 0 | 27 | 0 | 5 | 66 | 98 | 784 |
| 66KV | 3270 | 0 | 0 | 0 | 0 | 0 | 0 | 3270 |
| 33KV | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22KV | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11KV | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 38068 | 1696 | 2143 | 3199 | 4572 | 4315 | 15925 | 53993 |

*The values for FY 2011-12 are based on the actuals (provisional) for MSETCL.

MSETCL submits that the above network addition plan is in consonance with the Demand forecast prepared by STU for the State.

Table 17: Demand Forecast for the Control Period

| Sr No | Year | Peak Demand (MW) | | | |
|-------|-----------|------------------|--------|--|--------|
| | | State | MSEDCL | Triggering loads of EHV consumers/DMIC | Mumbai |
| 1 | 2007 - 08 | 18390 | 15946 | - | 2444 |
| 2 | 2008 - 09 | 18072 | 15630 | - | 2442 |
| 3 | 2009 - 10 | 19120 | 16582 | - | 2538 |
| 4 | 2010-11 | 19559 | 16139 | - | 3420 |
| 5 | 2011-12 | 22318 | 18672 | - | 3646 |
| 6 | 2012-13 | 23826 | 19886 | - | 3940 |
| 7 | 2013 - 14 | 24780 | 20519 | - | 4261 |
| 8 | 2014-15 | 25789 | 21179 | - | 4610 |
| 9 | 2015-16 | 30729 | 21869 | 3872 | 4988 |

Note:

1. The above forecast has been prepared by STU
2. The numbers indicate the expected demand for the period FY 2011-12 to FY 2015-16
3. State demand as per 17th EPS for the year 2016-17 is 28348 MW
4. Triggering load of EHV consumers/ DMIC for the year 2015-16 obtained from MIDC

As seen from above, the Demand for the State is expected to grow by 36%, without considering the triggering load of 3872MW(in FY 2015-16), from FY 2010-11 to FY 2015-16. With inclusion of the triggering load the increase in demand for the State stands at 57% for the same period.

In line with above, the physical asset addition plan, proposed by MSETCL is expected to yield an increase of 43% in Transformation capacity of its network, for the control period. The Transformation Capacity is expected to increase to 118325 MW in FY 2015-16 from 82620MW at the end of FY 2010-11. Accordingly, the number of bays, line length and substations are proposed to increase by 36%, 42% and 26% respectively for the control period FY 2011-12 to FY 2015-16.

The proposed capacity addition in the Transmission network in terms of number of substations and the envisaged Transformation capacity (in MVA) over the period FY 11-12 to 15-16 is as given below:

Table 18: Number of Substations and Transformation Capacity

| Particulars | As on April 1, 2011 | Year-wise Addition of number of substations during Control Period | | | | | | No of the substations at the end of the control period |
|--------------|---------------------|---|-----------|-----------|-----------|-----------|------------|--|
| | | 2011-12 | 2012-13 | 2013-14 | 2014-15 | 2015-16 | Total | |
| 765KV | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 2 |
| 500KV | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 400KV | 21 | 1 | 3 | 2 | 2 | 4 | 12 | 33 |
| 220KV | 158 | 13 | 11 | 15 | 12 | 11 | 62 | 220 |
| 132KV | 252 | 9 | 10 | 9 | 16 | 17 | 61 | 313 |
| 110KV | 33 | 1 | 0 | 1 | 0 | 0 | 2 | 35 |
| 100KV | 36 | 0 | 0 | 0 | 1 | 1 | 2 | 38 |
| 66KV | 34 | 0 | 0 | 0 | 0 | 0 | 0 | 34 |
| 33KV | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22KV | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11KV | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 536 | 24 | 24 | 27 | 32 | 34 | 141 | 677 |

*The values for FY 2011-12 are based on the actuals (provisional) for MSETCL.

| Particulars | As on April 1, 2011 | Addition in Transformer Capacity in MVA during Control Period | | | | | | Transformation Capacity at the end of the control period |
|--------------|---------------------|---|-------------|-------------|-------------|-------------|--------------|--|
| | | 2011-12 | 2012-13 | 2013-14 | 2014-15 | 2015-16 | Total | |
| 765KV | 0 | 0 | 0 | 0 | 3000 | 0 | 3000 | 3000 |
| 500KV | 3582 | 0 | 0 | 0 | 0 | 0 | 0 | 3582 |
| 400KV | 15180 | 3500 | 4000 | 2000 | 2000 | 3730 | 15230 | 30410 |
| 220KV | 35683 | 4000 | 3325 | 3900 | 2700 | 3000 | 16925 | 52608 |
| 132KV | 21911.5 | 1188 | 475 | 450 | 1100 | 1000 | 4213 | 26125 |
| 110KV | 2549 | 125 | 0 | 0 | 100 | 0 | 225 | 2774 |
| 100KV | 2575 | 12 | 0 | 0 | 0 | 50 | 62 | 2637 |
| 66KV | 1139 | 0 | 0 | 0 | 0 | 0 | 0 | 1139 |
| 33KV | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22KV | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11KV | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 82620 | 8825 | 7800 | 6350 | 8900 | 7780 | 39655 | 122275 |

*The values for FY 2011-12 are based on the actuals (provisional) for MSETCL.

Based on the discussion above the proposed capitalization, during the plan period is provided in the following tables:

Table 19: Proposed Capitalisation during the Control Period

Budget Head-wise

Rs Cr

| Particulars | No. of Schemes | Project Cost | Capitalisation for FY11-12 | Capitalisation for FY12-13 | Capitalisation for FY13-14 | Capitalisation for FY14-15 | Capitalisation for FY15-16 |
|-------------------------|----------------|----------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| Evacuation | 20 | 5794.19 | 810.53 | 663.82 | 567.10 | 728.69 | 758.70 |
| Transformer Addition | 100 | 3097.40 | 376.18 | 153.74 | 206.14 | 170.94 | 54.71 |
| Transformer Replacement | 55 | 1506.68 | 15.36 | 148.07 | 159.96 | 113.29 | 10.17 |
| Substation | 140 | 12596.19 | 705.82 | 2421.44 | 2026.95 | 2845.61 | 2906.46 |
| Link Lines | 119 | 10729.66 | 160.00 | 350.34 | 607.74 | 566.90 | 441.12 |
| Life Extension | 77 | 1291.49 | 88.18 | 32.62 | 72.80 | 141.87 | 200.00 |
| Ancillary | 85 | 2117.49 | 39.89 | 104.59 | 242.02 | 203.87 | 77.90 |
| TOTAL | 596 | 37133.1 | 2195.96 | 3874.62 | 3882.71 | 4771.17 | 4449.06 |

*The values for FY 2011-12 are based on the actuals (provisional) for MSETCL.

Approval-status wise

Rs Cr

| Particulars | No. of Schemes | Project Cost | Capitalisation for FY11-12 | Capitalisation for FY12-13 | Capitalisation for FY13-14 | Capitalisation for FY14-15 | Capitalisation for FY15-16 |
|-------------------------------------|----------------|--------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| MERC Approved Schemes (DPR Schemes) | 110 | 19,550.40 | 1,922.01 | 2,665.14 | 2,352.07 | 2,336.45 | 1,446.03 |
| MERC Approval Awaited Schemes | 153 | 9,764.96 | 212.80 | 1,014.43 | 927.10 | 1,378.26 | 1,427.52 |

| Particulars | No. of Schemes | Project Cost | Capitalisation for FY11-12 | Capitalisation for FY12-13 | Capitalisation for FY13-14 | Capitalisation for FY14-15 | Capitalisation for FY15-16 |
|---|----------------|------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| MERC Proposed DPR Schemes | 91 | 5,942.09 | 1.59 | 71.28 | 382.44 | 884.73 | 1,478.36 |
| MSEB Period DPR Schemes | 14 | 699.56 | 10.07 | 7.60 | 6.48 | 4.32 | 0.00 |
| Schemes sanctioned costing < RS. 10Cr (Non DPR Schemes) | 228 | 1,176.09 | 49.49 | 116.17 | 214.62 | 167.41 | 97.15 |
| TOTAL | 596 | 37,133.10 | 2,195.96 | 3,874.62 | 3,882.71 | 4,771.17 | 4,449.06 |

*The values for FY 2011-12 are based on the actuals (provisional) for MSETCL.

The proposed plan for *Capital Expenditure* for MSETCL has been provided by the State Transmission Utility (STU). The STU has prepared the plan for the entire State, clearly identifying the schemes to be undertaken by each of the State Transmission licensees, including MSETCL. Any modification in MSETCL's Capex plan would hamper the Transmission System planning at State level, as the Transmission network is required to be developed in a synchronized way.

As directed by the Commission vide its letter dated 19th July 2012 to present the Business Plan to the Standing Committee, the Capital expenditure plan was presented in the 9th meeting of the Standing Committee chaired by Director (Operations), MSETCL and attended by members from STU, MSETCL, RInfra-T, TPC-T, and Power Grid. The meeting was held on August 3, 2012. The Minutes of Meeting has been attached as Annexure -2 herewith.

Hence, MSETCL would like to request the Hon'ble Commission to approve its Capex plan without any alterations.

7.2. Technical Improvement Plan(TIP)

As part of the Capital Investment plan, it is proposed to bring technical innovation in the capital expenditure proposed for the period FY 2011-12 to FY 2015-16. The following Technical Innovation are proposed in the MSETCL Capex program:

- A. MSETCL has SCADA / Automation System at all the new EHV substations since the past 3-4 years and proposes to advance the automation through technological modification in coming years. This will enable precise and real time data logging without any intervention of the operator. Since all the protection, relays specified by MSETCL are state-of-the-art numerical relays; all

relevant information will be available in the SCADA system to enable proper and speedy analysis of the breakdowns and any other operational disturbances.

The state-of-the-art EMS-SCADA system at SLDC Kalwa and ALDC, Ambazari (Nagpur) utilized for real time operation of the system including that of accommodating variable generation from Thermal, Hydro, Gas generating stations and renewable energy sources. This shall consider proper forecasting of renewable energy and its integration with the grid.

- B.** Implementation of Life extension scheme (LES): MSETCL is implementing Life Extension Schemes (LES) for replacement of age old equipments in EHV substations as well as EHV line elements so as to reduce the failures and interruptions/occurrences. Total 99 nos. of LES have been sanctioned at a total estimated cost of Rs.606 crores. Out of these 99 schemes, 61 schemes have been completed and remaining are in progress. The benefits to be gained on implementation of the scheme are:
- Reduction in interruptions and occurrences.
 - Increase in reliability and availability.
 - Trouble free operation of switchyard equipments.
- C.** Modernisation of Protection system: MSETCL has taken-up steps towards modernization of its protection system (S). Under this scheme, the retrofitting/ replacement of existing old distance protection relay of EHV and 400Kv lines, Differential and Backup protection of transformer and busbar protection scheme is envisaged. The retrofitting work of distance protection relays has already been completed and other works are in progress. This will ensure correct and reliable operation of protection schemes. Also, Substation Monitoring Systems (SMS) have been provided at 23 nos. of 400KV & EHV substations attached to Power station.
- D.** Proactive O&M practices:
- a. Use of Modern Diagnostic Testing Equipments:
MSETCL has procured various types of modern diagnostics testing equipments for ensuring healthiness as well as residual life assessment of various EHV equipments. Due to this, incidents of sudden equipment failures can be avoided thereby reducing interruptions and occurrences and power failures.
 - b. Use of Hot-line Maintenance Techniques:
Hot line maintenance practices are used extensively in MSETCL which helps in reducing EHV lines outages. Also, as this work is carried out without availing any outages and hence system availability also increases. MSETCL has established 13 Hot lines units, imparted training to its employees and procured necessary hot line equipments for carrying out hotline works more efficiently and effectively.

- E.** MSETCL has started implementing GIS based substations in urban areas. Two EHV substations in urban area (Rastapeth and Bhandup) have been established with Gas Insulated Switchgear (GIS) and EHV cable. Such GIS based sub-stations and equipments are beneficial due to their compactness, reliability and low maintenance during its usages and are especially suitable for usage in urban areas where land is extremely costly and availability of suitable land is scarce. MSETCL has proposed more (about 8) nos. of EHV substations with GIS and XLPE cable in the next five years.
- F.** Further, to overcome Right of Way (RoW) constraints in urban areas, MSETCL proposes EHV underground cabling as an alternative to overhead transmission lines. In urban area, it is very difficult to obtain Right of Way (ROW) for EHV transmission lines, as the tower requires substantial footprint. With conventional transmission towers, area required for erecting one tower is substantial which leads to reluctance on the part of land lords to construct EHV lines through their premises. An alternative to this perennial problem is the use of monopole, which is a tubular structure requiring much less footprint. Furthermore, these are aesthetically pleasing and do not tarnish the beauty of the premises. MSETCL is now proposing to use these monopoles at specific locations (primarily in urban area) where conventional towers are not practically feasible. MSETCL has already started using 'narrow base' towers, which require less footprint compared to the conventional towers. MSETCL has also envisaged erection of Double ckt. & multi circuit towers, looking into the future requirements of additional circuits (lines), which can be strung on the same tower.
- G.** For EHT lines of voltages more than or equal to 400kV lines, MSETCL now uses quadruple conductor (instead of twin conductor used earlier) to enhance the power handling capacity up to double.
- H.** With the adoption of standardization of 400kV ICTs as 500MVA (3x167MVA), against the earlier capacity of 315 MVA (3x105MVA) per bank. The transformation capacity is proposed to be increased by about 60%.
- I.** Considering upcoming generating capacity addition and expansions planned by existing units, it is expected that the fault level is likely to cross the present 40kA level in near future. In order to safeguard the network from any unwarranted system failure, MSETCL proposes to procure equipment, for 400kV system, with short circuit rating of 50kA.
- J.** Power transformer being the most valuable (cost wise) single item in any EHV substation, in order to enable proper condition monitoring (and saving from failure) of the transformers, the following devices / features are proposed to be adopted by MSETCL.
- Fibre optic based temperature measurement of winding & oil:** This is direct measurement and hence is accurate.
 - Tap changer cum transformer monitoring system:** This system is a microprocessor-based device, which can control the tap changer in automatic (AVR) and manual modes. It can also control the cooling system based on the temperature of the transformer. It

can monitor various parameters of the transformer and convey the information to the operator through the automation (SCADA) system.

- c. **Oil Monitoring System (for > 100MVA capacity):** Hydrogen & moisture present in the oil is being monitored by this device. By trending the rate of rise of Hydrogen, a fault condition can be identified. Rise in moisture also calls for attention to take remedial actions.
 - d. **Nitrogen injection based fire protection system (for ICTs):** This system is envisaged for protection from fire hazards. In case of external fires (on the transformer), it extinguishes the same; and in case of internal faults, it prevents chances of fire. The system is fully automatic and uses the principle of “oil drain (to depressurize), nitrogen injection and stir”. MSETCL is examining the viability of extending this type of application to all transformers of 50MVA & above capacity.
- K.** MSETCL is using Power Line Carrier Communication (PLCC) for data transfer from substations to substations and from substations to State Load Dispatch Centre (SLDC). This type of Communication is very sluggish, and has limited data handling capabilities. Because of limited frequency band, there occurs frequency congestion at major substations, where a large volume of data is to be handled. MSETCL has a very wide network of transmission lines covering the entire state of Maharashtra. By laying fibre optic cable along these transmission lines (for which ROW is with MSETCL), a very efficient and high speed communication network can be established. MSETCL is therefore planning to establish this network in coming future. Since the investment required is huge, private participation in this field is proposed. The private party, who would be executing this, will be able to put the network to commercial use after reserving / allotting the required number of fibres for MSETCL.
- L.** MSETCL is planning for use of high ampacity conductor for replacing the existing conductor so that the power handling capacity of the existing system will get doubled. This high ampere capacity conductor has a very high operating temperature (200^o C and more) and hence the hardware, connectors etc. used with the same shall be capable of withstanding such high operating temperatures.

7.2.1. New measures in O&M practice

MSETCL has adopted the new measures across its Transmission network comprising 559 nos. of EHV S/S with a transformation capacity of 89178 MVA and 39871ckt kms. of EHV lines as on 31st march 2012 from 66kV level to ± 500kV HVDC lines. Such a huge infrastructure is widely spread over the entire state of Maharashtra. It is very challenging task to operate & maintain such a wide-spread network with high normative performance standards as specified by the Hon’ble Commission, wherein, the AC & HVDC

system availability are to be maintained at and above 98% & 95% respectively. New techniques & technologies are being adopted to cope-up with the technological developments in the field of power sector.

a. Adoption of concept of Predictive Maintenance practices:

MSETCL has adopted the latest concept of “Predictive & Proactive Maintenance practice”. Due to this concept, the suspected unhealthy equipments are removed from service before failure thereby reducing interruptions/occurrences & in turn breakdowns.

b. Hot Line Maintenance works & practices:

MSETCL has adopted hot line maintenance practices through which live line maintenance of equipments is possible. MSETCL has procured hot line tools for working up to 400 kV class level using Hot Stick & Bare Hand techniques. This hot-line maintenance practice improves the system availability & reduction in trippings /interruptions etc. due to on-call availability of Hot line staff.

c. Modernization of Protection Schemes & providing BCU based Substation Automation System:

MSETCL has taken-up the work of modernization & up gradation of existing old protection schemes. The various types of existing old electromechanical/static type protection schemes such as Distance, Differential, Back-up (i.e. O/C-E/F), Busbar etc. have been/are being replaced by the state-of-the-art fully numerical schemes. This helps in ensuring correct, selective & reliable operation of protection scheme & in turn improving system reliability & availability. Further, now-a-days, MSETCL is providing Bay Controller Unit (BCU) based SAS in new substations. In this scheme the BCU replaces the complete control panels & all the protection panels are housed in the Bay Control Rooms (BCRs) which are located in the switchyard near to primary equipment. All the control actions, events/alarms/logs etc. are obtained through SCADA system.

d. Implementation of SMARTGRID Pilot Project:

MSETCL is implementing a pilot “SMARTGRID” project. Under this project, Phasor Measuring Units (PMUs) will be installed at certain locations in MSETCL network. The visualization software will be installed at SLDC

7.3. Establishment of comprehensive communication network using OPGW

MSETCL board of directors vide BR No. 68/9 dated November 23,2011 selected M/s Sterlite Technologies Limited as partners for JV for establishment of Comprehensive communication network

using Optic Power Ground Wire (OPGW) for MSETCL. Subsequently, LoA was issued to them on December 12, 2011. Government of Maharashtra vide letter No. JVP-2011/P. No. 314/Urja-4 dated March 20, 2012 has accorded its approval for the project.

Scope of Work

Installation of 48 fibres Optic Power Ground Wire (OPGW) cable in Maharashtra with priority to cover MSETCL requirement as follows:

1. OPGW to cover 2801 km routes for MSETCL
2. Approach Cable to cover 100km routes for MSETCL
3. SDH & MUX equipments 50 sets for MSETCL on priority
4. Network Management System to cover MSETCL requirement

The work shall be done by the JV company and the project is scheduled to be completed by March 2014. The various benefits to MSETCL, are as followed:

Financial Benefits

The MSETCL JV is in the nascent phase. The JV partner is carrying out the market research and marketing exercise to ascertain the actual potential of OPGW business. Since, the actual potential has not been established yet, therefore MSETCL has not considered any income from this business in its business plan.

However, broadly the financial benefits to MSETCL arising due to JV formed are as followed:

- ✓ Upfront payment as per RFP
- ✓ Revenue share of 5% assured to MSETCL
- ✓ Dividend payout for 49% equity stake
- ✓ Savings on Equipment & 8 Fibers
- ✓ Saving on PLCC Equipment on OPGW route
- ✓ Saving on Tulip B/W payments

Other Benefits

- ✓ Investment Savings on the Project cost.
- ✓ Expediting Rollout in 15 to 18 months
- ✓ Sharing of market & financial risks with the JV partner.
- ✓ O&M benefits-Earnings for MSETCL for line maintenance @3%.
- ✓ HR potential for diversification- Deputation of staff for key assignments.
- ✓ Intra-city fibre and route expansion- which has higher potential for earnings.

7.4. Financing of CIP and TIP

To Finance the capital expenditure, MSETCL will primarily depend on Long-Term borrowings from financial institutions. Approximately 20% of the capital expenditure projected in the control period has been planned to be funded through equity (including internal accruals) and the balance (about 80%) of the requirement has been planned to be funded by taking long-term loans. MSETCL proposes to arrange its fund requirement for all of its capital expenditure schemes through both domestic e.g. Power Finance Corporation Limited (PFC), Rural Electrification Company Limited (REC) and banks like Bank of Maharashtra (BOM), Union Bank of India (UBI) etc and foreign Financial Institutions e.g., JICA, World Bank, ADB and IFC etc..

MSETCL arranges funds from local available banks. MSETCL being one of the government public sector utilities and having a good payment record fetches loan at a reasonable rate of interest.

The details of the financial institutions and their terms for funding the Capital Expenditure requirement for the second control period is as below:

Table 20: Funding Details for the Capital Expenditure Requirements

| Particulars | Power Finance Corporation | Rural Electrification Corporation | Bank of Maharashtra | Union Bank of India | Bank of Baroda | IFC | JICA |
|--------------------------|---------------------------|-----------------------------------|---------------------|---------------------|-----------------|----------------|-----------------------------------|
| Nature of Loan | Term Loan | Term Loan | Term Loan | Term Loan | Term Loan | Term Loan | Term Loan |
| Loan Amount | Up to Borrowing Limit | Up to Borrowing Limit | Rs 395.4 Cr | Rs 335.70 Cr | Rs 264 Cr | Rs 244.60 Cr | RS.623 cr (16749 million Yen) |
| Period (Term) | 17 Years (2+15) | 13 Years (3+10) | 15 Years (2+13) | 15 Years (2+13) | 15 Years (2+13) | 11 Years (3+8) | 15 Years(5+10) |
| Moratorium Period | 2 Years | 3 Years | 2 Years | 2 Years | 2 Years | 3 Years | 5 Years |
| Purpose of Use | Capex Funding | Capex Funding | Capex Funding | Capex Funding | Capex Funding | Capex Funding | Capex Funding |
| Rate of | 12.25% | 12.25% | 12.10% p.a. | 11.85% p.a. | 11.85% p.a. | 11.64% | 0.75% |

| Particulars | Power Finance Corporation | Rural Electrification Corporation | Bank of Maharashtra | Union Bank of India | Bank of Baroda | IFC | JICA |
|--|--|--|--|--|--|--|----------------------------------|
| Interest (Floating) | | | <i>With monthly rest & with annually reset</i> | <i>With monthly rest & with annually reset</i> | <i>With monthly rest & with annually reset</i> | | |
| Terms of Payment | <i>Quarterly</i> | <i>Quarterly</i> | <i>52 quarterly installments</i> | <i>52 quarterly installments</i> | <i>52 quarterly installments</i> | <i>Semi Annually</i> | <i>Semi Annually</i> |
| Upfront Fees | <i>.10% of the Loan Sanctioned on or before Execution of MOA</i> | <i>0.01% of Loan Amount</i> | <i>Nil</i> | <i>Nil</i> | <i>Nil</i> | <i>1% of the Loan Sanctioned</i> | <i>Nil</i> |
| Commitment Charges | <i>.25% P.A. on undrawn Amount of the Previous Quarter from the first day of following Quarter till the Actual Date of Drawl</i> | <i>0.25% P.A. on undrawn Amount of Quarter till the Date of Actual Drawl</i> | <i>Nil</i> | <i>Nil</i> | <i>Nil</i> | <i>0.50% of the undrawn amount of Loan has not been disbused</i> | <i>Nil</i> |
| Margin Money Requirement (Equity) | <i>20.00%</i> | <i>20.00%</i> | <i>20.00%</i> | <i>20.00%</i> | <i>20.00%</i> | <i>20.00%</i> | <i>VAT,CST/ED Paid by MSETCL</i> |

* The above table has been prepared on the basis of past data.

MSETCL humbly informs that REC and PFC would be major financial institutions that would be approached for raising funds. The debt funding proposed for the period FY 2011-12 to FY 2015-16 is as follows:

Table21: Expected Loan Drawl

| S. No | Particulars | FY 12 | FY 13 | FY 14 | FY 15 | FY 16 |
|-------|-------------|---------|---------|---------|---------|---------|
| 1 | Loan Drawl | 2041.12 | 3916.00 | 3737.52 | 3747.62 | 2825.96 |

The figures for FY 2011-12 is based on actual drawl (provisional)

7.5. Projection of Expenses for 2nd Control Period

7.5.1. Operation & Maintenance (O&M) Expenses

7.5.1.1. O&M Expenses for FY 2011-12 and FY 2012-13

The Commission has considered inflation rates on the basis of WPI and CPI index for the purpose of estimation of O&M Expenses during FY 2011-12 and FY 2012-13, in its Order in Case No. 169 of 2011. On similar lines, MSETCL has projected the Net O&M Expenses for FY 2011-12 and FY 2012-13 by applying inflation index on the Net O&M Expenses(audited) for FY 2010-11.

For the purpose of computation of appropriate inflation index, MSETCL has calculated three years point to point inflation on the basis of past data available in public domain. MSETCL is of the view that consideration of three year period reasonably incorporates the recent trend in the movement of the inflation indices, and is sufficient to forecast the movement in future.

For calculation of Wholesale Price Index (WPI), the data available on the website of Economic Advisor from March 2009 to March 2012 has been referred. Similarly for calculation of Consumer Price Index (CPI), data available on the website of Labour Bureau from March 2009 to March 2012 has been referred. The inflation factor considered for the projection of Employee Expenses, A&G Expenses and R&M Expenses after application of respective weights are tabulated below:

Table 22: Inflation factor applied on O&M Expenses

| S. No | Particulars | Inflation- WPI | Weightage- WPI | Inflation- CPI | Weightage- CPI | Total Inflation Rate |
|-------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------------|
| | | A | B | C | D | E=(AxB)+(Cx D) |
| 1 | Employee Expenses | 10.78% | 0% | 8.98% | 100% | 8.98% |
| 2 | A&G Expenses | 10.78% | 60% | 8.98% | 40% | 10.06% |
| 3 | R&M Expenses | 10.78% | 100% | 8.98% | 0% | 10.78% |

The inflation indices applied on the net O&M Expenses for FY 2010-11 (audited figure), therefore provides the estimates of net O&M Expenses for FY 2011-12 and FY 2012-13 as under:

Table 23: Net O&M Expenses calculated on the basis of inflation factor (Rs. Crore)

| S. No | Particulars | FY 2010-11 | FY 2011-12 | FY 2012-13 |
|-------|---|---------------|-----------------|-----------------|
| 1 | Employee Expenses (net of capitalisation) | 521.24 | 572.71 | 624.14 |
| 2 | A&G Expenses (net of capitalisation) | 130.60 | 143.74 | 158.20 |
| 3 | R&M Expenses (net of capitalisation) | 287.00 | 317.94 | 352.21 |
| 4 | Total O&M Expenses (net of capitalisation) | 938.84 | 1,034.38 | 1,134.54 |

**The above values do not include the impact of deferred O&M Expenses.*

7.5.1.2. O&M Expenses from FY 2013-14 to FY 2015-16

The MERC MYT Regulations, 2011 stipulates the following in respect to allowance of normative O&M Expenses for existing stations:

“ 61.5 Operation and Maintenance Expenses

...

...

61.6 Existing Transmission Licensee

| Voltage Level | Second Control Period | | | | |
|---|-----------------------|------------|------------|------------|------------|
| | FY 2011-12 | FY 2012-13 | FY 2013-14 | FY 2014-15 | FY 2015-16 |
| For Transmission lines as Rs Lakh/ckt km | | | | | |
| HVDC | 1492 | 1577 | 1667 | 1763 | 1863 |
| 765 kV | 0.74 | 0.78 | 0.83 | 0.88 | 0.93 |
| 400 kV | 0.53 | 0.56 | 0.59 | 0.63 | 0.66 |
| >66 kV & <400 kV | 0.21 | 0.22 | 0.24 | 0.25 | 0.26 |
| 66 kV and less | 0.13 | 0.14 | 0.14 | 0.15 | 0.16 |
| For Transmission Bays as Rs Lakh/bay | | | | | |
| 765 kV | 131.24 | 138.75 | 146.68 | 155.07 | 163.94 |
| 400 kV | 93.75 | 99.11 | 104.78 | 110.78 | 117.11 |
| >66 kV & <400 kV | 13.59 | 14.36 | 15.19 | 16.06 | 16.97 |
| 66 kV and less | 2.84 | 3 | 3.17 | 3.36 | 3.55 |

Further to this, the Hon'ble Commission in the Approach paper dated September 25, 2009 has mentioned to consider the actual O&M Expenses per bays and lines based on actual audited accounts, the same is reproduced below:

“...

The operation and maintenance expense norms for the Control Period shall be derived on the basis of average of the actual O&M costs per bay and O&M Costs per ckt. Km for the five years ending March 31, 2006 based on the audited financial statements, excluding abnormal O&M Expenses, if any subject to the prudence check of the Commission.

4. *The Average of such O&M costs per bay and O&M costs per circuit km shall be considered as the costs for the financial year ended March 31, 2004 and shall be escalated at the rate of composite index that the Commission would compute based on Wholesale Price Index (WPI) and Consumer Price Index (CPI) by assigning appropriate weights to the same per annum arrived at Operation and Maintenance Expenses for the base year commencing from April 1, 2006.*
5. *The basis of Operation and Maintenance Expenses for each subsequent year shall be escalated at the rate of composite index that the Commission would compute as mentioned above to arrive at the permissible O&M costs per bay and O&M costs per circuit km for the Control period.*

These values will be reviewed as a part of Annual Performance Review in terms of productivity level and efficiency factors.”

MSETCL would like to submit that though the methodology adopted by the Hon’ble Commission for proposing the O&M Expenses norms were justified enough to capture the actual O&M Costs of MSETCL. However the norms specified, in the final Regulations did not capture the same. In addition to this, neither MSETCL was asked to submit any information nor there had been any consultation with MSETCL to fix the norms.

During the period FY 2006 to FY 2011, there has been an increase of 48% in the Transformation capacity of the MSETCL network. There has been significant increase in the overall asset size of MSETCL. The same has been captured in the graphs as under:

Table 24: Increase in Transformation Capacity

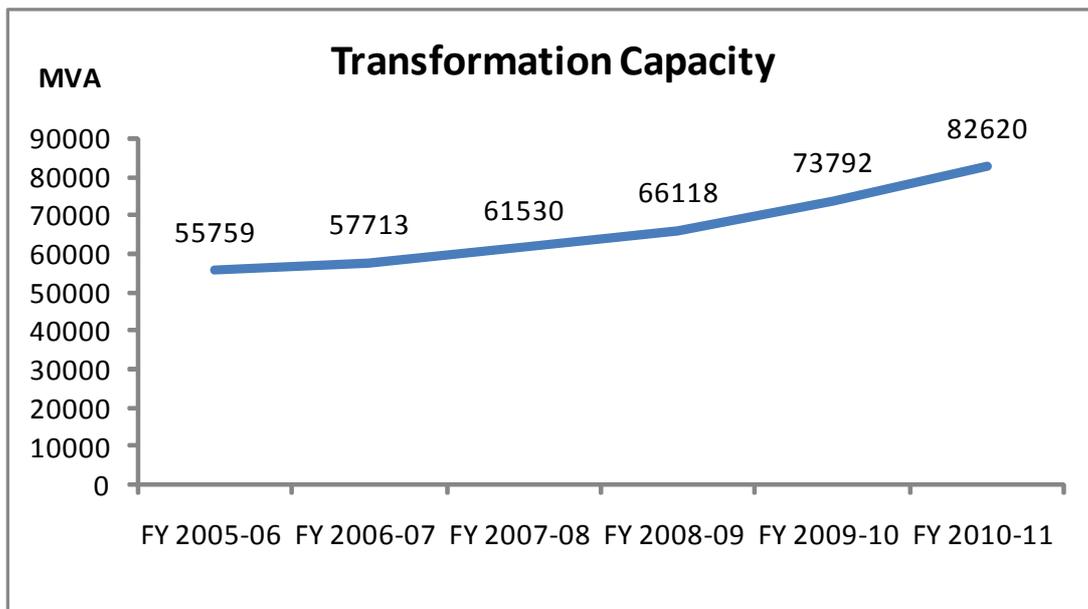
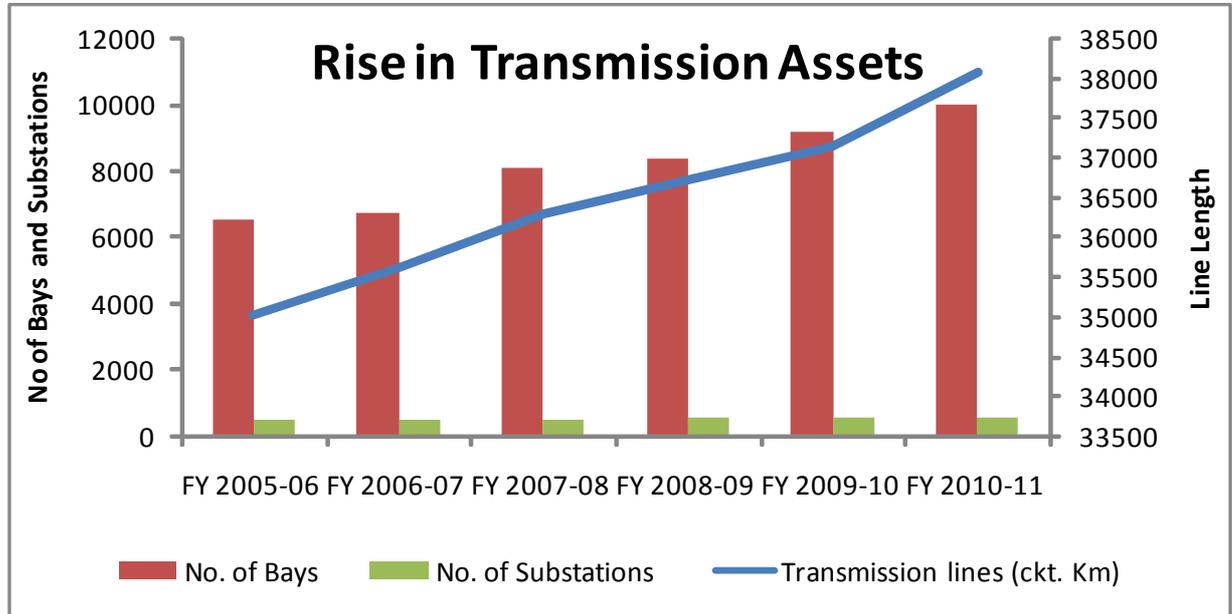


Table 25: Increase in Transmission Assets



The approach of the Hon’ble Commission of using the 2006 as the Base Year, failed to address the significant increase in the O&M expenses on account of substantial increase in the asset size of MSETCL.

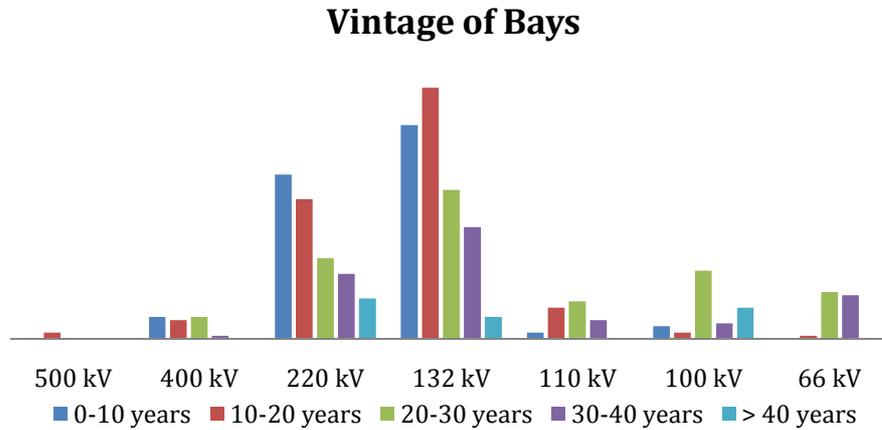
MSETCL further submits that the norms provided in the MYT Regulations 2011, are insufficient to capture the escalation desired to compensate for the rising WPI and CPI indices. Additionally, during erstwhile MSED era, the R&M Expenses were on a lower side. Hence, it is imperative to use the current level of O&M expenses in specifying the norms for FY 2013 to FY 2016.

In the past also, there has been tremendous Regulatory Pressure to contain the said expenses within specified limits. Even with such internal restrictions to control the expenses, the actual O&M Expenses over the years have been higher than the approved limits.

Not only this, MSETCL is operating the oldest network of transmission assets in the State of Maharashtra and most of the equipment at various voltage levels have already crossed their useful life. MSETCL submits that R& M Expenses allowed by the Hon’ble Commission are not reflecting the R&M expenses requirement of Petitioner for last many years. The higher R&M expenses are mainly attributable to vintage of asset base and rise in Transmission Assets.

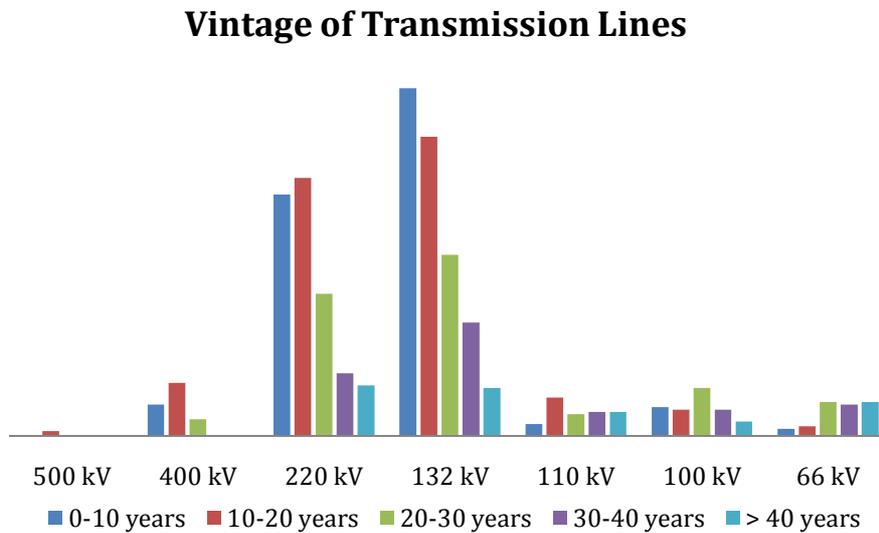
The vintage of the assets of MSETCL is provided in the graphic format as under:

Table 26: Vintage of Bays



Note: Age of Transmission Bays owned by MSETCL as on 31st March 2010

Table 27: Vintage of Transmission Lines



MERC (MYT) Regulations 2011, also provide O&M Norms for Rlnfra-T and TPC-T. The table below highlights the vast difference in the norms approve for MSETCL vis-à-vis, the norms approved for TPC-T and Rlnfra-T.

Table 28: Comparison between O&M Norms for Transmission Licensees

| Particulars | FY 2011-12 | | | FY 2012-13 | | | FY 2013-14 | | | FY 2014-15 | | | FY 2015-16 | | |
|-----------------------------------|------------|--------------|-----------|------------|--------------|-----------|------------|--------------|-----------|------------|------------|--------------|------------|--------------|-----------|
| | MSETCL | Rinfr a-T | TPC- T | MSETC L | Rinfra- T | TPC- T | MSETC L | Rinfra- T | TPC- T | MSETC L | MSETC L | Rinfra- T | MSETC L | Rinfra- T | TPC- T |
| Ckt. Km. Basis | | | | | | | | | | | | | | | |
| -HVDC (Rs. Lakh) | 1492 | | | 1577 | | | 1667 | | | 1763 | | | 1863 | | |
| -765 kV | 0.74 | N/A | N/A | 0.78 | N/A | N/A | 0.83 | N/A | N/A | 0.88 | N/A | N/A | 0.93 | N/A | N/A |
| -400 kV | 0.53 | | | 0.56 | | | 0.59 | | | 0.63 | | | 0.66 | | |
| -above 66 kV and less than 400 kV | 0.21 | 0.36 | 1.09 | 0.22 | 0.38 | 1.16 | 0.24 | 0.4 | 1.22 | 0.25 | 0.43 | 1.29 | 0.26 | 0.45 | 1.37 |
| -66 kV and below | 0.13 | N/A | N/A | 0.14 | N/A | N/A | 0.14 | N/A | N/A | 0.15 | N/A | N/A | 0.16 | N/A | N/A |
| Bay basis | | | | | | | | | | | | | | | |
| -765 kV | 131.24 | N/A | N/A | 138.75 | N/A | N/A | 146.68 | N/A | N/A | 155.07 | N/A | N/A | 163.94 | N/A | N/A |
| -400 kV | 93.75 | | | 99.11 | | | 104.78 | | | 110.78 | | | 117.11 | | |
| -above 66 kV and less than 400 kV | 13.59 | 16.95 | 28.49 | 14.36 | 17.92 | 30.12 | 15.19 | 18.95 | 31.85 | 16.06 | 20.03 | 33.67 | 16.97 | 21.18 | 35.6 |
| -66 kV and below | 2.84 | 3.54 | 5.96 | 3 | 3.75 | 6.3 | 3.17 | 3.96 | 6.66 | 3.36 | 4.19 | 7.04 | 3.55 | 4.43 | 7.44 |

As seen above, the norms for MSETCL are way below the norms for the other two companies, when the expenses for the Company are much higher because of its vast network, presence of network in difficult terrain and remote areas.

Based on the proposed asset addition to physical network (as provided at table 16) to be done every year over the horizon period of FY 11-12 to FY 15-16, the O&M expenses are computed on the average of opening and closing assets. The details of projected O&M expenses are provided in the form F2.1 of the attached Business Plan Excel formats and the summary of projected O&M expenses is reproduced below:

Table 29: Projection of O&M Expense as per MERC (MYT) Regulations, 2011 (in Rs. Crore)

| Particulars | Second Control Period | | |
|--|-----------------------|----------------|----------------|
| | FY 2013-14 | FY 2014-15 | FY 2015-16 |
| O&M Cost for Ckt. Kms. including HVDC system | 140.82 | 161.09 | 183.66 |
| O&M Cost for Bays | 1198.19 | 1377.82 | 1640.80 |
| Total O&M Cost | 1339.02 | 1538.90 | 1824.46 |

Apart from the above, the wage agreement which is done in every 5 years is also required to be covered as it is an uncontrollable factor and is not captured in inflation factor. This impact is also not included in the O&M norms provided by MYT Regulations 2011.

MSETCL humbly request the Hon'ble Commission to kindly review the norms specified in the MERC (MYT) Regulation, 2011 to address the gap between the normative and expected O&M expenses for the second control period.

In addition to this MSETCL shall also claim deferred payments of previous years that would be payable in FY 11-12 and FY 12-13 the details of which are as under:

Table 30: Deferred payments

| Particulars | Amount (Rs. Crore) | |
|--|--------------------|--------------|
| | FY 11-12 | FY 12-13 |
| Previous years deferred Employee expenses (deferred provision of leave encashment for FY 06-07, Effect of migration impact allowed from FY08-09) | 19.71 | 19.71 |
| Previous years deferred A&G expenses (Effect of migration impact allowed from FY08-09) | 20.23 | 20.23 |
| Previous years deferred R&M expenses (Effect of migration impact allowed from FY08-09) | 1.53 | 1.53 |
| Total | 41.47 | 41.47 |

Thus, the O&M expense for the period FY 11-12 to FY 15-16, considered while computing the ARR is as given below:

Table 31: Projection of O&M Expenses (in Rs. Crore)

| Particular | FY 2011-12 | FY 2012-13 | FY 2013-14 | FY 2014-15 | FY 2015-16 |
|--------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| O&M Expenses | 1,034.38 | 1,134.54 | 1,339.02 | 1,538.90 | 1,824.46 |
| Other claims | 41.47 | 41.47 | | | |
| Total | 1,075.85 | 1,176.01 | 1,339.02 | 1,538.90 | 1,824.46 |

7.5.2. Interest & finance Charges

Debt-Equity Ratio: MSETCL has proposed to fund its capex requirement through debt: equity ratio of 80:20. However as the cash inflow increases due to the allowance of ARR for MSETCL, the debt equity ratio may be changed from 80:20 to 70:30.

Sources of Loan: MSETCL has first considered its existing loan agreements from LIC, JICA, IFC, Bank of Maharashtra and Oriental Bank of Commerce, to fund to further considered that it will borrow loans from REC and PFC in the ratio of 80:20 to meet its debt requirement. The amount of loan borrowed from REC and PFC is tabulated below:

Table 32: Estimated Loan Drawl (Rs. Crore)

| S. No | Particulars | FY 12 | FY 13 | FY 14 | FY 15 | FY 16 |
|-------|---------------------|----------|----------|----------|----------|----------|
| 1 | Capital Expenditure | 2,411.59 | 4,895.00 | 4,671.90 | 4,684.53 | 3,532.45 |
| 2 | Capitalisation | 2,195.96 | 3,874.62 | 3,882.71 | 4,771.17 | 4,449.06 |
| 3 | Loan Drawl | 2,041.12 | 3,916.00 | 3,737.52 | 3,747.62 | 2,825.96 |

*The numbers for FY 2011-12 are provisional and subject to revisions

Rate of Interest: The existing rate of interest of 12.25% on PFC and REC Loans has been considered for calculation of interest expenses. For other agencies, the detailed drawl, repayment schedule, and interest rates are provided in form-6.

Reduction of Interest expenses pertaining to retirement of Assets: MSETCL has considered 80% of the total assets retired during the respective year for reduction of loan amount during that particular year. MSETCL has further applied a rate of 12.25% for calculation of the amount of interest expenses on account of reduction in loans during respective years.

As regards capitalization of interest expenses, MSETCL has considered the rate of 11.5% of Closing Work-in-progress of respective years. After accounting for the capitalization of interest expenses and considering other interest and finance charges, projected total interest and finance charge obligation for the above-mentioned period for MSETCL will be as below:

Table 33: Projection of Interest and Financing Charges (amount in Rs. Crore)

| Particulars | FY 2011-12 | FY 2012-13 | FY 2013-14 | FY 2014-15 | FY 2015-16 |
|---|---------------|---------------|---------------|----------------|----------------|
| <i>Net Interest Expenses (after capitalisation)</i> | 353.71 | 512.66 | 782.65 | 1106.45 | 1423.27 |
| <i>Other Interest and Finance Expenses</i> | 15.90 | 22.58 | 21.84 | 22.05 | 17.60 |
| Total Interest & Finance Charges | 369.60 | 535.24 | 804.49 | 1128.49 | 1440.87 |

The details of computation of Interest on long terms loans is provided at Form-6 of the data formats submitted with Petition on Business Plan. In case of other interest and finance charges for FY 2011-12 and FY 2012-13, MSETCL has considered the Guarantee and Finance Charges as approved by the Hon'ble Commission in its Order dated May 18, 2012. From FY 2013-14 to FY 2015-16, MSETCL has considered 5% increase in Guarantee charges over the Guarantee charges approved by the Hon'ble Commission for FY 2012-13 in its Order dated May 18, 2012. MSETCL has considered finance charges from FY 2013-14 to FY 2015-16 as 0.5% of the new loans drawn during respective years as per the methodology adopted by the Hon'ble Commission in Order dated May 18, 2012.

Table 34: Other interest and finance charges (amount in Rs. Crore)

| Particulars | FY 2011-12 | FY 2012-13 | FY 2013-14 | FY 2014-15 | FY 2015-16 |
|---|--------------|--------------|--------------|--------------|--------------|
| Guarantee Charges | 5.69 | 3.00 | 3.15 | 3.31 | 3.47 |
| Finance Charges | 9.65 | 19.58 | 18.69 | 18.74 | 14.13 |
| Total other interest and finance charges | 15.34 | 22.58 | 21.84 | 22.05 | 17.60 |

7.5.3. Assets and Depreciation

MSETCL maintains the assets wise classification and the depreciation for FY 2011-12 and FY 2012-13 has been computed by application of depreciation rates as given in Schedule of MERC Tariff Regulations, 2005.

Table 35: Depreciation Rates (FY 11-12 and FY 12-13)

| <i>Particulars</i> | <i>Depreciation Rates</i> |
|-----------------------------------|---------------------------|
| <i>Land & Land Rights</i> | <i>0.56%</i> |
| <i>Buildings</i> | <i>1.80%</i> |
| <i>Temporary Erections</i> | <i>18.00%</i> |
| <i>Hydraulic Works</i> | <i>2.57%</i> |
| <i>Other Civil Works</i> | <i>1.80%</i> |
| <i>Plant & Machinery</i> | <i>3.60%</i> |
| <i>Communication Equipments</i> | <i>3.60%</i> |
| <i>Air Conditioner – Portable</i> | <i>6.00%</i> |
| <i>Lines & Cable Networks</i> | <i>2.57%</i> |
| <i>Vehicles</i> | <i>18.00%</i> |
| <i>Furniture & Fixtures</i> | <i>6.00%</i> |
| <i>Office Equipment</i> | <i>6.00%</i> |
| <i>IT Equipments</i> | <i>6.00%</i> |

MSETCL has further computed the depreciation for the 2nd Control period by considering the depreciation rates as provided in the MERC (MYT) Regulations 2011, the rates to be considered for different asset categories is as given in the table below:

Table 36: Depreciation Rates (MYT Regulations 2011)

| Particulars | Depreciation Rates |
|-----------------------------------|---------------------------|
| <i>Land & Land Rights</i> | <i>3.34 %</i> |
| <i>Buildings</i> | <i>3.34%</i> |
| <i>Temporary Erections</i> | <i>100.00%</i> |
| <i>Hydraulic Works</i> | <i>5.28%</i> |
| <i>Other Civil Works</i> | <i>3.34%</i> |
| <i>Plant & Machinery</i> | <i>5.28%</i> |
| <i>Communication Equipments</i> | <i>6.33%</i> |
| <i>Air Conditioner – Portable</i> | <i>9.50%</i> |

| Particulars | Depreciation Rates |
|------------------------|--------------------|
| Lines & Cable Networks | 5.28% |
| Vehicles | 9.50% |
| Furniture & Fixtures | 6.33% |
| Office Equipment | 6.33% |
| IT Equipments | 15.00% |

MSETCL has claimed the depreciation expense for FY 13-14 to FY 15-16 based on the rates specified in the MERC (MYT) Regulations 2011, further for computation of interest on long terms the repayment schedule has been made equivalent to the estimated depreciation during the year in compliance with Regulation 33.3 of the MERC (MYT) Regulation 2011, as under:

33.3 The repayment for the year of the tariff period FY 2011-12 to FY 2015-16 shall be deemed to be equal to the depreciation allowed for that year:

The Hon'ble Commission has linked the amount of repayment to the depreciation allowed for the year. However, since the amount of depreciation is linked to the depreciates approved for the 5-year period, Regulation-31.2 of MERC MYT Regulations, 2011 stipulates the depreciation for Transmission Utilities as 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.

- b. *Depreciation shall be computed annually based on the straight line method at the rates specified in the **Annexure I** to these Regulations:*

Provided that the Generating Company or Transmission Licensee or Distribution Licensee shall ensure that once the individual asset is depreciated to the extent of seventy (70) percent, remaining depreciable value as on 31st March of the year closing shall be spread over the balance useful life of the asset, as provided in these Regulations.

Provided that the Generating Company or Transmission Licensee or Distribution

Licensee, shall submit all such details or documentary evidence, as may be required under this Regulation and as stipulated by the Commission, from time to time, to substantiate the above claims.

- c. *The salvage value of the asset shall be considered at 10 per cent of the allowable capital cost and depreciation shall be allowed upto a maximum of 90 per cent of the allowable capital cost of the asset.*

.. “

In addition to the above, the provision of Advance against depreciation has been removed by revising the depreciation rates.

MSETCL submits the Hon’ble Commission that it has planned to fund its capital expenditure requirement through 80% debt over the second control period. The concept of AAD in CERC Tariff Regulations, 2004 was linked to the loan repayment. The main philosophy behind the concept of AAD was the bridge the gap between the repayment of loan and depreciation in respective year.

MSETCL understands that the Commission has introduced higher depreciation rates for calculation of depreciation leading to higher repayment ability. However, the depreciation rates specified by the Commission remain same in each case irrespective of the funding pattern of the Utility. MSETCL is meeting 80% of capital expenditure requirement through loans. Therefore the depreciation of MSETCL will always be lesser than the actual repayment requirement of loans.

MSETCL does not have any other revenue source except the transmission tariff; the disallowance of AAD therefore, will result into erosion of equity/RoE of MSETCL. Otherwise, MSETCL will not be able to meet its repayment obligation which will adversely impact the image of MSETCL.

Therefore MSETCL prays to the Hon’ble Commission to not to restrict the approval of repayment for the year to the extent of depreciation claimed for the year and instead it should allow MSETCL to claim the excess of actual repayment made during the year over the depreciation for the year to be claimed as Advance Against Depreciation.

Accordingly, the estimated depreciation during respective years of 2nd Control Period is as below:

Table 37: Projection of Depreciation (amount in Rs. Crore)

| Particulars | FY 2011-12 | FY 2012-13 | FY 2013-14 | FY 2014-15 | FY 2015-16 |
|------------------------------|------------|------------|------------|------------|------------|
| Depreciation including AAD | 745.14 | 978.82 | 1135.16 | 1318.63 | 1580.47 |
| Depreciation | 467.47 | 553.3 | 1104.97 | 1318.63 | 1545.69 |
| Advance Against Depreciation | 277.67 | 425.51 | 30.19 | 0.00 | 34.78 |

As an alternative, the Hon'ble Commission may approve the same depreciation rates, without provision of AAD. However, it may allow a Return of 15.5% (RoE) on balance 10% of its funding, considered as normative equity. The approach shall also be consistent with the fact that the depreciation rates in MYT Regulations 2011, has been arrived at after considering a debt: equity ratio of 70:30, whereas MSETCL funds its Capex through a debt equity ratio of 80:20.

7.5.4. Interest on Working Capital and Consumer security deposit

MSETCL has computed the working capital requirement based on the normative parameters prescribed in the MERC (MYT) Regulations, 2011. The Indian economy is witnessing spiraling inflation and as a result, the interest rate cycle has firmed up, with a result that banks have raised their Prime Lending Rates. MSETCL has considered the current short term SBI PLR of 14.75% for the purpose of computation of Interest on working capital. The Commission has also considered the same rate for computation of interest on working capital in its Order in Case no. 169 of 2011.

MSETCL therefore submits the comparison of approved vis-à-vis the revised computation of interest on working capital for kind consideration and approval of the Hon'ble Commission. MSETCL further submits the detailed computation of the Interest on working capital for the FY 2011-12 to FY 15-16 are provided at Form F-6 and are summarised in the table below:

Table 38: Interest on working capital (amount in Rs. Crore)

| Particulars | FY 12 | FY 13 | FY 14 | FY 15 | FY 16 |
|---|---------------|---------------|---------------|---------------|---------------|
| Computation of Working Capital | | | | | |
| One-twelfth of the amount of Operations and Maintenance Expenses | 89.65 | 98.00 | 111.58 | 128.24 | 152.04 |
| One-twelfth of the sum of the book value of stores, materials and supplies | 18.44 | 18.80 | 19.58 | 19.77 | 20.39 |
| One and a half months of the expected revenue from transmission charges at the prevailing tariffs | 357.46 | 568.40 | 550.30 | 609.37 | 736.74 |
| <i>Less:</i> | | | | | |
| Amount of Security Deposit | | | | | |
| From Transmission System users | 0 | 0 | 0 | 0 | 0 |
| Total Working Capital | 465.55 | 685.21 | 681.47 | 757.38 | 909.17 |
| Computation of working capital interest | | | | | |
| Rate of Interest (% p.a.) | 14.75% | 14.75% | 14.75% | 14.75% | 14.75% |
| Interest on Working Capital | 68.67 | 101.07 | 100.52 | 111.71 | 134.10 |

MSETCL humbly submits that since it is not envisaging any security deposits to be taken from the users of its transmission system, no interest on security deposit has been considered for the purpose of computation of working capital. However, in future, in case any security deposits are taken from the transmission system users MSETCL shall claim the interest on security deposit.

7.5.5. Return on Equity

MSETCL submits that considering 20% equity contribution for the capitalisation proposed for the period FY 2011-12 to FY 2015-16, it has claimed RoE for FY 2011-12 and FY 2012-13 as per MERC Tariff Regulations, 2005 and from FY 2013-14 to FY 2015-16 as provided in the MERC (MYT) Regulations, 2011, further assuming the opening equity base as approved by the Hon'ble Commission, the projection of Return on Equity (RoE) is as below:

Table 39: Projection of RoE (amount in Rs. Crore)

| S.No. | Particulars | FY 12 | FY 13 | FY 14 | FY 15 | FY 16 |
|-------|--|---------------|---------------|---------------|---------------|----------------|
| 1 | Regulatory Equity at the beginning of the year | 3772.41 | 4178.69 | 4908.79 | 5641.56 | 6543.81 |
| 2 | Capitalisation during the year | 2195.96 | 3874.62 | 3882.71 | 4771.17 | 4449.06 |
| 3 | Equity portion of capitalisation during the year | 439.19 | 774.92 | 776.54 | 954.23 | 889.81 |
| 4 | Consumer Contribution and Grants used during the year for Capitalisation | 0 | 0 | 0 | 0 | 0 |
| 5 | Reduction in Equity Capital on account of retirement / replacement of assets | 32.91 | 44.83 | 43.77 | 51.98 | 62.09 |
| 6 | Regulatory Equity at the end of the year | 4178.69 | 4908.79 | 5641.56 | 6543.81 | 7371.54 |
| | Return Computations | | | | | |
| 7 | Return on Regulatory Equity at the beginning of the year | 528.14 | 585.02 | 760.86 | 874.44 | 1014.29 |
| 8 | Return on Equity portion of capitalisation during the year | 28.44 | 51.11 | 56.79 | 69.92 | 64.15 |
| 9 | Total Return on Regulatory Equity | 556.58 | 636.12 | 817.65 | 944.37 | 1078.44 |

However, MSETCL prays to the Hon'ble Commission to allow pre-tax RoE in line with CERC (Terms and Conditions of Tariff) Regulations 2009-14. The detailed submissions of MSETCL in this regard, has been covered in chapter 9, of the Business plan.

7.5.6. Other Expenses

7.5.6.1. Other expense

MSETCL has considered a nominal increase of 2% based on estimate of other expense likely to be incurred in FY 11-12. The prior period adjustments and loss on exchange rate variation has not been considered for future period. The projection of year –wise expense is as given below:

Table 40: Other expense (Rs. Crore)

| Particulars | FY 12 | FY 13 | FY 14 | FY 15 | FY 16 |
|-----------------------------|-------|-------|-------|-------|-------|
| Other Expenses Total | 59.46 | 1.18 | 1.21 | 1.23 | 1.26 |

7.5.6.2. Contingency Reserves

Considering the 0.25% of the opening gross block as contingency reserves for MSETCL as provided in the MERC (MYT) Regulations, 2011, the projection of Contingency reserves for the period from FY 2011-12 to FY 2015-16 are as below:

Table 41: Projection of Contingency Reserves (Rs. Crore)

| Particulars | FY 12 | FY 13 | FY 14 | FY 15 | FY 16 |
|---|-------|-------|-------|-------|-------|
| Contribution to Contingency Reserves | 34.65 | 39.73 | 48.85 | 58.01 | 69.29 |

7.5.6.3. Income tax

In accordance with MERC Tariff Regulations, 2005, MSETCL has claimed Income Tax as a part of ARR for FY 2011-12 and FY 2012-13. From FY 2013-14 onwards MSETCL has claimed Income Tax separately outside the ARR in accordance with MERC MYT Regulations, 2011.

Table 42: Income tax liability (amount in Rs. Crore)

| Particulars | FY 2011-12 | FY 2012-13 |
|----------------------|------------|------------|
| Income Tax Liability | 154.98 | 531.12 |

The tax computations for the period FY 2013-14 onwards has been discussed at section 8.1.

7.5.7. Non tariff Income

MSETCL has considered a nominal increase of 2% for NTI components other than interest income based on estimates of in FY 11-12. For the purpose of estimation of interest income on contingency reserves, it has considered an average interest rate of 8% (Govt securities) on the forecasted balance of Contingency reserves for various years. For interest on other investments, it has maintained the expected interest income for FY 2011-12, over the entire control period, as future investments are likely to be made in Govt Securities.

The projection of year –wise interest income on contingency reserves is provided below:

Table 43: Interest income on contingency reserves (Rs. Crore)

| S.No. | Particulars | FY 12 | FY 13 | FY 14 | FY 15 | FY 16 |
|-------|--|--------|--------|--------|--------|--------|
| 1 | Opening Balance of Contingency Reserve | 162.91 | 197.56 | 237.29 | 286.14 | 344.16 |
| 2 | Closing Balance of Contingency Reserve | 197.56 | 237.29 | 286.14 | 344.16 | 413.45 |
| 3 | Average Balance | 180.23 | 217.42 | 261.71 | 315.15 | 378.80 |
| 4 | Interest Rate | 8% | 8% | 8% | 8% | 8% |
| 5 | Interest Income | 14.42 | 17.39 | 20.94 | 25.21 | 30.30 |

The component-wise projection of Non-Tariff is provided below:

Table 44: Non tariff income (Rs. Crore)

| S.No. | Particulars | FY 12 | FY 13 | FY 14 | FY 15 | FY 16 |
|-------|---|-------|-------|-------|-------|-------|
| 1 | Interest on Contingency Reserve Investments | 14.42 | 17.39 | 20.94 | 25.21 | 30.30 |

| | | | | | | |
|----|--------------------------------------|---------------|---------------|---------------|---------------|---------------|
| 2 | Interest on Other Investments | 2.34 | 2.34 | 2.34 | 2.34 | 2.34 |
| 3 | Ancillary and Incidental Income | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4 | Other/Miscellaneous receipts | 60.83 | 62.05 | 63.29 | 64.56 | 65.85 |
| | Delayed Payment Charges | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Interest on Delayed Payment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Other receipts | 8.22 | 8.38 | 8.55 | 8.72 | 8.90 |
| 5 | Interest on staff loans & Advances | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | Dividend on Investments | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 | Training Fees | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8 | Sale of Scrap | 18.50 | 18.87 | 19.25 | 19.64 | 20.03 |
| 9 | Income from Trading | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10 | Income from staff welfare activities | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11 | Revenue from ST Open Access Charges | 80.44 | 82.05 | 83.69 | 85.36 | 87.07 |
| | Total | 184.75 | 191.09 | 198.06 | 205.83 | 214.49 |

7.5.8. Income from wheeling received from Goa State

MSETCL has not considered any increase on the income received from in FY 10-11 due to wheeling of power by Goa state. The projection of year –wise expense is as given below:

Table 45: Income from Wheeling Charges from Goa (Rs. Crore)

| Particulars | FY 2011-12 | FY 2012-13 | FY 2012-14 | FY 2014-15 | FY 2015-16 |
|----------------------------------|------------|------------|------------|------------|------------|
| Income from Goa Wheeling charges | 20.52 | 20.52 | 20.52 | 20.52 | 20.52 |

7.6. Revenue Gap for FY 2011-12

Hon'ble commission, vide its Order in Case No. 169 of 2011, dated May 18, 2012; has approved an ARR of Rs 2,485.58 Cr for FY 2011-12, and estimated revenue of Rs 2,264.28 Cr for the year. The approved Revenue gap for FY 2011-12 was Rs 221.3Cr and the Cumulative revenue gap till FY 2011-12 was approved at Rs 759.55Cr.

However, the provisional Revenue gap for FY 2011-12 comes out to be Rs 267.98 Cr and the Cumulative revenue gap till FY 2011-12 works out to Rs 806.23 Cr. The same has been tabulated as below:

Table 46: Cumulative Revenue Gap (Rs Crore)

| FY 2011-12 | |
|--|------------------|
| Particulars | Rs Crores |
| Net ARR | 2859.65 |
| Revenue from Transmission Tariff | 2264.28 |
| Stand Alone Gap for the year (Provisional) | (595.37) |
| Cumulative Gap till FY 2010-11 | (538.25) |
| Cumulative Gap till the year | (1133.62) |

Out of this cumulative revenue gap of MSETCL has considered the Commission approved gap of Rs 759.55 Cr in the ARR FY 2012-13, the balance amount of Rs 46.68 Cr has been carried forward to the ARR of FY 2013-14.

8. Projection of Annual Revenue Requirement

Based on the discussion in the previous sections, the ARR estimates for the control period has been tabulated as under:

Table 47: Projection of ARR (Rs. Crore)

| S.No. | Particulars | Projected | | | | |
|-------|---|-----------------|-----------------|-----------------|-----------------|-----------------|
| | | FY 12 | FY 13 | FY 14 | FY 15 | FY 16 |
| 1 | Operation & Maintenance Expenses | 1,075.85 | 1,176.01 | 1,339.02 | 1,538.90 | 1,824.46 |
| 2 | Depreciation Expenses | | | | | |
| a) | Depreciation | 467.47 | 553.31 | 1104.97 | 1318.63 | 1545.69 |
| b) | Advance against depreciation | 277.67 | 425.51 | 30.19 | 0.00 | 34.78 |
| 3 | Interest on Long-term Loan Capital | 353.71 | 512.66 | 782.65 | 1106.45 | 1423.27 |
| 4 | Interest on Working Capital and on consumer security deposits | 68.67 | 101.07 | 100.52 | 111.71 | 134.10 |
| 5 | Other Interest and finance charges | 15.90 | 22.58 | 21.84 | 22.05 | 17.60 |
| 6 | Other Expenses | 59.46 | 1.18 | 1.21 | 1.23 | 1.26 |
| 7 | Income Tax | 154.98 | 531.12 | | | |
| 8 | Contribution to contingency reserves | 34.65 | 39.73 | 48.85 | 58.01 | 69.29 |
| 9 | Total Revenue Expenditure | 2,508.35 | 3,363.17 | 3,429.25 | 4,156.98 | 5,050.46 |
| 10 | Return on Equity Capital | 556.58 | 636.12 | 817.65 | 944.37 | 1078.44 |

| S.No. | Particulars | Projected | | | | |
|-------|---|-----------------|-----------------|-----------------|-----------------|-----------------|
| | | FY 12 | FY 13 | FY 14 | FY 15 | FY 16 |
| 11 | Aggregate Revenue Requirement | 3,064.93 | 3,999.29 | 4,246.90 | 5,101.35 | 6,128.90 |
| 12 | Less: Non Tariff Income | 184.75 | 191.09 | 198.06 | 205.83 | 214.49 |
| 13 | Less: Income from Goa wheeling charges | 20.52 | 20.52 | 20.52 | 20.52 | 20.52 |
| 14 | Recovery towards past gap | | 759.55 | 374.07 | | |
| 15 | Aggregate Revenue Requirement from Transmission Tariff | 2859.65 | 4547.23 | 4402.39 | 4875.00 | 5893.89 |

MSETCL humbly requests the Hon'ble Commission to approve the above ARR for the business plan period for FY 11-12 to FY 15-16. The Income Tax liability for FY 14 to FY 16 is to be allowed additionally over the ARR for the respective years, as discussed in the next section.

8.1. Income Tax for FY 2013-14 to FY 2015-16

Regulation-34 of MERC MYT Regulations, 2011 provides the provision for Income-tax which is reproduced below:

*“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 the electricity business regulated by the Commission, as per latest Audited Accounts available for the applicant, subject to prudence check:
Provided that no Income Tax shall be considered on the amount of efficiency gains and incentive earned by the Generating Companies, Transmission Licensees and Distribution Licensees.
Provided further that the Generating Company, Transmission Licensee and Distribution Licensee shall bill the Income Tax under a separate head called "Income Tax Reimbursement" in their respective bills.”*

Since the Regulations provide for the treatment of Income-tax under a separate head and not as a part of ARR, MSETCL request the Commission to allow the Income-tax from FY 2013-14 to FY 2015-16 as tabulated below:

Table 48: Income Tax (Rs. Crore)

| Particulars | FY 2013-14 | FY 2014-15 | FY 2015-16 |
|-----------------------------|---------------|---------------|---------------|
| Income Tax Liability | 269.63 | 217.69 | 257.69 |

The income tax expenses may kindly be reimbursed to MSETC on quarterly basis by the Hon'ble Commission, in addition to the Transmission Charges for the period covered under MYT Regulations 2011, i.e. FY 2013-14 to FY 2015-16.

8.2. Scenario Analysis

The two major expenses heads that depends on changes in the environment under which MSETCL operates is the variation in O&M expense and the change in interest rates over the five year period. Considering the above ARR to be the Realistic scenario, MSETCL has attempted to make scenario projection of the change in the above two expense heads as Pessimistic scenario and Optimistic scenario as under:

8.2.1. O&M expense

The O&M expense are subject to change in material cost, compensation to be paid to the employees based on the policies of the Government, change in structure of statutory taxes and duties decided by the Government and any other Government Policy. MSETCL has envisaged the following two scenarios:

Pessimistic scenario – Wherein the O&M expense would increase by 10% over the amount estimated for the year. In this case the estimated O&M expense over the 5-year period would be as under:

| Particulars | Variation | FY 11-12 | FY 12-13 | FY 13-14 | FY 14-15 | FY 15-16 |
|---|-----------|----------|----------|----------|----------|----------|
| Other O&M expense to be considered | | 41.47 | 41.47 | | | |
| Standalone O&M norm related expense for each year | | 1,034.38 | 1,134.54 | | | |
| Pessimistic Scenario with 10% increase | 10% | 1,137.82 | 1,247.99 | 1,472.92 | 1,692.79 | 2,006.91 |
| Net under Pessimistic scenario | | 1,179.29 | 1,289.46 | 1,472.92 | 1,692.79 | 2,006.91 |

- a. Optimistic scenario – Wherein the O&M expense would reduce by 5% over the 5-year period as under:

| Particulars | Variation | FY 11-12 | FY 12-13 | FY 13-14 | FY 14-15 | FY 15-16 |
|---|-----------|----------|----------|----------|----------|----------|
| Other O&M expense to be considered | | 41.47 | 41.47 | | | |
| Standalone O&M norm related expense for each year | | 1,034.38 | 1,134.54 | | | |
| Optimistic Scenario with 5% reduction | 5% | 982.66 | 1,077.81 | 1,272.07 | 1,461.96 | 1,733.24 |
| Net under Optimistic scenario | | 1,024.13 | 1,119.28 | 1,272.07 | 1,461.96 | 1,733.24 |

8.2.2. Interest on Long term loans

The Interest on long term loans would vary depending on the interest rate on new loans to be availed over the five year period. MSETCL has envisaged the following two scenarios:

- a. Pessimistic scenario – Wherein the interest rate are expected to rise during the five year period. MSETCL has considered interest rate of 12.25% for FY 11-12 and 13% for the period FY 12-13 to 15-

16 (for drawl from PFC and REC). In this case the estimated interest expense over the 5-year period would be as under:

Table 49: Pessimistic – Interest Expenses

| Particulars | | FY 11-12 | FY 12-13 | FY 13-14 | FY 14-15 | FY 15-16 |
|---|-------------|---------------|-----------------|-----------------|-----------------|-----------------|
| Interest rate considered under the realistic scenario | (a) | 12.25% | 12.25% | 12.25% | 12.25% | 12.25% |
| Gross Interest expense under realistic scenario (Rs. Crore) | (b) | 711.91 | 964.73 | 1,307.34 | 1,623.16 | 1,855.65 |
| Interest capitalised | (c) | 358.20 | 452.08 | 524.68 | 516.71 | 432.38 |
| Net interest expense under Realistic scenario (Rs. Crore) | (d = b – c) | 353.71 | 512.66 | 782.65 | 1,106.45 | 1,423.27 |
| | | | | | | |
| Interest rate under Pessimistic Scenario | (e) | 12.25% | 13% | 13% | 13% | 13% |
| Gross Interest expense under Pessimistic scenario (Rs. Crore) | (f) | 750.02 | 1,017.03 | 1,380.59 | 1,715.82 | 1,962.57 |
| Interest capitalised | (g) | 358.20 | 452.08 | 524.68 | 516.71 | 432.38 |
| Net interest expense under Pessimistic scenario | (h = f - g) | 391.81 | 564.95 | 855.91 | 1,199.11 | 1,530.19 |

- b. Optimistic scenario – Wherein the interest rate are expected to rise during the five year period. MSETCL has considered interest rate of 12.25% for FY 11-12 and 11.25% for the period FY 12-13 to 15-16 (for drawl from PFC and REC). In this case the estimated interest expense over the 5-year period would be as under:

Table 50: Optimistic – Interest Expenses

| Particulars | | FY 11-12 | FY 12-13 | FY 13-14 | FY 14-15 | FY 15-16 |
|--|-------------|----------|----------|----------|----------|----------|
| Interest rate considered under the realistic scenario | (a) | 12.25% | 12.25% | 12.25% | 12.25% | 12.25% |
| Gross Interest expense under realistic scenario (Rs. Crore) | (b) | 711.91 | 964.73 | 1,307.34 | 1,623.16 | 1,855.65 |
| Interest capitalised | (c) | 358.20 | 452.08 | 524.68 | 516.71 | 432.38 |
| Net interest expense under Realistic scenario (Rs. Crore) | (d = b – c) | 353.71 | 512.66 | 782.65 | 1,106.45 | 1,423.27 |
| | | | | | | |
| Interest rate under Optimistic Scenario | (e) | 11.25% | 11.25% | 11.25% | 11.25% | 11.25% |
| Gross Interest expense under Optimistic scenario (Rs. Crore) | (f) | 661.10 | 895.01 | 1209.66 | 1499.60 | 1713.10 |
| Interest capitalised | (g) | 358.20 | 452.08 | 524.68 | 516.71 | 432.38 |
| Net interest expense under Pessimistic scenario | (h = f - g) | 302.90 | 442.93 | 684.98 | 982.89 | 1280.71 |

8.2.3. Comparison of ARR under the three scenario

Considering the remaining components of the ARR as projected under Realistic scenario to remain unchanged the other expense under the Realistic scenario would be:

Table 51: ARR items – Realistic

| Particulars | FY 12 | FY 13 | FY 14 | FY 15 | FY 16 |
|---|--------|--------|---------|---------|---------|
| Depreciation expense | 467.47 | 553.31 | 1104.97 | 1318.63 | 1545.69 |
| AAD | 277.67 | 425.51 | 30.19 | 0.00 | 34.78 |
| IWC and Interest on consumer security deposit | 68.67 | 101.07 | 100.52 | 111.71 | 134.10 |
| Other interest and finance charges | 15.90 | 22.58 | 21.84 | 22.05 | 17.60 |
| Other expenses | 59.46 | 1.18 | 1.21 | 1.23 | 1.26 |
| Income tax | 154.98 | 531.12 | | | |
| Contribution to contingency reserve | 34.65 | 39.73 | 48.85 | 58.01 | 69.29 |

| Particulars | FY 12 | FY 13 | FY 14 | FY 15 | FY 16 |
|---|---------|---------|---------|---------|---------|
| RoE | 556.58 | 636.12 | 817.65 | 944.37 | 1078.44 |
| (less) Income from Goa wheeling and non-tariff income | 20.52 | 20.52 | 20.52 | 20.52 | 20.52 |
| Other Expenditure | 1430.09 | 2099.02 | 1906.65 | 2229.65 | 2646.16 |

With the above scenario projection of O&M expense, Interest on long term loan and without considering change in any other expense heads of ARR as considered under the Realistic scenario, the ARR under the three scenarios would be as under:

Table 52: Scenario Analysis –ARR items (Without Past gap recovery)

| Optimistic scenario | FY 12 | FY 13 | FY 14 | FY 15 | FY 16 |
|-----------------------------|--------------|--------------|--------------|--------------|--------------|
| O&M expense | 1,024.13 | 1,119.28 | 1,272.07 | 1,461.96 | 1,733.24 |
| Interest expense | 302.90 | 442.93 | 684.98 | 982.89 | 1,280.71 |
| Gross expense | 2,757.12 | 3,661.23 | 3,863.69 | 4,674.50 | 5,660.11 |
| Pessimistic scenario | FY 12 | FY 13 | FY 14 | FY 15 | FY 16 |
| O&M expense | 1,179.29 | 1,289.46 | 1,472.92 | 1,692.79 | 2,006.91 |
| Interest expense | 391.81 | 564.95 | 855.91 | 1,199.11 | 1,530.19 |
| Gross expense | 3,001.20 | 3,953.43 | 4,235.48 | 5,121.55 | 6,183.25 |
| Realistic | FY 12 | FY 13 | FY 14 | FY 15 | FY 16 |
| O&M expense | 1,075.85 | 1,176.01 | 1,339.02 | 1,538.90 | 1,824.46 |
| Interest expense | 353.71 | 512.66 | 782.65 | 1,106.45 | 1,423.27 |
| Gross expense | 2,859.65 | 3,787.68 | 4,028.32 | 4,875.00 | 5,893.89 |

It can be observed from above that the ARR estimate under the Optimistic scenario is least and the ARR estimate under the Pessimistic scenario is the highest among the three scenarios.

8.3. Performance Indices

8.3.1. Availability of Transmission System

MSETCL submits that as per the quality objectives, it is endeavour to maintain the availability of transmission system more than 98% for HVAC, more than 92% for HVDC bi pole links and more than 95% for HVDC back-to-back stations throughout the year for the period FY 2011-12 to FY 2015-16.

8.3.2. Transmission Losses

MSETCL submits that the transmission losses in the transmission network depends upon various factors such as shift of load centers, energy injection and drawl in to the network and the extent of inherent technical loss pertaining to the transmission equipments in use. Further, in current scenario the load is present on the western side, whereas the generation is predominantly on the eastern side, and the situation is likely to continue in future, therefore restricting the scope of reduction in Transmission Losses. MSETCL continuously strives to reduce the technical losses in the system and proposes to achieve the transmission losses in the system at the level of 4.85% for the period from FY 2011-12 to FY 2015-16.

9. Difficulties under MYT Regulations 2011

In Chapter 7, MSETCL has already discussed the difficulties faced under MYT Regulations, 2011 under relevant sections. However, the current Chapter provides a compilation of the various difficulties for the ready reference of the Hon'ble Commission.

9.1. Operation and Maintenance Expense

The MERC MYT Regulations, 2011 stipulates the following in respect to allowance of normative O&M Expenses for existing stations:

“ 61.5 Operation and Maintenance Expenses

...

...

61.6 Existing Transmission Licensee

| Voltage Level | Second Control Period | | | | |
|---|-----------------------|------------|------------|------------|------------|
| | FY 2011-12 | FY 2012-13 | FY 2013-14 | FY 2014-15 | FY 2015-16 |
| For Transmission lines as Rs Lakh/ckt km | | | | | |
| HVDC | 1492 | 1577 | 1667 | 1763 | 1863 |
| 765 kV | 0.74 | 0.78 | 0.83 | 0.88 | 0.93 |
| 400 kV | 0.53 | 0.56 | 0.59 | 0.63 | 0.66 |
| >66 kV & <400 kV | 0.21 | 0.22 | 0.24 | 0.25 | 0.26 |
| 66 kV and less | 0.13 | 0.14 | 0.14 | 0.15 | 0.16 |
| For Transmission Bays as Rs Lakh/bay | | | | | |
| 765 kV | 131.24 | 138.75 | 146.68 | 155.07 | 163.94 |
| 400 kV | 93.75 | 99.11 | 104.78 | 110.78 | 117.11 |
| >66 kV & <400 kV | 13.59 | 14.36 | 15.19 | 16.06 | 16.97 |
| 66 kV and less | 2.84 | 3 | 3.17 | 3.36 | 3.55 |

Further to this, the Hon'ble Commission in the Approach paper dated September 25, 2009 has mentioned to consider the actual O&M Expenses per bays and lines based on actual audited accounts, the same is reproduced below:

“ ...

‘The operation and maintenance expense norms for the Control Period shall be derived on the basis of average of the actual O&M costs per bay and O&M Costs per ckt. Km for the five years ending March 31, 2006 based on the audited financial statements, excluding abnormal O&M Expenses, if any subject to the prudence check of the Commission.

- 6. The Average of such O&M costs per bay and O&M costs per circuit km shall be considered as the costs for the financial year ended March 31, 2004 and shall be escalated at the rate of composite index that the Commission would compute based on Wholesale Price Index (WPI) and Consumer Price Index (CPI) by assigning appropriate weights to the same per annum arrived at Operation and Maintenance Expenses for the base year commencing from April 1, 2006.*
- 7. The basis of Operation and Maintenance Expenses for each subsequent year shall be escalated at the rate of composite index that the Commission would compute as mentioned above to arrive at the permissible O&M costs per bay and O&M costs per circuit km for the Control period. These values will be reviewed as a part of Annual Performance Review in terms of productivity level and efficiency factors.”*

MSETCL would like to submit that though the methodology adopted by the Hon’ble Commission for proposing the O&M Expenses norms were justified enough to capture the actual O&M Costs of MSETCL. However the norms specified, in the final Regulations did not capture the same. In addition to this, neither MSETCL was asked to submit any information nor there had been any consultation with MSETCL to fix the norms.

During the period FY 2006 to FY 2011, there has been an increase of 48% in the Transformation capacity of the MSETCL network. There has been significant increase in the overall asset size of MSETCL. The same has been captured in the graphs as under:

Table 53: Increase in Transformation Capacity

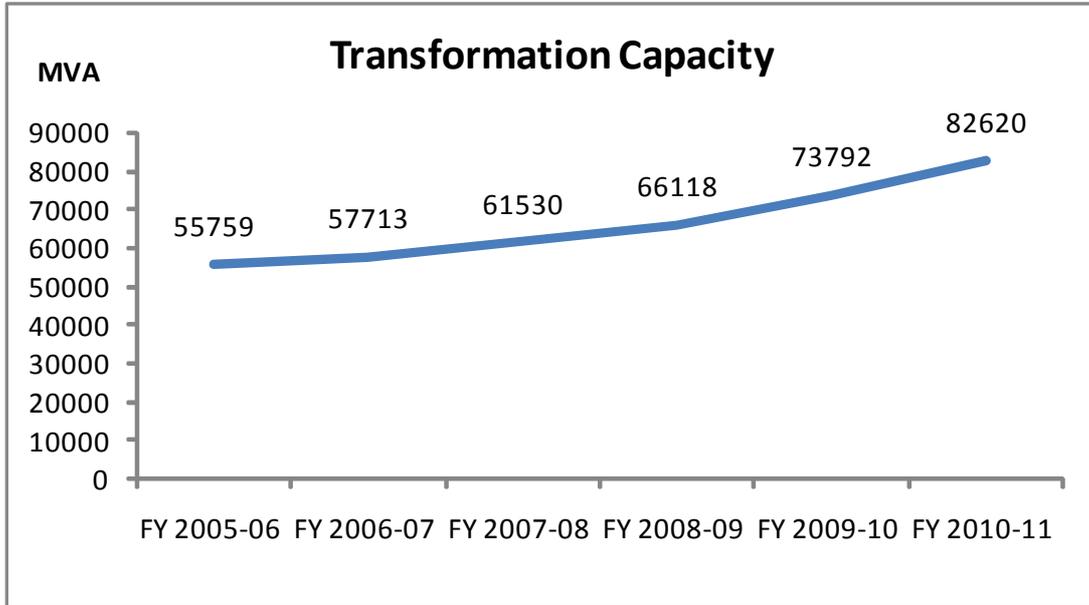
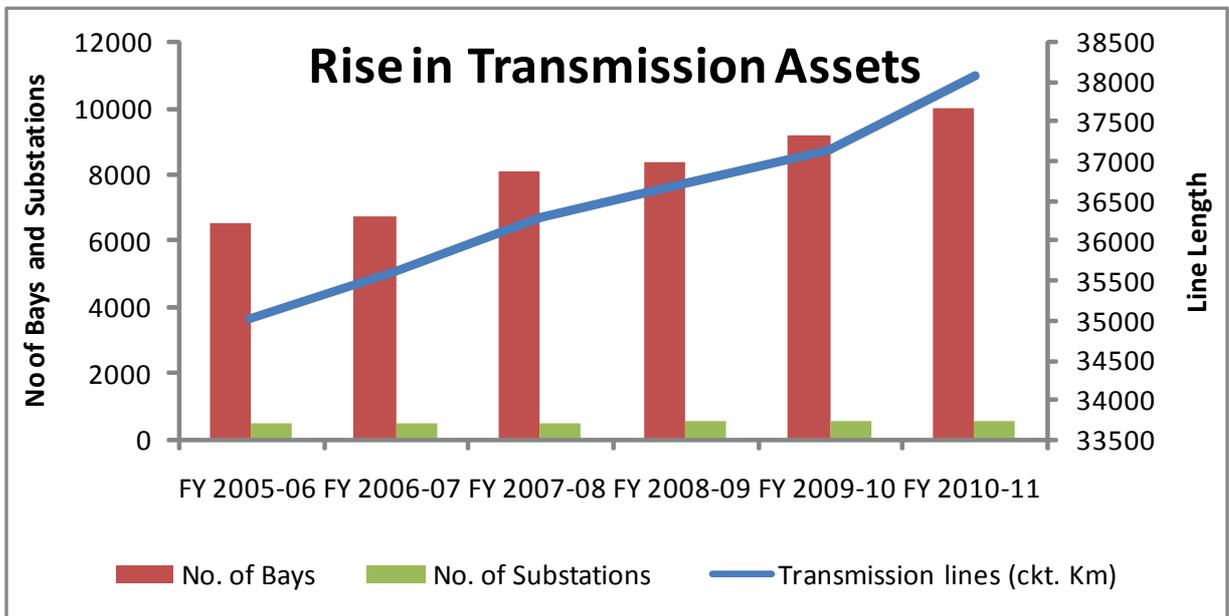


Table 54: Increase in Transmission Assets



The approach of the Hon’ble Commission of using the 2006 as the Base Year, failed to address the significant increase in the O&M expenses on account of substantial increase in the asset size of MSETCL.

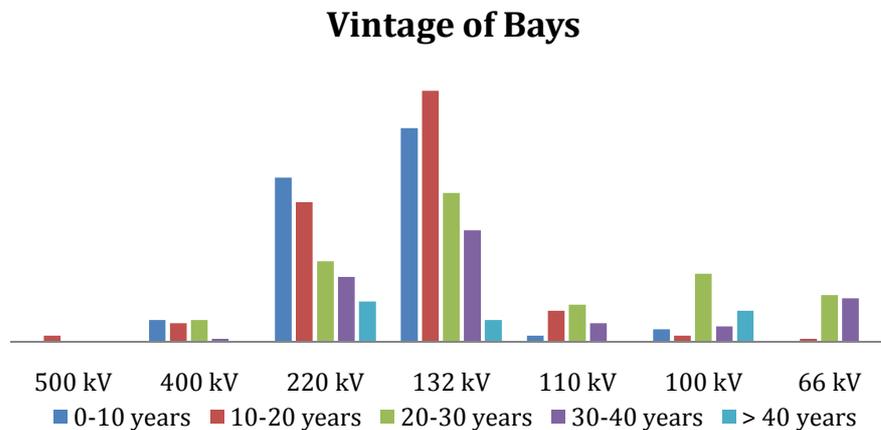
MSETCL further submits that the norms provided in the MYT Regulations 2011, are insufficient to capture the escalation desired to compensate for the rising WPI and CPI indices. Additionally, during erstwhile MSEB era, the R&M Expenses were on a lower side. Hence, it is imperative to use the current level of O&M expenses in specifying the norms for FY 2013 to FY 2016.

In the past also, there has been tremendous Regulatory Pressure to contain the said expenses within specified limits. Even with such internal restrictions to control the expenses, the actual O&M Expenses over the years have been higher than the approved limits.

Not only this, MSETCL is operating the oldest network of transmission assets in the State of Maharashtra and most of the equipment at various voltage levels have already crossed their useful life. MSETCL submits that R& M Expenses allowed by the Hon’ble Commission are not reflecting the R&M expenses requirement of Petitioner for last many years. The higher R&M expenses are mainly attributable to vintage of asset base and rise in Transmission Assets.

The vintage of the assets of MSETCL is provided in the graphic format as under:

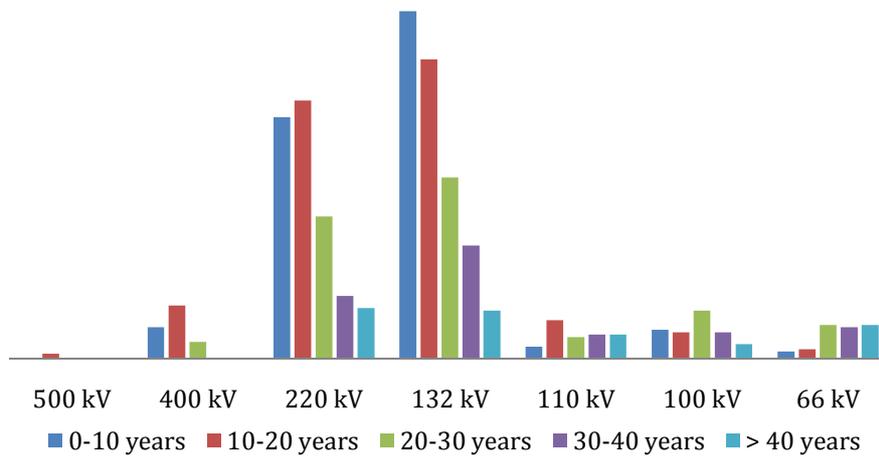
Table 55: Vintage of Bays



Note: Age of Transmission Bays owned by MSETCL as on 31st March 2010

Table 56: Vintage of Transmission Lines

Vintage of Transmission Lines



MERC (MYT) Regulations 2011, also provide O&M Norms for RInfra-T and TPC-T. The table below highlights the vast difference in the norms approved for MSETCL vis-à-vis, the norms approved for TPC-T and RInfra-T.

Table 57: Comparison between O&M Norms for Transmission Licensees

| Particulars | FY 2011-12 | | | FY 2012-13 | | | FY 2013-14 | | | FY 2014-15 | | | FY 2015-16 | | |
|-----------------------------------|------------|--------------|-----------|------------|--------------|-----------|------------|--------------|-----------|------------|--------------|-------|------------|--------------|-----------|
| | MSETCL | RInfr a-T | TPC- T | MSETC L | RInfra- T | TPC- T | MSETC L | RInfra- T | TPC- T | MSETC L | RInfra- T | TPC-T | MSETC L | RInfra- T | TPC- T |
| Ckt. Km. Basis | | | | | | | | | | | | | | | |
| -HVDC (Rs. Lakh) | 1492 | | | 1577 | | | 1667 | | | 1763 | | | 1863 | | |
| -765 kV | 0.74 | N/A | N/A | 0.78 | N/A | N/A | 0.83 | N/A | N/A | 0.88 | N/A | N/A | 0.93 | N/A | N/A |
| -400 kV | 0.53 | | | 0.56 | | | 0.59 | | | 0.63 | | | 0.66 | | |
| -above 66 kV and less than 400 kV | 0.21 | 0.36 | 1.09 | 0.22 | 0.38 | 1.16 | 0.24 | 0.4 | 1.22 | 0.25 | 0.43 | 1.29 | 0.26 | 0.45 | 1.37 |
| -66 kV and below | 0.13 | N/A | N/A | 0.14 | N/A | N/A | 0.14 | N/A | N/A | 0.15 | N/A | N/A | 0.16 | N/A | N/A |
| | | | | | | | | | | | | | | | |
| Bay basis | | | | | | | | | | | | | | | |
| -765 kV | 131.24 | N/A | N/A | 138.75 | N/A | N/A | 146.68 | N/A | N/A | 155.07 | N/A | N/A | 163.94 | N/A | N/A |
| -400 kV | 93.75 | | | 99.11 | | | 104.78 | | | 110.78 | | | 117.11 | | |
| -above 66 kV and less than 400 kV | 13.59 | 16.95 | 28.49 | 14.36 | 17.92 | 30.12 | 15.19 | 18.95 | 31.85 | 16.06 | 20.03 | 33.67 | 16.97 | 21.18 | 35.6 |
| -66 kV and below | 2.84 | 3.54 | 5.96 | 3 | 3.75 | 6.3 | 3.17 | 3.96 | 6.66 | 3.36 | 4.19 | 7.04 | 3.55 | 4.43 | 7.44 |

As seen above, the norms for MSETCL are way below the norms for the other two companies, when the expenses for the Company are much higher because of its vast network, presence of network in difficult terrain and remote areas.

MYT Regulations 2011, provides as under

“99 Power to amend

The Commission may, at anytime, vary, alter, modify or amend any provisions of these Regulations.”

MSETCL therefore requests the Commission to amend the Regulations by considering the above mentioned facts related to actual O&M expenses pertaining to HVDC and the consideration of higher R&M requirement due to vintage of asset base and addition of transmission assets pertaining to capital expenditure, and

9.2. Pre-tax Return on Equity

Regulation-32.2 of MERC MYT Regulations, 2011 stipulates the provision of Return on Equity for Transmission Utilities as below:

“32.2 Transmission Licensee and Distribution Licensee

32.2.1 Return on equity capital for the Transmission Licensee and Wires Business of Distribution Licensee shall be computed on the equity capital determined in accordance with Regulation 30 at the rate of 15.5 % per cent per annum, and for the Retail Supply of Electricity of Distribution Licensee, Return on equity capital shall be allowed a return at the rate of 17.5 % per cent per annum, in Indian Rupee terms, on the amount of equity capital determined in accordance with Regulation 30.”

MSETCL submits that the Regulation 30 of MERC MYT Regulations, 2011 stipulates to consider the debt: equity funding at the rate of 70:30. However the Hon’ble Commission in its existing MYT Period from FY 2006-07 to FY 2010-11 has allowed the debt equity ratio of 80:20. Accordingly , MSETCL has considered the same for future capex funding arrangement.

MSETCL further adds that Regulation 15 of CERC (Terms and conditions of Tariff) Regulation 2009-14, specifies pre-tax return on equity as below:

“15. Return on Equity. (1) Return on equity shall be computed in rupee terms, on the equity base determined in accordance with regulation 12.

(2) Return on equity shall be computed on pre-tax basis at the base rate of 15.5% to be grossed up as per clause (3) of this regulation:

*Provided that in case of projects commissioned on or after 1st April, 2009, an additional return of 0.5% shall be allowed if such projects are completed within the timeline specified in **Appendix-II**:*

Provided further that the additional return of 0.5% shall not be admissible if the project is not completed within the timeline specified above for reasons whatsoever.

(3) The rate of return on equity shall be computed by grossing up the base rate with the normal tax rate for the year 2008-09 applicable to the concerned generating company or the transmission licensee, as the case may be:

Provided that return on equity with respect to the actual tax rate applicable to the generating company or the transmission licensee, as the case may be, in line with the provisions of the relevant Finance Acts of the respective year during the tariff period shall be tried up separately for each year of the tariff period along with the tariff petition filed for the next tariff period.

(4) Rate of return on equity shall be rounded off to three decimal points and be computed as per the formula given below:

Rate of pre-tax return on equity = Base rate / (1-t)

Where t is the applicable tax rate in accordance with clause (3) of this regulation.

Illustration.-

(i) In case of the generating company or the transmission licensee paying Minimum Alternate Tax (MAT) @ 11.33% including surcharge and cess:

Rate of return on equity = 15.50 / (1-0.1133) = 17.481%

(ii) In case of generating company or the transmission licensee paying normal corporate tax

@ 33.99% including surcharge and cess:

Rate of return on equity = 15.50 / (1-0.3399) = 23.481%”

The Tariff Policy stipulates that the return on equity as notified by CERC should also be followed by SERCs.

MYT Regulations 2011, provides as under

“99 Power to amend

The Commission may, at anytime, vary, alter, modify or amend any provisions of these Regulations.”

Therefore, MSETCL prays to the Hon’ble Commission to amend the Regulations on ROE and assure the Transmission licensees a RoE, as specified by CERC.

9.3. Non-consideration of AAD

Regulation-31.2 of MERC MYT Regulations, 2011 stipulates the depreciation for Transmission Utilities as 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:

- d. 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.

- e. Depreciation shall be computed annually based on the straight line method at the rates specified in the **Annexure I** to these Regulations:*

Provided that the Generating Company or Transmission Licensee or Distribution Licensee shall ensure that once the individual asset is depreciated to the extent of seventy (70) percent, remaining depreciable value as on 31st March of the year closing shall be spread over the balance useful life of the asset, as provided in these Regulations. Provided that the Generating Company or Transmission Licensee or Distribution Licensee, shall submit all such details or documentary evidence, as may be required under this Regulation and as stipulated by the Commission, from time to time, to substantiate the above claims.

- f. The salvage value of the asset shall be considered at 10 per cent of the allowable capital cost and depreciation shall be allowed upto a maximum of 90 per cent of the allowable capital cost of the asset.*

.. “

In addition to the above, the provision of Advance against depreciation has been removed by revising the depreciation rates.

MSETCL submits the Hon'ble Commission that it has planned to fund its capital expenditure requirement through 80% debt over the second control period. The concept of AAD in CERC Tariff Regulations, 2004 was linked to the loan repayment. The main philosophy behind the concept of AAD was the bridge the gap between the repayment of loan and depreciation in respective year.

MSETCL understands that the Commission has introduced higher depreciation rates for calculation of depreciation leading to higher repayment ability. However, the depreciation rates specified by the Commission remain same in each case irrespective of the funding pattern of the Utility. MSETCL is meeting 80% of capital expenditure requirement through loans. Therefore the depreciation of MSETCL will always be lesser than the actual repayment requirement of loans.

MSETCL does not have any other revenue source except the transmission tariff; the disallowance of AAD therefore, will result into erosion of equity/RoE of MSETCL. Otherwise, MSETCL will not be able to meet its repayment obligation which will adversely impact the image of MSETCL.

MYT Regulations 2011, provides as under

“99 Power to amend

The Commission may, at anytime, vary, alter, modify or amend any provisions of these Regulations.”

Therefore MSETCL prays to the Hon'ble Commission to allow AAD as a part of depreciation.

As an alternative, the Hon'ble Commission may approve the same depreciation rates, without provision of AAD. However, it may allow a Return of 15.5% (RoE) on balance 10% of its funding, considered as normative equity. The approach shall also be consistent with the fact that the depreciation rates in MYT Regulations 2011, has been arrived at after considering a debt: equity ratio of 70:30, whereas MSETCL funds its Capex through a debt equity ratio of 80:20.

10.Submission to the Hon'ble Commission

MSETCL submits that the performance of the transmission system is a function of several input parameters, viz. energy transaction, vintage and technological advancement across its network etc. MSETCL has made sustained efforts to streamline its processes over the years as inherited from the erstwhile Maharashtra State Electricity Board (MSEB) period.

MSETCL humbly submits that the it has prepared the Business plan considering the factors which are within control of MSETCL, however MSETCL further requests the Hon'ble Commission to allow submission of further information and/or revision due to change in any accountable and non-accountable parameters for future years as part of the subsequent submissions.

The projections of ARR for FY 2011-12 and FY 2012-13, are in accordance with the MERC (Terms and conditions of Tariff) Regulations 2005, as directed by the Hon'ble Commission, vide its Order dated November 3, 2011.

The projections for FY 2013-14 to FY15-16, are based on MERC (Terms and conditions of Tariff) Regulations 2011. The estimate of expense and the working capital requirement have been considered based on the historical trend and as per MERC (MYT) Regulations, 2011. However on few items, MSETCL has relied on proposing the norms that reflects the justified expenses projection to meet the operational needs.

Further, MSETCL humbly requests the Hon'ble Commission to admit this Business plan and approve the Aggregate Revenue Requirement for the period FY 2011-12 to 2015-16 as provided in the Business Plan.