

Business plan of MSETCL For the Period from FY 2011-12 to 2015-16

Preface

Business plan of MSETCL for the period from FY 2011-12 to 2015-16 is prepared considering existing generation of Maharashtra, proposed generation upto 2015-16 and expected load upto Year 2015-16. The expected generation from the adjacent state such as Chhattisgarh and Gujarat are also considered while planning the evacuation schemes.

While planning for EHV substation, the upcoming load centres near major cities such as Mumbai, Pune, Nashik, Aurangabad, Nagpur and Kolhapur are also taken into account.

Delhi-Mumbai industrial corridor (DMIC) is being developed considering the load pockets such as Dighi, Sinner, Dhule and Shendra (Aurangabad) during the span from 2022-2032. Hence, these loads are not considered in present Business plan. **However, the DMIC corridor has its own generating plant of 1000 MW at Indapur Dist., Pune* which is likely to be established in 2022-23.** Aspect of deemed open access consumers above 1 MW (With reference to the letter from ministry of power, GOI dated 30.11.11.) is also considered in present business plan. The details of various aspects are discussed as below.

1. Mapping of generating stations in Maharashtra and adjacent states such as Chhattisgarh, Gujarat is done and is enclosed herewith. The various load centres near metropolitan regions, municipal corporations and major industrial areas are also marked on the map of India.

2. Technology advancements in the field of transmission :-

MSETCL is always a step ahead in accepting innovative and latest technology based practises to maintain its EHV grid and substations in trim condition.

EHV grid operations and maintenance of EHV substations and lines is a continuous process and all efforts are taken to keep trippings and breakdowns to a minimum level so as to achieve nearly 100% availability. To keep track of state of Art technology in the areas of substation design, protection, communication, maintenance and information is one of the objectives of MSETCL. The various practises to achieve this are shortlisted below

i) **HVDC transmission.**

Transmission of bulk power over very long distance is economical in case of HVDC transmission. At present ± 500 KV Bipole HVDC line of about 746 km from Chandrapur to Padghe is in service since 12th May 1999. In future VSC based HVDC technology may be adopted to meet the MMR region load through underground cables, thus overcoming ROW problems to large extent.

*Availability of gas for the proposed Generating station is uncertain

- ii) **765 KV HVAC transmission** –MSETCL (through JV) has decided to adopt 765 KV HVAC technology for evacuation of 1980 MW power from M/s Adani power plant towards load centre such as Aurangabad and onwards. This will necessarily minimise the transmission cost. Also 765kV corridor is proposed from Wardha to Retwadi in Pune District for evacuation of power from incoming power plant of M/S Lanco(2x660MW) at Wardha, M/S Jinhuvish(2x660MW) at Ner and M/S Ideal(2x270) at Umred. A pooling station of 765kV is also proposed at Wardha. This corridor will also support to evacuate power from Koradi(3x660MW).
- iii) **GIS Technology-**
Due to rapid urbanisation, the availability of land required for establishment of EHV substation has become critical issue. MSETCL has established Gas insulated Substations (GIS) in major cities like Pune (132 kV Rastapeth s/s) and Mumbai (220 kV Bhandup s/s).
- iv) **Underground Power cables**
Due to stringent norms of various departments such as PWD, forest and clearance problems in substations, MSETCL is thinking to adopt underground cables to avoid ROW problems.
- v) **Condition monitoring of ICT and Power transformers**
Requirement of 100% availability in case of intra state transmission system, has made it mandatory to test and monitor the health of transformers and lines. In line with these requirements various condition monitoring systems as mentioned below are adopted and are in day to day use.
 - a) **Online DGA kit for testing of transformer oil.**
 - b) **SFRA and Tan delta kit for transformers**
 - c) **Thermo vision camera for hot spot detection**
 - d) **Leakage current monitoring for lightening arrester**
 - e) **Digital breaker analyser to check tripping and closing time of breakers.**
 - f) **PID(puncture insulator detector)**
 - g) **Contact resistance measurement of circuit breakers etc.**
- vi) **Hot line maintenance**
Hot line maintenance units are established at Circle wise/Zone wise to avoid outages for maintenance. This is necessarily increasing system availability. Hot line techniques are being used to detect punctured insulator, attain hot spot and replacement of insulators strings and jump

vii) Numerical Protection System

Planning criteria makes it mandatory to limit the tripping time up to 100 ms in case of 400 KV and above and 160 ms below 400 kV. To minimise the tripping time old electromechanical relays are replaced by numerical relays. The numerical relays are not only fast in operation but also give fault details and the history record of tripping. The statistical details of commissioning of numerical protection schemes are given in Annexure- I

viii) Optical fibre communication

This makes it possible to transmit real time data. The speed of data transfer is also high. MSETCL is planning to lay 2801 kms of optical fibre cable with 48 fibres out of which 8 fibres for MSETCL use and remaining for commercial purpose. This project will be implemented through JV with M/S Sterlite and will be completed up to 2013-14. The benefits derived will be necessarily transferred to consumers, as envisaged in Section 41 of Electricity Act 2003.

ix) SCADA

Every generating unit and major substations are equipped with SCADA/RTU so that these are visible to SLDC for real time monitoring. At present 140 nos. of EHV S/S are equipped with SCADA units and data from these S/S is being sent to load despatch centres at Kalawa and Ambazari.

x) ERP

MSETCL has successfully commissioned ERP system. Breakdown reports and interruption reports are being sent through ERP and hence supporting to reduce interruption time. Also paper work is considerably reduced leading to saving in timing.

3). Ring main systems for major cities in Maharashtra state

With a view to maintain uninterrupted power supply in major cities EHV ring mains are already established. At present Mumbai, Pune has 220 KV ring main and Nagpur has 132 KV ring main. MSETCL has planned 220 KV ring main for Nagpur city up to Year 2014-15. Also 220 kV ring main is planned for Aurangabad-Jalna. MSETCL is planning to establish EHV ring main feeder to Solapur, Kolhapur, Sangli-Miraj-Kupwad corporation area. In near future most of the municipal corporation will be fed through EHV ring mains.

4.) CPP Generating plants of Railways –At present there is no Captive power plant of Railways in Maharashtra. However, Railway has applied for Long term open access to evacuate the power from their 1000 MW Captive power plant at Nabinagar Dist Aurangabad in Bihar state.

5) Removal of bottlenecks in load shedding withdrawal-Near about 33 pockets are identified where withdrawal of complete load shedding is not possible due to transmission system constraints. To remove these bottlenecks, MSETCL has undertaken system strengthening measures. The system strengthening works in respect of 10 no of such pockets are near completion and rest of the works are covered in business plan. Details are given herewith as annexure-II

6) Deemed open access consumers above 1 MW-MSETCL has planned its Transmission plan to take care of requirements of deemed open access consumer above 1 MW.

7) Reduction in transmission loss- At present transmission loss of intra state transmission system is 4.3 %(2010-11). MSETCL is planning to strengthen the system and taking various measures such as shunt capacitors, series capacitors, use of AL59 high ampacity conductor so as to reduce transmission losses. The details of year wise transmission losses are given as Annexure-III

8) Efficiency gains out of capital expenditure as per business plan-The gains of implementing various capex schemes cannot be quantified as a whole. However, the individual schemes are prepared and implemented for providing benefits to the system. The cost benefit analysis of the schemes would be identified and will be submitted at the time of approval.

9) Avenues to increase income from other sources-MSETCL is planning to lay OPGW in near future and the commercial utilisation of its various corridors. Hence, earning revenue from its idle infrastructure. MSETCL has formed JV with M/S Sterlite to lay 2801 Kms of optical fibre cable. The work is expected to be completed by 2013-14 and the profit earned will be transferred to the consumers as per Section 41 of Electricity Act 2003.

10) Substation and lines of Power Grid-Power grid is establishing its 765 Kv and 400 Kv transmission corridors through Maharashtra. The business plan of MSETCL also includes the lines to evacuate power from these substations. The details are given as annexure-IV

11) Power supply problems and grid disturbances- MSETCL has formed protection committee to review and analyse grid disturbances to avoid recur. In November 2010, major grid disturbances have caused black out in some of the parts in Mumbai. As per directives from Hon commission, a standing committee has been formed under Chairmanship of Director (Operations) , MSETCL. The committee has recommended certain measures and submitted its report to Hon commission on 17th January 2012. The measures on the part of MSETCL are included in business plan.

12) Guidelines for competitive bidding of transmission projects

MSETCL shall abide by the policy issued by G.O.M. on matter related to competitive bidding of transmission projects.

13) Non utilisation/under utilisation of bays in EHV substation-MSETCL has augmented its transformation capacity by way of new EHV substations , augmentation of transformers in various existing EHV substations and also erected additional bays so that additional 22 Kv /33 KV feeders can be laid to reduce length and load of existing distribution feeders. However, many bays are yet to be utilised by MSEDCL i.e. additional distribution feeders are not yet laid , hence defeating very purpose of augmented capacity and additional bays. Near about 535 nos 33 kv and 22 kv bays are left unutilised. MSETCL is pursuing the matter with MSEDCL. The copy of the letter is enclosed herewith.

The zone wise details of the 33kv/22kv spare bays are given as below

Sr NO	Name of Zone	No of 33kV spare Bays	No of 22kV spare bays
1	Amravati	113	0
2	Auragabad	82	0
3	Karad	49	0
4	Pune	36	39
5	Nashik	117	0
6	Nagpur	83	0
7	Washi	16	0
8	Total	496	39

14) Strengthening of STU

Reallocation of staff is being done by MSETCL as per requirement to strengthen State Transmission Utility. The fresh engineers are being sent to training, conferences in order to get appropriate exposures for load flow studies and technical advancement that is taking place globally.