

**BEST PRACTICES FOLLOWED BY BRIHANMUMBAI ELECTRIC SUPPLY &  
TRANSPORT UNDERTAKING IN ELECTRIC SUPPLY ACTIVITIES.**

The Brihan Mumbai Electric Supply & Transport i.e. BEST is a Distribution Licensee , a local authority engaged in the business of distribution of electricity in the old city limits of Mumbai covering an area about 67 sq. km. It is catering the services to 10.02 lacs consumers under different categories. The annual consumption is about 4635 MU with MD of 891 MW. The best practices followed by the utility in different areas are narrated as below:

**Reduction in losses - both system and revenue losses.**

The Loads of transformer and feeder exceeding 80% are reported /studied and action plan is formulated and executed before the loads cross 100%. This is done by commissioning new substation i.e. reducing LV length or laying parallel cable i.e. increasing cross-section area to supply same load. Hence losses are reduced. Thus 80% threshold for action implementation is followed. Amorphous core 11 /0.415 kV transformers are introduced in year 2000 to reduce losses. While processing tender for selection of low loss transformers BEST use transformer loss capitalization formula. BEST use all polypropylene capacitors instead of mixed dielectric having lesser losses. More accurate Electronic meters instead of electro mechanical meters were introduced very early especially for high consumption consumers.

For controlling the commercial losses a vigilance cell is established. The Vigilance cell is under direct control & supervision of the Chief Executive, BEST i.e. GM, BEST. Adequate tools & equipment like Accu-check, CMRI, Cameras, etc are arranged for the vigilance staff. Special gangs especially for disconnecting illegal lines to slums and unauthorized structures arranged in the evening shift. The cell is supported with Legal Advisor with expertise & experience in dealing with theft of electricity cases with the respective courts directly for assisting the Vigilance officers. All 3 phase and some single phase meters are scrutinized by Vigilance department before replacement as burnt, damaged, etc. to ensure tampered meter cases do not go undetected.

**Improved consumer satisfaction:**

A single Call Center for various consumers complaints regarding off supply is formed. Strengthening of help desk and Internal Grievances Redressal is arranged. An Emergency vehicle is made available 7x24 hrs on all 365 days of the year for restoration of electric supply for fast disposal of consumer grievances and requests. Various options for payment of electricity bill are made available. .All types of forms, duplicate electricity bills are made available through INTERNET.

### **Technological innovation and adoption thereof.**

BEST has Introduced Gas Insulated Switchgears at 110 kV and 33 kV levels to overcome the space constraint issues in Mumbai City and better service reliability. The Digitization of maps for better network information has been carried out . The other steps are as follows : Mobile cable testing van for quick locating address of cable faults, FRLS cables for control wiring for reducing damage during fire exigency, Introduction of Auto Power Factor Control units in substations for maintaining power factor according to load instead of fixed units, Introduction of SCADA in distribution system in 1970 based on electromechanical relays which is now replaced by microprocessor based system. The wireless communication technology is introduced to communicate with field staff. Group control of Street lighting based on sunset and sunrise timing through Automatic Street Light Management system (ASMS) facilitating one point control, Replacement of OCB.s, ABCB etc. by SF<sub>6</sub>/Vacuum switchgears to reduce fire hazards, Package type 11/0.415 kV substation to overcome space problems are some other steps taken.

BEST had Switched over from off-line billing system to on-line billing system. Through this system all activities are performed on line such as new connection, meter replacement, change in name, change in tariff and all other billing related complaints and requests. Installation of high technology LPRF meters to individual consumers which facilitate automatic meter reading. Meter readings are obtained with the help of hand held meter reading instruments to avoid human error and for uploading and down loading of data to the system. Introduction of onsite meter testing activity at site and load with the help of Standard Meter Testing equipment (Accu-check). All meters are tested with the help of fully automatic meter testing bench before installation at consumer's premises. Also, official testing and Consumers request regarding testing of meters are performed on fully automatic meter testing benches bought from Germany and Spain. BEST has Introduced pre-payment electricity meter.

### **Securing the interest of consumers :-**

BEST maintain Standard of Performance and Regulations stipulated by Maharashtra Electricity Regulatory Commission (MERC) strictly which secure consumers interest. Also offer Prompt Payment Discount, ECS incentive, Load Factor incentive, Power factor incentive etc. as applicable. Consumers Rights Statements are delivered through electricity bills. All procedures regarding filling of grievances are displayed on Notice Board of Ward Offices. Necessary help is given to needy consumer for lodging complaints in respective ward offices.

### **Skill development measures of employees.**

In house training is given to all staff and officers of Customer Care Departments to make awareness towards MERC Regulations, Standard Of Performance and to change mindset and positive approach for fast disposal of consumer grievances and requests. Officers are deputed to various training institutes to develop their skills and performance towards best services to consumers.

### **Imparting consumer education.**

BEST organizes various competitions through the schools to make the children aware of electrical safety and conservation of energy. BEST issues handbills of Consumer Right Statement, to make awareness about supply code and SOP. BEST displays various procedures, Tariff Orders on Notice Board at ward offices, cash collection centers. Procedure for grievances made under CGRF Regulations, Annexure 'C' form, Schedule 'A' etc. are made available at all help desks of ward offices. Various messages are forwarded from time to time through electricity bills regarding awareness towards electrical safety, conservation of energy, curbing of electricity theft, etc.

### **Optimization of resources for betterment of power sector.**

BEST lays cables in common excavation. In-house skilled manpower in Project/Erection activities and Maintenance which has helped in maintaining the quality of workmanship.

### **Improvement in Planning, design, construction and O&M activities and institutional measures adopted to achieve the objective of a BESTII established, efficient safe and secure power system.**

BEST maintains an installed capacity of 1.5 times the MD at 11kV level and 2.5 times the MD at 415 volts level. A Ring network is kept and is operated in radial 11kV and 415 volts. The additional installed capacity creates necessary redundancy for supply restoration and absorbing load growth. BEST maintains load data at various voltage levels. In-house erection and maintenance activities. Distribution automation at 11 kV and above level. BEST adopted heat shrinkable and epoxy jointing technology at a very early stage. BEST has Round the clock separate control centers for individual/building off supply, partial area off supply and large area off supply. BEST has a PPA power purchase agreement which is more than 50 years old with M/s TPC for ensuring uninterrupted power supply. BEST supplies electricity through individual meters on huts in hutment area since 1970 to curb theft cases. Insulated overhead cables were introduced to avoid shock and theft thereat.

BEST has maintenance schedule for Periodic oil filtering of transformers to reduce failure of transformer. BEST has established 33/0.415 kV substations to meet the bulk load on the large re-developed area such as Mill land.

### **Load and Demand management measures**

BEST system has day peak as against that of many other utilities which have evening peak when power is generally costly, however still BEST is actively exploring load response option for peak control & energy saving.

### **Energy Efficiency & Demand Side Management**

DSM Cell was created in BEST in year 2008 as per directives of MERC, since then it has been actively involved in developing DSM activities for BEST.

BEST has completed first phase of load research to study the electricity usage habits of consumers and thereby DSM potential was estimated in different segment of consumers.

DSM programs are proposed and approval of MERC is obtained in accordance with the DSM regulations. Presently BEST is implementing pilot programs in tube lights, fan and air conditioners to replace old in efficient equipment by new efficient ones. Experience in pilot programs will be used to design and implement future DSM programs.

BEST Undertaking has replaced all street lighting HPMV lamps by HPSV lamps and 80 watt HPMV in decorative garden lanterns were replaced by energy efficient 2 x 11 watt CFL. Switching on/off of street lights / garden lanterns is done by electronic timers using astronomical calendar thereby switching lights only at required time as per seasonal variations. Usages of LED lights is being actively considered for Street lighting in by lanes.