2022

# DISTRIBUTION COMPANY INTEGRATED INVESTMENT PLAN (DIIP) - MEPCO FOR F.Y 2021-22 TO F.Y 2025-26

THIS BUSINESS PLAN / DIIP ENTAILS GOALS AND OBJECTIVES AND INITIATIVES THAT WILL HELP MEPCO ACHIEVE THE STATED GOALS. THIS PLAN HAS BEEN PREPARED WITH EXTENSIVE CROSS-FUNCTIONAL DISCUSSIONS, COORDINATION AND TEAMWORK AND PROVIDES MEPCO THE ROAD MAP TO SUCCESS.

MEPCO | Khanewal Road Multan.

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# *Section -I*
# *Executive Summary*

## i. Introduction

Multan Electric Power Company (MEPCO), incorporated as a Public Limited Company, is responsible for the delivery of electricity to its customers spanning 13 districts of southern Punjab as set out in MEPCO's Distribution License number 06/DL/2002, granted by NEPRA under the NEPRA Act. On May 14, 1998, as a result of the restructuring of WAPDA's Power Wing, MEPCO assumed its official operations and is since then being headed by a Chief Executive Officer (CEO) who is in turn supported by nine Executive Directors.

MEPCO pays a power purchase price (in Rs/kWh) for the electricity it procures from the Central Power Purchasing Agency (CPPA) or from other sources on behalf of the CPPA which would include the generation and transmission charges regulated by NEPRA. The major objectives of the company include ensuring uninterrupted and stable power supply to all its customers along with state of the art customer care as well as establishing and operating reliable electricity distribution networks.

ii. Currently, MEPCO has 15709 active employees, employed in nine directorates and is responsible for distributing electricity to approximately 7.22 million consumers. The consumer mix comprises approximately 88.88% domestic consumers (6.42 million) including residential consumers in both urban and rural areas, 8.32% commercial consumers (0.60 million) including business consumers such as markets, plazas, and offices in both urban and rural areas, 0.82% industrial consumers (0.06 million) consisting of large and small industrial loads, 0.01% bulk consumers (458) consisting primarily of large societal consumers like housing societies, 1.37% agricultural consumers (0.099 million) including tube wells in rural areas, 0.56% General Service (0.041) consist of Govt. Offices, Semi & Govt Hospital and educational institutions and 0.02% other consumers (1,792).The sales mix consists of 56.25% domestic, 5.61% commercial, 16.38% industrial, 1.58% bulk, 18.33% agricultural, 1.69% General Service and 0.15% other consumers.

## iii. Purpose and Goal of Investment Plan

The Integrated Investment Plan entails MEPCO's vision, mission, core values, stakeholders' needs, general indicators, sales and consumer forecasts, power supply issues with limitations, human resources and organizational development, financial projections, regulatory requirements including quality of service, subsidies and legal restrictions affecting timely collection of delinquent payments, performance indices with initiatives and risk assessment and will serve as a central reference document for integrated cross-functional planning that will help MEPCO make informed decisions based on priorities.

The goal of the Investment Plan/Business Plan is to create a document which will be used by the CEO and senior managers of MEPCO to focus its activities and energies for the next five years in making MEPCO a financially viable company by improving the regulation and governance of the entity, introducing new technologies including upgrade of existing technology and machinery and improving human resources in line with best practices

worldwide. This plan will also be utilized by the Strategic Planning Committee to the Board for regular monitoring, to ensure that company achieves its stated objectives.

This Investment Plan covers a five-year period from FY 2021-22 to FY 2025-26, encompassing the following areas:

- Defining the activities and resources available to MEPCO through the incorporation agreements and laws relating to it.
- Identifying projections of power demand, power resources and population served expected in the time period from 2022-2026.
- Illustrating the strategic objectives for 2022-2026, aligned with optimally achievable scenario as defined by the regulator, which designated coordinators prepared to accomplish the strategic goals in the five year timeframe of the Investment Plan.
- The best and optimally achievable scenarios to demonstrate what is required and what can be achieved keeping in view the resources constraints and realities on ground.
- Projecting the financial impact on MEPCO's bottom-line of implementing the project plans.

### iv. Major Planning Situation

The following challenges faced by MEPCO require integrated cross functional planning:

- Technical challenges and technological advances that require MEPCO to upgrade the network, including metering to receive and measure continuous and reliable flow of power
- Operational challenges to maintain continuous flow of reliable power to the customers and meet their expectations in demand dominated, load-shedding driven regime
- Institutional challenges faced while developing the capacity of MEPCO
- Smooth power evacuation, especially related to variable renewables being integrated in the network
- Compliance with applicable laws and regulations
- Social responsibility to conserve energy and social up-lift

### v. Company's Investment Plan

The five year Investment Plan (FY 2022-26) is intended to be used by MEPCO managers and the Strategic Planning Committee of the Board of Directors as a reference guide to the upgradation and operations of MEPCO, taking into consideration the activities projected to occur in the next five years. Although the Investment Plan is based on a five-year window, it will be a living document and will be updated to reflect changes in requirements.

As per regulatory requirement specified in DIIP formats, two scenarios have been worked out, Best Case Scenario (if implemented, the company will achieve NEPRA standards in five years, comes with a higher cost) and Optimally Achievable Scenario (based on what company can fund, procure and implement realistically, comes with less cost, but compromise on the performance). The Multi

Year Tariff (MYT) of MEPCO will be based on the Achievable Scenario, and the Best Case is prepared to demonstrate the overall needs of the DISCO to meet the benchmarks specified by NEPRA in five years.

Abstract of the business plan based on the two scenarios is presented hereunder:

Under this five-year plan MEPCO will expand and rehabilitate is Transmission and Distribution (T&D) systems. Moreover, plans have been prepared to improve the financial, commercial, human resource and communications functions, including IT that supports the main T&D business. From new grid stations to AMRs for commercial improvements, initiatives have been planned to improve the overall performance of the company in an integrated manner. For details on scope please refer Section-V of this plan.

**Costs Summary:**

Total Cost (Capex+Opex) Best Case: **Rs. 149,382 Million**.
Total Cost (Capex+Opex) Optimally Achievable Case: **Rs. 110,304 Million**.

**Benefits Summary:**

- Optimally Achievable Case:Savings of **1354.12 MkWh** of energy through loss reduction and smooth dispersal of power from new generation.
- Best Case Savings of **1926.69 MkWh** of energy through the best implementation for loss reduction and smooth dispersal of power from new generation.

**Loss Reduction and Collections Targets:**

MEPCO will reduce the losses from 15.0% in FY 2020-21 to 13.8% by FY 2025-26 by reducing the 1.2% T&D Loss in five years by implementing the best case. However, as per the funding available MEPCO will implement the achievable case thus reducing company loss from 15.0% in FY 2020-21 to 14.2% by FY 2025-26 by reducing the T&D loss by 0.8%. Moreover, MEPCO has always attained the collection efficiency of 100% that will be maintained throughout the control period.

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# *Section -II*
# *The Company's– Baseline*

## i. General Information

- **History**

Multan Electric Power Company Ltd., MEPCO, is a Public Limited Utility Company, responsible for the distribution of electric power to the population. MEPCO was incorporated in Pakistan under the Companies Ordinance 1984, on May 14, 1998,in line with Government policy of unbundling and corporatizing Pakistan's power sector, as a result of restructuring of WAPDA's Power Wing after the enforcement of NEPRA Regulation of Generation, Transmission and Distribution of Electric Power Act (XL of 1997). MEPCO's Distribution License No. 06/DL/2002 was issued by NEPRA on April 25, 2002 for the sale of power.

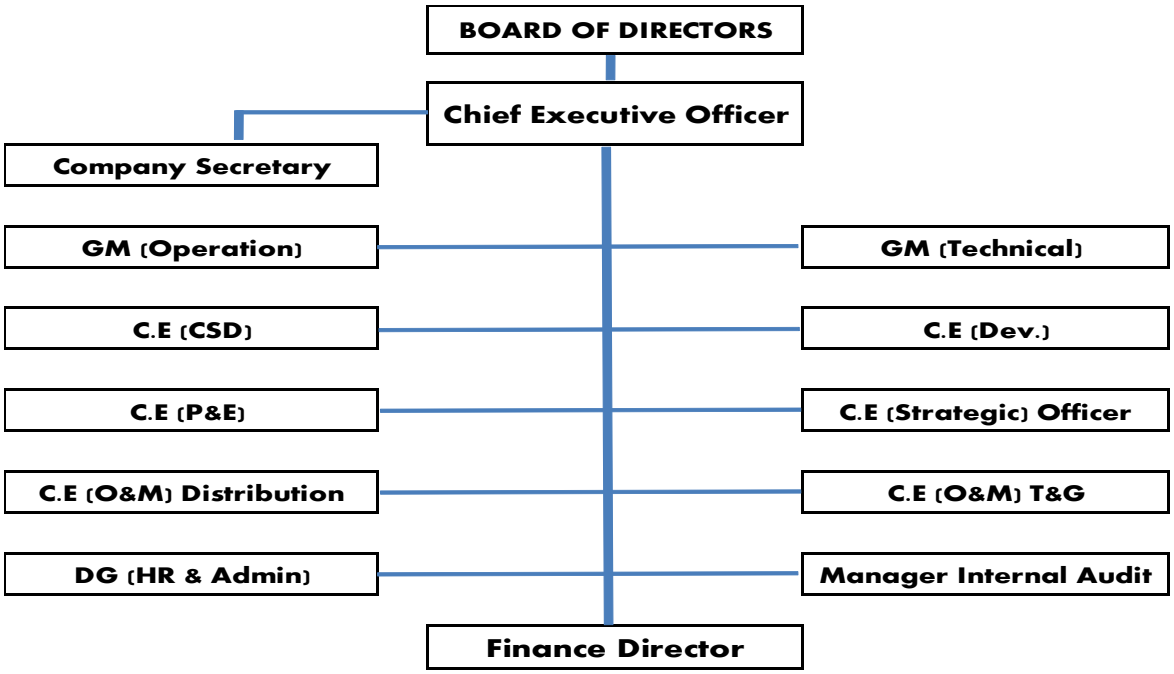
- **Geographic Coverage**

The network facilities of Multan Area Electricity Board (MAEB) of WAPDA were transferred to MEPCO after its incorporation. MEPCO's service area comprises of 13 administrative districts of southern Punjab i.e. Multan, Muzaffargarh, Layyah, D.G.Khan, Rajanpur, Lodhran, Bahawalpur, R.Y.Khan, Khanewal, Sahiwal, Pakpattan, Vehari and Bahawalnagar, spanning a total service area of 1,05,505 sq.km and 7,217,677 consumers.

- **Company's Structure, Human Resources and Corporate Governance**

The following organogram explains the management hierarchy of MEPCO.

Its Board of Directors, consisting often members, is responsible for overall policy making, decision making and guiding the authority. The day-to-day affairs of the company are run by its nine Executive Directors who are responsible for their respective functions, under the overall control of the Chief Executive Officer.




- **Statistical & Financial Information**, including Purchases and Sales of Electricity, losses, and net profit / loss depicting the company's financial health is tabulated below:

| Description | Units | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 |
|---|---|---|---|---|---|---|
| **Units Sold** | MkWh | 13,254 | 15,853 | 16,310 | 16,382 | 17,466 |
| **Units Received** | MkWh | 15,952 | 19,006 | 19,367 | 19,327 | 20,541 |
| **T & D Losses.** | % | 16.91 | 16.6 | 15.8 | 15.2 | 15.0 |
| **Sales Revenue** | M.Rs. | 126,040 | 138,685 | 180,237 | 235,312 | 278,931 |
| **Purchase Cost** | M.Rs. | 113,690 | 140,019 | 192,694 | 225,725 | 248,407 |
| **O & M Cost** | M.Rs. | 18,619 | 17,266 | 21,875 | 31,940 | 28,623 |
| **Repair & Maintenance** | M.Rs. | 1,686 | 1,888 | 1,299 | 1,726 | 1,729 |
| **Salaries/Pensions** | M.Rs. | 14,217 | 12,338 | 15,223 | 17,854 | 21,777 |
| **Other Expenses** | M.Rs. | 2,716 | 3,040 | 5,353 | 12,360 | 5,117 |
| **Fixed Assets** | M.Rs. | 81,680 | 91,089 | 100,028 | 108,890 | 117,672 |

- **General level of Investments:** MEPCO has made the following investments in different projects:

**(Mln Rs.)**

| Description | F.Y 2015-16 | F.Y 2016-17 | F.Y 2017-18 | F.Y 2018-19 | F.Y. 2019-20 | F.Y. 2020-21 |
|---|---|---|---|---|---|---|
| Development of Power (DOP) | 851 | 1,318 | 1099 | 853 | 1,378 | 600 |
| Energy Loss Reduction (ELR) | 1,183 | 1,538 | 1654 | 1,871 | 2,192 | 2,130 |
| STG | 1,457 | 1,695 | 2271 | 2,796 | 2,291 | 2156 |
| Village Electrification / Capital Contribution | 2,283 | 2,000 | 2846 | 4,172 | 4,994 | 1,767 |
| Deposit Works / SDG | 2,400 | 2,867 | 3496 | 2,517 | 2,404 | 748 |
| Others | 1,834 | 1,998 | 1558 | 1,230 | 628 | - |
| **Total** | **10,008** | **11,416** | **12,924** | **13,439** | **13,887** | **7,401** |

- **Relationship between staff and consumers:** There are total 15989 employees working in MEPCO as of FY 2019-20. The relationship between staff and consumers for the last five years is as follows:

| Description | 2014-15 | 2015-16 | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 |
|---|---|---|---|---|---|---|---|
| Customers | 5,116,073 | 5,374,773 | 5,701,391 | 6,072,783 | 6,485,432 | 6,861,110 | 7,217,677 |
| Employees | 16387 | 17445 | 17364 | 17220 | 16869 | 15989 | 16054 |
| Customer/Employee Ratio | 312 | 308 | 328 | 353 | 384 | 429 | 450 |

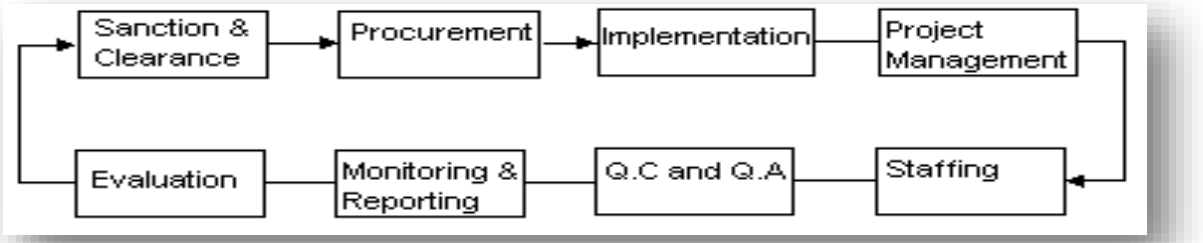
- **Existing Project Design and Implementation System of DISCO**

The project design and implementation system of MEPCO is based on the resource allocation (the anticipated amount of material required and obtained for the execution of the project), resource leveling (the required amount of resources to be provided at a proper time e.g, at the start of a phase, more work force and less material may be required as compared to the growth or maturity stage) and resource scheduling/loading (the amount of resources required during the specified phase of the project.

MEPCO has the required capability, personnel and expertise to implement and execute a project. It has well established, functioning departments that are capable of handling projects of similar nature and magnitude. Some of these departments are as under:

- Engineering
- Material Management
- Finance
- Commercial
- Project Management Unit

Project implementation is summarized in the form of a flow chart as below:




- **Existing Operation System of DISCO**

The existing administrative layout of MEPCO operation system is given below:

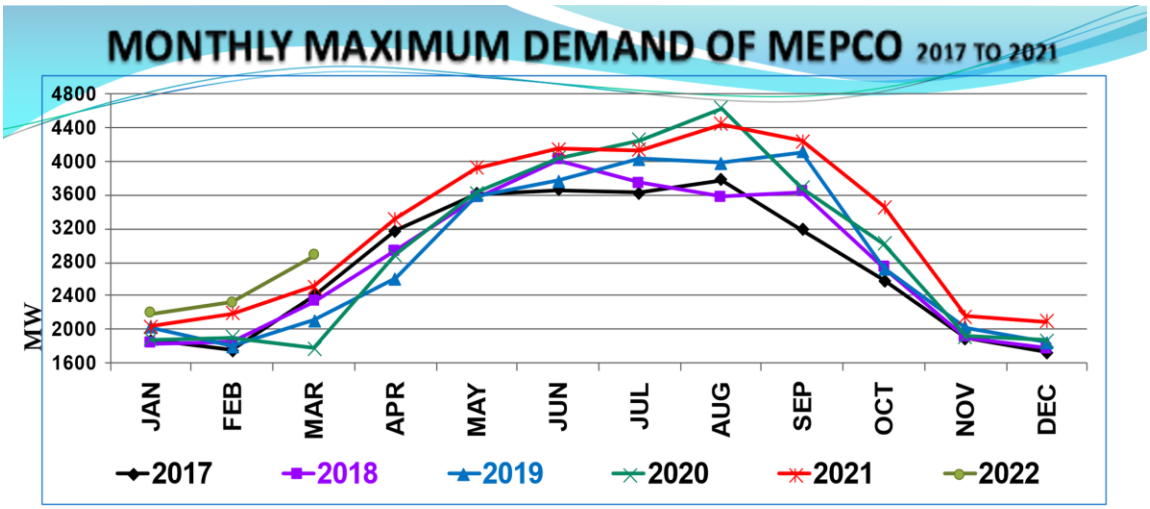
Each Distribution division has one revenue /customer service office. The distribution circles, divisions, customer services offices and subdivisions deal with all types of customers of the company. The Grid System Operation (GSO) circle, divisions and subdivisions take care of and maintain the power supply through 132kV and 66kV systems comprising of the transmission lines and grid stations while the Grid System Construction (GSC) executes 66kV and 132kV grid station and transmission lines works. The Metering and Testing (M&T) section takes care of the installation, maintenance and testing of energy meters of all types. The Construction Section undertakes the implementation and execution of investment programs of 11kV and LT (0.4 kV), System Augmentation Program (ELR and DOP), deposit works and village electrification.

| Description | Circles | Divisions | Subdivisions | R.O Office |
|---|---|---|---|---|
| **Distribution** | **Distribution** | **9** | **38** | **181** |
| **Grid System Operation** | **2** | **6** | **34** | **-** |
| **Metering & Testing** | **2** | **9** | **-** | **-** |
| **Construction** | **1** | **9** | **17** | **-** |
| **Grid System Construction** | **1** | **4** | **8** | **-** |
| **Total** | **15** | **66** | **240** | **38** |

## ii. Power Demand and Supply

- **Daily Load Demand**

The daily Load Demand with the Amount of Load Shedding and the computed Demand is provided in the Table below for the month of June 2021.




| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | MAX |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2017 | 1864 | 1756 | 2402 | 3179 | 3616 | 3661 | 3628 | 3784 | 3182 | 2583 | 1893 | 1722 | 3784 |
| 2018 | 1831 | 1846 | 2333 | 2936 | 3565 | 4018 | 3738 | 3579 | 3640 | 2737 | 1902 | 1772 | 4018 |
| 2019 | 2021 | 1802 | 2110 | 2603 | 3584 | 3771 | 4029 | 3979 | 4115 | 2718 | 2023 | 1849 | 4115 |
| 2020 | 1876 | 1907 | 1772 | 2887 | 3628 | 4042 | 4251 | 4635 | 3682 | 3017 | 1920 | 1874 | 4635 |
| 2021 | 2040 | 2184 | 2509 | 3316 | 3921 | 4148 | 4735 | 4443 | 4242 | 3460 | 2148 | 2098 | 4735 |
| | | | | | | | | | | | | | |

**Secondary Transmission and Distribution Network Condition:**

MEPCO has a total of 140 grid stations including 05 Nos. 66 kV Grid Stations. The details by grid stations (includes loading) is placed at **Annexure-1.** MEPCO serves over Seven million customers through over a thousand of distribution feeders approximately 1652 feeders with a total length over seventy nine thousand eight hundreds & Thirty Seven kilometers. The total number of distribution transformer in MEPCO is over 187,791 with over 9,102 MVA.

The total T&D losses are provided at **Annexure-2**. However, the segregate of Technical and non-technical losses is not available. The evaluation of Transmission & Transformation (T&T) Losses by third party has been completed by M/s Power Planner International. The D loss study is in process with M/s Power Planner International and is in process and will be completed in 2022 using SynerGEE and GIS.

**iii. Financial Management:**

The accounting systems and the corresponding back-office operations of MEPCO were legacy based which were not only unable to meet the growing needs of the company but also incapable of providing timely information required for senior management to make effective decisions or properly monitor and control utility operations. To cope with the said issues, three modules of ERP i.e. FICO, MM & HR have been implemented in MEPCO. Now, Financial, Human Resource and Material Management data is available through SAP module.

Now, the financial transactions are entered in SAP from all cost centers of MEPCO scattered in 13 district of Punjab Province. Many financial reports are available in ERP module for decision making at management level. However, automation of pension process in MEPCO is being planned in coming years to strengthen overall financial management and increasing the system reliability. The system of inventory / material management is operative in ERP/ SAP. All record of all stores is accessible to the users/ senior management for quick decision making. The ERP material management module is also helpful in financial discipline of stores and the processes.

The Human resource is considered the most important assets of an organization. The effective human resource management is the key to success of any organization. MEPCO has implemented HR module of SAP/ ERP. Now, most of the human resource processes are being run through ERP/ SAP.

However, the SAP/ ERP module are not integrated with the billing system of MEPCO which hampers the overall efficiency of the system. The consumer data available through billing system and other data is manually integrated to a certain level which limits benefits of SAP/ ERP implementation.

The MEPCO requirement for Operating and Maintenance expenses for the Financial Year 2019-20 was Rs. 28,623 million. The brief head-wise detail is provided in the table below:

| Sr.# | Expense Head | O&M Expense Requirement (Rs. Million) |
|---|---|---|
| 1 | Salaries and Benefits | 21,777 |
| 2 | Repair and Maintenance | 1,729 |
| 3 | Travelling Expenses | 952 |
| 4 | Vehicle Expenses | 399 |
| 5 | Other Expenses | 3,766 |
| | Total | 28,623 |

### iv. HR Management

The current strength of MEPCO for the year 2020-21 is 15709 employees against sanctioned post of 24690 that make occupancy rate 65 %. Among these 512 are in the management cadre i.e Grade-17 and above, while the remining 15197 are below Grade-17

| Sr.No. | Designation | BPS | Sanctioned | Working | Vacant |
|---|---|---|---|---|---|
| 1 | Chief Executive Officer | 20 | 1 | 1 | 0 |
| 2 | General Manager (Tech.) | 20 | 1 | 0 | 1 |
| 3 | General Manager (Op ) | 20 | 1 | 1 | 0 |
| 4 | General Manager (CS) | 20 | 1 | 0 | 1 |
| 5 | Chief Engineer (O&M) Distn: | 20 | 1 | 1 | 0 |
| 6 | Chief Engineer (O&M) T&G | 20 | 1 | 1 | 0 |
| 7 | Chief Engineer (Dev.) | 20 | 1 | 1 | 0 |
| 8 | Chief Engineer (P&E) | 20 | 1 | 0 | 1 |
| 9 | Chief Strategic Planner | 20 | 1 | 1 | 0 |
| 10 | D.G / G.M / Chief Engineer (MIRAD) | 20 | 1 | 0 | 1 |
| 11 | HR & Admn Director | 20 | 1 | 1 | 0 |
| 12 | Finance Director | 20 | 1 | 0 | 1 |
| 13 | Director General (IS) | 20 | 1 | 1 | 0 |
| 14 | Director General (Commercial) | 20 | 1 | 1 | 0 |
| 15 | S.Es | 19 | 26 | 26 | 0 |
| 16 | Manager (HRM) | 19 | 1 | 1 | 0 |
| 17 | Manager (Admn) | 19 | 1 | 1 | 0 |
| 18 | Manager (Exam) | 19 | 1 | 1 | 0 |

| | | | | | |
|---|---|---|---|---|---|
| **19** | **Manager (CM)** | **19** | **1** | **1** | **0** |
| **20** | **Manager (Transport &Security)** | **19** | **1** | **1** | **0** |
| **21** | **Manager (Public Relations)** | **19** | **1** | **1** | **0** |
| **22** | **Manager (M.M)** | **19** | **1** | **1** | **0** |
| **23** | **Manager (Commercial)** | **19** | **1** | **1** | **0** |
| **24** | **Manager (Internal Audit)** | **19** | **1** | **0** | **1** |
| **25** | **Manager (Legal & Labour)** | **19** | **1** | **0** | **1** |
| **26** | **Manager (MIS)** | **19** | **1** | **1** | **0** |
| **27** | **Manager Corporate Accounts** | **19** | **1** | **1** | **0** |
| **28** | **Manager (CPC)** | **19** | **1** | **1** | **0** |
| **29** | **Manager (Project Financing) PMU** | **19** | **1** | **0** | **1** |
| **30** | **Manager (Civil)** | **19** | **1** | **1** | **0** |
| **31** | **Company Secretary** | **19** | **1** | **0** | **1** |
| **32** | **Manager (Legal / Contracts)** | **19** | **1** | **0** | **1** |
| **33** | **XENs** | **18** | **113** | **109** | **4** |
| **34** | **DM (HRM / Admn)** | **18** | **4** | **4** | **0** |
| **35** | **DM (D&I) / DCM** | **18** | **10** | **10** | **0** |
| **36** | **DM (MM) / RSM** | **18** | **6** | **3** | **3** |
| **37** | **DM (Computer & P/SA)** | **18** | **7** | **7** | **0** |
| **38** | **DM (Operation & Development)** | **18** | **1** | **1** | **0** |
| **39** | **DM (ERP) MEPCO H.Qs** | **18** | **1** | **0** | **1** |
| **40** | **DM (Corporate Accounts)** | **18** | **5** | **2** | **3** |
| **41** | **DM (Finance) MIRAD** | **18** | **1** | **0** | **1** |
| **42** | **Sr. Audit Officer** | **18** | **2** | **0** | **2** |
| **43** | **DM/AM (L&L)** | **18/17** | **1** | **0** | **1** |
| **44** | **DM (Legal / Contracts)** | **18** | **1** | **0** | **1** |
| **45** | **DM (Transport)** | **18** | **1** | **0** | **1** |
| **46** | **DM (Security)** | **18** | **1** | **0** | **1** |
| **47** | **DM (Civil)** | **18** | **1** | **1** | **0** |
| **48** | **DM (Property Management)** | **18** | **1** | **0** | **1** |
| **49** | **DM (Civil Const:) GSC** | **18** | **1** | **0** | **1** |
| **50** | **DM (Environment & Safeguard)** | **18** | **1** | **1** | **0** |

| | | | | | |
|---|---|---|---|---|---|
| **51** | **Jr. Engineers/ SDOs** | **17** | **363** | **262** | **101** |
| **52** | **AM (HRM / Admn)** | **17** | **23** | **11** | **12** |
| **53** | **AM (Public Relation)** | **17** | **1** | **0** | **1** |
| **54** | **Asstt. Company Secretary** | **17** | **1** | **0** | **1** |
| **55** | **AM (CS) / RO** | **17** | **42** | **24** | **18** |
| **56** | **AM (MM) / FSM** | **17** | **15** | **4** | **11** |
| **57** | **AM (P/SA)** | **17** | **7** | **2** | **5** |
| **58** | **AM (Computer)** | **17** | **14** | **8** | **6** |
| **59** | **AM (CISA)** | **17** | **1** | **0** | **1** |
| **60** | **AM (Corporate Accounts)** | **17** | **18** | **11** | **7** |
| **61** | **Audit Officer** | **17** | **6** | **3** | **3** |
| **62** | **AM (Civil)** | **17** | **5** | **2** | **3** |
| **63** | **A.M (Social Impact)** | **17** | **1** | **0** | **1** |
| **64** | **AM (Environment)** | **17** | **1** | **0** | **1** |
| **65** | **Assistant GIS Specialist** | **17** | **1** | **0** | **1** |
| **66** | **A.M (Data Base & Networks)** | **17** | **1** | **0** | **1** |
| **67** | **A.M (MDC & MDM)** | **17** | **1** | **0** | **1** |
| **68** | **A.M (Field Operations / CIS Support)** | **17** | **1** | **0** | **1** |
| **69** | **AM (SAP) HCM** | **17** | **1** | **0** | **1** |
| **70** | **AM (SAP) FICO** | **17** | **1** | **0** | **1** |
| **71** | **AM (SAP) MM** | **17** | **1** | **0** | **1** |
| **72** | **AM (Microsoft Administrator)** | **17** | **1** | **0** | **1** |
| **73** | **AM (VM Administrator)** | **17** | **1** | **0** | **1** |
| **74** | **AM (Linux Administrator)** | **17** | **1** | **0** | **1** |
| **75** | **AM (Network Administrator)** | **17** | **1** | **0** | **1** |
| **76** | **AM (Network Administrator (Core)** | **17** | **1** | **0** | **1** |
| **77** | **AM (Chemcial) under TRW** | **17** | **1** | **0** | **1** |
| **78** | **Special Judical Magistrate** | **17** | **1** | **0** | **1** |
| | **TOTAL** | | **727** | **512** | **215** |

| Sr.No | Designation | BPS | Santioned | Working | Vacant |
|---|---|---|---|---|---|
| 1 | AMI SUPERVISOR | 16 | 3 | **3** | **0** |
| 2 | COMPUTER OPERATOR | 16 | 33 | **31** | **2** |
| 3 | SUPERVISOR (D.C) | 16 | 80 | **62** | **18** |
| 4 | SUPERVISOR (D.E) | 16 | 154 | **76** | **78** |
| 5 | DIVISIONAL ACCOUNTS OFFICER & ASSISTANT B&AO | 16 | 138 | **130** | **8** |
| 6 | OFFICE SUPERINTENDENT | 16 | 62 | **50** | **12** |
| 7 | STENO GRADE-I/STENO-I/APS | 16 | 42 | **39** | **3** |
| 8 | ASSTT. AUDIT OFFICER | 16 | 30 | **28** | **2** |
| 9 | COMMERCIAL SUPDT. | 16 | 38 | **33** | **5** |
| 10 | TEHSILDAR RECOVERY | 16 | 9 | **3** | **6** |
| 11 | SPORTS OFFICER | 16 | 1 | **1** | **0** |
| 12 | OFFICE ASSISTANT/HEAD CLERK | 15 | 299 | **264** | **35** |
| 13 | FOREMAN | 15 | 43 | **20** | **23** |
| 14 | LS-I(LINE SUPPTT-I | 15 | 665 | **433** | **232** |
| 15 | ACCOUNT ASSISTANT | 15 | 258 | **149** | **109** |
| 16 | AUDIT ASSISTANT | 15 | 130 | **43** | **87** |
| 17 | SECURITY INSPECTOR | 15 | 9 | **5** | **4** |
| 18 | SR. STORE KEEPER | 15 | 26 | **15** | **11** |
| 19 | IT TECHNICIAN (SYSTEM) | 15 | 1 | **0** | **1** |
| 20 | IT TECHNICIAN (NETWORKS) | 15 | 1 | **0** | **1** |
| 21 | ERP USERS | 15 | 23 | **0** | **23** |
| 22 | HEAD DRAFTSMAN-A | 15 | 14 | **8** | **6** |
| 23 | LINE FOREMAN I | 15 | 89 | **22** | **67** |
| 24 | SSO I | 15 | 348 | **194** | **154** |
| 25 | TEST INSPECTOR (GSO/ P&I) | 15 | 11 | **7** | **4** |
| 26 | TEST INSPECTOR (M&T) | 15 | 20 | **17** | **3** |
| 27 | METER READING SECTION SUPERVISOR/MRSS | 15 | 9 | **7** | **2** |
| 28 | COMMERCIAL ASSISTANT (CSC) | 15 | 676 | **559** | **117** |
| 29 | DATA CODER | 15 | 106 | **49** | **57** |
| 30 | DATA ENTRY OPERATOR/DEO | 15 | 101 | **39** | **62** |
| 31 | LS-II(LINE SUPPTT-II | 14 | 648 | **443** | **205** |
| 32 | STENO GRADE-II | 14 | 40 | **15** | **25** |
| 33 | CIVIL OVERSEAR | 14 | 6 | **4** | **2** |
| 34 | DATA CONTROL SUPERVISOR (DCS) | 14 | 2 | **0** | **2** |
| 35 | JR. STORE KEEPER | 14 | 39 | **12** | **27** |
| 36 | STOCK VERIFIER | 14 | 6 | **2** | **4** |
| 37 | SUB ENGINEER | 14 | 11 | **4** | **7** |
| 38 | SUB ENGINEER CIVIL | 14 | 6 | **2** | **4** |
| 39 | HEAD DRAFSMAN-B | 14 | 56 | **15** | **41** |
| 40 | ASSTT. FOREMAN | 14 | 131 | **65** | **66** |
| 41 | LAB ASSISTANT | 14 | 48 | **28** | **20** |
| 42 | LINE FOREMAN II | 14 | 88 | **62** | **26** |
| 43 | SSO II (SUB.ST.OPE) | 14 | 190 | **138** | **52** |
| 44 | TEST ASSTT. (M&T) | 14 | 32 | **22** | **10** |
| 45 | ASSTT. DRAFTSMAN | 13 | 71 | **26** | **45** |
| 46 | TELEPHONE SUPERVISOR | 13 | 2 | **1** | **1** |
| 47 | IMAM MASJID/KHATIB-CUM-IMAM | 12 | 1 | **1** | **0** |

| | | | | | |
|---|---|---|---|---|---|
| 48 | LINEMAN-I | 11 | 1851 | **1649** | **202** |
| 49 | CARE TAKER | 11 | 4 | **1** | **3** |
| 50 | GRAPHIC DESIGNER | 11 | 1 | **0** | **1** |
| 51 | CABLE JOINTER | 11 | 6 | **0** | **6** |
| 52 | MS-I | 11 | 88 | **31** | **57** |
| 53 | RELAY MECHANIC | 11 | 2 | **2** | **0** |
| 54 | ASSTT. DIGITIZER | 11 | 5 | **0** | **5** |
| 55 | JR. CLERK/LDC/TCC | 9 | 929 | **422** | **507** |
| 56 | LINEMAN-II | 9 | 1839 | **1661** | **178** |
| 57 | METER READER | 9 | 2478 | **1757** | **721** |
| 58 | DRIVER (HTV) | 9 | 74 | **40** | **34** |
| 59 | FITTER-I | 9 | 69 | **31** | **38** |
| 60 | MS-II | 9 | 89 | **62** | **27** |
| 61 | S.S.A | 9 | 167 | **101** | **66** |
| 62 | TELEPHONE TECH. | 9 | 1 | **0** | **1** |
| 63 | SECURITY SERGEANT | 8 | 13 | **12** | **1** |
| 64 | STOCK CLERK | 7 | 16 | **14** | **2** |
| 65 | ALM(ASSTT. LINEMAN) | 7 | 5657 | **3819** | **1838** |
| 66 | TELE. OPERATOR / TCC | 7 | 14 | **4** | **10** |
| 67 | CARPENTER | 7 | 3 | **0** | **3** |
| 68 | METER MECHANIC/MM | 7 | 42 | **42** | **0** |
| 69 | SURVEYOR | 7 | 12 | **0** | **12** |
| 70 | WELDER | 7 | 10 | **0** | **10** |
| 71 | PHOTOGRAPHER | 7 | 1 | **0** | **1** |
| 72 | FITTER II | 7 | 107 | **15** | **92** |
| 73 | HELPER | 7 | 311 | **47** | **264** |
| 74 | TRACER | 7 | 82 | **34** | **48** |
| 75 | A.S.S.A | 7 | 605 | **245** | **360** |
| 76 | DRIVER (LTV) | 6 | 862 | **538** | **324** |
| 77 | SECURITY GUARD | 6 | 1505 | **291** | **1214** |
| 78 | LADY SECURITY GUARD | 6 | 3 | **0** | **3** |
| 79 | STORE KEEPER | 6 | 3 | **2** | **1** |
| 80 | GATE CLERK | 5 | 13 | **10** | **3** |
| 81 | VEHICLE MECHANIC | 5 | 2 | **0** | **2** |
| 82 | TIRE SHOP OPERATORS | 5 | 2 | **0** | **2** |
| 83 | PATWARI | 5 | 3 | **0** | **3** |
| 84 | RECEPTIONIST | 5 | 4 | **2** | **2** |
| 85 | TRAINER | 5 | 2 | **0** | **2** |
| 86 | AC MECHANIC | 5 | 1 | **1** | **0** |
| 87 | AUTO ELECTRICIAN | 5 | 2 | **0** | **2** |
| 88 | ELECTRICIAN-I / II | 5 | 34 | **3** | **31** |
| 89 | PLUMBER | 5 | 2 | **1** | **1** |
| 90 | TUBEWELL OPERATOR | 5 | 25 | **11** | **14** |
| 91 | WORK MISTERY | 5 | 1 | **0** | **1** |
| 92 | MACHINE ATTENDENT | 5 | 11 | **2** | **9** |
| 93 | COOK | 4 | 21 | **6** | **15** |
| 94 | PPC. OPERATOR | 4 | 6 | **4** | **2** |
| 95 | WASHING HELPER | 3 | 2 | **0** | **2** |
| 96 | TRUCK CLEANER/LORY CLEANER | 3 | 117 | **43** | **74** |
| 97 | STORE HELPER | 3 | 136 | **63** | **73** |
| 98 | QASID | 2 | 1 | **0** | **1** |
| 99 | DAFTRI | 2 | 52 | **13** | **39** |
| 100 | WAITER/BEARERS | 2 | 27 | **10** | **17** |
| 101 | NAIB QASID | 1 | 646 | **560** | **86** |

| | | | | | |
|---|---|---|---|---|---|
| 102 | SANITARY WORKER/SWEEPER | 1 | 613 | **240** | **373** |
| 103 | MALI | 1 | 583 | **279** | **304** |
| 104 | STORE COOLI | 1 | 12 | **2** | **10** |
| | **TOTAL** | | **23963** | **15197** | **8766** |

MEPCO regularly conducts training and capacity building of its employees largely through self-owned training facilities (CTCs and RTCs), WAPDA Engineering Academy and WAPDA Staff College. The trainings that are mandated by WAPDA for the Officers are conducted at the Engineering Academy and Staff College while the local training centers organize around fifteen to twenty regular training programs each year for MEPCO employees.

### v. IT Directorate

IT Directorate MEPCO has been playing a pivotal role of being a catalyst for making available enterprise-wide integrated business automated infrastructure for efficient and effective decision-making. This office is responsible for providing IT related technical & infrastructure support to all MEPCO which include consumer billing and its allied reports, MEPCO web site management, support to field formations for AMR & Mobile Meter Reading and management of IT hardware infrastructure at state of the art tier 3 Data Center in Multan.

The implementation of Integrated Billing System (IBS) in all MEPCO Operational Circles from 2018 has made the communication faster as information of any kind can be generated in few hours which were the task of days in conventional COBOL billing system.

Development of online MIS website is providing continuous support to field formations for checking the status of online payment, defaulter management from Sub Division to Circle and then at MEPCO level.

Implementation of Smart Meters (AMI) infrastructure has benefitted MEPCO a lot and MEPCO has made a tremendous success in carrying our operational activities in AMI monitoring which resulted in reduction in losses and improved payment collection.

The state of the art tier 3 data center is ready to cater the needs of MEPCO IT Infrastructure. This data center is well equipped with redundant infrastructure, central repository, co-location services up to 10 Giga Network connectivity, reduced operational cost and business continuity and assurance.

| **MEPCO SERVERS & STORAGE & Network INFRASTRUCTURE (EXISTING)** | | | | | | |
|---|---|---|---|---|---|---|
| **Sr. No** | **Device Name** | **Type** | **Quantity** | **Location** | **Software / Application / OS / DB** | **Project Name** |
| 1 | HP DL-380 G8 | Rack Mount Server | 1 | DC MEPCO | **Software** ERP-SAP | ERP-SAP |
| | HP BLc7000 enclosure | Blade server enclosure | 1 | DC MEPCO | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | HP BL460c Gen 8 | Blade Servers | 2 | DC MEPCO | (PRD, QAS, DEV, SOL, App) / **OS** Linux SUSE **DB** SYBASE ECC-6 | |
| | HP BL460c Gen 9 | Blade Servers | 7 | DC MEPCO | | |
| | HP DL-360 Gen 9 | Rack Mount Server | 2 | DC MEPCO | | |
| | HP DL-60 | Rack Mount Server | 1 | DC MEPCO | | |
| | HP 1840 Store Easy | NAS | 1 | DC MEPCO | | |
| | Dell Equal Logic PS6210Xs | SAN | 1 | DC MEPCO | | |
| | HP MSL 4048 | Tape Library | 1 | DC MEPCO | | |
| | Juniper SRX-3400 | Router Cum Firewall | 2 | DC MEPCO | | |
| | Huawei USG 6650 | NGFW | 2 | DC MEPCO | | |
| | Cisco 6807-XL | Core Switch (L2+L3+L4) | 1 | DC MEPCO | | |
| | N5K-C5548UP-FA Cisco Nexus 5548Up Switch | Switch | 1 | DC MEPCO | | |
| | Juniper Srx-210 | Router Cum firewall (Remote Offices) | 19 | MEPCO FORMATION | | |
| | Cisco 2960-XL | Access Switches for HQ | 16 | MEPCO FORMATION | | |
| | Cisco 2960-XL | Switch (Remote Office) | 24 | MEPCO FORMATION | | |
| | Cisco C3650 | Switch (layer 2+Layer3) | 1 | MEPCO FORMATION | | |
| | AIR-CAP 1552 | Cisco Wireless Bridge | 2 | MEPCO FORMATION | | |
| | AIR-CAP1602 | Cisco access point | 17 | MEPCO FORMATION | | |
| | APC UPS (650, 1KVA, 2KVA) | UPS | 23 | MEPCO FORMATION | | |
| | Power, Access Control, Fire Supperation & Cooling System | Power Modules, Battery Modules, ATS Panel, Genset | 1 | DC MEPCO | | |
| | Desktop PCs | PCs | 350 | MEPCO FORMATION | | |
| | Laptop | Laptop | 25 | MEPCO FORMATION | | |
| | UPS | UPS | 350 | MEPCO FORMATION | | |
| | HP Printers | Printers | 125 | MEPCO FORMATION | | |
| | Scanner | Scanner | 53 | MEPCO FORMATION | | |

| **MEPCO SERVERS & STORAGE & Network INFRASTRUCTURE (EXISTING)** | | | | | | |
|---|---|---|---|---|---|---|
| **Sr. No** | **Device Name** | **Type** | **Quantity** | **Location** | **Software / Application / OS / DB** | **Project Name** |
| | SPARC T5-2 server 16 cores 3.6 GHz | Server | 1 | DC PITC | | |
| | Oracle ZFS Storage ZS3-2 | SAN | 1 | DC PITC | | |
| | Cisco 3560X | Switch | 1 | DC PITC | | |
| | Cisco 5500 | FW | 1 | DC PITC | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Cisco C-1941 | Router (Remote Office) | 9 | MEPCO FORMATION | | |
| | Cisco C-1921 | Router (Remote Office) | 1 | MEPCO FORMATION | | |
| | Cisco 800 Series | Router | 18 | MEPCO FORMATION | | |
| | Cisco 2900 Series | Switch | 32 | MEPCO FORMATION | | |
| | UPS 10 KVA | UPS | 2 | MEPCO FORMATION | | |
| | KM-Pro-951 | Heavy Duty Laser Printer | 7 | MEPCO FORMATION | | |
| | Canon IR Adv 8595 & 6265 Printers | Heavy Duty Laser Printer | 3 | MEPCO FORMATION | | |
| | HP M806 | Heavy Duty Laser Printer | 3 | MEPCO FORMATION | | |
| | Line Printers | Heavy Duty Laser Printer | 11 | MEPCO FORMATION | | |
| | Desktop PCs | PCs | 202 | MEPCO FORMATION | | |
| | Laptops | Laptop | 12 | MEPCO FORMATION | | |
| | Printer | Printer | 79 | MEPCO FORMATION | | |
| | UPS | UPS | 39 | MEPCO FORMATION | | |
| | Scanner | Scanner | 1 | MEPCO FORMATION | | |
| 3 | Dell Power Edge R430 Server (Backup Server + Domain) | Rack Mount Server | 2 | DC MEPCO | **Software** MicroStar AMI **OS** Window Server 2012 **DB** MS SQL Mongo | RF |
| | Dell PowerEdge R730 Server ( HA Cluster for Database & Application Server) | Rack Mount Server | 2 | DC MEPCO | | |
| | Dell SCv2020 Storage System | SAN | 2 | DC MEPCO | | |
| | Dell Power Vault TL1000 | Tape Library | 2 | DC MEPCO | | |
| | Cisco ISR 4351 (3GE, 3NIM,25M, 4G Flash, 4G DRAM, IPB) | Router | 2 | DC MEPCO | | |
| | Cisco Catalyst 3650 24 port Data 4x1G Uplink | Switch | 2 | DC MEPCO | | |
| | Brocode FC Switch | Switch | 2 | DC MEPCO | | |

| **MEPCO SERVERS & STORAGE & Network INFRASTRUCTURE (EXISTING)** | | | | | | |
|---|---|---|---|---|---|---|
| **Sr. No** | **Device Name** | **Type** | **Quantity** | **Location** | **Software / Application / OS / DB** | **Project Name** |
| 4 | PowerEdge R620, Intel ,Xeon , E-26XX v2 | Server | 5 | DC PITC | **Application** AMI Galaxy **OS** | AMI |
| | Backup & CDP Appliance Dell | Server | 1 | DC PITC | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | PowerVault DL4000 | | | | Windows Server 2012 **DB** MS SQL VM Ware-5 | |
| | 1-NMS &1- vCenter Server Power Edge R 320 | Server | 2 | DC PITC | | |
| | Equallogic PS6210E | SAN | 1 | DC PITC | | |
| | Dell Power Vault TL4000 | Tape Library | 1 | DC PITC | | |
| | MOXA GSM Modems N-Port (5610) 8 Port RS-232 | Device Server | 6 | AMI Cell | | |
| | Dell Sonic Wall NSA 4500 appliances | FW | 1 | DC PITC | | |
| | Dell Netowrking N4032F, 24x 10GbE SFP + Fixed Ports, 1x Modular bay, 2x Power Supplies | Switch | 2 | DC PITC | | |
| | Dell Networking N3024, L3, 24x 1GbE, 2x10Gbe SFP + fixed ports, stacking, IO | Router | 2 | DC PITC | | |
| | Sonicwall TZ 215 | FW | 1 | AMI Cell | | |
| | Mikrotik Router Board 750 | Firewall cum Router | 1 | AMI Cell | | |
| | Desktop PCs | PCs | 194 | | | |
| | UPS | UPS | 194 | | | |
| | Printer | Printer | 194 | | | |
| 5 | HP Proliant ML310c Gen8 Server Machine | Server | 1 | DC PITC | **Application** Hexing AMI G3 **OS** Windows Server 2008 **DB** Oracle | EAS AMR KBK |
| | Seltec Powerlink 1600 UPS 100AH | UPS | 1 | DC PITC | | |
| 6 | Data Base and Web Linus (Model: Dell Power Edge R710, HDD: 1 TB, RAM: 24GB, Cores: 4 [2.4GHz] | Server | 1 | DC PITC | **Application** AMI Galaxy **OS** Windows Server 2012 **DB** MS SQL | EAS AMR MTI |
| | UPS along with batteries | UPS | 1 | DC PITC | | |

| **MEPCO SERVERS & STORAGE & Network INFRASTRUCTURE (EXISTING)** | | | | | | |
|---|---|---|---|---|---|---|
| **Sr. No** | **Device Name** | **Type** | **Quantity** | **Location** | **Software / Application / OS / DB** | **Project Name** |
| 7 | Web Server (HP Proliant ML310e Gen8 Server Machine) | Server | 1 | DC PITC | **Application** ESEP | EAS AMR |

| | | | | | | |
|---|---|---|---|---|---|---|
| | UPS alongwith batteries | UPS | 1 | DC PITC | **OS** Windows Server 2008 **DB** MS SQL | IMS |
| 8 | Core i5 (HP Elite Desk 800 G2) Tower PC with 16 GB RAM | Computer System | 1 | DC MEPCO | Windows Server 2018 (Temporary basis) | Unmanned Grid by KICS |
| 9 | CISCO Small Buisness RV042 | Switch | 1 | MPCC | - | MPCC |
| 10 | HP Itanium, rx 3600 / rx 2620-2, 1.4 GHz, 2 Processors, Dual Core, 4 GB RAM, 3 x 146 GB SASH DD, DAT72 & Ultrium 448, redundant Power Supplies, rack mount 17" TFT. | | 5 | IT Centers, Multan, DGK, Bahawalpur, Sahiwal & RYK | **App** WEB **OS** Open VMS | Cobol Billing Infra |
| | UPS Emerson 10 KVA, GE 6 KVA, Voltac 3 KVA | UPS | 14 | | | |
| | Stablizer 10 KVA GL-10 KVAST | Stablizer | 3 | | | |
| 11 | Bio Matric Machines ZK Techo | BioMatric | 16 | MEPCO FORMATION | - | Other |

### vi. Commercial Management

The commercial operations of MEPCO were legacy based and did not offer much in terms of transparency, data accuracy, system efficiency and services to consumers. Therefore, there was a dire need to improve commercial procedures and bring them at par with best practices adopted by utilities worldwide. With the vision to improve the overall commercial operations MEPCO implemented an optimal fusion of activities that would be in order to revolutionize the business practices adopted by MEPCO which took its commercial operations many steps further.

The old billing system of MEPCO was characterized by manual and cumbersome processes, inadequate controls, insufficient commercial focus, limited transparency and a lack of reliable information. Therefore, CIS, which is the critical backbone of customer care and commercial operations, was implemented at all over MEPCO.

As far as meter reading process is considered, the orthodox practice was recording the reading and calculating the consumption on customer records (Kalamzu card), transferring this data to the meter reading list, obtaining approval for the compiled readings by operating personnel and then entering the reading and the consumption into the computer which was a time consuming process leaving little or no time to verify suspect readings. Therefore, data manipulation and transcription errors were common causing the entire process to be highly inefficient with poor internal controls. In response to this, MEPCO implemented the IMR initiative under which the process of meter reading was re-engineered and the role of the MIS directorate was increased to maintain registers electronically, eliminate redundancies and ensure better monitoring methods. The HHUs were implemented in two Circles of MEPCO with help of USAID PDP.MEPCO Subsequently implemented meter reading through HHUs in all operation circles. MEPCO replaced HHUs with Mobile phones with better operational efficiencies i.e, 2037 Nos., larger mega pixels, cameras with zoom and retake facilities. MEPCO has achieved Accuracy %age upto 96% of June 2021 and is committed to achieve 100% accuracy level.

The following table illustrates the trend of units purchased from CPPA and subsequent billing to the consumers by MEPCO:

(Units in GWh)

| **Description** | **2016-17** | **2017-18** | **2018-19** | **2019-20** | **2020-21** |
|---|---|---|---|---|---|
| Units Received from CPPA | 15951 | 19006 | 19367 | 19327 | 20541 |
| Units Billed to Customers | 13253 | 15853 | 16310 | 16382 | 17466 |
| Units Lost | 2698 | 3153 | 3057 | 2945 | 3075 |
| Losses (%) | 16.9 | 16.6 | 15.8 | 15.2 | 15.0 |

The Table below gives an illustration of the billing and collection pattern of MEPCO:

(Revenue in Million Rs)

| Description | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 |
|---|---|---|---|---|---|
| Revenue Billed to Customers | 141744 | 176024 | 209568 | 239410 | 272576 |
| Revenue Collected from Customers | 140986 | 175458 | 209146 | 225540 | 282404 |
| Revenue Collection (%) | 99.47 | 99.68 | 99.80 | 94.21 | 103.61 |
| AT &C Losses (%) | 17.4 | 16.9 | 15.9 | 20.2 | 11.9 |

**vii.** Moreover, net- metering has been established in MEPCO. NET-Metering Generates low cost electricity during daytime, when power demand maximizes and MEPCO is unable to provide peak demand load and is helping in relieving MEPCO distribution system overloading, as solar power through net-metering is consumed in homes and adjoining areas. Power generation through net-metering can be rapidly financed/implemented by home owners through own resources or bank loans. It enables conservation of hydel power during daytime to provide higher dispatch of hydel power at night and is offering potential to rapidly grow MEPCO distributed power through 'net-metering' resulting in saving on power transmission cost and losses. Currently Net Metering Cell in MEPCO has achieved the 300 Nos connections target.

**viii.** MEPCO has established Net Metering Cell to facilitate the application process & to submit its progress to PEPCO. Moreover, the procurement of Bidirectional Meters is under process at Manager MM (Procurement).

**ix. Internal Control**

- **Investment Approval**

  The company has adopted WAPDA procedures and PEPCO approved book of Financial Powers for processing all types of expenditures. The above documents prescribe financial and administrative powers of various offices for different type of expenditures.

  The investment program is categorized into three components: Development of Power, Rehabilitation / Energy Loss Reduction and Secondary Transmission Lines and Grid Stations and now been transformed into the Distribution Integrated Investment Plan (DIIP)/ Business Plan, which also covers other functional areas plans as well.

  The Planning Department under supervision of CEO and Chief Engineer and in consultation with Operation, Finance and other Directorates prepared PC-1s for DOP, ELR & STG. The PC-1s were submitted to Planning Division of GOP after approval of BOD/Authority for final approval from ECNEC and subsequently they were approved. The approved PC-1s are the basis of annual investment. At present the Development Working Party (DWP) has been formed to approve the DOP, ELR & STG plans based on MEPCO's own resources and they are under approval

process. Now DIIP will be utilized for getting regulatory approval first and then taking the desired course of approval, based on funding sources.

- **Internal Audit**

  There are three types of audits conducted in MEPCO Internal Audit, Govt. Audit and Audit by a chartered company. Each has different scope and objectives. The internal audit processes of MEPCO are governed by the legacy systems which have missed the mark to adequately identify non-compliance with existing procedures such as:

  - Units consumed but consumer not billed
  - Damaged or slow meters
  - Inaccurate meter reading
  - Units billed to nonexistent consumers
  - Failure to monitor accounts with payment arrangements

  Under the co-sourcing arrangement, a co-sourcing partner was hired through PDP provided assistance to MEPCO to implement a risk based audit approach as defined in the new internal audit manual for a period of one year. After a year, the performance of the audit function was evaluated and it was revealed that the internal audit function has significantly improved as the desired controls were established with in the processes. The capacity and capability of the internal audit staff was also increased.

**x. Legal and Contractual Framework**

The primary function of MEPCO is to distribute electrical power to the residents and industries within its service area.

The important legal and regulatory documents, principal contracts, and laws under which MEPCO must operate are:

- The Companies Ordinance 1984
- MEPCO Memorandum of Association
- MEPCO Articles of Association
- Distribution License 2002
- NEPRA Performance Standard 2005
- Income Tax Ordinance 2001

The Companies Ordinance of 1984 encompasses all the rules and regulations for businesses registered with Security Exchange Commission of Pakistan (SECP). The Ordinance provides legal protection to the businesses, with the SECP keeping a close check on financial and corporate entities to ensure the stakeholders' interest. According to the Ordinance, MEPCO has to follow the Memorandum of Association and Articles of Association.

According to its Memorandum of Association, in May 1998, MEPCO was incorporated as a Limited Liability Company with the right to acquire properties and grid stations of WAPDA with the sole purpose of carrying on and expanding the business and supplying electricity to the areas formerly supplied by the Multan Area Electricity Board (AEB). Similarly, the Companies Ordnance of 1984 provides a framework of rules and regulations to MEPCO, known as its Articles of Association, which cause MEPCO to be classified as a Public Limited business and therefore subject to the laws which apply to such corporations.

In April 2002, NEPRA granted a distribution license to MEPCO as per section 21 of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997. According to it, MEPCO can engage in distribution services and make sales of power to consumers in the Service Territory and the Concession Territory subject to and in accordance with the terms and conditions of the license.

NEPRA also prescribes separate performance standards for generation, transmission and distribution of safe, efficient and reliable electric power to all the consumers.

Additionally, the taxation system is defined by the Income Tax Ordinance of 2001. Like all DISCOs, MEPCO has to comply with this Ordinance and file the following returns:

- Annual income tax return
- Monthly sales tax return
- Statement of deductions and calculations
- Monthly withholding tax
- Quarterly advance tax

The following deductions are made by MEPCO and are duly submitted to the Government of Pakistan:

- Sales tax
- Withholding tax on sales tax
- Withholding tax on goods
- Withholding tax on sales

# *Section -III*
# *Forecasts for Next Five Years*

Through Power Market Survey (PMS), MEPCO prepares the forecast ten years. The actual Statistics for the Year 2020-21 are provided. The forecasts for the period of FY 2021-22 to FY 2025-26 are tabulated in this section. Additionally, the generation plan is prepared centrally by NTDC that is also attached.

## i. Consumer Growth by Category

| Category/ Year | Domestic | Commercial | Small Industry | Industrial | Bulk | T/ Well | Public Light | Others | Total |
|---|---|---|---|---|---|---|---|---|---|
| **2020-21** | **6,415,415** | **600,662** | **48,498** | **11,016** | **458** | **99,127** | **1,666** | **40,835** | **7,217,677** |
| **2021-22** | **6,800,340** | **636,702** | **51,408** | **11,677** | **485** | **105,075** | **1,766** | **43,285** | **7,650,738** |
| **2022-23** | **7,344,367** | **687,638** | **55,521** | **12,611** | **524** | **113,481** | **1,907** | **46,748** | **8,262,797** |
| **2023-24** | **7,785,030** | **728,896** | **58,852** | **13,368** | **556** | **120,289** | **2,022** | **49,553** | **8,758,566** |
| **2024-25** | **8,252,131** | **772,630** | **62,383** | **14,170** | **589** | **127,507** | **2,143** | **52,526** | **9,284,079** |
| **2025-26** | **8,747,260** | **818,988** | **66,126** | **15,020** | **624** | **135,157** | **2,272** | **55,678** | **9,841,125** |

## ii. Energy and Demand Forecasts

**Category-wise Energy Sales (GWh) – Including Load Shedding**

| Description | 2020-21 | 2021-22 | 2022-23 | 2023-24 | 2024-25 | 2025-26 |
|---|---|---|---|---|---|---|
| **Domestic** | 9825 | 10248 | 10863 | 11514 | 12205 | 12937 |
| **Commercial** | 981 | 1073 | 1138 | 1206 | 1279 | 1355 |
| **Small Industries** | 383 | 395 | 419 | 444 | 470 | 498 |
| **M&L Industries** | 2477 | 2927 | 3102 | 3288 | 3486 | 3695 |
| **Bulk** | 276 | 298 | 316 | 335 | 355 | 376 |
| **Tube Well** | 3201 | 3714 | 3937 | 4173 | 4423 | 4689 |
| **Public Light** | **20** | **22** | **23** | **24** | **26** | **27** |
| **Others** | **302** | **362** | **384** | **407** | **431** | **457** |
| **TOTAL** | **14766** | **19038** | **20180** | **21391** | **22675** | **24035** |
| **Growth %** | **6.62** | **9.00** | **6.00** | **6.00** | **6.00** | **6.00** |

**Category-wise Energy Sales (GWh) – Excluding Load Shedding**

| Description | 2021-22 | 2022-23 | 2023-24 | 2024-25 | 2025-26 |
|---|---|---|---|---|---|
| Domestic | 10644 | 11244 | 10644 | 10644 | 10644 |
| Commercial | 1142 | 1241 | 1344 | 1450 | 1559 |
| Public Light | 23 | 28 | 34 | 39 | 45 |
| Small Industries | 433 | 506 | 579 | 653 | 728 |
| M&L Industries | 2286 | 2339 | 2378 | 2406 | 2434 |
| Tube Well | 3638 | 3976 | 4316 | 4657 | 5000 |
| Bulk | 276 | 276 | 276 | 276 | 276 |
| **TOTAL** | **18023** | **19252** | **20475** | **21719** | **23011** |
| **Growth %** | **10** | **6.8** | **6.4** | **6.1** | **5.9** |

**Category-wise Demand (MW) – Including Load Shedding**

| Description | 2021-22 | 2022-23 | 2023-24 | 2024-25 | 2025-26 |
|---|---|---|---|---|---|
| Domestic | 10578 | 11179 | 11793 | 12434 | 13099 |
| Commercial | 1215 | 1303 | 1394 | 1488 | 1585 |
| Public Light | 22 | 22 | 22 | 22 | 22 |
| Small Industries | 443 | 443 | 443 | 443 | 443 |
| M&L Industries | 2634 | 2634 | 2634 | 2634 | 2634 |
| Tube Well | 3481 | 3481 | 3481 | 3481 | 3481 |
| Bulk | 280.0 | 280.0 | 280.0 | 280.0 | 280.0 |
| **TOTAL** | 18654 | 19872 | 21076 | 22229 | 23391 |
| **Growth %** | 6.8 | 6.5 | 6.1 | 5.5 | 5.2 |

**Category-wise Demand (MW) –Excluding Load Shedding**

| Description | 2021-22 | 2022-23 | 2023-24 | 2024-25 | 2025-26 |
|---|---|---|---|---|---|
| Domestic | 2647 | 2800 | 2957 | 3121 | 3290 |
| Commercial | 347 | 372 | 398 | 426 | 454 |
| Public Light | 7 | 8 | 9 | 9 | 10 |
| Small Industries | 57 | 65 | 72 | 80 | 87 |

| | | | | | |
|---|---|---|---|---|---|
| M&L Industries | 721 | 752 | 778 | 792 | 800 |
| Tube Well | 800 | 865 | 930 | 995 | 1061 |
| Bulk | 54 | 63 | 73 | 82 | 91 |
| **TOTAL** | 3806 | 4049 | 4292 | 4528 | 4765 |
| **Growth %** | 6.5 | 6.4 | 6 | 5.5 | 5.2 |

### iii. Generation Forecast and Power Acquisition Program

Apart from aggressive generation additional plan out-side MEPCO's territory, widespread variable renewable generation (Solar Power) influx in is also planned in MEPCO's territory, along with coal based conventional power plants coming on bar in next five years. Quaid-e Azam Solar Park, Sahiwal Coal Power plant have been implemented in MEPCO's territory. Please see **Annexure-3** for generation plan recently finalized by NTDC.

### iv. Analysis

As depicted above, the power demand of the customers is growing rapidly, and extensive generation is being added. With overloaded transmission and distribution system, if proper plan like DIIP is not approved, implemented, monitored and closed in-time, then the customers will not get relieve and the whole generation investments can go down the drain.

# *Section -IV*
# *Next Five Years Goals and Objectives*

## i. Goals and Objectives Matrix

The goals are long term targets and objectives are medium term targets. The objectives defined by MEPCO are SMART i.e. Specific, Measurable, Attainable, Realistic and Timely. The target setting has been done keeping in view what can be **achieved optimally** in next five years. Table below (DIIP4) lists the goals and objectives for next five years for the company, are prepared by extensive discussions and coordination within MEPCO and the signed-off goals and objectives from initial exercise are placed at **Annexure-4**:

**DIIP1 - Goals and Objectives Matrix**

| Strategic Goals | Strategic Objectives | Target Measurement | Measurement FY 2020-21 | Five Year Objectives FY 2021-22 to 2025-26 | | | | | Supporting Plan |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 2021-22 | 2022-23 | 2023-24 | 2024-25 | 2025-26 | |
| 1.0 Improve Operational Efficiency | 1.1 Reduce overall electricity losses | % of kWh | 15.0% | 14.8% | 14.6% | 14.4% | 14.3% | 14.2% | DIIP-Transmission and Distribution Plan |
| | Improving voltage profile To meet specified regulatory performance standards | % of specified voltage | (+ -) 13% | Improved | Improved | Improved | Improved | Within acceptable limits | |
| | Improve power factor to meet specified regulatory standards | 0.95% | Average 0.92 | Improved | Improved | Improved | Improved | Average 0.95 | |
| | Reduce distribution transformers failure rate to <1% | Less than 1% | Reported 0.3% | Improved | Improved | Improved | Improved | Improved | |
| | Improve HT/LT ratio to 2:1 | Ratio | 1.56:1 | Improved | Improved | Improved | Improved | Improved | |

| Strategic Goals | Strategic Objectives | Target Measurement | Measurement FY 2020-21 | Five Year Objectives FY 2021-22 to 2025-26 | | | | | Supporting Plan |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 2021-22 | 2022-23 | 2023-24 | 2024-25 | 2025-26 | |
| 1.0 Improve Operational Efficiency | 1.1.2 Reduce Commercial Loss | % of KWh | 0.3 % loss has been reduced. Therefore 1% commercial loss will be reduced. | 0.3% | 0.2% | 0.2% | 0.2% | 0.1% | DIIP-commercial improvement Plan (CIP) |
| | 1.2 Maintain Revenue recovery up to 100% | %age billed amount excluding subsidy | 100% | 100% | 100% | 100% | 100% | 100% | |
| | 1.3 Reduce meter reading to bill delivery time 1 days | Days | 7 | 7 | 7 | 7 | 7 | 7 | |
| | 1.4 Improve SAIDI/SAIFI To meet specified regulatory performance standards | Hours/No.'s | Over specified limits of NEPRA | To comply with NEPRA specified standards | | | | | DIIP-Transmission & Distribution Plan |
| | 1.5 Eliminate fatal & non-fatal accidents | No of accidents | 10/10 | Eliminate | Eliminate | Eliminate | Eliminate | Eliminate | |
| | 1.6 Automation of Financial, HR and Material Management Processes | | Partial Through ERP | Partial DISCO | Partial DISCO | Partial DISCO | Complete DISCO | Complete DISCO | DIIP-Financial Management Improvement Plan (FMIP) |
| | 1.7 E-Transfer of bank scrolls by 100% | %age of collection | 60% of collection | All | | | | | |

| Strategic Goals | Strategic Objectives | Target Measurement | Measurement FY 2020-21 | Five Year Objectives FY 2021-22 to 2025-26 | | | | | Supporting Plan |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 2021-22 | 2022-23 | 2023-24 | 2024-25 | 2025-26 | |
| Improve SAP | SAP Pension System | HCM System Improvement | - | Work in Progress | 70% | 30% | 100% | 100% | DIIP-Financial Management Improvement Plan (FMIP) |
| | SAP HCM Workflows | HCM System Improvement | - | 20% | 60% | 20% | 100% | 100% | |
| | SAP E-tendering | MM System Improvement | - | 20% | 50% | 20% | 100% | 100% | |
| | SAP FICO Integration with CIS (ORACLE) | FICO System Improvement | | 10% | 90% | 100% | 100% | 100% | |
| | SAP Plant Maintenance/Project System | New SAP Module | - | NIL | 20% | 60% | 80% | 100% | |
| | SAP Dash Board | New SAP Module | | Work in Progress | 10% | 40% | 70% | 100% | |
| | SAP Upgrade to HANA | Improvement SAP | | NIL | NIL | 40% | 60% | 100% | |
| Improve Regulatory Affairs | 1.12 Regulatory MYT Affair | 5 Year MYT Petition | - | - | Determination / Notification | | | | |
| 2.0 Improve Customer Care and Service | 2.1 Reducing complaints related to billings to less than 0.1% | %age of total consumers | 0.2 % | 0.1% | 0.1% | <0.1% | <0.1% | <0.1% | DIIP-commercial improvement Plan(CIP) |
| | 2.2 Minimize New Connections installation duration | No of days | NEPRA's Guidelines not complied with | To Comply with Consumer Service Manual | | | | | |
| | 2.3 Minimize Reconnection installation duration | No of days | NEPRA's Guidelines not | To Comply with Consumer Service Manual | | | | | |
| | 2.4 Maximize the time between date of receipt of bill and due date (10 days) | Days | 7 | 7 | 10 | 10 | 10 | 10 | |

| Strategic Goals | Strategic Objectives | Target Measurement | Measurement FY 2020-21 | Five Year Objectives FY 2021-22 to 2025-26 | | | | | Supporting Plan |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 2021-22 | 2022-23 | 2023-24 | 2024-25 | 2025-26 | |
| 3.0 Improve MEPCO's Infrastructure | 3.1 Human-ware | | | | | | | | |
| | 3.1.2 Start Training & capacity building initiatives | | Legacy training | Training needs analysis (TNA), Training plans | | | | | DIIP-Human Resource Improvement Plan (HRIP |
| | 3.2 Orgaware | | | | | | | | |
| | 3.2.1 Manpower Plan & Revision of Organization Structure | | Implemented | Align organization structure with Business Strategy | | | | | DIIP-Human Resource Improvement Plan (HRIP |
| | 3.2.2 Improve office facilities, Training Facilities / work environment | | Inadequate facilities | Needs improvement | | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 3.2.5 Improvement in health & education facilities for employees | | Health Care Policy Implemented & new educational scholarship under approval | Approval by BOD for Well fare Policies particularly educational scholarships | | | | | |
| **Strategic Goals** | **Strategic Objectives** | **Target Measurement** | **Measurement FY 2020-21** | **Five Year Objectives FY 2021-22 to 2025-26** | | | | | **Supporting Plan** |
| | | | | **2021-22** | **2022-23** | **2023-24** | **2024-25** | **2025-26** | |
| **3.0 Improve MEPCO's Infrastructure** | **3.3 Techno ware** | | | | | | | | |
| | 3.3.1 AMI expansion | | **AMI Project being expanded** | All remaining 212570 Three Phase meters will be converted to Smart Meters. | | | | | **DIIP-Commercial Improvement Plan (CIP)** |
| | 3.3.2 P&E expansion to GIS Mapping | | **Fully implemented** | Further improvement in 5-years | | | | | **DIIP-Transmission and Distribution Plan** |
| | **3.4 Infor ware** | | | | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | 3.4.1 Implement ERP & its rollout | | **ERP project implemented** | IT infrastructure to be extended and new modules to be implemented | **DIIP-Financial Management Improvement Plan (FMIP)** |

| Strategic Goals | Strategic Objectives | Target Measurement | Measurement FY 2020-21 | Five Year Objectives FY 2021-22 to 2025-26 | | | | | Supporting Plan |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 2021-22 | 2022-23 | 2023-24 | 2024-24 | 2025-26 | |
| | **3.4.2 Implement CIS & its rollout** | | **CIS completed in all Circles** | Time to time development as per the requirements of data based on consumers | | | | | **DIIP-Commercial Improvement Plan (CIP)** |
| | **3.4.3 Strengthening Data Centre** | | **Complete Operational data Centre** | Full Utilization of Data Centre by replacing the End of Life (EOL) equipment with updated technology and smooth transition of applications accordingly.<br>Shifting of CIS/AMI/GIS servers from PITC Data Center at Lahore to MEPCO Data Center, Multan as MEPCO Data Center, Multan is well equipped as compared to PITC Data Center. | | | | | |
| | **3.4.4 Improve communications through email** | | **Paper based communication** | Promote e-communication culture (outlook) | | | | | **DIIP-Communication Improvem** |

In the above table the goals for MEPCO are divided into five major categories (i) Improve operational efficiency (this includes technical (transmission and distribution systems operational efficiency[1]), financial, commercial, human resource, employee safety etc. (ii) Customers Services and Care, (iii) Improve DISCOs Infrastructure (with only top priority projects under the four heads defined that need highest of attention).

[1] NEPRA Performance Standards (Distribution) Rules, 2005 and Distribution Codes were consulted while preparing these objectives.

### ii. Rationale for Setting Goals and Objectives and the Planning Criteria for Proposed Investments

The goals and objectives that have been narrated under DIIP-4 were prepared after extensive discussions and coordination efforts within MEPCO. These are the targets that MEPCO has set and the projects / initiatives have been identified to meet these set targets. The resources requirements for the best case were far more than the capacity of MEPCO to fund and execute. Initiatives have been identified and prioritized under the optimally achievable scenario keeping in view, the following factors:

a. The reliable dispersal of power, especially the power that will be injected within MEPCO in next five years, including the variable renewables.

b. MEPCO can arrange funding only up to Rs. **109,784 Million** as required under the achievable scenario and not Rs. **149,382 Million** as required under best case.

c. Capacity to procure and execute is another constraint that has limited MEPCO's capability to implement the achievable scope, not the larger scope envisaged under best scenario developed.

d. Meeting the technical parameters specified in the Grid Code, Distribution code performance standards and consumer service manual.

e. Loss reduction from 15.0% in FY 2020-21 to 14.2% in FY2025-26, the loss improvement potential saturates as the losses are further decreased and improving/maintaining collections.

f. Improving internal controls, faster information availability and quality of data through back-office automation.

g. Improving the competencies of the employees and their morale, through training capacity building and incentives.

h. Improving corporate brand image by improving internal and external communications.

i. Safety of line-staff is a key part of DIIP, includes special focus on LM safety.

j. Return on investment is also considered while planning and prioritizing the interventions.

k. Other objectives (social uplift e.g. village electrification) are part of the plan as well.

# *Section -V*

# *Projects and Programs – Scope*

## A. Secondary Transmission System

This section covers scope for the expansion and rehabilitation of secondary transmission network (132 kV and or 66 kV) of MEPCO.

MEPCO has prepared plan for five years from 2021-22 to 2025-26 that if implemented would have completely revamped the transmission network and enabled the DISCOs to achieve the NEPRA's specified Performance Standards of Distribution and provision of the Distribution Code, especially the Distribution Planning Code issued by NEPRA.

After reviewing the existing MEPCO system, the scope of work comprising of new 132kV grid stations & transmission lines, rehabilitation, augmentation / extension at existing grid stations and conversion of existing 66kV grid stations into 132kV voltage level has been finalized by considering the anticipated future load demand in the various areas of MEPCO.

The secondary transmission system also includes Supervisory control and data acquisition (SCADA), the SCADA implementation of power system improves the overall efficiency of the system for optimizing, supervising, and controlling the transmission system. SCADA function in the power system network offers greater system reliability and stability for integrated grid operation. Following are the benefits of SCADA

- Obtain information leading to better process traceability
- Storage of performance data to correct quality problems
- Creating a smart maintenance regime and decreasing downtime

Moreover, transmission system rehabilitation sponsor by world bank also included in the plan.

The proposed sub Transmission Lines and Grid Stations works for DISCO also includes the scope for "Deposit Work" and these works are separately identified in the formats below:

- **Load Flow Studies for Five Year Plan**

This section covers the load low flow peak-cases for of the five years (FY 2021-22 to 2025-26). The assumptions and results of these studies are discussed under this section and detailed plots are referred in the Annexures. Special situation, for instance, integration with Solar Power (large induction) over a specified period in MEPCO has been paid special attention in the studies.

As per NEPRA's guidelines provided in the DIIP formats, MEPCO has prepared the case that if implemented will completely revamp the transmission network and enable the DISCOs to achieve the NEPRA's specified Performance Standards Distribution and provision of the Distribution Code, especially the Distribution Planning Code issued by NEPRA.

The other objectives of the studies are identification of any reinforcements required with the proposed sub-projects in terms of new lines, new substations, transformer addition/augmentation, reactive power compensation and switchgear addition/replacement at

the substations, in addition to the already planned/under execution projects in MEPCO. The benefits of the proposed sub-projects to the network of MEPCO have also been determined through system studies and are discussed below.

Existing STG network of MEPCO is under great stress & its loading position is increasing day by day due to increase in power demand. The perpetuity of hidden load growth by the consumers is compelling the company to go for repeated progression in rehabilitating / up-gradation of the existing STG system. For this, construction of new grid station and transmission system along-with rehabilitation & re-modeling of existing network is urgently required, to meet the transmission system efficiency and stability to evacuate power from SPP's and deliver adequately & quality power to various existing & upcoming customers.

**Methodology of Analysis – Load Flow Studies**

The methodology of system studies/analysis for these cases is given as under:

i. Under this DIIP, MEPCO's network expansion plan including already planned/under-execution projects has been included.

ii. The proposed sub-projects to be implemented have been identified through load flow studies and identified separately.

iii. The complete system model of the National Grid has been simulated, i.e., system network of not only the MEPCO but also of NTDC and the neighboring DISCOs have been simulated for the purpose of analysis.

iv. The assumptions on which the system studies are based have been mentioned with necessary details below.

v. Two type of analysis, i.e., load flow and short circuit, have been carried out and their results have been presented in the report.

vi. Load flow analysis has been carried out for the steady state normal system operating condition in order to:

- Assess adequacy of the network to feed the proposed sub- projects.
- Determine any additional transmission reinforcement and/or reactive compensation requirement for the scope of work of sub-projects.
- Justification of proposed projects.
- Determine the benefits of the above proposed works at substations and transmission lines in terms of reduction in transmission losses, improvement in voltage profile, reduction in loading of transmission lines or transformers, spare capacity margin in the transmission system.

vii. Conclusions and recommendations on the basis of technical analysis have been presented at the end.

**Assumptions – Load Flow Studies**

The load flow studies are based on the following assumptions:

i. Latest PMS load forecast, attached as **Annexure-5**. The diversified values of the peak projected loads on substations, existing and new, have been modeled as per latest PMS load forecast. The loads have been adjusted as per the ratio between MEPCO Peak including load shedding and the algebraic sum of recorded individual peaks of the substations of MEPCO. This diversified peak is modeled in the load flow cases for FY 2021-22 to FY 2025-26 that helps in identifying scope for transmission lines.

ii. The scope of substation is derived from their individual undiversified peaks separately in excel based models. This scope identified is then modeled in the load flow cases.

iii. Generation expansion plan utilized in the load flow studies is attached with document. All the existing as well as the proposed power plants, both in public and private sectors have been assumed in operation in all the study scenarios as per their expected commissioning schedules

iv. The transmission expansion plans of NTDC.

v. Latest MEPCO's planned/on-going transmission expansion/re-enforcement projects, including substations (extension, augmentation, conversion, new), transmission lines have also been simulated in the studies as per their expected commissioning schedules

vi. The existing and planned shunt capacitors at 11 kV and 132 kV have been modeled in the study scenarios. However, additional shunt capacitors have also been recommended to compensate the reactive power where net power factor at the substations have been found too low.

**Study Criteria– Load Flow Studies**

The load flow studies have been carried out keeping in view the following criteria in the MEPCO's network:

- Voltage Limits: ±5% under normal operating conditions.
- Loading of transmission lines and transformers have been kept within 100% of their capacities under normal operating conditions.
- N-1 contingency analysis has been carried out and additional scope to meet those criteria is also simulated.

**Results of Load Flow Studies**

Load flow studies have been carried out with already planned/on-going projects; and with & without proposed subprojects in 5 year plan to study their impact on the system network. The system scenarios of peak load conditions of years 2022 to 2026 have been simulated.

The year wise Single line diagram of the system showing voltage profile and MW/MVAR flows are **Annexure- 6** for five year (FY 2021-22 to FY 2025-26)

**i. Year Wise Voltage Profile**

It is evident from the study exhibits that voltage profile will improve and becomes within permissible limits. The detail of proposed rehabilitation and there effects is show in the single line diagram (**Annexure-7**).

ii. **Year Wise Loading Position** - For Grids refer to the Excel Sheet and for T/Lines refer to plots of Load Flow

Load flow studies have also been carried out for both Best and optimally achievable system scenario with the proposed rehabilitation in form of Conversions, 132 kV Capacitors and New transmission Lines and year wise Grid Stations and Transmission lines are attached (**Annexure-8**)

**iii. Reduction In Losses (Best Case)**

| Year | MW | Units (MKWh) |
|---|---|---|
| | Best | Best |
| 2021-22 | 17.8 | 67.5 |
| 2022-23 | 51.0 | 192.9 |
| 2023-24 | 37.2 | 238.9 |
| 2024-25 | 35.8 | 135.8 |
| 2025-26 | 22.2 | 83.9 |

**iv. Reduction In Losses (Achievable Case)**

| Year | MW | Units (MKWh) |
|---|---|---|
| | Achievable | Achievable |
| 2021-22 | 14.4 | 54.5 |
| 2022-23 | 29.5 | 111.6 |
| 2023-24 | 19.3 | 123.9 |
| 2024-25 | 14.1 | 53.4 |
| 2025-26 | 11.1 | 42 |

- **Expansion and Rehabilitation (Best Case) - Scope**

The scope of Work for the Five Year Plan is tabulated here under:

**a. <u>Grid Stations</u> (Best Case)**

**DIIP 2 - Grid Stations**

| Sr. No. | Description | Total No. | Total Capacity (MVA) | 2021-22 (No) | 2022-23 (No) | 2023-24 (No) | 2024-25 (No) | 2025-26 (No) |
|---|---|---|---|---|---|---|---|---|
| 1 | New | | | | | | | |
| a | 132 KV | 32 | 2204 | 3 | 5 | 8 | 8 | 8 |
| 2 | Conversion | | | | | | | |
| a | 66 to 132 KV | 2 | 78 | - | 1 | 1 | - | - |
| 3 | Augmentation | | | | | | | |
| a | 132 KV | 31 | 426 | 9 | 7 | 5 | 5 | 5 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **4** | **Extension (Transformer)** | | | | | | | |
| a | 132 KV | 38 | 937 | 8 | 8 | 8 | 8 | 6 |
| **5** | **Capacitors** | | | | | | | |
| a | 132 KV | 19 | - | - | 13 | 2 | 2 | 2 |
| **6** | **Conversion of ISO Bay** | | | | | | | |
| a | 132 KV | 7 | - | 7 | - | - | - | - |
| **7** | **Ext: of 11 KV Control House** | | | | | | | |
| a | 132 KV | 10 | - | 10 | - | - | - | - |
| **8** | **Twin Bundle** | | | | | | | |
| a | 132 KV | 13 | - | 13 | - | - | - | - |
| **9** | **Transmission Lines** | | | | | | | |
| a | **132 KV** | **86 (2106.6 kM)** | - | **10 (222.4 kM)** | **20 (561 kM)** | **20 (469 kM)** | **19 (468 kM)** | **17 (386.2 kM)** |

- **Expansion and Rehabilitation (Achievable Case) - Scope**

The scope of Work for the Five-Year Plan is tabulated here under:

**b. <u>Grid Stations</u>** (Achievable Case)

**DIIP 3 - Grid Stations**

| Sr. No | Description | Total No. | Total Capacity (MVA) | Year 2021-22 | Year 2022-23 | Year 2023-24 | Year 2024-25 | Year 2025-26 |
|---|---|---|---|---|---|---|---|---|
| **1** | **New** | | | | | | | |
| a | 132 KV | 28 | 1896 | 3 | 5 | 10 | 6 | 6 |
| **2** | **Conversion** | | | | | | | |
| a | 66 to 132 KV | 2 | 78 | - | 1 | 1 | - | - |
| **3** | **Augmentation** | | | | | | | |
| a | 132 KV | 31 | 426 | 9 | 7 | 5 | 5 | 5 |
| **4** | **Extension (Transformer)** | | | | | | | |
| a | 132 KV | 38 | 937 | 8 | 8 | 8 | 8 | 6 |
| **5** | **Capacitors** | | | | | | | |
| a | 132 KV | 19 | - | - | 13 | 2 | 2 | 2 |
| **6** | **Addition of Line Bays** | | | | | | | |
| a | 132 KV | 10 | - | 10 | - | - | - | - |
| **7** | **Twin Bundle Bus Bar** | | | | | | | |
| a | 132 KV | 13 | - | 13 | - | - | - | - |
| **8** | **Conversion of Iso Bay into Line Bay** | | | | | | | |
| a | 132 KV | 7 | - | 7 | - | - | - | - |
| **9** | **Transmission Lines** | | | | | | | |
| a | 132 KV | 58 (1252.6 kM) | - | 10 (222.4 kM) | 14 (302 kM) | 12 (210 kM) | 12 (293 kM) | 10 (225.2 kM) |

**B. Plan for Expansion and Rehabilitation Distribution System – Scope**

Under this section, the Expansion and Rehabilitation (two scenarios Best and Optimally Achievable) are presented and the Status of Study Based Distribution System Planning Based on GIS Mapping and the Rollout Plans are also discussed.

This section covers the expansion and rehabilitation of distribution network (11kV and below) of the distribution company. Please refer to **Annexure-9** for list of overloaded 11-kv feeders to be rehabilitated in next five years.

MEPCO has prepared two Scenarios and the related scope. **Scenario-1** (the Best Case), that if implemented will completely revamp the distribution network and enable the DISCOs to achieve the NEPRA's specified Performance Standards for Distribution and the provisions of the Distribution Code, especially the Distribution Planning Code issued by NEPRA.

MEPCO has also prepared a **Scenario-2** (the Optimally Achievable Case) based on its procurement and execution capacity and will make the MYT rate case based on this scenario.

he proposed distribution works for MEPO also includes the scope for "Deposit Works" and "Village Electrification Works" and these works are separately identified in the formats below.

The ABC Cable proposals have also been implemented in MEPCO for the past five years and more proposals will be executed in future.

Below is the overall synopsis - HT/LT ratios of distribution system and length per feeder of

11kV lines comparison:

**Existing HT/LT Ratios and length per feeder of 11 kV lines:**

- Existing HT to LT Ratio = 1.60**:** 1
- Existing average length of 11-KV feeder = 47.29 Km

**After completion of Best Case of the 5 year plan (DIIP), the above parameters will be as under:**

- HT to LT Ratio = 1.68 : 1
- Average length of 11-KV feeder = 37.71 Km

**After completion of Optimally Achievable Case of the 5 year plan (DIIP), the above parameters will be as under:**

- HT to LT Ratio = 1.64 : 1
- Average length of 11-KV feeder = 40.86 Km

Due to increased HT/LT ratio and decrease in HT average length per feeder, the technical loss of the distribution system will be decreased. This will further result in reduction of system outages making it more efficient and reliable.

## Expansion and Rehabilitation (Best Case)

The table DIIP 14 captures the complete scope under Best Case for distribution system:

**DIIP4 - Distribution System (Best Case)**

| Sr. No. | Descreption | Unit | Quantities | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | 2021-22 | 2022-23 | 2023-24 | 2024-25 | 2025-26 | Total |
| Scop of work for 11 KV and Below Expension (Dedicated Feeders on Cost Deposit Basis) | | | | | | | | |
| A. | | | | | | | | |
| 1 | New HT Lines | | | | | | | |
| | No. of Works | Nos. | 9 | 8 | 8 | 9 | 10 | 44 |
| | Length of New HT lines | KM | 63 | 50 | 52 | 65 | 72 | 302 |
| 2 | Transformers | | | | | | | |
| | a. 1000 KVA | Nos. | 5 | 3 | 3 | 4 | 3 | 18 |
| | b. 750 KVA | Nos. | 3 | 3 | 2 | 2 | 2 | 12 |
| | c. 630 KVA | Nos. | 7 | 6 | 5 | 7 | 6 | 31 |
| | d. 400 KVA | Nos. | 4 | 5 | 4 | 5 | 7 | 25 |
| | e. 200 KVA | Nos. | 31 | 29 | 27 | 24 | 32 | 145 |
| | f. 100 KVA | Nos. | 45 | 37 | 37 | 40 | 39 | 198 |
| | Sub Total | Nos. | 95 | 83 | 78 | 84 | 89 | 429 |
| 3 | 11 KV Pannel | Nos. | 9 | 8 | 8 | 9 | 10 | 44 |
| 4 | 11 KV 500 MCM S/C Cable | KM | 9 | 8 | 8 | 9 | 10 | 44 |
| 5 | New LT Line (For Housing So | KM | 56 | 48 | 47 | 48 | 52 | 251 |
| Scope of work for LT Expension (Village Electrification on Cost Deposit Basis) | | | | | | | | |
| B. | | | | | | | | |
| 1 | New LT Line | | | | | | | |
| | Number of Works | Nos. | 1720 | 2100 | 3096 | 2000 | 1900 | 10816 |
| | Length of new LT Lines | KM | 421 | 515 | 759 | 490 | 466 | 2650 |
| 2 | Transformers | | | | | | | |
| | a. 25 KVA | Nos. | 451 | 550 | 811 | 524 | 498 | 2834 |
| | b. 50 KVA | Nos. | 361 | 440 | 649 | 419 | 398 | 2267 |
| | c. 100 KVA | Nos. | 90 | 110 | 162 | 105 | 100 | 567 |
| | Sub Total | Nos. | 901 | 1100 | 1622 | 1048 | 996 | 5668 |
| 3 | New HT Lines (For village connectivity with HT | KM | 817 | 998 | 1471 | 950 | 903 | 5183 |

**The narrative, assumptions and details is here under:**

**Village Electrification:**

- The estimation of scope of work in next five years is based on the historical data of the financial years 2016-17 to 2020-21
- The 25 KVA transformers are considered as 50 %, 50 KVA transformers are considered as 40 % and 100 KVA transformers are considered as 10 % of the total transformers
- HT conductor percentage is assumed as 30 % 'Dog' and 70 % 'Rabbit'
- LT conductor assumed to be 'Ant'

**Dedicated 11-kv Feeders:**

- The estimation of scope of work in next five years is based on the historical data of the financial years 2016-17 to 2020-21
- HT conductor percentage is assumed as 50 % 'Osprey', 40 % 'Dog' and 10 % 'Rabbit'
- LT conductor percentage is assumed as 60 % 'Wasp' and 40 % 'Ant'
- 1000 KVA transformers are considered as 4 %, 750 KVA transformers are considered as 3%, 630 KVA transformers are considered as 7 %, 400 KVA transformers are considered as 6 %, 200 KVA transformers are considered as 34 % and 100 KVA transformers are considered as 46 % of the total Transformers.

| Scope of Work for 11 kV and Below Rehabilitation | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **A.** | **Rehabilitation of HT Lines** | **Unit** | **Quantities** | | | | | |
| | | | **2021-22** | **2022-23** | **2023-24** | **2024-25** | **2025-26** | **Total** |
| | Number of proposals | Nos | 83 | 103 | 113 | 128 | 133 | **560** |
| **1** | New HT Lines | Km | 591 | 734 | 805 | 912 | 948 | **3990** |
| **2** | HT Line Reconductoring | Km | 732 | 909 | 997 | 1129 | 1173 | **4941** |
| **3** | 11KV Capacitors | Nos | 166 | 206 | 226 | 256 | 266 | **1120** |
| **4** | 11KV Panels | Nos | 83 | 103 | 113 | 128 | 133 | **560** |
| **5** | Replacement of T/F Earthing | Nos | 7512 | 7512 | 7512 | 7512 | 7512 | **37558** |
| **6** | 11-kv Sectionalizers | Nos | 249 | 309 | 339 | 384 | 399 | **1680** |
| **7** | 11-Kv 500 MCM Cable | Km | 25 | 31 | 34 | 38 | 40 | **168** |
| **Scope of Work for LT Rehabilitation** | | | | | | | | |
| **B.** | **LT Lines Rehabilitation** | | | | | | | |
| | Number of proposals | Nos | 550 | 580 | 610 | 650 | 700 | **3090** |
| **8** | New LT Lines | Km | 404 | 410 | 415 | 419 | 422 | **2070** |
| **9** | LT Line Reconductoring(with Wasp) | Km | 111 | 117 | 123 | 131 | 141 | **621** |
| | ABC Cable | Km | 96 | 90 | 85 | 80 | 75 | **426** |
| **10** | New HT Lines (New T/F Substations) | Km | 74 | 78 | 82 | 87 | 94 | **414** |
| **11** | Replacement of D fuse fitting | Nos | 5258 | 5258 | 5258 | 5258 | 5258 | **26290** |
| **12** | **New Transformer Substations** | | | | | | | |
| | a. 50 KVA | Nos | 240 | 244 | 247 | 249 | 251 | 1231 |
| | b. 100 KVA | Nos | 364 | 371 | 375 | 379 | 381 | 1870 |
| | c. 200 KVA | Nos | 97 | 99 | 100 | 101 | 107 | 504 |
| | **Sub Total** | Nos | **701** | **714** | **722** | **729** | **739** | **3605** |
| **13** | **Augmentation of Overloaded Transformers** | | | | | | | |
| | a. 50 KVA | Nos | 508 | 528 | 564 | 576 | 580 | **2756** |
| | b.100 KVA | Nos | 426 | 458 | 516 | 536 | 570 | **2506** |
| | c. 200 KVA | Nos | 424 | 440 | 470 | 480 | 510 | **2324** |
| | d. 200 KVA (Additional) | Nos | 180 | 187 | 199 | 204 | 225 | **995** |
| | **Sub Total** | Nos | **1538** | **1613** | **1749** | **1796** | **1885** | **8581** |
| **14** | **Energy Meters (against defective/Sluggish)** | | | | | | | |
| | a. Single Phase | Nos | 318983 | 322173 | 325395 | 328649 | 331935 | **1627135** |
| | b. Three Phase | Nos | 8446 | 8530 | 8615 | 8702 | 8789 | **43081** |
| | **Sub Total** | Nos | **327429** | **330703** | **334010** | **337350** | **340724** | **1670216** |
| **15** | P.G. Connectors | Nos | 721768 | 721768 | 721768 | 721768 | 721768 | **3608838** |

## 1.1 Methodology:

In best case program, rehabilitation of 560-No. 11-KV feeders has been proposed including connectivity proposals against new proposed Grid stations. Moreover, 3090-No. LT- Proposals have been identified for rehabilitation in next five years.

The rehabilitation material and equipment has been determined as follows:

**New 11 KV Switchgear**
Panels for express feeders to be built for Shifting/bifurcation of existing feeders 560 Nos.

**ACSR Conductors for new express line construction**
It is estimated that 560 feeders will require construction of express lines for their bifurcation. On the basis on sample studies, 7.125 km of 3-phase HT line will be constructed per feeder. The overall share of different ACSR conductors in the total of 560 x 7.125 = 3990 km of lines is calculated as below:

| *KM Line* | | | |
|---|---|---|---|
| Osprey | 67.62% | 3990 x 0.6762 | 2698 Km |
| Dog | 22.87% | 3990 x 0.2287 | 913 Km |
| Rabbit | 09.50% | 3990 x 0.0950 | 379 Km |
| | | Total | 3990 Km |

**11 kV Line Re-conductoring**
Estimated re-conductoring per feeder based on sample studies= 8.823 KM
Estimated % share of different Conductors in re-conductoring,

| | |
|---|---|
| Osprey | 51.46% |
| Dog | 40.73% |
| Rabbit | 07.80% |

Number of feeders for rehabilitation 560 Nos.
Therefore, total re-conductoring length (560 x 8.823)= 4941 Km

The quantities of ACSR conductors required for re-conductoring are therefore:

| *KM Line* | | | |
|---|---|---|---|
| Osprey | 51.46% | 4941 x 0.5146 | 2543 KM |
| Dog | 40.73% | 4941 x 0.4073 | 2013KM |
| Rabbit | 07.80% | 4941 x 0.0780 | 385 KM |
| | | Total | 4941 KM |

**Capacitor Applications for Power Factor Improvement**

The sample studies indicate that at an average, one capacitor bank of 450 kVAr is needed per feeder for improving the power factor to 95% from existing average power factor of 85% on the selected feeders. For 560 No. 11 kV feeders, requirement of capacitor banks of 2 x 450 kVAr each will, therefore, be 1120 Nos.

**Earthing**

Estimation of quantities for replacement of earthing on existing transformers is worked out as follows:

| | | |
|---|---|---|
| Total transformers up to 6/2021 | | 187791 Nos. |
| Replacement of earthing is estimated on 20% of transformers, | | |
| Therefore total earthling required | (187791 x 20%) | 37558 Nos. |

**11 KV Sectionalizers**

In order to achieve isolation of faulty portions of feeders under fault conditions, sectionalization equipment is needed. A minimum of 3 sectionalizers per feeder are recommended for new locations as well as for replacement of damaged sectionalizers. The quantity is worked out as follows:

| | |
|---|---|
| 11 kV Sectionalizers required per feeder | 3 Nos. |
| Total number of 11 kV sectionalizers required (3 x 560) | 1680 Nos. |
| Share | |
| Sectionalizers 600 Amps 30 % | 504 Nos. |
| Sectionalizers 200 Amps 70 % | 1176 Nos. |

**11 KV Cables**

11 KV cable is required for connecting the proposed new feeders as well as for adding/replacing the under-size/deteriorated cable. The quantity is worked out on the basis that an average length of 300 meters of 500 MCM cable is required for each feeder from the panel in the grid station to the first riser pole of the feeder.

| | | |
|---|---|---|
| Feeders selected for rehabilitation | | 560 Nos. |
| Average length of S/C cable per feeder | | 300 M |
| Therefore length of cable required | 0.3 x 560 = | 168 KM |

**New 11 KV Line**

| | | |
|---|---|---|
| Total number of LT proposals | | 3090 Nos. |
| Average length of 11 kV line extension per LT proposal | | 134 M |
| Total length of new 11 kV line (Dog conductor) | 3090 x 0.134 | 414 KM |

**D-fuse fittings (Drop-out Cut-outs)**

Replacement of D-fuse fittings (drop-out cut-outs) is estimated as 14 % of the total number of transformers. The total quantity of D-fuse fittings is therefore worked out as follows:

| | |
|---|---|
| Total transformers up to June 2020-21 | 187791 Nos. |
| Total D-fuse fittings required @ 14% | 26290 Nos. |

**LT Line Reconductoring**

The average LT line reconductoring per LT rehabilitation proposal is estimated as:

| | |
|---|---|
| 3-φ, Wasp conductor line | 0.095 km |
| 3-φ, Ant Conductor line | 0.106 km |

The same average have been applied to evaluate the LT conductor quantities which is as under:

| | | |
|---|---|---|
| Total number of LT proposals for Reconductoring | | 3090 Nos. |
| LT line reconductoring (3-φ, Wasp) | 3090 x 0.095 | 294 km |
| LT line reconductoring (3-φ, Ant) | 3090 x 0.106 | 328 km |

**ABC Cable**

Proposed replacement of 426 KM bare conductor with ABC cable for high loss feeders especially in Kunda infested areas within the city as well as rural where higher rate of pilferage of electricity and it provide higher safety and reliability of the system.

ABC Cable = 426 Km (It is 95 or 50 mm^2 not mentioned)

**New 11 KV Line**

| | |
|---|---|
| Total number of LT proposals | 3090 Nos. |
| Average length of 11 kV line extension per LT proposal | 0.134 kM |
| Total length of new 11 kV line (Dog conductor) 3090 x 0.134 | 414 KM |

**New Transformer Sub-Stations**

These will be required for installation after extension of HT lines to minimize the high loss LT lines or to install under the existing HT line to take up additional loads. The quantity is estimated as 25% of the 10300 overloaded transformers.

Total overloaded transformers up to 06/2021 = 10300 Nos.

New additional transformer sub-stations required: 10300 x 35% = 3605 Nos.

*Share of Different Ratings of Transformers*

| | | | |
|---|---|---|---|
| 50 kVA | 15 % | 3605 x 15 % | 541 Nos. |
| 100 kVA | 50 % | 3605 x 50 % | 1803 Nos. |
| 200 kVA | 35 % | 3605 x 35 % | 1261 Nos. |
| | | Total: | 3605 Nos. |

**Energy Meters**

The requirement of energy meters for replacement against damaged/defective meters is estimated as follows:

| | | |
|---|---|---|
| 1-phase defective/damaged energy meters upto 6/2021 | = | 311894 Nos. |
| 3-phase defective/damaged energy meters upto 6/2021 | = | 9641Nos. |
| Total | | 321535 Nos. |

Therefore, requirement of total no. of energy meters is approximately same as above per year.

**P.G. Connectors**

The requirement of P.G. Connectors has been estimated as follows:

| | |
|---|---|
| Total customers of MEPCO upto 6/2021 | 7,217,677Nos. |
| Estimated customers requiring P.G. Connectors (50% Approx.) | 3608838 Nos. |
| Share | |
| 1-phase services requiring connectors (80%) | 2887070 Nos. |
| 3-phase services requiring connectors (20%) | 721768 Nos. |
| Total: | 3608838 Nos |

- **Expansion and Rehabilitation (Optimally Achievable Case) - Scope**

The table DIIP 15 captures the complete scope under Achievable Case for distribution system:

**DIIP5 - Distribution System (Optimally Achievable Case)**

| Sr. No. | Descreption | Unit | Quantities | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | 2021-22 | 2022-23 | 2023-24 | 2024-25 | 2025-26 | Total |
| Scop of work for 11 KV and Below Expension (Dedicated Feeders on Cost Deposit Basis) | | | | | | | | |
| A. | | | | | | | | |
| 1 | New HT Lines | | | | | | | |
| | No. of Works | Nos. | 9 | 8 | 8 | 9 | 10 | 44 |
| | Length of New HT lines | KM | 63 | 50 | 52 | 65 | 72 | 302 |
| 2 | Transformers | | | | | | | |
| | a. 1000 KVA | Nos. | 5 | 3 | 3 | 4 | 3 | 18 |
| | b. 750 KVA | Nos. | 3 | 3 | 2 | 2 | 2 | 12 |
| | c. 630 KVA | Nos. | 7 | 6 | 5 | 7 | 6 | 31 |
| | d. 400 KVA | Nos. | 4 | 5 | 4 | 5 | 7 | 25 |
| | e. 200 KVA | Nos. | 31 | 29 | 27 | 24 | 32 | 145 |
| | f. 100 KVA | Nos. | 45 | 37 | 37 | 40 | 39 | 198 |
| | Sub Total | Nos. | 95 | 83 | 78 | 84 | 89 | 429 |
| 3 | 11 KV Pannel | Nos. | 9 | 8 | 8 | 9 | 10 | 44 |
| 4 | 11 KV 500 MCM S/C Cable | KM | 9 | 8 | 8 | 9 | 10 | 44 |
| 5 | New LT Line (For Housing So | KM | 56 | 48 | 47 | 48 | 52 | 251 |
| Scope of work for LT Expension (Village Electrification on Cost Deposit Basis) | | | | | | | | |
| B. | | | | | | | | |
| 1 | New LT Line | | | | | | | |
| | Number of Works | Nos. | 1720 | 2100 | 3096 | 2000 | 1900 | 10816 |
| | Length of new LT Lines | KM | 421 | 515 | 759 | 490 | 466 | 2650 |
| 2 | Transformers | | | | | | | |
| | a. 25 KVA | Nos. | 451 | 550 | 811 | 524 | 498 | 2834 |
| | b. 50 KVA | Nos. | 361 | 440 | 649 | 419 | 398 | 2267 |
| | c. 100 KVA | Nos. | 90 | 110 | 162 | 105 | 100 | 567 |
| | Sub Total | Nos. | 901 | 1100 | 1622 | 1048 | 996 | 5668 |
| 3 | New HT Lines (For village connectivity with HT | KM | 817 | 998 | 1471 | 950 | 903 | 5183 |

**The narrative, assumptions and details is hereunder:**

**Village Electrification:**

- The estimation of scope of work in next five years is based on the historical data of the financial years 2016-17 to 2020-21
- The 25 KVA transformers are considered as as 50 %, 50 KVA transformers are considered as 40 % and 100 KVA transformers are considered as 10 % of the total transformers
- HT conductor percentage is assumed as 30 % 'Dog' and 70 % 'Rabbit'
- LT conductor assumed to be 'Ant'

**Dedicated 11-kv Feeders:**

- The estimation of scope of work in next five years is based on the historical data of the financial years The estimation of scope of work in next five years is based on the historical data of the financial years 2016-17 to 2020-21
- HT conductor percentage is assumed as 50 % 'Osprey', 40 % 'Dog' and 10 % 'Rabbit'
- LT conductor percentage is assumed as 60 % 'Wasp' and 40 % 'Ant'
- 1000 KVA transformers are considered as 4 %, 750 KVA transformers are considered as 3%, 630 KVA transformers are considered as 7 %, 400 KVA transformers are considered as 6%, 200 KVA transformers are considered as 34 % and 100 KVA transformers are considered as 46 % of the total Transformers.

| Scope of Work for 11 kV and Below Rehabilitation | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **A.** | **Rehabilitation of HT Lines** | **Unit** | **Quantities** | | | | | |
| | | | **2021-22** | **2022-23** | **2023-24** | **2024-25** | **2025-26** | **Total** |
| | Number of proposals | Nos | 52 | 100 | 85 | 110 | 95 | **442** |
| **1** | New HT Lines | Km | 371 | 713 | 606 | 784 | 677 | **3149** |
| **2** | HT Line Reconductoring | Km | 459 | 882 | 750 | 971 | 838 | **3900** |
| **3** | 11KV Capacitors | Nos | 104 | 200 | 170 | 220 | 190 | **884** |
| **4** | 11KV Panels | Nos | 52 | 100 | 85 | 110 | 95 | **442** |
| **5** | Replacement of T/F Earthing | Nos | 7700 | 7700 | 7700 | 7700 | 7700 | **38500** |
| **6** | 11-kv Sectionalizers | Nos | 156 | 300 | 255 | 330 | 285 | **1326** |
| **7** | 11-Kv 500 MCM Cable | Km | 16 | 30 | 26 | 33 | 29 | **133** |
| **Scope of Work for LT Rehabilitation** | | | | | | | | |
| **B.** | **LT Lines Rehabilitation** | | | | | | | |
| | Number of proposals | Nos | 475 | 455 | 460 | 440 | 450 | **2280** |
| **8** | New LT Lines | Km | 274 | 273 | 291 | 315 | 325 | **1478** |
| **9** | LT Line Reconductoring | Km | 95 | 91 | 92 | 88 | 90 | **458** |
| | ABC Cable | Km | 96 | 90 | 85 | 80 | 75 | **426** |
| **10** | New HT Lines (For New T/F Substations) | Km | 64 | 61 | 62 | 59 | 60 | **306** |
| **11** | Replacement of D fuse fitting | Nos | 535 | 545 | 570 | 580 | 595 | **2825** |
| **12** | **New Transformer Substations** | | | | | | | |
| | a. 50 KVA | Nos | 55 | 70 | 83 | 89 | 98 | **395** |
| | b. 100 KVA | Nos | 218 | 240 | 255 | 284 | 288 | **1285** |
| | c. 200 KVA | Nos | 205 | 165 | 169 | 175 | 181 | **895** |
| | **Sub Total** | Nos | **478** | **475** | **507** | **548** | **567** | **2575** |
| **13** | **Augmentation of Overloaded Transformers** | | | | | | | |
| | b. 50 KVA | Nos | 257 | 170 | 160 | 40 | 120 | **747** |
| | c.100 KVA | Nos | 625 | 190 | 180 | 45 | 200 | **1240** |
| | d. 200 KVA | Nos | 703 | 280 | 250 | 40 | 297 | **1570** |
| | e. 200 KVA (Additional) | Nos | 713 | 300 | 300 | 50 | 168 | **1531** |
| | **Sub Total** | Nos | **2298** | **940** | **890** | **175** | **785** | **5088** |
| **14** | **Energy Meters (against defective/Sluggish)** | | | | | | | |
| | a. Single Phase | Nos | 93400 | 105000 | 361000 | 366000 | 354000 | **1279400** |
| | b. Three Phase | Nos | 1000 | 1000 | 6000 | 8000 | 10000 | **26000** |
| | **Sub Total** | Nos | **94400** | **106000** | **367000** | **374000** | **364000** | **1305400** |
| **15** | P.G.Connectors | Nos | 834783 | 834783 | 834783 | 834783 | 834783 | **4173916** |

## 1.2 Methodology:

In Optimally achievable case program, rehabilitation of 442-No. 11-KV feeders has been proposed including connectivity proposals against new proposed Grid stations. Moreover, 2280-No. LT- Proposals have been identified for rehabilitation in next five years.

The rehabilitation material and equipment has been determined as follows:

**New 11 KV Switchgear**

Panels for express feeders to be built for Shifting/bifurcation of existing feeders 442 Nos.

**ACSR Conductors for new express line construction**

It is estimated that 442 feeders will require construction of express lines for their bifurcation. On the basis on sample studies, 7.125 km of 3-phase HT line will be constructed per feeder. The overall share of different ACSR conductors in the total of 442 x 7.125 = 3149 km of lines is calculated as below:

| | | | *KM Line* |
|---|---|---|---|
| Osprey | 67.62% | 3149 x 0.6762 | 2129 Km |
| Dog | 22.87% | 3149 x 0.2287 | 721 Km |
| Rabbit | 09.50% | 3149 x 0.0950 | 299 Km |
| | | Total | 3149 Km |

**11 kV Line Re-conductoring**

Estimated re-conductoring per feeder based on sample studies= 8.823 KM
Estimated % share of different Conductors in re-conductoring,

| | |
|---|---|
| Osprey | 51.46% |
| Dog | 40.73% |
| Rabbit | 07.80% |

Number of feeders for rehabilitation 442 Nos.
Therefore, total re-conductoring length (442 x 8.823)= 3900 Km

The quantities of ACSR conductors required for re-conductoring are therefore:

| | | | *KM Line* |
|---|---|---|---|
| Osprey | 51.46% | 3900 x 0.5146 | 2007 KM |
| Dog | 40.73% | 3900 x 0.4073 | 1589 KM |
| Rabbit | 07.80% | 3900 x 0.0780 | 304 KM |
| | | Total | 3900 KM |

**Capacitor Applications for Power Factor Improvement**

The sample studies indicate that at an average, one capacitor bank of 450 kVAr is needed per feeder for improving the power factor to 95% from existing average power factor of 85% on the selected feeders. For 442 No. 11 kV feeders, requirement of capacitor banks of 2 x 450 kVAr each will, therefore, be 884 Nos.

**Earthing**

Estimation of quantities for replacement of earthing on existing transformers is worked out as follows:

| | | |
|---|---|---|
| Total transformers up to 6/2021 | | 187791 Nos. |
| Replacement of earthing is estimated on 20% of transformers, | | |
| Therefore total earthling required | (187791 x 20%) | 37558 Nos. |

**11 KV Sectionalizers**

In order to achieve isolation of faulty portions of feeders under fault conditions, sectionalization equipment is needed. A minimum of 3 sectionalizers per feeder are recommended for new locations as well as for replacement of damaged sectionalizers. The quantity is worked out as follows:

| | |
|---|---|
| 11 kV Sectionalizers required per feeder | 3 Nos. |
| Total number of 11 kV sectionalizers required (3 x 275) | 1326 Nos. |
| Share | |
| Sectionalizers 600 Amps 30 % | 398 Nos. |
| Sectionalizers 200 Amps 70 % | 928 Nos. |

**11 KV Cables**

11 KV cable is required for connecting the proposed new feeders as well as for adding/replacing the under-size/deteriorated cable. The quantity is worked out on the basis that an average length of 300 meters of 500 MCM cable is required for each feeder from the panel in the grid station to the first riser pole of the feeder.

| | | |
|---|---|---|
| Feeders selected for rehabilitation | | 442 Nos. |
| Average length of S/C cable per feeder | | 300 M |
| Therefore length of cable required | 0.3 x 442 = | 133 KM |

**New 11 KV Line**

| | | |
|---|---|---|
| Total number of LT proposals | | 2280 Nos. |
| Average length of 11 kV line extension per LT proposal | | 134 M |
| Total length of new 11 kV line (Dog conductor) | 2280 x 0.134 | 306 KM |

**D-fuse fittings (Drop-out Cut-outs)**

Replacement of D-fuse fittings (drop-out cut-outs) is estimated as 14 % of the total number of transformers. The total quantity of D-fuse fittings is therefore worked out as follows:

| | |
|---|---|
| Total transformers up to June 2020-21 | 187791 Nos. |
| Total D-fuse fittings required @ 14% | 26290 Nos. |

**LT Line Reconductoring**

The average LT line reconductoring per LT rehabilitation proposal is estimated as:

| | |
|---|---|
| 3-φ, Wasp conductor line | 0.095 km |
| 3-φ, Ant Conductor line | 0.106 km |

The same average have been applied to evaluate the LT conductor quantities which is as under:

| | | |
|---|---|---|
| Total number of LT proposals for Reconductoring | | 2280 Nos. |
| LT line reconductoring (3-φ, Wasp) | 2280 x 0.095 | 216.6 km |
| LT line reconductoring (3-φ, Ant) | 2280 x 0.106 | 241.6 km |

**ABC Cable**

Proposed replacement of 426 KM bare conductor with ABC cable for high loss feeders especially in Kunda infested areas within the city as well as rural where higher rate of pilferage of electricity and it provide higher safety and reliability of the system.

ABC Cable = 426 Km

**New 11 KV Line**

| | |
|---|---|
| Total number of LT proposals | 2280 Nos. |
| Average length of 11 kV line extension per LT proposal | 134 M |
| Total length of new 11 kV line (Dog conductor) 2280 x 0.134 | 306 KM |

**New Transformer Sub-Stations**

These will be required for installation after extension of HT lines to minimize the high loss LT lines or to install under the existing HT line to take up additional loads. The quantity is estimated as 25% of the 10300overloaded transformers.

Total overloaded transformers up to 06/2021 = 10300 Nos.

New additional transformer sub-stations required: 10300 x 25% = 2575 Nos.

*Share of Different Ratings of Transformers*

| | | | |
|---|---|---|---|
| 50 kVA | 15 % | 2575 x 15 % | 386 Nos. |
| 100 kVA | 50 % | 2575 x 50 % | 1287 Nos. |
| 200 kVA | 35 % | 2575 x 35 % | 902 Nos. |
| | | Total: | 2575 Nos. |

**Energy Meters**

The requirement of energy meters for replacement against damaged/defective meters is estimated as follows:

| | | |
|---|---|---|
| 1-phase defective/damaged energy meters upto 6/2021 | = | 311894 Nos. |
| 3-phase defective/damaged energy meters upto 6/2021 | = | 9641Nos. |
| Total | | 321535 Nos. |

Therefore, requirement of total no. of energy meters is approximately same as above per year.

**P.G. Connectors**

The requirement of P.G. Connectors has been estimated as follows:

| | |
|---|---|
| Total customers of MEPCO upto 6/2021 | 7,217,677Nos. |
| Estimated customers requiring P.G. Connectors (50% Approx.) | 3608838 Nos. |
| Share | |
| 1-phase services requiring connectors (80%) | 2887070 Nos. |
| 3-phase services requiring connectors (20%) | 721768 Nos. |
| Total: | 3608838 Nos |

- **Status of Study Based Distribution System Planning Based on GIS Mapping and the Transition Plan**
  The status on the mapping of HT and LT network and studies based on GIS mapped network on modern planning analysis tool(s) is provided.

| S# | Description | Unit | Quantities | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | 2021-22 | 2022-23 | 2023-24 | 2024-25 | 2025-26 | Total (including existing) |
| **GIS Mapping** | | | | | | | | |
| 1 | **HT Mapping GIS** (Mapping of 1600 No. 11 kV feeders having length 84846 km have mapped upto June 30th 2021) | | | | | | | |
| | No. of 11 kV Feeders(Total No of Feeders 1672) | **Nos** | 72 | 119 | 105 | 130 | 116 | 2,142 |
| | Length of HT Lines mapped | **km** | 624 | 1031 | 909 | 1126 | 1005 | 89,540 |
| **LT Mapping** (No. of 14838 transformers having length of 7625 km have mapped up to june 30th 2021) | | | | | | | | |
| 2 | Total No. of LT Lines (219305 total distribution T/F having length of 50332km) upto june 2021<br>Total No. of LT Lines (8672 total distribution T/F having length of 4379 km) to be added upto june 2026 | **Nos** | 4368 | 40700 | 59575 | 56303 | 52193 | 227,977 |
| | Length of LT Lines to be mapped upto june 2025-26 | **km** | 1715 | 7332 | 15230 | 15129 | 7680 | 54,711 |

## Tools and Plants for HT

| Sr.# | Descreption | H/Q | Circle | Division | Sub Divisoin | Quantity | Amount Rs | Total Rs Millions | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| **1** | **GPS Sets** | 0 | 9 x 1 | 38 x 1 | 181 x 1 | 228 | 74,800 | **17.05** | 60 GPS sets Available |
| **2** | **Printer B&W** | 0 | 9 x 1 | 38 x 1 | 181 x 1 | 228 | 19,800 | **4.51** | |
| **3** | **Printer Coloured A3 Size** | 0 | 9 x 1 | 0 | 0 | 9 | 200,000 | **1.80** | |
| **4** | **HP Designjet 800PS Plotter** | 1 | 9 x 1 | 0 | 0 | 10 | 775,000 | **7.75** | |
| **5** | **Computer / Laptop** | 0 | 9 x 1 | 38 x 1 | 0 | 47 | 174,000 | **8.18** | |
| **Total** | | | | | | | | **39.30** | |

## Tools and Plants for LT

| Sr.# | Descreption | H/Q | Circle | Division | Sub Divisoin | Quantity | Amount Rs | Total Rs Millions | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| **1** | **GPS Sets** | 0 | 0 | 0 | 181 x 1 | 181 | 74,800 | **13.539** | |
| **2** | **Computer / Laptop** | 0 | 0 | 0 | 0 | 0 | 174,000 | **0.000** | |
| **Total** | | | | | | | | **13.54** | |

Multan Electric Power Company (MEPCO) is comprised of 1700 No. 11kv feeders having total length of 84,846 km emanating from 138 No. Grid Station.

MEPCO is pioneer amongst the DISCO's of Pakistan to start GIS activity of its STG & distribution system and developed its resources at sub division level for carrying out GIS mapping. At the end of June 2021, 1600 No. 11 KV feeders were digitized and load flow study was carried out. The mapping of remaining feeders of MEPCO will be completed in coming months.

In order to carry out GIS mapping of remaining feeders, updation of already mapped 11 kV feeders & mapping of LT network, tools like GPS sets, computers, and printers will be required and the requirement is given above.

Furthermore, MEPCO management intends to implement state of the art Enterprise GIS Solution in MEPCO for optimization of resources, decision making, area planning and real time updation of T&G & Distribution network up to consumer level and utilization of GIS data by all Directorates under MEPCO. In this regard, hiring of consultant for successful implementation of Enterprise GIS Solution in Electrical utility is in process. For this the additional amount for implementation of Enterprise GIS solution will be required. However the actual amount will be incorporated once the process of hiring of consultant and subsequently report of the consultant is finalized.

## C. Other Functional Improvement Plans:

### i. Commercial Improvement Plan

This plan covers the commercial improvement activities including but not limited to metering (including AMRs, Mobile Units based meter reading, improvement in billing systems, anti-theft initiatives, consumers database update, customers services improvement initiatives etc. The scope that what will be done in each of the five year under this business plan is provided here. The narrative shall is supported by justification.

**DIIP6 - Commercial Improvement Plan**

**Commercial DIIP- MEPCO**

| # | Scope | FY22 | FY23 | FY24 | FY25 | FY26 | 5-Year Total |
|---|---|---|---|---|---|---|---|
| 1 | **Mobiles for MRs (Nos)** | | 2000 | 2000 | 2,000 | 2000 | **8000** |
| 2 | **(a)Total 3-Phase Connections ( All Tariffs) 5 KW & above sanctioned load** | 50,000 | 50,000 | 50,000 | 60,000 | 60,000 | **270,000** |

The Integrated Commercial Improvement Plan (ICIP) broadly aims to demonstrate commercial loss reduction, improvement in revenues and improvement in customer services through process automation, transparency, accountability, and improved productivity in order to create a foundation for sustainable commercial operations. Additional goals and objectives include:

Please refer table DIIP-4 for complete mapping of ICIP with goals and objectives. Here are the highlights related to commercial interventions:

- Improving MEPCO's operational efficiency through:
  - Reduced commercial losses by 0.8% progressively over the period of five years
  - Maintaining revenue recovery up to 100% in next five years

- Improving customer care and services:
  - Reducing complaints related to billings to less than 0.01%
  - Minimizing new connections installation duration to comply with NEPRA's requirements
  - Minimizing reconnection installation duration to comply with NEPRA's requirements
  - Maximizing the time between date of receipt of bill and due date (07 days)
- Improving MEPCO's infrastructure:
  - Expansion of AMI to reduce commercial losses at high-end customers, this contributes to reduction in commercial loss

Other related objectives:

- Streamlined procedure without compromising system of internal controls

- Re-direction of documents on an efficient path to reduce revenue cycle and process cycle time
- Faster complaint resolution and timely availability of accurate information for better decision making
- Increased accuracy of billing through reduction of human interface in commercial processes
- Increased efficiency, easy access and administration through an online complaint system

**Problem Statement (Baseline-Defined)**
The current commercial operations of DISCOs were legacy based and did not offer much in terms of transparency, data accuracy, system efficiency and services to consumers. Therefore, there was a dire need to improve commercial procedures and bring them at par or close to best practices adopted by utilities worldwide. The commercial cycle started with meter readings (which was manual), billing (which was being done through a legacy billing system), collections and customers services, which needed considerable improvements.

**Response**
As a result of comprehensive planning exercise, MEPCO has identified some low cost and quick impact interventions that would transform the way MEPCO operate commercially and would bring a paradigm shift in its commercial operations. The ICIP is an optimal fusion of all the activities that would be implemented through the course of five years to revolutionize the business practices adopted by MEPCO and take its commercial operations further.

The ICIP offers a holistic approach as it not only targets the main goal of the organization i.e. increased revenues but also takes the customers' perspective into consideration through improved services. The ICIP starts with striking the heart of commercial operations i.e. the provision of correct consumer and billing data. Hence, the Improved Meter Reading (IMR) initiative was designed to correct the baseline so that if any consumer was under billed or over billed, it might be adjusted accordingly and also the consumer database is also correct with regards to its tariff and other important parameters. The IMR was a pre-requisite for the Mobile Devices Project. To further strengthen the meter reading process and make it more stringent against inaccurate readings, the support of latest technology is being utilized thus, MMR is being implemented across MEPCO. This will not only enhance the capability of meter readers to take accurate readings but will also build the confidence of consumers in the bills that they receive. MEPCO has already converted its meter reading on MMR and has achieved significant results in this regard.

Special attention will be paid to all three phase consumers of MEPCO with a load above 5kW whereas consumers having load 20kW and above in all MEPCO and all tubewell consumers of Multan, Khanewal & Vehari circles were already covered by AMRs under USAID Power Distribution Program (PDP) and Sahiwal & Bahawal nagar circles through own source. All AMR meters of Whole Current meters are having remote connect-disconnect capability to help the DISCOs to remotely connect or disconnect the customers on non-payment. The AMR meters are enabling the DISCO to give special treatment to its high revenue consumers by getting accurate and timely readings. Another aspect of installing AMRs is the trigger that they send to the DISCO in case of any potential theft. It will add another level of monitoring to the existing mechanism of the DISCO while a separate cell will be established as well to counter the alarms triggered by the AMR meters.

Further, in order to curb potential theft and non-recovery, a surveillance unit will also be setup across the DISCOs that will be responsible to monitor incidents of theft and guard the revenues of the company. This cell will also enforce the nonpaying consumers to pay their outstanding dues. To achieve excellence in customer services, the Customer Service Centers (CSCs) will be upgraded in each subdivision. These centers will facilitate the consumers and improve the brand image of MEPCO in the eyes of the consumers. In conjunction, a Customers Management System (CMS) will be launched all across MEPCO, along with a toll free number where consumers can file their complaints.

All these integrated commercial efforts will create a synergized effect of improving the commercial performance of MEPCO and making it a more profitable entity. Therefore, based on the return on investment offered, these projects have been chosen.

Please refer table DIIP-18 above for summary scope by year and refer to **Annexure-10** for details on scope and cost.

**AMIs Extension**

AMI technology has been designed to assist MEPCO in achieving significant improvement in commercial performance through integration of advanced metering processes. MEPCO has an outdated metering system based on electro-mechanical metering subject to inaccurate manual readings and field tampering, resulting in a significant loss of revenue and increased opportunities for theft. The project aims to scale-up the AMR system to help reduce distribution losses, enhance load control and load management, provide automated consumption (billing) data, improve revenue collection and customer services, reduce billing complaints, increase operational efficiency, reduce operating costs and modernize the electricity metering and billing operations while also responding to AMR meter alerts and events.

Thus, under this activity, MEPCO plans to carry out a large-scale meter replacement program across its territory, with AMR (GSM/GPRS) meters for high-end residential, agricultural, commercial and industrial customers. For these meters in-case of disconnection initiated by the backend system, the AMR meter will not reconnect until it receives a reconnection command. These will also have the capability to support two different load thresholds against different time slots (peak/off peak) which will be programmed to activate disconnection/reconnection automatically.

Furthermore, to effectively implement the AMR project and enable a smooth transition, an AMI Cell has been established with the help of USAID PDP within the existing DISCO IT department to undertake the responsibility of AMR system.

MEPCO under this DIIP will further Procure 212570 AMI meters for all remaining 3-Phase Connections.

Further MEPCO has already procured the 135,000 RF based Single Phase Meters for which the Sahiwal Circle was selected and these meters are functioning properly.

Please refer table DIIP-18 above for summary scope by year and refer to **Annexure-11** for details on scope and cost.

**Customers Information System (CIS) & Data Center**

The operations of DISCOs are characterized by manual and cumbersome processes, inadequate controls, insufficient commercial focus, limited transparency and a lack of reliable information. As a result, operations are highly inefficient with substantial revenue leakages and poor customer orientation. Integrating and automating core commercial functions like meter reading and billing/collections will minimize the human element in commercial processes and lay the foundation for sustainable revenue cycle reforms.

Integrating and automating core commercial functions like meter reading and billing/collections that will minimize the human element in commercial processes and lay the foundation for sustainable revenue cycle reforms is being planned. From customer care and metering to billing, payments, credit and collections, these applications enable the customer experience and support all aspects of billing and revenue collections. Augmented with Mobile Meter Reading devices, the CIS has generated more accurate consumer bills and a one-window customer services facility has provided improved customer experience. This will result in improved operational efficiency, increased accuracy of bills, and reduced process cycle time and more efficient customer services with a reduction in customer complaints.

CIS is a web based application system. The required servers and allied hardware has already been provided earlier by PDP. PDP-PITC developed the CIS application whereas Oracle license for database got purchased by MEPCO. The CIS rollout comprises of numerous elements including the application software, database engine, computer hardware and networks (LANs and WANs), network installation and testing, data conversion from legacy system to a new system, data cleansing, pre-installation and on-the-job training, and operational support for a limited time. Now CIS has already been installed in all 9 Circles but time to time modifications in the applications are still being carried out which will be implemented by PITC. However, it has been felt that there is a strong need to replace the old servers therefore; MEPCO will replace the servers in the coming years.

In future, MEPCO intends to transfer the CIS servers, installed at PITC to MEPCO data center.

## DIGITAL TRANSFORMATION IN MEPCO

Digital Transformation is the process of using digital technologies to create new — or modify existing — business processes, culture, and customer experiences to meet changing business requirements.

For this purpose IT Directorate has proposed a comprehensive roadmap plan which will change the overall face of MEPCO. MEPCO top management will get the information from digital control room and take the initiatives timely and proactively.

If MEPCO wants to prosper in true letter and spirit and take the benefits of technology then it is proposed that following technologies need to be adopted in future:

### A. Enterprise Asset Management

Enterprise asset management (EAM) combines software, systems and services to help maintain, control and optimize the quality of operational assets throughout their lifecycles. Currently in

MEPCO there is no any proper Asset Management System operational in MEPCO which is leading to undue cost leakage, asset health status, replace and repair priorities, risk identification, data analytics, etc.

*Following are major features/ benefits of Asset Management Software:*

- Detect potential issues
- Return on Investment
- Real Time Asset tracking
- Data Analytics
- Saving inventory expenses
- Improves asset performance to reduce downtime
- Schedules Preventive Maintenance to prevent problems
- Improves processes such as warranty management

**B. Enterprise GIS**

Though the DISCOs have learned how to function with bad quality and out-of-date data and in spite of poor operational performance they are still providing services. They connect new customers and distribute energy, but for long outages, damages from false start, unnecessary field work, they simply incorporate in them into energy prices. If power distribution utility has consistent and up-to-date data, then those expenses can be decreased to minimum.

An Enterprise GIS is a comprehensive geographic information system (GIS). It contains all the elements needed to solve utility challenges and includes tools to help you leverage digital maps.The implementation of GIS infrastructure, processes and tools are needed at a scale within the context of an organization, shaped by the prevailing information technology patterns of the day. The system maintains key information, analyzing and distributing it to everyone that needs business intelligence through a system of record, a system of engagement, and a system of insights.

*Following are benefits of implementing Enterprise GIS*:

- **Better Service to customers**
  - Ability to locate/inform impacted customers
  - Improvement in trouble call resolution through network analysis
  - Etc
- **Improve Efficiency of operations**
  - Ability to get accurate network asset information
  - Avoid duplication of effort
  - Informed decisions making
  - Etc
- **Reduce Costs**
  - Better network planning/design

- Reduce manpower through automation
- Contribute to reducing T&D losses
- Etc

- **Overall improved reputation & safety of operations**

### C. Meter Data Management (MDM)

Currently nearly 41000 Smart Energy Meters have been installed and appx. 212,570 more three phase connections will be purchased in four years from 2020-21 to 2023-24.

MDM is an Multi-vendor Enterprise-wide data management solution which receives energy data in many forms and from a growing diversity of network sources like RF, PLC, GPRS/3G/4G. It validates, edits, and formats the data for use by different applications & analysis.

*Following are features of MDM:*

- Capacity to archive huge amount of data for years
- Simplify future integration of new AMI technologies
- Manage collection of meter readings and facilitate two-way requests from multiple technologies for the same meter
- Simplify integration of new meter reading and billing system technologies acquired through merger and acquisition
- Validate, edit and store commercial and industrial readings along with mass residential readings
- Smart meter deployment planning and management;
- Make efficient energy buying decisions based on the usage patterns,
- Detecting and reducing unbilled energy.

### D. Distribution Network Management (DNM)

DNM is a system, capable of collecting, organizing, displaying and analyzing real-time or near real-time electric distribution system information. A DNM incorporates IVR and other mobile technologies, through which there is an improved outage communications for customer calls, provide customers with more accurate estimated restoration times and Improve service reliability by tracking all customers affected by an outage, determining electrical configurations of every device on every feeder, and compiling details about each restoration process.

*Main features and benefits are:*

- Provides clear and consistent real-time, forecasted, and historical views of the distribution network.
- Allows system operators, field crews, planning engineers and managers to work as a team - accessing the same as-operated representation of network grid information.
- Network Connectivity Analysis

- Switching Schedule & Safety Management
- State Estimation
- Load Flow Applications
- Load Shedding Application
- Fault Management & System Restoration
- Load Balancing via Feeder Reconfiguration
- Distribution Load Forecasting

## E. Outage Management System (OMS)

An OMS provides rapid real time information to predict outages, enabling to respond quickly when faced with extreme weather or excess demand. OMS identify outages and provide instant alerts. OMS systems usually work in tandem with GIS or geographical information systems, CIS or customer information systems and call handling systems such as IVR (interactive voice response).

*Major features usually found in an OMS are:*

- Reduced outage durations due to faster restoration based upon outage location predictions.
- Reduced outage duration averages due to prioritizing
- Improved customer satisfaction due to increase awareness of outage restoration progress and providing estimated restoration times.
- Improved media relations by providing accurate outage and restoration information.
- Fewer complaints to regulators due to ability to prioritize restoration of emergency facilities and other critical customers.
- Reduced outage frequency due to use of outage statistics for making targeted reliability improvements.

## F. Mobile Work Force Management (MWFM)

While remote work offers countless benefits, it can present new challenges as well. With employees working from various locations and less face-to-face interactions with managers and coworkers, the mobile workforce can be tricky to manage. However, with a robust workforce management system, managers can gain insight into what's going on with each employee through one convenient platform.

Mobile Workforce Management is used to manage employees working outside the company premises (field teams) by using mobile devices, mobile aps and PC software.

*Main features are:*

- It provides timestamps and captures locations.
- It offers flexible scheduling.
- It sends alerts in real time.

- It supports customization according to industry needs.
- It allows seamless reporting and third-party integrations.
- Less down time, fewer inefficiencies, and ultimately, better performance.

## G. Transformer Monitoring System (TMS)

To achieve an appropriate level of safety and reliability in power grids, real time monitoring of the grid is considered as an essential requirement. In the existing distribution system of DISCOs there is no protection for a distribution transformer other than D-Fuse which is unfortunately, not properly implemented in the field. As per survey of an independent 3rd party, more than 80% of breakdown in field is being faced in 100 & 200 KVA transformers which indicate the necessity of an adequate protection. Real time monitoring of distribution transformer will enable the utility to monitor critical electrical parameters i.e. voltage, current, harmonics, active, reactive and apparent power, power factor, ambient temperature, etc.

Fundamental aspiration of any DISCO is to appease its customers by its performance and reliability. There are state of the art monitoring and control mechanisms installed in power grids which play vital role in keeping utility's power system up and running. Distribution transformer is another critical and valuable component in power system especially in distribution grids as it is the source of supply to consumer. Consequently, it is prone to different kind of faults and problems.

*Main Features:*

- It prevents circuitry from damage
- Avoid interruption in power supply
- Remove power blackout at pick hours
- Accident prevention
- Transformer safety

## H. Enterprise Analytics

Companies need to know what data they should be analyzing to ensure that the right employees have the right access to the right data sources to present data visualizations that provide business leaders with the real-time insights they need.

A form of big data analytics where an organization can perform analytical processes on the data stored across the organization. It is used by data analysts, big data analysts and/or web analytics to extract meaningful data or relations from the raw data repositories it has.

Enterprise Analytics is a process by which businesses use statistical methods and technologies for analyzing historical data in order to gain new insight and improve strategic decision making.

*Following are main features of Enterprise Analytics:*

- **Decision Analytics:** Supports human decision with visual analytics
- **Descriptive Analytics:** Gains insight from historical data
- **Predictive Analytics:** Employs predictive modeling using statistical and machine learning techniques
- **Prescriptive Analytics:** Recommends decisions using optimization, simulation, etc.

Please refer to **Annexure-12** for details on scope and cost.

**Customers Service Center (CSC) Up-grade and Complaints Management System (CMS)**

Efficiently Customer Services are a critical success factor for MEPCO who bear a significant responsibility to provide continuous and reliable services to their customers. Currently following services are being provided to Regional Customer Services Centre, MEPCO H/Q Multan.

**Interactive Voice Recording System (IVR).**

IVR is a technology that allows a computer to interact with customers through the use of voice input via keypad and has been introduces at MEPCO CSC to allow callers to lodge various complaints. Through Toll Free No. 0800-63726

**Queue Management System.**

Queue Management System is designed to help managers through enhanced customer service, improved efficiently and reduced costs. If comprises a token dispenser and counter display alert system with four counters at MEPCO's Customer Services Centre. Different complaints are entertained at respective counters and token are issued to walk-in customers to accurately detect the number and behavior of people in the queue.

**Online Complaint Management System (OCMS).**

OCMS is one of the latest productivity entertainment tools widely organizations where there is a need to book complaints via operators and analyze the complaint that are make or are pending. Through this, the concerned Customer Services Representative (CSR) register complaint and fills out the requisite information received through the complainant.

Thus, by optimizing the complaint handling process, speeding up the turnaround from complaint submission to resolution, and keeping the overall quality of online customer complaint system always reading for audits, this initiative aims to ensure transparently and efficiently of commercial procedures while bringing about a fundamental change in the work culture. While the current OCMS can only pick basic information of customers, when interfaced with CIS, we will be able to get comprehensive consumer information for efficient complaint resolution. This will further create a positive image of MEPCO for the customers, motivate employees to work the overall performance improvement of the Company and provide an environment for the sustainability of the new technology and improvement in OCMS.
Regional Complaint Centre, MEPCO is dealing complaints received from following formations.

1. Prime Minister's Delivery Unit, (PMDU) Islamabad Complaints.
2. Federal Complaint Cell (FCC), Ministry of Energy (Power Division) Islamabad Complaints.
3. MEPCO Online Complaints received through MEPCO Toll Free No. 0800-63726.
4. Walk-In Customer Complaints.

5. Complaints Marked by CEO MEPCO H/Q Multan.
6. Complaints' Received through DAK.

All above complaints received in CSC MEPCO H/Q Multan forwarded to concerned SDO/XEN/SE through Online Complaints Management System (OCMS) and also OCMS sends SMS of complaint detailsto concerned SDO/XEN/SE for early resolved.
After redressal of complaints MEPCO CSC send detail report to concerned offices.

Available resources at CSC MEPCO H/Q Multan.

1. Interactive Voice Recording System (IVR)
2. Queue Management System.
3. Online Complaints Management System (OCMS)
4. 10 Nos. Computers.
5. 04 Nos. Lines for MEPCO toll free No. 0800-63726 for Online Complaints.
6. 04 Land Lines for follow up of all complaints.
7. 01 No. Cell Phone for follow up of complaints.
8. Fax machine.
9. Printers.
10. Photo Copier Machine.
11. Scanners.

These facilities are running at MEPCO H/Q and All Circles. Now MEPCO plans to establish the same in each Sub Division till ending 2023.

Please refer table DIIP-18 above for summary scope by year and refer to **Annexure-13** for details on scope and cost.

**Surveillance**

T&D losses of DISCOs are one of the primary causes for Pakistan's circular debt in the energy sector. Power theft is a major contributor towards T&D losses and poor collections in the DISCOs. In MEPCO currently Monitoring & Surveillance (M&S) department is working at Head quarter level to carry out investigations on public / consumers complaints received from Ministry of Power Division, Prime Minister Delivery Unit, S&I PEPCO, Info reports, NAB, FIA, Chief Executive MEPCO, Roshan Pakistan and Open Katchery. Checking / raids of suspected consumers assessed in detecting theft of electricity and making strenuous efforts regarding eradication of the menace of pilferage of electricity.

Thus, with an overall objective of increasing collections and decreasing losses, MEPCO's M&S department is identifying discrepancies in metering equipment's during monthly random / routine checking and raising detection bills in consultation with respective DMOs / AMOs. The procedure for surveillance includes survey and inspection of theft cases through coordinated field teams, prosecutable evidence collection through standardized forms, photographs and defined procedure, FIR application and registration, penalty (detection bill preparation), legal action and case management.

As part of this project, surveillance teams will be formed at Division Level to perform Surveillance / M&S to improve recovery and reduction in theft for which 38 Nos vehicles and other allied accessories are required. For prompt surveillance on the AMI alerts, M&S and M&T staffs have been working jointly to visit the sites and detect problems and discrepancies to avoid any revenue losses. Surveillance will be carried out on the discrepancies pointed out by the meter reader / follow up teams where IMR/ HHU are being implemented along with meters that have not been replaced yet. Random surveillance will also be carried out in high end commercial and residential areas and those with high loss feeders.

Please refer table DIIP-18 above for summary scope and refer to **Annexure-14** for details on scope and cost.

### ii. Financial Management Improvement Plan

MEPCO has already implemented ERP with USAID PDP's assistance. The costs for ERP implementation have already been covered. Further USAID PDP has assisted MEPCO to improve the internal audit function and audit and accounting manuals. Provision for covering the bandwidth operational costs is also made under this DIIP for ERP. Further staffing required to scale ERP company-wide is part of the HR plan.

**DIIP7 - Financial Management Improvement Plan**

**Financial DIIP- MEPCO**

| # | Description | FY 2021-22 | FY 2022-23 | FY 2023-24 | FY 2024-25 | FY 2025-26 | 5-Year Total |
|---|---|---|---|---|---|---|---|
| 1 | ERP | Financial Management, Materials Management & Human Resource Management Modules are already implemented and online. | | | | | - |
| | . | We have started work on Pension and work flows, PM/PS will be kicked off during 2022 . SAP Upgrade will commence during 2024-25. | | | | | |

## Enterprise Asset Management (Plant Maintenance):-

SAP Plant Maintenance (SAP PM) application component provides an organization with a tool for all maintenance activities to be performed. All the activities that are performed under maintenance are interconnected and hence this module is closely integrated with other modules - Production Planning, Material Management, and Sales and Distribution.

Plant Maintenance contains the following sub modules −

- Management of technical objects and equipment master record.
- Planning of maintenance task.
- Manage workflow notifications and work orders under maintenance order management.

Following activities are performed under Plant Maintenance –

- Inspection
- Preventive Maintenance
- Repair

Following are the key modules in which integration is performed with Plant Maintenance

- Material Management
- Sales and Distribution
- Personnel Management
- Controlling
- Production Planning
- Project Systems

**Project Systems**

Project System is one of the key modules of SAP to perform project and portfolio management. It helps to manage the project life cycle starting from structuring to planning, execution, until the project completion. Project system is closely integrated with other SAP modules like logistics, material management, Sales and Distribution, Plant Maintenance, and Production planning module

As per budget, projects can be categorized in the following categories,

- External Financed Projects
- Internal Financed Projects

Following are the key steps involved in Project process flow −

- Create Templates/WBS
- Create Project
- Project Planning
- Budgeting and Release
- Project Implementation
- Project Completion

Following are the key modules in which integration is performed with Project Systems

- Finance & Controlling
- Material Management
- Sales & Distribution
- Production Planning
- Personnel Management
- Plant Maintenance

## Pensions:-

Pension process will be covered under FICO and HCMin SAP system. In this regard additional 25 blocks of payroll are required from SAP for pesion execution, where as we have already 36 Blocks for executing salary of employees. Complete implementation of this processwill result in the distribution of centralized pension through SAP. Resultantly work burden will be reduced from field offices and pensioners will be benefited as well..These additional payroll blocks will cost us approximately 25 MFurther more we can connect the system with biometric machansim for authentication /varification of pensioners and it can be distribute centrally llike we are doing with our regular employee salaries.Pension system will help us to control any duplication/miscalculation.

### Dash Board:-

SAP ERP has been live in MEPCO since 2018. Now, we are planning to install SAP ERP Dashboard. It will facalitate MEPCO management to get reports on single click. For this, we need to configure our SAP system to activate the Dash board. The approximate cost for this project is 15 Millions.

### Upgrade SAP

MEPCO using ECC6.7 version of SAP. It has been obsoleted since 2015. So, it needs to upgrade our SAP system as well as allied hardware installed at Data centre. It needs complete system configurations and upgradation of the existing system.This excerise need to be done the same way as the SAP system was implemented. We are expecting the total project cost of 35 Millions approximately. We have a plan to start this activity fromfiscal year 2024-25.

### HCM Work Flows:-

It has been decided to implement HCM work flows to get real benefits from HCM module. In this regard 52 work flows has been identified which will reduce the manual work. Resultantly efficiency of work will increase.We are expecting it would be done during 2022-23. Our estimate for the project is 35 Millions.

### E-Tendering:-

MEPCO is working on E-Tendering project which would be accomplished within next financial year.

### FICO Work Flows:-

It has been decided to implement FICO work flows to get real benefits from FICO module. Systematic flows will be designed for Audit & Admin approvals of claims/invoices of parties along with approval of fund demands.

We need few ABAP services to get this task done by the FY 2023-24.

### SAP FICO Integration with IBS (ORACLE)-

Currently, SAP & IBS systems are running in isolation, MEPCO want hand shake of these two systems for integrated real time component wise posting of all type of commercial data from IBS to SAP System.

| Description | Estimated Cost (Rs. In Millions) | Estimated Completion Time | Remarks |
|---|---|---|---|
| SAP Pension System | 25 | FY 2022-23 | Work in Progress |
| SAP FICO Integration with IBS (ORACLE) | 10 | FY 2022-23 | Work in Progress |
| SAP HCM/FICO Work Flows | 35 | FY 2023-24 | -- |
| SAP EAM (PM)/PS | 45 | FY 2024-25 | -- |
| SAP Dash Board | 15 | FY2025-26 | -- |

**Multiyear Tariff (MYT) Petition:-**

MEPCO has planned to prepare and submit its Multiyear Tariff Petition for the period 2021-25 in accordance with the NEPRA Tariff Guidelines-2015. The objectives of Multiyear Tariff Petition aim to increase the stability and predictability of future revenue chain of the licensee (MEPCO). It focuses on rationalized increase in the demand of electric power, expansion of facilities and expenditure on O&M (OPEX) and investment activities (CAPEX). Further the Multiyear Tariff Petition would minimize the risks of regulatory assessment by NEPRA and MEPCO would be in the better position for planning and strategic decision making.

Please refer **Annexure-15** for details on scope and cost.

### iii. Human Resource Improvement Plan

This plan covers the HR improvement activities, revamping / addition of training facilities, training of employees through external facilities, improving the working environment etc. Under this section scope that what will be done in each of the five year under of business plan is discussed. The narrative shall also be supported by the justification.

**DIIP8 - Human Resource Improvement Plan**

| HR DIIP- MEPCO | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| **#** | **Scope** | **FY22** | **FY23** | **FY24** | **FY25** | **FY26** | **5-Year Total** |
| **1** | Improving the Working Env. Of offices & training facilities | Furnishing the Office Buildings with new furniture and allied equipment in order to improve the working | | | | | - |
| **2** | Trainings | Trainings of officers and officials to improve skills | | | | | - |
| **3** | Improving Health & Education facilities | Implementation of Well fare Policies particularly educational scholarships | | | | | |
| **4** | Manpower Plan & Revision of Organization Structure | Align org structure with business strategy | | | | | |

The Human Resource Improvement Plan (HRIP) broadly aims to increase the functional capacity of DISCO staff by providing the institutional model for technical and behavioral skills among the company's employees. It also aims to increase the productivity and quality of services provided both internally and externally, creating a foundation for sustainable HR operations.

Please refer table DIIP-9 for detailed mapping of HR initiatives with goals and objectives, with a summary mapping discussed below:

Human-ware:

- Improving MEPCO's infrastructure:
    - Starting training and capacity building initiatives

- Staffing / Recruitment

Org-ware:

- Manpower Plan & Revision of Organization Structure
- Improving office facilities/work environment
- Conducting motivational campaigns
- Preparation of MEPCO HR Manual

Please refer **Annexure-16** for details on scope and cost.

**Improving the Working Environment**

MEPCO contains the following Fleet of 1073 vehicles of different categories:

| Sr. No | Type Of Vehicles | No Of Vehicles | Sr. No | Type Of Vehicles | No Of Vehicles |
|---|---|---|---|---|---|
| **1** | **Cars** | 28 | **8** | **Coasters** | 07 |
| **2** | **Jeeps** | 137 | **9** | **Bus** | 01 |
| **3** | **Vans** | 33 | **10** | **Cranes** | 43 |
| **4** | **Double Cabins** | 33 | **11** | **Aerial Buckets** | 11 |
| **5** | **Single Cabin Pickups** | 452 | **12** | **Fork Lifters** | 23 |
| **6** | **Trucks** | 221 | **13** | **Rickshaws** | 70 |
| **7** | **Trailors** | 09 | **14** | **Tractors** | 05 |
| | | | | **Total** | **1073** |

- Most of vehicles have completed their useful lives and approximately 380 vehicles are more than 20 years old. This phenomenon has vital cause of increasing expense of day to day repair. The budget allocated for the wear and tear for 2020-2021 financial year 55 million was consumed whereas the total budget for the P.O.L. was approximately 370 million is consumed every year before the end of financial year. The field formation concentrate on the operation duties owing to emergency and do not bother to get the vehicle repair timely, thus deteriorate the condition of vehicle. The budget allocated is not enough for the actual repair and only fulfill the demand of P.O.L. The maintenance/ repair is either postponed or ignored due to non-availability of funds.

- The repair is carried out as per SOP devised by MEPCO but the expenditure is increasing tremendously due to old obsolete models of vehicles which consumes P.O.L. at maximum being old Technology

- In this context it is stated that MEPCO BOD is principally agreed to approve amortization policy for which phase-wise demand of funds has been suggested and Finance Director MEPCO is proposing budget provision for the next financial years.

- The proposed purchase of vehicle for MEPCO Officers is being mentioned in the future budget plan of 5 years. The saving cost benefit analysis of the company is also prepared by Finance Director which shows cost saving of 110 million rupees per annum. The will definitely increase efficiency of officers and timely disposal of complaints. It will facilitate to achieve & assigned targets, besides improving the company image and goodwill.

| TRANSPORTATION PLAN EXPENSE FOR NEXT FIVE YEARS | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Description of Item | FY 2021-22 | | FY 2022-23 | | FY 2023-24 | | FY 2024-25 | | FY 2025-26 | |
| | No. | Total | No. | Total | No. | Total | No. | Total | No. | Total |
| Car (1800cc) | 1 | 4.2 | | | | | | | | |
| Car (1600cc) | 8 | 31.14 | | | | | | | | |
| Car (1300cc) | 30 | 87.66 | 143 | 417.83 | | | | | | |
| Car (1000cc) | | | 255 | 617.61 | | | | | | |
| S/Cabin Pickup | 50 | 150 | 16 | 48 | | | | | 92 | 276 |
| Mini Pickup | | | | | | | | | | |
| (7-10) Seater | | | | | 3 | 14.1 | 3 | 14.1 | | |
| Hi-ace/Van | | | | | 6 | 36 | | | | |
| Coaster | | | | | | | 4 | 36 | | |
| Bus | | | | | | | | | | |
| Jeep | | | | | | | | | | |
| Defender | | | | | | | | | | |
| Path Finder | | | | | | | | | | |
| Truck (3 Ton) | 84 | 436.8 | | | 42 | 218.4 | | | 14 | 73 |
| Truck (6 Ton) | | | | | | | 14 | 84 | 22 | 132 |
| Truck (13 Ton) | | | | | | | 11 | 138.6 | | |
| Bucket (32-50 Ft) | | | | | | | | | 3 | 45 |
| Bucket (100-120 Ft) | | | | | 2 | 34 | | | | |
| Crane (3-5 Ton) | | | | | 19 | 266 | 19 | 266 | | |
| Crane (30 Ton) | | | | | | | | | | |
| Crane (120 Ton) | | | | | | | | | | |
| Tractor | | | | | | | 2 | 3.2 | | |
| Trailor (28 Ton) | | | | | | | 4 | 50.8 | | |
| Fork Lifter (3-5 Ton) | | | | | | | 6 | 30 | | |
| Fork Lifter (7-10) Ton | | | | | | | 1 | 7 | | |
| **TOTAL** | **173** | **709.80** | **414** | **1,083.44** | **72.00** | **568.50** | **64.00** | **629.70** | **131.00** | **526.00** |

**Training Courses Details for officials to be conducted at RTC and CTC's**

1. During FY 2019-20, almost 2392 Nos. of Employees of different cadres was trained by MEPCO in different courses.

2. Annual schedule of trainings / classes to be conducted at RTC and CTC's is prepared in advance and got approved from MEPCO H/Q.
3. Nomination of the trainees is made by the concerned offices which are maintaining seniority lists according to approved schedule.
4. Arrival of the class is taken by class incharge nominated by Principal RTC / CTCs on the 1st day of training.
5. Weekly schedules are prepared by training incharge and class incharge.
6. To increase the communication skills and improve the moral values of trainees especial session of Tilawat / Tafseer and Thought of the day is conducted every day for all classes in the morning, wherein participation of all trainees is ensured.
7. Training is imparted in the light of preapproved course contents for all classes.
8. Lectures on all topics are delivered by trainers having good knowledge, where needed guest speakers are also invited to meet the requirements of trainees.

9. To make the training effective trainees are given lectures in the class rooms according to weekly schedule and different practicals are perform in the labs and practical yard.
10. Special emphasis is lay down on the development of safety culture in the organization.
11. Trainees along-with representative of RTC / CTCs are sent to different field offices for on job training.
12. Study tours are also arranged where needed to improve the effectiveness of training.
13. At the end of session final examination is conducted for which papers are prepared by Examination Cell from relevant officers.
14. Examination of Technical classes also include practical and safety papers which are mandatory to successfully pass the examination.
15. Results of the examination is declared by Principal RTC after receipt of checked paper from Director Examination of MEPCO H/Q.
16. Special classes are also conducted at RTC according to the need and requirement of company as required by MEPCO H/Q.

## HEALTHCARE FACILITY

MEPCO has adopted PEPCO Healthcare Policy with the approval of MEPCO BOD and enhancement in rates have been applied as given below:

**Maternity Charges for delivery in Hospital:**

i. Rs.20,000 for normal delivery in Hospital.
ii. Rs.50,000 in C.Section cases
iii. Rs.5,000/- if delivery is conducted at residence of the employee

**Reimbursement Facility**

Reimbursement on twice the rates of CMH on referred cases. Reimbursement on treatment of chronic diseases on actual expenditure.

**Reimbursement Limits.**

i. Where the Medical Facility Exists.
   Upto 01 month's running basic pay in a financial year.
ii. Where the Medical Facility Does Not Exist.
   Upto 03 month's running basic pay in a financial year.
iii. The chronic and life-saving emergency cases exempted from above restriction

**Advance for Non-Fatal Accidents.**

In case of non-fatal accident, the concerned Drawing & Disbursing Officer (DDO) will arrange advance payment.

**Reimbursement Limits.**

Limit or reimbursement of medicine be enhanced as under:-

Where the Medical facility Exist.
Upto 01 month running basic pay of the employee.
Where the Medical Facility Does Not Exist.
Upto 03 month running basic pay in a financial year.

Note: There will be no restriction on reimbursement for treatment of chronic diseases as determined by the board.

MEPCO is already improving medical facilities for MEPCO employees by providing best facilities. In this connection, MEPCO has made agreement with Ch. Pervaiz Elahi Institute of Cardiology Multan for treatment of MEPCO Patients regarding Heart Diseases.The use of medicated stunts instead of ordinary stunts in Heart Surgery / Angioplasty has been allowed as per recommendation of Treating Consultant if required for MEPCO employees (Serving, Retired and Family Pensioners of MEPCO only) in relaxation of "The Pakistan Wapda medical Attendance Rules 1979.

To provide better treatment facilities, MEPCO signed a contract with Shoukat Khanum Memorial Cancer Hospital & Research Centre Lahore for treatment facilities of cancer patients of MEPCO (Serving, Retired and Family Pensioners of MEPCO only) in relaxation of "The Pakistan Wapda medical Attendance Rules 1979.

**Accommodation**

- **Official Residential Accommodation**

  MEPCO is proving following residential accommodation

| A-Type | B-Type | C-Type | D-Type | E-Type | F-Type | Total |
|---|---|---|---|---|---|---|
| 1 | 60 | 90 | 253 | 503 | 784 | 1691 |

- **Official Hostels**

| Sr. No. | Hostels | Total No. Rooms | Full Room Allotted | Room Allotted Sharing Basis | No of Officers residing in Hostel |
|---|---|---|---|---|---|
| 1 | Sr. Officer Hostel, | 4 | 4 | - | 4 |
| 2 | Bachelor Hostel | 19 | 9 | 10 | 29 |
| 3 | Female Hostel | 4 | - | 3 | 6 |
| 4 | Family Suit (02 Rooms) | 4 Suit | - | - | 4 |

**Communication**

- **Mobile Phone Services**
  - New Mobile Phone Service Contract has been signed for the period from 01.07.2021 to 30.06.2023 with M/s Jazz Telecom Ltd. after adopting Tender / Bid procedure as per PPRA Rules.
  - **Courier Services**
  - M/S TCS Pakistan is providing courier services

**Renovation of Offices / Residential Accommodation**

All offices / official residences are being repaired / maintained time to time.

**Office Supplies**

All offices are being provided office supplies stationary & consumable items for smooth functioning of work.

**Furniture, Fixtures, Computer & allied equipments**

Furniture, fixtures, computer & allied equipments are being provided to run office work smoothly in accordance with modernization.

**Welfare**

- **Welfare Grant**

  Welfare grant is being provided to widows of retired / deceased MEPCO employees.

- **Marriage Grant**

  All MEPCO service / retired / family pensioners are provided marriage grant

- **Scholarships**

  Scholarships are being provided to working employees to facilitate employees in education of their children.

**Staffing Plan:**

The recruitment plan is an essential component of the HR plan. Appropriate staffing aligned with Business Strategy is a must to ensure smooth implementation of projects, operations, sustainability and achievement of goals. Below is the recruitment plan from FY 2020-21 to FY 2024-25 involving the staff for IT, Planning, Strategic Planning, commercial, communications, transmission and distribution.

## DIIP 9- Staffing Plan aligned with Investment Plan

| STAFFING PLAN | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sr. No** | **Title** | **BPS** | **Total Nos.** | **F.Y. 2021-22** | **F.Y. 2022-23** | **F.Y. 2023-24** | **F.Y. 2024-25** | **F.Y. 2025-26** |
| 1 | DG / GM / CE (MIRAD) | 20 | 1 | 0 | 0 | 0 | 0 | **1** |
| 2 | Company Secretary | 19 | 0 | 1 | 0 | 0 | 0 | **1** |
| 3 | Director (Legal & Labour) | 19 | 0 | 1 | 0 | 0 | 0 | **1** |
| 4 | Director (Legal / Contract) | 19 | 1 | 0 | 0 | 0 | 0 | **1** |
| 5 | Manager (Internal Audit) | 19 | 0 | 1 | 0 | 0 | 0 | **1** |
| 6 | Manager (Planning & Forecasting) | 19 | 1 | 0 | 0 | 0 | 0 | **1** |
| 7 | DM (ERP) | 18 | 0 | 1 | 0 | 0 | 0 | **1** |
| 8 | DM (CPC Tariff) | 18 | 0 | 1 | 0 | 0 | 0 | **1** |
| 9 | DM (Taxation & Banking) | 18 | 0 | 1 | 0 | 0 | 0 | **1** |
| 10 | DM (Legal / Contract) | 18 | 1 | 0 | 0 | 0 | 0 | **1** |
| 11 | DM (Finance) | 18 | 1 | 0 | 0 | 0 | 0 | **1** |
| 12 | DM (Demand Forecasting) | 18 | 1 | 0 | 0 | 0 | 0 | **1** |
| 13 | AM (Transmission Planning) | 17 | 1 | 0 | 0 | 0 | 0 | **1** |
| 14 | AM (Legal) | 17 | 0 | 1 | 0 | 0 | 0 | **1** |
| 15 | Jr. Engineers/ SDOs | 17 | 3 | 60 | 22 | 20 | 20 | **125** |
| 16 | A.M (CS) / RO | 17 | 0 | 5 | 4 | 4 | 4 | **17** |
| 17 | A.M (HRM / Admn) | 17 | 1 | 5 | 5 | 4 | 3 | **18** |
| 18 | A.M (MM) / FSM | 17 | 0 | 4 | 3 | 3 | 3 | **13** |
| 19 | A.M (P/SA) | 17 | 0 | 2 | 2 | 2 | 1 | **7** |
| 20 | A.M (Computer) | 17 | 0 | 2 | 2 | 2 | 1 | **7** |
| 21 | A.M (Transport/ Mechnical) | 17 | 0 | 1 | 0 | 0 | 0 | **1** |
| 22 | A.M (CISA) | 17 | 0 | 1 | 0 | 0 | 0 | **1** |
| 23 | AM (Finance) | 17 | 2 | 0 | 0 | 0 | 0 | **2** |
| 24 | A.M (Corporate Accounts) | 17 | 0 | 3 | 2 | 2 | 2 | **9** |
| 25 | A.M (Demand Forecasting) | 17 | 1 | 0 | 0 | 0 | 0 | **1** |
| 26 | A.M (Civil) | 17 | 0 | 2 | 1 | 0 | 0 | **3** |
| 27 | Assistant GIS Specialist | 17 | 0 | 1 | 0 | 0 | 0 | **1** |

| Sr. No | Title | BPS | Total Nos. | F.Y. 2021-22 | F.Y. 2022-23 | F.Y. 2023-24 | F.Y. 2024-25 | F.Y. 2025-26 |
|---|---|---|---|---|---|---|---|---|
| 28 | A.M (Data Base & Networks) | 17 | 0 | 1 | 0 | 0 | 0 | **1** |
| 29 | A.M (MDC & MDM) | 17 | 0 | 1 | 0 | 0 | 0 | **1** |
| 30 | A.M (Field Operations / CIS Support) | 17 | 0 | 1 | 0 | 0 | 0 | **1** |
| 31 | A.M (SAP) HCM | 17 | 0 | 1 | 0 | 0 | 0 | **1** |
| 32 | A.M (SAP) FICO | 17 | 0 | 1 | 0 | 0 | 0 | **1** |
| 33 | A.M (SAP) MM | 17 | 0 | 1 | 0 | 0 | 0 | **1** |
| 34 | A.M (Microsoft Administrator) | 17 | 0 | 1 | 0 | 0 | 0 | **1** |
| 35 | A.M (VM Administrator) | 17 | 0 | 1 | 0 | 0 | 0 | **1** |
| 36 | A.M (Linux Administrator) | 17 | 0 | 1 | 0 | 0 | 0 | **1** |
| 37 | A.M (Network Administrator) | 17 | 0 | 1 | 0 | 0 | 0 | **1** |
| 38 | A.M (Network Administrator (Core) | 17 | 0 | 1 | 0 | 0 | 0 | **1** |
| 39 | A.M (Chemcial) under TRW | 17 | 0 | 1 | 0 | 0 | 0 | **1** |
| 40 | A.M (Social Impact) | 17 | 0 | 1 | 0 | 0 | 0 | **1** |
| 41 | A.M (Environment) | 17 | 0 | 1 | 0 | 0 | 0 | **1** |
| 42 | Steno Grade-I/Steno-I/ APS | 16 | 0 | 3 | 3 | 3 | 3 | **12** |
| 43 | IT Technician (System) | 15 | 0 | 1 | 0 | 0 | 0 | **1** |
| 44 | IT Technician (Networks) | 15 | 0 | 1 | 0 | 0 | 0 | **1** |
| 45 | ERP Users | 15 | 0 | 17 | 0 | 0 | 0 | **17** |
| 46 | Data Coder | 15 | 0 | 20 | 15 | 12 | 10 | **57** |
| 47 | Data Entry Operator/DEO | 15 | 0 | 20 | 15 | 15 | 13 | **63** |
| 48 | Office Assistant/Head Clerk | 15 | 5 | 5 | 5 | 5 | 5 | **25** |
| 49 | Audit Assistant | 15 | 3 | 10 | 10 | 10 | 9 | **42** |
| 50 | Accounts Assistant | 15 | 5 | 10 | 7 | 5 | 5 | **32** |
| 51 | Commercial Assistant (C/A) | 15 | 5 | 15 | 15 | 8 | 8 | **51** |
| 52 | LS-I (Line Supptt-I) | 15 | 8 | 8 | 5 | 5 | 2 | **28** |
| 53 | SSO-I | 15 | 0 | 25 | 25 | 20 | 20 | **90** |
| 54 | Test Inspector (GSO/ P&I) | 15 | 0 | 2 | 2 | 1 | 1 | **6** |
| 55 | Sr. Store Keeper | 15 | 0 | 2 | 2 | 2 | 2 | **8** |
| 56 | Foreman | 15 | 0 | 5 | 3 | 3 | 3 | **14** |
| 57 | Security Inspector | 15 | 0 | 2 | 1 | 0 | 2 | **5** |

| Sr. No | Title | BPS | Total Nos. | F.Y. 2021-22 | F.Y. 2022-23 | F.Y. 2023-24 | F.Y. 2024-25 | F.Y. 2025-26 |
|---|---|---|---|---|---|---|---|---|
| 58 | Steno Grade-II | 14 | 0 | 4 | 3 | 3 | 3 | **13** |
| 59 | Asstt. Foreman | 14 | 0 | 25 | 20 | 15 | 10 | **70** |
| 60 | Jr. Store Keeper | 14 | 0 | 10 | 5 | 5 | 2 | **22** |
| 61 | Lab Assistant/Test Assistant | 14 | 0 | 10 | 6 | 5 | 5 | **26** |
| 62 | LS-II (Line Supptt-II) | 14 | 8 | 30 | 30 | 30 | 30 | **128** |
| 63 | SSO-II | 14 | 8 | 5 | 5 | 5 | 5 | **28** |
| 64 | Sub Engineer Civil | 14 | 3 | 1 | 0 | 0 | 0 | **4** |
| 65 | Asstt. Draftsman | 13 | 0 | 15 | 10 | 10 | 8 | **43** |
| 66 | Cable Jointer | 13 | 0 | 3 | 0 | 0 | 0 | **3** |
| 67 | Imam Masjid | 12 | 0 | 1 | 0 | 0 | 0 | **1** |
| 68 | Graphic Designer | 11 | 0 | 1 | 0 | 0 | 0 | **1** |
| 69 | Care Taker | 11 | 0 | 3 | 0 | 0 | 0 | **3** |
| 70 | MS-I | 11 | 0 | 7 | 7 | 7 | 7 | **28** |
| 71 | Relay Machine | 11 | 0 | 1 | 0 | 0 | 0 | **1** |
| 72 | Asstt. Digitizer | 11 | 0 | 0 | 0 | 3 | 2 | **5** |
| 73 | Fitter-I | 11 | 0 | 10 | 10 | 10 | 5 | **35** |
| 74 | Jr. Clerk/LDC | 9 | 15 | 100 | 80 | 70 | 80 | **345** |
| 75 | Meter Reader | 9 | 4 | 120 | 100 | 100 | 100 | **424** |
| 76 | Telephone Technician | 9 | 0 | 1 | 0 | 0 | 0 | **1** |
| 77 | Surveyor | 9 | 0 | 3 | 3 | 3 | 3 | **12** |
| 78 | Fitter-II | 9 | 0 | 10 | 10 | 5 | 5 | **30** |
| 79 | Tracer | 9 | 0 | 10 | 10 | 10 | 10 | **40** |
| 80 | S.S.A | 8 | 0 | 30 | 20 | 10 | 10 | **70** |
| 81 | Driver (LTV) | 8 | 0 | 80 | 60 | 60 | 60 | **260** |
| 82 | Security Sargent | 8 | 0 | 2 | 0 | 0 | 1 | **3** |
| 83 | Welder | 7 | 0 | 3 | 3 | 2 | 2 | **10** |
| 84 | Helper | 7 | 0 | 45 | 45 | 45 | 45 | **180** |
| 85 | Electrician-II | 7 | 0 | 5 | 3 | 3 | 3 | **14** |
| 86 | Carpenter | 7 | 0 | 2 | 0 | 0 | 0 | **2** |
| 87 | A.S.S.A | 6 | 4 | 50 | 50 | 50 | 50 | **204** |
| 88 | Security Guard | 6 | 0 | 800 | 300 | 129 | 100 | **1329** |
| 89 | Assistant Lineman (ALM) | 5 | 840 | 300 | 300 | 200 | 100 | **1740** |
| 90 | Tyre Shop Operator | 5 | 0 | 2 | 0 | 0 | 0 | **2** |
| 91 | Moazzan Khadim Masjid | 5 | 0 | 1 | 0 | 0 | 0 | **1** |

| Sr. No | Title | BPS | Total Nos. | F.Y. 2021-22 | F.Y. 2022-23 | F.Y. 2023-24 | F.Y. 2024-25 | F.Y. 2025-26 |
|---|---|---|---|---|---|---|---|---|
| 92 | Receptionist | 5 | 0 | 1 | 1 | 1 | 1 | **4** |
| 93 | Trainer | 5 | 0 | 0 | 0 | 2 | 0 | **2** |
| 94 | Auto Electrician | 5 | 0 | 2 | 0 | 0 | 0 | **2** |
| 95 | Plumber | 5 | 0 | 2 | 0 | 0 | 0 | **2** |
| 96 | Tube well operator | 5 | 0 | 6 | 5 | 4 | 4 | **19** |
| 97 | Work Mistery | 5 | 0 | 1 | 0 | 0 | 0 | **1** |
| 98 | Machine Attendant | 5 | 0 | 2 | 1 | 1 | 1 | **5** |
| 99 | Cook | 4 | 0 | 4 | 4 | 4 | 3 | **15** |
| 100 | PPC Operator | 4 | 0 | 0 | 2 | 2 | 0 | **4** |
| 101 | Washing Helper | 3 | 0 | 0 | 2 | 0 | 0 | **2** |
| 102 | Store Helper | 3 | 4 | 15 | 15 | 15 | 15 | **64** |
| 103 | Truck Cleaner/Lory Cleaner | 2 | 0 | 20 | 15 | 15 | 15 | **65** |
| 104 | Waiter / Bearer | 2 | 0 | 0 | 5 | 5 | 5 | **15** |
| 105 | Daftri | 2 | 0 | 5 | 5 | 5 | 5 | **20** |
| 106 | Mali | 1 | 4 | 5 | 5 | 5 | 5 | **24** |
| 107 | Naib Qasid | 1 | 15 | 40 | 40 | 40 | 40 | **175** |
| 108 | Sanitary Worker/Sweeper | 1 | 4 | 100 | 100 | 90 | 90 | **384** |
| **TOTAL STAFF** | | | **949** | **2146** | **1429** | **1095** | **947** | **6566** |

**iv. Communications Improvement Plan**

This plan covers the communications improvement activities including but not limited to improving the internal communication amongst employees and external communication with customers to improve image of the company etc. Under this section scope of work is provided to be done in each of the five years under this business plan.

MEPCO Public Relations Department is doing well in promotion of Company's activities for Public awareness. Department is using modern tools of communication like Facebook, Twitter and Whatsapp for fast & effective dissemination of company's message to target audience. Publication of its monthly magazine is effective tool to deliver its activities to lower formations, Ministry and other important departments. MEPCO has revised the yardstick of Public Relations Department and after recruitment of proposed staff further activities will be started for more comprehensive and effective P.R activities.

The Communications Improvement Plan (CIP) thus, offers a holistic approach because it not only emphasizes the importance of public awareness and image building initiatives for the DISCO but also the internal communication.

This plan identified some low cost interventions that would transform the way MEPCO operate their PR department. Frequent consumer awareness campaigns and regular interaction with consumers are few of the highly recommended activities targeting educated and well-informed consumers who are bound to play their role in energy conservation and spread positive messages. In addition, MEPCO will allocate a clearly defined budget and resources for consumer awareness activities. The CIP is an optimal fusion of all such activities that would be implemented through the course of five years by MEPCO to take its communications and outreach further.

Through the initiatives indicated, the CIP aims to improve MEPCO's branding with recognition among local communities and consumers and improved understanding among the young generation regarding their role in energy conservation along with improved corporate communication and increase in the usage of email and telephonic communication amongst MEPCO's staff.

All these efforts will create a synergized effect of improving the communications function of the DISCO and making it a corporate entity at par with utilities worldwide. Therefore, based the maximum band for the buck, these projects have been chosen.

**A. Internal Communication:**

**Mail Servers:**

Before MEPCO could take the initiative to improve communication with its external stakeholder such as consumers and the community as a whole, it must ensure that it has achieved the optimum level required in the internal communication among staff. To achieve this objective, MEPCO should acquire the basis infrastructure that would help the staff to have affective communication among them. The modes of communication that are needed to be strengthened by MEPCO as an organization are electronic communication via email and, telephonic communication over the cell phones.

In order to provide instant access to the information required for the spontaneous decision making and problem solving, MEPCO employees in the officer cadre need to have in their possession, at

least an email address to communicate within the boundaries of MEPCO and a cell phone enabling them to relay their communication outside the premises of their offices. Therefore a mail server is suggested to be deployed within the organization. Scanners will also be installed to ease the email functionality. This will be done right after the communication protocols have been set, user trainings have been imparted and procedures have been finalized; all of which would happen in the first year of Business Plan implementation. In addition, cell phones will also be provided to the officers serving the dual purpose of not only making phone calls but also checking their emails.

**Annual Employee Recognition Event:**

It is the duty of an organization to appreciate its employees because as a matter of fact, an organization is in existence only because of its employees. Therefore, MEPCO will organize an annual function to celebrate its successes and achievement in the last year as well as to recognize the employees that have given MEPCO the reasons for celebration through their dedication and hard work. This will not only motivate the employees but will consequently result in creating harmony and mutual understanding among them.
These interventions will ensure that MEPCO establish an effective internal communication setup required to run the organization and its operations, in a more efficient manner.

**B. Public Communication & Outreach Activities:**

MEPCO's Public Relations (PR) Departments comprise one PR officer and two clerical staff who dedicate a good portion of their time to issuing rebuttals to inaccurate media reports. The concept of image building and consumer awareness needs improvement. Therefore this plan which actually comprises of a complete portfolio in the realm of Public Communication and Outreach, helping put forward an improved brand image of MEPCO, better customer services and better informed customers through a series of outreach campaigns.

**1. Mass Media Campaigns**

The Public Relations and Customer Services Departments of MEPCO will design localized campaigns to target consumers on both energy conservation and the timely payments of bills. These campaigns will help MEPCO in its image promotion as a well-run and progressive power distribution company. MEPCO staff will be given an opportunity to talk to consumers through radio, TV and newspapers to educate consumers regarding the distribution business of MEPCO.

In the long run, these campaigns will result in an improved image of MEPCO as a dynamic and customer-friendly entity through external communications that will help to smoothly implement consumer awareness campaigns and will empower the PR Department to deliver assertive communications and outreach on behalf of MEPCO.

**2. Public Outreach & Awareness Programs**

Consumer outreach activities will help build a relationship between MEPCO and its consumers. Campaigns targeted at schools and universities, and industries, traders and farmers will be planned in close coordination with the relevant departments of MEPCO.
A variety of interventions at schools and colleges will be held including energy conservation seminars, lectures on MEPCO's role as a DISCO, debating, essay writing and painting competitions. These will help in the image promotion of MEPCO among school- / college-going students. A

range of consumer awareness material will be disseminated to improve the knowledge of students on energy conservation and efficiency at both homes and schools.
Industries are important consumers of MEPCO therefore targeting industrialists, through seminars at the Chamber of Commerce, will spread energy conservation awareness and the effectiveness of energy audits. Speakers from MEPCO will be arranged to speak with industrialists on selected topics e.g. energy conservation, better relationships between MEPCO and industries and the need for strengthening cooperation to the mutual benefit of both.
Similarly meetings will be organized with Press Club, to gain its support to spread the message to the masses to adopt energy conservation measures and place MEPCO's conservation material in prominent locations.
Farmers, in addition to being important consumers of MEPCO, can play a significant role in the conservation of energy through the use of efficient tube-wells and legally managing their connections. Improved relationships between farmers and MEPCO are the key to discouraging theft and soliciting timely bill payments.

**3. Design and printing of Customer Awareness Material**

MEPCO's corporate image requires steps to be taken for its improvement and to promotion as a DISCO rather than an electricity generation and supply control entity. A localized media campaign will be designed and executed to create awareness among consumers regarding MEPCO and energy conservation. Material will include news articles, brochures and leaflets, billboards, pamphlets, local cable advertisements and documentaries. A new corporate tagline (slogan) along with business cards will help introduce a uniform public face of the company at the professional level and will be proposed to MEPCO management.
As part of the overall branding campaign, MEPCO's Customer Services Centers will be branded through the strategic placement of standees, banners and other awareness material. Brochures, leaflets and handbooks will be developed for employee safety measures and workplace ethics that will help guide Customer Service Center employees. The proposed action plan includes designing content that educates consumers about MEPCO's role as a DISCO and the different energy conservation measures they can adopt.

**4. Student Energy Conservation Programs**

Another important intervention is the energy efficiency and anti-theft campaigns consisting of mass media and Informational and Educational Communication (IEC) materials for dissemination to the public as well as internal communications. These are grassroots-level promotions that target awareness at community level or through schoolchildren and college/university students with action-oriented messages, where benefits of proposed actions are quantitative and clear to the audience. For instance, replacing an incandescent light bulb with an energy saver will help reduce consumption by 50%, resulting in money saving and increased availability of electricity.

**5. Radio Talk shows**

Talk shows aired through radio are one of the cost effective ways to directly reach the consumers and to tame their minds by talking about the positive developments being carried out by MEPCO and showing the positive side of the picture. These talk shows also provide an opportunity to the consumers to take part in the ongoing discussions with the senior officials of MEPCO, turn attention to their complaints, or provide their feedback. MEPCO will launch two seasons of the radio talk shows on the leading FM radio channels, one series of 13 episodes will be aired for a quarter in peak summer season focusing on energy conservation, while other series will commence in peak winter season with an emphasis on the anti-theft.

**6. Monthly News Letter**

Any progressive organization would like to update the society in general and its employees and consumers in particular, in a progressive manner, about the achievement it is making throughout the course of time. Newsletter is an effective matter to get this done. MEPCO will publish monthly newsletter that will not only contain the updates about the organization but will also include news, events, articles, consumer feedback and other topics of interest as it is being done at present.

**DIIP 10 - Communications Improvement Plan**

Rather than presenting the scope in a table it is narrated and explained below:

**A. Internal Communications**

For enhancing email internal communication via email, the company will deploy physical IT infrastructure consisting of one Mail Server and associated paraphernalia. In addition, scanners will be provided in all the distinguished offices of MEPCO to facilitate email communication. Further, to facilitate swift communication amongst the officers, smart phones will be designated for all the officers enabling them not only to make calls but also to check and respond to the emails on the go.
Apart from investments in the communications technology, MEPCO will invest in the human aspect as well by arranging at least one Employee Recognition Event each year. It will be a formal event attended by all the employees of MEPCO in which the high-achievers will be acknowledged for their services and successes.

**B. External Communications**

Public Outreach Office of MEPCO will be strengthened by provision of a Toyota HI ace for rapid outdoor mobility of staff for performing outreach activities in the field.
At least four mass media campaigns in a year will be arranged within the territory of MEPCO, two campaigns will be based on the theme of anti-theft while two will focus energy conservation. These will include publishing advertisement in leading local newspapers, and relaying the message using the electronic media: TV, Cable and FM Radio. In addition, billboards, pole streamers and similar mediums will also be utilized to spread the message among the consumers.
Apart from these campaigns, public outreach programs and awareness sessions will be arranged at university, community and district levels. It is anticipated that at least four sessions per year at each level will be organized to reciprocate the message.

Printed material is an effective way to penetrate within the masses therefore, consumer awareness material will be designed and printed which includes but not limited to brochures, pamphlets, leaflets, flyers etc. In addition, a newsletter will be also published each month as it is being done at present.
Please refer **Annexure-17** for details on scope and cost.

**v. Linemen Training, Tools and Equipment**

1- MEPCO H.S.E department is now being operated through Manager H.S.E by creating position of Manager H.S.E and also created Nine positions of A.Ms H.S.E at each Operation Circle. Further as future plans, 4 more A.Ms and 26 Safety Inspectors positions are required to be created as one A.M and 2 Safety Inspectors in each 13 Circles of Company who will effectively

oversee the implementation of Safety S.O.Ps to eliminate accidents and injuries of MEPCO Employees.

2- MEPCO & LESCO jointly prepared H.S.E Manual which is submitted to NEPRA for approval.

3- Conduction of job specific training at RTC and CTCs to employees of all cadres.

4- Conduction of H.S.E awareness training at RTC & CTCs for staff and officers.

5- Conduction of Safety Seminars at each Division on monthly basis.

6- Conduction of Safety Committee Meetings at Sub Division, Division, Circle and Regional levels on monthly basis.

7- Hazard identification and its removal by field formation.

8- Conduction of Management H.S.E walk-through / site tours.

9- Provision of First Aid facilities.

10-Conduction of PPE Parade at Sub Divisional level on monthly basis.

11-Provision of very good quality T&P and PPE to line staff. Nomination of Inspectors for National and International inspections of material for quality assurance.

12-On daily basis, SEs (OP) will provide abstract of HT line and Transformer Sub Stations complaints attended with PTW / without PTW and action taken against safety violators.

13-Conduction of H.S.E Audit of each Sub Division on quarterly basis by H.S.E Staff.

14-Proper implementation on permit to work system through PDC.

Currently MEPCO is working on meeting its demand for Transport, Tools and Personal Protective Equipment for Lineman and procurement of Bucket Mounted Vehicles and one educational Bucket Mounted Vehicle is reached in Regional Store.

In this business plan MEPCO has incorporated such needs in lineman safety with extensive homework and calculations. In this plan, 231 Bucket Mounted Trucks for Transport and mobility with safety of lineman, Linemen T&P and PPEs have been catered with to make MEPCO lineman safe, effective and efficient.

This plan under safety when executed will save MEPCO from huge losses due to poor quality of work and rampant accidents of experienced lineman caused in the shape of heavy financial losses and human loss and it will also improve response to complaint time resulted in improved customer services.

**Please refer** Annexure-18 **for details on scope and cost.**

# Section -VI
# Costs and Financing Plan

## A. Capital Expenditure and additional Operating Costs for Expansion and Rehabilitation (this section also includes the total cost of DIIP):

This section includes:

- Summary of Annual Capital and Operational Expenditure Costs for Best Case
- Summary of Annual Capital and Operational Expenditure Costs for Optimally Achievable Case
- Detail Costing

### ▪ Summary of Annual Capital and Operational Expenditure Costs for Best Case

**DIIP 11 - Summary of Best Case Annual Capital Expenditure and Operational Expenditure Costs**

**Total (Support + Core) DIIP-Business Plan- MEPCO - Best Case**

In Million Rs.

| Grand Total Capex Plans | FY22 | FY23 | FY24 | FY25 | FY26 | 5-Year Total |
|---|---|---|---|---|---|---|
| | 14038 | 27046 | 32943 | 28882 | 27632 | 130540 |
| Total Opex Plans | 2491 | 3749 | 4045 | 4150 | 4407 | 18842 |
| Grand Total* ( Capex Plans + Opex Plans ) | 16529 | 30795 | 36988 | 33032 | 32039 | 149382 |

*Excluding Cost Deposit Expenditure

## Total Core Business - Transmission and Distribution Plans DIIP-MEPCO --- Best Case

In Million Rs.

| | Capex | FY22 | FY23 | FY24 | FY25 | FY26 | 5-Year Total |
|---|---|---|---|---|---|---|---|
| 1 | Distribution without Deposit | 6640 | 9724 | 11260 | 9492 | 10419 | 47535 |
| 2 | Transmission | 4274 | 10399 | 13962 | 13295 | 14395 | 56324 |
| 3 | Linemen Safety | 750 | 2519 | 579 | 748 | 905 | 5502 |
| 4 | GIS Mapping | 1 | 3 | 44 | 18 | 3 | 69 |
| | **Total** | **11665** | **22644** | **25845** | **23553** | **25722** | **109429** |

| | Opex | FY22 | FY23 | FY24 | FY25 | FY26 | 5-Year Total |
|---|---|---|---|---|---|---|---|
| 1 | Distribution | 266 | 313 | 349 | 380 | 417 | 1723 |
| 2 | Transmission | 171 | 416 | 558 | 532 | 556 | 2233 |
| 3 | Linemen Safety | 103 | 487 | 502 | 536 | 552 | 2180 |
| | **Total** | **540** | **1215** | **1409** | **1448** | **1524** | **6136** |

## Total Support Business - DIIP(Best Case)- MEPCO

In Million Rs.

| Total Capex Support Plans | FY22 | FY23 | FY24 | FY25 | FY26 | 5-Year Total |
|---|---|---|---|---|---|---|
| | **2373** | **3402** | **2125** | **2328** | **1910** | **12138** |

| Total Opex Support Plans | FY22 | FY23 | FY24 | FY25 | FY26 | 5-Year Total |
|---|---|---|---|---|---|---|
| | **1951** | **2494** | **2437** | **2583** | **2863** | **12327** |

## Summary of Annual Capital and Operational Expenditure Costs for Achievable Case

**DIIP 12 - Summary of Achievable Annual Capital Expenditure and Operational Expenditure Costs**

### Total Support Business - DIIP- MEPCO (Achievable)

In Million Rs.

| Total Capex Support Plans | FY22 | FY23 | FY24 | FY25 | FY26 | 5-Year Total |
|---|---|---|---|---|---|---|
| | 2,373 | 3,402 | 2,125 | 2,328 | 1,910 | 12,138 |
| Total Opex Support Plans | 1,951 | 2,494 | 2,437 | 2,583 | 2,863 | 12,327 |

### Total Core Business - Transmission and Distribution Plans DIIP-MEPCO --- Achievable

In Million Rs.

| | Capex | FY22 | FY23 | FY24 | FY25 | FY26 | 5-Year Total |
|---|---|---|---|---|---|---|---|
| 1 | Distribution without Deposit | 6051 | 8328 | 9259 | 7127 | 7602 | 38367 |
| 2 | Transmission | 3450 | 7015 | 9240 | 8229 | 8955 | 36889 |
| 3 | Linemen Safety | 750 | 2519 | 579 | 748 | 905 | 5502 |
| 4 | GIS Mapping | 0.73 | 2.56 | 44.19 | 18.47 | 2.66 | 68.61 |
| | **Total** | **10252** | **17864** | **19123** | **16123** | **17465** | **80826** |

| | Opex | FY22 | FY23 | FY24 | FY25 | FY26 | 5-Year Total |
|---|---|---|---|---|---|---|---|
| 1 | Distribution | 242 | 257 | 269 | 285 | 304 | 1357 |
| 2 | Transmission | 138 | 281 | 370 | 329 | 338 | 1456 |
| 3 | Linemen Safety | 103 | 487 | 502 | 536 | 552 | 2180 |
| | **Total** | **483** | **1024** | **1140** | **1150** | **1214** | **5012** |

## Total (Support + Core) DIIP-Business Plan- MEPCO - Achievable

In Million Rs.

| Total Capex Plans | FY22 | FY23 | FY24 | FY25 | FY26 | 5-Year Total |
|---|---|---|---|---|---|---|
| | **12625** | **21266** | **21248** | **18451** | **19375** | **92965** |
| **Total Opex Plans** | **2434** | **3517** | **3577** | **3733** | **4077** | **17339** |
| **Grand Total* ( Capex Plans + Opex Plans )** | **15060** | **24784** | **24825** | **22184** | **23452** | **110304** |

***Excluding Cost Deposit Expenditure.**

### Details of Costing

The detailed costs of Transmission, Distribution and functional plans is provided hereunder, with more details.

- **STG- Expansion and Rehabilitation (Best Case)**
  - **a. Grid Stations**

**DIIP 13 - STG Expansion and Rehabilitation: Grid Stations**

Rs. In Million

| Description | YEAR | | | | | |
|---|---|---|---|---|---|---|
| | 2021-22 | 2022-23 | 2023-24 | 2024-25 | 2025-2026 | TOTAL COST (Mrs.) |
| New Grids | 956 | 2527.5 | 2396.23 | 2866.75 | 2717.98 | **11464.5** |
| Conversions | 126 | 0 | 255 | 0 | 0 | **381** |
| Extensions TF | 756 | 922 | 614 | 727 | 746 | **3765** |
| Augmentations | 900 | 1054 | 1123 | 1196 | 1389 | **5662** |
| T/Lines | 1021.66 | 4742.6 | 4447.88 | 5415.06 | 6035.92 | **21663.1** |
| 132kV Caps | 176 | 102 | 124 | 87 | 0 | **489** |
| Conversion of ISO Bay | 214 | 0 | 0 | 0 | 0 | **214** |
| Ext: of 11KV Control House | 43 | 21.1 | 12.5 | 2.7 | 5.7 | **85** |
| Twin Bundle | 81 | 30 | 16 | 0 | 0 | **127** |
| SCADA | | 1000 | 2000 | 3000 | 3500 | **9500** |
| World Bank | | | 2973 | | | **2973** |
| TOTAL COST | **4273.66** | **10399.2** | **13961.6** | **13294.5** | **10894.6** | **52823.6** |

- **STG- Expansion and Rehabilitation (Achievable Case)**
  - **b. Grid Stations**

**DIIP 14 - STG Expansion and Rehabilitation: Grid Stations**

Rs. In Million

| Description | YEAR | | | | | |
|---|---|---|---|---|---|---|
| | Year-1 | Year-2 | Year-3 | Year-4 | Year-5 | Total Cost (MRs.) |
| New Grids | 956 | 2528 | 1499 | 2389 | 2209 | **9581** |
| Conversions | - | 118 | 209 | - | - | **327** |
| Extensions TF | 420 | 259 | 281 | 305 | 243 | **1508** |
| Augmentations | 670 | 651 | 496 | 528 | 567 | **2912** |
| T/Lines | 1066 | 2186 | 1741 | 1963 | 2388 | **9344** |
| 132kV Caps | - | 275 | 42 | 45 | 48 | **410** |
| Conversion of ISO Bay | 214 | - | - | - | - | **214** |
| Ext: of 11KV Control House | 43 | - | - | - | - | **43** |
| Twin Bundle | 81 | - | - | - | - | **81** |
| SCADA | | 1000 | 2000 | 3000 | 3500 | **9500** |
| World Bank | | | 2973 | | | **2973** |
| TOTAL COST | **3450** | **7017** | **9241** | **8230** | **8955** | **36893** |

- **Distribution System-Expansion and Rehabilitation (Best Case)**

**DIIP15 - Distribution System Expansion and Rehabilitation (Best Case)**

**Scope of Work for 11 kV and Below Rehabilitation**

| A. | | Million Rs. | | | | | |
|---|---|---|---|---|---|---|---|
| | **Rehabilitation of HT Lines** | **2021-22** | **2022-23** | **2023-24** | **2024-25** | **2025-26** | **Total** |
| 1 | New HT Lines | 1563 | 1940 | 2128 | 2411 | 2505 | **10546** |
| 2 | HT Line Reconductoring | 652 | 810 | 888 | 1006 | 1046 | **4402** |
| 3 | 11KV Capacitors | 45 | 55 | 61 | 69 | 71 | **301** |
| 4 | 11KV Panels | 120 | 149 | 164 | 186 | 193 | **812** |
| 5 | Replacement of T/F Earthing | 10 | 10 | 10 | 10 | 10 | **50** |
| 6 | 11-kv Sectionalizers | 164 | 204 | 223 | 253 | 263 | **1107** |
| 7 | 11-Kv 500 MCM Cable | 45 | 56 | 62 | 70 | 73 | **306** |
| **Sub Total (1 to 7)** | | **2600** | **3224** | **3536** | **4004** | **4160** | **17524** |
| **Scope of Work for LT Rehabilitation** | | | | | | | |
| **B.** | **LT Lines Rehabilitation** | | | | | | |
| 8 | New LT Lines | 355 | 362 | 366 | 370 | 375 | **1828** |
| 9 | LT Line Reconductoring | 217 | 218 | 219 | 223 | 229 | **1106** |
| 10 | New HT Lines (For New T/F Substations) | 59 | 62 | 65 | 70 | 75 | **330** |
| 11 | Replacement of D-Fittings | 37 | 37 | 37 | 37 | 37 | **184** |
| 12 | **New Transformer Substations** | | | | | | |
| | b. 50 KVA | 101 | 103 | 104 | 105 | 106 | **520** |
| | c. 100 KVA | 233 | 238 | 241 | 243 | 244 | **1200** |
| | d. 200 KVA | 106 | 108 | 109 | 110 | 117 | **551** |
| | **Sub Total** | **441** | **449** | **454** | **459** | **468** | **2271** |
| 13 | **Augmentation of Overloaded Transformers** | | | | | | |
| | b. 50 KVA | 181 | 188 | 201 | 205 | 207 | **981** |
| | c. 100 KVA | 232 | 250 | 281 | 292 | 311 | **1367** |
| | d. 200 KVA | 423 | 439 | 469 | 479 | 509 | **2319** |
| | e. 200 KVA (Additional) | 180 | 187 | 199 | 204 | 225 | **993** |
| | **Sub Total** | **1016** | **1064** | **1150** | **1180** | **1251** | **5661** |
| 15 | **Energy Meters (against defective)** | | | | | | |
| | a. Single Phase | 558 | 564 | 569 | 575 | 581 | **2847** |
| | b. Three Phase | 63 | 64 | 65 | 65 | 66 | **323** |
| | **Sub Total** | **622** | **628** | **634** | **640** | **647** | **3171** |
| 16 | P.G.Connectors | 96 | 96 | 96 | 96 | 96 | **481** |
| **Sub Total (8 to 16)** | | 2,843 | 2,915 | 3,022 | 3,075 | 3,177 | **15,032** |
| **Total Cost of Distt. Rehabilitation (1 to 16)** | | **5,443** | **6,139** | **6,558** | **7,079** | **7,337** | **32,556** |
| **Total Cost of Distt. Rehabilitation (including Store & installation Charges 20%)** | | **6,531** | **7,367** | **7,870** | **8,494** | **8,804** | **39,067** |
| **Total Cost of Distt. Rehabilitation (including Store, installation Charges(20%), Contingency Charges (2%), with Escalation.** | | **6,640** | **7,816** | **8,716** | **9,492** | **10,419** | **43,082** |

## Cost for GIS Mapping and P&E:

| Description | Unit | Scope of Work | | | | | |
|---|---|---|---|---|---|---|---|
| | | 2021-22 | 2022-23 | 2023-24 | 2024-25 | 2025-26 | Total |
| **11 KV Feeders Mapping** | MRs. | 0.22 | 0.36 | 0.32 | 0.39 | 0.35 | 1.64 |
| **LT Circuits Mapping** | MRs. | 0.51 | 2.20 | 4.57 | 4.54 | 2.30 | 14.13 |
| **Tools Required(HT+LT)** | MRs. | - | 0 | 39.3 | 13.54 | - | 52.84 |
| **TOTAL** | **MRs.** | **0.73** | **2.56** | **44.19** | **18.47** | **2.66** | **68.61** |

## DIIP17 - Distribution System Expansion and Rehabilitation (Optimally Achievable Case)

**Scope of Work for 11 kV and Below Rehabilitation**

| A. | | Million Rs. | | | | | |
|---|---|---|---|---|---|---|---|
| | **Rehabilitation of HT Lines** | **2021-22** | **2022-23** | **2023-24** | **2024-25** | **2025-26** | **Total** |
| 1 | New HT Lines | 979 | 1883 | 1601 | 2072 | 1789 | **8324** |
| 2 | HT Line Reconductoring | 409 | 786 | 668 | 865 | 747 | **3475** |
| 3 | 11KV Capacitors | 28 | 54 | 46 | 59 | 51 | **238** |
| 4 | 11KV Panels | 75 | 145 | 123 | 160 | 138 | **641** |
| 5 | Replacement of T/F Earthing | 10 | 10 | 10 | 10 | 10 | **50** |
| 6 | 11-kv Sectionalizers | 103 | 198 | 168 | 217 | 188 | **874** |
| 7 | 11-Kv 500 MCM Cable | 28 | 55 | 46 | 60 | 52 | **242** |
| | **Sub Total (1 to 7)** | **1633** | **3130** | **2662** | **3442** | **2974** | **13842** |
| **Scope of Work for LT Rehabilitation** | | | | | | | |
| **B.** | **LT Lines Rehabilitation** | | | | | | |
| 8 | New LT Lines | 242 | 241 | 257 | 278 | 287 | **1305** |
| 9 | LT Line Reconductoring | 201 | 190 | 186 | 177 | 174 | **928** |
| 10 | New HT Lines (For New T/F Substations) | 51 | 49 | 49 | 47 | 48 | **244** |
| 11 | Replacement of D-Fittings | 37 | 37 | 37 | 37 | 37 | **184** |
| 12 | **New Transformer Substations** | | | | | | |
| | a. 50 KVA | 23 | 30 | 35 | 38 | 41 | **167** |
| | b. 100 KVA | 140 | 154 | 164 | 182 | 185 | **824** |
| | c. 200 KVA | 224 | 181 | 185 | 191 | 198 | **979** |
| | **Sub Total** | **387** | **364** | **384** | **411** | **424** | **1970** |
| 13 | **Augmentation of Overloaded Transformers** | | | | | | |
| | a. 50 KVA | 92 | 61 | 57 | 14 | 43 | **266** |
| | b. 100 KVA | 341 | 104 | 98 | 25 | 109 | **676** |
| | c. 200 KVA | 702 | 279 | 250 | 40 | 296 | **1567** |
| | d. 200 KVA (Additional) | 712 | 299 | 299 | 50 | 168 | **1528** |
| | **Sub Total** | **1846** | **743** | **704** | **129** | **616** | **4037** |
| 15 | **Energy Meters (against defective)** | | | | | | |
| | a. Single Phase | 438 | 275 | 632 | 641 | 620 | **2604** |
| | b. Three Phase | 30 | 8 | 139 | 150 | 165 | **491** |
| | **Sub Total** | **468** | **282** | **771** | **791** | **785** | **3095** |
| 16 | P.G.Connectors | 96 | 96 | 96 | 96 | 96 | **481** |
| | **Sub Total (8 to 16)** | 3,327 | 2,002 | 2,484 | 1,965 | 2,467 | **12,245** |
| **Total Cost of Distt. Rehabilitation (1 to 16)** | | **4,960** | **5,132** | **5,146** | **5,408** | **5,442** | **26,087** |
| **Total Cost of Distt. Rehabilitation (including Store & installation Charges 20%)** | | **5,952** | **6,159** | **6,175** | **6,489** | **6,530** | **31,304** |
| **Total Cost of Distt. Rehabilitation (including Store, installation Charges(20%), Contingency Charges (2%), with Escalation** | | **6,051** | **6,420** | **6,715** | **7,127** | **7,602** | **33,916** |

## B. Capital Expenditure and Additional Operating Costs for Other Functional Improvement Plans:

### Summary of Capital and Operational Expenditure Costs

Please note that the Scope and Cost of Functional Plans is same for both the scenarios.

**DIIP18 - Summary of Capital and Operational Expenditure Costs**

**Commercial DIIP- MEPCO**

In Million Rs

| # | Capex | FY22 | FY23 | FY24 | FY25 | FY26 | 5-Year Total |
|---|---|---|---|---|---|---|---|
| 1.1 | Mobile Phones for MRs. | - | 40 | 144 | 160 | 16 | 361 |
| 1.2 | MIS / Data Center | 44.22 | 498.01 | 66.90 | 44.49 | 48.79 | 702 |
| 1.3 | AMRs and Elec Meters | 729 | 708 | 374 | 360 | 290 | 2,461 |
| | | 460 | 460 | 460 | 552 | 552 | |
| 1.4 | CSC | 85 | 3 | _ | _ | _ | 88 |
| 1.5 | Surveillance | 12 | 8 | 8 | 4 | 4 | 35 |
| | Total | 1,331 | 1,717 | 1,053 | 1,121 | 911 | 3,648 |

In Million Rs

| # | Opex | FY22 | FY23 | FY24 | FY25 | FY26 | 5-Year Total |
|---|---|---|---|---|---|---|---|
| 1.1 | Mobile Phones for MRs. | 8 | 8 | 38 | 53 | 83 | 188 |
| 1.2 | MIS / Data Center | _ | 21 | 81 | 84 | 102 | 289 |
| 1.3 | AMRs and Elec Meters | 5.18391 | 7.394985 | 8.56359 | 9.68859 | 10.589085 | - |
| 1.4 | CSC | 12 | 12 | 12 | 13 | 14 | 63 |
| 1.5 | Surveillance | 2 | 1 | 1 | 0 | 0 | 5 |
| | Total | 27 | 49 | 141 | 160 | 209 | 545 |

## HR DIIP- MEPCO

In Million Rs

| | Capex | FY22 | FY23 | FY24 | FY25 | FY26 | 5-Year Total |
|---|---|---|---|---|---|---|---|
| 2.1 | Improving Working Environment Of offices & training facilities | 323 | 567 | 458 | 533 | 458 | 4,625 |
| 2.2 | Improving Transport Facilities | 710 | 1,083 | 569 | 630 | 526 | 3,517 |
| | | | | | | | - |
| | **Total** | 1,033 | 1,650 | 1,026 | 1,163 | 984 | **8,142** |

In Million Rs

| | Opex | FY22 | FY23 | FY24 | FY25 | FY26 | 5-Year Total |
|---|---|---|---|---|---|---|---|
| 2.1 | HR Development Training and Capacity Building | 79 | 100 | 107 | 110 | 113 | 509 |
| 2.2 | Improving Working Environment Of offices & Health Facilities | 1,389 | 1,401 | 1,587 | 1,791 | 2,020 | 8,188 |
| 2.3 | Improving Transport Facilities | 118 | 147 | 51 | 54 | 90 | 460 |
| | | | | | | | - |
| | **Sub-Total-A** | 1,586 | 1,648 | 1,745 | 1,955 | 2,223 | **9,157** |

In Million Rs

| | Staffing Opex | FY22 | FY23 | FY24 | FY25 | FY26 | 5-Year Total |
|---|---|---|---|---|---|---|---|
| **2.5** | | 310 | 766 | 507 | 420 | 380 | **2,383** |
| | **Sub-Total-B** | 310 | 766 | 507 | 420 | 380 | 2,383 |
| | **Total Opex HR (A+B)** | 1,896 | 2,414 | 2,252 | 2,375 | 2,603 | 11,540 |

## Communication DIIP- MEPCO

In Million Rs

| | Capex | FY21 | FY22 | FY23 | FY24 | FY25 | 5-Year Total |
|---|---|---|---|---|---|---|---|
| 3.0-A | Internal Communication | 6 | - | 11 | - | - | 17 |
| 3.0-B | External Communication | 4 | - | - | - | - | 4 |
| | **Total** | 10 | - | 11 | - | - | **21** |

In Million Rs

| | Opex | FY21 | FY22 | FY23 | FY24 | FY25 | 5-Year Total |
|---|---|---|---|---|---|---|---|
| 3.0-A | Internal Communication | 1 | 1 | 14 | 15 | 15 | 45 |
| 3.0-B | External Communication | 28 | 29 | 31 | 33 | 35 | 156 |
| | **Total** | 29 | 30 | 45 | 48 | 50 | **202** |

## Financial DIIP- MEPCO

In Million Rs

| | Capex | FY21 | FY22 | FY23 | FY24 | FY25 | 5-Year Total |
|---|---|---|---|---|---|---|---|
| 4.0-C | ERP SAP | _ | 35 | 35 | 45 | 15 | 130 |
| | **Total** | **-** | **35** | **35** | **45** | **15** | **130** |

In Million Rs

| | Opex | FY21 | FY22 | FY23 | FY24 | FY25 | 5-Year Total |
|---|---|---|---|---|---|---|---|
| 4.0-A | ERP SAP | - | - | - | - | - | - |
| | **Total** | **-** | **-** | **-** | **-** | **-** | **-** |

**Financing Plan:**

| Funding | 2021-22 | 2022-23 | 2023-24 | 2024-25 | 2025-26 | Total |
|---|---|---|---|---|---|---|
| DISCO's Financing through Tariff | 15060 | 24784 | 24825 | 22184 | 23452 | 110304 |

## Section - VII
## Benefits and Financial Analysis

**A. Expansion and Rehabilitation of Secondary Transmission and Distribution System(Best & Achievable Case)**

i. Tangible Benefits

# Transmission-Loss Reduction

| Year | MW | Units (MKWh) | MW | Units (MKWh) |
|---|---|---|---|---|
| | Achievable | Achievable | Best | Best |
| **2021-22** | 14.4 | 54.5 | 17.8 | 67.5 |
| **2022-23** | 29.5 | 111.6 | 46.1 | 174.4 |
| **2023-24** | 19.3 | 123.9 | 31.9 | 204.6 |
| **2024-25** | 14.1 | 53.4 | 27.8 | 105.1 |
| **2025-26** | 11.1 | 42 | 22.2 | 83.9 |

# Distribution Loss Reduction (Best Case) Savings

| Year | HT Rehabilitation | LT Rehabilitation | Augmentation Of Dist: T/Fs | Energy Meters | ABC Cable | Total |
|---|---|---|---|---|---|---|
| | MkWh | MkWh | MkWh | MkWh | MkWh | MkWh |
| **2021-22** | 150.52 | 14.69 | 10.74 | 9.16 | 2.29 | **187.4** |
| **2022-23** | 184.37 | 15.69 | 11.25 | 9.27 | 2.15 | **222.73** |
| **2023-24** | 205.02 | 16.44 | 12.18 | 9.36 | 2.02 | **245.02** |
| **2024-25** | 227.84 | 17.77 | 12.51 | 9.44 | 1.91 | **269.47** |
| **2025-26** | 239.46 | 19.01 | 13.3 | 9.54 | 1.8 | **283.11** |
| **Total** | **1007.21** | **83.6** | **59.98** | **46.77** | **10.17** | **1207.73** |

## Distribution Loss Reduction (Optimally Achievable Case)

| Year | HT Rehabilitation | LT Rehabilitation | Augmentation Of Dist: T/Fs | Energy Meters | ABC Cable | Total |
|---|---|---|---|---|---|---|
| | MkWh | MkWh | MkWh | MkWh | MkWh | MkWh |
| **2021-22** | 94.3 | 33.09 | 7.95 | 4.18 | 2.29 | **141.81** |
| **2022-23** | 166.4 | 31.64 | 8.07 | 4.43 | 2.15 | **212.69** |
| **2023-24** | 143.2 | 31.98 | 7.65 | 10.63 | 2.02 | **195.48** |
| **2024-25** | 169.4 | 30.59 | 6.71 | 10.81 | 1.91 | **219.42** |
| **2025-26** | 149 | 31.29 | 6.74 | 10.53 | 1.8 | **199.36** |
| **Total** | **722.3** | **158.59** | **37.12** | **40.58** | **10.17** | **968.76** |

| Total Loss Reduction - DIIP Best Case | | | | | | |
|---|---|---|---|---|---|---|
| **Loss Reduction MKWh** | **FY2022** | **FY2023** | **FY2024** | **FY2025** | **FY2026** | **Total** |
| Total DIIP Loss Reduction for Achievable for MYT | **254.91** | **415.67** | **483.88** | **405.24** | **366.99** | **1926.69** |

| Total Loss Reduction - DIIP Achievable Case | | | | | | |
|---|---|---|---|---|---|---|
| **Loss Reduction MKWh** | **FY2022** | **FY2023** | **FY2024** | **FY2025** | **FY2026** | **Total** |
| Total DIIP Loss Reduction for Achievable for MYT | **196.31** | **324.29** | **319.34** | **272.82** | **241.36** | **1354.12** |

**ii. Non-tangible Benefits**

The other benefits like improvement in voltage profile, improving the overloading of the network are placed at **Annexure 8.**

**iii. Financial Analysis for the entire Transmission and Distribution Investments**

- Internal financial rate of return (IFRR)of the STG investments and Distribution System Investments is placed at **Annexure-19**.

**iv. Sensitivity Analysis**

The IFRR also contains the Sensitivity Analysis for the following scenarios are placed at **Annexure-19**

- Increasing costs by 7.47%, 10%, 12% and 15.02%
- Decreasing benefits by 7.47%, 10%, 12% and 15.02%
- Increasing costs and decreasing benefits by 7.47%, 10%, 12% and 15.02% each.

# Section - VIII
# Financial Projections for FY2022 to FY 2026

Following are provided in Annex-20

i. Profit and Loss Statement
ii. Balance sheet and Cash Flow.

# Section - IX
# Investment Plan Implementation

**Business Planning Organization for Preparation of Investment Plans**

The stewardship responsibility of the Board of Directors (the Board) is to have an oversight role over the management of the DISCO, which is responsible for the day-to-day conduct of the business. The Board must assess and ensure systems are in place to identify and manage the risks of the Company's business with the underline objective of preserving Company's assets and steering it in a strategic direction that ensures fulfilling its objectives. The Board, through the Chief Executive Officer (CEO), sets the attitude and disposition of the Company towards achieving sets of goals and objectives, in compliance with applicable laws and regulations. Business Plan is a tool that helps a company to achieve its goals and objectives.

MEPCO has started the business planning initiative / DIIP that will entail company's goals and objectives to the initiatives that are required to meet those objectives. The integrated cross-functional plan will cover the core business (transmission and distribution system expansion and rehabilitation) and support business (improving the commercial, financial, HR and other functional improvement) initiatives to meet the stated objectives. In-order to sustain this initiative, a strategic planning organization is already established within MEPCO, who can assist the CEO of the Company to prepare, maintain, improve, monitor and get implemented the business plan.

Moreover, in businesses comparable to the scale of MEPCO, the planning restructuring of the overall organization including formation of Business Unit at the central level is a very essential step.

## Section - X
## Environmental and Social Assessment and Mitigation Plans

There will be environmental and social impacts of the implementing these projects. A detailed environmental and social assessment is required to be carried out to successfully complete this project.

# List of Tables