SEPCO MUTE METER DASHBOARD
INTERNSHIP REPORT

MANEGMENT INFORMATION SYSTEM DEPARTMENT

SUKKUR ELECTRIC POWER COMPANY

SUBMITTED BY:

ZAIN UL ABIDIN ARAIN

SUKKUR IBA UNIVERSITY

Supervised by: Imran Akhund (Additional Assistant Manager)

Progress Report

1. Project Overview

The "Mute Meter Monitoring and Admin Dashboard" project has been developed for **Sukkur Electric Power Company (SEPCO)** to streamline the identification, tracking, and resolution of mute (non-communicative) electric meters across its operational zones. The system is intended to replace manual processes with a centralized digital dashboard that enables data-driven decision-making, efficient monitoring, and accurate field management.

This web-based application facilitates the upload, update, filtering, and export of mute meter data and enables authorized administrative staff to manage records securely and efficiently.

2. Technologies Used

The project leverages the following core technologies and tools:

- **Streamlit**: Used for building the front-end interface. Streamlit enables rapid development of interactive web apps using Python without needing frontend frameworks like HTML/CSS/JavaScript.
- **SQLite**: A lightweight, embedded SQL database used for storing meter records persistently and reliably.
- **Pandas**: Utilized for data manipulation, filtering, validation, and export to Excel or CSV formats.
- **OpenPyXL**: Required for exporting data to Excel format, used in backend logic.
- **Git & GitHub**: Version control was maintained through Git and the codebase is hosted on GitHub for collaboration, tracking, and deployment purposes.
- **Streamlit Cloud**: Used for hosting the live deployment of the dashboard, making it accessible online to authorized users.

3. Key Features Implemented

3.1 Admin Login System

A secure login system has been implemented to ensure that only authorized personnel can access and manipulate data. Credentials are verified before granting access to admin functionalities.

3.2 Mute Reason Editor

Admins can enter a reference number to fetch meter details and update or remove the mute reason associated with it. This feature allows real-time updates to the mute status of individual meters, aiding quick reporting and response.

3.3 Data Import Module

Admins can import large datasets of meter information from CSV or Excel files. The system validates required columns and ensures no duplicate reference numbers are inserted. Duplicate entries are automatically skipped to preserve data integrity.

3.4 Filtered Export and Deletion

The dashboard provides a filtering interface by Circle, Division, Sub-Division, and Feeder. Admins can export filtered mute records to Excel and have the option to delete them from the database post-export, helping in tracking which records have already been processed.

4. User Interface Enhancements

The dashboard now includes a branded home page with **SEPCO's logo** and bilingual headings (English and Urdu). Attention was given to **theme compatibility**, ensuring the text adapts correctly to both light and dark modes, although specific CSS tweaks were required for compatibility in the deployed environment.

Each module is encapsulated within collapsible sections (expanders) to maintain a clean and organized interface. This design improves usability and allows focus on task-specific sections without overwhelming the user.

5. Development Methodology

The development followed a **modular, iterative approach**. Each feature was designed, implemented, tested, and then integrated into the main system. This ensured early issue detection, ease of debugging, and the ability to make incremental improvements based on feedback.

Frequent commits to GitHub ensured safe version control, and all changes were logged and traceable. Feature testing was performed locally before deployment to Streamlit Cloud for staging and final review.

6. Current Status

The system is fully functional with all core modules implemented. Final testing with production data is underway. Admins are able to manage mute meter records, import field data, and export reports for corrective action.

Signature: _____   **Dated: 18/07/2025**