EV Charging Demand Forecasting Project Report

Abstract:

This project aims to forecast electric vehicle (EV) charging demand using historical synthetic data. The dataset includes charging duration, energy delivered, and timestamps of sessions. Data preprocessing and time series forecasting (Exponential Smoothing) were applied to predict future daily energy demand. This helps optimize EV charging station load management and energy resource planning.

Tools Used:
• Python (Pandas, Matplotlib, Statsmodels)
• Jupyter Notebook
• ReportLab for PDF generation
• Dataset: Synthetic EV Charging Data (Maxwell)

Steps Involved:
1. Imported dataset and examined columns.
2. Created datetime from 'dayIndicator' and 'connectionTime_decimal'.
3. Aggregated data by day to compute total kWh delivered.
4. Applied Exponential Smoothing forecasting for next 7 days.
5. Visualized results through line plots.
6. Compiled findings and results in this report.

Daily EV Charging Demand (kWh)

EV Charging Demand Forecast (Next 7 Days)
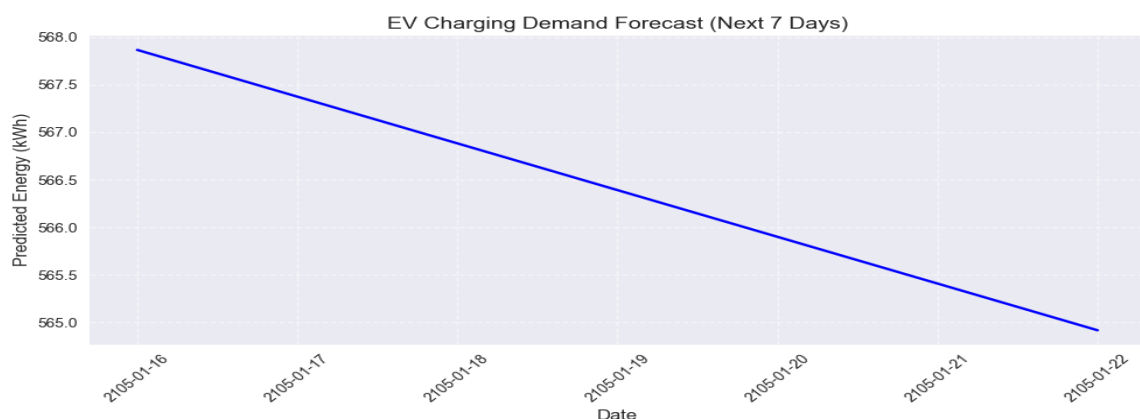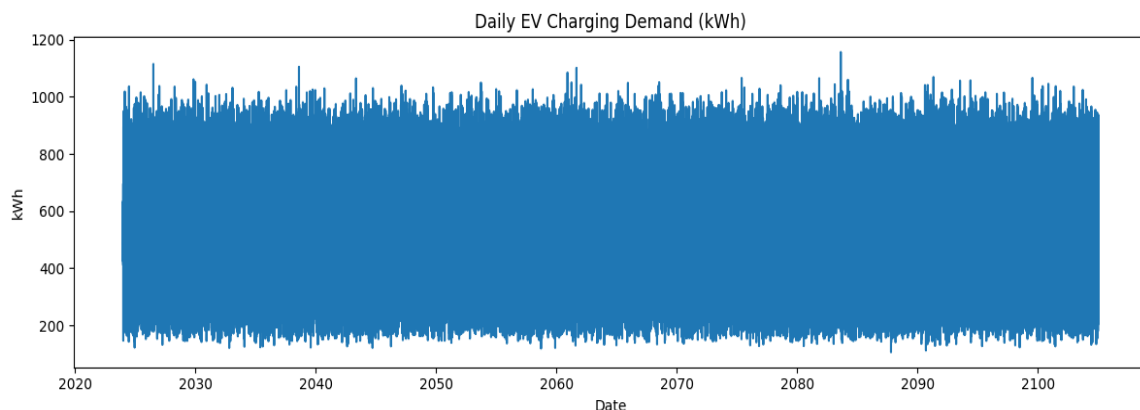
Conclusion:

The EV Charging Demand Forecasting project successfully predicted future energy requirements using time series techniques. The model provides useful insights for load planning, sustainable energy management, and infrastructure optimization. Future improvements could involve adding weather and traffic data to enhance accuracy.