

Problem–Solution Alignment for Electricity Consumption Analytics

Introduction

This document establishes the alignment between the identified business problems and the proposed analytical solution for the project titled “Plugging into the Future: An Exploration of Electricity Consumption Patterns Using Tableau”.

The goal is to ensure that every technical component directly addresses a defined business or analytical need.

Identified Core Problems

Problem 1: Inability to Easily Interpret Time-Series Electricity Data

Raw electricity consumption data across Indian states from 2019–2020 is complex and difficult to analyze manually.

Problem 2: Lack of Comparative Year-wise Analysis

Stakeholders require comparison between 2019 (pre-pandemic) and 2020 (pandemic year).

Problem 3: Regional Demand Imbalance

Some regions experience higher demand, but there is no structured visual analysis.

Problem 4: Lockdown Impact Uncertainty

COVID-19 lockdown significantly affected industrial and commercial consumption patterns.

Problem 5: Absence of Interactive Decision-Making Tool

Decision-makers lack an interactive dashboard to filter, compare, and analyze data dynamically.

Solution Mapping

Problem 1 → Time-Series Visualizations

Solution:

- Line charts for daily/monthly trends
- Aggregated SQL queries (GROUP BY Date, Month, Year)
- Tableau time-series analysis

Problem 2 → Year Comparison Dashboard

Solution:

- Calculated fields for Year extraction
- Side-by-side 2019 vs 2020 comparison
- Year-based filters

Problem 3 → Region-Wise Analysis

Solution:

- Region-based aggregation queries

- Geographic map visualization
- Region filters

Problem 4 → Lockdown Impact Analysis

Solution:

- Creation of “Pre-Lockdown” and “Post-Lockdown” calculated field
- Comparative bar charts
- Period-based filtering

Problem 5 → Interactive Dashboard

Solution:

- Tableau dashboard with filters (Year, Region, State)
- Drill-down capability
- Story scenes for structured presentation

4. Alignment Summary

Every business challenge is directly mapped to:

- SQL-based aggregation
- Tableau visual analysis
- Interactive dashboard
- Story-driven insights

This ensures complete problem-to-solution traceability.