Project Design Phase-II

Solution Requirements (Functional & Non-functional)

Date	31 January 2025
Team ID	LTVIP2025TMID48457
Project Name	Plugging into the Future: An Exploration of Electricity Consumption Patterns Using Tableau
Maximum Marks	4 Marks

Here's the "Project Design Phase-II: Solution Requirements (Functional & Non-functional)" template filled out for your "Plugging into the Future: An Exploration of Electricity Consumption Patterns Using Tableau" project.

Project Design Phase-II

Solution Requirements (Functional & Non-functional)

Date: 30 June 2025

Team ID: [LTVIP2025TMID48457]

Project Name: Plugging into the Future: An Exploration of Electricity Consumption Patterns Using Tableau

Maximum Marks: 4 Marks

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	**Data Acquisition & Preprocessing**	Collection of raw Consumption.csv data.
		Storage of consumption data in a database.
		Execution of SQL operations for data cleaning and preprocessing.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
		Connection of preprocessed database to Tableau.
FR-2	**Core Tableau Visualizations**	Generation of 2019 & 2020 state consumption and total consumption visualizations.
		Creation of usage by region and Top N/Bottom N state visualizations.
		Visualization of 2019 and 2020 month-wise consumption.
		Visualization of usage before and after lockdown periods.
		Creation of region-wise, quarterly, and yearly usage visualizations.
		Visualization of metro city state usage.
FR-3	**Dashboard & Story Development**	Design and implementation of an interactive dashboard for overall consumption trends and KPIs.
		Design and implementation of an interactive dashboard for regional and sector-specific insights.
		Creation of a narrative Tableau Story summarizing key findings.
FR-4	**Web Integration**	Setup of the basic Flask web application structure.
		Embedding of Tableau dashboards and stories into the Flask UI.
FR-5	**Testing & Documentation**	Performance testing on dashboard rendering and filter responsiveness.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
		Preparation of comprehensive project documentation for all development phases.

Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

NFR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	The interactive Tableau dashboards and Flask web interface must be intuitive and easy for diverse stakeholders (utility companies, policymakers, consumers) to navigate, understand, and extract insights from the data.
NFR-2	**Security**	Data stored in the database and accessed via the web application must be protected from unauthorized access, modification, or disclosure, ensuring the privacy and integrity of consumption data.
NFR-3	**Reliability**	The system must consistently provide accurate data visualizations and remain operational without frequent crashes, errors, or data inconsistencies. Data refresh mechanisms should be robust and dependable.
NFR-4	**Performance**	All dashboards and visualizations should load and respond to user interactions (e.g., applying filters, changing views) within acceptable timeframes (e.g., under 5 seconds), even when dealing with the full 24-month dataset.
NFR-5	**Availability**	The Flask-based web application should be highly available and accessible to users whenever required, with minimal unplanned downtime, ensuring continuous access to critical consumption insights.
NFR-6	**Scalability**	The solution must be capable of handling increasing data volumes (e.g., adding more years of data, more granular hourly data) and an expanding number of concurrent users without

NFR No.	Non-Functional Requirement	Description
		significant degradation in performance or requiring major architectural changes.