Project Design Phase-II
Technology Stack (Architecture & Stack)

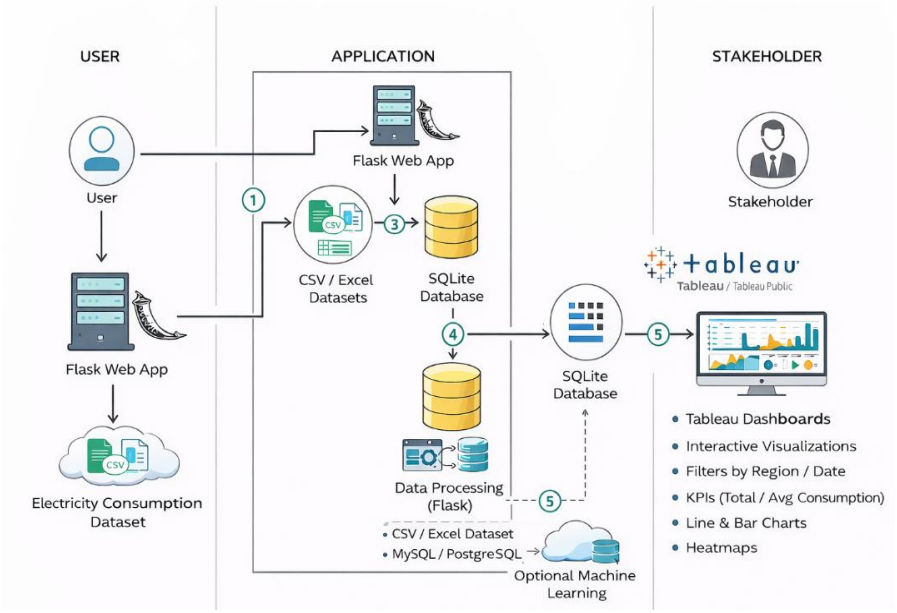
Date	20 February 2026
Team ID	LTVIP2026TMIDS66673
Project Name	Plugging into the Future: An Exploration of Electricity Consumption Patterns Using Tableau
Maximum Marks	4 Marks

Technical Architecture:

The deliverable shall include the architectural diagram as shown below along with the details specified in Table 1 and Table 2.

Example: Electricity consumption analysis and visualization for efficient energy planning using

Tableau.Reference:https://developer.ibm.com/patterns/ai-powered-backend-system-for-order-processing-during-pandemics/



Guidelines :

The architecture diagram should include all major application logic and technology blocks involved in the electricity consumption analysis system. Clearly demarcate the infrastructure into **Local/User environment** and **Cloud/Data processing environment**. Indicate any **external interfaces**, such as data sources or APIs used for electricity datasets. Show **data storage components/services** used to store raw and processed electricity consumption data. If applicable, include the **interface to analytics or machine learning models** used for trend analysis, peak demand detection, or forecasting, and their integration with Tableau for visualization.

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	Interface for users to view dashboards and interact with reports	Tableau Dashboard, Web Browser .
2.	Application Logic-1	Data cleaning and preprocessing logic	Python (Pandas, NumPy)
3.	Application Logic-2	Data analysis and aggregation logic	Python
4.	Application Logic-3	Data visualization and reporting logic	Tableau
5.	Database	Stores historical electricity consumption data	CSV / Excel / Relational Database
6.	Cloud Database	Centralized storage for large datasets (if deployed on cloud)	AWS RDS / Google BigQuery / Azure SQL (optional)
7.	File Storage	Storage for raw datasets and processed files	Local File System / Cloud Storage
8.	External API-1	Weather data used to analyze impact on electricity usage	Weather API
9.	External API-2	Government / public electricity consumption datasets	Open Data API
10.	Machine Learning Model	Used for demand forecasting and trend prediction (optional)	Python (Scikit-learn)
11.	Infrastructure (Server / Cloud)	Platform used to run analysis and dashboards	Local Machine / Cloud Platform

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Libraries and tools used for data analysis	Python, Pandas, NumPy
2.	Security Implementations	Tool used for interactive dashboards	Tableau
3.	Scalable Architecture	Ability to handle large datasets	Cloud Storage, Tableau
4.	Availability	Data access control and secure storage	Role-based access, Cloud Security
5.	Performance	Efficient processing of large electricity datasets	Optimized Python scripts

References:

https://help.tableau.com

https://www.tableau.com/learn

https://pandas.pydata.org/docs/

https://numpy.org/doc/

https://aws.amazon.com/architecture/