DATE	28-02-2026
TEAM ID	LTVIP2026TMIDS89110
PROJECT NAME	plugging into the future: an exploration of electricity consumption patterns using tableau
MAXIMUM MARKS	4 MARKS

3.4 Technology Stack

The “Plugging into the Future” project relies on a robust and integrated technology stack to collect, process, analyze, and visualize electricity consumption patterns efficiently. At the core of the stack is Tableau, which provides advanced capabilities for creating interactive dashboards, visual analytics, and predictive insights. Tableau serves as the front-end visualization layer, enabling stakeholders to explore complex electricity data dynamically, filter by region, sector, or time, and identify trends and anomalies without deep technical expertise.

On the data management side, the project leverages relational databases (such as MySQL or PostgreSQL) and cloud storage solutions (like AWS S3 or Google Cloud Storage) to store large volumes of structured and semi-structured electricity consumption data. These databases maintain historical records from utility companies, smart meters, and government datasets, ensuring scalability and reliability. Data extraction and transformation are handled using ETL (Extract, Transform, Load) tools or scripting languages such as Python or R, which clean, normalize, and enrich the data by integrating demographic, economic, and environmental indicators.

For analytics and forecasting, the stack incorporates Python libraries like pandas, NumPy, and scikit-learn, enabling statistical analysis, trend identification, and predictive modeling for future electricity demand. Where real-time monitoring is required, API integrations allow live connections from smart meters or utility data systems directly into Tableau, providing near real-time insights. Visualization enhancements may include Tableau extensions or JavaScript APIs, allowing custom interactivity and embedding dashboards into internal platforms for stakeholders.