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

4.3 Solution Architecture

The solution architecture for *Plugging into the Future: An Exploration of Electricity Consumption Patterns Using* Tableau is designed as a multi-layered, end-to-end system that transforms raw electricity consumption data into actionable insights for energy stakeholders. At the foundation is the data layer, which aggregates electricity usage data from multiple sources, including utility providers, smart meters, government energy reports, and open datasets. This layer also incorporates supplementary data such as population statistics, industrial output, and urbanization metrics, which are essential for contextual analysis. Data is stored in structured formats within relational databases (like MySQL or PostgreSQL) or cloud storage solutions (such as AWS S3 or Google Cloud Storage), ensuring scalability, reliability, and secure access.

Above the data layer is the data processing and integration layer, where raw datasets are cleaned, validated, and transformed through ETL pipelines or scripting languages like Python and R. This step handles missing values, resolves inconsistencies, and standardizes data formats to ensure compatibility with Tableau. Preprocessing also includes data enrichment to provide correlations between electricity consumption and demographic or economic indicators, enabling more comprehensive analysis.