Project Design Phase-II

Solution Requirements (Functional & Non-functional)

Date	16 February 2026
Team ID	LTVIP2026TMIDS55781
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 Integration & Preparation	• Connect Tableau to the electricity consumption dataset(s). • Clean and format data (e.g., handling missing values, standardizing date formats). • Create necessary calculated fields (e.g., Year-over-Year growth, peak consumption metrics).
FR-2	Core Visualizations Development	• Build temporal trend charts (e.g., line charts showing monthly/yearly electricity usage). • Develop geographical distribution maps (e.g., consumption mapped by region or state). • Create sector-wise breakdowns (e.g., bar or pie charts comparing residential, commercial, and industrial use).
FR-3	Dashboard Interactivity & User Controls	• Implement global date/time filters for users to select specific periods. • Add geographical drop-down filters (e.g., filter by specific city or region). • Enable interactive tooltips to display precise data points and metrics upon hover.
FR-4	Storytelling & Deployment	• Assemble individual visualizations into a cohesive Tableau Dashboard or Story. • Publish the final dashboard to Tableau Public or Tableau Server. • Enable user export functionalities (e.g., allow users to download the view as a PDF or image).
FR-5	Comparative & Geographical Analysis	• Provide a Year-over-Year (YoY) comparison filter specifically for 2019 and 2020 usage trends. • Generate a heat map to highlight high-consumption states and regions visually.

FR-6	Trend & Anomaly Detection	• Calculate and display peak electricity demand periods (e.g., highest usage months/days). • Implement visual indicators (e.g., reference lines or specific colors) to detect anomalies and unusual consumption spikes.

Non-functional Requirements:

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

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	The dashboard must be intuitive and easy to navigate. It should feature clear color-coding for different consumption levels, readable fonts, and self-explanatory filters so non-technical users can easily explore the electricity data.
NFR-2	**Security**	If published internally, Row-Level Security (RLS) or Tableau Server permissions must be used to restrict access to sensitive regional data. If published to Tableau Public, the underlying raw dataset should be hidden from public download to protect data integrity.
NFR-3	**Reliability**	The visualizations must accurately and consistently reflect the underlying electricity dataset without distortion. Any scheduled data extract refreshes must run successfully without corrupting the dashboard views.
NFR-4	**Performance**	The Tableau dashboard should be optimized to load quickly (ideally under 3–5 seconds). Interactive elements, such as region or date filters, should update the visualizations almost instantaneously without lagging.
NFR-5	**Availability**	The final project dashboard should be highly accessible (24/7) to the intended audience via Tableau Server, Tableau Cloud, or Tableau Public, ensuring users can view the electricity consumption stories whenever needed.
NFR-6	**Scalability**	The dashboard's underlying data model must be structured so it can handle the addition of future data (e.g., adding consumption data for the next 5 years, or increasing granularity from monthly to daily data) without requiring a complete redesign or causing severe slowdowns.