

Project Design Phase-II
Solution Requirements (Functional & Non-functional)

Date	29 June 2025
Team ID	LTVIP2025TMID50075
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 Ingestion & Cleaning	<ul style="list-style-type: none">Automate ingestion from smart meters via APIsRemove outliers (e.g., usage $>3\sigma$ from mean) using Tableau Prep
FR-2	Real-Time Consumption Visualization	<ul style="list-style-type: none">Hourly usage heatmaps for consumersUrban vs. rural comparison charts for policymakers
FR-3	Predictive Analytics	<ul style="list-style-type: none">Peak demand forecasts (TabPy + Prophet)Anomaly detection alerts (SMS/email)
FR-4	Policy Impact Simulation	<ul style="list-style-type: none">Drag-and-drop subsidy slidersGenerate PDF reports with Tableau Server
FR-5	Multi-Stakeholder Access Control	<ul style="list-style-type: none">Role-based dashboards (consumer/policymaker/provider)OAuth 2.0 authentication

Non-functional Requirements:

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

NFR No.	Non-Functional Requirement	Description
NFR-1	Usability	<ul style="list-style-type: none">90% of users complete key tasks in <3 clicks (e.g., view peak hours)WCAG 2.1 AA compliance
NFR-2	Security	<ul style="list-style-type: none">Column-level encryption for PII (Tableau Server)GDPR-compliant data anonymization
NFR-3	Reliability	<ul style="list-style-type: none">99.5% uptime for critical dashboardsAutomated failover to backup servers

NFR No.	Non-Functional Requirement	Description
NFR-4	Performance	<ul style="list-style-type: none"> • Load dashboards in <2 seconds (10K concurrent users) • Process 1TB data/hour via Tableau Prep
NFR-5	Availability	<ul style="list-style-type: none"> • 24/7 access for providers • Maintenance windows limited to 2AM–4AM (local time)
NFR-6	Scalability	<ul style="list-style-type: none"> • Support 1M+ households (Phase 3) • Kubernetes cluster for Tableau Server auto-scaling