Project Design Phase

Proposed Solution Template

Date	23 june 2025
Team ID	LTVIP2025TMID47899
Project Name	Plugging Into the Future – An Exploration of Electricity Consumption Patterns using Tableau.”
Maximum Marks	2 Marks

Proposed Solution Template:

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	**In an era of growing energy demand and environmental concerns, understanding electricity consumption patterns is crucial for sustainable planning and resource management.**
2.	Idea / Solution description	**Visualize Electricity Consumption Data** • Display time-based patterns (hourly, daily, monthly trends). • Segment by geography (city, region, state) and sector (residential, commercial, industrial). • Highlight peak and off-peak usage times. Enable Forecasting and Scenario Analysis Integrate predictive models to estimate future consumption. Provide “what-if” scenarios (e.g., impact of energy-saving policies or population growth).

<table>
<tr><td>3.</td><td>Novelty / Uniqueness</td><td>1. Dynamic, User-Friendly Dashboards
Unlike static reports, the project features interactive dashboards that allow users to filter data by time, location, and sector, making complex data understandable at a glance.

2. Combination of Historical and Predictive Insights
Most analyses focus only on past usage. This project incorporates forecasting tools to predict future electricity consumption, helping anticipate demand and prevent shortages.

3. Multi-Dimensional Pattern Analysis
It explores cross-sectoral and geo-temporal patterns, revealing hidden trends—for example, how climate, urbanization, and consumer behavior collectively affect usage.</td></tr>
<tr><td>4.</td><td>Social Impact / Customer Satisfaction</td><td>Promotes Energy Awareness & Responsible Usage
By visualizing when and how electricity is consumed, the project educates users and encourages more conscious energy usage, leading to lower carbon footprints and reduced wastage.

Reduces Power Outages and Overloads
By identifying peak load times and forecasting future demand, utility providers can improve grid reliability and reduce the risk of blackouts, especially in underserved areas.

Customers gain insights into how and when they use electricity, helping them understand their bills better and manage consumption to reduce costs</td></tr>
<tr><td>5.</td><td>Business Model (Revenue Model)</td><td><table><tr><th>Section</th><th>Details</th></tr><tr><td>1. Customer Segments</td><td>- Utility companies
- Government agencies
- Industrial/commercial users
- Residential consumers
- Smart home/IoT solution providers</td></tr><tr><td>2. Value Propositions</td><td>- Real-time, insightful electricity consumption visualization
- Forecasting to optimize energy use</td></tr></table></td></tr>
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			and reduce costs - Supports sustainability goals
		3. Channels	- Web-based dashboards (via Tableau) - Mobile applications - API integrations with smart meters and IoT platforms - Partnerships with utilities
		4. Customer Relationships	- Self-service portal for end users - Dedicated support for enterprises - Knowledge base and user training - Consulting for custom analytics
		5. Revenue Streams	- SaaS subscriptions (tiered pricing) - Enterprise licensing - Consulting & customization services - Data monetization - Freemium upgrades
		6. Key Resources	- Tableau expertise and visualization tools - Electricity consumption data - Forecasting algorithms - Cloud infrastructure
		7. Key Activities	- Data collection and cleaning - Dashboard development - Forecast model integration - Customer onboarding & support
		8. Key Partnerships	- Utility companies - Government energy departments - Smart meter manufacturers - Cloud service providers - Tableau/BI communities
		9. Cost Structure	- Tableau licensing - Cloud hosting and storage - Data acquisition and integration - R&D for forecasting - Marketing and customer support
6.	Scalability of the Solution	**1. Data Scalability** • Can handle **large volumes of electricity consumption data** from various regions, time periods, and user types. • Easily integrates with **real-time data sources** such as smart meters, IoT devices, and weather APIs. **2. Geographic Scalability**	

		• Applicable at **local, regional, national, and even global levels**. • Can be adapted to different **geographies, climate zones, and utility regulations** with minor adjustments.