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

Date	16 April 2025
Team ID	PNT2025TMID07432
Project Name	Global-Energy-Trends-A-Comprehensive-Analysis-of-Key-Regions-and-Generation-Modes-using-Power-BIGlobal-Energy-Trends-A-Comprehensive-Analysis-of-Key-Regions-and-Generation-Modes-using-Power-BI
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	User Registration	Registration through Form (email & password)
		Registration through Gmail
		Registration through LinkedIn
FR-2	User Confirmation	Confirmation via Email (account activation link)
		Confirmation via OTP (for secure access)
FR-3	Data Integration	Connect Power BI to energy datasets (Excel, CSV, databases)
		Enable real-time or scheduled data ingestion from APIs or cloud sources
FR-4	Data Processing	Clean and structure data related to region-wise energy consumption and generation
		Categorize data by generation mode (Solar, Wind, Hydro, Coal, etc.)
FR-5	Trend Forecasting	Apply forecasting models (e.g., linear regression, ARIMA) to predict energy consumption trends
		Enable region-wise prediction of renewable vs non-renewable energy usage
FR-6	Visualization	Develop Power BI dashboards showing key KPIs, trends, and comparative metrics by region & mode
		Include filters, slicers, and drill-downs for in-depth analysis
		Export and share reports with different user roles (admin, analyst, viewer)

Non-functional Requirements:

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

NFR No.	Non-Functional Requirement	Description
NFR-1	Usability	Provide a simple and intuitive Power BI dashboard UI/UX for non-technical users to explore data easily.
NFR-2	Security	Implement secure login with authentication (email/Gmail/LinkedIn), role-based access control, and data encryption in Power BI and data sources.
NFR-3	Reliability	Ensure accurate data refresh and stable connectivity to all data sources with minimal failures.
NFR-4	Performance	Dashboards should load within **5 seconds**, even when querying large energy datasets across regions.
NFR-5	Availability	Ensure the Power BI dashboards and backend systems are available **99.9%** of the time.
NFR-6	Scalability	The system should support increased data volume (more countries/years/modes) and additional users without degrading performance.