IDEATION PHASE

BRAINSTORM & IDEA PRIORITIZATION

Date	8 February 2026
Team ID	LTVIP2026TMIDS89922
Project Name	Weather-Based Prediction of Wind Turbine Energy Output
Maximum Marks	4 Marks

Step 1: Problem Statement Selection

Objective: Define the project problem clearly and identify the main goal.

Problem Statement:

Predict the energy output of wind turbines based on weather conditions to optimize energy production, plan maintenance schedules, and support grid integration.

Step 2: Brainstorm, Idea Listing, and Grouping

Objective: Generate potential solutions and organize them into categories.

Ideas Generated:

Idea	Description	Category
Predict energy output	Train ML models to forecast turbine power using weather parameters	Core ML Functionality
Maintenance scheduling	Predict low-output periods to plan maintenance efficiently	Operational Efficiency
Grid integration	Forecast energy output to balance grid load	Energy Management
Web interface	Build UI for input, prediction, and visualization	User Interaction

Idea	Description	Category
Real-time updates	Integrate live weather API for real-time predictions	Innovation
Theoretical power curve	Estimate turbine power based on wind speed	Model Enhancement

Grouping:

- Core ML Functionality: Predict energy output
- Operational Efficiency: Maintenance scheduling
- Energy Management: Grid integration
- User Interaction: Web interface
- Innovation: Real-time updates
- Model Enhancement: Theoretical power curve

Step 3: Idea Prioritization

Objective: Rank ideas based on impact and feasibility to focus on high-value solutions first.

Idea	Feasibility (1-5)	Impact (1-5)	Total Score	Priority
Predict energy output	5	5	10	High
Maintenance scheduling	4	4	8	Medium
Grid integration	3	5	8	Medium
Web interface	5	4	9	High
Real-time updates	3	3	6	Low
Theoretical power curve	4	5	9	High

Conclusion:
The project focuses on:

1. Developing the ML model to predict energy output.

2. Building a web interface for user interaction.

3. Implementing theoretical power curve calculations to improve accuracy.

Additional enhancements such as maintenance scheduling, grid integration, and real-time updates can be implemented in future iterations.