

Project Design Phase
Proposed Solution Template

Date	15 February 2026
Team ID	LTVIP2026TMIDS80318
Project Name	Weather-Based Prediction of Wind Turbine Energy Output: A Next-Generation Approach to Renewable Energy Management
Maximum Marks	2 Marks

Proposed Solution Template:

Project team shall fill the following information in the proposed solution template.

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	The project aims to predict the energy output of a wind turbine based on weather conditions. This is valuable for energy companies and grid operators to better manage and optimize energy production. By analyzing historical data of weather conditions and energy output, machine learning models can be trained to predict the energy output of a wind turbine given current weather conditions.
2.	Idea / Solution description	The proposed solution is a web-based application that predicts wind turbine energy output using real-time weather data. The system fetches live weather parameters for any user-entered city using a weather API and computes the expected wind energy output. A Flask-based web interface is developed to display weather conditions and predicted energy output in a user-friendly manner.
3.	Novelty / Uniqueness	Combines live weather API data with wind energy prediction in a user-friendly web interface.
4.	Social Impact / Customer Satisfaction	Supports renewable energy usage and helps in better energy planning and awareness.
5.	Business Model (Revenue Model)	Can be provided as a paid analytics service to wind energy companies and researchers.
6.	Scalability of the Solution	The system can be extended to more cities, turbines, and advanced prediction models.