Project Design Phase-I
Proposed Solution Template

Date	19 September 2022
Team ID	PNT2022TMID31390
Project Name	Project - Predicting the energy output of wind Turbine based on weather condition
Maximum Marks	2 Marks

Proposed Solution Template:

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

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Any Windfarm owner needs a Wind energy output prediction software that not only gives a prediction value closest to the actual output value but also gives notifications in case of unexpected weather changes to meet their customer demands with more satisfaction so that their customers can purchase power from other sources in case of less output or zero power generation due to any failures.
2.	Idea / Solution description	With weather, Wind Mill altitude, Location, and Wind speed as parameters, different ML algorithms will be trained and tested. Then, the best-performing algorithm that gives the highest accuracy will be deployed as a web app. The Web app will be user-friendly, with an explanation of the electrical terms used. A notification system will be used to notify users priorly if the expected power cannot be generated due to unexpected weather changes like sudden rainfall and outages.
3.	Novelty / Uniqueness	Present wind energy output predicting solutions do not have any specific methods to predict the output energy based on the changing weather and wind conditions. These solutions also do not handle unexpected weather changes and outages. By implementing the proposed solution, Prediction of wind power output will be more accurate as dynamic weather, wind conditions are taken into account and as the prior notification system is introduced in this proposed solution, it will handle unexpected weather changes and outages.
4.	Social Impact / Customer Satisfaction	Meeting secondary consumers' demands as accurate prediction helps primary consumers (Wind Farm Owners, Wind power producers) to make satisfiable demands from secondary consumers and generate demanded power. So,

		this provides customer satisfaction to both primary and secondary consumers.
5.	Business Model (Revenue Model)	Wind power forecast/prediction is critically required to increase the reliability of renewable energy generation. Accurate wind power generation prediction gives scope to the wind mill producers to sell maximum power to grid by effective scheduling so that all the power generated can be evacuated by the power utility.
6.	Scalability of the Solution	As data grows upon collecting and storing predicted values, actual output, wind speed, and weather in the cloud storage, the prediction software will maintain and utilize all these data and develop more accurate predictions in the upcoming years.