Project Design Phase-I
Proposed Solution Template

Date	19 September 2022
Team ID	PNT2022TMID35179
Project Name	Predicting the energy output of wind turbine based on weather condition
Maximum Marks	2 Marks

Proposed Solution:

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	The manufacturer needs to find a way to analyse the weather conditions of a region so they can choose regions that produce high quality and quantities of wind energy. Overproduction and cost of production needs to be reduced. Wind energy should be utilised in a way to provide a steady supply of electricity.
2.	Idea / Solution description	We examine the impact of different weather conditions on the energy output of wind farms. By accurately forecasting the wind-power, we reduce the need for additional balancing energy and reserve power to integrate wind power. A prediction system is developed with a method of combining statistical models and physical models. In this model, the inlet condition of the wind farm is forecasted by the auto regressive model.
3.	Novelty / Uniqueness	Currently, wind energy is not a primary source of electricity. Implementing our solution makes it possible to maximise energy output. This solution would make renewable energy sources more widely used. The user can upload their own data in real-time for forecasting.

4.	Social Impact / Customer Satisfaction	Local employment, better health, consumer choice, improvement of life standard, social bonds creation, income development, demographic impacts, and community development can be achieved by the proper usage of renewable energy system. Renewable energy improves human well-being and overall welfare well beyond GDP. Switching to clean sources of energy, thus helps address not only climate change but also air pollution and health.
5.	Business Model (Revenue Model)	Wind farm owners need a prediction model to predict the wind energy so they can provide a steady energy source. A subscription model would be efficient here, as the model will improve with time as it is used for forecasting using more and more data.
6.	Scalability of the Solution	This solution can be applied on a larger scale, to windfarms across the world.