

Project Initialization and Planning Phase

Date	6 July 2024
Team ID	SWTID1720449665
Project Name	Predicting The Energy Output Of Wind Turbine Based On Weather Condition
Maximum Marks	3 Marks

Define Problem Statement :

Wind farm operators are facing significant challenges due to the unpredictable nature of weather conditions, which result in substantial fluctuations in energy output. These fluctuations complicate the process of meeting energy demand, lead to inefficient energy storage, and increase operational costs. To address these issues, there is a need for an accurate predictive model that can forecast wind turbine energy output based on real-time and forecasted weather conditions. Such a model would help optimize turbine operations, maximize energy production, and provide insights for proactive maintenance scheduling, thereby reducing downtime and extending the lifespan of turbines. Additionally, reliable predictions are essential for better integration with the energy grid, ensuring a stable and consistent supply of electricity. By developing and validating a predictive model that uses historical weather and turbine performance data, and integrating it with real-time weather information, wind farm operators can enhance the efficiency and reliability of their operations, resulting in improved resource management, cost savings, and a more stable energy supply for their customers.

Problem Statement (PS)	I am (Customer)	I'm trying to	But	Because	Which makes me feel
PS-1	Power Supplier	predict the energy output of a wind turbine	I struggle because I lack real-time weather data and accurate predictive models.	I do not have any valid predictions.	hesitant about relying on renewable energy sources
PS-2	I am a farmer	estimate the energy output of my wind turbine	I face challenges because existing methods don't provide accurate predictions	No reliable predictor.	unsure about investing more in renewable energy solutions.