

## Model Development Phase Template

Date	12 July 2024
Team ID	SWTID1720108739
Project Title	<b>Predicting The Energy Output Of Wind Turbine Based On Weather Condition</b>
Maximum Marks	5 Marks

## Feature Selection Report Template

In the forthcoming update, each feature will be accompanied by a brief description. Users will indicate whether it's selected or not, providing reasoning for their decision. This process will streamline decision-making and enhance transparency in feature selection.

Feature	Description	Selected (Yes/No)	Reasoning
Date/Time	wind turbine energy output based on weather conditions, the use of date/time data involves capturing temporal patterns and trends. This includes seasonal variations, daily cycles, and long-term trends in weather conditions and energy production.	Yes	It allows us to capture temporal variations in weather conditions, such as seasonal changes and daily cycles, which directly impact wind turbine energy production.
LV ActivePower	LV ActivePower (kW) represents the actual electrical power output generated by a wind	Yes	It Directly measures the real-time electrical power output of a wind turbine, providing a precise

	turbine at a given moment, measured in kilowatts (kW).		indicator of its performance under specific weather conditions.
Wind Speed (m/s)	Wind Speed (m/s) represents the velocity of wind at the location of a wind turbine, measured in meters per second.	Yes	This parameter is essential for predicting energy output based on weather conditions, providing critical insights into the potential efficiency and output of wind turbines. It enables accurate forecasting of energy production
Theoretical Power_Curve (KWh)	Theoretical Power Curve (KWh) represents the expected maximum power output of a wind turbine under ideal conditions, measured in kilowatt-hours (KWh)	Yes	This data parameter serves as a benchmark for predicting actual energy output based on weather conditions, aiding in accurate forecasting of energy production, optimizing maintenance schedules for peak efficiency, and facilitating efficient grid integration by aligning expected and actual energy outputs.
Wind Direction (°)	Wind Direction (°) indicates the direction from which the wind is blowing relative to the turbine, measured in degrees	no	The feature was excluded due to its consistently negative correlation with all other features in the dataset. This exclusion was necessary to ensure that the predictive model accurately reflects the relationships and influences of weather conditions on wind turbine energy output. By omitting wind direction, the model focuses on more positively correlated variables, improving the accuracy of energy production forecasts, optimizing maintenance scheduling, and enhancing grid integration strategies for efficient energy management.

