# Project Design Phase-I
# Proposed Solution

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| Date | 19 September 2022 |
| Team ID | **PNT2022TMID46873** |
| Project name | Predicting the energy output of wind turbine based on weather condition |
| Maximum Marks | 2 Marks |

## Proposed Solution:

| SI.NO | PARAMETER | DESCRIPTION |
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| 1 | Problem statement (problem to be solved) | Now, meteorologists have to manually take down every value and then calculate the value for theoretical power. This a very time taking process and there are chances foe human errors. As this decides how much energy will be produced, any king of error will cost a huge amount to the government. Also, there is no fixed formula for calculating theoretical power. They depend on number of factors. Hence, we have come up with the solution such that the work for meteorologist is decreased and also efficiency is increased |
| 2 | Idea / solution description | Our aim is to map weather data to energy production. We wish to show that even data that is publicly available for weather stations close to wind farms can be used to give prediction of the energy output. Furthermore, we examine the impact of different weather conditions on the energy output of techniques to predict the energy output of wind farms. We are building to predict the energy output of wind turbines and weather conditions of a city. |
| 3 | Novelty / uniqueness | Wind energy is a source of renewable energy. It reduces the use of fossil fuels, which are the origin of greenhouse gases that cause global warming. Producing electricity through wind energy and its efficient use contribute to sustainable development. The uniqueness of wind energy: <br>       Renewable energy <br>       Inexhaustible <br>       Not pollutant <br>       Reduces the use of fossils fuels <br>       Reduce energy imports |

| | | Creates wealth and local employment |
|---|---|---|
| 4 | Social impact/customer satisfaction | The environmental impact of electricity generation from wind power is minor when compared to that of fossil fuel power. Habitat loss and fragmentation are the greatest impacts of wind farms on wildlife. Onshore wind farms can have significant impacts on the landscape, as typically they need to be spread over more than other power stations. It also generate noise and at a residential distance of 300 metres this may be around 45 dB. Construction of offshore wind farms may create underwater noise. |
| 5 | Business model (Revenue model) | Wind energy projects provide many economic benefits. <br>Direct employment <br>Land lease payments <br>Local tax revenue <br>Wind energy tourism |
| 6 | Scalability of the solution | This model can be used as API in mobile app or web building. We are developing a web application which is built using node red service. We make use of the scoring end point to give user input values to be deployed model. The model prediction is then showcased on user interface to predict the energy output of wind turbine |