

# MSDS 604 Fall 2022 Final Group Project

## Data:

Renewable energy remains one of the most important topics for a sustainable future. Wind, being a perennial source of power, could be utilized to satisfy our power requirements. With the rise of wind farms, wind power forecasting would prove to be quite helpful.

Here's data on a particular windmill. It contains various weather, turbine, and rotor features. Data has been recorded from January 2018 till March 2020. Readings have been recorded at **10-minute intervals**. The aim was to predict the **mean daily wind power** that could be generated from the windmill for the next 15 days.

## Goal:

Use the training data ('train.csv') to select and train a model to produce a forecast on the **mean daily wind power** that could be generated from the windmill for the **next 15 days**. The target variable indicating the wind power is the column 'ActivePower' in the training set. The prediction accuracy will be measured using RMSE.

## Requirements of the Analysis:

- You are required to fit models from **at least three modeling approaches** from ARIMA, ETS, Theta, and Prophet.
- Each group member is required to work on at least two approaches to guarantee fair workload and accuracy.
- You are not limited to the models we have learned in class and add more methods.
- You can train and validate however you want to find the best model.

## Requirement of Submissions:

Each group is required to submit the following files:

1. Each member will submit your own notebook that include all your analysis. For example, if a group has three members, you should submit three notebooks each one with the student's name in the file name.
2. One .csv file including your final forecasting results from the group. The format of the csv file is as below:

Date	Forecasting
2020-03-16	20
.	.
.	.
.	.
2020-03-30	21

**Grading rubric:**

- 10 points: Submitting all required files and all notebooks run.
- 6 points: Your forecasting will be compared to the test set I have and I will calculate the test RMSE for all groups. The highest ten groups will get 6 points. Others will get 4 points.
- 4 points: peer review score from your teammate. In your peer review, please state the models each member has trained.