CT Windvision Proposal

Team

We are a group of three ITWS and one CS majors from RPI under the name Wacky Windmills. Ilhwan Song is a junior, dual majoring in ITWS and BMGT. Sydney Hannert is a sophomore majoring in ITWS with a concentration in Cognitive Science. Miles Ednie is a junior, majoring in Computer Science. Peter Krumpholz is a sophomore majoring in ITWS.

Summary

The project is focused on utilizing historical data of air temperature, wind direction, and wind speed in Connecticut, to create a website that allows users to predict the best locations for wind turbines in the state or for other uses. The website will utilize data from NASA, which will be processed and analyzed to provide users with accurate and reliable information. The website will have a user-friendly interface and will be easy to navigate. Users will be able to access the historical data by searching for specific locations or by browsing the data by region. The website will also feature a wind turbine prediction tool that uses the historical data to determine the most suitable locations for wind turbines based on wind conditions. The project aims to provide a valuable resource for those in the renewable energy industry, as well as for individuals and organizations interested in the potential for wind energy in Connecticut. The website will also serve as a tool for policymakers and researchers to better understand the state's wind potential and identify areas for future wind energy development. Overall, this project aims to create a comprehensive website that provides historical data on air temperature, direction, and speed in Connecticut, and uses this data to predict the best locations for wind turbines in the state. The

website will be a valuable resource for those interested in wind energy, and will help to promote the development of renewable energy in Connecticut.

Users & Stakeholders

Although the data provided by this project may seem quite technical, we aim to design the website in a user-friendly manner, making it accessible to a wide range of users, including windmill companies, high school students, policymakers, researchers, and anyone else interested in wind energy and the potential for renewable energy development in Connecticut. Our goal is to create a user-friendly interface that is easy to navigate, allowing users to easily access and utilize the historical data provided by NASA.

The stakeholders of this project include a diverse group of individuals and organizations who stand to greatly benefit from the increased use of renewable energy. These include organizations and individuals in the renewable energy industry who can use the website's data to create wind turbines, providing a clean source of electricity without polluting the air. Additionally, NASA, as a provider of the data used in the project, is also a key stakeholder as their data is being utilized and presented in a user-friendly manner for the benefit of the wider public. The project will be a valuable resource for stakeholders looking to understand wind conditions and potential for renewable energy development in Connecticut, providing them with the necessary information to make informed decisions and take action towards a more sustainable future.

Technologies

Our project plans to use React for frontend, Node and Express for backend, and MongoDB for databases system. (MERN)

Functional & Non Functional

Our API will display data from NASA's AIRS and MERRA-2 datasets on wind speed, direction, and temperature. Our API will have information from wind datasets over a variety of locations and range of dates. We plan to allow users to make calls to our API that will send them back recent wind speed, direction, and temperature data. The queries we plan to implement are sending data based on area, a range of dates, and type of data. For example, a user would be able to get recent wind data for a town in Connecticut using an API call like /v1/CT/town which would return the recent wind speeds, direction, and temperature for that location. Users could also make a call that returns data from many locations over a certain time period or a call for only recent wind speed data.

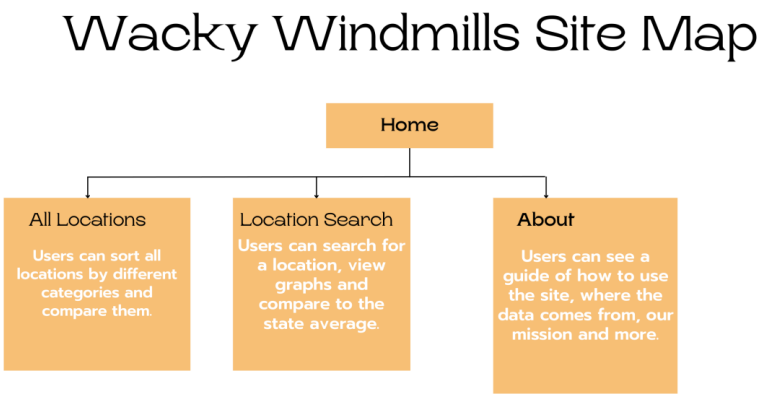
For our front end, our team will have a landing page that welcomes new users and three additional pages that introduce users to our data and include information about us. On a page called "location search" we plan to have documentation specifically for users that plan to make API calls for wind data in a certain location. We also plan to display graphs of the wind data on this page to show users what to expect when making certain API calls. On a page called "all locations" we plan to have documentation for users that desire wind data from many locations over a specific period of time. We plan to display sample API calls as well as a table of wind data with locations that the user would receive from the call. We also plan to include an about us page to introduce users to our team and the data stored in our API.

Schedule

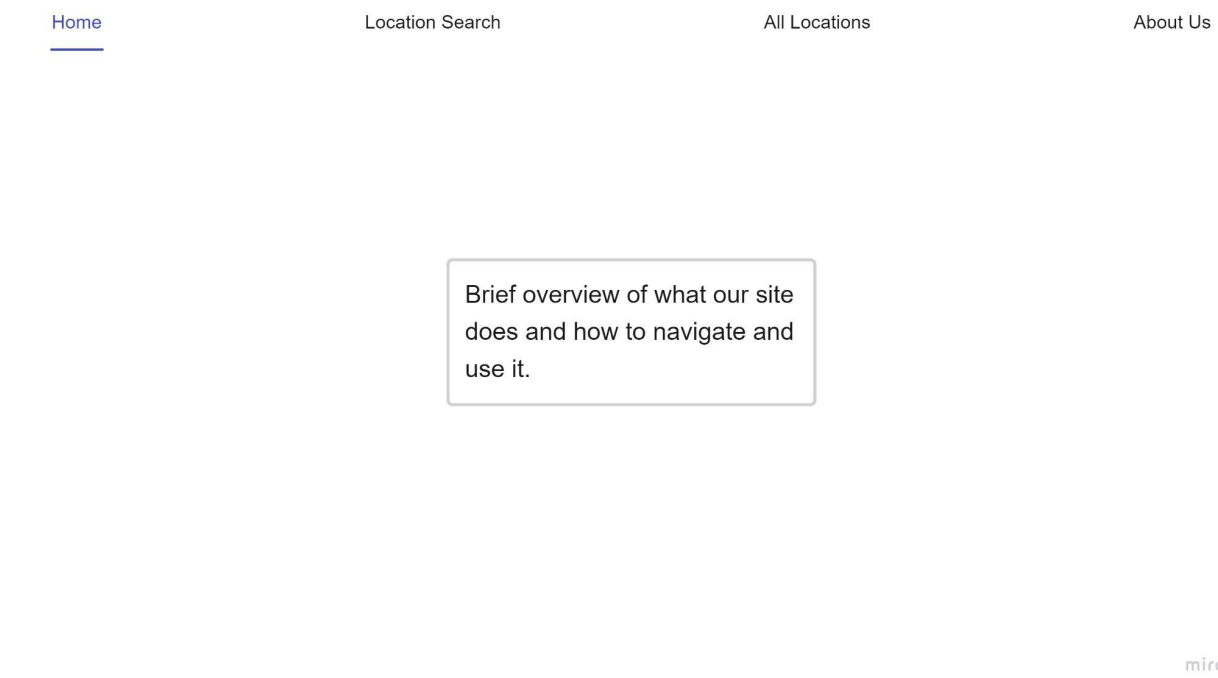
By the end of February, make a solid start on the front-end of our project. By March 3rd, finish up the front-end and begin work on the back-end. By the second week of April, finish the back-end and prepare the presentation.

February	March	April	May
Front-end development	Working on back-end	Finishing back-end and working on presentation	Finishing touches

Sitemap



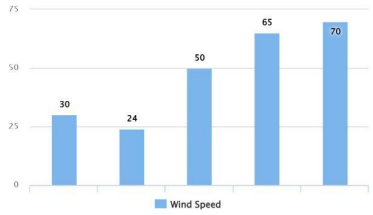
Wireframes

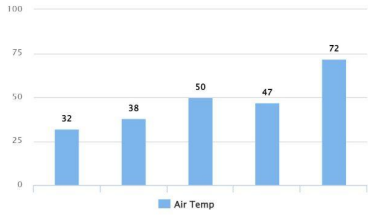

Home
Location Search
All Locations
About Us
Brief overview of what our site does and how to navigate and use it.
miro

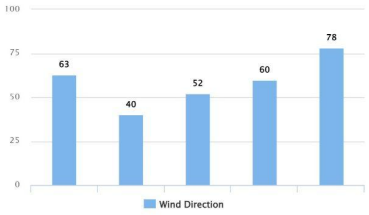
Home | Location Search | All Locations | About Us

Brief example of how to use page

Select Date | Search Location







Area to display averages / specifically requested data

miro

Home | Location Search | All Locations | About Us

Select Date | Search Location

Graph changes based on location(s) specified

Wind Speed	Wind Direction	Air Temp
30	N	32
24	NE	38
50	W	50

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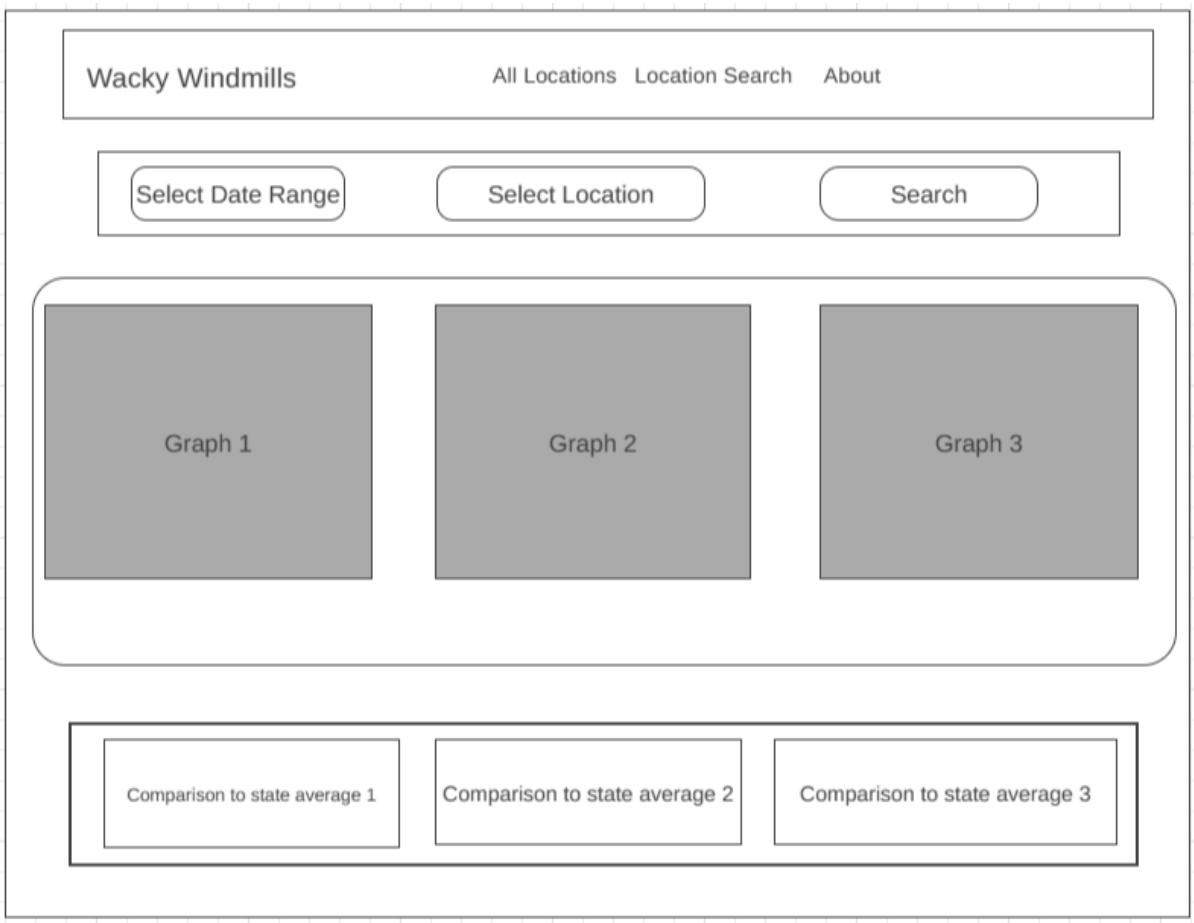
Wacky Windmills
All Locations
Location Search
About
Select Date Range
Select Location
Search
Graph 1
Graph 2
Graph 3
Comparison to state average 1
Comparison to state average 2
Comparison to state average 3