

WATT2Buy

Prepared by
Team WATT2Buy (#112-3)

Hung Bui
Simon Julien
Tiger McDaniel
Kunal Sinha
Vanessa Van Scyoc Hernandez

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Application Description

In the age of declining use of finite resource energy, rapid climate change and making of a corroding carbon footprint on Earth, companies and neighborhoods are slowly moving towards the era of sustainable supply of power. Fossil fuels are being avoided due to their soon depletion and nuclear energy is thought of to be highly hazardous and is kept away from residential neighborhoods. Moreover, companies that claim to use renewable energy, have been shown to gain popularity exponentially due to consumer interest in preserving the planet.

In such a state of affairs, there is a need for third parties to help companies switch smoothly to renewable energy. Watt2Buy is a third party website which first requests its users to fill in a quick survey about their average energy usage, locality and the budget for their energy transition. Using this data, The website gives the customer a myriad of renewable energy options: wind power, hydropower, solar energy, geothermal energy, bioenergy, etc. It also provides a possible combination of each to be the most cost effective alternative. Additionally, it is able to give a feasibility study of each alternative, and an approximate time by which the customer's investment will be able to break even with their savings from ceasing use of finite resources.

Finally, the user is able to select the options they find best, by customizing the order to tailor their specific needs and add it to a shopping cart. One user will be able to repeat for multiple buildings/farms/factories and add them to the cart. The website will then lead an online shopping trajectory and be able to transfer to an online payment system website.

Vision Statement

This product is for residential and commercial property owners considering renewable and sustainable energy technology for their power needs. Watt2Buy is an automated investment advising website that provides its users with renewable and sustainable product recommendations based on a series of factors such as: building type, energy usage habits, proximity to urban areas, sun exposure, the user's spending budget, and more. Unlike other price comparison websites like Google Shopping and NexTag, Watt2Buy's concentration on sustainability within residential and commercial buildings allows our recommendation algorithm to match each user to a handful of products that are optimal and realistic for their specific investment situations.

Version Control

Link to GitHub repository: <https://github.com/CSCI-3308-CU-Boulder/WATT2Buy.git>

Development Method

The team will be using the Agile Project development methodology. Within agile, we will implement the Scrum Methodology combined with the Kanban Methodology. The team will assign a Product Owner and a Scrum Master. The team will then choose user stories to focus on for a two week sprint period. The Product Backlog is

currently being developed in a Kanban method writing ideas down in an icebox, modifying them into user stories and adding them to the Backlog box. The board used by the team is linked below. Once the team finishes a sprint, a sprint retrospective will be carried out to create tasks of improvement, or added functionality for the next sprint. The team feels that this method would fit the team best, primarily due to the loosely defined functionality requirements, continuous room for improvement and change without a huge cost in time for every iteration, a continuous product review with the TAs to know how well the product is functioning and ease of implementing suggestions, and finally, with this methodology, the team is free to experiment and adapt with the website, instead of adhering to strict set goals.

Link for Trello board:

<https://trello.com/invite/b/gThDiGGC/0dc32ff18c411668925e14973768eb5f/csci-3308-watt2buy>

Communication Plan

Telegram will be the team's main form of communication. On this platform all documentation, notifications, information are saved and made available to all members. Additionally the platform is used as a group chat for quick communication. Longer discussions are held virtually through zoom, these meetings may be recorded and put in Telegram for later reference. These usually occur during designated meeting times but may pop up sporadically throughout the week if needed.

Meeting Plan

The team meets twice a week in addition to designated lab times. There is a short meeting on Fridays at 10:10am with the Project Manager/Teaching Assistant. These meetings are used to briefly review progress and plan future tasks. Additionally the team meets on Sundays from 11:00am to 1:00pm. These meetings are more in depth that focus on addressing any challenges, having any discussions, or completing any documentation that needs to be done. All team meetings are done virtually through Zoom.

Proposed Architecture Plan

For this web-based project, we manage to use HTML - CSS - Vanilla Javascript for Front End. We may consider using React JS to make the Front End look more elegant. HTML is used for placing the content of the website, while CSS is used for representing the content (colors, fonts, layout, mobile display, ect.). Additionally, Javascript is used to interact with the website (React JS for lazy loading, boost the speed of the website and faster rendering).

For the Back End, Node JS will mainly be used. It has a Javascript framework as the programming language. Alternative languages are Python with Django or Flask frameworks.

For the database, the main database application is implemented with RDBMS (i.e Postgres).

After completion, the project will be hosted on Github as the cloud server.

Use Case Diagram

