Project Proposal - Energy Supply

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Problem Statement

“The Mission of the office of Energy and Central Utilities is to deliver highly reliable electricity, chilled water, steam, and utilities at the lowest cost to the campus.”(TCNJ Energy and Central Utilities)

TCNJ is committed to providing a reliable but cost-efficient energy supply to the TCNJ campus. There is currently no application that lets users access and visualize the use and costs of locally produced versus grid energy with environmental considerations for the entire TCNJ campus.

Users would benefit from a single module that provides visualizations, displays, and comparisons of the costs and environmental impacts of the various energy supply methods.

Objective of Module

To create a comprehensive application that allows the institution to balance environmental concerns with their spending budget and energy costs. The goal of the module is to assist the college in creating a budget friendly plan for shifting to a greener source of energy.

End product and importance

By aggregating and displaying data, this module will allow a user to come to an informed decision regarding the most cost-effective and environmentally friendly way to supply the TCNJ campus with power.

We plan to provide visual representations in the form of graphs and charts to help the user understand trends in their data. We believe that an intuitive user interface is crucial to achieving our goal of informing our users.

Data and Research

- Data on the unit cost of power
  - when produced locally vs. taken from the grid.
- Emissions and environmental impact for each energy supply method
- Seasonal fluctuations in price
- Potential costs associated with generating power on the TCNJ campus

Research would include obtaining available data on energy supply from similar institutions that have taken a “greener energy” initiative.

Difference in our System

Energy star Portfolio manager application

- displays data on energy consumption and efficiency per building.

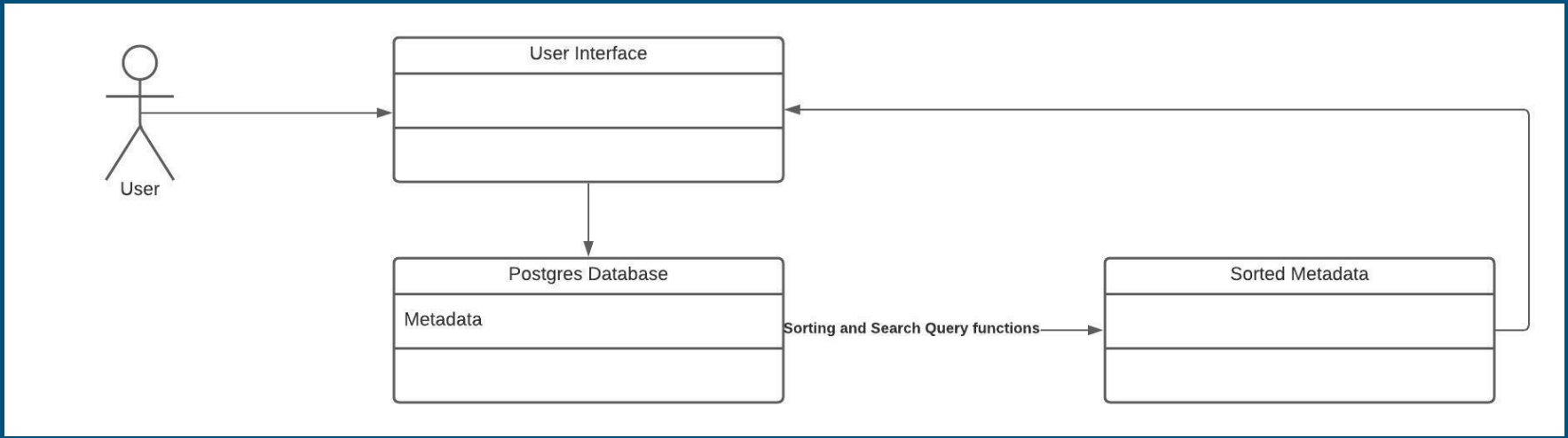
Our module will display campus-wide data on the costs of energy supply. We plan to include both locally produced power and energy from the grid, as well as the environmental consequences of producing versus outsourcing energy supply.

Other Uses of Module

This module will be useful in visualizing data from the past and current day, as well as providing projections into the future.

A possible modification can be to create multiple projection plans and compare them using live data. This means that a user could view historical trends in power supply in former years. It can also be used to build various plans for years in the future.

Diagrammatic representation of the system boundary



Energy Supply – Maintaining a Low Cost and Improving Environmental Impacts

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Need

- TCNJ, as well as other customers in the market, are looking for a cost effective, yet environmentally conscious way to balance energy supply cost.

Approach

- Create a web based module which allows for easy visualization of the costs of various supplies of power for TCNJ's campus.

Benefit

- Balance in energy cost and environmental sustainability
- Benefits for future use of buildings and energy sources

Competition

- No direct competition; energy star provides a somewhat similar service on a per building basis.