

Group 1-5 Pitch Fleet Management

By

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Problem Statement

- In the push for improving the current state of the environment, many businesses have made it a goal to reduce their impact on the environment as a whole.
- In the case of TCNJ, the goal is to become carbon neutral by 2040, and one of the steps in this process is to reduce the carbon impact of the vehicle fleet.
- However, there needs to be a plan of action when considering the costs of performing this transition and what the best course of action could be.



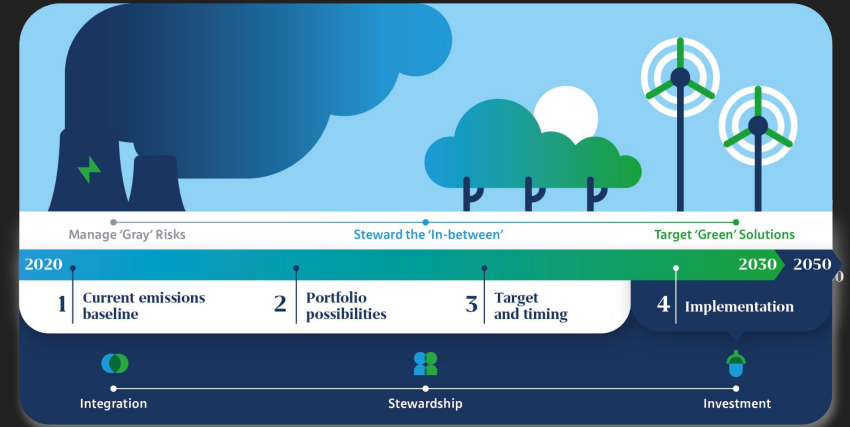
Objective

- What is the most cost effective solution in which the College can reach its goal of net 0 emissions by 2040?
- This process can be done by analyzing the costs of owning different types of vehicles and the amount of emissions they create at different points in time.
- Should the College move to transition its fleet to zero emission alternates immediately or later in our time frame?



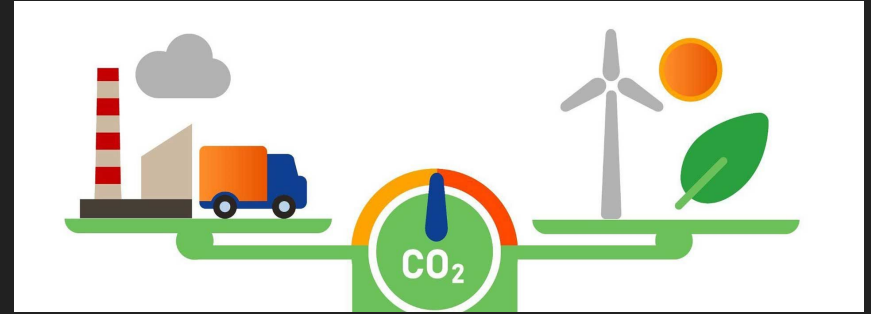
Desired End Product

- We wish to create a model of the current TCNJ fleet where vehicles and vehicle factors can be changed and costs/carbon effects can be calculated and displayed.
- Users can therefore test different replacement/transition strategies to find the best possible strategy for the transition both financially and environmentally.



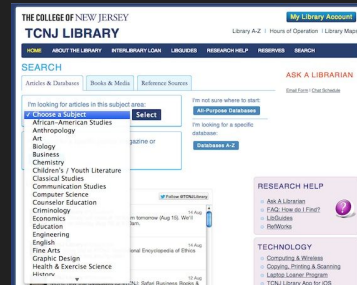
Importance and Need

- We cannot jump to a solution for the carbon neutral problem without a system for testing the possibilities towards reaching this goal.
- Our produced system will allow ease of method testing with quick results and predictions for the outcomes of switching vehicles in the vehicle fleet towards a 0 emissions solution.



Plan For Research

- We will first start with the data from the excel files in Canvas.
- We will then search other reports/studies about carbon emissions (Maybe from the TCNJ's virtual library).
- Next, we will find newspaper/magazine/journal articles about carbon neutral efforts and difficulties (Virtual/physical library).
- Look for statements from car manufacturers about their efforts to reduce carbon emissions from their vehicles.
- We would also try to gain ideas from other existing measurement systems to improve our module.




Other Systems

- [GREET Fleet Footprint](#): measures the GHG emissions associated with medium and heavy-duty vehicles. Our system can be applied to various vehicles. Additionally, our method also takes cost into consideration.
- The [Energy Star](#) program's system is linked to your electric bills and is applied strictly to buildings while determining solutions based on more successful buildings. Our system can do both cars and buildings (with slight modification) and offers ideas based on options that TCNJ has already determined viable
- [AASHE](#)'s tool is designed for comparison between other schools and generating data for reporting purposes. Our system provides data for analytical purposes



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Reporting Tool Search

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Institution	Location	STARS Version	Rating	Valid Through
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Universidad de Monterrey	Mexico, NL	2.2	Silver	Jan. 31, 2025
Concordia University	Canada, QC	2.2	Gold	Jan. 27, 2025
Oregon State University	United States, OR	2.2	Gold	Jan. 20, 2025
California State University, Northridge	United States, CA	2.2	Gold	Jan. 18, 2025
Western University	Canada, ON	2.2	Gold	Jan. 11, 2025
Gustavus Adolphus College	United States, MN	2.2	Silver	Jan. 9, 2025
Cascadia College	United States, WA	2.2	Silver	Jan. 2, 2025

Other Applications

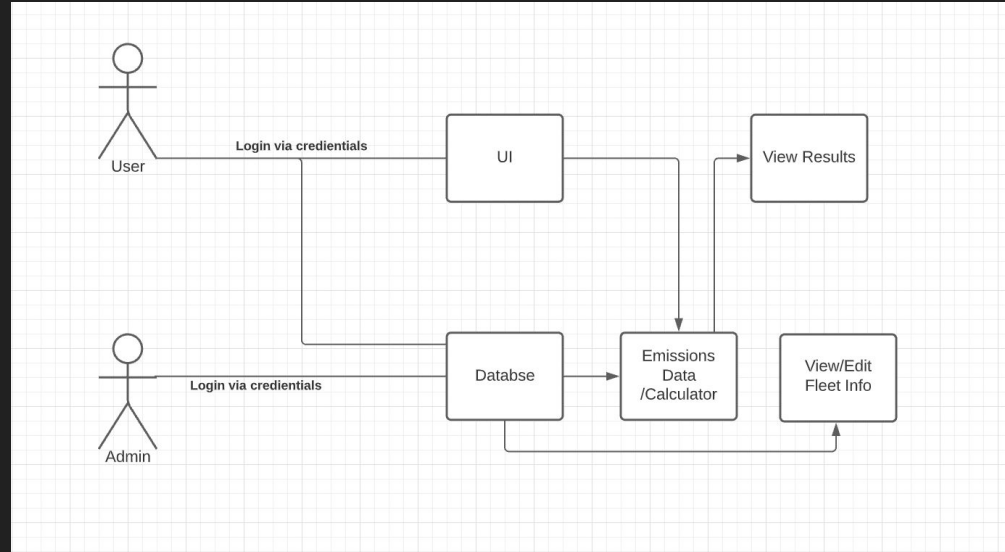
- We believe that our module can be used for campus buildings; the data would just need to be changed since it's a sustainability testing system.
- The application doesn't have to just apply to TCNJ, other schools or even car companies could benefit from a vehicle sustainability testing system.



Technology/Database Concepts + Diagram



- We will need to understand how to use and view Excel files in order to keep track of our data.
- Some technologies & database concepts we will need to learn:
 - Optimal Database Design with PostgreSQL
 - Querying our database in an efficient manner
 - Securing & Backing up our data



The End