

# Group 1-5

# Mid-Semester Project Presentation

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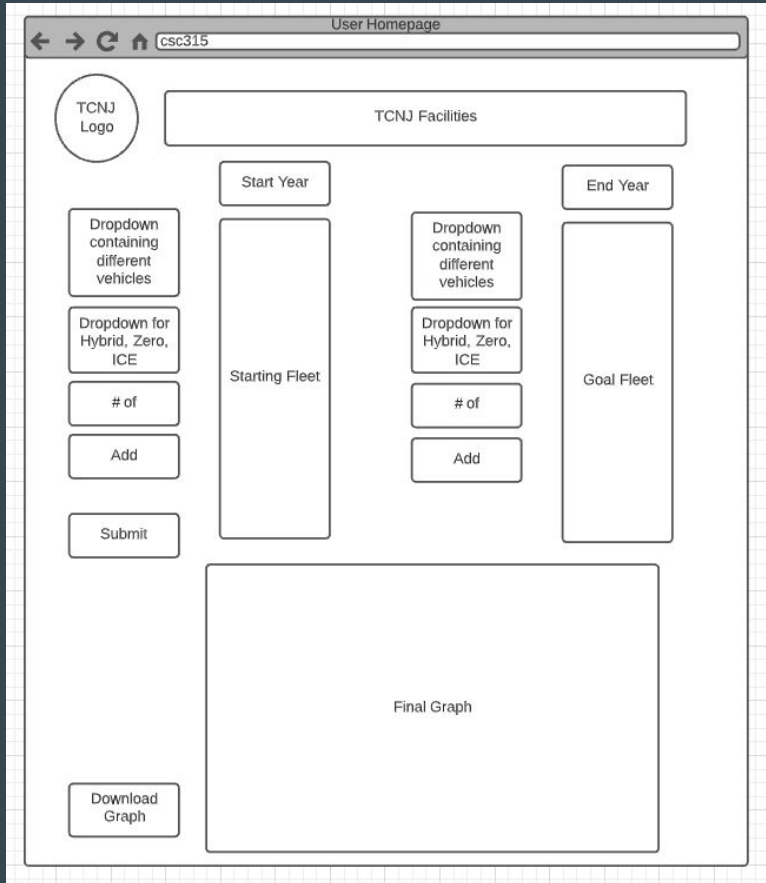
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# Our Project

- Using data provided to us through Microsoft Excel, we plan to create an application that can successfully predict how the TCNJ vehicle fleet will adapt to meet the College's emissions standards.
- Users will have an interactive interface to obtain a visual model in order to test different solutions.
- For today, we will give an idea of our plans for the database model, in terms of design as well as what we believe the best path will be to calculate the emissions over time when transitioning the TCNJ vehicle fleet to carbon neutral standards.



# What it will look like



The wireframe shows a web browser window titled "User Homepage" with the address bar displaying "csc315". The page layout includes a circular "TCNJ Logo" in the top left. A horizontal bar labeled "TCNJ Facilities" spans the top. Below this, the interface is divided into two main columns. The left column contains a "Start Year" input field, a "Starting Fleet" text area, and a "Submit" button. The right column contains an "End Year" input field, a "Goal Fleet" text area, and a "Submit" button. Both columns feature a "Dropdown containing different vehicles" and a "Dropdown for Hybrid, Zero, ICE". Below these dropdowns are "# of" and "Add" buttons. A large "Final Graph" area is positioned at the bottom center, with a "Download Graph" button to its left.

Supported User Queries:

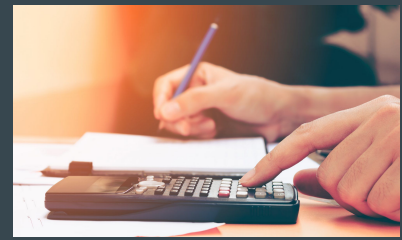
## User:

1. The user would be able to enter their current fleet by vehicle category (Passenger, Public Safety, Pick up Truck, etc.) and their vehicle type (ICE, Hybrid, Zero).
2. The user would then enter their end year and the fleet they would like to have by that year.
3. The user can then hit submit and our application would generate a report showcasing the most optimal path the user could take while balancing emissions and costs.

## Admin

1. The admin will be able to view and edit the database, as well as use the emissions calculator.

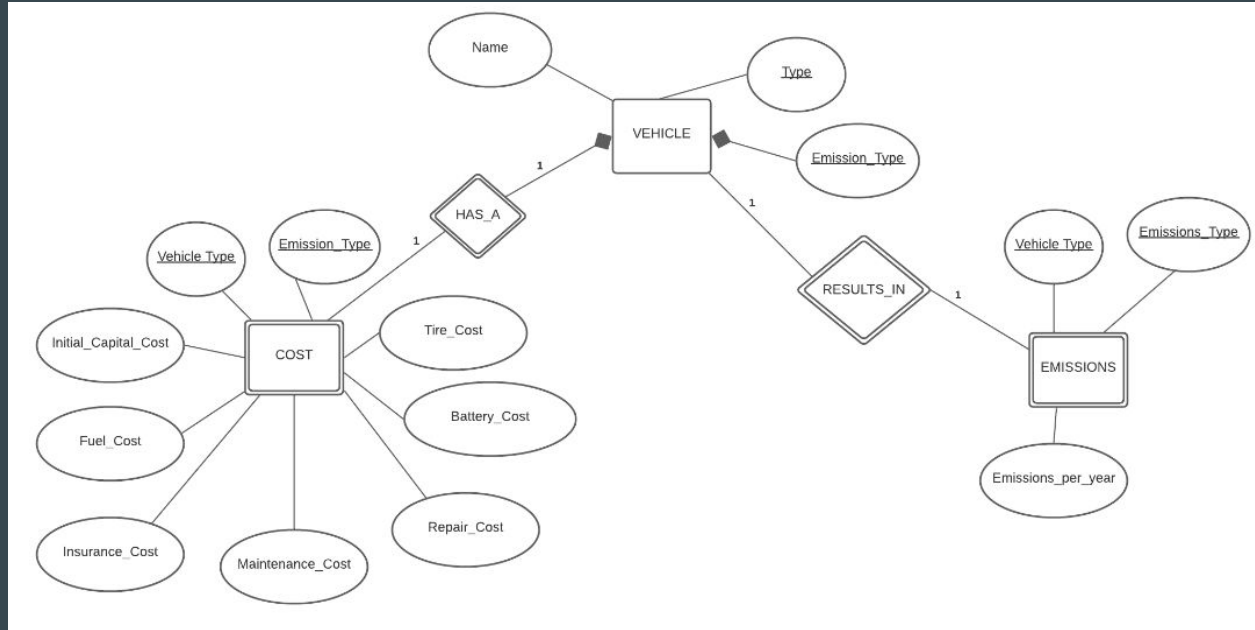
# How will we calculate the best path?



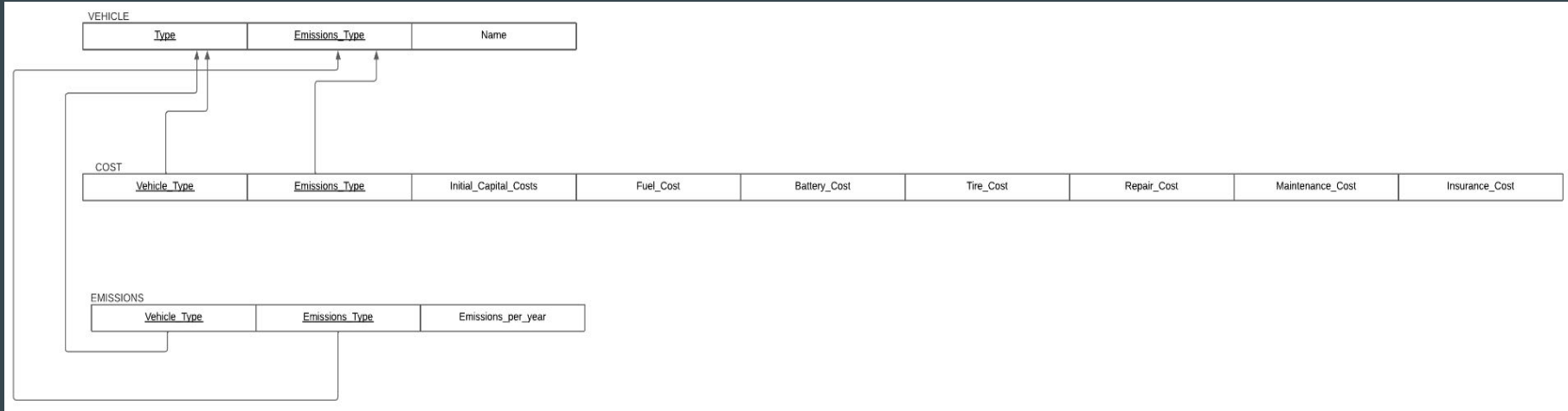
- Two charts, both with a X-axis representing “Start year” to “End year”, Y-axis = “Cost” or “Emissions”
- The system will automatically calculate the cost/emission at Start Year and End Year using the Excel data provided
- To illustrate the transition from the Start Year’s vehicle fleet to the End Year’s vehicle fleet, the system will assume a straight-line adjustment for each year (Ex: replace one start-year specific vehicle with a vehicle of similar Initial Capital Cost)
- This, in turn, will calculate how to find the best path to transition in terms of which vehicles need to transition to carbon neutral options over time

# ER Diagram

- Strong entity:
  - Vehicle
- Weak entities:
  - Cost
  - Emissions



# Relational Schema



- Vehicle: contains 2 primary keys
  - Type & Emissions Type
- Cost: contains 2 foreign keys
  - Vehicle Type & Emission Type
- Emissions: contains 2 foreign keys
  - Vehicle Type & Emission Type

# Thank You

Questions, comments?

What do you believe to be the best path in transitioning the vehicle fleet into a carbon neutral future?