Personal CO2 Emission Budget Tracker

Capstone 1 Proposal

Software Engineering Career Track, Springboard

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Goal

Climate change is impacted by many things that are out of the average individual's control. It is easy to become disillusioned or feel frustrated by data showing that much of impact is done by corporations, governments, or chains of processes too large to interfere with.

Change happens through the cohesive effort of many small shifts in habits. Similar to workout, weight watching, and financial planning apps, this CO2 Emissions Tracker is a budgeting app that allows users to track their impact. By no means is this a perfect creation or solution. The goal is to sketch out a habit-forming app that can help bring awareness and autonomy to the average individual who wants to help make a difference in their carbon footprint.

Initially, this was designed for a user to track their 'alternative' activities and view how much emission they *would have* used. This approach is more effective at building lasting behavioral change.* However, for the simplicity of building this app, and the sanity of a SWE student, the user will record their current activities to see how much emissions they *have* spent, *then* being presented with alternative activities.

*(ie, being motivated by guilt about eating donuts is less likely to create habitual change than feeling great about eating an awesome salad!)

User Demographic

Anyone who wants to raise awareness of their individual carbon footprint.

Approach to Creating Project

a. What does your database schema look like?

See attached

b. What kinds of issues might you run into with your API?

Not much; seems like a very simple and straightforward API. The factor ID's being used may change.

c. Is there any sensitive information you need to secure?

- User email address (users will not be able to add personal information such as address, birthdate. First & last names are optional)
- User's activity tracking will require authentication to access, edit, and delete

d. What functionality will your app include?

- Lots of mathematical conversion-based backend functionality
- Flask WTForms to generate forms for each activity
- User may enter details about a given activity to save to their history log
- Activity history can be viewed by user based on date and activity type
- User can view daily, monthly, yearly, and total CO2 emissions generating
- Front end displays alternative activity suggestions for user to try in order to manage CO2 budget

e. What will the user flow look like?
See attached

f. What features make your site more than CRUD? Do you have any stretch goals?
See below

Stretch Goals

1) Allow user to select user type:

- Consumer (Current)
  - Allow user to select diesel, diesel hybrid, or battery EV from list of vehicles

- Data Center Prof. Track CO2e by:
  - CPU
  - Networking
  - Memory
  - Storage

- Construction/Real Estate Prof. Track CO2e by:
  - Supply chain emissions from construction materials shipped
    - Based on type of building being constructed
    - Based on residential property rental
  - Construction waste disposal
    - Based on type of material (wood, soils, metal, mineral oil, insulation, asphalt)
  - Asphalt pavement & surfacing

- Service Industry (for eco-tourist marketing). Track CO2e by:
  - Supply chain emissions from commodities: Tobacco & Alcohol, toiletries
  - Emission from running place of accommodation: electricity, wastewater mgmt., gas-fueled heat & steam

2) Game-ify tracking by allowing users to share their stats. Incorporate scoreboard, some humor, selfies, comments area, etc

3) Create a comparison of number of trees (or kelp forests – these are actually most efficient CO2 offset) – required to filter user's emission activity. Something easily comparable for user to understand quantity of CO2 they have used.

4) The API has data from several different countries. Add in endpoints based on user's location. Allow users to compare avg per-user CO2e total by country

5) Incorporate a map to allow a user to track their routes automatically, therefore eliminating the need to manually enter mileage

6) Incorporate connection to an organization that works towards offsetting CO2. Allow user to donate. Place this next to idea #3.