Project Purpose

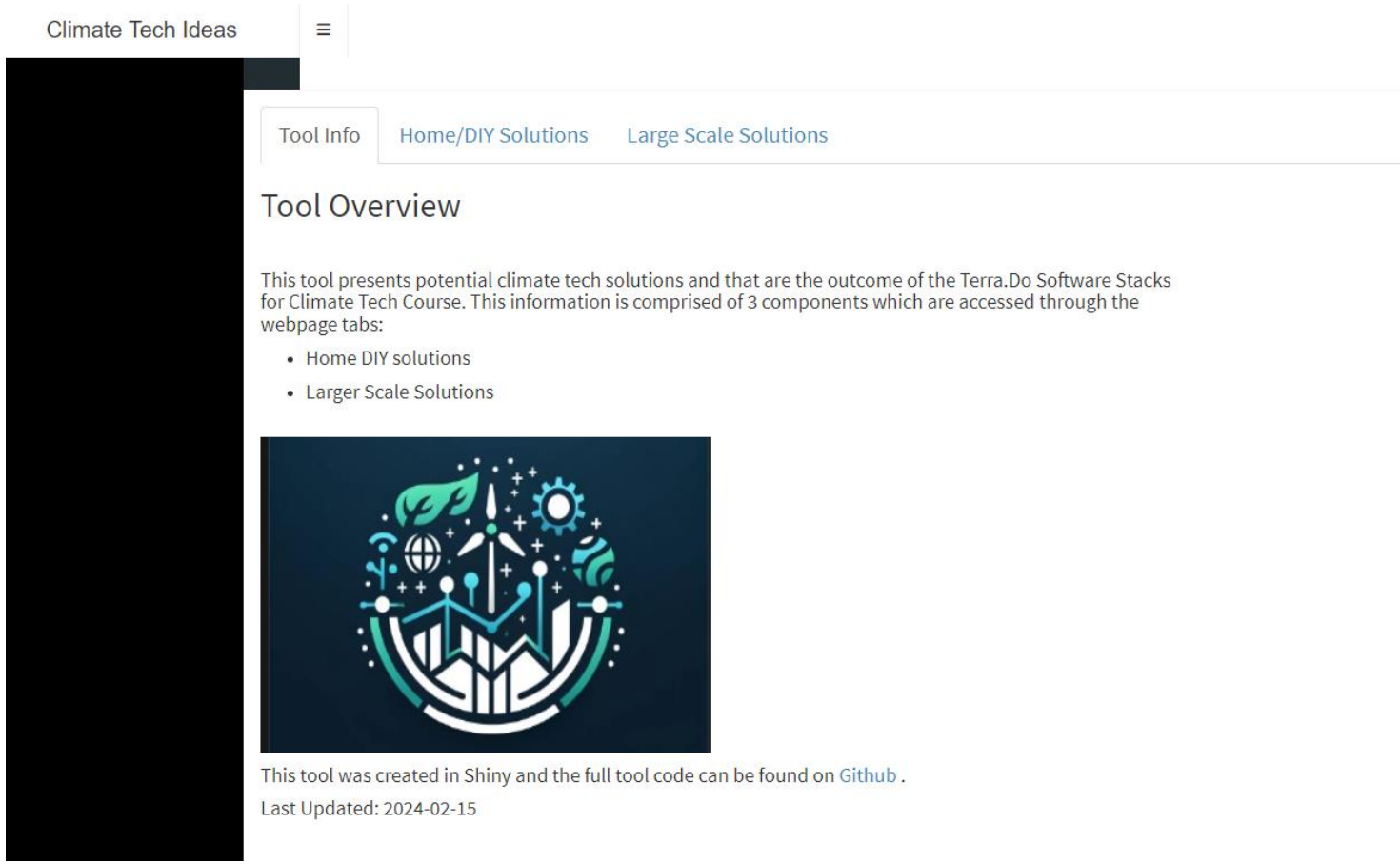
Create something useful or interesting based upon skills I learned in this class that could be applied to my current job or that could spawn an unrelated side project.

My interests/skills

- Data analysis/modeling for transportation planning / urban planning
- Home renovation DIYer
- Strong R programming skills, average python programmer
- Creating web applications in Shiny

Climate Tech Project

- A web application that explores and visualizes sensor and home energy model data

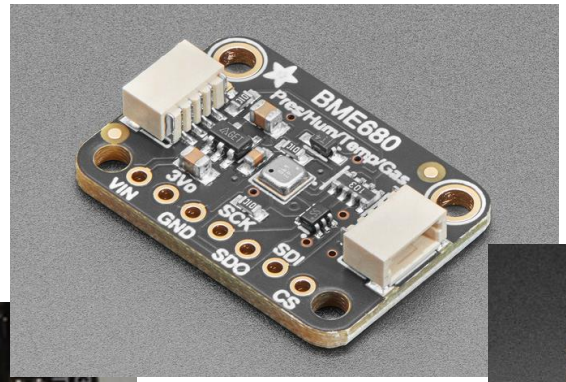


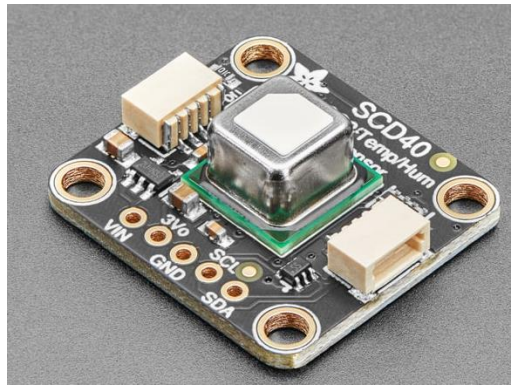
Tech Stack

R Programming

python™

Open-Meteo





Data Sources

- **Medium and Heavy Duty Infrastructure - https://gis.data.ca.gov/datasets/CAEnergy::medium-and-heavy-duty-infrastructure/about**
- **Electric Fuel Corridor Groups (Updated December 2023) - https://gis.data.ca.gov/datasets/CAEnergy::electric-fuel-corridor-groups-updated-december-2023/about**
- **California Electric Balancing Authority Areas - https://gis.data.ca.gov/datasets/CAEnergy::california-electric-balancing-authority-areas/about**
- **DC fast charging stations that do not meet NEVI requirements but within 1-mile of a corridor - https://gis.data.ca.gov/datasets/CAEnergy::dc-fast-charging-stations-that-do-not-meet-nevi-requirements-but-within-1-mile-of-a-corridor-updated-october-2023/about**
- **Stations that meet NEVI requirements - https://gis.data.ca.gov/datasets/CAEnergy::stations-that-meet-nevi-requirements-october-2023/about**
- **Traffic Volumes AADT - https://gis.data.ca.gov/datasets/d8833219913c44358f2a9a71bda57f76_0/about**
- **Commute Patterns – Census LEHD LODES**

Electric Vehicle Planning App

National Electric Vehicle Infrastructure Formula Program

	FAST Act (extension)	Bipartisan Infrastructure Law (BIL)				
Fiscal year (FY)	2021	2022	2023	2024	2025	2026
ınd)	---	$1.000 B	$1.000 B	$1.000 B	$1.000 B	$1.000 B

Takeways

- Primary data collection is fun.

Future Work

- Connect app directly to live sensor database
- Additional user defined inputs connecting to backend data
  - Locations (lat/lng), all home energy model parameters
- Migrate the entire workflow to either all python or all R
- Integrate the sensor data directly into the home energy model

Interested in collaborating on R/Python Shiny apps for:

- Home energy market
- Transportation electrification market
- Sauna market (custom sensors and sauna accessories)
- Others???

Contact Me

- reidhaefer.rbind.io
- https://www.linkedin.com/in/reidhaefer/

•bring in transportation datasets
•bring in local data from Tahoe Open data or other easily accessible datasests in spatial form - people love maps.

•Areas for improvement
- Add user defined dynamic location input. Currently the lat lon definitions are hard coded in the python pre-processing script and the app was developed in R so the lat long values aren't available to activated dynamically.
- Connect the IOT data to the home energy model - make the all of the inputs to the home energy model dynamic.
- Bring in the energy generation data to recommend cheapest times to charge an EV.

•Phils project
- charger availability, utilization, and functional data (Phil) - data source? from an analytics company (anonymous)? This data could be very useful to integrate into travel demand modeling
- weather data (Phil) - data source? - visual crossing