

Project Purpose

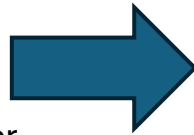
Create something useful or interesting based upon skills I learned in this class that could be applied to my current job or that could spawn an unrelated side project.

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




Climate Tech Ideas

Tool Info Home/DIY Solutions Large Scale Solutions

Tool Overview

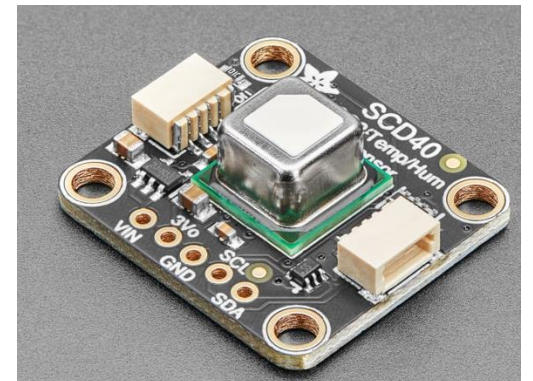
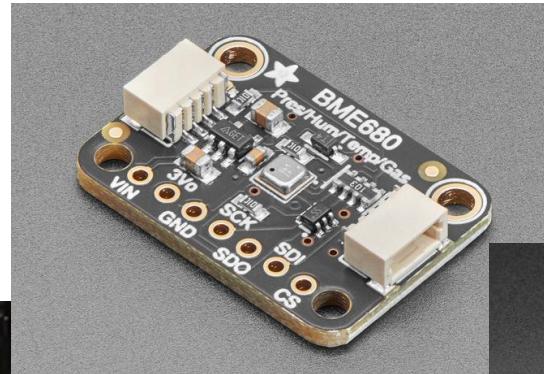
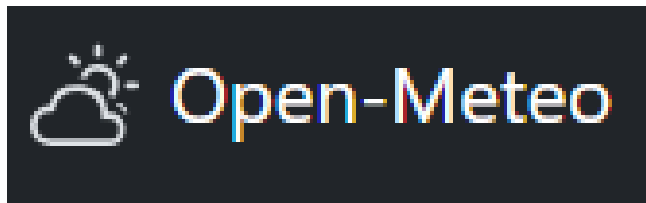
This tool presents potential climate tech solutions and that are the outcome of the Terra.Do Software Stacks for Climate Tech Course. This information is comprised of 3 components which are accessed through the webpage tabs:

- Home DIY solutions
- Larger Scale Solutions



This tool was created in Shiny and the full tool code can be found on [Github](#) .
Last Updated: 2024-02-15

Tech Stack



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
	---	\$1.000 B	\$1.000 B	\$1.000 B	\$1.000 B	\$1.000 B



HOME PROCEEDINGS RULES AND REGULATIONS PROGRAMS AND TOPICS FUNDING DATA AND REPORTS

California Energy Commission > Programs and Topics > All Programs > National Electric Vehicle Infrastructure Program - NEVI



National Electric Vehicle Infrastructure (NEVI) Formula Program

Caltrans and the CEC are partnering to implement the federal NEVI Formula Program, which allocates \$5 billion to the states to create a nationwide, interconnected network of DC fast chargers along the federally designated Alternative Fuel Corridors. California’s share will be approximately \$384 million over 5 years.

PROCEEDING INFORMATION

Formula Program
[Docket Log \(22-EVI-05\)](#) 
[Submit e-Comment \(22-EVI-05\)](#) 

NEVI Deployment Plan
[Docket Log \(22-EVI-03\)](#) 
[Submit e-Comment \(22-EVI-03\)](#) 

Takeaways

- 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

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- bring in transportation datasets
- bring in local data from Tahoe Open data or other easily accessible datasets 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 be activated dynamically.
 - Connect the IOT data to the home energy model - make 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