#### Research Plan: Resilient Time Constant

Directly relevant prior work:

1. ([Wang et al. 2021](https://www.sciencedirect.com/science/article/pii/S2666792421000536#sec0007)): estimates parameters R and C for the thermal time constant equation, from the Ecobee Donate Your Data dataset. Order of 50,000 households analyzed. Estimated the distribution of thermal time constant by state/province and found it to be normally distributed where there were sufficiently large sample sizes.
2. ([John et al. 2018](https://surface.syr.edu/cgi/viewcontent.cgi?article=1283&context=ibpc)): Also estimates parameters R and C for the thermal time constant equation, from the Ecobee Donate Your Data dataset. Order of 10,000 households analyzed. Found significant difference in summer and winter months, speculating that the lower summer value is due to occupant behavior like opening the windows.

Available data and models:

1. [PNNL prototype residential building energy models](https://www.energycodes.gov/prototype-building-models#Residential):
   1. Single-family detached house
   2. Multi-family low-rise apartment
2. Ecobee Donate your Data (DYD): discussing with Tom Parkinson and Federico Dallo
3. Energy codes adopted by each state: https://cove.tools/blog/energy-us-energy-codes-adopted-2023