Estimates of Central AC in Residential Buildings

Issue Statement

Climate change will result in increased temperatures and incidents of wildfires. Central air conditioning units address residential cooling needs and can serve as filtration systems when wildfires result in unhealthy levels of particulate matter. Not all the state's residential buildings have central air conditioning, especially low-income residential units. Low income households, in rural and disadvantaged communities, have the least resources to respond to climate change impacts and will feel those impacts disproportionately.

Proposal

The aim of this project is to predict how many residential units within the state are without central air conditioning units, looking particularly at the difference between residential units located in disadvantage communities and non-disadvantaged communities. The project would combine data from the California Energy Commission Residential Energy Saturation Survey, community and demographic data that is linked to the survey, and data on state-designated disadvantaged communities to predict air conditioning unit adoption throughout the state.

Relevant datasets may include:

- Statewide designations of disadvantaged communities and layers of key characteristics on populations
  https://oehha.ca.gov/calenviroscreen/maps-data

- U.S. Energy Information Administration – residential energy use information from surveys
  https://www.eia.gov/consumption/residential/data/2015/
  https://www.eia.gov/todayinenergy/detail.php?id=36692
  https://www.eia.gov/consumption/residential/reports/2009/state_briefs/pdf/ca.pdf
  https://www.eia.gov/state/?sid=CA

- California Energy Commission – data (see the class Github folder for most recent survey response data)
  https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data
  https://ww2.energy.ca.gov/2018publications/CEC-500-2018-018/CEC-500-2018-018.pdf
- https://ww2.energy.ca.gov/2010publications/CEC-200-2010-004/CEC-200-2010-004-V2.PDF

Other

- https://link.springer.com/article/10.1007/s10584-011-0299-y#Sec3