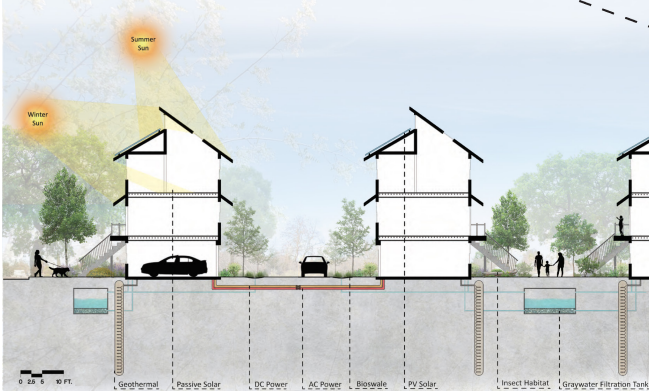


THE CHILES ECOGRID A Microgrid Neighborhood Test Project

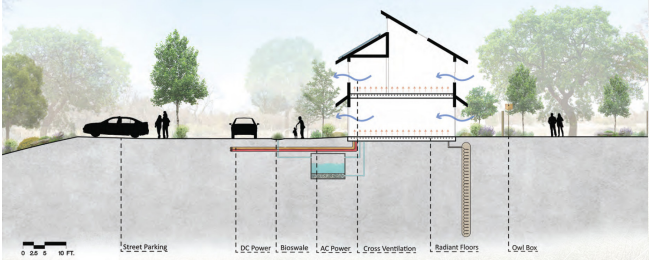
John Mooyman | Spring 2021
Senior Project | UC Davis



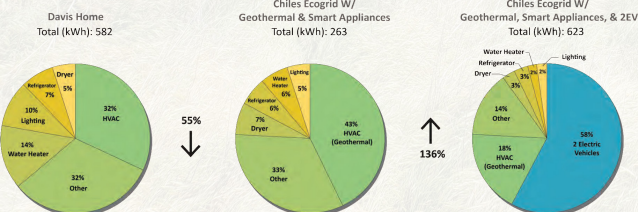
Section A



Section B



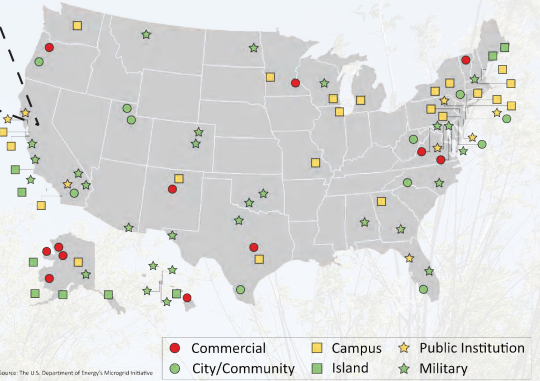
Average Monthly Energy Use



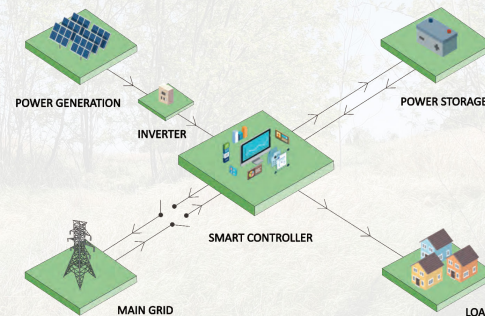
Operational Microgrids

Site Location
2411 East 8th Street
Davis, California

The site is a 12 acre lot of undeveloped land in East Davis. It is zoned for medium density residential and borders the Davis cemetery. It is located about 1.4 miles away from downtown and is situated near 4 parks



Microgrid Components



The microgrid starts with power generation which can come from diesel generators, solar panels, wind turbines, hydro, or whatever method you can use to create electricity. Once the power is generated, an inverter converts it into usable electricity. The smart controller is the brains of the microgrid and sends power where it will best be used. Most of the time, the smart controller will send it to the load or batteries for future use. Any excess power will be sold to the main grid. If not enough power is generated on site, the smart controller can also take power from the main grid in order to meet load demands

Energy Consumption

The average home electrical consumption with 2 electrical vehicles in this neighborhood is about 623kWh per month which is actually above the current average Davis home. With this, it is then possible to calculate the amount of solar must be on site. Accounting for peak summer months by increasing the demand by 20%, the total monthly neighborhood consumption would be 84,092kWh. By installing solar on the roof with a three foot setback around the sides, we can utilize 27,690 sqft off panels which will generate 84,520kWh per month. There will be an average of 428kWh in excess each month that can be stored or sold to PG&E.

