eSC Energy:

Predictions & Recommendations

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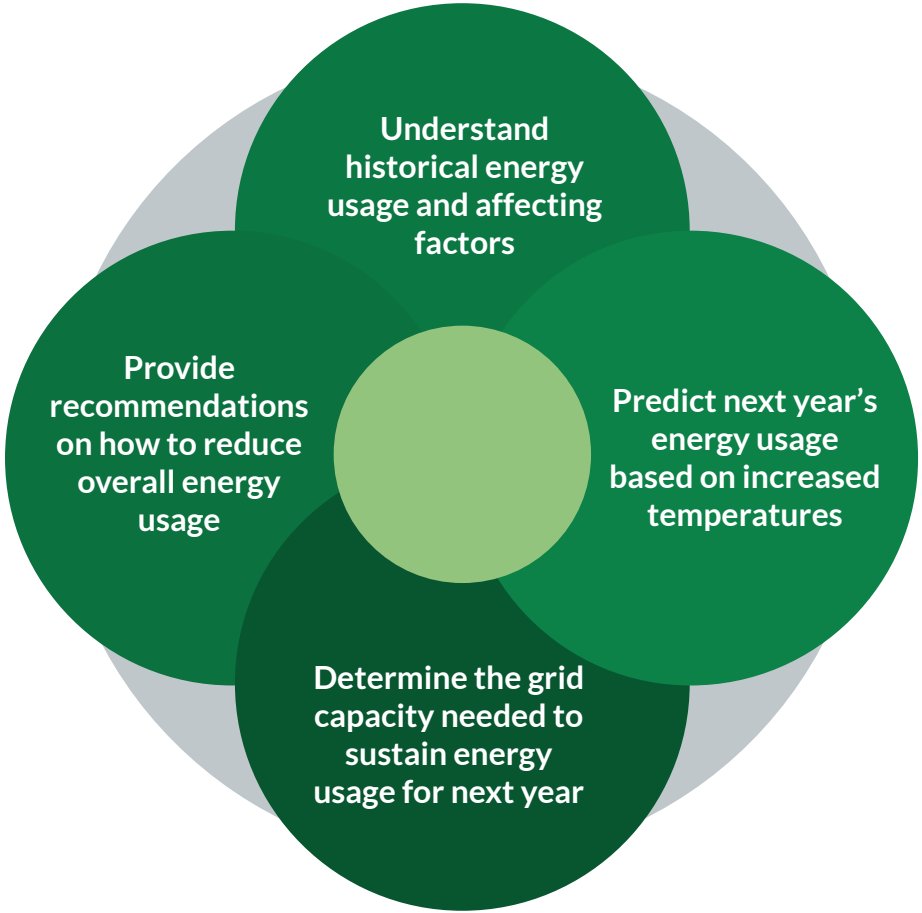
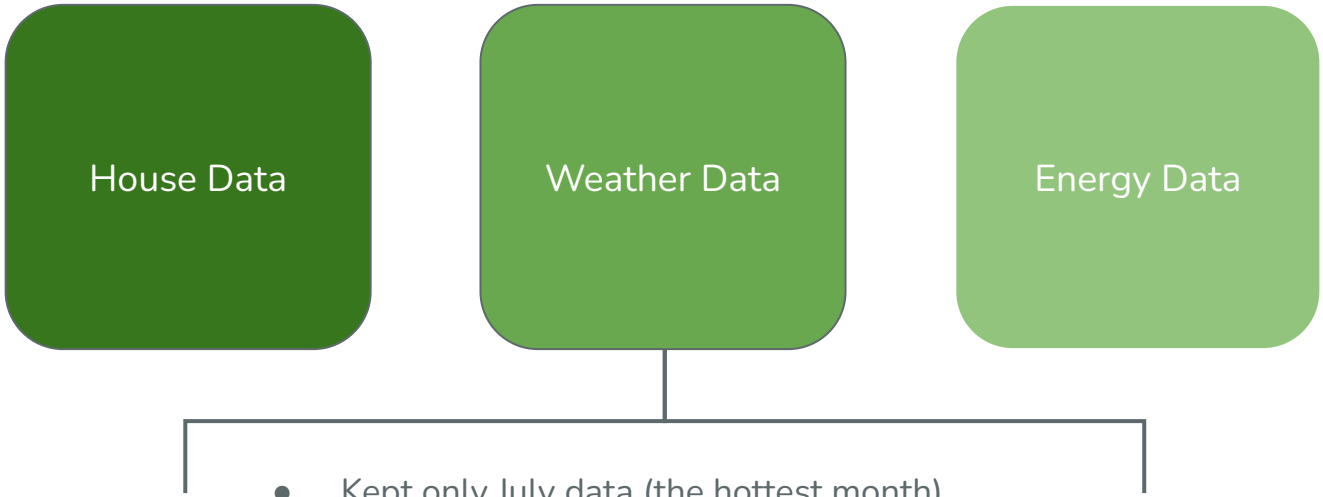
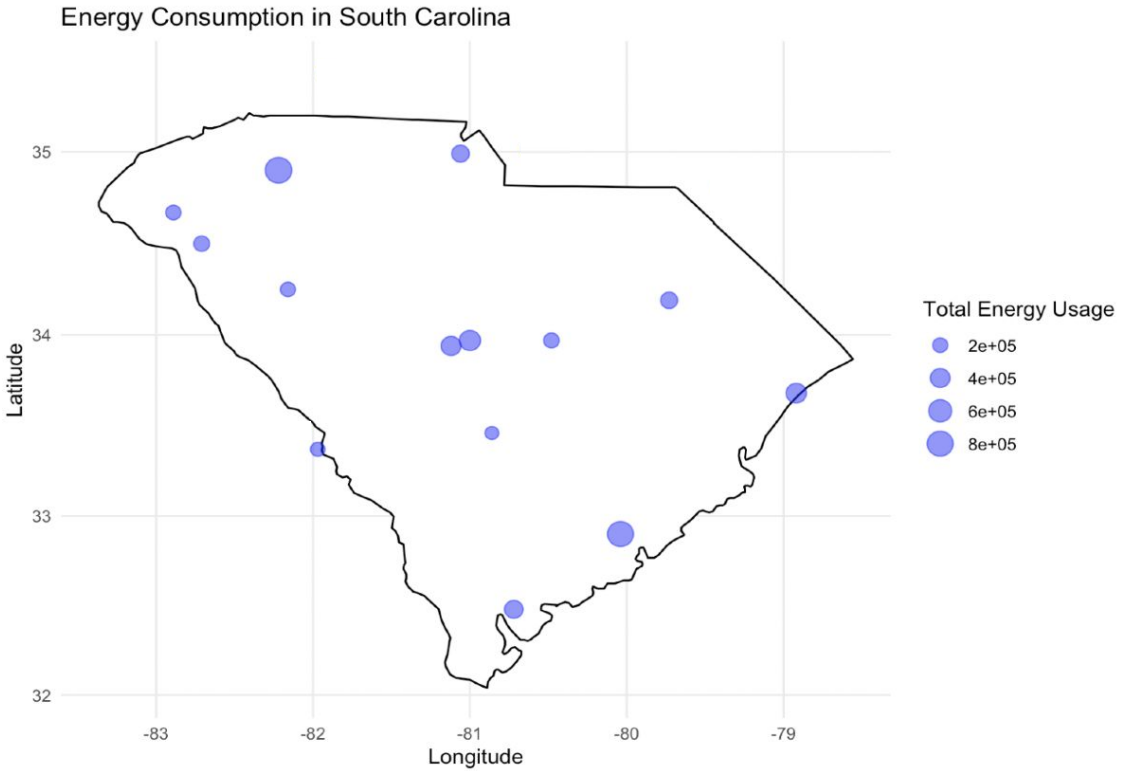
Project Goal



Understanding the Data



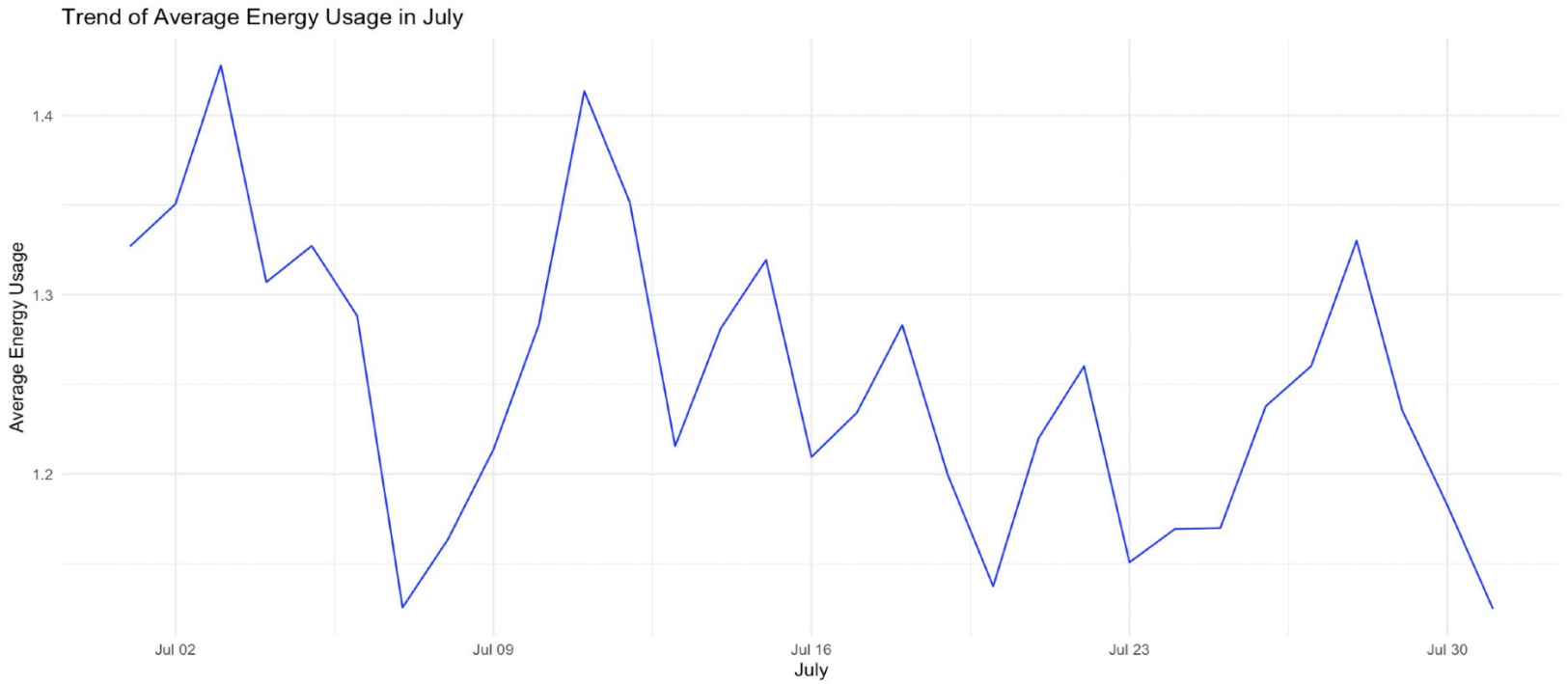
Map of City Energy Usage



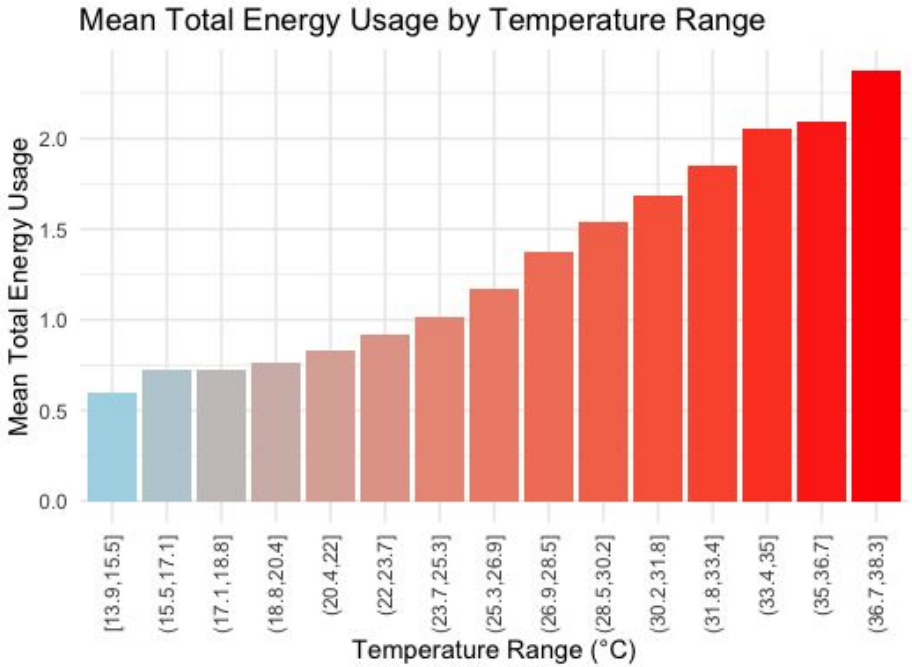
The data was collected from major cities in South Carolina like Charleston, Myrtle Beach, Hilton Head, etc.

The cities with the highest energy usage include Goose Creek and North Charleston.

Patterns in Energy Usage - Historical

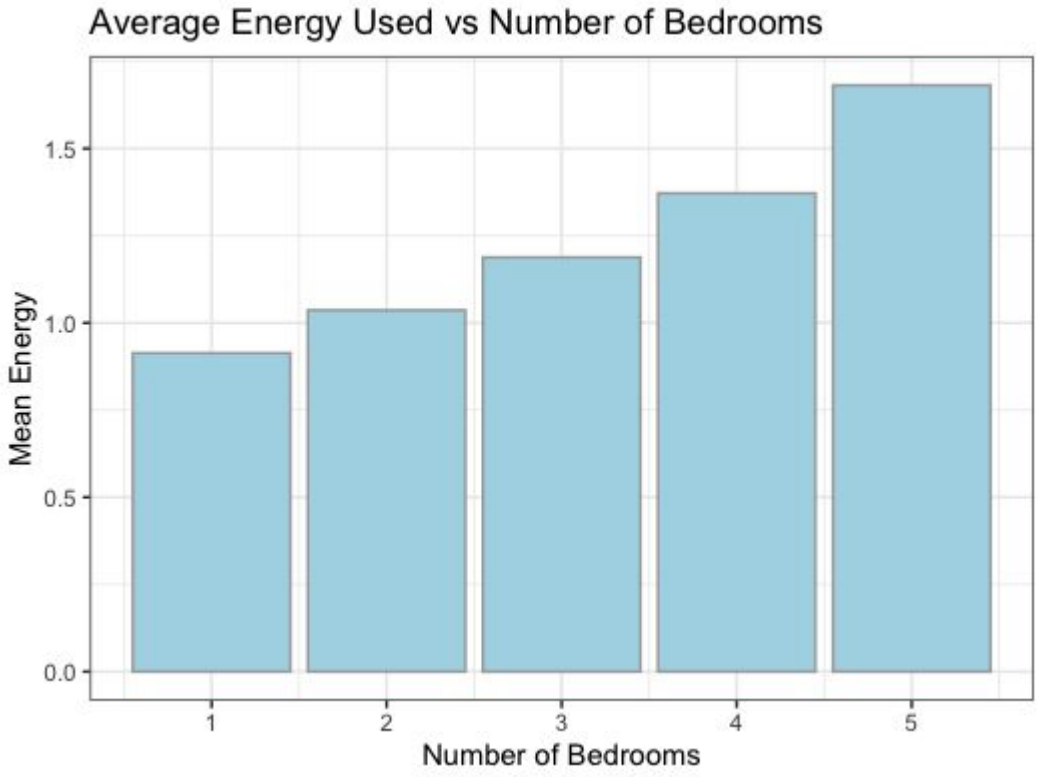


As temperature increases, so does energy usage



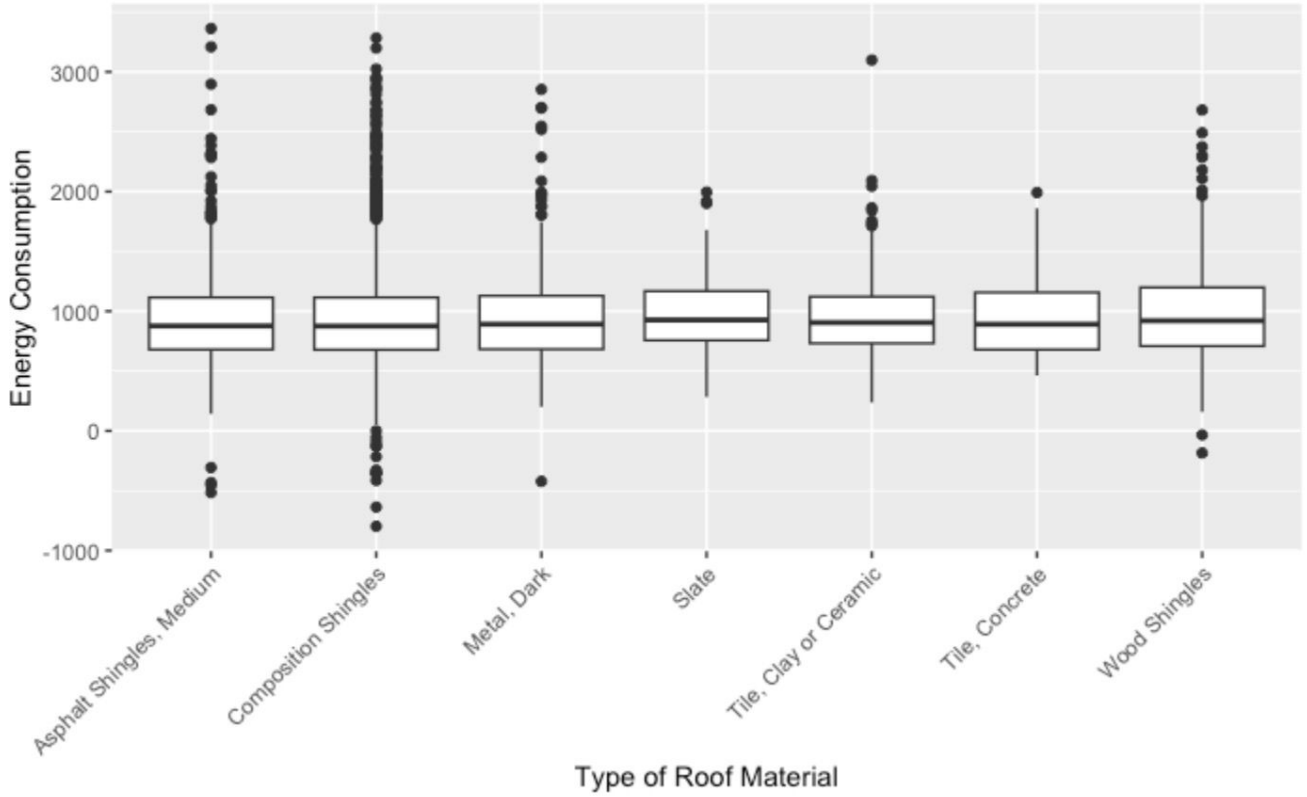
Variable Visualizations

Number of Bedrooms & Energy

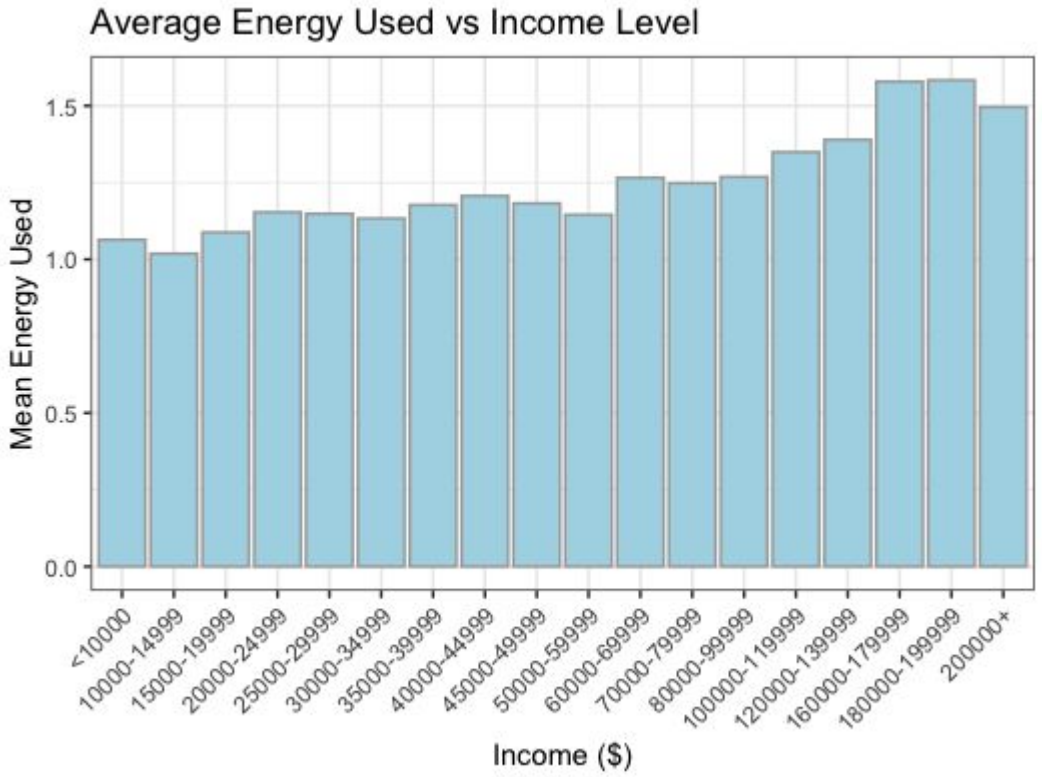


As the size of a house increases, so does the energy usage for the house

Difference in Energy Consumption based on Roof Material



Average Energy Consumption vs Range of Income



As household income range increases, the house typically uses more energy

Which variables most impact energy use?

Using ANOVA (statistical testing), we determined **40** variables relating to house data that had a significant impact on energy usage that we can use in our model

Example variables with high significance:

- County
- Pool & Hot Tub
- Solar Panels
- Light Type
- Roof Material

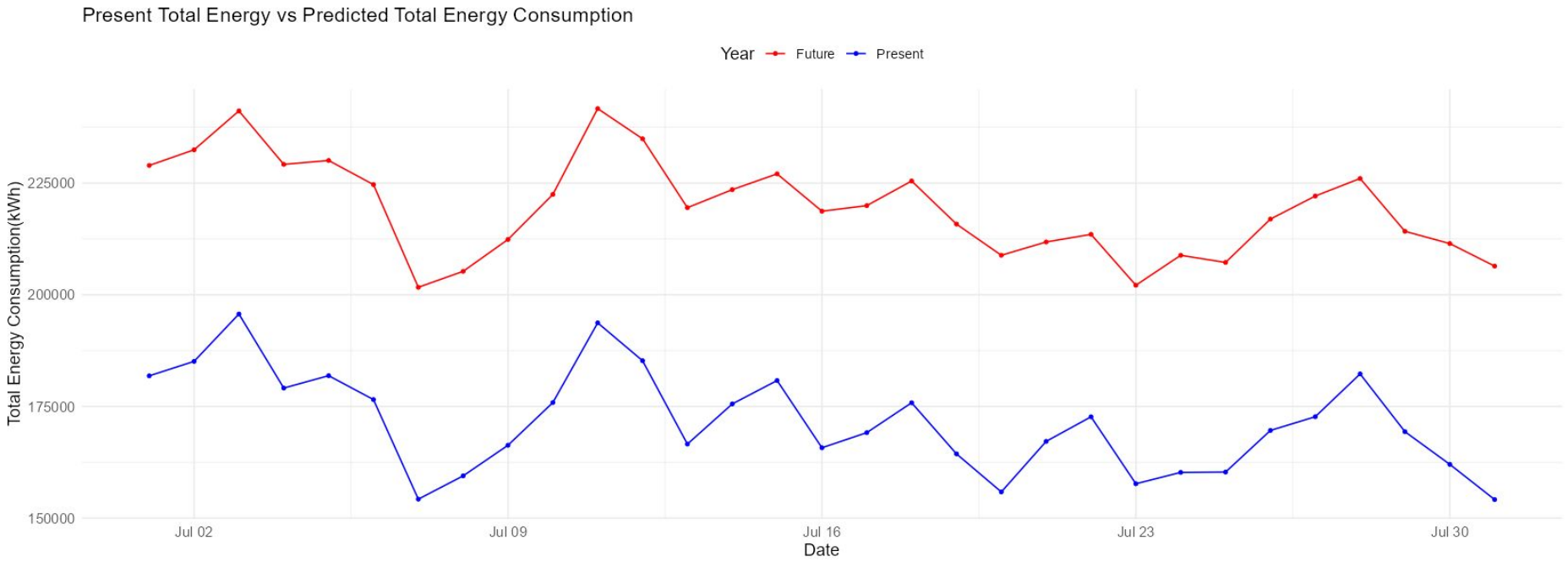
Our Model

Linear Regression

We can predict **85.3%** of the change in energy usage using daily temperature and house information data.

On average, we are only **5.16 kWh** off from the true daily energy usage.

Predicted Total Energy Usage



Predicted grid capacity needed to account for all houses in South Carolina:

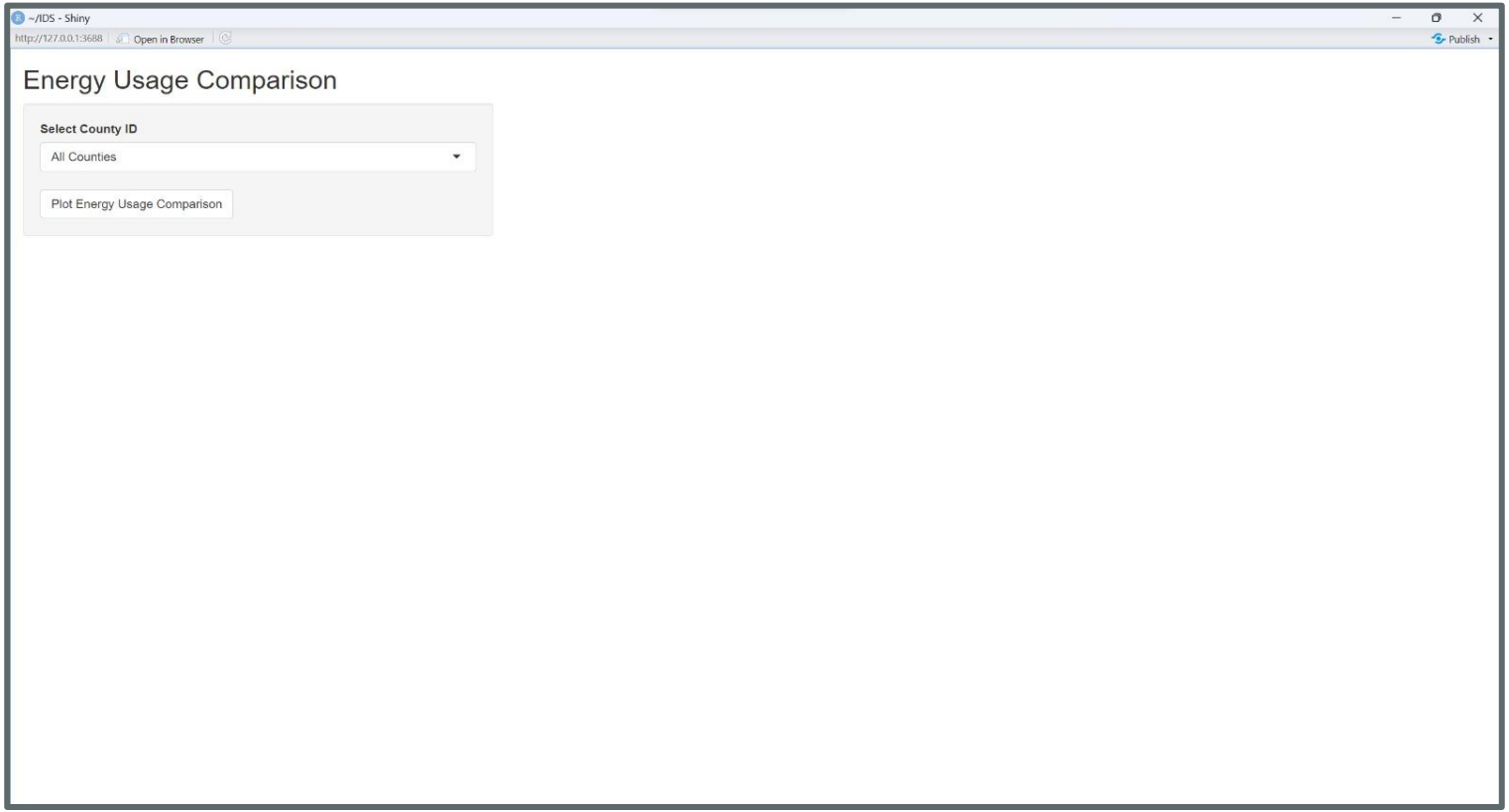
approx.

242901.3

kWh

The estimated max energy for a single house is about **99 kWh**

Shiny Application



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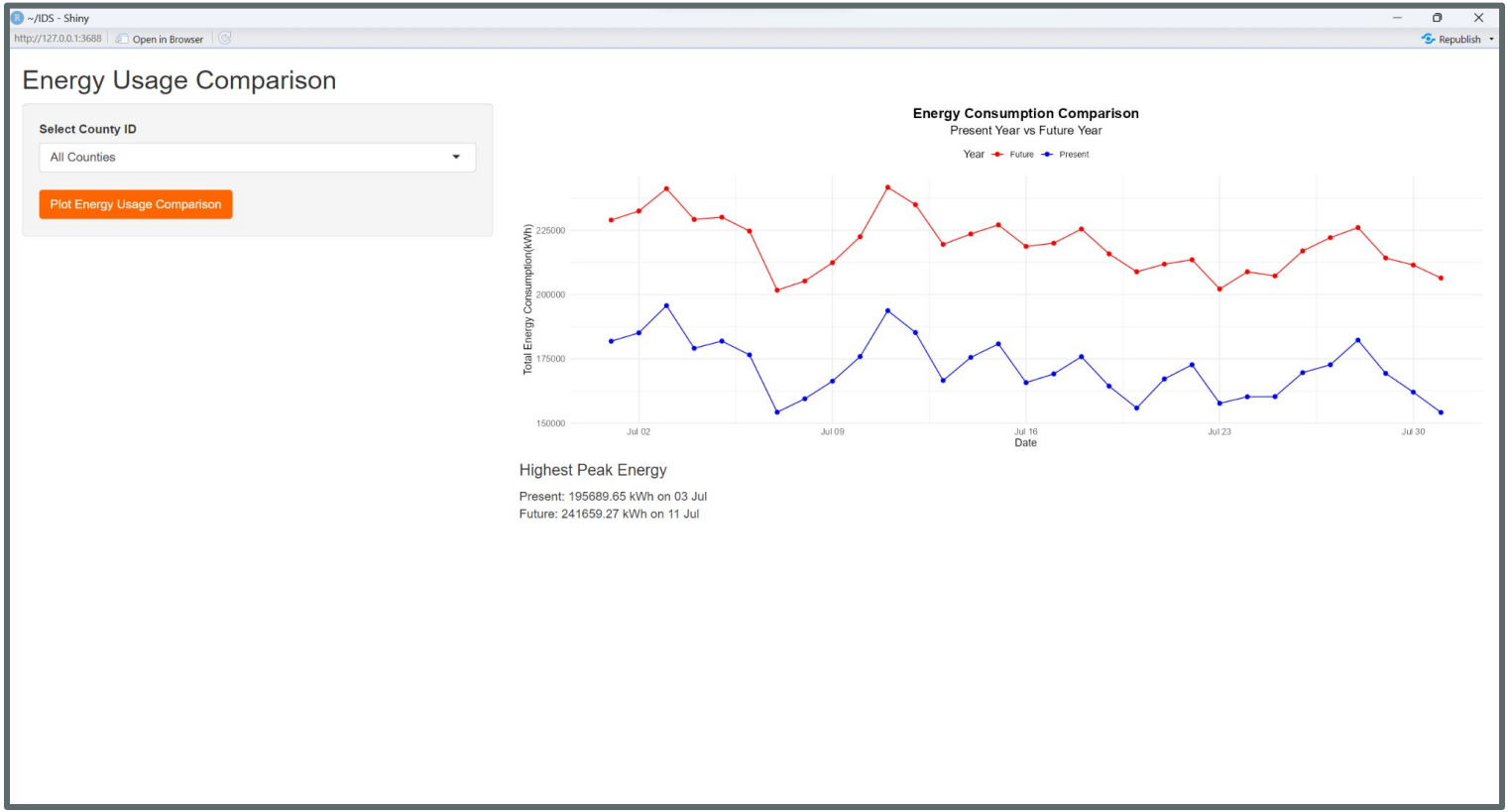

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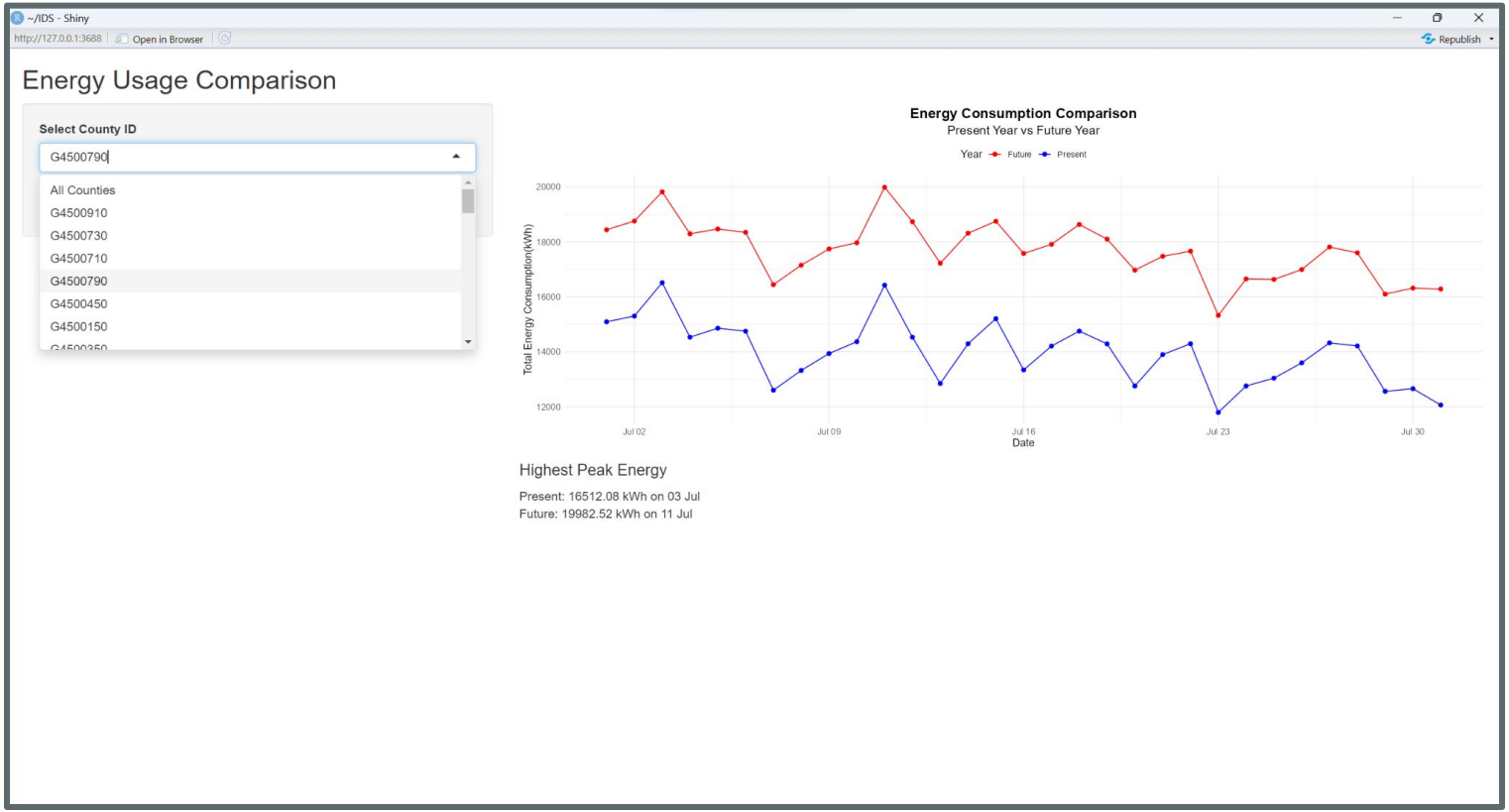
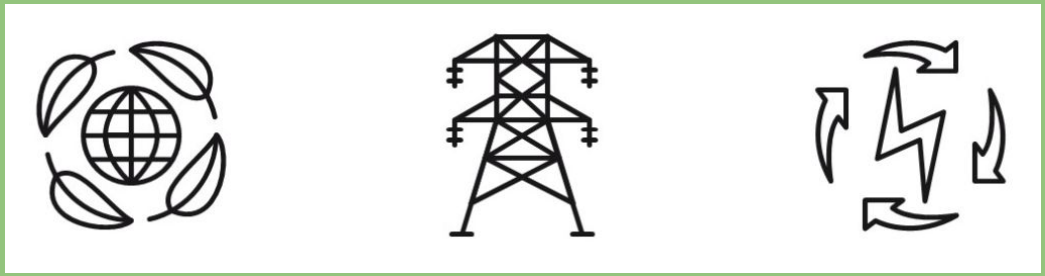
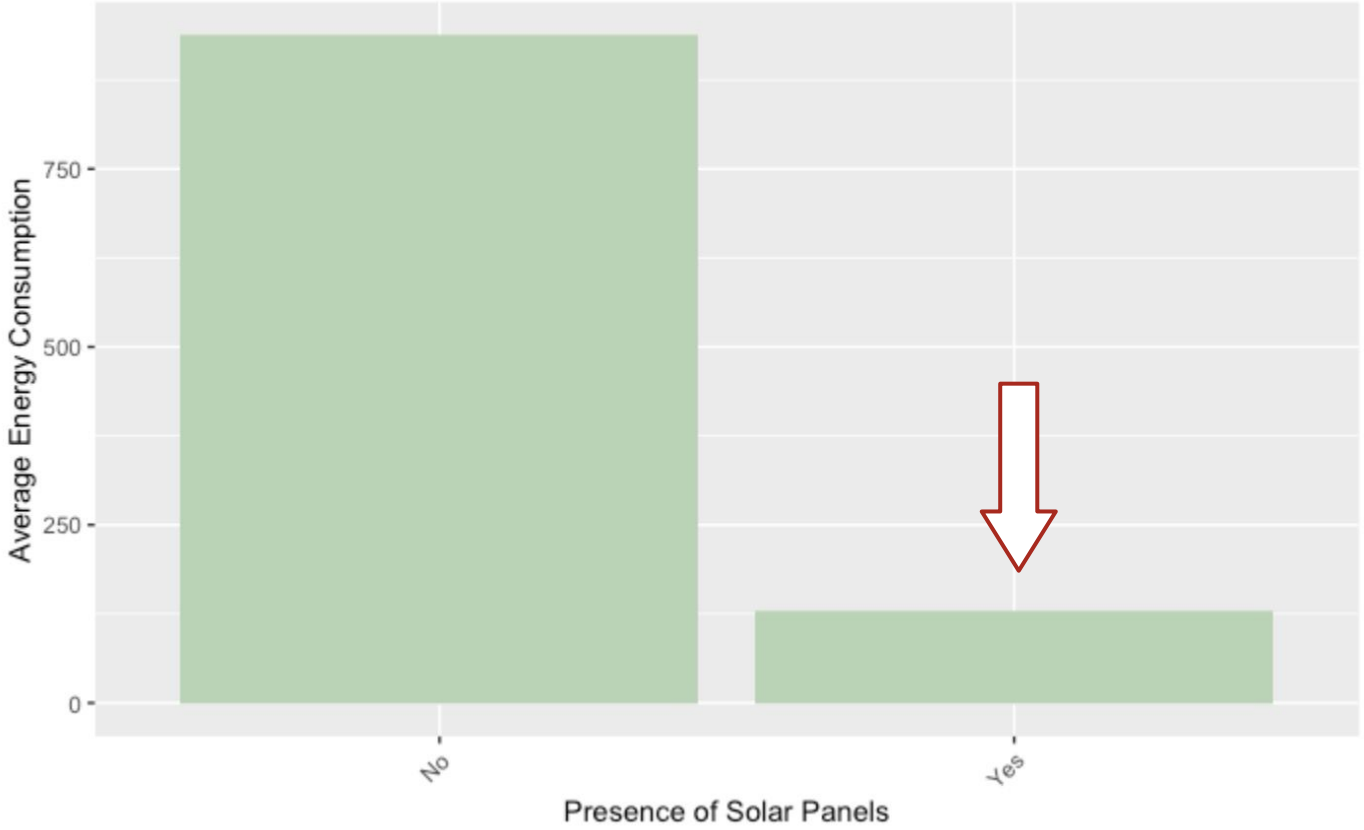


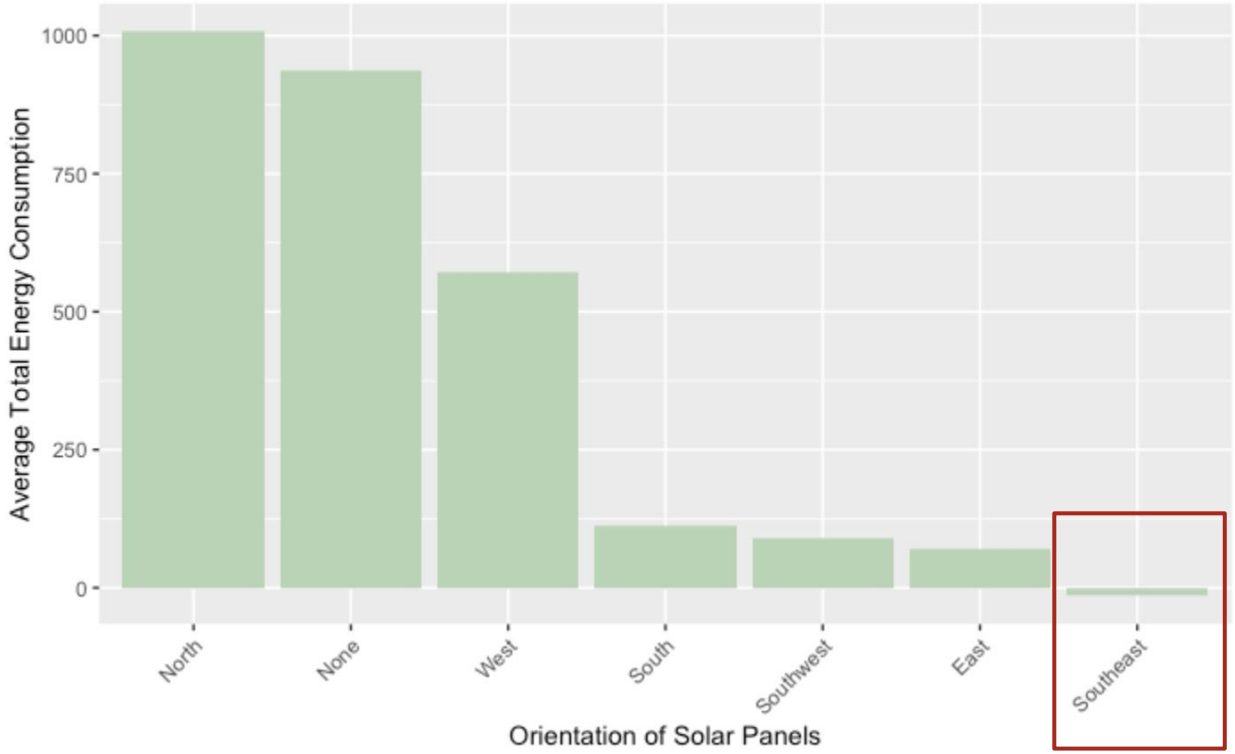
Recommendations to Reduce Energy Usage:



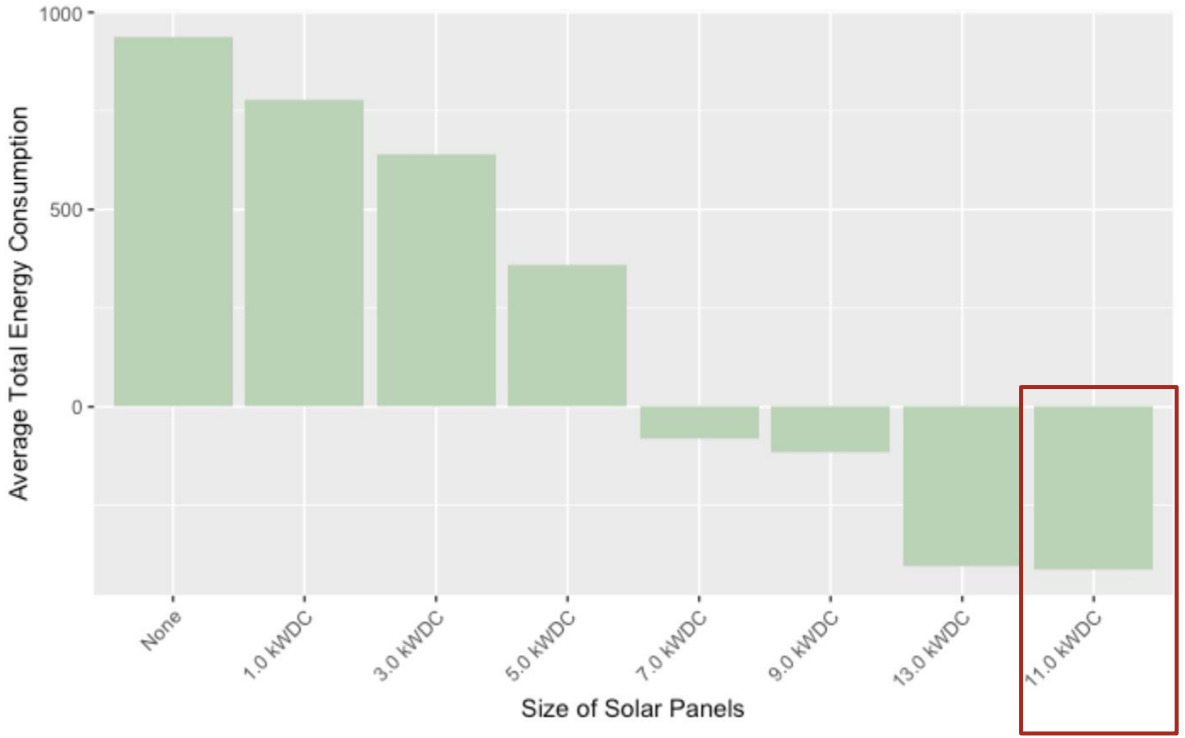
Solar panels drastically reduce energy usage:



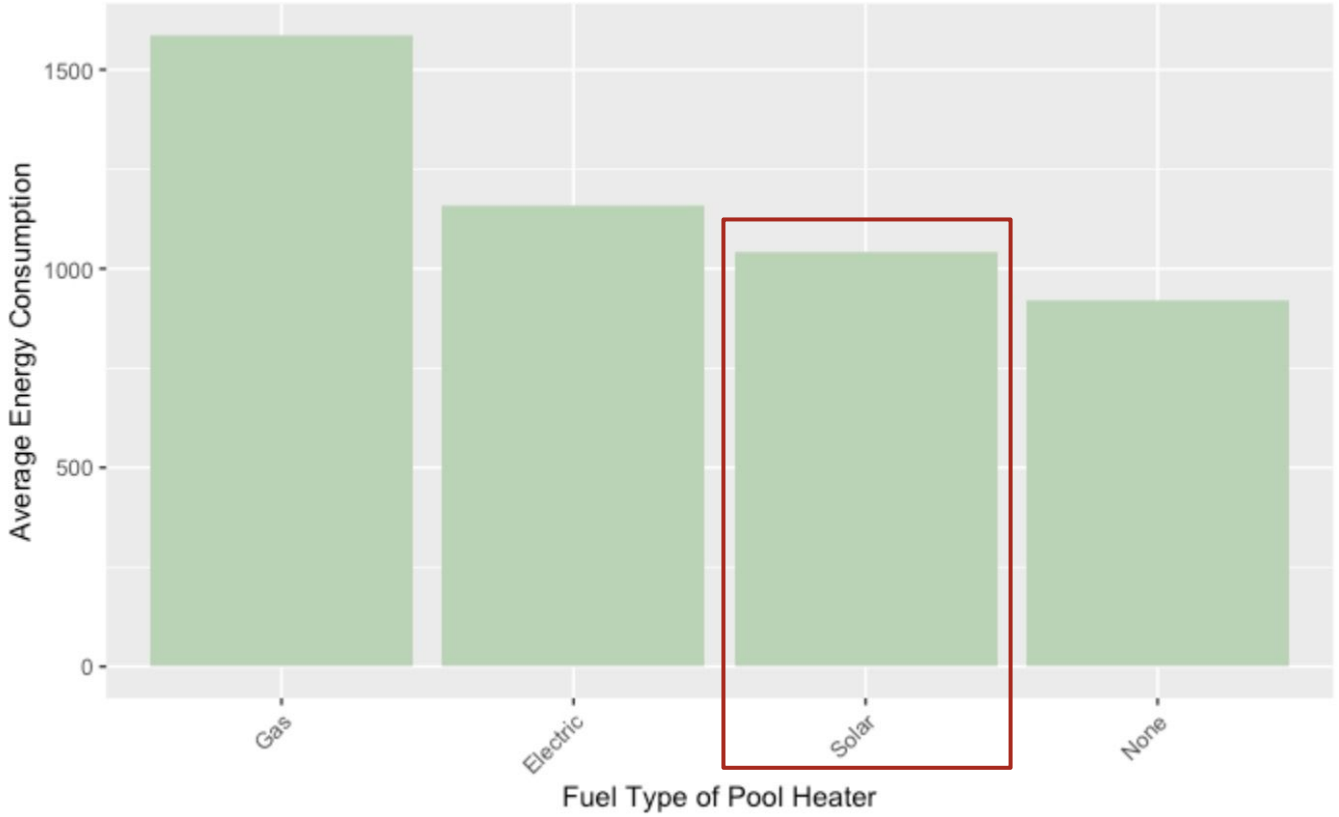
Recommended Orientation of Solar Panels - SouthEast



Recommended Size of Solar Panels - 11 kW DC



Recommended Fuel Type of Pool Heater - Solar



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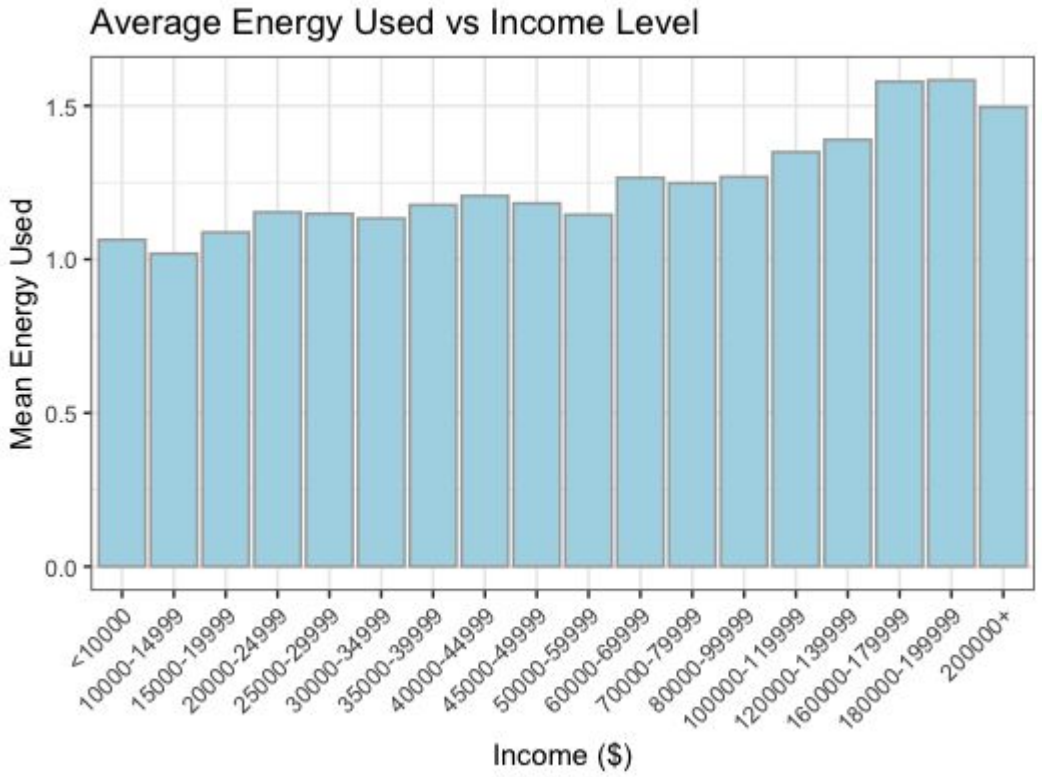

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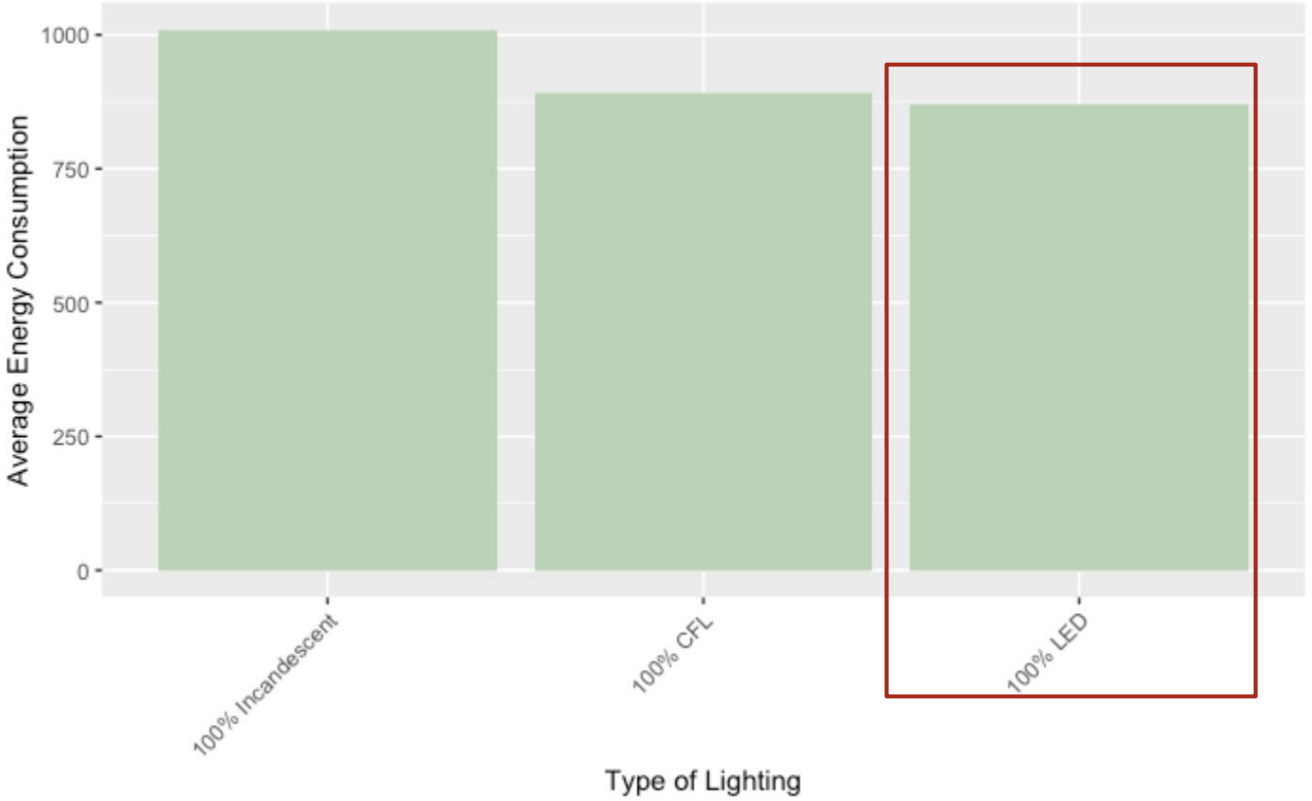
Secondary Recommendation - LED lights



Thank you!