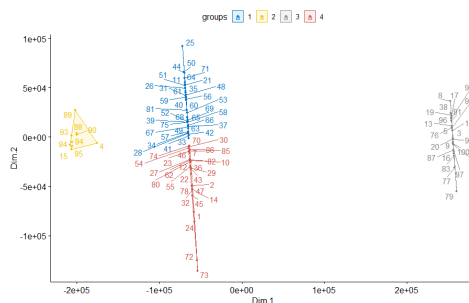


Ted Gundlach

Trevor Grayson

Executive Summary

Suitable Solar Energy Site Analysis



Motivation & Goal

Our goal is to determine which sites around Dane County are most suitable and which factors contribute to that fact. The motivation of this project is a great interest in renewable energy and understanding what makes a site suitable. Also, with solar becoming cheaper than fossil fuels, the need for understanding solar suitability is an increasing demand.

Data

Data was obtained from the National Renewable Energy Laboratory (NREL) and contained data from multiple reputable sources including the local government. The data contains 20 variables of the top 100 suitable sites in Dane County and was analyzed to determine which sites were most suitable and which variables contributed to those conclusions.

Methods

To determine which sites are the most suitable, classical multidimensional scaling (MDS) was employed to break the multivariate data down into fewer dimensions and cluster the sites using the K-means method. When comparing to the raw data, this showed which sites were superior and which sites belong in which group based on their level of suitability. Then a random forest algorithm was used to determine which variables have the biggest effect on a site's suitability to cross-analyze with the raw data and then re-apply MDS and K-means to draw final conclusions.