Predicting energy consumption of a building based on historic usage rates and weather data

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Abstract

One of the biggest problems facing the world today is global warming. Production of carbon dioxide and other greenhouse gases is heating up the atmosphere and this could be very dangerous for human life. With electricity and heat production being one of the biggest contributors to the greenhouse gases, there is a demand in constructing a more energy-efficient buildings for our growing human population and increasing number of commercial buildings. In addition to creating new buildings, there is an interest in renovating existing buildings into a more energy-efficient ones. An estimate of how much energy would improved building consume relative to the old one can incentivize investors to pursue these renovations. For this purpose it is useful to have an accurate prediction of how much energy would a building consume in future given how much that same building was consuming in the past. In this project I would like to use the data[1] of historic usage rates and observed weather over three year period across thousands of buildings in order to predict how much energy would these buildings consume in the future. Buildings are labeled by their primary use (e.g. office, educational building), square footage and year they were built, and we have historic data on the usage of these buildings across the areas such as chilled water, electricity, hot water, and steam meters. In addition to building usage data, we also have a data on weather features such as temperature, humidity and wind, that could be linked to the building usage data given building site id.

References

[1]   URL: https://www.kaggle.com/c/ashrae-energy-prediction.