Recruitment Challenge

Electricity Demand Challenge

Overview

This challenge is part of a larger project to assess the impact of Covid-19 on Queensland electricity demand. The purpose of this challenge is to assess: i) knowledge & skills relating to data analysis and ii) ability to interact effectively with colleagues and mentor.

The challenge involves:

- creating a baseline of seasonally adjusted 2020 Queensland electricity by averaging the actual electricity demand over the past 5 years.
- downloading electricity demand for April 2020 from AEMO
- using visualisation to compare recent actual demand with the same time interval of the baseline demand.

To complete this task, please fork this GitHub repository (https://github.com/Synergetic-Engineering/recruitment-challenge-2020) and share your forked repo with us when you're done.

Goals

The overall goal is to provide a visualisation of how electricity demand in April 2020 compares to the historic average. At a minimum, provide this visualisation for a single day of your choosing.

For bonus points:

- Identify patterns and/or trends in the data
- Allow user to select which day to visualise
- Provide visualisation for an entire week
- Create your own functions
- Write associated test(s)

Any Questions?

- If you run into any issues when completing this task, please don't hesitate to contact recruitment_challenge@synengco.com for help.

Data Source

1. Yearly Demand

The dataset includes 5 CSV files of actual Queensland electricity demand for the financial years 2015 to 2019. These files were downloaded from the AEMO website. Each file contains a row for each day in the year and 48 columns for each half-hourly time interval from midnight.

2. Daily Demand

Recent daily actuals may be downloaded from the AEMO Data Portal: https://aemo.com.au/en/energy-systems/electricity/national-electricity-market-nem/data-nem/aggregated-data

Notes on these files:

- Filter on Queensland actuals
- Demand is recorded over 48 half-hourly time intervals, with the 'day' starting and ending at 4:00am
- The structure of these Daily Demand files is different to the Yearly Demand Files (e.g. single column of demand measurements vs multiple columns)

Tools

You may complete this challenge using your preferred development environment (ideally R or Python).

Deliverables

The expected deliverables for this challenge are:

- CSV file of predicted half-hourly Queensland electricity demand for 2020 (based on historic average)
- Daily electricity demand for April 2020
- Visualisation of recent electricity demand compared to historic average over same time period
- Your accompanying notes on this challenge
- GitHub repository of your code

Visualisation

How you visualise the data is entirely up to you! It needs to show how the April 2020 demand compares to the average historic demand over the same period of time.

Accompanying Notes

Provide a short set of notes (1-3 pages) on this challenge. Topics to consider:

- Your thoughts on how to tackle this challenge
- Your rationale as to why you did things the way you did
- Observations about the data
- Your questions (with or without answers)
- What you would do differently if you had more time
- Suggestions for progressing this work further