NAO Data Science Internship – Technical Exercise

The UK government has committed to reducing greenhouse gas (GHG) emissions to net zero by 2050 following recommendations made by the Committee on Climate Change. This change to legislation came into force on 27 June 2019.

For this technical exercise we would like you to produce two outputs:

1. A model which investigates how GHG emissions in the UK have changed over time; and
2. A short written summary of your findings.

Your model should:

- be built in Excel, R or Python; and
- visualise:
    - annual GHG emissions; and
    - a forecast of what GHG emissions might look like over the next 5 years.

As part of the technical exercise, you are encouraged to consider:

- the analytical techniques you can use to determine how UK emissions are changing; and
- the implications for the UK government of your findings.

For this exercise, please use ONS atmospheric emissions as your data source. You may use either the 'current' or 'provisional' datasets at your discretion.

Your short-written summary should include:

- A brief summary of the data used, and any data processing/cleaning you carried out;
- An explanation of why you chose the modelling technique you chose, and of any assumptions used by your model;
- A summary of your findings and a short analysis of their implications for the UK government; and
- Suggestions for how your model could be improved.

Submission format:

Your model should be presented in an appropriate format for your chosen software (e.g. an Excel workbook, R script or Jupyter notebook). The model will not be marked directly but will serve to support the written summary.

Your written summary should be no more than 1,000 words in length, and include no more than 4 charts/figures. You may generate the summary in whatever format you prefer (e.g.

you may wish to use Word, R-markdown or Jupyter notebooks), but all submissions should be PDF (.pdf) files.

We recommend that you spend no more than a day completing this technical exercise.

Assessment:

Once you have submitted your model and summary, we will assess the results. Your outputs will be assessed on:

- adherence to the brief;
- your understanding of the input data;
- your understanding of your chosen modelling approach;
- your ability to reflect on the limitations of your model;
- the quality and suitability of your analysis, your findings, and their implications; and
- the clarity of your written summary and visualisations

If you are successful, we will invite you to a follow-up telephone interview where you will be asked to present your modelling as part of the interview.