



Company / Organisation Name:	GHD
Team / Department:	Insights and Analytics, Advisory
Address:	6th Floor, 10 Fetter Lane, London EC4A 1BR, UK

Provisional title for project:

Driving Net Zero Future Energy Targets using Smart Sensors

Short description of the problem that would be addressed by the project:

An exploration of energy demand against various covariates. We hope that this research will provide a workflow that allows the owner of a building (retail outlet, warehouse, office etc) to identify instances of excessive heating/cooling usage, and therefore opportunities to optimise their energy demand.

Background:

As a global engineering consultancy, GHD are at the forefront of the Future Energy transformation in industry - building sustainability at its heart and using technology to drive optimal design and operations to reach Net Zero.

<https://www.ghd.com/en-gb/expertise/future-energy.aspx>

Our close, longstanding relationship with Cisco gives us access to the latest technologies - from Wi-Fi networks to intelligent optical sensors - before they become available to the market, and we have recently begun testing their new range of smart environmental sensors in retail and office locations.

The outputs from these sensors are a first step towards understanding efficiency of energy usage. Enhanced with data intelligence, this can hold the key to reducing carbon footprint.

Short description of the data sources that would be used in the project, and how they would be used

The following data will be made available for a number of locations:

- Environmental sensors (measuring temperature and humidity)
- Building energy usage at location
- Space occupancy/utilisation
- Local weather data at location

Using the student's tools of choice and preferred programming language, the objective is to:

1. Investigate the longitudinal relationships between these data sources
2. Use predictive analysis and modelling techniques to pull out key patterns
3. Identify the concrete adaptations to heating/cooling practices which can optimise energy demand.

Would any work by the student need to be carried out on site at the Company with the exception of supervisory meetings?

No requirement to be onsite

Any issues of data confidentiality and IPR that would need to be resolved

Data will be stored in a secure cloud-based platform. GHD have experience of supporting Master's Students through the CDRC process and understand the relevant ethical procedures that students may face. GHD actively encourages the publication of Master's research subject to the relevant data sharing and privacy policies.

Essential skills

Python or R

Desirable skills

Preferred degree programmes (if any)

A programme with a primarily statistical/data science focus

Preferred selection method

Either face to face or online

Support and training offered by the company

A full range of support and training is available from GHD, starting from a 1 hour meeting every 2 weeks, through to a full-time desk being provided at our London offices, with immediate access to a dedicated supervisor and other staff. This meeting will either be conducted in person or online, depending on the health restrictions in place.

Financial assistance offered by the company

The organisation will pay the honorarium (£500)

Any other comments

GHD has a strong track record of offering project placements to students over the past 5 years. Successful students will be supported with individual mentors who are subject matter experts, most of which who have previously taken part in the CDRC themselves and have a good understanding of the process and guidance required.

For details on how to apply, please visit:

www.cdrc.ac.uk/education-and-training/masters-dissertation-scheme/details-for-students