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| **Company / Organisation Name:** | Liverpool City Region Combined Authority  |
| **Team / Department**: |  Strategic Investment Directorate |
| **Address:** | 1 Mann Island, Liverpool, L3 1BP |

**Provisional title for project:**

 Reconciling building heat models to understand decarbonisation potential across Liverpool City Region.

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

The Liverpool City Region has an ambitious target to decarbonise by 2035. Crucial to this will be the decarbonisation of heat in buildings. Homes will need to remove fossil gas boilers and replace them with heat pumps and in some case connections to heat networks. Commercial buildings are also to be considered, with some existing research undertaken. The LRC CA is concerned that heat solutions are deliverable and will not disadvantage vulnerable residents on low incomes. As a result, there is a need for a comprehensive building stock heat model to identify where heat solutions should be prioritised.

The LCR CA is in the process of developing a good practice standard for heat modelling of buildings (led by the North West Net Zero Hub, hosted by LCR CA) as an aspect of local area energy planning. Current approaches include (1) taking data from energy performance certificates (EPC) and (2) benchmarking based on footprint and age. Liverpool City Council (1 of the 6 LCR local authorities) is also delivering an innovation project that is developing (3) a more sophisticated heat model for the city, and it is also receiving (4) national data from the Dept of Energy, which has identified several parts of the city as future heat network zones. However, the extent to which the outcomes of these four approaches differ is not yet understood, and the impacts of these differences on the potential for decarbonisation across Liverpool City Region.

The aim of this project will be to develop a comprehensive building stock heat model for the Liverpool City Region. This would be achieved by 1) comparing and empirically testing existing data sources and heat modelling methods, 2) making a series of recommendations that reconcile the differences and effectiveness of each, and 3) generating a new comprehensive dataset that describes the holding heat of existing building stock and other relevant data related to property archetypes. The desired output would be a GIS map or dashboard which effectively represents all the information pertaining to objective 3.

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

Open EPC data; building stock modelling data; national heat modelling data; council grant programme data. These data will be combined and reconciled by LCR CA in advance of project commencing in May 2025. Project may also use other open datasets (e.g. census) to capture socio-economic characteristics.

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

**Meetings)?**

Follow-up presentation on research findings.

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

Some data sets are provided to LRC CA in confidence and approval would be needed to share with UoL.

**Essential skills**

GIS mapping, comparative analysis

**Desirable skills**

Good communication skills, interest in regional policy and the energy sector.

**Preferred degree programmes (if any)**

Data science, with interest in engineering, geography, city planning, built environment, architecture.

**Preferred selection method**

CV sift and interview.

**Support and training offered by the company**

Training in the policy context, briefings by data teams currently handling data, fundamentals of heat modelling approaches. LCR CA will also join some supervision meetings for input on project design and outcomes.

**Financial assistance offered by the company**

£500 upon completion.

**Any other comments**

If there are any questions about the 2025 programme, please contact Richard Arnold at richard.arnold@ucl.ac.uk. The completed form should also be returned to this address.