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**Job Description**

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| **Job title** | Research Associate |
| **Department/School** | Architecture and Civil Engineering |
| **Job family** | Education and Research |
| **Grade** | 7 |
| **Reporting to** | Andy Shea, Principal Investigator (PI). |
| **Responsible for** | There may be a requirement for:day to day supervision of other staff e.g. technical staff or, co-supervision of doctoral or undergraduate students  |
| **Location** | University of Bath premises  |

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| **Background and context** |
| Buildings have increasing potential to be active participants in the transition to Net Zero. Demand side energy management, energy storage, and even the thermal mass of a building structure have potential to facilitate and enhance energy flexibility. The ability to shift the timing of building energy demands and the decoupling of heating energy supply from demand are important levers in optimisation of buildings and energy network interaction, including the utilisation of renewable energy resources. However, retaining the high fidelity associated with building level energy modelling is challenging when scaled-up and aggregated to street, community, or higher levels.This project will seek to develop computational modelling of building energy use with improved fidelity at scale. The aim of this modelling is to deliver accurate insight into the impact of future heating technologies and strategy options for residential buildings.Your skills and attributes: * You will be educated to doctoral level in an engineering/physical sciences subject with demonstrable skills in energy modelling including programmatic use of EnergyPlus, or similar building energy modelling tools.
* You will have experience in delivering research project results in a built environment context, i.e. a record of peer-reviewed journal and conference papers in this or a closely related area.
* Experience in AI/ML tools for advanced building energy modelling is desirable.
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| **Job purpose** |
| This Grade 7 Post-Doctoral Research Associate (PDRA) will specifically be responsible for:* Assessing the effectiveness of novel low-carbon space heating systems.
* Building energy modelling with a specific focus on systems modelling (e.g. HVAC) at both individual and multiple (residential) building levels.
* With a focus on hydrogen boilers and hybrid heat pump systems for use in UK dwellings, you will work with multiple stakeholder groups to map drivers and challenges to H2 and hybrid heating systems.

The researcher will be expected to use and develop modelling techniques, leveraging machine learning and artificial intelligence where possible, to assess a range of net zero building heating scenarios with varying degrees of electrification of heat and energy flexibility. |

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| **Main duties and responsibilities**  |
|  | Responsible to the PI/CI for (as appropriate to discipline):  |
| **1** | Conduct individual and/or collaborative research projects. Contribute to the design and execution of the project e.g. timetabling and meeting project milestones; participating in regular discussions with collaborative partners. Generate, collect and analyse existing data related to the project using qualitative and/or quantitative techniques. |
| **2** | Write-up results of research and contribute to the publication of results in high-quality peer-reviewed academic literature. |
| **3** | Disseminate results of research project as appropriate to the discipline through activities such as* overseas research visits
* conference presentations
* public engagement activities
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| **4** | Participate in departmental/group meetings and prepare and deliver presentations/seminars to project team, internal and external stakeholders or funders. |
| **5** | Assist with the supervision of postgraduate students and undergraduate project students and the assessment of student knowledge. |
| **6** | Continually update knowledge and understanding in field or specialism to inform research activity. |
| **7** | Identify sources of funding and provide assistance with preparing bids to funding bodies. Develop ability to secure own funding e.g. travel grants.  |
| **8** | Contribute to the development of research objectives and proposals for own or joint research projects, with assistance of a mentor, if required. |
| **9** | Disseminate knowledge of research advances to inform departmental teaching. |
| **10** | As a member of Research Staff at the University, you will be encouraged to take up a minimum of 10 days’ professional development pro rata per year. You should use this time to spend on activities that will benefit your career development and your personal growth. Examples include: attending workshops, career development coaching, mentoring, training courses, participation in networks, attending conferences, writing fellowship or funding applications, and representing the research staff community on committees or working groups.The University, as a signatory to the Concordat for the Career Development of Researchers, is committed to its principles. We aim to provide a supportive and inclusive environment, where researchers’ contributions are recognised and valued, and we provide opportunities to enable research staff to develop their full potential.  |
|  | You will from time to time be required to undertake other duties of a similar nature as reasonably required by your line manager. You are required to follow all University policies and procedures at all times and take account of University guidance.  |

**![logo-uob-resize[1]]() Person Specification**

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| **Criteria** | **Essential** | **Desirable** |
| **Qualifications** |  |  |
| Undergraduate degree (e.g. BA, BSc, BEng)PhD degree in subject area of direct relevance for the project; **or** Professional/Industrial/Creative Doctorate in subject area of direct relevance for the project (e.g. DBA, MD, EdD, PsyD, EngD, DA); **or**Professional qualification (e.g. Chartership) and relevant experience equivalent to that of a PhD; **or**Professional experience in relevant discipline equivalent to that of a PhD  | √√ |  |
| **Experience/Knowledge** |  |  |
| Post doctoral experience |  | √ |
| Demonstrated significant depth and breadth of specialist knowledge of subject matter to contribute to research programmes and to the development of departmental research activities | √ |  |
| Demonstrated awareness of latest developments in the field of research and in research design | √ |  |
| Demonstrated potential to publish in high quality, peer reviewed journals | √ |  |
| **Skills** |  |  |
| Ability to prepare research proposals, to conduct individual research work and to disseminate results |  | √ |
| Ability to organise and prioritise own workload to meet required deadlines | √ |  |
| Ability to write research reports and to effectively disseminate outcomes | √ |  |
| Excellent oral, interpersonal and written communication skills | √ |  |
| Proficiency in appropriate techniques (as appropriate to discipline) | √ |  |
| Proficiency in IT skills (as appropriate to discipline) | √ |  |
| **Attributes** |   |  |
| Commitment to working within professional and ethical codes of conduct | √ |  |
| Innovation and developing creative solutions  | √ |  |
| Commitment to excellence in research | √ |  |
| Enthusiasm and self-motivation | √ |  |
| Tenacity – working to achieve own and team objectives and to overcome obstacles  | √ |  |
| Ability to be an effective team worker | √ |  |
| Commitment to safe working practices | √ |  |