Notes on Completion: Please refer to the appropriate NIA Governance Document to assist in the completion of this form. The full completed submission should not exceed 6 pages in total.

NIA Project Registration and PEA Document

Date of Submission

Feb 2024

Project Reference Number

NIA_WWU_02_44

Project Registration

Project Title

Pathfinder Development

Project Reference Number

NIA_WWU_02_44

Project Licensee(s)

Wales & West Utilities

Project Start

February 2024

Project Duration

0 years and 3 months

Nominated Project Contact(s)

Lewis Garvey

Project Budget

£66,666.00

Summary

Decarbonising heat in buildings is widely recognised as a key challenge in the delivery of net zero carbon emissions in the UK. However, the interactions between various initiatives and measures, including energy efficiency, changing heating systems and wider decarbonisation of supply are complex.

A tool is necessary for landlords to easily assess the relative merits of different interventions across their housing portfolio. Some tools already exist which may provide some of the functionality, however existing housing stock tools do not relate the impacts of energy saving measures to the wider energy networks. This project is taking a new approach by developing where possible the Pathfinder modelling environment further to a dispersed housing stock, linking stock analysis and stock performance to the energy system.

Preceding Projects

NIA_WWU_055 - Pathfinder Plus

Third Party Collaborators

LCP Delta

Nominated Contact Email Address(es)

innovation@wwutilities.co.uk

Problem Being Solved

Decarbonising heat in buildings is widely recognised as a key challenge in the delivery of net zero carbon emissions in the UK. However, the interactions between various initiatives and measures, including energy efficiency, changing heating systems and wider decarbonisation of supply are complex.

A tool, such as the one planned for in this project, is therefore necessary for landlords to easily assess the relative merits of different interventions across their housing portfolio. Therefore, usage of the tool has immediate relevance and can have immediate impact.

Some tools already exist which may provide some of the functionality, however existing housing stock tools do not relate the impacts of energy saving measures to the wider energy networks. This project is therefore taking a new approach by developing the Pathfinder modelling environment further where possible, to a dispersed housing stock, linking stock analysis and stock performance to the energy system.

WWU will be looking to roll out the tool to social housing landlords and local authorities as part of the existing Local Area Energy Planning (LAEP) strategy to support the energy transition. This will enable landlords and local authorities to make informed decisions regarding decarbonisation of their housing stock; this has the potential to support lowering energy bills and carbon emissions than could otherwise be delivered.

Method(s)

The approach will be split into three phases, detailed below.

Phase 1 - scoping

The approach begins with LCP-Delta developing a specification for the required toolkit working in collaboration with Exeter County Council (ECC) and Wales & West Utilities (WWU). This needs to consider a range of factors including:

The required outputs from ECC (and potentially other social housing providers).
The resolution and level of detail in the analysis required (for example, whether the tool will be tailored to individual homes or typologies)
The availability of data from ECC to drive the tool (and likely level of data from other social housing providers who WWU may wish to work with in the future)
The use cases for the tool.
The outcome from the scoping stage will be a detailed definition of the requirements of all parties, and identification of the desired MVP requirements.

Phase 2 - specification of the toolkit

Phase 2 of the work will take the MVP requirements and develop a design for the toolkit which can be reviewed and agreed with ECC and WWU. This phase includes reviewing the capabilities of existing toolkits and methodologies (including the Pathfinder tool and variants) to assess whether these can be used in part or full to meet the needs.

The output from this phase will be a short specification document which will form the basis of work in phase 3.

Phase 3 – toolkit construction and launch

The final phase is to construct the MVP toolkit based on the Phase 2 specification. Work will include:

updates with WWU and ECC to describe the progress being made on toolkit development and receive input on key issues identified as they emerge
Building the toolkit in MS Excel, incorporating / drawing on existing tools and methodologies where possible
Developing a simple user interface to enable operation by trained users
Testing and quality assurance of the tool to ensure reliable and correct operation for the desired use cases
Handover and initial training.
Data Quality

All sources of data used will be assessed for reliability of the data acquisition method used, and bias of the data source to the extent practical. Sources of data that do not meet high standards of reliability and impartiality will be excluded from usage. The data provider, original sourced data location and details about the data acquisition method will be recorded for all data used in an MS Excel spreadsheet. Any outstanding concerns regarding the quality of data sources will additionally be recorded in an MS Excel spreadsheet. All such records will be discussed with WWU during the project with complete documents provided alongside the final deliverables of the project.

Measurement Quality

LCP-Delta will create a testing process and conduct tests to ensure the toolkit operates correctly. This includes:

Testing the response of the outputs to the inputs of the toolkit, including the impact of different housing stock inputs (such as type of property and rural/urban/etc. location). E.g. are they reasonable, do they react as expected to input changes, can they be replicated?
Testing the effect of the inputs will not include testing every combination of values for each parameter, but will include testing of each parameter's values independently, testing of typical sets of values, and testing of corner cases
Testing inputs. Can the desired range of inputs be used, are the input requirements clear and unambiguous?
Algorithms. Testing algorithms cell by cell to ensure they are correctly referenced, coded, etc.
Checking overarching design and structure. Does it follow the specification, is it clear, etc.
Checking functionality against the MVP. Does it meet the requirements?
A checklist of quality assessment tasks to complete will be kept up-to-date, specific to a released version of the toolkit. A change log will be kept to detail changes made between each released version of the toolkit. Functionality that will not require further change after release will be kept hidden to avoid accidental changes.

The project is rated low in the common assessment framework detailed in the ENIP document after assessing the total project value, the progression through the TRL levels, the number of project delivery partners and the high level of data assumptions. No additional peer review is required for this project.

Scope

The project scope is comprised of the following:

- Construction of a toolkit in MS Excel which meets an MVP specification. The MVP specification will need to reflect the budget for the project and the potential limitations this imposes on the toolkit development.
- The use of an agile process to develop the tool. LCP-Delta will iterate the development so that time can be appropriately focused, and the budget managed. LCP-Delta will keep WWU and ECC updated on progress and remining budget so that decisions can be made about further development activity.
- Working closely with WWU. LCP Delta will be leading the development but with support from WWU. The exact nature and role of this support will be clearly defined at the kick off stage.
- Error correction. LCP-Delta will provide updates / corrections to errors in the toolkit which were not identified during the testing stage. These must be genuine errors (e.g. faults in calculations) rather than further development activity (e.g. because users want to look at a wider range of input parameters).

Objective(s)

To construct the MVP toolkit based on the specification as defined in phase 2, including developing a simple user interface to enable operation by trained users. Delivery of the toolkit will also include handover and technical training on its use. Phase 2 will determine whether the existing Pathfinder tool will be developed to deliver the project's objectives (this is the preferred solution); otherwise, pre-existing tools and methodologies identified and reviewed as part of this phase will be utilised. WWU will be looking to roll out the tool to social housing landlords and local authorities as part of the existing Local Area Energy Planning (LAEP) strategy to support the energy system transition.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

This project has been assessed as having an overall positive impact on consumers in vulnerable situations. The assessment has identified that this project has the potential to reduce the costs for households, improve the exchange of information between networks and customers, improve the network's understanding of customers' needs and the ability to address these, and improve customers' health, safety, and accessibility within or immediately around the home in the long-term. Other considerations including the projects impact on supply, immediate health and safety in the home have been made in carrying out this assessment.

Indeed, it is the aim of the project to engage social housing landlords and local authorities using the toolkit as part of WWU's LAEP strategy to support the energy system transition. This project will deliver the toolset but it will be the responsibility of landlords/local authorities to implement changes based on their modelling using the tool; benefits such as reduced energy demand and reduced bills will only have the potential to be realised when actioned by these property owners, and if they chose to pass these savings onto their tenants.

Success Criteria

A successful project will see the delivery of an MVP toolkit based on the specification as defined in phase 2, including developing a simple user interface to enable operation by trained users. Delivery of the toolkit will also include handover and technical training on its use. Phase 2 will determine whether the existing Pathfinder tool will be developed to deliver the project's objectives (this is the preferred solution); otherwise, pre-existing tools and methodologies identified and reviewed as part of this phase will be utilised.

Project Partners and External Funding

The partner for this project is LCP-Delta and the project is wholly funded via NIA.

Potential for New Learning

The project has potential for new learning by developing existing Pathfinder approaches for a dispersed housing stock. By developing the tool in collaboration with Exeter County Council, WWU can better understand how gas networks can support social housing providers in decarbonizing their housing stock. The toolkit created will help relate energy savings measures in a dispersed housing stock to gas network needs. Typically housing stock models annualize energy demands, while gas network analysis is performed in hourly intervals throughout the year. A key innovation will be determining the impact of energy savings measures at an hourly level, relevant to assessment of network demands.

Scale of Project

This is a desktop research project that has been costed to deliver a minimum viable product (MVP) toolkit, including its specification, implementation, quality assurance and handover.

Technology Readiness at Start

TRL7 Inactive Commissioning

Technology Readiness at End

TRL8 Active Commissioning

Geographical Area

The project and it's learning generated will be applicable to a wide range of social housing providers seeking to decarbonise their housing stock.

Revenue Allowed for the RIIO Settlement

N/A

Indicative Total NIA Project Expenditure

External: £50,000 Internal: £16,666 Total: £66,666

Project Eligibility Assessment Part 1

There are slightly differing requirements for RIIO-1 and RIIO-2 NIA projects. This is noted in each case, with the requirement numbers listed for both where they differ (shown as RIIO-2 / RIIO-1).

Requirement 1

Facilitate the energy system transition and/or benefit consumers in vulnerable situations (Please complete sections 3.1.1 and 3.1.2 for RIIO-2 projects only)

Please answer **at least one** of the following:

How the Project has the potential to facilitate the energy system transition:

The project creates a tool for use by social housing providers to assess the benefits of different energy savings measures in their housing stock. By enabling social housing providers to make better choices regarding their investment in energy savings measures it benefits a transition to a more efficient energy system. Social housing tenants, who may otherwise not have the resources or the permission to implement such measures themselves, additionally benefit from reduced bills and potentially increased comfort from such measures being implemented in their residence.

How the Project has potential to benefit consumer in vulnerable situations:

N/A

Requirement 2 / 2b

Has the potential to deliver net benefits to consumers

Project must have the potential to deliver a Solution that delivers a net benefit to consumers of the Gas Transporter and/or Electricity Transmission or Electricity Distribution licensee, as the context requires. This could include delivering a Solution at a lower cost than the most efficient Method currently in use on the GB Gas Transportation System, the Gas Transporter's and/or Electricity Transmission or Electricity Distribution licensee's network, or wider benefits, such as social or environmental.

Please provide an estimate of the saving if the Problem is solved (RIIO-1 projects only)

N/A

Please provide a calculation of the expected benefits the Solution

The project creates a tool for use by social housing providers to assess the benefits of different energy savings measures in their housing stock. By enabling social housing providers to make better choices regarding their investment in energy savings measures it benefits a transition to a more efficient energy system. Social housing tenants, who may otherwise not have the resources or the permission to implement such measures themselves, additionally benefit from reduced bills and potentially increased comfort from such measures being implemented in their residence.

The project has the potential to reduce costs for households, improve the exchange of information between networks and customers, improve the network's understand of customers' needs and the ability to address these, and improve customers' health within the home. The timeframe for these impacts to be felt by customers is unknown but are anticipated in the long-term as social landlords and local authorities utilise the toolset.

Please provide an estimate of how replicable the Method is across GB

The project and it's learning generated will be applicable to a wide range of social housing providers seeking to decarbonise their housing stock.

Please provide an outline of the costs of rolling out the Method across GB.

There are no rollout costs at present, as the project endeavours to develop an MVP tool for use but does not include rollout. WWU will be looking to roll out the tool to social housing landlords and local authorities as part of the existing Local Area Energy Planning (LAEP) strategy to support the energy transition.

Requirement 3 / 1

Involve Research, Development or Demonstration

A RIIO-1 NIA Project must have the potential to have a Direct Impact on a Network Licensee's network or the operations of the System Operator and involve the Research, Development, or Demonstration of at least one of the following (please tick which applies):

☐ A specific piece of new (i.e. unproven in GB, or where a method has been trialled outside GB the Network Licensee must justify repeating it as part of a project) equipment (including control and communications system software).

☐ A specific novel arrangement or application of existing licensee equipment (including control and/or communications systems and/or software)

☐ A specific novel operational practice directly related to the operation of the Network Licensees system

☐ A specific novel commercial arrangement

RIIO-2 Projects

☐ A specific piece of new equipment (including monitoring, control and communications systems and software)

☐ A specific piece of new technology (including analysis and modelling systems or software), in relation to which the Method is unproven

☐ A new methodology (including the identification of specific new procedures or techniques used to identify, select, process, and analyse information)

☑ A specific novel arrangement or application of existing gas transportation, electricity transmission or electricity distribution equipment, technology or methodology

☐ A specific novel operational practice directly related to the operation of the GB Gas Transportation System, electricity transmission or electricity distribution

☐ A specific novel commercial arrangement

Specific Requirements 4 / 2a

Please explain how the learning that will be generated could be used by the relevant Network Licensees

Learnings could be used by networks to engage social housing providers in new ways in their process of decarbonizing their housing stock. The learning would help networks encourage social housing landlords to choose the retrofit interventions and understand the impact this has on the broader energy system including gas networks.

Or, please describe what specific challenge identified in the Network Licensee's innovation strategy that is being addressed by the project (RIIO-1 only)

N/A

Is the default IPR position being applied?

☑ Yes

Project Eligibility Assessment Part 2

Not lead to unnecessary duplication

A Project must not lead to unnecessary duplication of any other Project, including but not limited to IFI, LCNF, NIA, NIC or SIF projects already registered, being carried out or completed.

Please demonstrate below that no unnecessary duplication will occur as a result of the Project.

All networks have been made aware of this project and no concerns of duplication have been raised.

If applicable, justify why you are undertaking a Project similar to those being carried out by any other Network Licensees.

N/A

Additional Governance And Document Upload

Please identify why the project is innovative and has not been tried before

The toolkit created will help relate energy savings measures in a dispersed housing stock to gas network needs. Typically housing stock models annualize energy demands, while energy system analysis is performed using hourly profiles throughout the year. A key innovation will be determining the impact of energy savings measures at an hourly level, relevant to assessment of network and system demands.

Relevant Foreground IPR

The MVP toolkit (if the project determines that this would be a development of WWU's pathfinder tool), as well as the training and handover support, would form the relevant foreground IPR.

Data Access Details

Data for this project and all other projects funded under the Network Innovation Allowance (NIA), Network Innovation Competition (NIC) or the new Strategic Innovation Fund (SIF) can be found or requested in a number of ways:

- A request for information via the Smarter Networks Portal at https://smarter.energynetworks.org, to contact select a project and click 'Contact Lead Network'. WWU already publishes much of the data arising from our innovation projects here so you may wish to check this website before making an application.
- Via our Innovation website here
- Via our managed mailbox innovation@wwutilities.co.uk
- Details on the terms on which such data will be made available by Wales & West Utilities can be found in our publicly available "Data sharing policy relating to NIC/NIA projects" here

Please identify why the Network Licensees will not fund the project as apart of it's business and usual activities

Ofgem published its final determinations which included a variety of provisions to enable necessary development work on Net Zero projects but also to ensure vulnerable customers are thought about in any decision making. This project has the potential to facilitate the energy system transition and is therefore eligible to use the NIA funding mechanism.

Please identify why the project can only be undertaken with the support of the NIA, including reference to the specific risks(e.g. commercial, technical, operational or regulatory) associated with the project

The project would only be undertaken with support from NIA funding, it is in the interests of gas customers, the regulator and the UK government and the realisation of any benefits are outside the control of the gas networks. There is no allowance in BAU business plans for this type of work and there is a risk that if hydrogen is not accepted as a means to heat homes in 2050 that this work is no longer valid.

This project has been approved by a senior member of staff

☑ Yes