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

Sep 2020

Project Reference Number

NIA_WWU_067

Project Registration

Project Title

Integrated Calibration Solution

Project Reference Number

NIA_WWU_067

Project Licensee(s)

Wales & West Utilities

Project Start

September 2020

Project Duration

0 years and 8 months

Nominated Project Contact(s)

Ben Lewis

Project Budget

£189,083.00

Summary

This project will develop a CMX software solution for our BEAMEX calibration system, this will enable sufficient time savings for operatives on site and provide an audit trial of tests completed on the network.

Nominated Contact Email Address(es)

innovation@wwutilities.co.uk

Problem Being Solved

Currently WWU calibrates and verifies the accuracy of the various types of instrumentation on each of our sites. This instrumentation is used so that WWU can accurately measure the flow of gas going through the pipeline.

Once the test is carried out the test results are documented and must then be double checked and approved by a Senior Network Technician before being submitted to OFGEM or DNV-GL (depending on the tests) for annual audits.

Currently, these flow calculation results are entered directly into an excel spreadsheet by the technician. Within the spreadsheet, the results are multiplied by a predefined number and this determines whether this test has passed or has failed. This is largely dependent on the technician entering the correct values. These tests can vary in terms of the pass/fail criteria and, in relation to the time it takes for the technician to carry out the test. Some tests can take up to 4 or 5 hours before the pass criteria is met. If the pass criteria are not met, the test must be performed again. When a test passes and is recorded in the spreadsheet, this data then must be double checked by a Senior Network Technician before it is closed off in the High-Pressure Metering Information System and submitted to the regulator. This may be a necessity, but it is also a non-value adding exercise.

Each point at which data is manually entered is a potential for error within the test data. The technician must enter the data into the spreadsheet correctly, and from there he/she can see whether the test has passed or failed. As the tests are recorded manually, the audit trial is currently paper based.

In 2018 WWU trialed two Beamex MC6EX calibrators the BEAMEX CMX software. The trial proved the unit was beneficial to the work that is carried out by WWU (it would replace 6-7 other items of test equipment and enable WWU to be far more efficient on site). However, there was uncertainty about the validity of using the CMX software to manage the relevant calibration records that WWU are

required to document.

This project will investigate if the development of the CMX software can accommodate flow calculation tests.

Method(s)

The Beamex CMX software has not been used to calculate gas flow before and will require some modification to perform this. This project will streamline the calibration process by replacing the manual spreadsheet based process, with a digital automated solution.

To achieve a digital flow of information within the calibration process, BEAMEX must design a customised template to enable the recording of flow calculation results into the BEAMEX CMX software. This template will mirror the current process that we have in place.

This template will hold the same predefined calculations as the spreadsheet, and will perform the calculations, as the data is recorded and entered in to the CMX software.

This will mean that once the solution is in place, our technician can carry out their flow calculation test with the MC6EX calibrator and capture the result within the unit. They can then connect the calibrator to the CMX software and upload the result data into a template which will perform the calculation for them. This can ensure that WWU can move away from the excel spreadsheet into a more robust automated process.

The project will investigate a number of innovative developments to the Beamex System

- Assess the ability of the Beamex software to provide an improvement in data integrity, removing sources of transcription errors, changes to raw data
- To develop templates/ forms within CMX to calculate gas flow correctly from a number of variables, to provide flow weighted test results.
- To investigate the operational efficiencies (predominantly shortening of test times) that may be gained by using the Beamex integrated solution across the gas distribution network.
- Optimisation of existing onsite tests, such as the flow tests, which currently can take several hours to perform

Scope

This project will be broken down into three key stages

Stage 1
Software Development and installation

- Install CMX on a Test environment
- bMobile online/offline test
- Flow weighted calculations
- Customized report/certificate generation
- BEAMEX to build CMX Database for 20 site
- Project Management Report/ Meeting

Stage 2
Pre-Trial Training

- Administrator Training
- Technician Training MC6EX MC6 Testing
- Technician Training CMX
- bMobile Training

Stage 3

- Site Trials (Trials to take place across 20 sites)
- Report

Objective(s)

The objective of the project is to create a solution that will allow technicians at WWU to move away from a manual process when completing flow calculations, to an automated, fully auditable system.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

A successful project will investigate the enhancements that can be made to the CMX Software and detail whether we can move to an automated process.

Project Partners and External Funding

Project partners: Beamex Limited
The project will be fully funded via NIA.

Potential for New Learning

This project will help WWU understand if we can move to an automatic, auditable process when completing flow calculations.

Scale of Project

The scale of the project will include an investigation into the CMX software and move to field trials if a solution can be found.

Technology Readiness at Start

TRL7 Inactive Commissioning

Technology Readiness at End

TRL8 Active Commissioning

Geographical Area

All trials will take place within the WWU network.

Revenue Allowed for the RIIO Settlement

N/A

Indicative Total NIA Project Expenditure

External Costs: £141,812
Internal Costs: £47,271
Total Costs: £189,083

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:

n/a

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)

CMX has the potential to deliver net financial gains in the following areas

Time
Using CMX will drastically reduce the time required to undertake the calibrations and inspections on site.
CMX will also reduce the time taken to approve and archive the results and readings, currently a senior technician must check all results and readings carried out and approve them.

Equipment
CMX will allow us to trend historical data allowing us to decide how the instrument is performing, from this information we can also determine if the frequency of calibration should be raised or decreased and will also allow us to determine when the instrument will require replacement, allowing us to replace on condition rather than age

Audit Purposes
All data stored within CMX is readily available for audit purposes and the information stored will be correct as there is no human intervention the results and readings are 100% accurate and cannot be modified to show false passes.

Please provide a calculation of the expected benefits the Solution

Estimated cost of manually entering flow data: £32k
Estimated days verifying data: £21k
Total = £53k

License for CMX Software (3 years) estimated: £3k
Number of licenses needed: 3
Total = £9k

Savings
Year one
£53k - £9k = £44k

Year two and three
£53k

Added costs would be necessary to purchase hardware and ancillaries

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

All networks will need to complete flow calculations, so will be fully replicable across all networks.

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

Hardware and software licenses would need to be purchased to roll out this innovation. Prices vary depending on how many are purchased. For reference WWU initially invested £32k in hardware.

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

The CMX software is not currently used by any GDN's, currently all information is stored within various Excel spreadsheets. It is very difficult and time consuming to interrogate and analyse current and previous test results due to the number of spreadsheets to query. Currently all instrumentation on sites are replaced on an age basis rather than condition based. CMX has the potential to change the way networks record and monitor onsite instrumentation. The tests undertaken are completed by all networks so learning can be applied to all GDN's.

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

☑ Has the Potential to Develop Learning That Can be Applied by all Relevant Network Licensees

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.

No projects of this type have been registered on the ENA smarter networks portal.

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

Currently all results and readings are recorded and stored in Excel spreadsheets that have been designed specifically for ME2 tests and MAINT-12 activities. This process will enable the recording of the calibration result direct on site without the technician having to enter any information, this data is then transferred to the CMX server where it can be stored centrally, this information will be easier to integrate and analyse and will also store the entire networks Instrumentation asset data in one place which has never been done before. This way of working hasn't been tried before as the calculations used with the instrumentation results and readings have always been deemed too complex to integrate within a Management programme such as SAP.

Relevant Foreground IPR

n/a

Data Access Details

n/a

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

This project did not form part of the RIIO GD1 settlement. It requires funding outside of this.

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

This software has never been used on the gas network in Great Britain and requires development and modification, to incorporate some of the onsite testing carried out, the calculations currently used within current spreadsheets have always been deemed too difficult to integrate into a SAP based system or database. In utilising NIA funding all learning will be shared with other GDN's who could benefit from the work completed.

This project has been approved by a senior member of staff

☑ Yes