

NIA Project Registration and PEA Document

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.

Project Registration

Project Title

Smart Energy Isles

Project Reference

NIA_WPD_027

Project Licensee(s)

Western Power Distribution East Midlands, Western Power Distribution South Wales, Western Power Distribution South West and Western Power Distribution West Midlands

Project Start Date

January 2018

Project Duration

2 years and 6 months

Nominated Project Contact(s)

Jennifer Woodruff

Project Budget

£502,583

Problem(s)

The Isles of Scilly Council has been awarded European funding to develop an energy project which will look to install more renewable generation on the Isles of Scilly. The prominent type of generation for this deployment is small LV connected generators at small premises and demand control systems being delivered by Hitachi. However as the Isles of Scilly is embedded within the Alverdiscott/Indian Queens Active Network Management (ANM) zone, these generators will need to be controlled by this system. This causes two issues: the existing Generator Constraint Panel has been developed for 11kV connections and above and is too large and expensive for typical LV applications, and the existing ANM system is not configured to use localized demand side response to help minimized local curtailment.

Method(s)

The project will develop an extension to the existing Active Network Management system which will optimize the small generators on the Isles and enable the proposed Demand Side Response capabilities that will be installed as part of the European funded project. The LV optimization of ANM will build on the Domestic Load Controller (DLC) developed as part of the LV Connect and Manage NIA project. This device will be connected to a new localized sub ANM controller allowing for the communication paths to be reviewed. This localized sub ANM controller will also act as the interface with Demand Side Response via Hitachi's control system. An interface and control system will be developed and the technical and commercial issues will be explored so this system will be implementable anywhere, in particular on the mainland, in a sustainable way ensuring the new connections are fair and equitable.

Scope

The project is looking to enable LV distributed generation on the Isles of Scilly to connect into the existing ANM system while enabling the local Demand Side Response to reduce curtailment for those generators. The development of the system, the identification of technical issues and commercial issues that may limit the role out of this system across the network work should be identified to ensure system can be implemented across the wider network.

Objectives(s)

- Deliver an ANM system for the new generators on the Isles of Scilly as part of the European funded project.
- Develop an extension to the ANM system that can take account of localized Demand Side Response.
- Integrate a local LV orientated ANM interface box into the ANM system.
- Develop the relevant procedures and documentation to implement the system elsewhere.

Success Criteria

The project will be deemed a success if the ANM system has been successfully adapted to accept small generators and Demand Side Response thus enabling the installation of the generation using the most appropriate customer interface and limiting its curtailment. The learning from this process will also be documented and a plan to role this adaptation out to the wider network.

Technology Readiness Level at Start

Technology Readiness Level at Completion

Project Partners and External Funding

Isles of Scilly Council - The Isles of Scilly council are co-ordinating the wider Smart Energy Isles and are the primary recipient of the EDRF funds. Although they are not directly contributing to the project they are helping with ensuring both projects are running alongside each other successfully.

Hitachi - Hitachi are delivering most of the technological elements required for the European project. The ANM system is required to enable their part of the project therefore close co-ordination is required. The loS ANM system will need to directly talk to the Hitachi control system so it can respond to their demand side response system. These systems will need to be developed in conjunction between Hitachi, WPD and ZIV.

ZIV - ZIV are the current supplier of the Alversicott/Indian Queens ANM system that the Isles of Scilly are embedded within. As this new system is a new development and extension of the existing system ZIV are best placed to do this work.

Nortech - We require a smaller, LV orientated interface to interact with LV customers. We are building on the existing work from LV Connect and manage to do this. Nortech had already developed the basic hardware for DLC so we intend to use it in this project also. Nortech are best placed to do the required development and integration work.

Accenture – will project manage this project.

Potential for New Learning

The integration of local community Demand Side Response and small community generation into large scale ANM has not been demonstrated before. The exploration of the technical solution and the commercial implications are important to allow ANM systems to bilaterally allow demand side response to be deployed to a specific generator in the LIFO stack. The project will demonstrate this how this can be demonstrated in a scalable way.

Scale of Project

The project is specifically focusing on LV generators and LV Demand Side Response. The project will develop the system which can accommodate the likely growth of generation on the Isles which could be in the order of hundreds of kilowatts. Based on the sensitivity studies of system constraints upstream of the Isles of Scilly, it is understood that we may need approximately 250 kw of LV generation cluster. This will include addition of approximately around ten LV control interfaces on the Isles of Scilly LV generators.

Geographical Area

The project is based in the Isles of Scilly, the system will be able to accommodate generators and Demand Side Response based on St Marys as well as the off Islands.

Revenue Allowed for in the RIIO Settlement

None

Indicative Total NIA Project Expenditure

£452,325

Project Eligibility Assessment

Specific Requirements 1

1a. A 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 the GB the Network Licensee must justify repeating it as part of a Project) equipment (including control and communications systems and 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 Licensee's System

A specific novel commercial arrangement

Specific Requirements 2

2a. Has the Potential to Develop Learning That Can be Applied by all Relevant Network Licensees

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

The learning from this project would allow any Network Licensee implement the same concept of small scale community generation alongside Demand Side Response. The interface, equipment design and concepts will all be transferable to a new Network Licensee.

Please describe what specific challenge identified in the Network Licensee's innovation strategy that is being addressed by the Project.

This project is directly referenced in WPD's Innovation Strategy to help support Isles of Scilly Council and Hitachi with their European Funded project.

2b. Is the default IPR position being applied?

Yes

2c. Has the Potential to Deliver Net Financial Benefits to Customers?

Yes

Please provide an estimate of the saving if the Problem is solved.

This project will allow smaller connections to benefit from ANM and utilise Demand Side Response. This would make an estimated 300MW of small generation projects viable saving the customers up to £800k of costs in the South West.

Please provide a calculation of the expected financial benefits of a Development or Demonstration Project (not required for Research Projects). (Base Cost - Method Cost, Against Agreed Baseline).

In the case of the Isles of Scilly, any additional generation would trigger in the very least the reinforcement of k route at a cost of approximately £8m, costs of implementing this project to enable a community to develop generation and Demand Side Response is around £280k making it a far cheaper alternative.

Please provide an estimate of how replicable the Method is across GB in terms of the number of sites, the sort of site the method could be applied to, or the percentage of the Network Licensees system where it could be rolled-out.

This could be implementable in any community group within an ANM zone, so by 2021, shortly after the project is complete this will be the entire WPD patch where it could be an option for the 150 communities within it.

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

Subsequent adaptations of the ANM systems would be at a lower costs, but there will need to be equipment and communication at each site, this could equate to a UK roll out in the region of £1.5m with wide scale adoption.

2d. Does not Lead to Unnecessary Duplication

Yes

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

This is the first time ANM has been adapted to allow a portfolio community generation and Demand Side Response within an active ANM zone.

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

Additional Governance Requirements

Please identify

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

ii) Please identify why the Network Licensee will not fund such a Project as part of its business as usual activities

iii) Please identify why the Project can only be undertaken with the support of the NIA, including reference to the specific risks (eg commercial, technical, operational or regulatory) associated with the Project

Approved by senior member of staff