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 2018

Project Reference Number

NIA_WPD_029

Project Registration

Project Title

Visibility Plugs and Socket

Project Reference Number

NIA_WPD_029

Project Licensee(s)

National Grid Electricity Distribution

Project Start

February 2018

Project Duration

2 years and 3 months

Nominated Project Contact(s)

Jenny Woodruff

Project Budget

£178,667.00

Summary

- To assist Centrica with the design, testing and trial of the market platform known as the Cornwall local energy market.

Problem Being Solved

As part of DSO transition, DNOs expect to make greater use of flexibility services to delay or avoid reinforcement. Recruiting and operating flexibility services can be expensive and methods used to date have not encouraged the development of a wider market or the exchange of data with third parties. The development of a market platform to simplify the process of trading flexibility services, could not only reduce procurement costs for DNOs but would also improve the information available to third parties to avoid conflicts in resources and to monitor the operation and development of the flexibility market. Similarly, the advantages and disadvantages of the potential market models have not yet been fully explored. Testing different ways of matching buyers and sellers such as through a spot market, potentially including local regional pricing, will inform the DSO transition.

Method(s)

The visibility plugs and socket project seeks to investigate the use of a market platform to procure and dispatch flexibility services. The process of designing, building and testing the market platform will provide learning that will inform the way flexibility markets operate, DNOs procure services and data is exchanged between interested parties.

Centrica are creating a market platform which will enable sellers of flexibility services to see the requirements in a local area from multiple purchasers, similarly it will enable buyers of flexibility services to select from a range of potential suppliers including multiple aggregators or larger customers providing services without an intermediary. The platform can then be used for the arming and dispatching of services and will support the processes for validation of service delivery and settlement. The information on the platform can then be used for notifications between parties to reduce the negative impact that one party's use of flexibility services may have on another, but in the longer term could be analysed to ensure that flexibility markets are growing and operating as expected.

WPD are assisting in the design, testing and trial of the platform. The trial of the market platform will include different seasons and market models and will investigate the impact of purchasing at different timescales or volumes on prices.

A market platform is expected to deliver the following benefits;
Reduced cost in recruiting flexibility services as the central point is easily accessible to all aggregators and larger companies that may choose to act as their own aggregator if the process is simplified.

Encouraging new entrants into the market, making flexibility services a realistic option more often, and also reducing the average prices for flexibility services from having greater competition in supply.

Avoiding wasted payments on flexibility services that are negated by other parties via the exchange of information.

Improved planning by having better information on the availability of flexibility resources and the viability of non-network solutions.

Scope

The project will trial the market platform in Cornwall, by simulating constraints to demonstrate the use cases of

Seasonal peak lopping

Maintenance window extension

Post fault response

These will be operated with two market mechanisms

Quote and tender model (with variations in notice periods)

Spot market

And will be simulated for both transformers and circuits at 132kV and 33kV.

Objective(s)

- To determine the data exchanges that are required to support the platform and the practicalities of purchasing and operating flexibility services via a market platform.
- To determine a means of optimising the selection of services from those available, which may include other factors than price, such as reliability.
- To investigate the impact of varying attributes such as market model, purchasing timing etc.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

The project will be successful if it delivers the following outcomes;

- Business processes validated and we have understanding of their practicality / limits.
- Data exchanges validated and can be used as a specification for future systems.
- Process to optimise and combine offers of flexibility services trialled and refined for inclusion in future systems.
- Service delivery validation explored and options understood, including whether half hourly metering data can provide sufficient information.
- Understanding of whether load modelling and optimal service selection are best placed within the “socket” of a market platform or the “plugs” of associated software.

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

The project is limited to Cornwall by the associated ERDF project, but given the proliferation of renewables in Cornwall, and the new installations to provide flexibility services, this will be of sufficient size to demonstrate the market platform. The platform is not being used to remediate real constraints and therefore the number of services trialed and the number of times the services are called upon is the minimum to allow for conclusions to be drawn balancing the need to

support the learning with keeping down the cost of DSR payments.

Technology Readiness at Start

TRL5 Pilot Scale

Technology Readiness at End

TRL7 Inactive Commissioning

Geographical Area

Cornwall – focusing on the 33kV and 132kV Networks.

Revenue Allowed for the RIIO Settlement

None

Indicative Total NIA Project Expenditure

£160,800

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)

Implementing the platform is expected to reduce the number of staff required to procure and operate flexibility services. A broad estimate would suggest that this could equate to around £200k a year in staff costs. However assuming that the platform also encourages and develops the market in flexibility services while saving wasted payments on services that cancel each other out then the real financial benefits should include an element of the savings from using flexibility services as an alternative to traditional reinforcement. A recent research paper "Stochastic Intra-Day Engagement of Flexibility Services for Cornwall Local Energy Market" has suggested that for Cornwall, the benefits of a market that operated perfectly could be over £2m, allowing for savings with realistic market imperfections to still be significant.

Please provide a calculation of the expected benefits the Solution

This project is not seeking to manage actual constraints therefore there is no deferral or avoidance of reinforcement costs resulting from the project. The potential financial benefits are given above.

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

There is the potential either to develop a further number of local market platforms or to use the knowledge to develop competing market platforms. The costs for developing and testing new platforms would be in the order of £1-2m but the cost of replicating existing platforms would be significantly lower, likely to be under £300k. They would be valid options for all network Licensees systems.

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

The full development cost of the platform will involve Centrica costs that are part of the ERDF project which would be difficult to ring-fence.

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

All DNOs can benefit from better processes to purchase and execute flexibility services. This is an enabler of the DSO transition.

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

Our innovation strategy includes for investigating the commercial arrangements and practical implications of applying DSM and DSR.

☑ 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.

n/a

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

n/a

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

n/a

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

n/a

This project has been approved by a senior member of staff

☑ Yes