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

Oct 2019

Project Reference Number

NIA_WPD_046

Project Registration

Project Title

IntraFlex

Project Reference Number

NIA_WPD_046

Project Licensee(s)

National Grid Electricity Distribution

Project Start

October 2019

Project Duration

2 years and 2 months

Nominated Project Contact(s)

Matt Watson

Project Budget

£1,281,202.00

Summary

The focus of the trial is to understand how to deliver a link between DNO procurement activity and Balance Responsible Party (BRP) imbalance positions.

As such the project will look to trial a short-term marketplace for the procurement of DNO flexibility. This will trial an active rebalancing link to the Nord Pool intraday market as well as an information exchange with day-ahead markets. The project also aims to open up for independent aggregators to participate alongside BRPs

Preceding Projects

NIA_WPD_017 - Entire

Third Party Collaborators

Smart Grid Consultancy

NODES

Problem Being Solved

It is acknowledged that to make flexibility services commercially attractive to participants, the ability to stack revenues from multiple sources is essential. Previous work in our SYNC, Entire and EFFS projects have looked to stack revenues against Electricity System Operator (ESO) services, however limited work has been done to link services into wholesale processes. The omission of these markets limits the potential for stacking revenue.

Furthermore, this lack of link creates imbalance in the wider system but does not account for it. Whilst Balancing Mechanism (BM) providers of ancillary services see their positions adjusted following calls by the ESO, there is no such process for the DNO. With current volumes of DNO called Demand Side Response (DSR) limited, this imbalance is lost in the noise, however as volumes increase a process to account for them would allow for the whole system cost of the action to be reflected.

NODES has developed a marked design for an integrated flexibility market aimed at serving all levels of the grid both Distribution System Operator (DSO) and ESO.

Method(s)

The focus of the trial is to understand how to deliver a link between DNO procurement activity and Balance Responsible Party (BRP) imbalance positions.

As such the project will look to trial a short-term marketplace for the procurement of DNO flexibility. This will trial an active rebalancing link to the intraday market operated by Nord Pool as well as an information exchange with day-ahead markets. The project also aims to open up for independent aggregators to participate alongside BRPs.

Scope

The trial will be broken into five work packages based around two trials. These trials will consist of a test of NODES' ShortFlex service for DNO flexibility, followed by a more comprehensive trial with automated rebalancing of imbalance positions through the integration with the GB intraday market.

The work packages are:

- WP1 Project Management and reporting
- WP2 Detailed Stakeholder Engagement & Market Design
- WP3 NODES System & Process build
- WP4 WPD System & Process build
- WP5 Trial

WP2 will include an extensive engagement piece with potential stakeholders to refine the proposed market design and validate assumptions and value flows.

WP3 will focus on the development of the NODES platform and it's deployment within WPD. The development work will be carried out at NODES expense.

WP4 includes the design of new Payment Mechanics, the build of a link between the NODES platform and dispatch processes, a review of procurement law and analysis on the ability to target future audits with existing data.

WP5 will trial the platform. This will be broken into two sub-trials, with the initial phase looking to test the short term flexibility markets and the second phase testing the full intraday rebalancing link.

Objective(s)

The objective of the project is to develop learning on

- The operability of short term flexibility markets
- The value of increased information at the day ahead stage to suppliers
- The value of an integrated link for rebalancing in the intra-day market

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

- Development of a UK Market design for short term flexibility market that reflects imbalance costs
- WPD access to ShortFlex products that have the potential to benefit the distribution network
- Procurement of ShortFlex via the NODES platform
- Demonstration of ShortFlex products that limit supplier exposure to imbalance costs
- Delivery of the project on time and on budget

Project Partners and External Funding

Smart Grid Consultancy (SGC): Will manage the project for WPD. In addition they will provide detailed technical assistance on service design, building on previous trial learning and participant recruitment support. SGC will also deliver the audit targeting work.

NODES will develop and deploy the platform. This will be based on their experience of delivering flexibility markets across Europe. The GB intraday integration will be developed as part of their existing R&D programme (£360k).

Potential for New Learning

The project expects to develop learning on the following topics:

- The operability of short term flexibility markets
- The value of increased information at the day ahead stage to suppliers
- The value of an integrated link for rebalancing in the intra-day market

Scale of Project

The trial is aimed at larger providers of flexibility. Whilst this is primarily a technology and process trial, it will initially focus on areas where CMZ procurement is already underway. This should maximise any network benefit and facilitate any potential roll out to BaU. However, should sufficient flexibility not be recruited, the target area will be widened to allow for the trials to proceed.

Potential providers will be engaged within the first phase of the project (in WP2) to understand the relevance of the market design to them. Within this phase, appetite for participation will be gathered and initial recruitment undertaken.

Technology Readiness at Start

TRL5 Pilot Scale

Technology Readiness at End

TRL7 Inactive Commissioning

Geographical Area

The geographic area will be detailed as part of the trial design phase. It will initially focus on areas where CMZ procurement is already underway. This should maximise any network benefit and facilitate any potential roll out to BaU. However should sufficient flexibility not be recruited, the target area will be widened to allow for the trials to proceed.

Revenue Allowed for the RIIO Settlement

N/A

Indicative Total NIA Project Expenditure

£829,082

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)

If the problem were solved, risk associated with the provision of flexibility services would be reduced. In the long run we would expect to see increased liquidity within DNO DSR markets and a corresponding reduction in pricing.

Please provide a calculation of the expected benefits the Solution

n/a

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

It is anticipated that the value of DNO DSR could reach £12.1m/year by the end of ED1 (£3.38m/year within WPD). If the increased liquidity drove a 10% saving in this value the savings would be £340k/year across WPD or £1.21m/year across the UK.

Base cost = 12.1m/year
Method cost = 12.1*0.9= £10.9m/year
Financial benefits = £1.21m/year

It should be noted that a number of initiatives are currently underway to improve liquidity in DNO flexibility markets. The value attributed to each, and the total value created is unknown at this stage.

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

All DNOs have committed to the assessment of flexibility services for relevant reinforcement of significant value. This method should be applicable to all flexibility procurements.

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 network licensees have committed to the assessment of relevant reinforcement of significant value against flexibility options. With this commitment to flexibility, the volumes procured will increase and the impact Suppliers will increase. This project will look to investigate a solution to this issue and is applicable to all network licensees.

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.

There are a number of projects looking into the topic of flexibility services and how they can be improved.

The focus of this project is the trialing of a more explicit link between the DNO action and the BRP. This will be done through an informational link at the day-ahead stage and a full auto re-balancing link.

We are unaware of any such projects.
Through the project we will coordinate with wider projects to looking at flexibility services to ensure we are building on the latest industry learning

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

A market to link DSO flexibility service procurement to the GB intraday market, and the automatic rebalancing of participants has not

been trialled in the UK. Neither has the provision of information to suppliers on a day ahead basis. This could address many concerns about the provision of whole system benefit and the communication of requirements between DSO and suppliers.

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 could not proceed without innovation funding due to the technical and commercial risks associated. This includes the risk that flexibility bought through the trial is more expensive than through alternative means.

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 looks to investigate the options for creating more cost reflective market signals for DNO flexibility. Due to the commercial risk (potential for more expensive flexibility) as well as the technical risk (the trialing of systems unproven in the UK), the NIA is the best route to support the project.

This project has been approved by a senior member of staff

☑ Yes