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NIA Project Registration and PEA Document

Date of Submission

Jun 2022

Project Reference Number

NIA_WPD_069

Project Registration

Project Title

Generating Additional Markets for Mature Access to Flexibility (GAMMA Flex)

Project Reference Number

NIA_WPD_069

Project Licensee(s)

National Grid Electricity Distribution

Project Start

June 2022

Project Duration

0 years and 10 months

Nominated Project Contact(s)

Jacob Lynch

Project Budget

£374,952.00

Summary

GAMMA Flex will build on the learning of Intraflex and seek to push our understanding of what is needed for a liquid flexibility market to the next level by including some key new learning through for example, secondary trading, Demand Turn Up, and other services, which should give participants the opportunities that they need to stack revenues from adjacent markets. It will be delivered by designing a set of market blueprints that will envisage how each services will interact and fit in the future flexibility market place. These are all vital insights that we need to progress our aims and understanding for flexibility markets. It also supports our strategic consultation on Flexibility and has potential to easily transition into business as usual if proven.

Problem Being Solved

The IntraFlex project, which trialled closer to real-time flexibility procurement, identified several areas that need to be further developed for the market to mature. As part of IntraFlex, WPD purchased flexibility services as 30-minute products, starting 7 days ahead of delivery and up until 90 minutes ahead of delivery, in a marketplace operated by NODES.

Whilst the project demonstrated that closer to real time flexibility procurement works and adds value, the project also identified a number of gaps that need to be addressed to build a liquid, well-functioning market.

The gaps that were identified included:

- Need for secondary trading – IntraFlex only allowed flexibility service providers (FSPs) to sell flexibility services. This prevents FSPs from trading out positions, e.g. in case an FSP is operationally unable to deliver flexibility it has sold or wishes to trade out of its position for commercial reasons. Over the longer term, secondary trading would be expected to build market liquidity and is a key OFGEM expectation.

- Need for demand turn up services – IntraFlex included up regulation (generation upturn/demand downturn) only. In areas of the

network with a high penetration of renewable generation, including down regulation (generation downturn/demand turn up) this service could help free up network capacity and enable new renewable assets to connect.

- Need for baselining methodology to develop - IntraFlex applied a default baseline, calculated as a simple average across historic meter readings, and gave FSPs the option of overriding the default baseline with a baseline calculated by the FSP (submitted prior to trading). Feedback from FSPs that relied on the default baseline highlighted that a baseline based on historic meter readings can get distorted when the calculation includes periods for which the FSP has already delivered flexibility services. There is value in exploring the impact of different baselining methodologies further to better reflect positions.

- Need for a link to longer term flexibility procurement- There needs to be a link between the near-term market and flexibility purchased as longer term availability agreements, such as Flexible Power. The link is needed to ensure that the lowest cost flexibility is activated, whether that means activating a longer-term agreement or purchasing flexibility in the near term market.

- Need for cooperation with the ESO – At present there is no direct link between DNO level flexibility procurement and ESO procurement of balancing services. A link would help ensure flexible resources are activated where they add the most value to the system as a whole. A link would also be expected to help build liquidity in the DNO level flexibility market, as it would encourage FSP participation by enabling FSPs to participate with assets located both inside and outside of WPD's congestion zones and enable revenue stacking. Part of this is also being covered as a desktop research exercise under Project COMMANDER with ESO and will feed into GAMMA Flex.

The intention is to address these needs through a project where the near-term procurement developed as part of IntraFlex is continued and the five points above are addressed, through market designs. At the end of GAMMA Flex, it will be decided whether a trial will be undertaken, either through innovation one part of business as usual.

Method(s)

The innovation work is expected to be delivered through several linked work packages as follows.

- WP1 PM and reporting.
- WP2 - Market Design & Blueprint - Milestone 1: Detailed market design stakeholder feedback complete.
- WP2 - Market Design & Blueprint - Milestone 2: Detailed market design complete.
- WP2 - Market Design & Blueprint - Milestone 3: Detailed technical specifications stakeholder feedback complete.
- WP2 - Market Design & Blueprint - Milestone 4: Detailed operational & technical specifications complete.
- WP2 - Market Design & Blueprint - Milestone 5: Updated Rule book.
- WP3 - ESO Co-ordination Analysis - Milestone 6: ESO Co-ordination Complete.
- WP4 - Operational Trials Design (Optional) - Milestone 7: Operational Trials Design Complete.
- WP1 - Project Management and Reporting - Milestone 8: Closedown report.
- WP5 - BAU Handover - Milestone 9: Handover.

Scope

A flexible energy system is estimated to be worth in the order of £16.7bn pa out to 2050 , according to the Carbon Trust and Imperial College London. Currently, whilst procurement for flexibility services is increasing across all DNOs, it is still a nascent market.

During ED2, DNOs are expected and WPD is committed to be taking a Flexibility First approach to constraints and so it is imperative that we are ready to take the next step. Having undertaken near real time flexibility procurement under Intraflex we believe that we can see a roadmap out to this and as such published our recent consultation on our vision for the future.

It is anticipated that the value of WPD Demand Side Response (DSR) services could reach £9.3m over the next five years (from our Distribution Network Options Assessment)[3]. Even if increased liquidity drove a 10% saving in this value the savings could be £186k per year however indications from Intraflex would suggest that we may be able to achieve greater savings. In addition, procurement would also defer some £134m of network reinforcement works, therefore pursuing the optimal model for flexibility services has significant benefits for WPD and its customer base.

Moreover, DNOs are estimating that they will be procuring £57.5m on flexibility services out to 2028 and this project could help further drive improved liquidity and drive cost savings to customers. This could equate to a conservative 10% saving across the board, which would equate to £5.75m.

Accessing markets that may be available to us via markets like NODES (& potentially several others like EPEXSPOT) will be vital for achieving market liquidity and therefore saving customer's money.

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

The costs of rolling out the solutions proposed across the UK would be limited. It would require each DNO to license the required platform which is a commercial product from NODES. Moreover with the project testing the principle of linking an independent market place to Flexible Power(a product used by 5 of the 6 DNOs), via an Open API it would create the potential for all market places that may emerge to take advantage of a very simple route to accessing and providing DNO flexibility opportunities. Therefore, we believe that this would ultimately be repeatable and the cost to consumers across all DNOs would be negligible. The costs of the platforms would probably be shared with DNOs, ESO, Generators, Suppliers and Aggregators who would probably pay subscription or transaction fees.

GAMMA Flex will aid this by designing a set of market blueprints that will simplify the process of enabling new marketplaces that can then be integrated with DSO systems, policies and processes. The need for specific blueprints have been identified to include;

- Secondary trading
- Demand turn-up services
- Implementation of appropriate baselining methodologies
- Creating links to longer flexibility procurement
- Enhancing coordination and cooperation with the ESO

Objective(s)

We have a number of key objectives as follows:

- To develop a blueprint to allow secondary market trading.
- To develop a blueprint to allow demand turn up services.
- To create a blueprint for longer flexibility procurement linked to short term flexibility.
- To co-create a blueprint to link to ESO procurement of balancing services.

The need for secondary trading – Allow FSPs to trade out of positions, over the longer term, secondary trading would be expected to build market liquidity.

The need for demand turn up services – In areas of the network with a high penetration of renewable generation, including down regulation (generation downturn/demand turn up) could help free up network capacity and enable new renewable assets to connect.

The need for a link to longer term flexibility procurement - There needs to be a link between the near-term market and flexibility purchased as longer term availability agreements. The link is needed to ensure that the most appropriate flexibility is activated.

The need for cooperation with the ESO – At present there is no direct link between DNO level flexibility procurement and ESO procurement of balancing services.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

N/A

Success Criteria

GAMMA Flex will focus on the following measures of success:

- Market blueprints designed for secondary trading services.
- Market blueprints designed for demand turn-up services.
- Market blueprints designed for linking of long-term flex with short-term flex.
- Successful engagement and coordination with stakeholders.
- Successful designs for cooperation with the ESO.

Project Partners and External Funding

Project Partners are Smart Grid Consultancy (SGC) and NODES and their roles are as follows:

SGC will provide detailed technical assistance and initial Market Design, stakeholder management and subject matter expertise.

NODES will provide expert support on the designs from a flexibility market platform perspective and play an active role in the authoring the blueprints for technical design and market rules. No platform development will be undertaken, and the designs produced will reflect an “open” design so that any market place can take them forward.

£32,348 will be externally contributed from the project partners.

Potential for New Learning

We will use the various forms of socialisation on our learning as follows:

- Social Media.
- One to One engagement with FSPs.
- Existing relationships based on Intraflex.
- Events and Webinars.

New learning will be focussed wholly on the following area:

- Is it possible to design a set of market blueprints that can be adopted on a range of flexibility market platforms.

Scale of Project

The project is a design exercise and therefore will primarily require a desktop approach, although there will be significant stakeholder engagement amongst key industry players including DNO / DSO representatives and potential Flex Providers. It is important that to meet its success criteria the outputs will progress the services to a point where an operational trial or even direct BaU roll out is feasible.

Technology Readiness at Start

TRL6 Large Scale

Technology Readiness at End

TRL7 Inactive Commissioning

Geographical Area

Not Applicable- although the designs and blueprints are expected to be relevant across GB.

Revenue Allowed for the RIIO Settlement

N/A

Indicative Total NIA Project Expenditure

£337,456

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)

It is anticipated that the value of WPD DSR services could reach £9.3m over the next five years (from our Distribution Network Options Assessment). Even if increased liquidity drove a 10% saving in this value the savings could be £186k per year however indications from Intraflex would suggest that we may be able to achieve higher savings. In addition procurement would also defer some £134m of network reinforcement works, therefore pursuing the optimal model for flexibility services has significant benefits for WPD and its customer base.

Moreover, DNOs are estimating that they will be procuring £57.5m on flexibility services out to 2028 and this project could help further drive improved liquidity and cost savings to customers. A 10% saving across the board would equate to £5.75m.

Please provide a calculation of the expected benefits the Solution

Base cost = £57.5m (out to 2028)

Method cost = 57 * 0.9 = £51.3m (out to 2028)

Financial benefits = 57.5 – 51.3 = £6.2m (out to 2028)

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

The key diver to this project is to ensure that the results will be easily replicable by all DNO's. We are using what we have already in terms of Flexible Power and proving that market designs can be a simple integration into BaU through our close working with the DNO / DSO processes that have already been established As Flexible Power is a collaboration between 5 of the DNO with the potential for the remaining two to join, it is feasible that the methods could be ubiquitous in their impact and standardise the offerings to providers.

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

Negligible- as we are trying to ensure that the solution trialled can be adapted easily from existing Flexible Power processes.

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 learning will be entirely replicable across GB, it will inform how DNO's can optimally access marketplaces for flexibility and enable the stacking of revenues for Flexibility Service Providers. In addition it will be attempting to prove that it can be done in a way that is repeatable and can be easily transitioned into BaU.

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.

The services seeking to be procured under this project have never been procured or trialled in the UK before in this context and moreover attempting to run both short-term flexibility trading with longer-term procurement activities has not been trialled before.

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

None of the areas we are trialling have been done before in the context of the UK Energy market. Aligning learning from existing trials

into what we are doing in business as usual in order to get the maximum benefit will further test how far or near we are to having that vision and incumbent certainty as to what flexibility procurement should look like and this aligns perfectly with the recent consultation that we undertook.

Relevant Foreground IPR

All parties have agreed to the default IPR requirements.

The primary development will be:

- UK Market design;
- UK Market design technical adaption white paper. (This will include high level flow chart of system component);
- Technical documentation to support data interfaces for provision of services from external Flex Markets.

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

There is insufficient activity in the Flexibility market at present. The processes are still nascent and forming. Because of this the trials that we are proposing to undertake in part do not exist and so therefore would be potentially complex to run in parallel with business as usual furthermore it would also create additional risk and uncertainty. However, we are cognizant of the potential alignment of these trials to business as usual and intend to repurpose and reuse to avoid unnecessary duplication.

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

There is insufficient activity in the Flexibility market at present and as such the risks associated with testing and trialling new concepts like this have a measure of risk beyond which we would normally undertake business as usual trials. However, we do want to test these principles as near to BaU as we can in order to be able to transition any learning over as quickly as possible, similar to that done under Future Flex.

This project has been approved by a senior member of staff

☑ Yes