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

Jan 2024

Project Reference Number

NIA_UKPN0100

Project Registration

Project Title

Trading Connections: Exploring a novel approach to connections queues

Project Reference Number

NIA_UKPN0100

Project Licensee(s)

UK Power Networks

Project Start

February 2024

Project Duration

1 year and 7 months

Nominated Project Contact(s)

Rona Mitchell

Project Budget

£773,000.00

Summary

This project will investigate a novel approach to increase the speed of connections to the network. The project aims to enable appropriate visibility of the UK Power Networks connections queue; and facilitate commercial discussions between customers around trading queue positions if benefit can be demonstrated.

Nominated Contact Email Address(es)

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Problem Being Solved

When a customer receives a quote for an electrical connection, they join the end of the connections queue. This is the case at all voltages, although in many cases at the low voltage level, there is nobody else in the queue. Once in a queue, customers have no facility to change their queue position. This means they must wait to get to the front of the queue to connect, even if they are ready to connect immediately. Whilst there is significant variance across regions, where reinforcement is required, the time customers may have to wait to energise would range from 3 months to 3 years.

There is an existing initiative by the ENA to improve and accelerate customer connections and UK Power Networks is closely involved with this. The main feature of this approach is that customers in the queue have a set of milestones that they must achieve in order to keep their queue position. If customers who are not ready to connect fail to meet their milestones, they will lose their spot in the queue completely, therefore shortening the queue for those behind. This means that the queue will move faster and customers ready to connect will not be stuck behind customers who are not ready. However, this system does not enable customers to know how much capacity is available on the network or to move themselves from their existing queue position.

More information about the existing ENA initiative is available here: Improving and accelerating customer connections – Energy Networks Association (ENA)

Method(s)

This project looks to develop a solution to:

· Enable appropriate visibility of the UK Power Networks' connections queue; and

· Facilitate commercial discussions between customers around trading queue positions if benefit can be demonstrated.

This will be done by:

· Carrying out best-in-class engagement with customers, stakeholders, other industries and Ofgem to define the requirements for how the solution will work, how data will be exchanged, and how we will ensure the system will conform to security, data privacy and regulatory requirements. This will make up the bulk of the first phase of the project, and include completion of a desktop design. A comprehensive engagement plan and approach will be developed, and will include meetings with all stakeholders identified. Stakeholders will influence the initial design, and have the opportunity to iteratively review and test the design and product; and

· Developing and trialling the digital solution which meets the requirements set out in the first phase. This will be carried out after successful completion of the first phase.

If successful, the solution will be deployed into business-as-usual operation and the solution will be available for all UK Power Networks' connections customers. The learnings from this project, if successful, could then be taken up by other DNOs and the approach could then be used across the UK.

Data Quality Statement:

It is a requirement of this project that data quality is taken into consideration when building the solution. The information accessible in the solution is intended to be used to make commercial decisions. Therefore, data accuracy (and a management plan to ensure it is maintained) is paramount. The project will carry out and publish a data risk assessment.

Scope

The project scope and approach is to carry out workstreams 1 and 2 in the first phase, then workstreams 3 and 4 following a go/no go decision at the end of the first phase.

Workstream 1: Conceptual design and platform requirements

· Review of adjacent industries, such as financial markets and shipping industry as well as electricity distribution networks in other countries.

· Engagement with relevant internal stakeholders

· Customer and regulator engagement to understand pain points in process and support the initial development of the new process. Engagement points will be before, during and after the completion of the conceptual design.

· Data plan – carry out a detailed data risk assessment and plan for how we will ensure data is correctly managed in the system.

· Conceptual design including documenting the new customer process.

· Develop detailed cost-benefit analysis (CBA) for the solution

Workstream 2: Procurement

· Prepare procurement documentation to identify a delivery partner to build the solution (a system to hold up to date information of connection offers and capacity allowing visibility, as well as customer-facing portal to allow customers to initiate trading of position in queue).

· Recruit a delivery partner

Workstream 3: Development and testing of solution

- Development of the solution
- Development of external website to provide route to trading system
- Development of trial plan. This will include defining the trial approach, how the trial will work and success criteria for the trial.
- Execution of trial for selected area.
- Feedback gathering from customers and stakeholders

Workstream 4: Preparation for deployment

- Identify the arrangements required for enduring solution.
- Preparation of internal and external documentation required for ongoing use.

Objective(s)

To increase the speed of connections to the network, improve satisfaction of customers and improve visibility of network capacity. There are three sub-objectives that form part of successful project delivery, where steps two and three depend on a successful delivery of Workstream 1 and Workstream 2 (go / no go decisions).

1. Identify the solution requirements:

a. Analysis of adjacent markets; and

b. Engagement with customer and stakeholder to gain a greater understanding of needs and wants.

2. If value can be shown, Develop the proof of concept solution and trial approach.

3. If proof of concept developed, solution tests carried out trial and gather feedback from stakeholders.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

Customers using this solution will be those requesting large capacity electrical connections at 11kV or higher. Due to the scale, these will be organisations, rather than domestic electricity customers. There are requirements from Ofgem that network operators treat all connections customers the same, without preferential treatment.

However, the project will ensure the customer-facing tool is as simple as possible to reduce any technical or other barriers to organisations. This will mean that connections secured for providing electricity to customers in vulnerable circumstances or at risk of being left behind do not face an unfair disadvantage.

Success Criteria

The project will be considered successful if it meets the following criteria:

- The project develops learning to: understand whether this solution is wanted by customers, and the expected benefits are assessed in more detail;
- It meets the solution-specific success criteria, which will be defined during the project; and
- The UK Power Networks facing part of the solution is built and tested.

Project Partners and External Funding

There is no external funding proposed for this project beyond the NIA funding. We estimate the UK Power Networks' NIA expenditure to be £773,000, of which £695,700 (90%) will be recovered from NIA.

Delivery partners to build the new solution will be identified as part of project delivery. The project plans to work with the Cambridge Energy Policy Research Group, who will provide technical/expert advice and supporting analysis. They have been selected to support the project due to their general expertise in this area, as well as their specific experience on relevant previous projects such as Energy Exchange and Flexible Plug & Play.

Potential for New Learning

This project will develop new learning around customer appetite for enhanced visibility of the connections queue, and views on how this could be brought to life. The project will also carry out a data protection impact assessment to determine what can and cannot be shared (and with who), the learnings of which will be made available through the project.

Scale of Project

This is a software project, and the database and proof of concept tool will be developed for all three licence areas of UK Power Networks. UK Power Networks has three separate regional planning teams. To ensure acceptance by all regions, it is important that any new tool is developed with the consultation of all regions. Customers from all across all three regions will be invited to participate in the project, from initial engagement through to user testing. Because it is a software project, if the scope was limited to less than all three areas, the benefits would be less and the project cost would be unchanged.

Technology Readiness at Start

TRL6 Large Scale

Technology Readiness at End

TRL8 Active Commissioning

Geographical Area

The project will take place mostly at the UK Power Networks' offices in London and Crawley. Engagement events will take place in other locations throughout the UK Power Networks geographical area.

Revenue Allowed for the RIIO Settlement

No funding was provided within the current RIIO-ED2 settlement that will become surplus to requirements as a result of this project.

Indicative Total NIA Project Expenditure

We estimate the UK Power Networks' NIA expenditure to be £773,000, of which £695,700 (90%) will be recovered from NIA

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:

This project has the potential to facilitate the energy system transition by facilitating quicker and more efficient connection to the distribution networks, supporting economic growth and energisation of Low Carbon Technologies.

Allow projects ready for immediate connection to connect quicker to the grid by a novel approach. This will include enhanced visibility to customers and allowing customers to trade connection queue positions with each other.

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)

n/a

Please provide a calculation of the expected benefits the Solution

Whilst there is significant variance across regions, where reinforcement is required, the time customers may have to wait to energise would range from 3 months to 3 years.

Base case: Customers cannot change their queue position and must wait for reinforcement work to be completed before connecting. In some cases, customers would mobilise a site and then demobilise due to delays. The cost associated with this is £50k per site.

Method case: There are two main benefits cases:

1. Customers can change their queue position, and could connect earlier if a successful trade is made. For each successful trade, we have taken a conservative estimate that there will be customer benefit of £12k, made up of:

a. combined benefit of the customer who sold their queue position plus the benefit of the customer who bought the queue position.

b. Connections customers no longer needing to engage consultants as part of a large connection application

This value will be reviewed and validated within the project.

2. There is also an estimated time saved for existing customers and stakeholder groups in the provision of greater levels of capacity data through a self-serve tool / Open Data portal. Out of the approximately 1,000 budget requests we receive per year, we believe that 10% of these could be eliminated if more information regarding the connection queue was published. The benefit of this would be worth the amount of time saved in avoiding completing a budget request template. The overall benefit is estimated to be £6k per year. We also believe this will lead to a saving within the DNO, as the network planning team will not have as many customer queries to respond to.

Compared to the baseline, there is value of £790k total for RIIO-ED2 estimated. This is made up of £160k benefits to the DNO and £630k benefits for customers.

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

All DNOs have major connections customers and could make use of the proposed solution. The issue of facilitating efficient connection, and ensuring that 'zombie projects' do not block the way for projects ready to connect, is an area of increasing focus in the industry. The benefits will depend on the state of connection queues across different networks.

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

It is estimated that the cost of rolling out the method will be approximately £200k per DNO group. This is based on previous experience of rolling out a software solution which requires some customisation.

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

This project will develop new learning around customer appetite for enhanced visibility and scrutiny of the connections queue, and views on how this could be brought to life. The project will also carry out a data protection impact assessment to determine what can and cannot be shared (and with who), the learnings of which will be made available through the project.

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.

There are a number of ongoing and recent projects which aim to improve the speed of connection for customers to the network. We believe that this project is unique in that it is exploring a secondary market solution in the connections queue stage.

SSEN's ExtenDER NIA project is investigating 'Market-Based Connections'. This is developing a potential new type of connection that permits assets to connect to the grid on a non-firm basis (with no limited capacity guarantee from the DNO) and trade their way to the required import capacity by trading with others already connected to the network in a local flexibility market.

ENWL's BiTraDER NIC project is demonstrating how access to a neutral market allows connected resources to trade their obligations bilaterally.

NPg's Diversified Flexible Queue Management SIF project looked at maximising network utilisation in tandem with building new capacity. It is investigating the viability of real-time network and asset data to drive network operation and adaptive management of distribution connections

All the projects above involve looking at the behaviour and actions of assets already connected to the network, and ways to release network capacity using innovative approaches.

This project is unique in that it is exploring secondary market for customers in the existing connection queue. No unnecessary duplication will occur as a result of this project.

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

To the best of our knowledge, the approach of queue trading within electrical connections is not done anywhere else in GB or globally. The project is aware of other industries, such as shipping, that take a similar approach, and a key part of the initial phase of the project is to engage with them and understand how their learnings can be lent to a distribution network application.

Relevant Foreground IPR

The project expects to develop learnings around queue management, including approaches from other countries and industries. The project will also develop learnings around stakeholder sentiment to a potential approach to trading spots in a connection queue.

Data Access Details

To view the full Innovation Data Sharing Policy, please visit UK Power Networks' website here:

https://d1oyzg0jo3ox9g.cloudfront.net/app/uploads/2023/10/UKPN-InnovationDataSharingPolicy-Nov-23-v1.0.pdf

UK Power Networks recognise that Innovation projects may produce network and consumption data, and that this data may be useful to others. This data may be shared with interested parties, whenever it is practicable and legal to do so, and it is in the interest of GB electricity customers. In accordance with the Innovation Data Sharing Policy, UK Power Networks aim to make available all non-personal, non-confidential/non-sensitive data on request, so that interested parties can benefit from this data.

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

The NIA funding will enable UK Power Networks to undertake a project which has technical and operational risks associated with it, in terms of a lack of certainty in the results. This project seeks to investigate a novel approach to queue management that is not done anywhere else in GB or globally, to the best of our knowledge. There is therefore risk associated with this novel solution and its effectiveness. In addition, if successful, it is expected that the majority of benefits from this project would accrue to customers. Due to the level of risk in the novel solution and low return to shareholders, the business cannot fund the project.

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 can only be undertaken as an innovation pilot given the operational risks associated with the deployment of an unproven solution. The proposed approach to allowing customers to trade queue positions with one another also has an unproven business case, and the range of potential benefits should be tested before the tool can be deployed.

As noted in the NIA guidance, certain projects are speculative in nature and yield uncertain commercial returns. This is the case for with this project. There is a commercial risk that the solution developed as part of the project is not adopted by the stakeholders involved following the trial period. This could be due to the fact that the solution has not reach the level of maturity required for business-as-usual application, or due to stakeholder sentiment. This risk is being mitigated against through early engagement with stakeholders and ensuring requirements are clearly defined and documented. If the project is successful, it will have proven a number of technical solutions and business processes which will improve customer service. The specific details regarding the benefits are captured earlier in this document.

This project has been approved by a senior member of staff

☑ Yes