

NIA Project Registration and PEA Document

Date of Submission

May 2018

Project Reference Number

NIA_UKPN0035

Project Registration

Project Title

Network Vision

Project Reference Number

NIA_UKPN0035

Project Licensee(s)

UK Power Networks

Project Start

May 2018

Project Duration

2 years and 5 months

Nominated Project Contact(s)

Rona Mitchell

Project Budget

£975,800.00

Summary

The purpose of this project was to design and build a modern fit-for-purpose outage planning and tracking tool. Our aim was to better serve customers whose sites are impacted by Extra High Voltage (EHV) outages. With our project partners Cyient, we developed a scalable network outage planning, tracking and integration platform (OPTIP) with a customer-facing web portal to provide information about generation customer curtailments and shutdowns. The tool also provides interface for customers to engage with our Outage Planners.

To understand customer requirements, we hosted a customer workshop in January 2019 where we gathered specific requirements for the tool. We followed up and presented the software to customers at various points in the production process.

Nominated Contact Email Address(es)

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Problem Being Solved

Outage Planning is a key activity contributing to the normal operation of a DNO. The following problems and opportunities have been identified with the current system:

- Distributed Generation (DG) Customers are occasionally constrained due to planned network outages, and also request their own planned outages to conduct maintenance.
- Additionally, Distributed Energy Resources (DERs) including DG Customers have expressed that they would prefer to communicate and interact with us in a more dynamic and automated manner.
- Optimising annual outage plans across UK Power Networks and third parties such as National Grid, Network Rail, DERs and large load customers is critical in a dynamic and flexible energy system.

- Interaction between multiple parties requiring access to the network can no longer be managed via historic manual interaction due to increasing volumes of interaction.
- Outages inherently place the network at risk compared to standard running arrangements. Better management of the volume of outages will enable our growing number of connected DERs to support locational and system constraints.

Method(s)

We aim to develop a scalable network Outage Planning Tracking Tool (OPTT) that will have a customer-facing web portal to provide information about generation customer curtailments and shutdowns to our customers, and will provide an interface for our customers to engage with our Outage Planners.

We aim to conduct a procurement exercise to identify a suitable software supplier, work with the software supplier to design the tool, and provide support in its implementation and integration within UK Power Networks' IS ecosystem. We will test the tool both for functionality but also for user experience prior to implementation and integration.

Scope

The project will demonstrate the benefits of the OPTT across the entire range of business-as-usual outage planning activities in the EPN licence area.

The scope of this project will be to initially design the architecture of the solution through intensive stakeholder feedback, then commission and trial the solution in the EPN licence area. Following the demonstration trial, UK Power Networks will make an assessment to decide whether or not to invest further to transition the technology to Business as Usual.

In spring 2020, this project was extended four months following a combination of software issues and unforeseen outage planning complexities.

Objective(s)

The objectives of the project are to develop:

- a first-of-its-kind interactive OPTT that can be scaled across all GB DNO licence areas; and
- a planning and tracking tool that will allow GB DNOs to plan outages on the distribution network at the lowest cost possible across multiple programmes (capex deployment, I&M) whilst taking into account DER input.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

The use of the OPTT will be considered successful if it can demonstrate efficiency in outage planning labour requirements, cost savings as a result of optimal outage scheduling, and improved customer engagement. We will develop metrics that will measure the success of the tool across these categories in project delivery.

Project Partners and External Funding

We will conduct a competitive procurement to select a vendor who will be responsible for the development of the OPTT software, and its integration to our IS ecosystem.

Potential for New Learning

The proposed project has the potential to generate lessons that can be shared with the entire community of GB DNOs, as well as the TNOs. Lessons that will be shared are expected to include:

- The benefits of customer engagement in effective outage planning;
- Best practice for outage planning; and
- Potential synergies between outage planning and capital programme delivery/connections.

We will disseminate lessons learned from the project via our regular Innovation reporting channels, as well as the project closedown report. Other licensees will be invited to participate in demonstrations of the developed tool.

Scale of Project

The OPTT will be tested across the EPN license area in parallel with the existing outage planning approach. This way we will eliminate any operational risk, whilst also being able to measure the improvement that can be achieved by the OPTT at scale. We believe that testing the tool at operational scale is appropriate to capture the full range and scale of the potential benefits that can be achieved.

Technology Readiness at Start

TRL5 Pilot Scale

Technology Readiness at End

TRL8 Active Commissioning

Geographical Area

The OPTT will be will be tested by outage planners in the EPN licence area.

Revenue Allowed for the RIIO Settlement

We did not include expenditure relating to the development of an outage planning tool in our RIIO-ED1 business plan submission.

Indicative Total NIA Project Expenditure

£975,800

Project Eligibility Assessment Part 1

There are slightly differing requirements for RII0-1 and RII0-2 NIA projects. This is noted in each case, with the requirement numbers listed for both where they differ (shown as RII0-2 / RII0-1).

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 RII0-2 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 (RII0-1 projects only)

We expect that if deployed across our networks, the proposed solution can deliver savings across the following:

- Avoided losses in revenue to distributed generators from curtailment that is imposed in certain outages
- Improved efficiency in outage scheduling and reporting

Please provide a calculation of the expected benefits the Solution

Baseline: Equivalent base costs remain the same once the method is applied, therefore £0k

Method Cost: £833k, which is the NPV of the project cost

Benefits: £1456k, which is the NPV of benefits to DG Customers and improved efficiency to the DNO.

We expect that the project can deliver net financial benefit of £623k over the course of RII0-ED1. This is for the project scale, which is across one of our licenses.

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

All GB DNOs and TOs conduct outage planning activities similar to UK Power Networks, and could make use of the proposed solution. The internal benefits we expect could be replicated across GB, however benefits to customers will depend on the number of DERs connected to a network. All network groups bar one operate a GE PowerOn product- as such interfacing be resolved as part of this project for the benefit of other DNOs.

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

It is estimated that the cost of rolling out the OPTT will be approximately £300k per DNO group.

Requirement 3 / 1

Involve Research, Development or Demonstration

A RII0-1 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

RIO-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 and TOs take network outages. As such, they could all benefit from the development of the proposed OPTT.

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

None of the GB DNOs and TNOs currently have a purpose-built outage planning tool that enables optimal scheduling and customer engagement. No current IFI or NIA project has covered the scope of this project. As supported by our January 2018 RFI and by reaching out to other DNOs, we believe that there is no existing solution that provides the benefits of OPTT and recognises the rapid growth of DG and DER solutions within the networks.

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

This solution is innovative as it enables centralised information management and coordination to minimise the costs associated with outage planning both for network licensees and customers. As supported by our January 2018 Request For Information and by reaching out to other DNOs, we believe that there is no existing solution that provides the benefits of OPTT and recognises the complexity and rapid growth of DG and DER solutions within the networks. Furthermore, OPTT will enable an innovative approach to outage planning that will actively take into account DER customer input, and will enable closer customer engagement than has previously been possible. This project is being initiated now because the opportunities identified in the 'Problem(s)' section of this PEA document are now significant enough to justify developing a solution.

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

As there is currently no off-the-shelf solution which offers outage planning and tracking, there is a significant piece of development work in this project. As we transition to a DSO, we believe that a tool of this kind will be an enabler of future innovations which will be of direct benefit to the customer. In section 3.2 of the NIA Governance document, the DNOs are encouraged to pursue different types of Methods and Solutions. The development of an Outage Planning & Tracking Tool, and the associated benefits, are in an area that has not received a great amount of attention from any Innovation stimulus. Due to the risk involved in the project and not fully knowing whether the benefits can be delivered across our licence areas, these activities would not form part of our business as usual activities. In order to progress an innovative project which carries significant risk in implementation, additional innovation funding is required as a stimulus.

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 in network operations. The proposed approach to outage planning 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. 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 under section 2b of this document.

This project has been approved by a senior member of staff

☒ Yes