Scottish & Southern Electricity Networks

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

Aug 2023

Project Reference Number

NIA_SSEN_0070

Project Registration

Project Title

Near Real-time Data Access 2 (NeRDA 2)

Project Reference Number

NIA_SSEN_0070

Project Licensee(s)

Scottish and Southern Electricity Networks Distribution

Project Start

August 2023

Project Duration

2 years and 8 months

Nominated Project Contact(s)

Brian Wann, Innovation Delivery Manager

Project Budget

£935,603.00

Summary

The Near Real-time Data Access project was a small-scale demonstration project which made real-time data available to stakeholders. The original NeRDA project focused on the Oxford and Green Recovery areas, the NeRDA 2 project will make real-time network data available across the entirety of the SSEN network. In addition, NeRDA 2 will make connectivity and load model data available alongside near real-time monitoring data to provide stakeholders with enhanced visibility of our network utilisation to allow them to make better informed decisions.

Preceding Projects

NIA_SSEN_0050 - Near Real-time Data Access (NeRDA)

Third Party Collaborators

Open Grid Systems

University of Strathclyde

Nominated Contact Email Address(es)

fnp.pmo@sse.com

Problem Being Solved

Near real-time data is essential to help facilitate the transition to a low carbon network. The Ofgem ‘Data Best Practice, Supporting Information’ document has highlighted that; “Electricity network data is essential for a number of emerging energy system innovations

including the successful integration of a highly distributed, renewables dominated grid." The original NeRDA project made real-time network data available in the Oxfordshire area of our network.

NeRDA 2 will go beyond the scope of the first project and make available real-time network data for the entirety of our North (SHEPD) and South (SEPD) regions in a CIM (Common Interface Model IEC 61970 and 619680) compliant format and via portal and Application Protocol Interface (API) technologies. In our ED2 LV Network Monitoring Engineering Justification Paper we propose to monitor 20% of our network totalling 21,000 sites in ED2, this real-time network data would be available via the NeRDA 2 project deliverables. As it is not financially or technically viable to monitor every single LV substation, the remaining 80% of our network will be represented by our load model information which includes sufficient data for users to make decisions, this data will also be available via NeRDA 2.

[1] https://www.ofgem.gov.uk/sites/default/files/2021 11/Data_Best_Practice_Supporting_v1.pdf

Method(s)

This is a technical demonstration project that will provide CIM compliant real-time network and load model data for the entirety of our SHEPD and SEPD networks. The project will look to implement a technology solution for DNO near real-time data using API technologies, the configuration of the API has been shaped by stakeholder feedback received in the original NeRDA project.

In addition, NeRDA 2 will endeavour to increase the visibility of capacity, headroom and loading data available via API.

Data Quality Statement (DQS): The project will be delivered under the NIA framework in line with Ofgem, ENA and SSEN internal policy. Data produced as part of this project will be subject to quality assurance to ensure that the information produced with each deliverable is accurate to the best of our knowledge and sources of information are appropriately documented. All deliverables and project outputs will be stored on our internal SharePoint platform ensuring access control, backup, and version management. Deliverables will be shared with other network licensees through the closedown reports on the Smarter Networks Portal.

Measurement Quality Statement (MQS): The methodology used in this project will be subject to the supplier's own quality assurance regime. Quality assurance processes and the source of data, measurement processes and equipment as well as data processing will be clearly documented and verifiable. The measurements, designs and economic assessments will also be clearly documented in the relevant deliverables and final project report and will be made available for review.

Scope

The scope of the project is based on the stakeholder feedback received in the original project, that APIs provide the best mechanism to provide near real-time network, load model and capacity data for SHEPD and SEPD. This will allow the opportunity for stakeholders to understand the value that they can unlock from accessing the data provided via the NIA.

Enabling better access to network data will facilitate flexible use of the network, from our initial analysis this could deliver financial benefits of between £1m and £3m by 2030 to GB consumers.

Objective(s)

The projects high level objectives are to
- Provide near real-time network and load model data for SHEPD and SEPD network.
- Employ advanced APIs to make the data configurable based on stakeholder feedback.
- Increase the visibility of capacity data on our network for stakeholders.

Consumer Vulnerability Impact Assessment

A consumer vulnerability impact assessment has been conducted for NeRDA and the results are below. At a high level we expect the benefits for consumers will be;
- Reduced costs for households (such as bills, appliance maintenance, etc.)
- Improved exchange of information between DNOs and customers
- Improve the DNOs understanding of customers' needs and the ability to address these
- The NeRDA project will not adversely impact or exclude consumers in vulnerable situations, the benefits will be applicable to all consumers.

Figure 1

Success Criteria

The NIA project will be deemed successful if the deployed solution can be demonstrated to meet stakeholder needs in the provision of

near real-time network and load model data for both the SHEPD and SEPD areas.

Project Partners and External Funding

We have no project partners and will be funded by the NIA.

Potential for New Learning

The project will create new learning on
• How the value of near real-time data can be unlocked by stakeholder groups;
• How that data needs to be presented and configured to allow stakeholders to understand and digest the data to allow them to make best use of it; and
• How appropriate an API is for sharing the data, load and capacity information.

Learning from the NeRDA project will be disseminated via multiple platforms and events including presentations at the annual innovation summit, virtual webinars, and written closed down reports.

Scale of Project

The proposed scale of the project is required to allow us to develop the near real-time data sharing platform to meet its intended purpose of sharing network and load model data in enough detail that it can be scrutinised and employed by stakeholders. If the project was at a smaller scale, we would risk reaching too few stakeholders and not being able to demonstrate that stakeholder feedback has been credibly interpreted.

Technology Readiness at Start

TRL7 Inactive Commissioning

Technology Readiness at End

TRL9 Operations

Geographical Area

The project will be undertaken in the SEPD and SHEPD licence areas.

Revenue Allowed for the RIIO Settlement

No revenue was allowed for this activity.

Indicative Total NIA Project Expenditure

The total expenditure expected from the project is £935,603.

Project Eligibility Assessment Part 1

Requirement 1

Facilitate the energy system transition and/or benefit consumers in vulnerable situations

Please answer **at least one** of the following:

How the Project has the potential to facilitate the energy system transition:

The project will make available near real-time network data; 'A smart and flexible system can only be enabled by digitalisation of the energy system.' (Carbon Trust and Imperial Collage London) Data and access to network data is essential in facilitating the energy system transition.

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

N/A

Please provide a calculation and/or description of the expected benefits of the solution

Flexibility enables the movement of timing and location of both the consumption and generation of energy; with more technologies participating in flexibility, having an up-to-date view of the energy system will be key in ensuring an efficient and cost-effective transition to net zero.

To highlight the impact participating in flexibility could have, a study by Imperial College London and the Carbon Trust found that the UK could save up to £8bn a year by 2030 by having a more flexible electricity system. A large proportion of this flexibility will come from distributed sources being deployed closer to demand. The study also found that local flexibility could unlock up to (£0.94bn/yr) on the wider system with an additional network cost of (£0.6bn/yr) giving a potential benefit of (0.34bn/yr) from the use of local flexibility.

We estimate the Network benefit amount to be between 15 and 20% of the overall system benefit, if we assume that benefits will be accrued in a similar manner we estimate that local flexibility could provide network benefits of between £6.6m and £8.8m per year. NeRDA 2 will provide a key enabling technology providing additional opportunities to unlock the value of flexibility for our customers it is therefore believed that if fully implemented the NeRDA 2 outputs could contribute to between two and five percent of local flexibility benefits which would generate between £1m and £3m by 2030.

https://publications.carbontrust.com/flex-gb/

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

The findings from this project will be replicable across all DNOs. Learnings will be shared in order to assist with implementation of near real-time data sharing platforms.

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

If successful, the project will be able to provide insight into the roll out costs for further refinement. It is estimated that the cost to roll out NeRDA could be up to £12m across GB, including IT infrastructure.

Requirement 3 / 1

Involve Research, Development or Demonstration

Projects 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

Involve Research, Development or Demonstration - Please select all that apply

☐ 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 project will develop learning on how near real-time network and load model data can be made available to stakeholders and be configurable to maximise the value that stakeholders can unlock. This learning will be used by other DNOs to enable them to understand how network data is shared.

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. Networks must explicitly mention similar projects that they have considered and how these differ.

Please demonstrate below that no unnecessary duplication will occur as a result of the Project.

There is no unnecessary duplication. NeRDA 2 follows on and goes beyond the scope of the original NeRDA 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

This project is innovative as it focuses on making near real-time network and load model data available at scale across two licence areas which has never been done before. The project will understand what the requirements are to ensure that the data shared meets stakeholders' needs. The project will look to see what value can be delivered by sharing near real-time data and to inform if wider

spread roll out is appropriate.

Relevant Foreground IPR

N/A

Data Access Details

For information how to request data gathered in the course of this project, see Network Innovation Competition (NIC) and Network Innovation Allowance (NIA) Data Sharing Procedure at https://ssen-innovation.co.uk/innovation-strategy/.

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

The focus on real time data at the scale envisaged by NeRDA is beyond that which is currently included in the SSEN Digitalisation Strategy for ED2, therefore, this cannot be funded via BaU.

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 with support of NIA due to a range of uncertainties and risks listed below;

Technical risks; there are technical risks in the volumes and complexity in the data being made available through NeRDA 2.

Operational; the project will involve new support and operational practices that will benefit from research and user testing ahead of deployment into business as usual.

Commercial; the costs of new technologies specifically in relation to the volumes of data are currently unknown and will need to be researched through the project.

This project has been approved by a senior member of staff

☑ Yes