Energy Networks Innovation Process

Project Closedown Report Document

Date of Submission: 27/06/2024

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Notes on Completion: Please refer to the NIA Governance Document to assist in the completion of this form. Please use the default font (Calibri font size 10) in your submission. Please ensure all content is contained within the boundaries of the text areas.

Project Title (*This cannot be changed once registered*)	Project Reference
Near Real-time Data Access (NeRDA)	NIA_SSEN_0050
Funding Licensee(s)	**Project Start Date**
Scottish Hydro Electric Power Distribution Southern Electric Power Distribution	November 2020
Project Duration	**Year**
40 months	2024
Nominated Project Contact(s)	
Tim Sammon, Innovation Programme Delivery Manager at SSEN	

1. Scope

The project scope is limited to the works needed to make near real-time data available. This real-time data will be trialled in select local areas including Oxfordshire and the LEO project. The scope of the project has been extended so that in addition to real time data, NeRDA will make available Long Term Development Strategy (LTDS) data, network connectivity data and data from SSEN's load model. The project will provide data via APIs, and improved dashboards giving the user a rich source of connectivity and schematic data of the SSEN networks to help them unlock the value of real-time data.

The geographical scope of the project will also be extended to include areas receiving LV monitoring through separate programmes such as the Green Recovery funding. This will extend the scope of the stakeholder engagement allowing for greater and more diverse feedback that will help to increase the applicability of the project findings across GB. This will add minimal extra cost to the project.

2. Objective(s)

The project will make near real-time data for the Oxfordshire area available to stakeholders and will assess its usefulness to them.

This will be enabled through the implementation of a technology solution for near real-time DNO data within the SEPD licence area to enable its collation and presentation through an Application Protocol Interface (API).

The project will assess the usability of the data through this API with stakeholder groups such as local community energy action initiatives Local Energy Oxford (LEO) and Flexr Beta User Group (BUG).

3. Success Criteria

The NIA project will be deemed successful if the deployed solution enables the sharing of near real-time data, and if we are able to gather appropriate feedback on its usefulness from the stakeholders identified.

4. Performance compared to the original project aims, objectives and success criteria

Details of how the Project is investigating/solving the issue described in the NIA Project Registration Pro-forma.
Details of how the Project is performing/performed relative to its aims, objectives and success criteria.

The NeRDA project was successful in delivering its objectives. **The** NeRDA portal makes available real time power flow data from our EHV, HV, and LV networks. This data is collected from numerous sources, including SCADA (Supervisory Control and Data Acquisition) from our PowerOn system, our recently installed low voltage monitoring equipment, load models, forecasting tools, network connectivity models, and our Long-Term Development Statements (LTDS). Open Grid Systems (OGS) were engaged to develop the NeRDA solution. The OGS CIMphony platform was used as a model-driven data management tool to deliver NeRDA, CIMphony is OGS's original model-driven desktop data management tool for editing and analysing Common Information Model (CIM) data, using CIMphony allowed NeRDA to provide the real-time data to our stakeholders in CIM format. OGS were provided with static data sets about our network (i.e. geographic references of assets, network configuration, ratings and unique identification of assets) and the ability to stream HV and LV data from SSEN systems into the CIMphony platform was created. OGS also set up a dashboard view that provides users with a geographical view of the network and data that is available. HV data is updated every 3 minutes and LV data every 10 minutes.

Figure 1 below shows the geographical view of the network and data that the users are presented with.

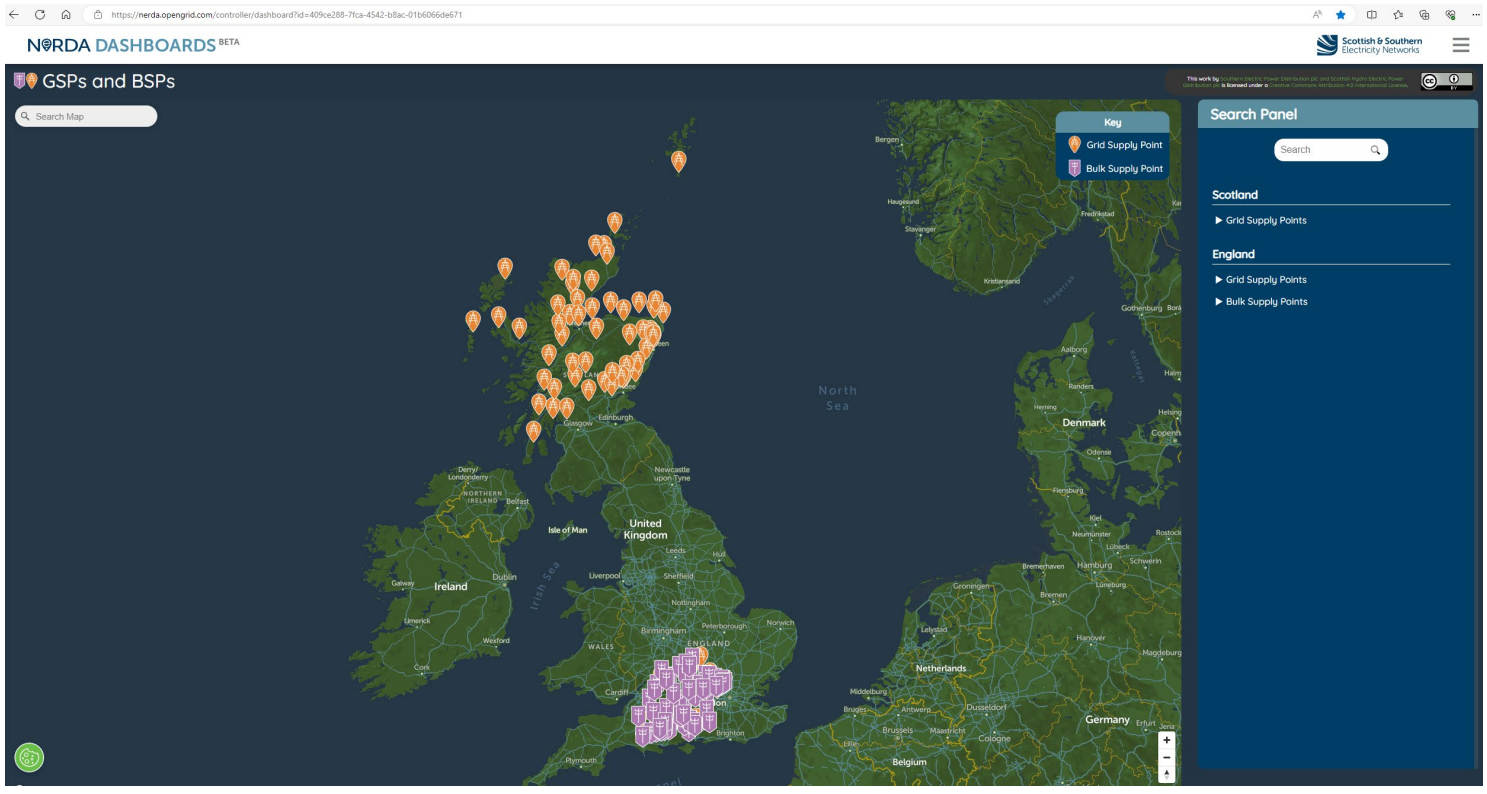

Figure 1 – NeRDA Dashboard View

As well as being able to access the data via dashboards, users also have the option to access them via API. These allow them to access all the data in that site, and the example in figure 2 shows the Javascript Object Notation (JSON) of all the measurement points that can be pulled from the NeRDA API – this example is for an LV substation where the user can pull two years of data from 26 measurement points where Maximum measured value, Minimum measured value and Root Mean Square (RMS) of the values are updated in real time every ten minutes.

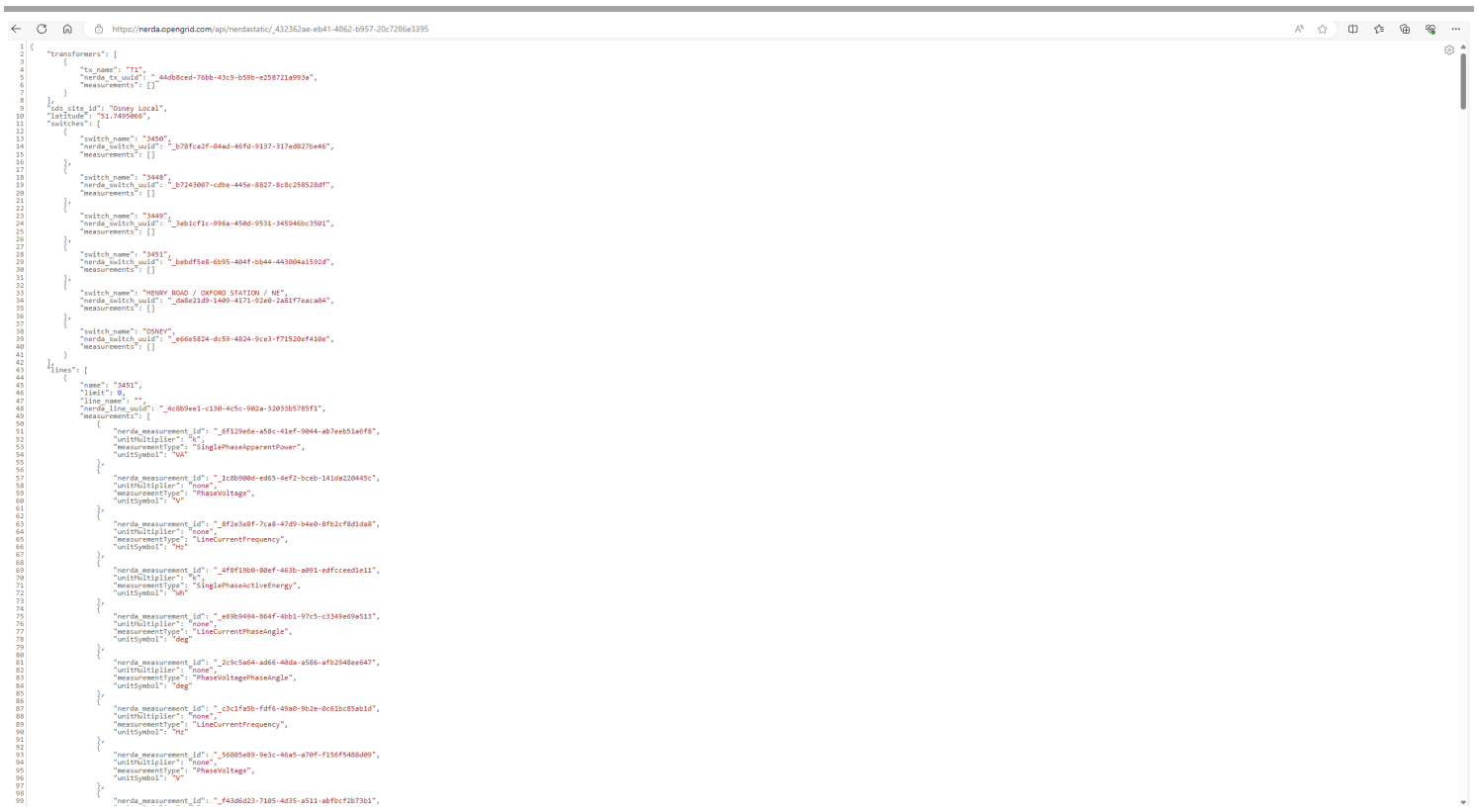

Figure 2 - Example of JSON payload from API

The objectives of NeRDA stated that we would develop based on feedback from the Flexr BUG. The Flexr project did not progress, however NeRDA has played a critical role in underpinning the key data sets for the TRANSITION neutral market facilitator and system coordination technical trials. These trials set out to demonstrate the operation of low voltage flexibility across a range of network scenarios and topologies. The data provided via the NeRDA platform has been critical in the success of SSEN's TRANSITION project. Specifically, NeRDA has been instrumental in providing the data that facilitated a number of the TRANSITION technical trials during the last year. This is expanded upon in section 7.

5. Required modifications to the planned approach during the course of the project

The Network Licensee should state any changes to its planned methodology and describe why the planned approach proved to be inappropriate. Please confirm if no changes were required

During the project a change request was submitted to increase the scope of NeRDA based on stakeholder feedback to go beyond the geographical scope of Oxford to include HV data across both licence areas and LV Data for areas in the North of Scotland that received funding as part of the green recovery challenge fund.

6. Lessons learnt for future projects

Describe how the project (methodology, stakeholder engagement etc.) changed, or provided opportunities, from your expectation at the start of the project and therefore could be useful for a future project. In addition, please discuss the effectiveness of the research development or demonstration undertaken.

1. Regular meetings to include all technical resources- these were set weekly but perhaps greater frequency could have helped move things faster.
2. Dedicated resources (Open Grid Systems & SSEN side)- voids distractions and loss of momentum with people being pulled into other activities.
3. More robust delivery plan, with clear dates set out to deliver for User Anticipated Tests, testing, & sign off. This could have aided momentum.
4. Better understanding of the target end-state architecture would have helped with performance, architecture, expectation setting, & delivery approach.

7. The outcomes of the project

When available, comprehensive details of the Project's outcomes are to be reported. Where quantitative data is available to describe these outcomes it should be included in the report. Wherever possible, the performance improvement attributable to the Project should be described. If the TRL of the Method has changed as a result of the Project this should be reported. The Network Licensee should highlight any opportunities for future Projects to develop learning further.

NeRDA demonstrates a UK first for a DNO, making network loading information, including at LV, available to external users in near real time. To ensure data compatibility, NeRDA uses the Common Interface Model (CIM) format to make network loading and topology data available to improve the user experience. This enables stakeholders to derive maximum value from the use of the data. For example, a local energy project can now access near real-time data and can identify opportunities to connect and also areas of network constraints (which could restrict low carbon technologies being installed), thus allowing them to make better informed decisions.

The data provided via the NeRDA platform has been critical in the success of SSEN's TRANSITION project. The TRANSITION Project's aim was to test and validate the operation of LV flexibility markets on the distribution network. Specifically, NeRDA has been instrumental in providing the data that facilitated a number of the TRANSITION technical trials during its last year.

NeRDA provided the data that populated the network model used within TRANSITION to provide an accurate representation of the network configuration and loading, which allowed the Power Systems Analysis (PSA) to assess loads flows across a range of different near-term topology changes and forecast scenarios including the use of LV flexibility.

The introduction of real-time data allowed the TRANSITION project to better assess and validate the accuracy of forecasts, as opposed to the traditional method of using pre calibrated models. It demonstrated that the introduction of real-time data was essential to capture short-term and longer-term variations of consumption, both in magnitude and shape to avoid disruption to consumers and fully assess the impact of LV flexibility.

This has resulted in the success of the TRANSITION technical trial, which saw the near to real-time dispatch of flexibility, including the recruitment and implementation of 130 flexibility contracts, which utilised 1.6MW of flexible resources across 16 Distributed Energy Resources (DER), all of which were facilitated by the digital transformation of near real-time data provided by the NeRDA project.

A follow on project NeRDA 2 has been registered in ED2 to look at how we increase the amount of LV data that we can make available to stakeholders and the uses cases around sharing LV data and the value that sharing that data will create for our stakeholders.

8. Data Access & Quality Details

A description of how any network or consumption data (anonymised where necessary) gathered in the course of the Project can be requested by interested parties. Please include a link to the publicly available data policy.

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/.

9. Foreground IPR

A description of any foreground IPR that have been developed by the project and how this will be owned.

Not applicable

10. Planned implementation, recommendations or next steps

Please describe the next steps to implement this innovation project. What policies and standards need to be updated or created as part of this implementation.

A follow-on project NeRDA 2 has been registered. The learning from this project and the progress achieved will be used and enhanced in the NeRDA 2 project.

11. Other comments

12. Standards Documents

Identify any industry standards that may require updating due to the outcomes or understanding developed from this innovation project. If no standards will need to be updated, please state - not applicable

Not applicable