NIA Project Registration and PEA Document

Date of Submission

Oct 2015

Project Reference

NIA_SSEPD_0015

Project Registration

Project Title

LV Connectivity Modelling

Project Reference

NIA_SSEPD_0015

Project Licensee(s)

Scottish & Southern Electricity Networks

Project Start

October 2015

Project Duration

0 years and 10 months

Nominated Project Contact(s)

SSEN Future Networks Team

Project Budget

£246,000.00

Summary

This project will develop a LV connectivity model using software to align meter supply points with local substations so that the links between substation feeders and user premises can be shown. These results can then be compared with the existing LV model, to give a level of confidence in using data analytics for this requirement.The project will use a small section of the LV network in Bracknell, 10 Substations with approx. 2000 connected properties, so that we can compare the data analytics model, with that obtained by manual means.Data from the Metering Point Registration System and the Geographical Information System will be provided to Bit Stew Systems for them to produce the LV connectivity data.The area of the network to be analysed, has already been mapped as part of the Tier 2 Thames Valley Vision project being undertaken by SEPD.

Nominated Contact Email Address(es)

fnp.pmo@sse.com>

Problem Being Solved

As the need for the distribution grid to become more flexible increases due to distributed generation and changes in demand, there is value in DNOs having a more comprehensive end to end map of the Low Voltage (LV) network down to individual consumer premises. This more comprehensive map, or connectivity model, will lead to improvements in customer service. The work involved in investigating all the individual connections and creating a comprehensive model would be manually intensive, and costly in terms of manpower.

Method(s)

One potential solution is to create the model in software which removes much of the need for extensive fieldwork and manual interaction with the LV connectivity. As a result, the process can be quicker, less costly and just as accurate. This project explores this methodology.

The project is a technical method which will use data analytic techniques, with software from Bit Stew Systems, to align Meter Supply Points, their addresses, with local Substations to produce a connectivity model that can show the link between substation feeders and individual premises.

Scope

This project will develop a LV connectivity model using software to align meter supply points with local substations so that the links between substation feeders and user premises can be shown. These results can then be compared with the existing LV model, to give a level of confidence in using data analytics for this requirement.

The project will use a small section of the LV network in Bracknell, 10 Substations with approx. 2000 connected properties, so that we can compare the data analytics model, with that obtained by manual means.

Data from the Metering Point Registration System and the Geographical Information System will be provided to Bit Stew Systems for them to produce the LV connectivity data.

The area of the network to be analysed, has already been mapped as part of the Tier 2 Thames Valley Vision project being undertaken by SEPD.

Objective(s)

The output of the project is to produce LV connectivity diagrams, using software, for the trial area which is within an acceptable level of accuracy when compared with the manually derived diagram.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

The project will have been a success if the end conclusions are able to make a justifiable statement that the use of data analytics techniques with the available data are either 1) able to make an accurate LV connectivity model, or 2) not able to make an accurate LV connectivity model.

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

The project is to show if there are any benefits in using data analytics to develop a full network connectivity map, as such it will use a small sample of existing data, and the scale of the project is deemed adequate for the anticipated work.

Technology Readiness at Start

TRL8 Active Commissioning

Technology Readiness at End

TRL9 Operations

Geographical Area

This work will be done in the Southern Electric Power Distribution licence area

Revenue Allowed for the RIIO Settlement

There is no revenue allowed for in the RIIO ED1 settlement

Indicative Total NIA Project Expenditure

The project expenditure will be £246,000 , 90% of which is allowable NIA expenditure (£ 221,400)

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)

If the network connectivity can be determined through data analytics, rather than by the current labour intensive method, then the savings would be over £10 million for the SSEPD network.

Please provide a calculation of the expected benefits the Solution

Base cost of determining network connectivity for 1470 premises across 10 substations is £138,500
Method cost of replicating a successful project for 1470 premises across 10 substations is £26,000
Financial benefit of the project is £112,500.

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

The method is replicable across all of the UK distribution networks as the techniques used are replicable across all DNOs if the data is tailored expressly for this use.

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

The costs to other DNOs would have to include hardware costs, either using cloud hosting or using internally hosted servers, and software licensing costs. Bit Stew Systems will negotiate with interested DNOs on the level of licence required, and the level of support needed.

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

n/a

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

☑ 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.

n/a

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

n/a

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

n/a

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

n/a

This project has been approved by a senior member of staff

☑ Yes