

NIA Project Registration and PEA Document

Date of Submission

May 2012

Project Reference

UKPNT1004

Project Registration

Project Title

Validation of Photovoltaic (PV) Connection Assessment Tool

Project Reference

UKPNT1004

Project Licensee(s)

UK Power Networks

Project Start

January 2012

Project Duration

2 years and 11 months

Nominated Project Contact(s)

UKPN Innovation Team

Project Budget

£367,000.00

Summary

Following the introduction of the Feed in Tariff (FIT), clusters of renewable generation are appearing on the Low Voltage (LV) network, and proposed programmes suggest that large numbers of connections could be carried out in relatively small geographical areas.

This intermittent generation exporting energy into the network is expected to cause a number of technical issues including: voltage rise, phase imbalance and harmonics.

Small scale renewables such as PV panels are usually connected to the low voltage network without a DNO's prior consent, in accordance with Engineering Recommendation (G83 stage 1), and have not so far been considered to be a significant problem. UK Power Networks has recently been assessing requests for large numbers of PV connection in relatively small geographical areas (G83 stage 2).

In response, UK Power Networks has developed a draft policy to provide guidelines for planners when more intensive studies are required, but this policy has necessarily had to make some simplifying assumptions.

Nominated Contact Email Address(es)

innovation@ukpowernetworks.co.uk

Problem Being Solved

Method(s)

Scope

Objective(s)

This project aims to carry out the following:

- Validate the assumptions within UK Power Networks draft guidelines and develop an approved policy.
- Gain a detailed understanding of the impact of PV on the LV network by monitoring several PV clusters (G83 stage 1 and 2) and covering different types of LV network. This will be achieved by equipping 20 secondary substations and 10 PV installations with LV network monitoring equipment. The monitoring will include networks without PV connections to create a clear baseline and develop a better understanding of the difference in voltage profiles and power flows. The trial will run for 24 months to capture seasonal variations
- Assess to what extent the information available to PV installers (e.g. monitoring of PV output) could be used by DNOs
- Investigate what innovative solutions can be applied to address network constraints. It is expected that the networks selected for this project will be used as trial areas for the solutions being identified.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

n/a

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

n/a

Geographical Area

Revenue Allowed for the RIIO Settlement

Indicative Total NIA Project Expenditure

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)

n/a

Please provide a calculation of the expected benefits the Solution

n/a

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

n/a

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

n/a

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

Please demonstrate how the learning from the project can be successfully disseminated to Network Licensees and other interested parties.

Please describe how many potential constraints or costs caused, or resulting from the imposed IPR arrangements.<

Please justify why the proposed IPR arrangements provide value for money for customers.

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