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

Mar 2016

Project Reference Number

NIA_SPT_1603

Project Registration

Project Title

Trialling Long-Lasting Tower Paints

Project Reference Number

NIA_SPT_1603

Project Licensee(s)

UK Power Networks

Project Start

April 2016

Project Duration

2 years and 4 months

Nominated Project Contact(s)

SP Transmission: Chris Halliday, SHE Transmission: David MacLeman, UK Power Networks: Richard Gould

Project Budget

£279,899.00

Summary

The scope of this project is to undertake laboratory tests and practical trial applications of six proposed new coatings (identified during a recent Energy Innovation Centre, EIC 'Call for Innovation') on a sample of pylons, sufficient to measure the suitability and performance of the coatings in this UK application. The project also undertakes additional testing such that successful coatings can be adopted quickly into BaU.

Nominated Contact Email Address(es)

innovation@ukpowernetworks.co.uk

Problem Being Solved

There are around 88,000 electricity towers, or pylons, in the UK. These towers are usually made of steel and require painting to ensure that the structures do not corrode. The towers need to be painted on a regular basis to ensure their suitability for the future. Network operators spend a significant amount of money painting and maintaining towers, usually on a twelve yearly basis with 'Electricity Company Approved' coatings.

Method(s)

New coating systems could be adopted fairly quickly into Business as Usual (BaU) through tendered procurement specifications for painting companies if they meet the goals of 'Electricity Company Approved' specification, even if they do not meet the specifically referenced alkyd formulation.
If they do not pass the tests then it is possible that they could still be adopted, but there may need to be risk assessments carried out or tweaks to the formulas, for instance if the slip resistance of the new coatings are less than desired, or if more rigorous surface preparation is required.

Scope

The scope of this project is to undertake laboratory tests and practical trial applications of six proposed new coatings (identified during a recent Energy Innovation Centre, EIC 'Call for Innovation') on a sample of pylons, sufficient to measure the suitability and performance of the coatings in this UK application. The project also undertakes additional testing such that successful coatings can be adopted quickly into BaU.

Objective(s)

Stage 1

- Engage with the coating suppliers to ensure that each coating is applied to the samples according to the recommended instructions. Where it may be not possible to follow these for UK application on pylons, alternatives will be agreed;
- Identify a trial circuit for the practical application;
- Specify laboratory tests and practical tests;

Stage 2

- Carry out laboratory tests to estimate longevity and supplementary tests if necessary to meet 'Electricity Company Approved' status;

Stage 3

- Engage approved contractor to carry out practical application of the coatings on a test circuit;

Stage 4

- Produce a report evaluating the coatings against the applicable sections of the Electricity Company Approved specification;
- Rate the performance of the coatings by analyzing test data and life-cycle cost relative to the control paint (Alkyd based complying with Electricity Company Approved requirements);
- Recommend the best coatings and any additional work necessary before wide-scale adoption.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

1. One or more coating systems are identified that allow the repainting interval to be increased from 12 years
2. The repaint interval for one or more can be increased to 25 years or more
3. The life-cycle cost for one or more is less than the present method

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

Laboratory testing in test environments, with several samples being evaluated, paired with the control, to assess longevity of the coating, sag and slip tests as necessary to meet 'Electricity Company Approved' status. Practical application of (at least) a subset of coating systems on an overhead line (OHL) circuit.

Reports to be produced after laboratory and practical application tests.

Technology Readiness at Start

TRL6 Large Scale

Technology Readiness at End

TRL8 Active Commissioning

Geographical Area

Practical application will be carried out in Scotland on a SP Transmission OHL circuit.

Revenue Allowed for the RIIO Settlement

£1.61m * 8 = £12.88m within SPEN's RIIO Settlement

£0.12m*8= £0.96m within SHE Transmission's RIIO Settlement

Indicative Total NIA Project Expenditure

The total Project cost is: £279,899

SP Transmission: NIA funding £96,085

SHE Transmission: NIA Funding £91,907

UKPN: NIA Funding £91,907

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 re-paint interval can be extended from 12 years to the target of 25 years, with only a 25% increase in the cost per application, then the savings when fully rolled out would be:

£1.61m – (£1.61m * 50% * 125%) = £0.6m per annum.

Please provide a calculation of the expected benefits the Solution

Base cost £1.61m

Method cost £1.61m * 50% * 125% = £1m

Benefit £0.6m (per annum)

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

Based upon SP Energy Networks owning one-sixth of the UK's pylons, the benefit when replicated across the UK and fully rolled out across all distribution pylons would be 6 * £0.6m = £3.6m per annum.

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

To roll out across the UK, each network operator will need to specify a new coating to be applied by contractors when painting contracts are due for renewal. Since this project is designed to bring one or more coatings to the generic requirements of the Electricity Company Approved specification, there should be little extra work unless the Test Provider deems it advantageous for formulations to be modified.

Estimated 12 man-days per DNO, £350/md, 6 DNOs = £25k.

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

This project seeks to identify a method to reduce expenditure on OHLs by extending the re-paint interval, through the trial of coating products, as yet unused in the field in the GB electricity supply industry. It identifies suitable coatings from a selection of promising alternatives and carries out testing to determine the new re-painting interval.

This should result in a selection of coatings suitable for use in the industry, with the benefit of reduced life-cycle costs.

Or, please describe what specific challenge identified in the Network Licensee's innovation strategy that is being addressed by the project (RIIO-1 only)

Operational and process innovation — driving efficiency and service benefits.

☑ 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