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NIA Project Registration and PEA Document

Date of Submission

Apr 2020

Project Reference Number

NIA_SPEN_0051

Project Registration

Project Title

All Terrain Low Ground Pressure Access Vehicle with 34m boom

Project Reference Number

NIA_SPEN_0051

Project Licensee(s)

SP Energy Networks Distribution

Project Start

March 2020

Project Duration

1 year and 10 months

Nominated Project Contact(s)

Adele Ramsden

Project Budget

£150,000.00

Summary

This project will develop an All terrain vehicle with improved access to Transmission OHL.

Nominated Contact Email Address(es)

innovate@spenergynetworks.co.uk

Problem Being Solved

SPEN operate a substantial 132kV – 400kV Transmission Network in Central & Southern Scotland, and also the 132kV network in North Wales. Many of these transmission lines pass through very remote and inaccessible locations, particularly in the upland areas. In the event of an unplanned outage on these circuits (caused by a failure, environmental incident, 3rd party damage etc) they can cause major disruption to customers and the subsequent repairs can be both time consuming, technically challenging and expensive.

One of our greatest challenges is accessing conductors mid-span or accessing on a damaged structure. In recent years we have encountered a number of scenarios involving damaged towers, mid span repairs, spacer damper replacement damper recovery etc. The future network with regards to windfarm connections has at least four Trident or HDWP lines at 132KV and 33KV planned, all of which are in hostile terrain.

The machine can greatly reduce risk from work at heights on various repairs we carry out across our network including on the Emergency Restoration System (ERS) which will often be deployed in conditions where it is not preferable to climb. Environmentally the machine has potential eliminate the need for stone access roads for the works it is proposed for.

Method(s)

A hybrid MEWP combining an all terrain access vehicle and a 34M bronco boom with a basket capacity of 250kg

Scope

The bulk of the design work has been done by Adele Ramsden (SPEN), Dale Harrison (PLPC) and Bronco trucks to establish a viable solution. Innovation funding will be used to undertake an initial trial of the machine. SPEN will make a continuing BAU commitment with the supplier subject to successful trials. This commitment gives the supplier confidence to progress with modifications required to marry the two machines together.

Objective(s)

The objectives of the project are as follows:

- Increase efficiency on outage times on faults and repairs reducing network financial constraints and down time. Including deployment of the emergency restoration system
- Greatly reduce risk during work at heights
- Commitment to stakeholders in fast repairs and response time on OHL windfarm connection routes
- Grantor commitment using advanced technology to eliminate/reduce land damage
- Environmental commitment to reducing stone road requirements and wagons required to bring the stone in.
- Reduction in muscular skeletal injury to work force by allow two men to work from a very generous 250KG basket on repairs needing heavy equipment such as a press head.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

The project will be considered a success if it delivers a comprehensive assessment of the ability of the Hybrid MEWP to meet the objectives listed above.

Project Partners and External Funding

PLPC are project partners and are providing the funding to develop and construct the Hybrid MEWP. Therefore they are providing the majority of the funding. NIA funding will cover a comprehensive trial on the SP Transmission network for approximately 9 months. SP Transmission have made a commitment to utilise the vehicle for a 5 year term under BaU funding subject to the outcome of the trial.

Potential for New Learning

No one in the UK has a machine with the unique capabilities that this one has. Going forward it could be something that is developed for this industry by a mainstream manufacturer.

Scale of Project

A single machine will be trialled on the SP Transmission network and the trial will include as many different applications as can be practicably included in the trial.

Technology Readiness at Start

TRL6 Large Scale

Technology Readiness at End

TRL8 Active Commissioning

Geographical Area

SPD Licence Area

Revenue Allowed for the RIIO Settlement

None

Indicative Total NIA Project Expenditure

£100,000

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)

We have routes where outages result in circa £500,000 per day in constraint payments funded by network customers.

A reduction in (say) two days which we may need to install stone roadway or Trak panels for a truck mounted MEWP could save £1,000,000.

Please provide a calculation of the expected benefits the Solution

Below is a comparison for savings which could have been made in one job alone. Machine v Trak panels based on actual Trak costs from XY route 2017 conductor to ground fault (Note - £200,000.00 per day constraint potential on XY also)

Base Cost (from LM Trackway lay, 7 days MEWP Hire, 14 days outage) is £51,600.

Method Cost (From 4 days MEWP Hire and 7 days outage) is £3750.

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

If successful this type of machine could be adopted by other transmission operators and also potentially by DNO's for application to 132kV lines.

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

Approximate hire costs of £55k per year per machine.

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)

- Improving our asset performance and utilisation.
- Meeting customer service expectations;
- Becoming more cost efficient; looking at alternative systems and technologies which will allow the overall unit cost of delivery to be reduced
- Reducing our environmental impact;
- Improving Health & Safety

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.

We are not aware of any other similar 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

We have used Tracked MEWPS (lesser reach and one man basket) or Truck mounted MEWPS (higher reach) which require access

works that are time consuming and not particularly friendly to the environment or convenient to a grantor. There is not a machine that can meet both objectives as this hybrid proposal one can.

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

The proposed machine is as yet unproven. The business is not prepared to commit BaU until the capabilities of the machine are verified. Upon successful completion of the NIA funded trial period SP Transmission will fund the remainder of the 5 year commitment period required by our partner PLPC to manufacture this machine

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 proposed machine is as yet unproven. There are commercial and operational risks. A demonstration project is required to reduce the risk. Developing the solution under NIA will enable knowledge sharing between the Transmission Owners

This project has been approved by a senior member of staff

Yes