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

Dec 2021

Project Reference Number

WPD_NIA_062

Project Registration

Project Title

Approach for Long-term Planning accounting for Carbon Assessment (ALPACA)

Project Reference Number

WPD_NIA_062

Project Licensee(s)

National Grid Electricity Distribution

Project Start

January 2022

Project Duration

1 year and 3 months

Nominated Project Contact(s)

Liza Troshka

Project Budget

£240,473.00

Summary

ALPACA project will look to develop a framework and a toolset for the whole life carbon management and measuring across varies DNO business processes and activities in order to drive a lower carbon and more resource-efficient model for power distribution industry. Specifically, the outputs of the work will include:

- Whole Life Carbon (WLC) Management Framework with a supplementing process map and an action plan.
- WLC Measuring tool.
- A sustainability procurement protocol with integrated carbon weighting component.
- A formal procedure to capture carbon footprint of the material, equipment and activities we procure.

Third Party Collaborators

AECOM

Problem Being Solved

The infrastructure Carbon Review showed that infrastructure is associated with over half of UK greenhouse gas emissions, 30% of which are directly attributed to the construction, operation and maintenance of infrastructure assets (emissions that infrastructure has direct control of). At the moment DNOs keep track of operational carbon, however, there is a scope for the industry to measure and reduce carbon impact across all of our business activities and target our reduction efforts on most carbon intensive activities/processes/equipment. Integration of a whole life carbon vision across all relevant business units will enable us as assets owners/managers to realise a full carbon reduction potential through a fully integrated value chain by involving designers, constructors and product/material suppliers.

There is currently no off-the-shelf solution to whole life carbon management available across the power distribution industry. Therefore this project will aim to develop a whole life carbon management (WLC) framework/methodology supported by the WLC measuring tool which will be trialled across WPD business for the potential inclusion in the relevant business activities going forward.

Method(s)

The project will be delivered through a collection of four interlinked work packages:

Work Package 1: Literature Review and best practice capture

This work package will focus on identifying effective frameworks, methodologies and approaches to whole life carbon management across various infrastructure sectors that can be applicable as a basis in a DNO context. Special attention of the literature review will be on the approaches that can drive carbon reduction from DNOs design, construction, reinforcement and maintenance activities.

Work Package 2: Stakeholder Engagement

WPD internal and external stakeholders will be consulted in order to build up a process map showing the key touch points for carbon management, with information on the relevant team involved, key activities, data availability, and the outputs requirements to support active whole-life carbon management.

Work Package 3: Guidance on embedding and integrating whole life carbon management and measuring across business processes and systems

Building on the findings from work package 2, work package 3 will draft a detailed guidance on how to integrate whole-life carbon management into typical DNO's processes and systems, allowing teams and individuals across the business to monitor and report the carbon impacts of their activities so that they can proactively manage these impacts as they plan and develop projects. Some of the details to be captured are: users who need to be involved at each stage of the assessment; the activity data, datasets likely to be relevant, data gaps, the data flow over time, etc.

Work Package 4: Development of whole life Carbon measuring tool

The tool will be developed and trialled within a DNO context with an ultimate goal of incorporating proactive carbon management, enabling internal teams to use reliable carbon data to inform decision making in support of network decarbonisation.

Scope

Whole life carbon management is widely recognised as a good practice, however, there is currently no industry-wide approach that was tested to be easily scalable in a DNOs context. This project aims to generate carbon management framework and a set of tools to facilitate the integration of whole life carbon assessment into DNOs processes and procedures to drive carbon reduction agenda and ensure compliance with national and company-specific reduction targets.

Objective(s)

This project will develop a framework/methodology and supporting tools for integration of whole life carbon management and measuring into standard DNO processes and procedures.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

N/A

Success Criteria

- Whole Life Carbon Management Framework/methodology for application in a power distribution sector is developed and verified.
- Sufficient guidance and methodology is developed for integrating of the framework into business as usual.
- Fully functioning whole life carbon measuring tool is developed and trialled.

Project Partners and External Funding

- AECOM (project delivery)

- Scottish Power Energy Networks (review)

Potential for New Learning

The outputs of this work will provide a detailed learning on how to integrate whole life carbon management into DNO activities. Whole life carbon measuring tool is expected to identify most carbon intensive activities that would allow the business to consider and implement targeted reduction measures.

Scale of Project

This is a desktop study that will utilise data from all four WPD licence areas.

Technology Readiness at Start

TRL5 Pilot Scale

Technology Readiness at End

TRL7 Inactive Commissioning

Geographical Area

All four WPD licence areas.

Revenue Allowed for the RIIO Settlement

N/A

Indicative Total NIA Project Expenditure

Project Summary of Costs:

Total Project Cost: £240,473.10

Agreed Partner Contributions (SPEN): £6,899.10

Sub Total: £233,574.00

WPD DNO Contribution: £24,047.31

Funding From NIA: £209,526.69

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)

Having a formal whole life carbon management framework (and supplementing tools) in place will drive a lower carbon and more resource-efficient model for our business and industry as a whole. Conducting whole life carbon assessments will put all studies on the same basis and will provide consistency among results enabling meaningful comparison at different levels: per asset category, per life cycle stage as well as for the entire projects throughout their life. Collection of carbon outputs in a structured fashion will subsequently facilitate benchmarking that will set the bar for carbon performance in the power industry.

With a credible benchmarking in place, we will be well equipped to set relevant targets for the whole life carbon performance of built assets. Clear and quantifiable whole life carbon targets will also aid the pursuit of emissions reductions and directly support our aspiration to reach net-zero by 2028 and beyond.

Under the assumption that for a 10% reduction in carbon there is up to 5% reduction in cost (as reported by National Grid for their transmission business), having a structured whole life carbon assessment process in place that drives internal capital carbon reduction has a potential of saving WPD up to £22.9m primary network load related reinforcement cost during RIIO-ED2.

Please provide a calculation of the expected benefits the Solution

N/A

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

It is anticipated that the outputs of this work will be applicable across all DNOs.

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

If the outputs of the project are successfully trialled and approved by the business they can be directly embedded within business as usual processes. Staff training will be required to ensure understanding of the approach and calculation method.

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

The outputs of this work are expected to be applicably across all DNOs. Should the proposed approach be adopted it has a high potential to reduce DNOs' carbon footprint short-, medium- and long-term and drive cultural change.

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

This project will address our Innovation Strategy 'Decarbonisation and Net Zero' priority.

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.

At the time of submitting this documents there is no existing whole life carbon management framework and/or measuring tool available for a DNO to adopt into business as usual.

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

Whole life carbon management is widely recognised as a good practice, however, there is currently no power distribution industry-wide approach that was tested to be easily scalable. This project aims to generate carbon management framework and a set of tools to facilitate the integration of whole life carbon assessment into DNOs processes and procedures to drive carbon reduction agenda and ensure compliance with national and company-specific reduction targets

Relevant Foreground IPR

Foreground IPR:

- Whole life carbon management framework and supporting documents delivered during the course of the project
- Whole life carbon measuring tool developed during the course of the project

Data Access Details

Anonymised data will be available to share in accordance with WPD's data sharing policy
www.westernpower.co.uk/Innovation/Contact-us-and-more/Project-Data.aspx

Please identify why the Network Licensees will not fund the project as apart of it's business and usual activities

WPD would not typically fund the investigation of a new methodology of managing and measuring carbon footprint of our activities in such a detail as intended to do in this project. Building a whole life carbon measuring tool requires specialist knowledge which is outside of WPD remit.

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 project can only be undertaken with the support of the NIA due to:

The proposed whole life carbon management framework and measuring tool are unproven at a DNO scale.
To establish whether the approach is compliant and achievable, a trial and testing within the business needs to be undertaken outside of BaU activities.

This project has been approved by a senior member of staff

☑ Yes