Date of Submission

May 2021

Network Innovation Allowance Closedown Report

Notes on Completion: Please refer to the appropriate NIA Governance Document to assist in the completion of this form.

Network Licensees must publish the required Project Progress information on the Smarter Networks Portal by 31st July 2014 and each year thereafter. The Network Licensee(s) must publish Project Progress information for each NIA Project that has developed new learning in the preceding relevant year.

Project Progress

Project Title

ACSS Conductor Study

Project Reference

NIA_SSEN_0033

Funding Licensee(s)

Scottish Hydro Electric Power Distribution, Southern Electric Power Distribution

Project Start Date

March 2018

Project Duration

1 year and 0 months

Nominated Project Contact(s)

Tim Sammon

Scope

Overhead line conductors both in England and Scotland are predominately Aluminium Conductor Steel Reinforced (ACSR). Many of these will require replacement in the RIIO-ED2 price control period. Many of these replacement schemes require increased current carrying ability. Presently to achieve the increase in current High Temperature Low Sag (HTLS) conductors are being utilised. Composite cored HTLS conductors have been trialled and, while effective, have exhibited higher installation risks than those associated with conventional steel core conductors. Horizon scanning activity has revealed another potential HTLS solution which utilises Aluminium Conductor Steel Supported (ACSS) conductor technology. This may offer a different cost performance option and may offer lower installation risk than the composite core conductor solution. This project will report on;
• Comparative studies against the following pre-existing studies undertaken by Energyline: o Single circuit 132kV wood pole,new build o Double circuit 132kV lattice steel reutilisation o Double circuit 275kV lattice steel reutilisation o • A technology review of the conductor systems which would incorporate the ACSS type conductor

Objectives(s)

• Quantify any benefits available from ACSS.
• Compare ACSS H285 to other conductor options in the modelled scenarios.

Success Criteria

The success criteria aredefined as:
• Quantification of any benefits available from ACSS.
• Comparison of ACSS to other conductor options in the modelled scenarios.

Performance Compared to the Original Project Aims, Objectives and Success Criteria

The project has achieved its aims, objectives and success criteria to:
• Quantify any benefits available from ACSS.
• Compare ACSS H285 to other conductor options in the modelled scenarios.
To address the foregoing:
OHL capacity, support loadings, and clearances under thermal and climatic loading have been reported for ACSS, AAAC, and ACCC conductor options in the modelled scenarios. Of these, the study has concluded that the 132kV wood pole new build is the only scenario where ACSS conductors offer a viable potential option worthy of further investigation.
More detailed information isin the full report that is available on request from SSEN.

Required Modifications to the Planned Approach During the Course of the Project

There have been no required modifications to the planned approach during the course of the project.

Lessons Learnt for Future Projects

The standard ACSS wire files in PLSCADD, the power modelling and design system do not adequately represent some manufacturers' products. It is recommended that wire files are checked with a conductor manufacturer before being used.

Note: The following sections are only required for those projects which have been completed since 1st April 2013, or since the previous Project Progress information was reported.

The Outcomes of the Project

The project has concluded that ACSS conductor technology potentially offers a viable alternative HT option for new build 132kV wood pole supported overhead lines.
Its modelled performance on re-utilised steel lattice supports at 132kV and 275kVwith Northern Scottish climatic loading does not support further investigation as an HT conductor option in these circumstances. The technologies embodied in the ACSS conductors have been reviewed and provide an adequate basis to support further investigation and type certification for use on the GB network.
The report underpinning these conclusions is available from SSEN by contacting futurenetworks@sse.com.

Data Access

N/A

Foreground IPR

N/A

Planned Implementation

The learning from this study is currently under consideration.It is likely that further investigation will be required before business as usual implementation.

Other Comments

A full report of the study is available upon request through contacting futurenetworks@sse.com

Standards Documents

The learning from this project has no implication on standards.