Scottish & Southern Electricity Networks

Date of Submission

July 2017

Network Innovation Allowance Progress 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

Fault Passage Indicators for Sensitive Earth Faults

Project Reference

NIA_SSEPD_0023

Project Licensee(s)

Scottish Hydro Electric Power Distribution, Southern Electric Power Distribution

Project Start Date

Dec 2015

Project Duration

2 Years 3 Months

Nominated Project Contact(s)

David MacLeman

Scope

To establish the magnitude of reduction in Customer Minutes Lost (CMLs) achievable by locating SEF faults with a revised FPI supplied by Bowden Brothers and modified to be sensitive to currents as low as 4A through tests at PNDC, field trials and a post-trial evaluation.

Objective(s)

1. Determine, from testing, that the revised FPIs successfully meet the required standard
2. Train operational staff in the correct use of the revised FPIs
3. Perform a field trial with trained operational staff
4. Monitor and evaluate the reduction in customer hours lost per Customer affected by an SEF fault in the trial area when compared to previous years.

Success Criteria

This project will be successful if we are able to determine the ability of the revised FPI to reduce CMLs due to SEF faults.

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

Determine, from testing, that the revised FPIs successfully meet the required standard

• Testing has been carried out at the Power Networks Demonstration Centre and the device successfully flagged for 100% of SEF faults at 4A over a range of times from 3 seconds to 10 seconds duration. This objective has been met in full

Train operational staff in the correct use of the revised FPIs

• Training was carried out in April 2016 at 6 locations across the Highland Region of SHEPD, and 70 sets of three of the new SEF FPIs were issued to staff. 2 sets have been retained by the project team for testing purposes. This objective has been met in full.

Perform a field trial with trained operational staff

• The units have been in use in Highland area since April 2016 and a series of meetings with operational staff has been arranged for May and June 2017 to get feed back from Staff on the use of the SEF FPIs.   This objective has partly been met.

Monitor and evaluate the reduction in customer hours lost per Customer affected by an SEF fault in
the trial area when compared to previous years

• An interim review of SEF faults has shown a reduction in CMLs and Cis for these faults but one fault pre the use of the SEF FPIs and one fault post the introduction each contributed more than 50% of the total CML and CI costs.   This objective has partly been met.

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

While technically the new SEF FPIs are a big advantage over the previous versions, operationally there have been some problems with knowing whether to set up units for SEF faults or for normal faults. This can be resolved by fitting both an SEF and a normal FPI on the same pole. However, a better solution is to build both SEF detection and normal fault detection into the same unit and Bowden Brothers have done this with the release of a new mark 9B FPI which carries out both functions simultaneously. To include this new version, the project has been extended to 2 years 3 months. 72 sets of three mark 9B units have been purchased to replace the mark 9 FPIs and will be issued to staff in the coming months.

Lessons Learnt for Future Projects

Innovation projects can be iterative as it is not likely that the right solution to a problem can be found the first time around. Plans should therefore be flexible enough to allow design improvements during the course of the project. In this case, the learning from the project helped in the identification of a problem and a solution. This has potential for greater learning as the new solution is now being tested.

Work has started to take the use of portable FPIs with both normal and sensitive earth fault detection into the rest of the SSEN distribution business during the course of the 2017/18 financial year.