Date of Submission

May 2021

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

Phase Identification Unit to Assist in Underground Fault Location

Project Reference

NIA SSEN_0032

Funding Licensee(s)

Scottish Hydro Electric Power Distribution, Southern Electric Power Distribution

Project Start Date

February 2018

Project Duration

1 year and 3 months

Nominated Project Contact(s)

NIA Programme Delivery Manager –Joe McNeil

Scope

Phase identification has traditionally been targeted at connections teams to accurately identify the loading/imbalance on low voltage feeders emanating from secondary sub-stations allowing the preferred phase to be identified for new connections.
Similarly,the checking the accuracy of historical records in terms of phase connections has been a primary application of this technology.
A very limited trial on site has identified the units as accurately identifying the phase to which suburban housing is connected without entering the households. The unit is set to a reference phase at the appropriate secondary substation and by approaching households the unit can identify if power is present and to which the house is connected.
This functionality will be the basis of the trial in assessing whether the unit can reduce fault restoration times. It is recognised that for many faultswhere the LV fuse is blown this unit will not be of assistance but for other faults and in conjunction with other technologies it is hoped to be of assistance to the depot fault location teams.

Objectives(s)

Issue a select number of depot fault location teams with Phase Identification Units.
Initiate training for the teams, then develop formal Training, process and procedure.
Evaluate equipment performance over a period of around 9 months in assisting fault locationincluding reinforcing further learning.
Create a robust methodology for attributing benefits to Phase Identification Units
Acquire data and develop a detailedcost benefits analysis
Document all results, conclusions and recommendations
Evaluate project outcomes for possible adoption by BAU

Success Criteria

A number of existing fault location technologies have been developed to substantially improve the re-connection of customers to the network at times of interruption due to faults.
However, none are 100% accurate in identifying the preferred location for the primary excavation point. If the Phase Identification Unit can assist in the appropriate type of fault to narrow this excavation point to an area between two properties without disturbing the householders or in situations where customers are absent from properties this is hoped to lead to continuing improvement in customer service and reconnection times.

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

Progress Against Objectives:
• Issue a select number of depot fault location teams with Phase Identification Units 26 units have been procured and at present 22 are in use with the field operatives in the control group in the South. The remaining units are under general evaluation and testing at SSEN and UKPN. From activity recording,it is clear the units issued are being used more than was anticipated and for a wider range of tasks than was originally envisaged.This objective has been fully achieved.
• Initiate training for the teams Training of staff was held in the Wessex Region of Southern Electric Power Distribution (SEPD) with significant effort being made to ensure the field staff were engaged as early as possible. There is presently a training/open day planned for other depots in Scottish Hydro Electric Power Distribution (SHEPD). This will provide the staff there with an introduction into the new technology. This objective has been partly met.
• Evaluate equipment performance over a period of around 9 months in assisting fault location Data is being recorded and ongoing interface meetings with the field staff using the devices are underway.At present,there is not enough data to make a clear distinction to understand the cost benefits in the HAYSYS devices. So far, the field response has been positive and engagement is ongoing. Work to achieve this objective is still in progress.
• Create a robust methodology for attributing benefits to Phase Identification Units This is underway.However,the present use cases for HAYSYS have changed significantly, with faults which were not expected to require HAYSYS, benefiting from some of the devices capabilities. More work and data is needed to make a reasoned and defendable assessment in the benefits assessment.
• Acquire data and develop a detailed cost benefit analysis Data is presently being recorded on the usage of the device. Field reports are at present limited but it is expected with additional engagement that the field teams will provide more detailed feedback.
• Document all results, conclusions and recommendations
• Evaluate project outcomes for possible adoption by BAU Note: Work to meet the two objectives above has not commenced yet.

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

At Present the project has had limited changes in approach. The changes that are being considered are as below:
• Due to the data recording and mapping capabilities there may be connection benefits from fault restoration works when using the HAYSYS PIU. This may require some of the Servers and background works to be brought in-house to SSEN from a data security stand point should the data be combined with mapping technology in the future. This is still under consideration.
Although not confirmed it may be that additional units are required due to the types of use case being experienced.

Lessons Learnt for Future Projects

Due to varying experience levels within the field staff,there are difficulties in defining a standard use of the HAYSYS device. This is compounded by the multiple tools being available to field staff for fault finding in which the final stage to optimise these tools and staff performance is to provide a hierarchy of use, this has led to efforts to create a LV Fault finding process. this will try to standardize the approach of field staff. Documentation is in draft at present

The Outcomes of the Project

N/A

Data Access

N/A

Foreground IPR

N/A