

NIA ENWL025

Online Assessment of Neutral Conductor Integrity

Progress Report

31 July 2022



VERSION HISTORY

Version	Date	Author	Status	Comments
V1.0	27/07/2022	B Ingham	Final	

REVIEW

Name	Role	Date
Lucy Eyquem	Innovation PMO Manager	29.07.22
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APPROVAL

Name	Role	Date
Steve Cox	DSO Director	29.07.22

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GLOSSARY

Term	Description

1 PROJECT FUNDAMENTALS

Title	Interface
Project reference	NIA_ENWL025
Funding licensee(s)	Electricity North West Limited
Project start date	April 2021
Project duration	1 year 11 months
Nominated project contact(s)	innovation@enwl.co.uk

2 PROJECT SCOPE

The project will be split into two phases:

Phase 1: a desktop study to understand the different LV cable types, failure mechanisms for the neutral conductor and types of data required, including use of Smart Meter data, to enable detection.

****Stage Gate** – at the end of phase 1 a decision will be made as to whether the method is viable and the project can continue to phase 2

Phase 2: develop and test a detection algorithm in a real network environment with a view to incorporating the algorithm in fault identification and location processes, including consideration of changes to existing business processes.

3 OBJECTIVES

To develop a tool that DNO's can use to analyse LV monitoring data to enable the early detection of neutral degradation on the LV networks.

4 SUCCESS CRITERIA

Phase 1: Desktop study and data collection/interfacing:

WP1 - Identification of the physical traces neutral degradation produces at various parts of the network.

WP2 - Identify existing sources or potential sources of data that can be used to facilitate WP1.

Phase 2: Detection algorithm in real network environment:

WP3 - Develop the infrastructure needed to gather the data from the sources identified in WP2.

WP4 - Creation of algorithms to detect neutral degradation based on the data sources identified in phase 1.

WP5 - Use algorithm to identify real world networks with defective neutral conditions developing.

WP6 - Verify the algorithm by investigating and, if necessary, repairing the defective networks and demonstrating that subsequent

data now demonstrates an intact neutral. This work package will determine the benefits of the algorithm to all UK DNO's.

5 PERFORMANCE COMPARED TO THE ORIGINAL PROJECT AIMS, OBJECTIVES AND SUCCESS CRITERIA

The project is currently in the initial scoping and requirements gathering phase. Currently desk top models have been created to investigate the changes that are likely to be seen as the neutral begins to fail. These are being refined to cover a wider range of realistic scenarios to understand any possible variations. Once this work is sufficiently advanced testing will begin on Kelvatek's test network to validate the findings.

6 REQUIRED MODIFICATIONS TO THE PLANNED APPROACH DURING THE COURSE OF THE PROJECT

There have been no modifications to date

7 LESSONS LEARNED FOR FUTURE PROJECTS

As the project is still in it's initial phase there are no lessons learned to report

8 THE OUTCOME OF THE PROJECT

Not applicable.

9 DATA ACCESS

Electricity North West's [innovation data sharing policy](#) can be found on our website.

There has been no data gathered so far during the project.

10 FOREGROUND IPR

None

11 PLANNED IMPLEMENTATION

Not applicable.

12 OTHER COMMENTS

Not applicable.