

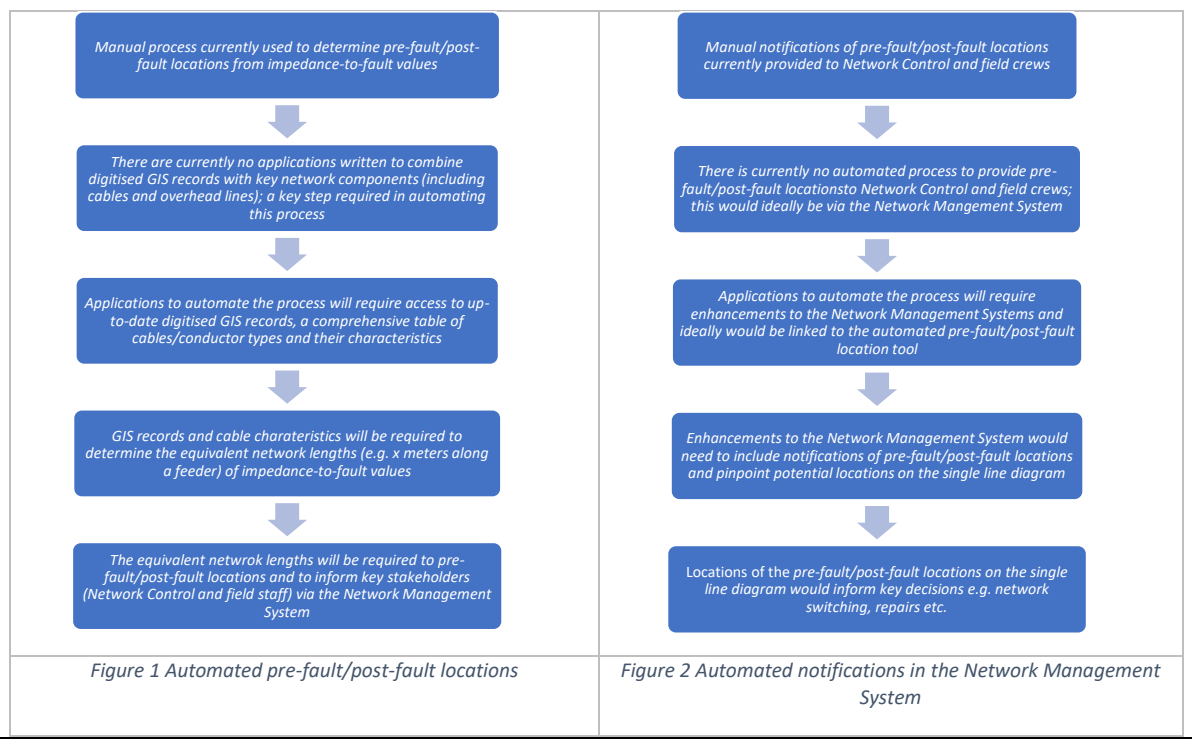
EIP022

Can we marry network monitoring and management?

Problem Statement Details

There are several commercially available LV and HV monitoring equipment/solutions which provide impedance-to-fault values for either pre-fault or post-fault events on distribution networks. Converting these impedance-to-fault values to physical locations on networks (e.g., X metres along feeder Y) is typically a manual process which involves support teams carrying out some network modelling or reviewing GIS records to identify cable and overhead line types and characteristics.

In addition to identifying the above, there is a manual process in informing Network Control Engineers and field crews of these pre-fault/post-fault locations - see *Figure 1 and Figure 2*.



Key Stakeholders

Network Control – The solution will enable automated notification to Network Control Engineers and allow them to carry out timely switching on the network to isolate faulting/faulted network sections.

Network Operations – The solution will enable field crews to find the actual location of faults more quickly (for post-fault events) and carry out pre-emptive repairs for pre-fault events.

Asset Management – The solution will remove the need for dedicated roles to carry out the annual tasks associated with identifying pre-fault/post-fault locations and notifying stakeholders. It would also remove the need (and associated costs) for third parties to provide these services.

Target Market

This solution will provide most value for managing LV and HV faults. By either acting pre-fault or locating and responding to post-fault events quicker, customers will see a direct benefit through a reduction in CIs and CMLs.

Enablers and Constraints

- The solution must be technology agnostic, i.e., take impedance to fault values as input from sensors and monitoring solutions from many suppliers in order to provide a location.
- Examples of innovation projects that provide fault locations include but are not limited to: [HV Feeder monitoring to pre-empt faults](#), [MILES](#) and [Arc Aid](#).
- The output of the solution must integrate with our current Network Management System, GE PowerOn/ADMS.
- Comprehensive records of LV and HV cables and overhead line conductors are required to calculate pre/post fault locations.
- A key enabler is fully digitised network records (particularly for LV and HV cables and overhead lines).

Scalability and Target Implementation Date

The target date for successful implementation is mid-2024. The solution could be scalable to other DNOs if they have the pre-requisites:

- Commercially available monitoring solutions that provide impedance-to fault values as outputs.
- Fully digitised network records (particularly for LV and HV cables and overhead lines).
- Comprehensive records of LV and HV cables and overhead line conductors.
- Network Management Systems with enhancement capabilities.

Innovation Strategy Target Areas

Innovation Theme	Target Area	Primary or Secondary
Data and Digitalisation	<p>The shift to data-driven, digitally-enabled networks is critical as we move towards Net Zero.</p> <p>We need your help to drive standardisation, interoperability, security and digital skills whilst accelerating our transformation to data-driven networks by the mid 2030s.</p>	Secondary
Flexibility and Market Evolution	<p>Energy networks must quickly and efficiently respond to the rapidly evolving needs of the energy system transition. We need your support to eliminate barriers to new market entrants, deploy novel commercial and network management solutions whilst ensuring fair participation and eliminating regulatory barriers within the RIIO-2 price control periods.</p>	Not applicable
Net zero and the energy system transition	<p>In order to meet the UK net zero targets of 2050 we must start converting our networks to deliver low carbon fuels today. We want to work with you to develop the role of our gas networks into the future by investigating, trialling, implementing and delivering safe, low carbon alternatives to natural gas such as Hydrogen.</p> <p>Net Zero requires connection of more low and zero carbon sources of energy generation, storage and demand to both the transmission and distribution networks. We need your innovative methods for effective network management and accessing flexibility to improve visibility, forecasting and modelling of low carbon technologies.</p>	Not applicable
Optimised assets and practices	<p>Innovation has a key role to play in ensuring our networks continue to remain reliable, safe, secure and resilient to our changing climate. We are constantly looking to improve and welcome support to identify methods to prevent interruptions, ensure resilience, reduce climate impact and future-proof our networks.</p>	Primary
Supporting Consumers in Vulnerable Situations	<p>Equality and fairness are the foundations of a just transition to Net Zero. We hope you can provide insight into the transient and situational nature of vulnerability and how we can overcome the impact the energy system has on consumers, building strong relationships for the future.</p>	Not applicable
Whole Energy System Transition	<p>The energy system must consider the full range of opportunities, risks and interdependencies that exist across the energy networks to integrate and optimise them in a way that best serves the consumer. We are looking for ways to improve visibility of the networks and transitional options, co-ordinate approaches and collaborate across the UK.</p>	Not applicable