EIP010

Can we better predict fluid ingress?

Problem Statement Details

Fluid Ingress events are a common form of unplanned supply interruptions on the gas distribution network. This can range from interruption of supply to individual properties through to impacting 10,000s. The most common cause of fluid ingress on the gas distribution network is water ingress from fractured/burst water mains in the vicinity of the gas distribution network. This is followed by groundwater entering the gas distribution network *via* undetected points of ingress.

Water Ingress events can have significant difficult impacts for all customers, both residential and commercial, with remedial work often requiring extensive resource to rectify. Rectifying water ingress incidents can involve the requirement to vent significant volumes of gas to atmosphere to enable re-commissioning of the system. It can also require multiple large excavations across a local community to enable this re-commissioning.

Other fluid ingress events that impact the gas distribution network include odorant pooling during times of low gas flow, and hydrate/oil deposits (a variety of causes).

Use of AI and system modelling is presumed to play a key part in supporting with developing solutions to this GB wide challenge. NGN is seeking solutions to improve the network's capacity for predicting potential fluid ingress scenarios to enable prevention; this methodology will also support future distribution of low carbon gases across the network.

Key Stakeholders

Other GDNs, DNOs, Water Network Operators, Environment Agency, Customer Vulnerability Groups

Target Market

AI Solution providers, Technology Partners

Enablers and Constraints

Previous project: NIA_NGN_168 – Water Ingress Investigation.

Learnings can be taken from this previous work to understand how to apply technological advances since completion.

Scalability and Target Implementation Date

RIIO-GD3 and beyond, dependant on proposals. Solutions could be scalable across Network Operations, Investment Planning, Strategy & Customer Safeguarding Initiatives.

Innovation Strategy Target Areas

Innovation Theme	Target Area	Primary or Secondary
Data and Digitalisation	The shift to data-driven, digitally-enabled networks is critical as we move towards Net Zero. We need your help to drive standardisation, interoperability, security and digital skills whilst accelerating our transformation to data-driven networks by the mid 2030s.	Secondary
Flexibility and Market Evolution	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.	
Net zero and the energy system transition	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.	Secondary
	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.	
Optimised assets and practices	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.	Primary
Supporting Consumers in Vulnerable Situations	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.	Secondary
Whole Energy System Transition	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.	