EIP008

Can we be more resilient to multi-hazard weather events?

Problem Statement Details

Weather related hazards are often assessed in isolation with little understanding on the complexities of how different hazards interact with each other and over what period an individual risk may leave us vulnerable to another hazard.

This was seen in the recent June 2022 Yellowstone flooding in the US, where a greater-than-average snowpack was experienced followed by a much warmer-than-normal spring. This caused a rapid melting, followed by wetter-than-normal early summer rainfall, which resulted in catastrophic flooding. Each of these incidents considered in isolation would not have caused concern, however the cumulative and amplification was catastrophic.

The problem of multi-hazard weather events happening within the same location and time must be critically analysed to manage probability of cascade failures which are a growing concern as one the main mechanisms causing widespread blackouts of power networks.

Currently, no matrix exists to fully incorporate resilience against such multi-hazards which are forecasted to increase with climate change. Current research has been looking at resilience against specific individual weather events.

Key Stakeholders

Asset Management Teams and System/Network Operators across all network operators (e.g., NG, TNOs, DNOs, ESOs)

Target Market

Ensuring the security of supply and keeping the lights on for millions of customers everyday even under extreme weather conditions.

Enablers and Constraints

In some cases, the individual risk is somewhat understood. Current design standards typically consider risk in isolation.

Scalability and Target Implementation Date

The solution can latch on the use of existing data and tools to produce a model which can be easily integrated into NGET's risk management system with RIIO-T2

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.	Not applicable
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.	Secondary
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.	Not applicable
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.	Primary