

EIP038

## Can we build climate change into power system modelling?

### Problem Statement Details

Over the last 5-10 years there has been substantial growth in the capacity of wind and solar generation. In addition, large changes in electricity demand are expected from electrification of heat and transport. This is leading to a growing sensitivity of supply and demand to meteorological conditions. Consequently, to model the behaviour of the power system detailed, meteorological data is required.

At short lead times (< 2 weeks ahead), meteorological data is provided by the latest weather forecast, but at longer lead times there is reliance on historic weather data. However, the climate is changing and there are concerns that the historic data is not representative of the future conditions, particularly at longer time horizons. There is a need to identify the best available meteorological data to model the power system at different time horizons.

### Key Stakeholders

ESO FES and Electricity Market Reform teams, DNOs, BEIS, meteorological data providers

### Target Market

ESO FES and Electricity Market Reform teams, DNOs, BEIS.

At this stage we are looking at this being a research project to include review and analysis of the available data to identify the source that best meet our needs.

### Enablers and Constraints

**Enabler** – Mapping the impacts and visualization of risks of extreme weather on system operation (MIVOR) [https://smarter.energynetworks.org/projects/nia\\_ngso0023/](https://smarter.energynetworks.org/projects/nia_ngso0023/)

Other enablers include the Adverse Weather Scenarios for future electricity systems: long duration events project led by the Met Office.

<https://nic.org.uk/studies-reports/national-infrastructure-assessment-old/adverse-weather-scenarios-for-future-electricity-system-long-duration-events/>

### Scalability and Target Implementation Date

Any Critical National Infrastructure providers (GB and global)

## Innovation Strategy Target Areas

Innovation Theme	Target Area	Primary or Secondary
<b>Data and Digitalisation</b>	<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
<b>Flexibility and Market Evolution</b>	<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
<b>Net zero and the energy system transition</b>	<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>	Primary
<b>Optimised assets and practices</b>	<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>	Not applicable
<b>Supporting Consumers in Vulnerable Situations</b>	<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
<b>Whole Energy System Transition</b>	<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