EIP039
Can we more accurately model electricity storage?

Problem Statement Details

Electricity storage can play an important role as enabler of renewable energy penetration and facilitate the transition to Net Zero. However, uncertainty in terms of how the assets will operate tends to result in a cautious approach being adopted as part of the connections assessments across Transmission and Distribution Networks. On the transmission network, connection dates being provided to electricity storage developers are far into the future (late 2030s), as a result of the assumptions being used in the studies and the volume of future contracted generation.

We are looking at new ways of modelling electricity storage that better reflect how they intend to operate. This includes exploring the possibility of offering electricity storage an earlier connection onto the network, on the basis that they can be curtailed to zero output at the times of network congestion if they were going to be contributing to the constraints at the time.

The aim of the innovation project is to improve the understanding of the operation of energy storage assets and *could* cover the following areas:

- How assets of different fuel types operate when co-located with storage e.g., PV and/or wind and storage.
- How the assets operate when providing energy arbitrage and what factors determine when the storage assets would charge or discharge.

This could be achieved by looking at existing operational data for storage assets but also at future data collected once new storage projects are connected on the both the transmission and distribution networks.

The data will enable improved modelling of storage systems which will support long term network planning and development as well as real time operation of the network.

Key Stakeholders

ESO – Network Operability team, TOs, DNOs, electricity storage developers and optimisers.

Target Market

Electricity storage developers.

Enablers and Constraints

Enablers – sharing knowledge and Collaboration with Transmission & Distribution companies and electricity storage developers; sharing of operational data from existing electricity storage units.

Constraints – The lack of clear data and lack of coherent approach of modelling storage across Transmission and Distribution.

Scalability and Target Implementation Date

The modelling approach could be applied across both Transmission and Distribution for all electricity storage.

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.	Secondary
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.	Primary
	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