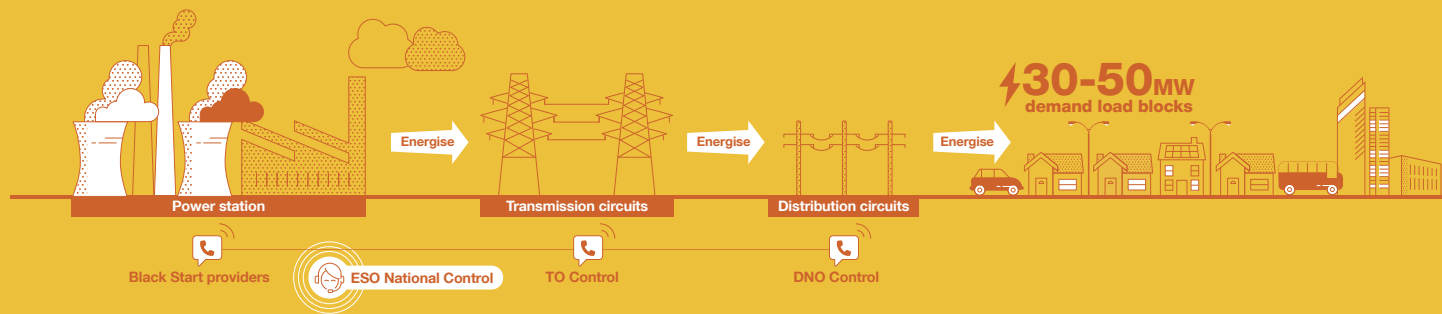


BENEFITS

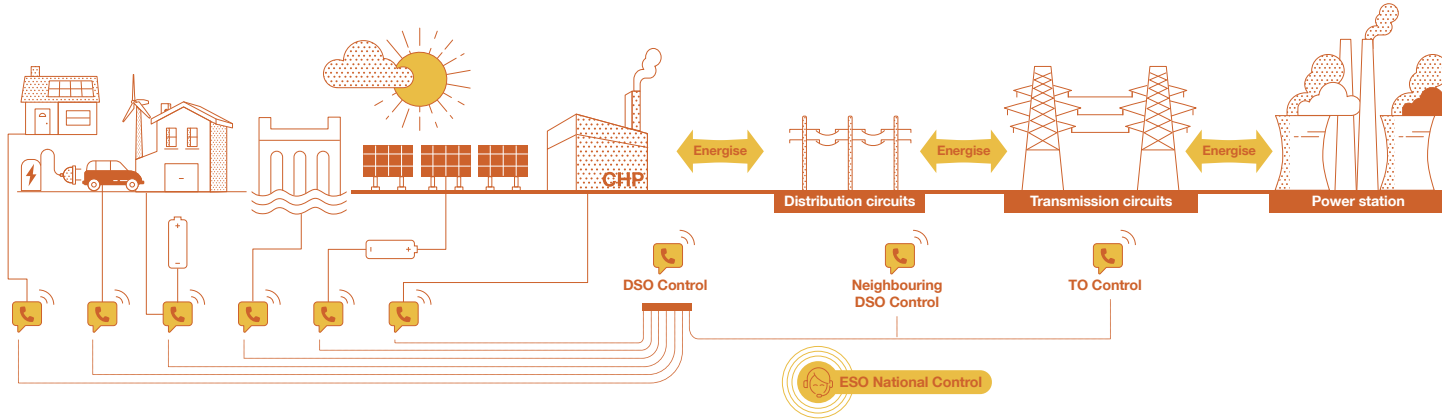
- REDUCE COST TO CONSUMERS**
We anticipate savings of at least £115M through increased competition by 2050
- DECREASING CARBON FOOTPRINT**
Through reduction in Black Start warming we expect 810kT less emissions
- FUTURE PROOFING OUR NETWORKS**
As our power market continues to decentralise we need to look at alternative Black Start Providers

Planning for whole electricity system outcomes	This project will enable ESO to take a holistic 'whole system' approach to restoration. The large pool of energy resources on the distribution network will enable ESO and DSOs to consider restoration at this level, rather than relying on a smaller volume of power stations on the transmission network. DSOs will be critical to facilitating and managing this increased market competition, providing overall cost reductions to customers.
Increasing participation	Opportunities for participation on the Black Start service market by DER should significantly increase the size and breadth of the market.
Increasing competition	A larger number of providers will increase market liquidity, reduce concentration and enable a reduction in costs.
Innovation in procurement of services	Innovative and more transparent commercial arrangements will better enable new types of DER to take part in Black Start.

What Black Start looks like today



What the future DER restoration could look like



National Grid Electricity System Operator (NGESO) is the lead partner for the Distributed ReStart project. As the electricity system operator for Great Britain, NGESO have responsibility for the safety, reliability and efficiency of the network.



SP Energy Networks (SPEN) is a licensed Electricity Distribution Network Operator (DNO) for central and southern Scotland and parts of England and north Wales. SPEN also operates the Transmission Network in central and southern Scotland.



TNEI is an independant specialist energy consultancy firm with a range of skills tailored to answer the challenges and opportunities associated with increased distributed renewable generation, and the integration of low carbon technology.

Distributed ReStart

Energy restoration for tomorrow



WHO ARE WE?

We are SP Energy Networks, part of the Iberdrola Group, leaders in sustainable innovation. As a Distribution and Transmission Network Operator we keep electricity flowing to homes and businesses throughout Central and Southern Scotland, North Wales, Merseyside, Cheshire and North Shropshire.

We do this through the network of overhead lines and underground cables which we own and maintain.

Our three regulated electricity licences are:

SP Transmission (SPT)

SP Distribution (SPD)

SP Manweb (SPM)

Our aim is to deliver a safe and reliable electricity supply 24 hours a day, 365 days a year whilst providing exceptional value for money.

Distributed ReStart



The Distributed Restoration project is a partnership between National Grid Electricity System Operator (ESO), SP Energy Networks (SPEN) and TNEI (a specialist energy consultancy) that has been awarded £10.3 million of Network Innovation Competition (NIC) funding.

The project is exploring how distributed energy resources (DER) can be used to restore power in the highly unlikely event of a total or partial shutdown of the National Electricity Transmission System. Past and current approaches rely on large power stations but as the UK moves to cleaner, greener and more decentralised energy, new options must be developed.

The enormous growth in DER presents an opportunity to develop a radically different approach to system restoration. However, there are significant technical, organisational and commercial challenges to address.

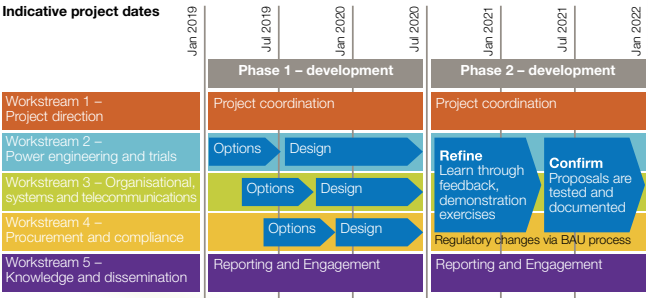
PROJECT APPROACH

The project will tackle these challenges in a three-year programme (Jan 2019 – Mar 2022) that will develop and demonstrate new approaches. Case studies on the SP Distribution (SPD) and SP Manweb (SPM) networks will be used to explore options then design and test solutions through a combination of detailed off-line analysis, stakeholder engagement and industry consultation, desktop exercises, and real-life trials of the re-energisation process. Three areas of work will cover the wide range of issues to enable Black Start services from DER:

• **The Power Engineering & Trials work stream** is concerned with assessing the capability of GB distribution networks and installed DER to deliver an effective restoration service. It will identify the technical requirements that should apply on an enduring basis. This will be done through detailed analysis of the case studies and progression through multiple stages of review and testing to achieve demonstration of the Black Start from DER concept in 'live trials' on SPEN networks.

• **The Organisational, Systems and Telecommunications work stream** will consider the restoration process including different roles, responsibilities and relationships needed across the industry to achieve distributed restoration at scale. It will specify the requirements for information systems and telecommunications, recognising the need for resilience and the challenges of coordinating Black Start across a large number of parties.

• **The Procurement & Compliance work stream** will address the best way to deliver the concept for customers. It will explore the options and trade-offs between competitive procurement solutions and mandated elements. It will make recommendations on the procurement strategy aiming to be as open and transparent as possible while reflecting wider industry discussions on related topics like the DSO transition and Whole System Planning. It will feed into business as usual activities to make changes as necessary in codes and regulations.



CONTACT US

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