

Distributed ReStart



Stakeholder Advisory Group

18th September 2019



In partnership with



nationalgridESO

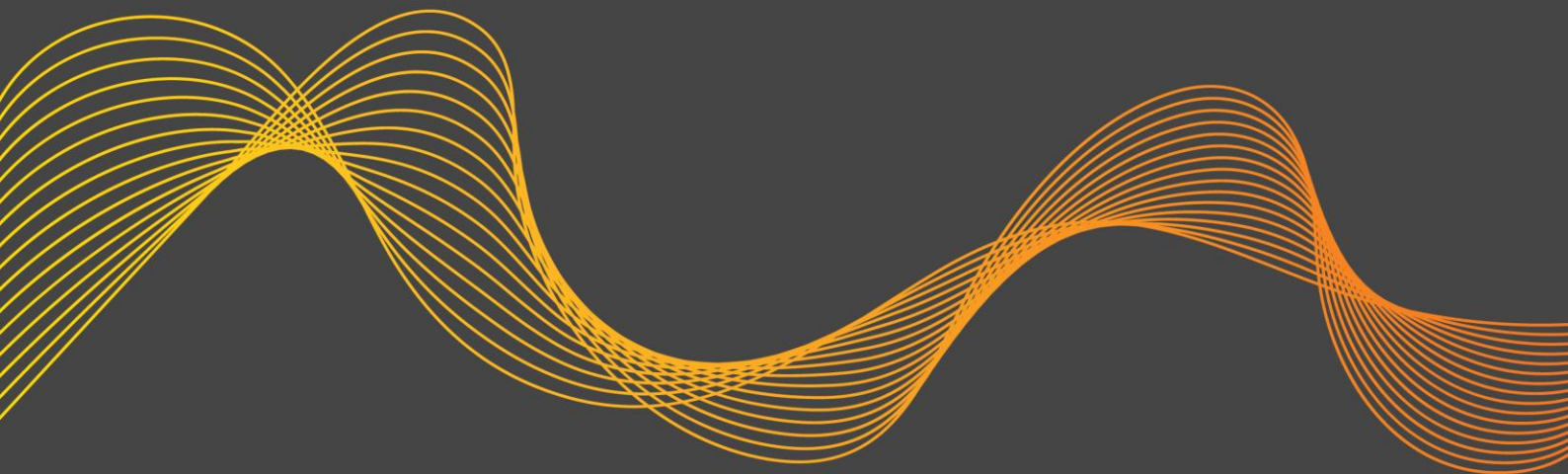
Stakeholder Engagement Summary

Distributed ReStart aims to incorporate the views of wider industry at every opportunity, bringing in the diverse expertise found across the electricity market to solve this world first challenge of Black Start using Distributed Energy Resources.

On Wednesday 18th September Distributed ReStart hosted our first stakeholder advisory group meeting to provide wide ranging industry views on project outputs and planned next steps.

This event focused on reviewing the key conclusions from the Power Engineering and Trials Viability Report. In response to this paper, key questions were posed by the panel which were debated during the meeting.

A summary of the outcomes from this event is provided in the following document to provoke thought and further discussion. If you have any queries or comments stemming from this, don't hesitate to contact us at ReStart@nationalgrideso.com, we look forward to hearing from you.



Stakeholder Advisory Board



Distributed ReStart have engaged cross industry experts to hold the project to account and guide the overall outcomes and direction of investigation.



Figure 1: Our stakeholder advisory panel consists of representatives from Cardiff University, Energy Systems Catapult, Cornwall Insight, Citizens advice, Chiltern Power, The IET, BEIS and ENA

Attendees

Name	Role	Company
Nick Jenkins	Technical Chair	Cardiff University
James Kerr	Panel Member	Citizens Advice
Alasdair Muntz	Panel Member	Energy Systems Catapult
Andrew Enzor	Panel Member	Cornwall Insight
Herpreet Bhamra	Panel Member	BEIS
John Scott	Panel Member	Chiltern Power
Emma Penhaligon	Project Team (Secretary)	National Grid Electricity System Operator
Peter Chandler	Project Team (Lead)	National Grid Electricity System Operator
Neil Miller	Project Team (Power Engineering Lead)	Scottish Power Energy Networks

Guests

Name	Role	Company
Duncan Burt	Director of Operations	National Grid System Operator
Julian Leslie	Project Sponsor	National Grid Electricity System Operator
Eric Leavy	Project Sponsor	Scottish Power Energy Networks
Joanna Carter	Project Team (Organisational Systems and Telecommunications Lead)	National Grid Electricity System Operator
Sophie Corbett	Project Team (Procurement and Compliance Lead)	National Grid Electricity System Operator
Anyta Dooley	Project Team (PMO Lead)	National Grid Electricity System Operator

Apologies

Name	Role	Company
Simon Harrison	Panel Member	IET
Tom Palmer	Panel Member	Cornwall Insight
Randolph Brazier	Panel Member	ENA

The Role of Non-Synchronous Generation

Q1 Should there be further consideration and development of non-synchronous anchor generators and what role will they play?

Impacted Area	Key Outputs and Questions
Engineering Requirements	What do the Future Energy Scenarios say about generation technology in 2040 and how will the project consider aligning its thinking to this analysis?
Engineering Requirements	Can the project consider anchor generation being non-synchronous? For example, grid forming convertors.
Engineering Requirements	Can the project consider the merits of using flywheels or Synchronous Compensators on distribution networks to provide inertia and for voltage control?

Microgrid Options

Q2 Is there a case for exploring microgrid options further as there is growing international interest in microgrid islanding capability

Impacted Area	Key Outputs and Questions
Systems	Further information is available at: https://microgridknowledge.com/power-outages-microgrids/

Changes to Supply Quality Standards

Q3 Consideration of flexing frequency and voltage limits in power islands could be a key enabler (and cost-saving factor) for Distributed Energy Resources islanding and Black Start.

Impacted Area	Key Outputs and Questions
Codes	ESQCR states system frequency shall be maintained at 50Hz +/- 1% unless in exceptional circumstances. Does Black Start = exceptional circumstances?
Codes	Are there any EU code requirements that apply? E.g. RFG, SOGL, NCER?
Codes	ESQCR requirements for Frequency & Voltage – will these need changing?
Engineering requirements/Codes	Discussion about the Class Project for voltage reduction (ENW). Could a relaxation of voltage standards or requirements be acceptable for consumers? (better to have power with low volts than no power at all?)
Engineering Requirements/Codes	For consumers within a microgrid area then you'd expect to see your lights flickering a lot. What are the Quality of Supply / ESQCR requirements?

Changes to Supply Quality Standards

Q4 Will restoration times warrant an entirely fresh look for Distributed Energy Resources, including speed/cost trade-offs?

Impacted Area	Key Outputs and Questions
Organisations	Can the project consider producing scenarios for restoration timescales from DER-based restoration? Can maybe use ESO's probabilistic model.
Codes	Will there be a need to change DNO/DER/ESO licence requirements?

Trip to Island

Q5 The trip-to-island concept looks to be very useful. It would likely have a stronger cost/benefit case if viewed as part of microgrids and community energy enterprises.

Impacted Area	Key Outputs and Questions
Engineering Requirements	Trip to House Load is a useful concept, it could be used to protect supplies to a multitude of sensitive demand sites; e.g. petro-chemical plants.
Procurement	Discussed Energy from waste where plant can run in islanded mode for an extended period to allow continuous operation. There's a link here to financial & environmental incentives/penalties.
Procurement	Has the project considered local community energy groups to provide power islands?
Systems	Microgrids could be utilised for EV charging hubs & other local schemes.
Systems	It would be helpful to recognise future islanding options in our project reports.
Organisations	How does the project acknowledge its proposed options meet the direction of travel of the energy industry and power system evolution?

Capability of Power Electronics

Q6 There are key issues around the impact and capability of power electronic convertors, including provision of Synthetic Inertia. Does the advisory panel include expertise in this area?

Impacted Area	Key Outputs and Questions
Engineering Requirements	ESO is running stability pathfinder projects and introducing an inertia market. SPEN is running Project Phoenix (flywheel). Can the project learn from any of these initiatives?
Engineering Requirements	Can the project consider reopening arguments for the need for Synthetic Inertia?
Engineering Requirements	Can the project consider grid forming convertor technologies?

Wider Discussion

Impacted Area	Key Outputs and Questions
Knowledge Dissemination	Should the project have someone on the Panel representing the DNOs?
Whole Project	ESO's ambition to be able to operate the System with zero carbon by 2025.
Organisations	Transition from DNO to DSO models.
Knowledge Dissemination	The project needs to engage with ENA Open Networks.
Systems	The OS&T work stream will include investigating microgrids.
Systems	Controllability of distribution islands.
Systems	Controllability of batteries.
Whole Project	The industry is undergoing a change from 'large' to 'small' power system worlds.
Codes	How will end-to-end industry code reviews work? How will the project approach this?
Engineering Requirements	How will power islands connect on the distribution networks? E.g. Power System Synchronising?
Telecoms	How will communications to the public work during a blackout?
Knowledge Dissemination	Engagement with academia is a good idea. A workshop format would be OK towards end of November or early December. What would the project want from this? What questions does the project want answered by academia? Under graduate research projects?

Conclusions

Though hosting this form of event, we can understand and build on the existing capabilities, systems and resources from across the industry. This will Reduce the economic impact of our decisions and ensure the concerns of industry are appropriately addressed.

The outcomes of this engagement will be addressed in the next steering group meeting and provide guidance for further investigation across all workstreams.

Further engagement will be announced through our mailing list (sign-up link available on the website) or through one of the many wider industry events we are attending (see our industry engagement calendar on the website).

The Distributed ReStart team would like to thank all delegates who have helped to deliver this event and look forward to continued engagement.

