Electricity Network Innovation Competition Full Submission

Supplementary Answer Form

Project: Black Start from Distributed Energy Resources

Tick if this answer has been provided verbally: ☐

Project code	ESOEN01	Question Number	27
Question date	21 Aug 2018	Answer date	23 Aug 2018
Submission section question relates to	Project Methodology		
Topic	a) Low carbon/environment and net financial benefits		
Question	At this stage only thermal power stations, small hydro stations, wind farms and small gas or diesel stations will be allowed to participate. Why only these generators?		
Notes on question	eNIC Competition Governance Document Version 3.0 "1.18. Technology Readiness Level (TRL) 1 – 3 (Research activities) and 9 (proven activities) will not be eligible for funding from the NIC. The term Technology Readiness Level is defined in Appendix 1." "Technology Readiness Level (TRL) The Technology Readiness Level is a measure used to assess the maturity of evolving technologies. It is graded on a scale from 1 to 9, where, for the purposes of the NIC: • TRL 1: Pure research that is theoretical or experimental work undertaken to acquire new scientific or technical knowledge for its own sake rather than directed towards an application; • TRL 2-3: Applied research driven by a desire to broaden scientific and technical knowledge for application on the network, related to an identified Problem. It typically includes investigating the underlying foundation of phenomena and observable facts; • TRL 4-6: Development activities with a more commercial application including technology validation and or demonstration in a working environment; • TRL 7-8: Full scale demonstration in a working environment to test and improve technologies so they are ready for commercial deployment; • TRL 9: Application of technology in its final form, ie the technology has been proven."		

Answer	To align with the eNIC guidelines and respond to feedback from Ofgem at the ISP stage, the current eNIC bid is limited to DER that have reached TRL 4-8 in the context of providing Black Start services. Furthermore, to deliver outcomes suitable for business as usual in the near term we will focus on DER that is already connected to GB distribution networks, or is known to be connecting soon. At this time, this leads to the position that all case studies should be built around at least one synchronous generator because this is the only technology (of sufficient TRL) that can be grid-forming and act as the 'anchor' for a Power Island. Thermal generation like biomass, gas or diesel engines, and hydro typically use synchronous generators and could feasibly be made self-starting, if they do not already have that capability. We also recognise the opportunities for other types of DER to contribute to the growth of a Power Island. Due to its deployment at scale on 33 and 132 kV networks across GB, and the readiness of the technology to provide the services required from secondary stations in Black Start, we believe wind has advantages over other types of DER. However, we are open to considering other technologies and the potential case studies described in Appendix G of our bid include a wide range of DER types. In particular, we recognise that batteries could be an extremely valuable resource and could be of great use in live trials, where they might emulate the behaviour of other demand customers. In our review of case study opportunities we have identified two locations that feature battery energy storage. However, there are significant numbers of batteries with connection offers and other applications in progress. If battery resources become available during the project timeframe, we will try to include more of these within the case studies and testing. We are currently scoping an NIA research project entitled "Capability study of Black Start from emerging distributed energy resource technologies". The purpose of this NIA project is to assess the technical capability of DER at TRL less than 4 (e.g. wind, solar or storage with self-start capability, DSR, EVs) to contribute to Black Start in future. More information on the NIA is provided in our answer to Question 11. Learnings from the NIA project, as well as input from the Stakeholder Advisory Panel, will also ensure that any solutions proposed by the NIC project will be appropriate for future inclusion of other emerging DER technologies.
Attachments	