

Proposal - Lot 10 – International Smart Grid Action Network

Energy Systems Catapult (ESC) are delighted to provide a proposal for Lot 10. This document sets out our responses as detailed in the ITT.

Q1a – Understanding of the sector in the UK and internationally - 3 pages

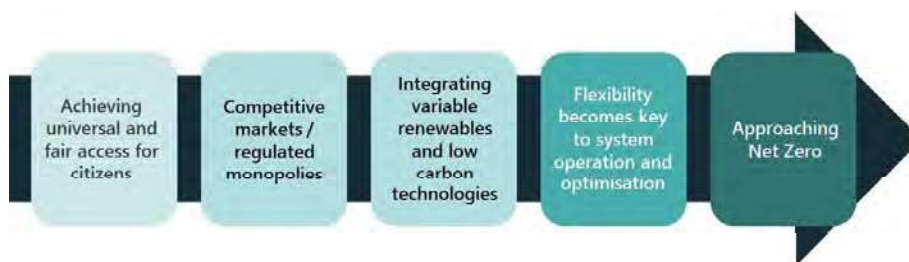
ESC is highly experienced within the key developments and challenges in the smart grid and flexibility sectors. Our experience is harnessed from numerous projects in this space – of particular relevance are (i) Working as the Alternate Delegate to ISGAN from 2018 – 2022 and leading the ISGAN Annex (now Working Group) related to flexibility; (ii) Supporting the launch of a new international Mission on Power – Green Powered Future Mission (iii) Workshops with International Research Organisations on challenges related to flexibility; (iv) leading the Energy Data and Energy Digitalisation Taskforces; and (v) working on BEIS funded Demand Side Response projects. More details can be seen in the reference list at the end of this section.

The individual ESC is putting forward for the Alternate Delegate (AD) role, [REDACTED] (CV attached in supporting documents), acted as the UK lead for the Mission Innovation Green Powered Future Mission and co-led the creation of Mission Roadmap of global innovation priorities and has also supported on ESC's role to date as ISGAN Alternate Delegate.

Challenges / Opportunities in the smart grid space

From this extensive experience ESC have a keen understanding of the principal drivers and challenges related to smart grids worldwide. It is worth noting at the outset that there is a huge disparity in the level of power system development worldwide, which of course shapes the local drivers and challenges.

Figure 1: Different stages of power system development



Despite this variation by country, there are however a number of key characteristics that are very common. Countries across the world are making the transition shown in Figure 2 below from the “Old” power systems, characterised by predictability and legacy technology, to “New”, more complex power systems which require greater innovation in managing large swings in generation, stability monitoring, fault level, voltage management and dealing with the engineering, market and policy challenges presented when transitioning to a low carbon power system.

Some key challenges include but are not limited to:

- Integrating embedded generation on distribution networks to be part of a wider balancing system,
- Integrating the Transmission System Operator role with the Distribution System Operator role,
- Managing intermittent generation sources without large cost implications,
- Managing the transition of consumers to ‘pro-sumers’ where they can participate in flexible services, respond to market signals and offer services to the DSO.