

ENA Future Worlds Impact Assessment Consultation Response

1st May 2019.

Smarter Grid Solutions is pleased to respond to this DSO Future Worlds Impact Assessment consultation by the ENA Open Networks.

Smarter Grid Solutions is a DER (Distributed Energy Resources) Management System (DERMS) software vendor. Our products and services are targeted at smart, efficient integration of distributed generation (DG) and distributed energy resources (DER) into power systems to create value for multiple stakeholders in each power system timeframe from investment planning to real time control. Our software is widely used in the UK to deliver Active Network Management (ANM) systems that support Flexible Connections for DG and other resources. With offices in New York, Glasgow and California, SGS is a global solutions provider to distribution utilities, system operators, and energy asset operators. We also provide independent consultancy on a broader range of topics in the power sector in the UK and internationally.

Smarter Grid Solutions has spent fifteen years researching, developing, deploying and proving our approach to managing flexible, smart grids. We have delivered a number of flagship ANM projects in the UK and overseas and worked with UK DNOs to publish key learning. We are recognised as leaders in this domain and have worked with, and learned from electricity distribution companies, national regulatory authorities, university research teams, generation developers, SCADA/DMS suppliers, grid edge device manufacturers, national labs and many others.

Smarter Grid Solutions welcomes the valuable analysis of future DSO worlds by Baringa. This adds to the important assessment of the decisions required to maximise the opportunity and value to be gained from the Distribution System Operator (DSO) transition and the development of a more decentralised, flexible and smart energy system. The implications of different pathways and the development of the most appropriate means of facilitating and coordinating Distributed Energy Resources) participation and flexibility are crucial issues for the imminent changes in the sector.

We welcome the opportunity to discuss any aspect of our response further.



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Q1. Please confirm which stakeholder groups you believe that you belong to; this will enable the Open Networks Project to understand the spectrum of respondents to this consultation.

- Technology business: Distributed Energy Resources Management System (DERMS) software, systems and services provider.

Q2. Please provide your views on Baringa's interpretation of the Future Worlds, detailed in Section 2, for the purpose of this impact assessment and the overall approach, highlighting any key strengths or weaknesses, or areas which should be explored in more detail?

- We think it was a necessary and useful step to add more detail to the Future Worlds defined originally by the ENA. This has enabled the balanced assessment of the Future Worlds but also develops and deepens the analysis towards better understanding of the implications of different pathways, decisions and courses of action (and also failure to take definitive steps).
- The additional clarity on scope of responsibility, type/location of flexibility and staging through time seems both plausible and helpful.
- If World E emerges or is actively pursued then separate IDSO(s) to work alongside a DNO (wires owner) seems appropriate to provide neutrality over system operation, with IESO continuing in the same role as now (or even becoming the combined IESO+IDSO). The nature and rules for coordination would still be required in World E if the IESO and IDSOs are separate entities, operate separate markets or have jurisdiction over different parts of the system, so the challenge of creating the means for coordination of flexibility and systems operation is still highly valid, important and urgent.
- We are pleased to see that a relevant and usable set of modelling data and assumptions has been shared and that this can be developed beyond the scope of this current work and report to test different assumptions and to make further updates as plans and policies develop.

Q3. Do you agree with the conclusions and insights within the Executive summary? If not, please explain your rationale. Please provide reference to more detailed comments against individual sections if this is appropriate.

- Yes. The additional insights generated by this analysis of the Worlds, pathways, relative merits, challenges, observations and areas for additional work are all very helpful in working out which Worlds and pathways might be preferred by different stakeholders to achieve different objectives.

Q4. Do you agree with the options set out as potential transition paths?

- Yes, there is strong logic behind the pathways presented with current status in World B Stage 1 and separate pathways for charging and Independent ESO. It will now be very interesting to explore the rationale for different industry participants and decision makers selecting preferences in the pathways and phases presented and assessing the implications of those preferences and choices.

Q5. Do you believe there are any other viable transition paths? If so, please explain why.

- The dotted lines paths into World E could usefully be developed (the narratives in section 5.4 do this to an extent) as this is a plausible future pathway. That decision towards independent DSOs is in keeping with the US Future of Electric Utility Regulation thinking where the early stage DSO maintains integration within the distribution wires utility but then

some DSO functions move to an Independent DSO organisation (IDSO) at a later date when the DSO mechanisms are more mature.

- There are important questions about the DER volumes and LV/HV/EHV DER connections that would cause the DSO or ESO to be the optimal DER flexibility coordinator and these could be analysed and developed further. The impact assessment presents the volume of DER as a significant influencing factor in the choice of pathway.

Q6. Do you agree with the assumption that all transition paths start in Stage 1 of World B?

- Yes, the mix of active system management and flexibility services procurement by DNOs, with charging review and ESO independence already underway but not yet fully connected/coordinated with DNOs/DSOs, is an accurate reflection of current status.
- The existing approach of the ESO managing some but not all resources embedded in distribution networks is the frontline challenge for DSO-ESO coordination at present. This presents some issues and delays to effective arrangements for DER operators (and their intermediaries) participating in ESO flexibility mechanisms or being impeded in securing an effective route to market with their flexibility requirements and services.

Q7. Do you agree with the areas identified for further work in the 2019 workplan and the further work ideas in the impact assessment or do you feel there are other areas of work that should be prioritised to progress in this area?

- No Response

Q8. What future work do you believe would enhance the debate and body of evidence around transitioning to the potential Future Worlds?

- We think there are two areas that could usefully inform and identify the means of accelerating the appropriate changes and investments to deliver DSO and enhanced customer and DER access to and participation in the system.
- #1: Better, transparent data and evidence of DER and customer participation in the system. Transparent and verified data on relevant DER and flexibility today would be very helpful in tracking the growth and impact of this significant and growing area of the market and system (existing Ofgem and DNO annual returns and reports already provide some of this):
 - DER connected by type, DNO, capacity and connection arrangements (and the contracted pipeline)
 - Flexibility services under procurement and aggregator operations, volumes, values, etc.
 - Capacity headroom, network CAPEX, expected non-wires/DER/flexibility alternatives, DER related investment plans per appropriate DNO, geographical and local area.
- #2: Debate on how to accelerate the discussion towards agreement on who coordinates DER flexibility in Distribution networks. There is much in the sector that depends on the means of coordination of DER and flexibility management so the sooner that decisions are taken and implementation occurs the better. This seems to be an issue of foresightful enablement of customers and DER rather than a response to events. Much opportunity, value and time could be lost in waiting for events to play out when the trends seem to be clear. It seems like a World C baseline with a World B starting point transitioning to either World A, D or E are the best and most likely transition pathways depending on the factors set out in the reports. It is apparent that the costs and benefits are not significantly different between

these different pathways so wider, non-quantitative issues may hold the key (e.g. neutrality, trust, fairness, speed to accelerate DER/low carbon transition). Those non-quantitative factors might also be the ones that unlock the implementation of the processes, systems and platforms that will enable the coordination between DSO, ESO and other participants to put in place the mechanisms required of a vastly greater decarbonised, decentralised and digitalised system.

- The above are key issues to understanding and creating the appropriate further clarity, significance and urgency in the Worlds and Pathways analysed in the report.

Q9. Do you agree or disagree with the four categories of system operation benefits identified? Are there areas that should be excluded from the list and/or other areas that should be included?

- The suggested four categories seem reasonable but the fourth (avoided generation investment) is not directly attributable to a network or system operation cost (there are many other drivers for generation investment) so could be set to the side for simplicity.
- The specific, benefits and costs for each of these four categories is more relevant. There are very important questions over which participants pay for the different component parts of conventional and smart solutions, both up-front and over time, and to who do the benefits flow. These are vital issues in creating clarity on which novel business models could reflect, create and allocate value appropriately among participants.

Q10. Do you agree, disagree on the key benefits assumptions contained within Appendix B (e.g. all Worlds, apart from World C, achieve the same benefits by 2050 etc) and used in the impact assessment? If you disagree, please explain your reasoning. Do you have any other comments?

- Q10-Q16 all relate to the specific and detailed modelling approaches and assumptions. Overall the approach and assumptions look reasonable given that the models are for unknowable futures, cover multiple criteria and are intended for indicative/comparative purposes. Our general view is that the models create valuable insights and so are fit for purpose.

Q11. Do you agree or disagree on the approach used to assess the overall potential benefits of improved system operation?

- No response

Q12. Do you agree with the assessment of the proportion of benefits which each Future World is capable of delivering in Stage 1 and Stage 2?

- No response

Q13. Do you agree or disagree on the approach taken to deal with the uncertainty/range of benefits? If you disagree please explain your reasoning.

- No response

Q14. Do you agree or disagree with the areas identified for quantification of the implementation costs that will be faced by DSOs and ESO in Appendix C? If you disagree please explain your reasoning.

- No response

Q15. Do you agree or disagree with the approach used to assess the costs of each world? If you disagree, please explain your reasoning.

- No response

Q16. Do you agree or disagree with the approach to dealing with the uncertainty/range of costs? If you disagree please explain your reasoning.

- No response

Q17. Do you agree with the trade-offs of each of the Future Worlds identified against each of the high-level criteria in Table 1 of the Executive summary?

- Yes, in general.
- We have some concerns about the complexity of system operation of World B with much greater diversity in customer and DER system participation and business models and interplays between DSOs and the ESO. This complexity is likely to focus on the commercial and contractual arrangements for participation and system operation. Data exchange (and transparency) is one of the areas where we anticipate a significant change and challenge.

Q18. Do you agree or disagree with the Appendix A approach of ranking of worlds to help identify the strengths and weaknesses of each World against each criteria? If you disagree please explain your reasoning.

- The report makes it clear that World C does not compare on similar terms with the other four future worlds. While World C should be assessed against different criteria, the industry can likely accept that charging is a different dimension and one that is necessary for all worlds. In that case the ranking is not viewed as so important in this analysis.
- If using the same criteria across all Worlds, it might be more effective to use the same score across the board when it is not possible to compare different worlds – which is the case when the details and subtleties are yet to be defined.

Q19. Do you agree or disagree with the rankings and whether they are suitably justified? If not, please comment on which ones and why?

- No response

Q20. Do you agree or disagree with the list of potential unintended consequences identified in Section 4.5, and their prioritisation and potential mitigation as charted in Figure 20? If you disagree please explain your reasoning. Should the Open Network project progress further work on unintended consequences?

- We agree with the list of unintended consequences in general - we do not have any specific additional comments to add.