Consultation on Future Worlds Impact Assessment

A Highview Power response

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Highview Power Storage (HPS) welcomes the opportunity to respond to this consultation. HPS is an award winning, UK based energy technology company focused on a cleaner, more efficient and secure energy future. HPS has developed a proprietary energy storage technology that uses surplus electricity, at times of low demand/low cost, to make liquid air, which can be stored and released later to generate electricity at times of high demand/high cost.

HPS technology uses proven components from the industrial gas and power generation sectors, is unconstrained geographically, uses no exotic/rare materials and produces no harmful emissions. It has the potential to provide a large scale, long duration solution to the challenges to the electricity supply chain associated with increased intermittent low carbon generation and low carbon technology.

Q1. Please confirm which stakeholder group5 you believe that you belong to; this will enable the Open Networks Project to understand the spectrum of respondents to this consultation.

Highview Power is a technology 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?

Baringa's interpretation of each of the 5 worlds is in line with the definition of each of them as presented in the Future Worlds consultation. The following considerations: How do the Worlds develop over time?, In World A what role does the DSO play in the Balancing Mechanism?, What are the co-ordination mechanisms in place in World B?, Is it correct for World C to be based on a variant of World B?, To what network level does the ESO co-ordinate flexibility in World D?, What is the role of the Flexibility Co-ordinator(s)? provided insights and considerations that helped identify the triggers for different stages in each world, coordination issues, the impact of World C, etc. This assisted in the identification of key benefits and strengths of each scenario in deliver a low carbon and cost effective energy future and highlighted the need to address additional areas, e.g. the distribution of responsibility to ensure security and quality of supply standards.
Perhaps the only area that should be explored in more detail, or rather updated, is the integration of the work that done as part of the network access and forward-looking charges review.

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.

We agree with the conclusions and insights within the Executive summary.

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

We agree with the options set out as potential transition paths. We concur on the view that the design of incentive schemes for the ESO and DSOs as well as the level of DER deployment will have a catalytic effect on the transition among paths.

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

Given the degree of uncertainty inherent in the future work, there might be additional transition paths that cannot be easily defined. The proposed transition paths are the most credible and are a sensible way of balancing that uncertainty to identify additional points for consideration in this work.

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

We find this assumption to be reasonable and agree that all transition paths start in Stage 1 of World B. Further comments are provided in the answer to question 8.

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?

In broad terms we agree with the areas identified for further work in the 2019 workplan. We believe that the work around Defining the commercial arrangements for the Future Worlds should be prioritised.

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

We note that the assumption that all transition paths start in Stage 1 of World B needs to be proof tested and a way to do this would be by focusing on the development of a network engineering model which not only forecast investment required under different load and generation growth scenarios across both Transmission and Distribution but also integrates the work carried out by National Grid ESO as part of the System Operability Framework. Operating the network with greater levels of non-synchronous generation, varying power flows, new types of demand etc might prove challenging and technical proof of the possibility to coordinate DSO and ESO actions at critical times is needed. Additionally, we note that CO2 emissions should be included in the assessment to ensure DSO and ESO coordination also supports the achievement of carbon targets.
We also note that at this stage the analysis has mainly focused on two areas of the energy trilemma, these are the sustainability and affordability. We believe that the proposed work on mapping the accountabilities and responsibilities of each actor in ensuring that local and national security and quality of supply standards are maintained at adequate levels.

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?

We believe that there is an opportunity cost associated with curtailed energy identified by Imperial College in "Strategic Assessment of the Role and Value of Energy Storage Systems in the UK Low Carbon Energy Future" and not considered in the analysis. The estimated value depending on the scenarios can reach the other of billions.

In addition, we believe that additional network modelling should be carried out to identify potential costs associated with voltage regulation triggered by a decrease in demand.

We also note that cost associated with managing lower levels of synchronous inertia, short circuit infeed and dynamic reactive capabilities should be considered as these can cause operability issues that are expensive to solve and might increase the complexity of coordinating DSO and ESO responses.