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Sent by email to: [opennetworks@energynetworks.org](mailto:opennetworks@energynetworks.org)

Dear Sir/Madam

### **Consultation on future worlds impact assessment**

Centrica is pleased to respond to the ENA's Open Networks Project consultation on the impact assessment carried out by Baringa on the five potential industry structures, known as the "Future Worlds".

In our September 2018 response to the Future Worlds consultation we stated our preference for a Future World where DER assets can freely access revenues in both distribution and transmission level markets. We continue to believe that independently operated local energy markets can contribute significantly to the transparency, efficacy and overall value of the system. The ultimate objective must be to find a design which provides the best value for GB consumers and opens the flexibility markets to innovation and competition.

An immediate benefit of the Future Worlds work has been to identify the key enablers and least regrets actions that can deliver smart grid benefits in the short term. More work is needed to drive these out. This must continue to be a priority for the ENA and policy makers.

In responding to this consultation, we focus on the impact assessment methodology, what the impact assessment says about the Future Worlds meeting these principles and where further work is needed.

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

Centrica is an energy and services company. We supply energy and services through brands such as British Gas, Centrica Business Solutions and Hive. Our Distributed Energy & Power business owns and operates distributed generation and storage assets. Centrica has invested £19m in a pioneering local energy market trial in Cornwall to explore flexible, smart energy solutions for the UK.

Within the Future Worlds lens we belong to these stakeholder groups:

- supplier
- aggregator
- distributed energy resource
- supply chain
- local market operator
- transmission connected generation
- gas

**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?**

The two-stage approach is reasonable – dividing each Future World into an initial stage of development (Stage 1) before maturing to the end-state (Stage 2). This approach could help policy makers crystallise the key milestones we feel are urgently needed to drive progress towards a smart flexible energy system for the UK.

We agree with Baringa's approach of modelling World C as a standalone world, but then assuming it could be applied on top of all the worlds.

- World A – we believe it was right for Baringa to remove DSO responsibility for energy balance at the GSP but believe there could still be issues with compliance with EU legislation. Compliance will have to be considered for all Worlds, but appears more problematic in World A.
- World B – we note that Baringa has assumed that for World B Stage 1 the DSO's procurement needs would be prioritised for the modelling, where the DSO has no alternative resources. We understand this is just for the purpose of the modelling. For all Worlds, further work is needed on how co-ordination will work in practice and as well as the other commercial design details missing from the SGAM modelling.
- World C – we agree that World C can be considered as a variant of all other Worlds.
- World D – we agree that it does not make sense for the ESO to have responsibility down to LV level and agree with Baringa's choice not to include World D Stage 2 as a Transition Path.
- World E – For the purpose of the IA we agree with the assumption of 4 Flexibility Co-ordinators (and sensitivity run for a single Flexibility Co-ordinator). More work is needed on how these differ from market platform providers and in the case of a single Flexibility Co-ordinator, how this differs from the ESO.
- Role of platform providers – we agree that market platform providers could exist in any of the Future Worlds. Properly implemented these should deliver more efficient outcomes, reducing World implementation costs.

#### Areas which should be explored in more detail

Baringa's comments in 2.3 highlight one of the key limitations of the Future Worlds *"There remain some uncertainties surrounding how the Future Worlds will operate from a commercial perspective. Understandably, the SGAMs did not go into this detail as it is a complex area and separate from how operational information will be exchanged. This does limit the ability to really understand how the Future Worlds will operate..."*

Not considering how the functioning of the Future Worlds from a market perspective is the main weakness of this work. Baringa recognises that this needs to be addressed. We believe this

needs to be covered from a range of angles – impact on investment in flexibility, impact on efficient market functioning, impact on consumers (individual and businesses).

In all the Future Worlds there remain unknowns on how functions – like coordination – would work in practice.

More work is needed on the role that market platform providers could play in all worlds. We see the potential for smart platforms to help with coordination and therefore reduce implementation costs.

The Future Worlds also need to be compliant with existing EU legislation, including the EU Network Codes and Guidelines resulting from the 3<sup>rd</sup> Energy Package. Even Baringa's variation on World A probably still conflicts with the Electricity Balancing Guideline (EBGL). Depending on the UK's future relationship with the EU, the Worlds may also need to comply with the Clean Energy Package.

**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.**

Baringa has taken a very high-level approach and made numerous assumptions. Baringa is transparent about this and the further work needed – especially on market impact and commercial operation. However, this does mean the IA is not sufficiently robust to be a decision-making tool.

| <b>Conclusions and insights</b>             | <b>Comments</b>  |
|---|--|
| <i>All Future Worlds are viable</i>         | We are surprised by the performance of World A in the short term. We think World A means significant change – more than World B – and are not convinced that the modelling captures the extent of work and new capability needed to deliver A.   |
| <i>Use of transition paths and triggers</i> | We support this approach. It should help policy makers think about setting milestones and what guidance is needed when.  |
| <i>Concerns about conflicts of interest</i> | Baringa says this would be the main driver for World E. We agree. There are precedents: concerns about conflict of interest led to the creation of ISO requirements in the 3 <sup>rd</sup> Energy Package.   |
| <i>Value of flexibility</i>                 | DNO procurement of flexibility is so nascent that it is too early to judge the value of these markets (to DNOs and investors in flexibility). Several unrelated policy decisions by Ofgem and Government are undermining the investment climate for flexible assets in the short/medium term. We are keen to see a more holistic approach from policy makers, but currently there is uncertainty in this area. |

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

For this IA, we think it is reasonable to follow the potential DSO transition paths and triggers shown in Figure 3. However, looking at the timeline, we would be concerned if this implied that that consumers would not be seeing the benefits from a more flexible energy system until the late 2030s or beyond.

Transition path 2 suggests a move from Stage 1 of World B directly to Stage 2 of World A. This is a big leap in systems and people capability and potential shock to the investment climate for flexible DER (with any services to the ESO going via the DSO). In contrast Transition path 2 goes from World B Stage 1 to World D Stage 1.

We agree that Stage 1 World E could be achieved reasonably early. We don't see why Stage 2 World E – to include dispatch of DER resources – would need to be as late as 2034, if this was justified.

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

No – based on the assumption that the current situation is closest to Stage 1 of World B.

There could be other viable **timings** for the movement between different Worlds.

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

Yes. Based on the ENA's description of the Future Worlds and Baringa's further interpretation, we agree that the current situation is closest to Stage 1 of World B. We are not in a fully functioning World B Stage 1 and the key enablers need implementing as a priority.

**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?**

2019 workplan further work areas

Our priorities relate to improving connections for DER, WS1A flexibility market principles, addressing DNO conflicts of interest, setting clear boundaries for regulated DNO activities. Some of these will be addressed by the 2019 workplan, although some areas will need guidance by Ofgem/BEIS. Progress in all of these areas is needed to deliver any Future World.

Impact assessment further work areas (p10)

We agree with the four areas for further work.

Baringa suggests further work on the value of flexibility at low voltage (LV). We believe that work on the value of flexibility at other voltages should be carried out in addition to this, to provide better evidence that can feed into the benefit calculations for all the Worlds.

Additionally, further work is needed to fill the gaps identified elsewhere in Baringa's report around what efficient market designs and commercial arrangements would look like in each of the Worlds – with their associated costs and benefits.

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

As mentioned in our response to Q7

- further work on the value of flexibility at all voltages to better inform the benefit calculations for all Worlds
- considering what efficient market designs and commercial arrangements would look like in each of their Worlds.

Other future work that could enhance the debate:

- identifying clearer milestone dates for each transition path
- considering the broader policy risks to the investment climate for DER flexibility and the implications of DER becoming unattractive to investors
- further consideration of the role of platforms and the contributions these could make to implementing the Future Worlds

**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 agree with the four categories for the purposes of carrying out a high-level assessment.

We agree that a broader whole systems assessment may be appropriate at a later stage. This should be accompanied by a more granular assessment of the benefit categories considered for this initial Impact Assessment.

**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?**

Baringa is very transparent about the uncertainties around some of the assumptions in Appendix B. We don't disagree with the approach, but it does suggest the need for further work to support decisions on defining the future long-term industry structure. This need not delay implementation of key enablers and least regrets improvements by policymakers and industry.

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

The approach is not unreasonable, but it is a significant assumption that all Worlds A, B, D and E can deliver all the potential benefits.

The assumptions taken on the implementation dates for the different Worlds have a significant impact on the net benefit values.

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

There are inherent weaknesses in the assessment due to the number of assumptions made, especially how benefits could evolve over time. Some of the studies used are relatively old (e.g. My Electric Avenue) and more up to date evidence may be available. Despite the logic to the mapping in Appendix B4, this is somewhat arbitrary.

We are not opposed to this high-level approach for this initial IA, but it does highlight the need for further work to quantify the potential benefits.

**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.**

The ranges used feel somewhat arbitrary, but we agree with the general approach for the purposes of this initial IA.

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

If this means the technology, resource, interface and business change costs, then we do not disagree.

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

The assessed costs appear to be limited to the costs faced by DSOs and ESOs. Further work should consider the wider implementation costs (e.g. for market participants).

As far as we can see, the approach does not consider if the use of platforms and/or new technology could reduce the implementation costs of the different worlds.

The report says that the individual technology costs were separated out for transparency and suggests that cost savings from these items being combined into a single system are not captured. There could also be cost savings from the same system being implemented in different DSO areas. These savings could be included in further work.

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

We agree with the approach, to the extent that we cannot offer more accurate estimates of the uncertainty range. As with the benefit assumptions, more work is needed to improve the accuracy of these figures.

**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?**

We have the following comments against the trade-offs in Table 1

| Trade-off  | Comment  |
|--|--|
| <i>Potentially more complex to operate (World B)</i> | <ul style="list-style-type: none"><li>These complexities will also exist in Worlds A, D and E where the 'co-ordinator' is the same entity.</li></ul>   |
| <i>May require mitigations.....</i>                  | <ul style="list-style-type: none"><li>Mitigations <b>must</b> be put in place where conflicts of interest are identified.</li><li>World A raises more concerns about conflicts of interest because the DSO acts as gatekeeper to transmission level markets.</li></ul> |

|  |   |
|--|---|
|  | <ul style="list-style-type: none"> <li>Conflicts of interest in World B could be resolved by strengthening the current regime to remove grey areas and the use of independent platforms to procure DER.</li> <li>In World D, mitigation may be needed to ensure that smaller DER has equal access to markets and is not unfairly disadvantaged relative to larger DER and transmission connected assets.</li> </ul> |
| <i>World D - less conducive to local energy markets in the short term</i>  | <ul style="list-style-type: none"> <li>Agree this is the case for World D, which is why we tend to prefer World B (with platforms) or World E (if needed to eliminate conflicts of interest).</li> </ul>  |
| <i>World D or E - takes time to implement</i>                              | <ul style="list-style-type: none"> <li>There is potential to move to World E relatively quickly, especially if conflicts of interest cannot be resolved through other means.</li> <li>We don't see a benefit in the ESO getting involved in distribution system co-ordination, beyond its existing procurement of DER flexibility for use at transmission level.</li> </ul>   |
| <i>World B – Higher longer-term costs / complexity / frictional issues</i> | <ul style="list-style-type: none"> <li>Costs – Beyond 2030 World A is more expensive than World B. World B does have the highest total costs, but is not dissimilar to Worlds A and E.</li> <li>Complexity &amp; frictional issues – These will exist in all Worlds even if being managed by the same entity.</li> </ul>  |
| <i>World E – loss of efficiency in decision making</i>                     | <ul style="list-style-type: none"> <li>Its independence may lead to more efficient decisions.</li> <li>Algorithms could deliver short-term procurement and dispatch decisions</li> <li>Yes - there is potential for loss of efficiency in making investment decisions. However, similar information exchanges already take place between the ESO and TOs.</li> </ul>  |

**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.**

We find the approach sensible.

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

We agree with the general approach. We do not agree with all the rankings and justifications. In some cases, the rank is more reflective a risk and that risk could be avoided if the World is designed correctly. Some selected comments:

| Criteria             | Comment   |
|----------------------|---|
| Confidence and trust | <ul style="list-style-type: none"> <li>Baringa interprets Stage 2 World B as like Stage 1, but with more detailed co-ordination rules and greater volumes of DER. We don't see a justification for scoring World B a 4, if the DSO grey areas around conflicts of interest can be clarified.</li> </ul> |

|                                    |   |
|------------------------------------|---|
|                                    | <ul style="list-style-type: none"> <li>We agree with the score of World A as a 5 because the DSO would be aggregating DER into national balancing markets.</li> </ul>   |
| Supports whole system optimisation | <ul style="list-style-type: none"> <li>World E – does not seem consistent to score Stage 1 World E as a 1 here and then as 3 for decarbonisation and 'lower losses'.</li> <li>World B – correctly implemented could deliver whole system optimisation well, if co-ordination principles are designed to optimise the system.</li> </ul> |
| Manages conflict                   | <ul style="list-style-type: none"> <li>As for whole system optimisation, World B and World E could manage conflict well. Conflicts will still exist in Worlds A and D – just within the same organisation.</li> </ul>   |
| Difficulty to implement for SOs    | <ul style="list-style-type: none"> <li>World A – we are surprised this is only a 2 at Stage 1, because of the learning curve, cultural change, systems and human resources needed to implement.</li> </ul>  |

**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 Networks project progress further work on unintended consequences?**

We agree with the risk around the 'uncertain value of flexibility' and highlight the need for a more holistic approach to regulatory change impacting flexibility. The current of impact of disjointed regulatory change on the investment climate for flexible DER is greater than shown in Figure 20. The benefits of smart flexible systems will not materialise if businesses cannot make the case for investing.

Only 11 of the 14 unintended consequences in Table 6 are charted in Figure 20.

One key area that the Open Networks project should progress is to consider which World would best facilitate robust and efficient markets for flexibility services from DER. This should be part of the benefits assessment. We mention it here as some negatives from poor market functioning are listed in Table 6. This could be combined into one piece of work related to markets.

Yours sincerely

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