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Dear Rachel

Re: Open letter on the development of gas and electricity stimuli

Please find below EA Technology's response to the questions raised in your letter dated 12 October. These comments should be read in conjunction with my letter dated 19 October, which outlined some initial thoughts in response to your letter and our competences in relation to innovation. Your letter posed four questions and, on behalf of EA Technology, I have responded to these below. I have also asked my team to consider a further question in relation to the role of Third Party Innovation Providers. Given our former position as an R&D provider to the sector, I believe that EA Technology is uniquely placed to comment on the challenges that this approach may bring.

1. What innovation might be required?
Project Discovery outlined the need for significant investment in the UK's energy sector between now and 2025 to facilitate the UK's transition to a lower carbon economy. EA Technology believes that innovation will be essential across all of the UK's energy networks to deliver this investment. We therefore recommend that mechanisms introduced **support innovation across the full Technology Readiness Level (TRL) spectrum** and that any barriers to activity being supported based on TRL should be minimised wherever possible.

We do believe that projects should be supported at the earliest stages of development (i.e. TRL 1-3). By allowing Network Operators to consider possible technologies at this stage increases the range of options available and encourages creativity. With the right partners on board, an initial idea can very quickly develop to a higher TRL solution and may be preferable to a technology that is more advanced but is hitting barriers to deployment. We don't believe Network Operators will be prepared to expend any significant amount at these TRLs unless confident that they can develop an initial concept into viable solution so we don't see the need for any restriction at this end of the development process.

For more advanced technologies (TRL 7-9), demonstration and deployment are essential. The introduction of the Low Carbon Networks Fund (LCNF) in DPCR5 has begun to focus attention on the challenges faced at this stage. We believe it is essential that incentives and/or support mechanisms are in place to ensure that the good solutions get adopted. The challenges faced at this stage of development are different to those overcome earlier in the technology's lifecycle but should not be underestimated. They include business change and cultural barriers; knowledge transfer, education and training requirements; policy amendments to facilitate implementation and business case development. The right mechanism will provide strong signals to overcome all of these substantial hurdles.

2. Level of funding to facilitate innovation
In relation to the funding requirements to facilitate innovation, there are three key elements that EA Technology recommends Ofgem consider. These are the **Amount of money** made available; the **Profile of funding;** and the **Speed required** to deliver the innovation and subsequent investment.

a. Amount of money made available
We recognise that there is an inherent difficulty in selecting the proportion of revenue made available to innovation mechanisms because they result in increased short-term costs to consumers, increasing the risk of the UK becoming less competitive and more households facing fuel poverty. Against this backdrop, the introduction of the LCNF is a significant step forward to releasing sufficient investment in network orientated innovation. The £64 million per annum announced, together with IFI, equates to approximately 2% p.a. of annual total UK DNO revenue for the DPCR5 period, which is a step change given that R&D intensity for the Network Operators has averaged approximately 0.5% under IFI alone. However, it is a tiny pot of money in comparison to the scale of the challenge facing the industry and the required spend profile over the next 10 to 15 years.

The proportion of electricity DNO expenditure related to low carbon networks will increase but it is likely to always be less than spend associated with day-to-day operation of networks (e.g. restoring faults, asset replacement, etc). The LCNF and a significant proportion of IFI are focussed on low carbon networks. There is a case for increasing R&D intensity in other aspects of network operation and management, in order to drive capital and operational efficiencies, ultimately delivering benefits to customers. It may be preferable to consider linking innovation mechanisms to the spend associated with each element of the energy Value Chain, using the work in Project Discovery as an input to calculate the breakdown.

The other note of concern in relation to the amount of money made available is that it is low when compared to other cutting-edge sectors, such as telecoms, advanced manufacturing and pharmaceuticals. Companies within these sectors choose to invest in innovation, without any formal incentive mechanism, as they will receive all of the upside for the successful solutions developed. However, the benefits arising from network innovation only accrue to network operators in part, with many of the benefits accruing to wider society. The business case for network innovation is therefore less strong without incentives like the IFI, as evidenced by DNO behaviours before DPCR4.

b. Profile of spending
We believe that the profile of spending on innovation needs to be as flexible as possible to ensure that the best opportunities can be invested as and when they arise. We therefore recommend that any mechanism introduced is flexible. Rigid limits on the profile and detail of spend should be avoided.

c. Speed
2020 and the targets that the UK has committed to achieve by then in its energy policy are rapidly approaching and the industry is tooling up fast to deploy. Despite great moves with the introduction of the LCNF, the processes are (and likely to continue to be) slow and bureaucratic and timing for decisions could ultimately become a barrier to deployment. We therefore recommend that external decision making be minimised wherever possible. Where this is required, we believe it is essential that application processes are kept to a minimum and can only stress the importance of prompt decision making.

3. Potential projects
As an alternative to a list of potential projects, EA Technology recommends that Ofgem consider the broad themes and associated investment levels that should be supported. We believe that

prescription may drastically reduce the amount and quality of innovation delivered and run the risk that only the iconic projects are considered.

Our recommendation is that the following themes be used as a focus:

- **Facilitating Low Carbon Energy;**
- **Delivering Securing of Supply;**
- **Ensuring Affordability and**
- **Equipping Tomorrow's Workforce.**

We believe these to be the main challenges facing the sector and innovation that advances one or more of these areas is likely to offer long-term benefits to the UK.

4. Speculative investment and/or competitive bids

The international dimension of UK innovative activity should be borne in mind. The UK has set some ambitious targets for carbon reduction and renewables integration, with an overarching aim that, in addition to reducing the UK's carbon footprint, these targets will spur creativity, leading to new jobs and export opportunities. As a SME with an increasing export market, we strongly support this aim. However, we are acutely aware there are countries around the world that are better in the delivery and adoption of innovation than the UK. EA Technology therefore believes that **it is essential that, as a country, we don't tie ourselves in knots with overly complex processes, ultimately slowing down development and adoption.**

We believe that speculative investment works well for smaller value, lower risk or earlier stage projects and that competitive bidding into a larger pot works well for larger value or higher risk projects. Initial experience of the LCNF seems to support this, with all parties sharpening their thinking to deliver strong, competitive proposals. It should be noted, however, that LCNF is currently supported by IFI to deliver the smaller value, lower risk and/or earlier stage projects. This allows the less high profile, often collaborative, projects to continue to develop the technologies that can be used in later LCNF bids.

Based on DPCRs 1-3, we believe that speculative investment on lower TRL activity is unlikely to just 'happen' if left to conventional NPV approaches, even within a eight year price control period. The cost to develop, coupled with the sharing of benefits, is likely to result in an incompatible risk – reward balance, even over this slightly longer timeframe. We also suggest that the ability of the LCNF to lead to successful deployment of innovation is currently unproven as the bid process is not yet complete. Given that it will be a number of years before the success of LCNF can be fully assessed, we believe that there is a need for mechanisms to support both speculative investment (IFI or a variation thereof) and competitive bids (based on LCNF).

Since its introduction, IFI has worked well and delivered a step change in network-led investment in innovation. It enables the network operators to select the projects they deem best suited to their needs, whilst negotiating the IP position well, avoiding overly cumbersome or complex rules. Furthermore, the IFI G85 v.2 rules highlight the needs of the industry to all interested parties and the ranking approach adopted was specifically intended to allow Third Party developers to assess their own project against a set of transparent guidelines used by the industry.

The other important aspect that needs to be considered is in relation to the Skills Shortage that faces the network industries. There are limited personnel with the knowledge and understanding to promote, facilitate and deliver innovation for the UK's energy network. Estimates from the National Skills Academy for Power suggest that the workforce is likely to need to more than double between now and 2025. At the same time, over 90% of the current workforce is likely to retire. The

consequence is a rapidly diminishing skills pool, which will be impacted by an over reliance on competition. If the UK wishes to become a leading nation in this area, collaboration and knowledge transfer is essential to backfill the skills pool and sharpen the talents of the individuals in the sector.

5. Third Party Innovation Providers

I have asked my team to draw out our thoughts in relation to the introduction of Third Party Innovation Providers as a separate point as I believe this needs further consideration. When EA Technology was part of the Electricity Council, its remit was to develop innovation that could be rolled out to all of the Area Boards (as they were then). On the whole, this approach did not deliver the innovation that one might expect, despite being well resourced, both financially and in terms of having many of the industry's experts on board. The organisation was consistently ahead of the curve and the lack of engagement created a range of cultural barriers that prohibited adoption of some of the solutions adopted.

Today, EA Technology operates on a very different commercial model and key to our success has been moving away from this historical approach of developing solutions in isolation from the end user to our current approach of seeking engagement and collaboration. The consequence of this shift is that all involved parties experience the 'journey' between encountering the problem and delivering a solution. This, in turn, results in the minimisation of barriers around communication and cultural adoption of new technologies that were previously encountered. Based on this first hand experience, **EA Technology strongly advocates against the decoupling of innovation from the end user**, with the firm belief that the introduction of competition in development between network operators and other innovation licence holders will lead to increased barriers to the deployment of the innovative solutions that the UK will need.

I hope that these comments will prove useful to your process. Please do not hesitate to contact us if we can be of further assistance. As stated previously, I strongly support the involvement of relevant members of my team, especially Dave A Roberts, in relevant working groups as I believe we can only address some of these more fundamental challenges by collaborating as an industry.

Yours sincerely

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cc. Anna Rossington, Ofgem