

Energy Systems Catapult Response to the Ofgem RIIO-2 Framework Consultation

Introduction

1. This response is submitted on behalf of the Energy Systems Catapult (ESC). The ESC supports innovators in creating opportunities from the transition to a clean, intelligent energy system. We are part of a network of world-leading centres set up by the government to transform the UK's capability for innovation in specific sectors and to help drive future economic growth.
2. By taking an independent, whole energy systems view, we work with stakeholders across the energy sector (consumers, industry, academia and government) to identify innovation priorities, gaps in the market and overcome barriers to accelerating the decarbonisation of the energy system at least cost. In doing so, we seek to open up routes to market for innovators, as well as supporting them to understand how their products, services and value propositions fit into the transforming energy system.
3. The ESC is working with the UK government and local authorities to deliver the *Smart Systems and Heat (SSH) Programme*, determining the most effective means of decarbonising the UK's 27 million homes and contributing to the target of an 80% reduction in the UK's Greenhouse Gas emissions by 2050.
4. The ESC is also leading the *Future Power System Architecture (FPSA)* project in collaboration with the Institution of Engineering and Technology (IET). **FPSA has identified 35 new or extended functions** that will be essential to the future efficient, coordinated and economic functioning of the electricity to deal with rapid transformative change driven by decarbonisation, decentralisation, digitisation and democratisation of energy supply. **FPSA2 has identified significant barriers to implementing the required functionality** under today's sector governance arrangements, and has proposed a system which characterised by inclusiveness, transparency, iteration and agility. We believe that the findings of the FPSA project can be used to facilitate the development of a more coordinated approach between network owners/operators.
5. If you wish to discuss the contents of this submission, please contact Tony Dicicco at: tony.dicicco@es.catapult.org.uk

Energy Networks Operators face a number of future challenges

6. The gas and electricity networks need to change radically to support a low carbon transition. Networks will need to accommodate an increasing role for decentralised generation, storage and multi-vector flexibilities. New demands are likely to be placed on electricity networks (for heat and transport energy) and managing network capacity is likely to become more challenging. These changes will require a more coordinated approach across electricity networks and also more cross-vector coordination. Improving the ability of price signals to incentivise efficient usage of networks and manage constraints is likely to become increasingly important to drive efficient patterns of investment and innovation in future.
7. While past regulatory focus has rightly been on costs and efficiencies in a relatively static growth period, the scale of future energy system transformation is unprecedented. The requirements of the regulatory framework and leadership will need to reflect the UK's ambitions. This includes the need for a full understanding of consumer expectations and values in a future world with major energy vector switches for both transport and home heating. Given the extent of the transition, there is a need for leadership. The period up to 2030 is pretty critical for both developing resources and beginning the transition.
8. New demands such as charging electric vehicles and heating/cooling are less time critical than lighting, cooking etc. If these demands can be managed to limit the impact on peak demand in a way that is practically invisible to customers, then this will limit the investment in both network and generating capacity. DNOs could be asked in their business plans to describe what their plans are for innovation in this area.

Enabling Innovation is key to delivering the low carbon transition

9. Innovation in the energy sector is key to meeting consumers' evolving needs and aspirations for comfort, mobility and control in everyday life and to deliver the low carbon transition. Providing certainty and direction on a clear pathway for innovation in the UK energy sector will also encourage new entrants across the supply chain to offer new products and services for customers, driving competitiveness in the sector and overall, bringing down energy costs for consumers. We would like to see greater recognition of the scale of energy system transition and more emphasis on the importance of electricity in heat and transport decarbonisation in the RIIO-2 consultation.
10. A key enabler will be the development of a **“whole system”** approach across transmission and distribution networks and between energy vectors as gas networks have a potentially important role to play in decarbonising heat. We agree that the RIIO-2 proposals should continue to provide an innovation stimulus for network companies to collaborate on system improvements. We have some concerns that the current RIIO-2 proposals are perhaps too focused on cost-minimisation and are not value-driven. This could lead to sub-optimal investment that does not recognise fully the risks of future network development required to facilitate the necessary decarbonisation of heat and transport.

11. We note Ofgem's intention under RIIO-2 to provide a targeted innovation support programme to support strategic challenges across the sector and to involve third party inventors and entrepreneurs in trialling new business models. Such support will be key to enabling innovation, but a better outcome may be achieved if innovation support is invested in an ecosystem that enables sector wide learning, rather than picking off individual projects.

Local Area Energy Planning can lead to a more integrated and co-ordinated approach to network development

12. Every local area is unique: buildings, existing energy networks and people all vary between areas, and the changes needed to decarbonise will be specific to each area. Such a significant transition will call for close co-ordination between many different stakeholders, including local and national government, network operators, energy providers, local communities and businesses as well as individual consumers.
13. To decarbonise the UK's energy system efficiently, and at least cost, local area energy planning will be of integral importance in providing a long-term view for local energy systems. Local area energy planning provides the evidence, guidance and framework to enable the long-term transition to a low carbon energy system. It considers the unique characteristics of the local area and its existing energy system to guide the transition; aid decision making; prioritise resources; and support project and investment decisions. However, it needs to consider the whole energy system and cannot be conducted by network operators considering their individual networks in isolation. It needs to be a collaborative process.
14. For individual home owners to make changes to the way they heat their homes they must be provided with certainty that the choices they make will be supported in the long term, with networks built and maintained to supply the energy they need in sufficient quantities at an acceptable cost.
15. The ESC is working with local authorities and a number of other stakeholders including energy network companies, energy suppliers and devolved administrations to develop local area energy strategies, using the "*EnergyPathTM Networks (EPN)*" analysis framework. So far, local area energy strategies have been developed for Newcastle City Council, Bridgend Council and Bury Council.
16. The EPN analysis framework takes a multi-vector approach to design the most cost-effective energy system in a local area. It can also identify the energy network improvements (including electricity, gas and heat) that will be required to facilitate the low carbon transition. We believe that the EPN analysis framework has the potential to be used to help network companies plan and develop their energy networks in a local area and beyond. Using this co-ordinated approach, with a range of stakeholders working together and led by local authorities, a more optimal approach might be possible and the risks of not delivering the appropriate future energy networks (including the risks of stranded

assets) might be reduced. Hence, the risks of “getting it wrong” for network companies (and for Ofgem when setting price controls) should be reduced.

17. There is a significant opportunity to align a future local area energy planning framework with gas and electricity network operator regulated planning cycles. Engagement in this process could provide network operators greater insight to local stakeholders’ needs and opportunities for alternative investment strategies. It could also create a more transparent and accessible process for communities and businesses to engage in helping shape the future energy system in local areas.
18. Effective local area energy planning depends on the availability of appropriate data. This data is dispersed across a number of stakeholders, with network operators holding much of the data that is essential to good quality planning. We believe that network operators need to be incentivised to make this data readily available to enable an effective whole system planning process.

Networks Price Controls should be as transparent and simple as possible and investor returns should be fair

19. **Integrated networks are likely to continue to play a role for some time**, but the demands placed on transmission and distribution networks are likely to change considerably due to:
 - changes in the generation mix;
 - new technologies (e.g. smart metering); and
 - new sources of demand.
20. We support Ofgem’s approach to ensure that investors in an “efficiently run company” can earn a reasonable level of return. We are in general agreement with the policy objectives on the cost of debt and equity but cannot say with certainty whether a cost of equity in the range 3-5% will provide the network investment required to deliver the low carbon transition.
21. We support co-ordination of transmission and distribution price controls but do not believe that full alignment of price control periods is necessary – this would cause unnecessary complications and lead to a spike in resource requirements for both Ofgem, network companies and other stakeholders to set and assess price controls. The change back to a 5-year price control period is sound: the current 8-year timescale is too long and makes it difficult to set accurate and cost-reflective targets.
22. We do not believe that an explicit upfront financial reward required to incentivise network companies to submit high quality business plans: this should be expected behaviour and can be supported by a greater reliance on consumer engagement and scrutiny.
23. We support **a separate price control for the new, independent Electricity System Operator (ESO)**. A new price control based on alternative models where revenue is not capitalised (rather than a RAV-based model) would seem more appropriate in helping the

ESO to think more widely about how it can reduce the costs of balancing the electricity system.

Effective Stakeholder Engagement is important in ensuring a fair deal for consumers, investors and other industry parties

24. We support setting up new stakeholder Groups (the ***Customer Engagement Group*** for distribution and the ***User Group*** for Transmission and the ***RIO-2 Challenge Group*** which will have a cross-cutting remit) to review and challenge the network companies' RIO-2 costs and proposals. Giving people/communities a say in what happens in their localities, which is a fundamental facet of local area energy planning, is important, particularly if RIO-2 seeks to improve engagement. The remit of the stakeholder groups must be about the facilitation and leadership of substantial change: this may require a change in mindset from a concentration on lower costs and the status quo.
25. Given the importance of local area energy planning, we would suggest that a range of stakeholders including local authorities, innovators, energy equipment manufacturers, energy providers and the Energy Systems Catapult should be involved in reviewing the RIO-2 proposals for network companies. It would also seem appropriate that the outputs and recommendations from the FPSA work are considered when developing future proposals. In particular, the emphasis on the importance of flexible and agile governance and change management mechanisms to keep pace with emerging trends in the market and new technologies should be considered.