****

|  |
| --- |
| **Energy Systems Catapult Response to Ofgem consultation: *Consultation on licence conditions and guidance for network operators to support an efficient, coordinated, and economical Whole System***  **Introduction**  The Energy Systems Catapult (ESC) was set up to help navigate the transformation of the UK’s energy system. We work across the energy sector to ensure businesses and consumers grasp the opportunities of the shift to a low carbon economy. The ESC is an independent centre of excellence that bridges the gap between business, government, academia and research. We take a whole-systems view of energy markets, helping us to identify and address innovation priorities and market barriers, in order to accelerate the decarbonisation of the energy system at the lowest cost.  We would be happy to discuss these issues in more detail if helpful. Please contact Tony Dicicco at: [tony.dicicco@es.catapult.org.uk](mailto:tony.dicicco@es.catapult.org.uk)  **Key Points** |

* ***We support the proposal to introduce licence conditions relating to whole system responsibilities for electricity network companies.*** We welcome this as a first step in in promoting a whole energy system perspective across firms with responsibilities for regulated energy networks (this may in future include networks for other energy vectors such as natural gas, hydrogen or heat networks).
* ***We also welcome the recognition in the Guidance that stakeholders might also include parties with interests in gas, transport or heating, for example, who may be impacted by a decision, or who may be able to contribute to identifying or assessing the benefits of alternative solutions.*** We highlight that adopting a ‘whole system’ perspective implies understanding interactions between multiple vectors such as heat, gas, electricity and transport and how they are changing as a result of new technologies and digitalisation. Whole system thinking and action must also include ‘both sides of the customer meter’, and not not be limited in definition to be transmission and distribution networks.
* ***At the local level, Local Area Energy Planning (LAEP) can be a key tool for building coherent transition plans that meet government targets, rather than just uncoordinated opportunistic projects.*** Pilot studies (documented in the ETI/ESC report[[1]](#footnote-1)*: ‘Local Area Energy Planning: D11 Insight report 3: implications for government)* conducted by the ETI/ESC in Newcastle, Bridgend and Bury (using the EnergyPathTM Networks (EPN) modelling framework) have shown the potential of LAEP to provide the evidence, guidance and framework to enable the long-term transition to a low carbon energy system. LAEP 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. We believe that Ofgem should consider the case for requiring licensees to demonstrate that their investment planning is informed by suitable local area energy planning, taking account of multi-vector dimensions.
* ***More generally we believe that Ofgem should give further consideration to the expectations and evidence it will require from licensees in their business plans and price review submissions, to demonstrate sufficient focus on whole system considerations and responsibilities in serving their customers.*** While licence conditions and guidance provide a useful directional signal and legal backstop, in practice it may be Ofgem’s approach to setting network price controls and monitoring output delivery that provide the strongest targeted levers to secure changed behaviours and management focus.

**Detailed Response to Questions:**

**Objectives:**

***Q1: Do you agree with the proposal to clarify Whole System responsibilities through licence and supporting Guidance? Where possible, please provide evidence and examples to support your views. In particular please describe:***

***a. The potential benefits you might expect to result from these proposals?***

1. We support the proposal to clarify whole system responsibility for electricity network companies (TOs, IDNOs, distribution licence holders). We expect that providing clarity on the need to cooperate and consider wider system impacts could unlock efficiency in resource planning and use across the electricity system, and lead to potential cost savings for end users.
2. This might be especially relevant for neighbouring networks, which might host distributed resources with capability to support different distribution licence holders. Sharing knowledge about such resources and cooperating in the organisation of transparent decision-making mechanisms (e.g. markets) in which those resources can easily engage can stimulate efficient use and appropriate system-wide investment.
3. **We also welcome the recognition in the Guidance that relevant stakeholders include actors outside the electricity system and stress the importance of engaging across the wider energy landscape to include gas, transport, and heat**. In the longer term, we expect the whole energy system to become more closely interlinked with increasing co-dependence of energy vectors and believe that extending the responsibility for whole system outcomes outside the electricity sector would be necessary. We support Ofgem’s assessment that those linkages need to be better understood.

***b. If there are any material costs or issues for you in relation to these proposals?***

1. Not applicable.

**Draft licence conditions and guidance**

***Q2: Do you agree with the proposed scope and content of these licence conditions and Guidance? Please provide any specific comments you have on the attached draft, including illustrative examples, and where possible, please provide reasons and evidence to support your response, in particular:***

1. ***Are there other examples or areas of activity which you consider should be highlighted, or do you see the need for further clarity in any area?***
2. We broadly agree with the proposed scope and content of the licence conditions. We consider that engagement between Licensees and broader Stakeholders is key in supporting whole electricity system outcomes. In that context we welcome the requirements set under section 2 of the licence conditions for Licensees to engage with each other, to consider system impacts, to develop a transparent decision-making and operational framework, to consider alternative actions available to other stakeholders, to work with ESO to optimise synergies.
3. We consider that section 1.16. of the Guidance could be more explicit in mentioning consumers/consumer groups as a key stakeholder to engage with, and with potential for provision of alternative solutions. We consider that in an increasingly smart energy system, there would be increased potential for either direct engagement with customers or engagement via service providers to unlock smaller scale end user demand-side management.
4. ***Do you consider these would be beneficial and proportionate? Are there any aspects which should not be included?***
5. We consider the introduction of the proposed licence conditions for licence holders in the electricity sector is a first step in the process of introducing whole system obligations in the energy system. We believe that whole system outcomes should be considered by all entities in the energy system and over time should be extended beyond distribution and transmission licence holders in the electricity sector. In that context, the balance of obligations to engage within the sector and with wider stakeholders seems appropriate. The draft licence conditions and Guidance seems to provide sufficient flexibility for engagement by licensees.

***Q3: These proposals require licensees to engage and coordinate with Stakeholders. This recognises that a range of parties may have an interest in different aspects of the system, and the licensees should seek to engage with those with an interest in a given situation. Do you agree with this approach?***

1. **We strongly support the approach and believe that a whole system perspective is essential to deliver an efficient UK energy transition**. We believe that a whole system perspective should discover the best value, most effective transition for society including the optimal allocation of resources and distribution of the costs and the efficient direction of incentives. However, a major barrier to whole system innovation is the difficulty obtaining network data from Distribution Network Operators – this needs to be addressed.
2. We welcome the requirements set under section 2 of the licence conditions for Licensees to engage with each other, to consider system impacts, to develop a transparent decision-making and operational framework, to consider alternative actions available to other stakeholders, to work with ESO to optimise synergies.
3. Demands placed on future electricity generation and networks will depend crucially on heat and transport demand electrification. Electricity policy cannot be designed in isolation without considering links to other vectors. For example, flexibility could be provided to the electricity system by enabling heat storage.
4. This is likely to become increasingly important in future, and a whole system perspective shows the importance of a broad set of technologies, including Carbon Capture Usage and Storage (CCUS) for industrial decarbonisation, and potentially enabling hydrogen as an option. Broad stakeholder coordination and engagement is needed, and energy vectors should not be considered in isolation to achieve efficient, coordinated and economical Whole *Energy* System.

***Q4: Do you consider any changes or clarifications are needed in relation to industry code objectives, notably the Distribution Code and the Grid Code, to support the delivery of Whole System outcomes? Specifically,***

1. ***Do you see the need for further change or clarification to the code objectives themselves, or their interpretation, e.g. through introduction of a specific relevant objective in relation to Whole System actions?***
2. The delivery of whole system outcomes will require coordination across network boundaries and a more holistic treatment of Distributed Energy Resources (DER). For example, the siting of DER on the electricity distribution system could have a significant impact on the electricity transmission system, in terms of electrical flows and the provision of ancillary services to support the network. This will require the recognition of a whole system approach through changes to the code objectives and modifications to the codes. Changes, such as the development of a more flexible and smart energy system will require significant changes to the operation of the wholesale and balancing mechanisms and network charging arrangements, as well as the introduction of new smart appliances. This will require major modifications to other codes such as the CUSC and BSC as well as the, Grid and Distribution Codes.
3. ***Have you identified any interactions of these provisions with wider aspects of industry arrangements which should be considered in developing them?***
4. The decarbonisation of electricity generation, heating and transport will require more cross-vector coordination and changes to a number of different codes simultaneously. For instance, the implementation of heat networks, fuelled by gas-fired CHP plant, could require changes to the BSC, CUSC, Distribution Code, UNC (and/or IGTUNC) and any associated codes developed for the supply and trading of heat.
5. Many of these changes will have technical aspects to them. As a simple example, there will be tension between the electric vehicle manufacturers’ desire that their vehicles will be able to charge rapidly and the network operators’ desire to limit the impact on their networks. This implies the requirement for a level of technical expertise and horizon scanning from both the Code Managers and, especially, those developing the strategic direction. Therefore, developing a coherent strategic direction to drive the development of the industry will be key to effecting the significant changes required to existing market and trading arrangements.

***Q5: Do you believe further, specific guidance in any area, and in particular in relation to efficient connections and constraint management (eg in preparedness for electric vehicles or increasing distributed generation) would be beneficial? Please provide reasons and, where possible, evidence to support your answer.***

1. We recognise that efficient connection/constraint management in the face of rising electric vehicles/heating demand and distributed generation will become a crucial part of managing overall system operation and cost. **Nevertheless, we believe licensees should develop approaches to achieve the outcomes specified in section 1 of the licence conditions regardless of the specific area of concern**. We believe the provision of specific guidance could lead to potentially unnecessary complications in implementation and slowdown in industry development – e.g. by creating differences in procedure depending on whether a constraint management concern emerges due to large number of connecting EVs or new buildings.

**Q6**: ***For which relevant datasets or information do you consider the need for availability and accessibility is greatest, in order to deliver Whole System benefits? Do you consider there to be any significant barriers to sharing these? Please provide specific suggestions for what you consider to be effective sharing arrangements, including required enablers and governance, such as the development of any industry standards?***

1. Many of the challenges facing future networks are being considered through the Future Power Systems Architecture (FPSA) project, being managed jointly by the ESC and Institution of Engineering and Technology (IET). **The findings of the FPSA work suggest the importance of flexible and agile governance and change management mechanisms to keep pace with emerging trends in the market and new technologies**.
2. **The ESC is leading the Energy Data Taskforce: we would refer to the forum’s output for the identification of gaps and recommendations on effective data use and sharing in the energy system**. As specified in the taskforce’s terms of reference, the taskforce’s objectives are to provide:

* A list of the key data or data sets that are held by industry, Ofgem, Government or other parties, their main attributes and who would benefit from accessing them, and which should be made public;
* A list of specific data or data sets that need to be improved or do not yet exist but whose existence would make the energy system work more effectively;
* Proposals or options for data architectures (e.g. optimising data flows or modes of transfer between energy system participants) and data formats (e.g. standardisation, interoperability, the level of granularity and frequency it is updated);
* Proposals or options for the roles of different parties in governing data in the energy system;
* Proposals or options for managing risks associated with data in the energy system.

**Scope of application**

***Q7: Do you agree with the proposal to apply these provisions to all electricity distribution licence holders, including IDNOs, and onshore TOs, and to exclude the ESO, offshore TOs and interconnectors? Where possible, please provide reasons and evidence to support your response.***

1. We support proposal to apply to all onshore TOs and IDNOs, and the exclusion of ESO which is already covered by similar responsibilities. We believe the inclusion of offshore TOs and interconnectors warrants further investigation, since their role in the future system is likely to increase.

1. ETI (2018*): ‘Local Area Energy Planning: D11 Insight report 3: implications for government’.* [↑](#footnote-ref-1)