Energy Systems Catapult: Consultation Response

Ofgem Forward Work Programme 2021-22[1]

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Energy Systems Catapult (ESC) was set up to accelerate the transformation of the UK's energy system and ensure UK businesses and consumers capture the opportunities of clean growth. The Catapult is an independent, not-for-profit centre of excellence that bridges the gap between industry, government, academia and research. We take a whole systems view of the energy sector, helping us to identify and address innovation priorities and market barriers, in order to decarbonise the energy system at the lowest cost.

ESC welcomes Ofgem's Forward Work Programme 2021-22 (FWP) and the many positive initiatives that are underway or have been proposed.

We welcome the continued emphasis on:

- the importance of whole systems thinking and coordination,
- openness in data and digitalisation activities,
- enabling and facilitating innovation, and
- ensuring that the future retail market and system governance are fit for the net-zero future.

Ofgem's FWP will play a key role in building on and realising the UK's energy and climate ambitions, as set out in recent publications including the Ten Point Plan, the CCC's Sixth Carbon Budget, and the Energy White Paper. ESC is particularly keen to ensure that Ofgem's role unlocks opportunities for innovation.

ESC would like to highlight a number of potential opportunities for synergy between Ofgem's role as sector regulator and ESC's role to support and stimulate innovation across the UK's energy system. We will look to strengthen our engagement and interaction with Ofgem to ensure that the Catapult's range of capabilities and assets can both support and inform Ofgem's regulatory and policy analysis. This includes our work through:

- the Energy Data Taskforce,
- Local Area Energy Planning (LAEP),
- ESC's Living Lab,
- supporting innovators through the Energy Launchpad, and
- our Consumers, Vehicles and Energy Integration Project (CVEI)/Electric Vehicle Energy Task Force.

In this response we highlight below **four key current priorities** that may be of particular value to Ofgem, as it implements its forward work programme, and develops its role in supporting decarbonisation of the energy system at the lowest cost while also promoting innovation and protecting the long-term interest of consumers.

[1] Consultation documentation available at: https://www.ofgem.gov.uk/publications-and-updates/forward-work-programme-202122-consultation

These four key priorities are:

1. **Harnessing Local Area Energy Planning (LAEP)** to support better decision making for Net Zero energy networks;
2. **Reforming energy markets** to enable consumer-focused markets and services;
3. **Reforming governance;**
4. **Real-life trials with consumers** to support innovation .

1. Harnessing Local Area Energy Planning to support better decision making for Net Zero energy networks

ESC is very supportive of Ofgem's acknowledgement that better whole systems coordination is needed to facilitate the transition to a more flexible, data-enabled, net-zero energy system.

ESC believes that Local Area Energy Planning (LAEP) can and should play a more central role in reforming and reframing the approach to infrastructure network regulation in a way that is consistent with delivery of net zero.

LAEP can support a new way of engaging with stakeholders and embed a whole energy system perspective more firmly into energy infrastructure planning and strategic choices at the local and regional level. It can help create robust and actionable whole system decarbonisation plans for local areas which reflect the unique nature of each local area, including its people, geography, building stock, energy system, ambitions and priorities.

We encourage Ofgem to consider embedding LAEP within the price control and investment framework for GB gas, electricity and heat networks, to focus network planning and investment decisions more clearly on delivering what is best for the energy system as a whole (i.e, across all energy vectors and users), while taking better account of local needs and ambitions as identified by local and regional authorities.

LAEP, if appropriately conducted, can help generate regional forecasts for investment planning which address some of the main concerns Ofgem has raised in connection to potential deviation from central forecasting methods.[2] These include:

- Transparency and confidence in the process DNOs have followed to establish regional plan
- Clarity of assumptions underpinning growth scenarios
- Appropriate stakeholder engagement process
- Increased level of transparency and open access to data that surrounds the process
- Evidence of structured and effective consultation with national and local stakeholders and supported by leadership from democratically accountable bodies.

As such, **ESC encourages Ofgem to consider its role in enabling the national rollout of a process of Local Area Energy Planning (LAEP), under the leadership of relevant local bodies to identify balanced strategies for the energy transition – including building and heat decarbonisation - at local level.**

[2] https://www.ofgem.gov.uk/system/files/docs/2020/07/ed2_ssmc_annex_2_keeping_bills_low_0.pdf Paragraphs 7.23 – 7.26

2. Reforming energy markets to enable consumer-focused markets and services

ESC welcomes Ofgem's establishment of the full chain flexibility programme and the acknowledgement that a more flexible electricity system will be more resilient, and easier and less costly to manage.

In order to fully unlock the potential of flexibility, ESC feel it is important to **ensure that market reforms develop more accurate granular market signals**. Ofgem can play a key role in driving the transition to a more dynamic energy market, where price signals are more granular in time and space.

The current framework delivers price signals that are not sufficiently granular by space and time and do not accurately or fully reveal the value of flexibility to the system, hampering investment in well targeted system integration. This prevents flexibility providers (e.g. storage and DSR) from receiving the full value of the flexibility they are offering and inhibits their potential to support Ofgem's goal of ensuring the electricity systems is more resilient, easier and less costly to manage.

If prices become more reflective of the short-term market conditions, it will result in better the price signals sent to generators and consumers, which can quickly alter their output or demand as appropriate. Faster short-term markets based on more granular time signals will help achieve the following outcomes:

- increased flexibility in system operation, reduced short-duration reserve requirements and enabling integration of more variable renewables in the grid;
- optimised capacity planning, incentivising investments in flexible generators; and
- ultimately reduced costs to consumers.

Ofgem's network charging reforms are important, but may only be a first step in a wider set of reforms to realise system efficiencies and unlock consumer benefits.

In order to enable the efficient integration of variable renewables and DER, short-term price signals need to be highly granular by time and location, and free to reflect the true value of flexibility to the system.

3. Governance reform

ESC welcomes Ofgem's decision to take a fresh look at the institutional and governance structures and consider whether those structures remain fit for purpose. ESC believes that current governance, policy and regulatory architectures are not well-adapted for the challenges of delivering the major change and investment at pace required by net zero. Governance arrangements that can support unlocking innovation across sectors/policy siloes and ensure coordination between local, regional and national scales will be essential for a successful transition.

As has been highlighted in our Future Power Systems Architecture[3] work, the UK power system needs a more agile change and governance approach to ensure it is accessible, flexible and fit for the purpose of coordinating increasingly dynamic disruption in the sector. 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. The Enabling Frameworks approach, developed by the FPSA programme, could provide the basis for more agile change and governance.

[3] https://es.catapult.org.uk/capabilities/systems-integration/future-power-systems-architecture/

We believe there is a strong case to accelerate the timeline for implementing wider energy industry code reform, especially given the pace and scale of change required to deliver deep decarbonisation. As decarbonisation will involve coordination across multi-vector dimensions (e.g. electricity, heat, transport), ESC believes that the existing code governance mechanisms need to be reformed to ensure greater coordination across codes. The remit of Ofgem should be widened to include the hydrogen and heat industries and potentially carbon, capture, utilisation and storage (CCUS), in addition to electricity and gas to ensure whole systems alignment. Any new code governance body/s must be obligated to consider the operation of the whole system, including non-traditional actors and behind the meter technologies, systems and operations.

ESC recommends that Ofgem considers how energy industry code reform could be accelerated and that Ofgem's remit also be reviewed in relation to regulating the hydrogen, heat and CCUS industries. ESC is keen to work with Ofgem and other relevant stakeholders to explore how agile change could be integrated within the overall governance of the sector.

4. Real-life trials with consumers to support innovation

We welcome Ofgem's continued emphasis on ensuring that the consumer is placed at the heart of future decision making for the energy sector.

The FWP refers to the use of smart metering data and more open access to data, but attention also needs to be paid to consumer consent management as we feel this will become an increasingly complex challenge. In addition, the ability for consumers to quickly and easily navigate, find and switch to the best energy service options (potentially via multiple suppliers) will be more important and needs to be more strongly pushed.

Given the scale of transformation needed in energy usage practices, it is vital that new services are delivered in ways that support, protect and appeal to consumers. This strongly points to the need for effective consumer facing market test and demo facilities such as the ESC's Living Lab.[4]

In our recent whole system analysis, Innovating to Net Zero,[5] we set out credible pathways for the UK to get to Net Zero. This analysis reveals both the scale of the challenge and the complex interactions between different parts of the energy system. Whilst many of the new technologies needed for the transition exist, new business models and market and policy mechanisms are essential if these are to be implemented and adopted at scale by consumers.

Ofgem has a key role in ensuring that technology, policy, regulation and commercial models both in the residential sector and back through the networks to the wider energy system are implemented in ways that benefit all consumers and avoid creating new types of vulnerability. An evidence-based understanding of consumer behaviour is crucial to this endeavour, with understanding that is tested in real homes with real people. Initiatives such as ESC's Living Lab provide a safe and affordable, real-world test environment for trialling new energy products, services and business models.

Without testing in a live environment, there is a high risk that net zero will be a slower, more expensive and more painful journey, with lots of dead-ends and stranded investments.

ESC assets, such as the Living Lab, can assist Ofgem as it seeks to understand the implications of new technology, policy, regulation and commercial models to enable a net zero future.

[4] https://es.catapult.org.uk/service-platforms/living-lab/
[5] https://es.catapult.org.uk/reports/innovating-to-net-zero/