

Enabling a High Renewable, Net Zero Electricity System: Call for Evidence

About the IET

We are the Institution of Engineering and Technology (IET), and one of the world's largest engineering institutions with over 168,000 members in 150 countries. Our aim is to inspire, inform and influence the global engineering community to engineer a better world. We are a diverse home across engineering and technology and share knowledge to engineer solutions to global challenges like climate change. With our roots in electrical engineering, we have been championing engineering solutions and the people who deliver them for 150 years.

The Institution of Engineering and Technology (IET) provides independent, impartial, and expert advice, spanning multiple sectors including Energy, the Built Environment, Transport, Manufacturing and Digital.

On behalf of the profession, the IET strives to inform and influence government on a wide range of engineering and technological issues. The organisation's membership spans a broad range of professional knowledge, and regularly offers unbiased, independent, evidence-based advice to policymakers via several channels. We believe that professional guidance, especially in highly technological areas, is critical to good policymaking.

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The IET welcomes the opportunity to comment on options to evolve the current Contracts for Difference (CfD) mechanism for future allocation rounds. The success of CfD to date, in terms of its contribution to decarbonising UK electricity generation, is significant and the opportunity now exists to develop and broaden this positive impact across the whole energy system.

Over the coming years we will need to develop additional renewable supply but also a flexible demand base that can make best use of supply, transmission, and distribution system capacity.

Through this review of investment cost reduction mechanisms represented by CfDs, and the ten year review of the Capacity Market, BEIS should ensure that the mechanisms work coherently to support the necessary investment in all technologies¹.

We note that more aggregated embedded resources are being used for system services which represents a promising development for the whole system, if this can be increasingly achieved with low carbon solutions.

¹ https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2017/May/IRENA_Adapting_Market_Design_VRE_2017.pdf

While it is not the intention of the IET to specifically answer each of the 22 questions contained within the call for evidence, we will be providing insight, and where relevant evidence to support key themes which can be summarised as follows:

1. 'Whole System thinking' approach to policy and regulation
2. Smart energy system that optimises value across all energy vectors and all potential actors
3. Digitalisation, Data Systems, Interoperability, and transparency
4. Coherent policy

²Whole System Approach (1 and 2)

The IET believes that a Whole System approach using systems engineering principles is essential if the green recovery and energy transition are to be realised³. ⁴For example, creating an integrated and flexible energy system by coordinating supply and demand across heat, transport & power adds further complexity but must be part of the whole.

A smart, low carbon, energy system that optimises the whole system: supply, consumption, and transmission / distribution capacity (potentially across energy vectors) is required to minimise the cost to consumers. The future energy system will be as much about people and their behaviour as about technology. Future governance, policy and regulation will therefore need to take a more agile and inclusive 'whole system thinking' approach.

CfD's have been successful in securing lower cost low carbon generation, however a 'de-risking investment' approach is also required for demand side solutions which may require long payback periods. It will be important not to discriminate between technologies with high upfront costs and low operating costs (for example renewable generation) and those with lower upfront costs but potentially higher operating costs (for example demand side solutions).

⁵Digitalisation, Data Systems, and Interoperability (3)

Although this call for evidence is focused on a fiscal mechanism i.e. CfDs, we would encourage the review to consider the wider objective and findings to date of the Energy Data Taskforce, particularly barriers in the current energy system to the effective use of data.

As illustrated in the **Re-costing Energy & powering our future** report⁶; *at the heart of Net Zero is productivity, doing more with less and re-engineering business incentives away from "more" to "better"*. To consider and optimise the Whole System approach to the energy system, the use of

² [Future Power Systems Architecture \(theiet.org\)](https://www.theiet.org/media/6394/open-letter-to-kwasi-kwarteng.pdf)

³ <https://www.theiet.org/media/6394/open-letter-to-kwasi-kwarteng.pdf>

⁴ [PowerPoint Presentation \(communityenergy.london\)](https://www.theiet.org/media/6394/open-letter-to-kwasi-kwarteng.pdf)

⁵ [Catapult-Energy-Data-Taskforce-Report-A4-v4AW-Digital.pdf](https://www.theiet.org/media/6394/open-letter-to-kwasi-kwarteng.pdf)

⁶ [FINAL-DOC-HR-1.pdf \(challenging-ideas.com\)](https://www.theiet.org/media/6394/open-letter-to-kwasi-kwarteng.pdf)

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data to consider and manage; interdependencies, interoperability, and efficiency must be at the core - fiscal frameworks cannot operate in silos. Further, electrification will require more capacity but will also need to send the 'right signals' to demand as well as supply⁷.

Transparency of the whole system is paramount, particularly when considering variations and fluctuations (market, seasonal, consumer, demand etc.) and must be across the full value chain, and operations.

Policy instrument mix – 'Energy System' and Net Zero achievement (4)

There is a need to ensure coherence between the design of CfDs and a redesigned Capacity Market⁸. They are both part of an overall energy policy mix including, for example, policy instruments to support innovation⁹ and policy instruments for energy efficiency¹⁰.

We recommend that the overall policy mix should be reviewed to ensure that it aligns with an overall whole system and Net Zero policy strategy. This should help clarify what specific outcomes CfDs should deliver.

We would be delighted to engage further on options to evolve the current Contracts for Difference (CfD) mechanism for future allocation rounds.

If you would like to discuss further anything in this response, please contact Caroline Holman, email carolineholman@theiet.org

⁷ <https://es.catapult.org.uk/impact/specialisms/ev-energy-taskforce/>

⁸ https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2017/May/IRENA_Adapting_Market_Design_VRE_2017.pdf

⁹ <https://www.irena.org/publications/2019/Jun/Market-Design-Innovation-Landscape-briefs>

¹⁰ [Facilitating energy efficiency in the electricity system: summary of responses to call for evidence \(publishing.service.gov.uk\)](https://publishing.service.gov.uk)