

Response to Ofgem consultation “The Future of Distributed Flexibility 2023”

Zero Carbon Shropshire (ZCS), www.zerocarbonschropshire.org.uk, welcomes the opportunity to respond to this consultation.

We regard increasing the flexibility of energy provision in the UK as a vital part of emissions reduction. We note that both introduction parts to the consultation document (A. Kaul and L. Sandys) emphasise this and the need for speed.

We base our response around Question 1 of the consultation:

1. What do you think distributed flexibility could contribute to the energy system?

We note the definition of ‘flexibility’ given on p.10 of the ‘Call for Input’ document:

A flexible system should not change how we use our devices – but it should mean we intelligently use power in different ways at different times and in different locations.

This flexibility is the key tool we need to modify electricity demand and generation patterns to accommodate clean electricity. If demand can be flexible, we can make better use of our renewables, accommodate more of their output, and (by reducing – and eventually eliminating - our reliance on gas on still days) help secure our energy supplies.

We agree with this statement, but note that the consultation only considers usage, not flexibility in generation. Herein lies the main difficulty we have with Ofgem’s overall approach to emissions reduction.

a) Economics pre-eminence

We see in many recent Ofgem consultations (including this one) a recourse to ‘market theory’ as the only tool for effecting change. We also see (for instance in the recent ‘REMA Summary of Responses to Consultation’) that this approach predominates to the point that any action that is judged to present a risk to the (economic) stability of these markets is immediately discounted.

We consider that this perspective on all consultation of the part of Ofgem severely constrains the range of solutions that can be effected and greatly increases the timescales for these and are concerned that this consultation follows the same approach.

b) Grid Architecture

The infrastructure of the UK electricity system is almost 100 years old in its conception and was put in place in a very different time. It is characterised by a ‘top-down’ distribution from large (initially coal-fired, now gas a nuclear) plant through a cascade of connections with diminishing capacity at each stage. This means, inherently, that a large amount of flexibility in provision of renewables, where generation and usage occur in the same area, are not feasible.

This architecture is not suitable for a distributed, flexible future supply system.

This position is increasingly being reported by industry, business and environmental leaders as the most significant barrier to progress, yet Ofgem seems to pay no heed to it.

c) **Future architecture**

We consider that before any more consultation is carried out on the 'economic behaviour' of markets, that Ofgem should properly consult on the architecture of the whole grid system that is required for the next 100 years. This would include:

- a) Ability of offshore wind to meet need
- b) Proper use of large-scale storage at different levels in the system
- c) Co-location of generation and usage
- d) The role of local storage in 'security of supply' provision
- e) The need or otherwise for a national system of inertia management

We note that the ESO has recently published some documents titled around the theme of 'Holistic grid'. On examination we find that these reports deal only with some of the national backbone and the connectivity of some parts of it. It does not cover the whole distribution system nor properly consider off-shore grids.

By any standard definition of 'holistic', they fail as documents.

Until there is a clear acceptance that the grid architecture needs major revision and some directions for this are set out, economic considerations make no sense, as these may be rendered irrelevant.

d) **A final analogy**

In the UK, the telephone system has undergone massive change in the last thirty years, primarily from an 'exchange and instrument' model, to that of a cellular network. This is not just due to digital technology; the same arguments would apply if a digital, rather than analogue, 'exchange and instrument' model had been retained. Part of this has been the movement of many user functions (e.g. communication encryption) into the end point devices, rather than in the core system.

Contrast this with the approach taken in many developing countries where there was not an 'old' telephone system of any scale and coverage. Rather than progress up the 'technology ladder' by stages, many such countries have gone straight to a 4G or 5G phone network and organised their economies accordingly.

The grid infrastructure needs to be set on a similar course of complete reorganisation. Ofgem should be concentrating its economic competencies on making this happen, not supporting an obsolete model.

END