Registered Office:
Newington House
237 Southwark Bridge Road
London SE1 6NP

Registered in England and Wales No: 3870728

Company:
UK Power Networks
(Operations) Limited

Akshay Kaul
Interim Executive Director
Infrastructure and Security of Supply
Ofgem
10 South Colonnade
Canary Wharf
LONDON
E14 4PU.

By email only: Flexibility@ofgem.gov.uk

10 May 2022

Dear Akshay,

Call for Input: Distributed Flexibility

Thank you for inviting input into your plans to promote distributed flexibility.

Overall – we support Ofgem's ambition for, and prioritisation of, a more joined up digital infrastructure for flexibility. **We completely agree that the future Net Zero energy system needs to empower consumers to take advantage of opportunities for flexible generation and storage and opportunities for smart consumption of power.** This will deliver system benefits and substantially reduce the cost of infrastructure build in the coming years.

UK Power Networks has already embraced Consumer Energy Resource (CERs) – through considerable industry engagement combined with the most accessible capacity thresholds (10kW per location) and metering standards. Over the past year, around a third of the 1.4GW of flexibility contracts we have awarded relate to individually aggregated Electric Vehicle charge points. We work with several aggregators of domestic and business flexibility.

Our vision of a flexibility first approach to electricity distribution animated and inspired our Business Plan for RIIO-ED2. By April 2028 we expect to have saved over £400m at distribution level alone by deferring or avoiding reinforcement through the development of flexibility markets. Further benefits will accrue at national level and in later years through our stimulation of the flexibility market at this critical time.

Our policy is very much to engage the communities we serve in delivering this change. We cannot rely solely on enormous, purpose-built flexible assets and instead we are focussing heavily on aggregated consumer demand-side response and small-scale storage. Suppliers and aggregators are therefore a critical part of the solution and we have to understand their needs and perspectives and those of the individual consumers they represent and respond to them.

The need to be demand-driven explains why we stress the need for DSO operational independence and have worked extremely hard to consult with users and intermediaries over the development of flex markets to-date. We are pleased to see Ofgem's recognition too that change

must above all be driven by the need to meet the aspirations of active consumers, aggregators and investors and thereby deliver optimal outcomes for electricity users across the board.

We look forward to seeing reforms to the electricity retail market and an updated Energy Retail Market Strategy, which we hope will incentivise suppliers to build relationships with customers, including for reduction of peak demand and provision of flexibility to the system. Well targeted reform in this space could significantly boost supply of CER, allowing our purchasing to be more ambitious.

Focusing on the consumer and the needs of flex suppliers should drive Ofgem towards solutions which build on existing progress and advance at pace, reassuring investors and offering some ongoing control to the market.

- We agree that more needs to be done to integrate distribution level markets with each other and with national markets run by the ESO (and in future by the FSO). This is essential not just to make participation easier, but to ensure that each flexible asset can contribute fully to the whole system and be rewarded accordingly. This is consistent with our own consultation, which highlighted the benefits of more integrated ESO and DSO flexibility markets and of more standardised approaches across DNOs. Progress is dependent, however, on all parties being willing to share data and to engage constructively on sharing digital infrastructure – such willingness has not always been displayed in the past and may need to be encouraged or mandated through regulatory requirements.

- We fully support Ofgem's aspiration to remove barriers to entry so that CER can access all relevant markets and so that flexibility buyers can in return source the services they need at best value.

When it comes to the four archetypes for the future, we do not see the first three archetypes as competing visions. **We would support the transition of the current system into the "medium" archetype over time and would seek to engage the Flex supply sector in discussions over the most appropriate time frame and model for delivery.**

- There are low-regrets initiatives, which could and should advance quickly:
    - Central asset register
    - Open Networks activity to standardise products, processes and interfaces
    - More sharing of data between System Operators
    - Leaders like UK Power Networks pressing ahead with technology enhancements (e.g. to enable day-ahead flex procurement) that deliver immediate benefits and establish learning
    - Harmonisation of data models in line with some open standards

- A roadmap should be set out for the rest to establish clarity of expectations.

- We must avoid the risk that this consultation (in combination with others) creates uncertainty which impedes progress. In particular, UK Power Networks needs to invest in technology in order to deliver its commitments around network investment deferral but is also keen to avoid stranded costs.

On the other hand, we do not see it as practical or beneficial to set a destination target of a single centralised platform for all purchases of flex at this stage.

We have doubts anyway about the practicality of co-optimisation of all markets and all CERs/DERs, though there would clearly be value in taking down the siloes between products and

buyers to increase liquidity. But our main concern is that announcing this as a target, and especially determining which institution would own the platform, might inhibit investment in alternative platforms and systems and stymie the development of flex markets until the new centralised platform is established. Even after that, single solutions are themselves inflexible and inhibit innovation. At this, still formative stage in the evolution of flex markets, the risk of foreclosing innovation is high, if a standard, unitary approach is imposed too early and there is also the inevitable risk associated with any major, new, public ICT project.

The UK is already a world leader in decentralised procurement of flexibility, because of the innovation which has been encouraged in multiple initiatives. If that innovation is halted in the name of standardisation and centralisation, then policymakers would have to be confident that the optimal design is clear, that the sector is exiting its period of flux and that no more disruptive change is likely.

There can be no such confidence in the case of flex markets, where optimal systems and benchmarks are still very much under development and the surrounding policy framework is uncertain.

In terms of which organisation is best positioned to specify, procure and coordinate any new market facilitation infrastructure, we are open-minded. We can see a role for FSO as a system coordinator that can help to ensure that processes and products have a level of consistency, but other technical roles could be performed independently, particularly if the “thick” option is avoided.

Whichever organisations are involved, the solution will have to contain the following ingredients:

- Distributed flexibility and CER must be equally prioritised alongside other purchases of flex when designing any exchange structure, systems, products and governance and models must be loose enough to allow for innovation and tailoring of products for particular and emerging needs. CER will not be facilitated if buyers are required to use inflexible products designed for a very different market segment. Markets must be designed for all their users’ benefit.

- Optimal systems must be determined based on user needs, rather than dictated by existing technology applications. Current ESO IT programmes (e.g. Single Market Platform, Enduring Auction Capability), for example, are deeply rooted in ENCC requirements and limitations (e.g. >1MW units).

- Impartiality, agility, ongoing innovation and responsiveness to user needs are the key requirements for any independent market facilitator. For this reason, we would tend to support participant-led models, a neutral, not-for-profit, market facilitator and a technical platform purchased from the market as far as possible, even if FSO has an overall coordinating role. We would invite Ofgem to look at the proposed Elexon funding model and adapt it as necessary for activities which can be sourced from the market.

Ofgem is understandably anxious to ensure that there is accountability to deliver and efficiently manage a new system and we would not oppose FSO having a system coordination role to make sure that it all happens. But it is important to be clear about the type of accountability which is needed. Public sector accountability to the Crown, Parliament and the Public Accounts Committee is one type – essential where public expenditure is involved, but it can result in centralised, public-sector control, risk aversion and a relative lack of flexibility. This is **not** what is needed in a fast-moving, innovative, market-oriented landscape where investment in untested technology will be essential.

The CDEI provider needs to be accountable mainly to consumers and by extension aggregators and suppliers of other forms of distributed flexibility. It should not need public financial support, especially after the start-up phase. There is, undeniably a public interest in its success, because of the wider implications for the cost of Net Zero electricity infrastructure, which justifies overall delivery accountability being conferred on the FSO, but in respect of the practical detail, the public interest is aligned with that of the users and accountability will be mainly to the market itself.

If this new body is collectively owned by market participants, as much as possible, there will be a healthy tension between their appetite for expansive new investment and their desire to keep costs low. If, on the other hand, the body is public sector and has to procure in solutions and expertise, there will be information asymmetries which will create a high risk of under or over-expenditure, risk aversion leading to sub-optimal outcomes and inevitably delays in meeting market expectations.

One way to achieve rapid change whilst ensuring efficient coordination and accountability could be for Ofgem or FSO to tender for design of a market exchange function and then have it established either as a licenced activity or a Code Body. This would be one way to integrate and build on new and existing market platforms to ensure that we do not create a hiatus that delays progress.

Any new market facilitation organisation will need to be properly resourced and supported by industry participants.

a. While component systems do exist, developed by ESO/DNOs, or through innovation projects – these require significant investment to deliver the seamless integrated experience that Ofgem envisages

b. Potentially key components, like Automatic Asset Registration currently appear immature and under-resourced to deliver accelerated benefit

c. There will still be a need to clarify rules/incentives for network operators to engage. UK Power Networks has long supported ambitious targets and incentives for DNOs to develop independent-minded DSOs and to invest in purchases of flex

d. In the start-up phase regulated finance might continue to be needed to create critical mass and ensure rapid progress. One option could be for the market facilitation entity to be funded by buyers of flex for an initial period, allowing DNOs and ESO/FSO to fund it through totex, but offering sellers nevertheless a share of governance. After that initial start-up period, it would be better for sellers of flex to contribute more in return for greater control, though an exemption for small, new innovative players might still make sense.

In summary, we share Ofgem's vision around the future of distributed flexibility and share the ambition to make the UK a world leader in this area, thereby reducing the cost of the Net Zero transition. We agree with much of the Ofgem analysis, especially the need to make the new system responsive to consumer requirements and for this we believe that as much of the new system as possible should be privately owned.

We support a roadmap towards the medium archetype, which sustains innovation and builds on current progress. But there is a trade-off between uniformity and innovation and it would be a mistake, in our view, to press forward with a "thick" single, integrated market platform at this point that undermines current investments in this space.

We would be happy to discuss this further with Ofgem at any stage.

Yours sincerely

Sotiris Georgiopoulos
Director of DSO
UK Power Networks

Copy: Suleman Alli, director of finance, regulation, strategy and technology
James Hope, head of regulation and regulatory finance

Appendix: Response to questions

Section 1

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

UK Power Networks has worked closely with Imperial College and Carbon Trust to quantify the benefits that distributed flexibility could contribute to the energy system in the Flexibility in GB report, which is quoted in the Call for Input.

It is important to note that distributed flexibility is already contributing to the UK energy system. Indeed Britain is seen as a leader in this space, and UK Power Networks is routinely approached for information and advice on “smart” network management by network operator peers from around the world. Around a third of capacity participating in UK Power Networks' recent flexibility tenders has come from aggregated domestic charge points. Furthermore, over 1.5m homes nationally participated in ESO's Demand Flexibility Service.

Distributed flexibility not only helps to defer or avoid reinforcement of networks, it can also accelerate connections of the low carbon technologies we need to decarbonise and has a part to play in overcoming the connection delays being faced by some developers of low carbon generation. The maximum peak usage of network capacity from a generating asset can effectively be reduced by combining the asset with energy storage installations and/or voluntarily agreeing to reduce generation at particular times.

Harnessing distributed flexibility offers consumers a more central role in the energy system, offsetting the cost of low carbon technology installations. Any scope for revenue generation through vehicle and domestic battery to grid flows or savings from variable, off-peak tariffs and demand management make the transition to Net Zero cheaper for the consumer. This reduces the need for and volume of government subsidies to promote Net Zero and speeds up the transition as well as contributing to economic growth.

The systemic benefits of distributed flexibility accrue to different parties – including DNOs, the ESO, bill payers and the government. Without coordination there is a risk that value is fragmented and hard for flexibility providers to access – meaning that flexibility is under-utilised and the energy system bigger and more expensive than it needs to be.

2. Will a focus on CER flexibility also help enable other forms of flexibility, especially distributed flexibility?

Yes, but we do not advocate an exclusive focus on CER. Tackling the hard issues around the retail market, incentivisation of demand management and, for example, vehicle to grid is essential, but it is also possible to make major progress with DER in the meantime.

DSOs need to press ahead with ambitious plans to purchase flexibility during RIIO-ED2 in order to support the market for supply of flexibility and allow it to grow. Most of the purchases in the short term will be of DER, but this allows the markets to become established and offers a vital outlet for CER, as it becomes established.

DER already exists today, buts its benefits are not fully utilised. We must ensure that ESO and DSO markets are coordinated to allow stacking and permit the value of distributed flexibility to be exploited to support national ancillary and balancing markets. CER aggregators will eventually face

the same difficulties in accessing national markets, but policymakers should not wait until then to address them.

Section 2

3. Is there a 'case for change' and a need for a common vision for distributed flexibility?

Yes, there is a case for a more user-centric and joined up digital infrastructure for flexibility.

We question whether there is a 'structural lack of trust' in existing flexibility buyers. This is not what we hear from our stakeholders, who are comfortable with the governance arrangements set out for RIIO-ED2, and respond positively to UK Power Networks' additional commitments to transparency.

If other buyers are not trusted, Ofgem should be taking action in respect of them. UK Power Networks has long favoured demanding standards for DSO activity and powerful incentives to ensure that DNOs (and ESO) rise to the challenge.

On the other hand, there is undoubtedly demand from our suppliers for easier access to multiple markets and for alignment between the different buyers. All purchasers need to collaborate to respond to this demand.

There is a place for a unifying vision of the future in order to develop momentum for change, to solve these problems, but this must be balanced against the need to avoid commitment to specific long-term outcomes before it is clear what the optimum solutions are. Misplaced specificity risks inhibiting innovation and exploration of alternatives.

The UK is currently amongst those leading the world in this area because it has encouraged a diversity of approaches and empowered action at multiple levels. Flexibility markets are still in a formative stage and longer-term access to national markets and interaction with wholesale and retail market reform agendas remain unclear.

Given the urgency for progress as a part of the transition to a decarbonised electricity system by 2035, Ofgem needs to press ahead full steam with expansion of existing markets, whilst exploring these wider interactions and developing new markets. Defining how it will all interface and appointing a single contro
lling authority at this stage risks slowing down progress and chilling innovation.

We therefore propose a balancing of the value of a unifying vision against the value of maintaining some diversity and competition between purchasing entities. The "medium" archetype offers the best balance in our view. An exchange can ease access for suppliers to all purchasing opportunities but retains scope for different purchasers to propose innovative opportunities.

Industry ownership, and in particular supply industry ownership of the exchange as far as possible, should ensure that it is continuously responsive to market opportunity, however this evolves.

4. What is your vision for how to accelerate the delivery of accessible, coordinated and trusted markets for distributed flexibility?

Some sort of end state vision is valuable, but not sufficient. We would contend that we need:

- To press ahead at pace with existing plans to exploit flexibility, in order to sustain our global lead in this area to benefit consumers and reduce the cost of investment for Net Zero. Any visionary end-state must not reduce incentives for rapid short-term progress, in particular

by delaying investment in technology and in skilled staff capability by creating uncertainty over roles and responsibilities.

- A roadmap that delivers quick wins as well as a compelling end state. In our view the end state should be the “medium” archetype for the foreseeable future – an exchange to align markets and ease access, whilst continuing to facilitate innovation, by permitting decentralised initiatives. A centralised platform would, by contrast, curtail innovation and could create a hiatus in investment.

- An intensive focus on the need to support flexibility when delivering wider reforms. In particular retail market reform should encourage variable pricing over time and allow suppliers to partner with aggregators to develop “energy as a service” offerings to customers, which can include embrace of CER. This boost to the supply side is the essential counterpart to DNO and ESO efforts to expand demand. Wholesale market reform should also be supportive and there is substantial opportunity to support distributed flex when reforming the balancing market and ancillary services.

- Clarity of roles/expectations for regulated entities and market players, but also the role that innovation and commercial entities can and should play. Sustained policy uncertainty and the risk of state intervention inhibit delivery. Our view is clear – there is a system co-ordination role, which could best be performed by FSO, to drive progress and ensure results, but the detailed market facilitation should be managed and funded collectively by the private sector, perhaps following an Elexon-type funding model. This will ensure that the market facilitation responds to market needs, especially the needs of suppliers of flex, and will thereby ensure that it meets consumer aspirations and interests.

- Significant investment to move from siloed and tactical solutions in 2023 towards a more joined up vision. Regulation needs to favour the supply side, as discussed and continue to favour investment by DNOs and ESO to expand purchasing and help establish any new exchange, as well as encouraging collaboration and whole systems solutions, but in the medium-term, public and regulated funding is likely to be slower to adapt to a fast-changing market environment. Private finance would be more flexible and would ensure ownership discipline from those market players with the most at stake in securing optimal results.

5. Will certainty of an end vision help accelerate enabling work and make it cohesive?

Yes, certainty of an end vision could help accelerate enabling work and make it cohesive as long as the end vision is for a system which builds on current initiatives, rather than supplanting them and as long as the end vision is for a system which is agile and responsive to user needs. If suppliers and buyers of flex are confident that they will have some control over future market facilitation, they are more likely to commit and to collaborate in advance to make rapid progress. If they feel that the state will impose a solution upon them, they will wait to see what it is before reacting as otherwise investment in time and technology could be wasted.

6. When should a common digital energy infrastructure be in place? And therefore, when should development begin?

While CERs are still in their infancy, the market for DER is already more substantial and opportunities for both are expanding. There is no reason to delay making progress on market accessibility and visibility and development should start immediately with identification of a series of quick wins.

Once the shape of the final destination is clear, a roadmap with detailed timing can be laid down. Realistically an exchange as formulated in the “medium” archetype will take some years to design and set up and if much of it is privately financed, as we suggest, a critical mass of organisations will need to commit to it. Once the commitment is there, however, it should be possible to move fast as no legislation or public finance will be required. A target date at the end of RIIO-ED2 – 31st March 2028 – might be feasible, for example, for the launch of the exchange, but this would depend on market willingness to commit.

A common asset register appears an essential and no-regret starting point. – it is important to note that there have been several attempts to create one. The barriers appear primarily institutional rather than technical. The ESO in particular needs to support the initiative.

In respect of other capabilities – in particular work to identify conflicts and align procurement – some foundational work will be needed to agree the rules. This must help tighten the focus and set the urgency for primacy work at Open Networks. This should be resolved between regulated entities and Ofgem and does not depend on the private sector market facilitation role described above. The exchange may highlight conflicts and may help identify market-based resolution mechanisms to establish which network need carries the greater value, but ultimately resolution will depend on incentives for compromise and for Whole Systems approaches for the regulated entities involved and the optimal solution would be to apply those incentives to coordination to prevent conflicts from arising.

Section 3

7. What should a common energy digital infrastructure look like, and why? Please consider the archetypes or develop your own proposition.

The CDEI must:

- be adaptable to market changes and commercial innovation (because we cannot set firm requirements in 2023 for 2030 or 2035). Given the formative nature of the sector a single, integrated platform would carry a high risk of curtailing innovation at a critical time.

- simplify participation as much as possible, responding to user needs and facilitating market entry for new, small-scale suppliers of flex alongside larger players, also offering access to all potential markets through a single registration process.

- support improved coordination and value-stacking between ESO and DSO, though as stated above, conflicts between purchasing entities will need to be resolved between the parties, who need to be incentivised to cooperate to prevent them arising.

- support wider open data initiatives.

- be developed in modular fashion so that parties with different skills and focus areas can work on different modules in confidence that this will enhance the overall system and so that progress can be made on some issues before the most intractable elements are resolved.

- build on existing platforms and processes to avoid any inhibition of progress whilst it is being planned and established.

8. What is your view on the desirability and feasibility of the archetypes or your own alternative proposition?

We do not generally see the first three archetypes as competing end states for the CDEI but as capabilities that grow over time with the “medium” archetype therefore as our preferred end state at this point in time.

We consider the shared asset register (with associated data on how these assets are being utilised) to be the most immediate win.

The “thick” archetype of a single integrated platform with co-optimised settlement of trades is undesirable and unnecessary at this stage and parts of it may even be unfeasible.

With the “medium” archetype there is scope for more targeted co-ordination of demand across ESO and DSO markets to avoid conflicts before they occur. This would support greater liquidity and reduce complexity for DER and CER aggregators. But given that aggregators will understand their portfolios better than any central buyer, we would not support central direction of co-optimised settlement in cases of conflict. The latter pre-supposes that the market facilitator can direct the market and distorts the decisions about public vs private finance and institutional hosting in favour of centralised, public sector institutionalised ownership and management.

In our view the costs of that bias in terms of lost agility, flexibility, innovation and trust are likely to far exceed any marginal benefits.

Section 4

9. Should a common digital energy infrastructure be new-build, or should it build out from existing infrastructure?

This needs to be assessed on a case by case basis. We cannot afford to start from scratch out of dogma, nor should we accept the limitations of existing systems, each designed with a very specific end in mind.

It seems likely that there are some significant limitations in developing current ESO systems, which have largely been architected around the manual capabilities of the ENCC (e.g. the assumption that all units must be 1MW+).

There are some promising capabilities and teams to have come out of the UK's innovation programmes (e.g. PicloFlex, EPEXSpot's Local Energy Markets) but these will need significant investment.

It is essential that decisions about market infrastructure are demand driven. That is why we favour an industry-owned model as far as possible.

10.What are the important areas for consideration when designing institutional delivery models for a common digital energy infrastructure?

We need to consider:

- skills (not just in flexibility and market potential at national and at distributed levels, but also wider understanding of technology and empathy for the users of the CDEI) – also the institutional capacity to flexibly recruit people with necessary skills as the market evolves

- focus and priorities – how well does the role fit within the relevant organisation's broader functions
- avoidance of conflicted incentives – for example avoidance of stranded costs in any existing, alternative technology and systems
- resourcing – the institution's ability to source finance flexibly as the need arises, but also carry incentives to minimise cost
- avoidance of bias or the perception of conflicted interests or bias in determining solutions
- accountability to the market

Against these criteria, we feel that FSO could be well suited to a system coordination role, but much less so for a more detailed market facilitation and delivery function.

Above all, the institutional delivery mechanism needs to ensure that the operational CDEI responds to consumer needs both initially and on an ongoing basis in a fast-moving, innovative environment. In our view this is best secured through collective, not-for-profit ownership of the market facilitation body by the market participants. This model supplies the necessary tension between meeting ambitious expectations and careful management of costs.

11.What are the important areas for consideration when designing financial delivery models for a common digital energy infrastructure?

Ofgem needs to ensure that licence obligations and incentives encourage DNOs to continue their current digital momentum and press ahead with plans to develop independent-minded DSOs and to expand purchases of flex.

DNO and DSO/FSO regulation needs to support the creation of the CDEI and ensure migration towards CDEI as it becomes available (i.e. don't lock out CDEI) and also needs to support collaborative resolution of local vs national conflicts to maximise overall whole system value.

In our view, the CDEI exchange should be owned and financed by market participants. In the long run this could perhaps be left entirely to sellers of flex, who in any case should control supervision of the CDEI, but in the start-up phase a bigger regulatory contribution from buyers (DNOs and ESO/FSO) might help to get the CDEI up and running quickly.