nationalgridESO

David Wildash David.Wildash@nationalgrideso.com www.nationalgrideso.com

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National Grid ESO response to Ofgem's Call for Evidence on the review of arrangements for electricity ancillary services

Dear James

We welcome the opportunity to respond to your call for evidence on the review of arrangements for electricity ancillary services.

National Grid ESO is the electricity system operator for Great Britain. We move electricity around the country second by second to ensure that the right amount of electricity is where it's needed, when it's needed – always keeping supply and demand in perfect balance. As Great Britain transitions towards a low-carbon future, our mission is to enable the sustainable transformation of the energy system and ensure the delivery of reliable, affordable energy for all consumers.

The ESO holds a unique position at the heart of the nation's energy system. We use this perspective and independent position to facilitate market-based solutions which deliver value for consumers. Our ability to access a range of ancillary service providers is vital to ensure that we can operate the power system in a stable and efficient manner. We broadly agree that a review of the arrangements is timely and that an agile regulatory framework which supports competition in the ancillary services market is desirable as the energy system evolves into a more diverse and distributed environment, with increasing zero carbon alternatives.

Key points of our response:

- Whilst we agree with the scope of the review, we note that there are other elements to be considered, and any proposals should be considered through a holistic whole system lens. We believe in fair treatment for all service providers in a way that promotes competition and encourages innovation.
- A primary aim of introducing network competition is to drive innovation. The regulatory framework and licencing arrangements need to be sufficiently agile and flexible enough to accommodate emerging technologies with the potential to increase zero carbon options.
- To create a more level playing field it may be appropriate to consider whether a new licence category would best facilitate the equitable treatment of standalone ancillary service providers and the costs that are attributed to them.

More information on these points can be seen in our response to your questions appended to this letter.

We welcome the opportunity to discuss any of the points raised within this response. Should you require further information or clarity on any of the points outlined in this paper then please contact Jon Wisdom in the first instance at Jon.Wisdom@nationalgrideso.com. Our response is not confidential.

Yours sincerely

David Wildash

Head of Markets

Appendix 1 – Consultation Question Responses

Question 1 Do you agree with the objective and scope of our review? Are there any other relevant issues we should consider?

We broadly agree with the objective and scope of the review but there may be other elements which should also be considered. it is important that bidders into competitions understand the licencing arrangements they will operate under from the outset in order to understand the associated costs and obligations. Whilst it is not explicitly outlined within the scope of this review, a clear and transparent regulatory framework, ensuring all interested parties are aligned on the treatment of different asset types is needed to maximise competition and innovation. It is important that bidders into Early Competition clearly understand at the outset what it is they are bidding for, i.e., a contract or a licence, as well as the associated costs and obligations.

It should also be recognised that the introduction of Early Competition, which seeks innovative ways of delivering what have traditionally been transmission services further blurs the distinction between what is a transmission service and what is an ancillary service. We think it would be worth reflecting on this as part of a review of regulatory arrangements.

For example, through Early Competition it is feasible that a storage asset, classified as a 'non-network solution' within the Early Competition Plan, could win a competitive tender to meet a network need. This storage asset will be awarded a tender revenue stream to meet a network requirement which would otherwise have been met by a transmission licensee providing a transmission service. It is currently unclear whether this asset should be categorised as providing a transmission or ancillary service, and therefore whether it is most appropriate for them to operate under a transmission or generation licence.

Should a storage asset require a Transmission Owner licence, unbundling rules would then prevent that asset from being utilised to create commercial value through participation in ancillary services markets. This inability to stack with other services could make Early Competition less attractive to prospective bidders. There is also a question of whether this is in the best interests of the consumer, as a storage asset may be able to provide a transmission service for a lower cost if they are able to maximise their revenue potential by managing their state of charge through the provision of ancillary services.

A primary aim of introducing network competition is to drive innovation. The regulatory framework and licencing arrangements need to be sufficiently agile and flexible enough to accommodate emerging technologies with the potential to increase zero carbon options.

Question 2 Table 1 summarises the key dedicated ancillary service technologies and the ancillary services they provide. Do you consider other technologies as capable of providing dedicated ancillary services? If so, please indicate what services they can provide.

As outlined in our response to question 1 we expect that the regulatory framework should be able to accommodate different technologies in a way that supports innovation and delivers efficiently for the consumer, such as grid forming technology which is attached to a generation source and provides ancillary services.

Question 3 What are the barriers to commercial dedicated provision of ancillary services?

There may be a range of barriers to dedicated provision of ancillary services, including the tension between the life cycle of an asset compared with the length of a contract term, which could create uncertainty for developers in their future revenue streams. The acquisition of suitable sites as well as the investment costs of research and development for unproven solutions, with no certainty of future contracts may also act as barriers to commercially viable dedicated provision.

Early Competition aims to create a more level playing field across network and non-network solutions, for the provision of network capacity, whilst recognising that different charges apply to different providers depending on how they interact with the licence. In this regard, existing barriers include uncertainty on what licence (if any) a solution requires and the impact of uncertainty this on the costs a party is exposed to. Ownership of the

asset should not define its licence requirement – i.e., incumbent TO owning a sync comp being transmission compared to market-owned sync comp being generation.

Consideration of whether a new licence category is needed, beyond transmission, generation or demand, capturing dedicated ancillary services and standalone assets performing the function of transmission without a network as such, may be valuable. In turn, any licence category would delineate the appropriate obligations to be met through industry codes and agreements. There also needs to be full consideration given to residual and cost reflective charges and whether providers should face these.

Question 3a Are there specific barriers for dedicated stability service providers? If so, what are they?

We have run two Stability pathfinders and are in the process of running the third pathfinder tender for Stability services. The first pathfinder focused solely on provision of inertia and the second solicited submissions from potential providers of Short Circuit Level (SCL)¹ and inertia. During and following these tender rounds we have sought feedback from participants on their experience and any barriers they may have faced.

Feedback from Stability pathfinder participants included:

- Synchronous Condensers are usually unable to stack MW services with their stability contract and must recover all their capital and operational expenditure through a stability contract. This means that they face uncertainties around what revenue options are open to them following the culmination of their pathfinder contract and are reliant on a consistent need for SCL and reactive power for their services in their specific location to ensure they can continue to access a reliable revenue stream. We are planning to explore the merits and drawbacks of a single asset stacking stability and reactive power services simultaneously during the next steps of the stability and reactive market design projects,
- The structure of Phases 1 and 2 tenders required upfront technical studies to be submitted to the ESO to demonstrate the capability of any proposed solutions. This required tenderers to incur costs to develop their solutions with no certainty on any revenue being recovered. Additionally, given the limited number of potential manufacturers to build contracted machines, this also posed challenges on securing slots to deliver on time.

Alongside the operation and continuous improvement of the pathfinder tendering process we have also run an <u>NIA funded innovation project</u>² to explore the optimal and enduring market design for procuring stability services. The project has just released its initial recommendations concluding that a combination of Long Term (investment timescales) and Short Term (day-ahead) market-based procurement for stability services could deliver benefit to the end consumer when compared to the status quo. In the future phase of this innovation project, we will be aiming to focus on more detailed market development and design questions.

During Phase 1 of the innovation project, we surveyed industry to understand the barriers they had experienced through the pathfinder tenders or anticipated in participating in a Long- or Short-term stability market and how we could mitigate them.

Feedback from stability market engagement included:

- Our existing approach of ad-hoc procurement for stability services in the rules and tender parameters created uncertainty and an unfavourable investment environment. They welcomed our intention to move towards an enduring long-term procurement through the stability market design project.
- Uncertainty about the licensing arrangements was raised as a barrier. This call for evidence signals that this uncertainty could be resolved and that Ofgem are aware of this issue.

¹ Short Circuit Level (SCL) is the amount of current that flows on the system when there is a fault. Operating the system with sufficient SCL prevents voltage disturbances from travelling too far from the fault locality and causing trips or instability. As the proportion of converter-based technologies generating to meet demand increases the amount of naturally supplied SCL has reduced. This has led to weaknesses in the network where there is particularly high penetration of renewables and we have sought to procure additional SCL through our stability pathfinders.

² https://www.nationalgrideso.com/future-energy/projects/stability-market-design

• Entering into a long-term contract leads to exposure to fluctuations in energy prices which are very difficult to forecast, especially for the later years of the contract term. Not all providers of stability services will be exposed to energy costs: TOs do not have to account for the energy consumption from their dedicated stability assets and non-dedicated providers, whilst facing an opportunity cost in power consumption will often be using power generated on site to support their provision of the stability service. This means that it is particularly difficult for dedicated providers to cope with unpredictable opportunity costs, variable costs and maintenance costs leading to long-term price risk and potential consumer costs. We have been considering the merits of utilisation payments for stability services to mitigate some of this exposure but have not yet come to a firm conclusion, answering this question will form part of our FY22/23 scope of work.

It is worth noting that not all pathfinder submissions were for service delivery from dedicated stability providers. We also expect this to be the case for a proposed stability market design. Short-term market could lower barrier to entry for providers who cannot commit in advance, particularly grid-forming capability, and increase competition. Aligned with our Market Design Objectives and Principles introduced in the latest version of Markets Roadmap³, it is important to make sure that there is a level playing field between both dedicated and non-dedicated assets to ensure that our procurement can bring forward the required capacity and capability in the most economic and efficient manner.

Question 3b Are there specific barriers for dedicated voltage service providers? If so, what are they?

We have carried out two tenders contracting with solutions to meet reactive power needs in the Mersey and Pennines regions into the mid-2030s. From the Mersey tender, a contract was awarded to a shunt reactor which is dedicated to the provision of voltage services, while the Pennines tender has also contracted with a solution that will solely deliver reactive power. We have also recently launched a Request for Information⁴ seeking additional voltage capability to meet needs in other regions across England and Wales.

During and following these tender rounds we have sought feedback from participants on their experience and any barriers they may have faced.

Similar to Synchronous Condensers in Stability, reactors are unable to stack MW services and therefore solely rely on revenues under the voltage contract. Additionally, there is the uncertainty of future income as this would be driven by whether any reactive power needs exist in future in their location.

Question 3c Are there specific barriers for other types of assets dedicated to providing ancillary services? If so, what are they?

This will depend on whether the sole or primary purpose of the asset is to provide an ancillary service or not. For example, a reactor can only provide ancillary services whereas 'Grid forming' technologies are a form of specification that can be applied to any DC converter connected equipment, so including many renewable generators and interconnectors.

Grid Code modification GC0137 set out the specification for 'grid forming' technology, and an industry workgroup continues to work on more detailed guidance for this.

If the sole purpose of the asset is to provide ancillary services then it makes it more important that this is addressed with a specific license that can then be used to make sure that the treatment in any industry frameworks is appropriate.

³ https://www.nationalgrideso.com/document/247136/download

⁴ https://www.nationalgrideso.com/balancing-services/reactive-power-services

Question 4 Should assets dedicated to providing ancillary services receive regulatory funding, be commercially provided, or should there be a combination of the two?

As there are several different technologies and organisational structures that can provide this capability, it is not clear that proscription of one approach would be the most effective outcome. It may not be appropriate to limit the routes to market for such services.

Winners of an Early Competition providing a network solution will receive a transmission licence and accede to the System Operator Transmission Owner Code (STC). Entitlement to revenue and details of the funding mechanism will exist in the licence granted by the Authority. Winners of an Early Competition providing a nonnetwork solution are not expected to receive a transmission licence but will be funded through commercial contract arrangements with the ESO. Under Early Competition, both network and non-network solution providers will be funded through a Tender Revenue Model Stream. This provides an agreed funding amount for the duration of the contract/licence period, rather than a periodically renegotiated funded deal like RIIO.

Question 5 On an enduring basis, should electricity consumed solely to provide an ancillary service be exposed to the costs, charges and levies that consumption of electricity in general (such as final demand) is exposed to? Please provide details to support your position, such as the magnitude of the impact to your business and the impacts on competition and energy consumers more widely.

We are supportive of measures which enable effective competition and a level playing field. A key principle should be that all parties are treated equitably and that consumer costs are minimised. It appears to us that levying charges against a provider as "final demand" may result in cost inefficiencies and potentially discrimination between different types of provider of a similar service. This is likely to result in higher costs to consumers overall compared to if the services all competed on a level playing field.

For example in CMP334 Ofgem approved an option where providers of certain services would not pay Transmission Demand Residual charges enabling more effective competition between them and other providers. This seems to be an appropriate area to take action to ensure providers can compete effectively across different types and technologies.

Question 6 Are there any other changes to the licensing and charging regime needed which could better enable competition that drives down prices for the dedicated provision of ancillary services and why?

As outlined above, we think that it would be beneficial to consider whether a new licence category is needed, beyond transmission, generation and demand, encapsulating the needs of standalone assets performing the function of a transmission network without a network as such.

Question 7 Are there any other existing disadvantages between different providers of ancillary services that need to be addressed and why?

Consideration should be given to the correct queue management process for dedicated ancillary service providers and/or assets providing transmission services through the Early Competition regime. Namely, when an asset is being built solely to provide benefit to the network (i.e additional capacity), is it appropriate for that asset to enter the queue for connections.

There is also a potential issue where TOs participating through regulated arrangements as opposed to commercial bids may see an advantage through potential risk reductions. This would need to be explored further to understand whether it presents a genuine disadvantage/barrier.

Question 8 Should the dedicated provision of ancillary services be a licensed activity?

As a part of the critical infrastructure of the power system, it would seem reasonable that some level of regulatory oversight should be in place where this can be achieved to deliver maximum efficiency and least cost to the end consumer whilst enabling further decarbonisation.

Question 8a What are the benefits and risks for consumers and other stakeholder of assets dedicated to providing ancillary services being provided solely through TO ownership?

There may be risks in adapting current licence arrangements to fit novel and emerging technologies. Whilst the creation of new licence categories is a complex process there may be opportunities to pursue this if there is a requirement to develop new categories in other areas in the regulatory landscape in the near future.

Where an entity is licence bound to ensure compliant operation of the system, this would provide greater certainty to the system operator that solutions will be offered compared to dependence on a contract alone. There will remain the challenge of solutions being delivered when required along with limited participation if the licencing route is viewed as cumbersome and more onerous.

Question 8b What are the benefits and risks for consumers and other stakeholder of assets dedicated to providing ancillary services being provided only through commercial ownership?

Should the ancillary service be required for compliance purposes, responsibility for ensuring that these are met would sit solely with the ESO who would then have to consider this in the commercial contract. This may then raise the possibility of commercial parties considering the delivery of ancillary service as too risky and thereby limiting their participation.

Agreeing the service through commercial ownership may allow for a greater number of participants thereby increasing innovation and competition to develop economic solutions. Additionally, this allows for changes in tender rules, commercial arrangements and payment structures to be adapted more quickly versus a licenced approach.

Question 8c Would differing licensing treatment for assets dedicated to providing ancillary services present any challenges? For example, with TO-owned assets licenced under their electricity transmission licence and commercially owned assets under a different (or no) licence?

See our response to question 7.

Question 8d What would be the impact of each of these options on competition?

Whilst in theory there should be no difference between the different options on competition, commercial contracts might not have the same level of oversight as regulatory scrutiny and as these are critical assets it is essential that there is the confidence that they are delivered within budget and on time.

Question 9 Do you think that the dedicated provision of ancillary services should fit within an existing licence category as an enduring solution? If not, how should this activity be best categorised within the licensing framework?

As noted previously, we think it is worth considering whether a new licence type is needed, beyond transmission, generation and demand, which captures the standalone assets performing the function of transmission without a network as such. This would better allow the particular issues for this class of asset to be addressed within the industry frameworks and would also avoid having to find an artificial fit within existing categories which may lead to imperfect solutions and issues to do with level playing field for existing stakeholders.

For example, providers of reactive power as a service to the system are connected to the system rather than being part of the system; they should have a connection agreement and should be bound by certain provisions of the CUSC and Grid Code. With a new licence category this would be reasonably straightforward in applying or adapting code requirements to apply to a new user category in the right manner. As another example, synchronous compensators are basically the same electrically as generators and should meet the same specification except that they do not produce active power.

Question 10 Do you think there is enough clarity around existing roles and responsibilities in the provision of ancillary services?

Whilst we do not believe that there are fundamental issues associated with the existing roles and responsibilities, we think that the STC, Grid Code and respective licences could be amended to be clearer.

Question 11 Are changes needed to clarify responsibilities? If so, what changes are needed?

As ever greater numbers of parties become involved in the provision of transmission solutions, there remains an overarching question around responsibilities for compliance on the network. While the provision of voltage support by third parties is long established, roles and responsibilities for ensuring the safe and secure operation of the network are set to become more complex with a greater number of asset types providing different system services. TOs are required by their licences to comply with the SQSS which includes requirements for voltage and hence reactive support as well as the STC. Market participants are generally expected to comply with the Grid Code, BSC, CUSC and potentially other codes depending on their connection type. This differing set of responsibilities would benefit from clarity. This would enable parties to understand the frameworks and legal requirements under which they are progressing their projects and may also ensure that funding of various options is clear from the outset whereby dedicated assets are funded only for the provision of a specific service.