

Cathy McClay
Head of Commercial, Electricity
National Grid House
Warwick Technology Park
CV34 6DA

10 July 2017

Dear Ms McClay

System Needs and Product Strategy: Consultation Response

Scottish Renewables is the representative body for the renewable energy industry in Scotland, working to deliver a low-carbon, secure energy system, integrating renewable electricity, heat and transport at the lowest possible cost.

The System Needs and Product Strategy consultation is welcome recognition of the need to reform the ancillary service market as work to meet our carbon reduction targets and transition to a smart more flexible energy system.

In order to provide the lowest cost to the consumer, it is important that the ancillary services market will be sufficient to underpin investment in new and necessary sources of flexibility while allowing existing assets to provide a wider range of services.

It is our view that this can best be achieved by:

- **Creating a level playing field:** All technologies should be able to compete to provide services to ensure that the most efficient solutions are delivered for the system. This will require an appropriate balance between providing simple and transparent market mechanisms while creating suitable flexibility to allow different types of investment to come forward.
- **Identifying value:** There is some concern that the current consultation doesn't provide any detail as to how National Grid will assess the value of required services. This is the fundamental driver to any investment decision, and National Grid is the only party that holds the information necessary to unpick the value of existing and future markets.
- **Continuing engagement with industry:** The energy system is undergoing a period of transformative change with the energy sector becoming more diverse, and the number of participants who can add value is multiplying. For many service providers, it is too early to tell which contracting strategies will be required and we expect that both system requirements and the make-up of service providers will continue to evolve.

It is important that the System Needs and Product Strategy marks the beginning of a process where more detail, further engagement and discussion will inform the changes that will best meet the needs of consumers and industry.

6th Floor, Tara House, 46 Bath Street,
Glasgow, G2 1HG
☎ 0141 353 4980 📧 @ScotRenew
www.scottishrenewables.com

- **Engaging with wider energy market reform:** It is important to recognise that ancillary services reform is part of a wider set of system changes. It is crucial that any changes are designed and implemented in conjunction with other ongoing work streams.

For example, consideration ought to be given to current reviews of network charging, the anticipated DNO-DSO shift and reform within the balancing and settlement code – such as P355, which is seeking to open the balancing market to smaller generators.

At the same time it is important to acknowledge that other National Grid work streams such as “Project Phoenix” are looking at a much broader suite of balancing services- including harmonics and fault ride through. While these may be a lower priority it may be helpful to at least open up the discussion around these issues through the SNaPS consultation.

- **Acknowledging different investment needs:** It is important to recognise what was previously a tertiary market, will now be used to underpin investment in a broad range of technologies.

Existing and new renewable assets can (and already) provide a number of balancing services, such as frequency response, reactive power and inter-trip provision. However new onshore wind or solar developments will have no subsidy to recover in pricing , therefore this balancing services revenue will be a greater part of the overall business case for development.

At the same time, some service providers will operate under different sets of commercial drivers. For example, storage providers from battery storage to pumped hydro storage may look at the balancing services market as core revenue.

Revenue stacks need to attract cost effective debt and equity finance to ensure that the lowest cost service provision is procured. This means designing service models with investors and consumers in mind, reflecting the reality that the financial characteristics of both new and existing assets are different from those in the past.

Our response to a number of the key questions from the consultation are set out below and we would be happy to provide any further information where required.

Yours Sincerely,

Michael Rieley

Senior Policy Manager – Markets and Systems

Consultation Questions

Q1: Do you agree with the summary of the issues identified around balancing services markets? If not, what additional concerns do you have?

We agree that the market is currently too complex and that this creates a barrier to entry for service providers. It is crucial that reform simplifies and increases transparency in service provision, allowing existing technologies (such as wind, solar, hydro and pumped hydro storage) as well as new market entrants (including battery storage). This market should be designed to create a level playing field for all participants to compete – from large generators to community scale batteries.

As it stands the status quo arrangements limit competition, inhibit new entrants commercially and technically from participating which ultimately make them inefficient for consumers.

System operation must change to most efficiently accommodate increasing non-synchronous generation but also in view of changing demand patterns, interconnection developments, international market design (such as TERRE developments, new nuclear and an overall shift in the generation mix).

The Strategy should set out key performance indicators and how the success of reforms will be measured. There are substantial system-wide benefits to be gained if the strategy successfully delivers new sources of flexibility. Scenario analysis undertaken by Imperial College in the Powry 'Road Map to Flexibility Services to 2030' suggests that the system wide benefits of integrating new sources of flexibility, are potentially between £3.2bn and £4.7bn per year in a system meeting a carbon emissions target of 100gCO₂/kWh in 2030.

Q2: Do you agree with our approach to resolving the issues identified through simplification of the product suite? If not, what alternative approach should be taken?

We support the move to simplify the suit of products, but caution that the needs case for products is likely to change over time. It is therefore crucial that products are sufficiently robust against future changes in system needs and also changes in flexible technology and would encourage regular engagement with industry, to ensure the process can evolve to account for changes in our energy system.

This SNAPs strategy is very short term and given the scale of the investments required and the life-span of flexibility assets (up to several decades). It is therefore important that the new strategy can accommodate the evolving system needs through to 2050. We ask that the SO explains how its strategy and proposed procurement approach can adapt to future system needs (e.g. the range of possible scenarios in the FES).

Simplification should facilitate entry to the market, not create barriers for potential participants. Changes should be sensitive to 'revenue stacking'¹ business models and system change. Again, an open dialogue with industry is crucial.

Q3: What are your views on the possible approaches to standardisation of the existing markets?

It is important to note that a range of technologies including existing generation plant, new battery technologies, pumped storage and demand side response are all potentially able to offer flexibility services. Accessing and realising the benefits of these services will require a balance of longer term reform to bring regulation and commercial arrangements in line with a modern clean energy system and short term 'fixes' to enable the system to move forward.

Standardisation therefore needs to be conducted in a way which simplifies the market while having a set of parameters wide enough not to preclude entry and ensure a level playing field.

The SO's methodology for setting the parameters needs to be transparent – the parameters can be make or break in terms of truly opening up competition.

¹ <https://www.scottishrenewables.com/publications/electricity-storage-cracking-code/>

Q4: What effect will fixing product parameters have on transparency and competition in the markets?

Setting clear parameters for services can help ensure that the market is transparent and that services don't overlap in terms of their outputs or technical requirements for service providers. Parameters should provide clarity for market entrants, encouraging new players to enter the market but not be so rigid as to restrict market entry. Care should be taken however to ensure that product parameters do not favour one technology over another

Q5: What are the pros and cons of the two approaches to service improvement; single product and standardisation?

Through encouraging market entrants, the single market approach may lead to stronger liquidity and greater competition between service providing technologies. However, transparency is difficult to achieve when procuring several services in the same market. Price signals for investment may also become less clear.

Different approaches could be developed for different products, but this must be justified by NGET and the product procurement method must be clearly described.

Q6: Where do you see the optimum balance being between single product and standardisation?

Overall it is our view that further detail is required to determine the optimal balance between these options and it is important that more detail, further engagement and discussion is required.

For example, with a single product it will be important to understand how the value of different variables will be accessed and communicated with the market. The so called 'value function' methodology or related communications plan has not been explained to stakeholders. While with a standardised product it is important to know how parameters would be set and what level of flexibility will be accepted within each parameter.

Regardless of whether a single product or a standardised route is preferred for procurement of a particular system need there is a key pre-requisite to the success of these reforms. This is the need for the SO to communicate system needs upfront more transparently. The concrete improvements we ask for are that:

- i) The market must be provided with detailed, transparent upfront information of the SO's needs on an ongoing basis. For example the Dutch SO provides the balancing markets with settlement prices minute by minute which stimulates trading.
- ii) The market should also be provided with information on the outcomes of contract tenders.

Q7: What are your views on the benefits and disadvantages of secondary trading in balancing services, and how to single product and standardisation affect secondary trading?

We would welcome further clarification from National Grid as to what secondary trading means within the context of balancing services. While secondary trading markets are generally positive, it is our view that there is insufficient detail within the current consultation to determine the benefits and disadvantages.

For example, While we see the benefits in general, we are also aware that under some circumstances secondary trading may not offer additional value or is impractical – such as with location specific system services. The SO should assess the merits of introducing secondary trading for each system service and justify its decision publically.

Industry trials may help to provide further information for this new initiative. However any trials should be carefully communicated to allow any eligible market participant to apply to participate and any outcomes should be widely communicated.

Q8: How would the two approaches, single product or standardisation, affect the ability of providers to stack multiple services and how important is this aspect when also considering short and long-term contract?

It is important to recognise that service providers operate under different sets of commercial drivers. For example, storage providers from battery storage to pumped hydro storage may look at the balancing services market as core revenue. Revenue stacks need to attract cost effective debt and equity finance to ensure that the lowest cost service provision is procured. This means designing service models with investors and consumers in mind, reflecting the reality that the financial characteristics of both new and existing assets are different from those in the past.

Multiple barriers to stacking different revenue streams have been identified² (as set out in some detail in response to Q10), including: the length and temporal alignment of contracts with reference to project bankability as well as revenue interface risk – the technical capacity to perform multiple contracts at the same time.

Clear and transparent processes are key to allowing providers to assess revenue staking opportunities.

Q9: What are the pros and cons of short and long-term markets particularly in respect of existing and new-build assets?

We believe that a reformed market should incorporate both short and long-term service procurement. A holistic cost benefit analysis should be conducted for each service being considered by the SO.

Short-term procurement (such as day ahead, or closer where technology allows) would enable a greater range of market participants, including renewable energy resources. Services better tailored to the immediate needs of the network, coupled with wider and more competitive suite of service providers could ensure the best outcome for consumers.

However, short-term procurement must be predictable in order to drive investment in assets and occur in forecastable, regular cycles to ensure liquidity in the market. A timetable of tenders needs to be scheduled by the SO- ideally on a rolling basis several years in advance to provide visibility of the long term market opportunities for new investors and incumbent market participants. If the SO cannot provide this for a particular service the barriers need to be clearly justified to stakeholders.

This should be balanced with long-term contracts, which may be also required to facilitate investment in new assets and therefore to bring a full suite of service providers to market. It is important however, that in line with ensuring the market continues to adapt to system requirements, long-term contracts are regularly reviewed.

Q10: What do you consider to be the most appropriate route to support the delivery of new flexible capacity or capability?

A range of technologies, including existing renewable generation capacity, pumped hydro storage, demand side response and new battery technologies are all able to offer flexibility services. Each 'flexibility provider' will operate under a different set of commercial drivers. With this in mind, it is our view that that there are three key revenue-based barriers to making these flexibility providers financeable and supporting their delivery;

- **Low bankability:** revenue streams from balancing services markets are not easily bankable from a private sector perspective. Long term market price signals delivered through a suite of transparent,

² <https://www.scottishrenewables.com/publications/electricity-storage-cracking-code/>

predictable and well defined, short and long-term contracts can improve the investment case for these service providers.

- **Revenue interface risk:** Revenue streams from service provision do not always match up from a timing, contractual and technical perspective. Market reform needs to consider that service providers are likely to seek stacking multiple revenue streams. . There are barriers to stacking through the product parameters currently defined by the SO, conflicting tender cycles etc.
- **Lost potential:** Flexibility providers cannot monetise the full range of services that their plant can deliver.

On storage specifically, reforms to ancillary services should consider that while much of the storage interest in the UK to date has focused on high power applications such as frequency response, high energy applications with longer storage durations are of particular value to the system, but have a very different investment case.

Such projects face large upfront capital costs and long lead times, but this is coupled with comparatively long operational lives and low operational costs. At present, the energy market does not provide sufficient revenue certainty for such significant financial commitments to be made³. Project developers are faced with the potential that future revenues will not be sufficient to cover capital and fixed costs.

Again, short-term procurement must be balanced with long-term contracts and continual engagement with industry to enable investment and the most efficient solutions for system requirements to come forward.

Q11: What are your views on the possibility of trialling different procurement approaches such as cleared price auctions and day-ahead markets?

We welcome the use of trials to better assess which procurement approaches are best suited to the services sought by NGET. However, in a period of change, industry is looking for certainty – so commitment to set out a programme of trials and to speedily adopt successful outcomes is necessary.

With that in mind, information about such trials must be made publically available in a fully transparent manner and interested parties must be allowed to respond and participate. Criteria for choosing the final party that would participate must be transparent.

We would also note that pay as clear auctions are recognised as having distinct advantages over pay as bid auctions in auction theory. Pay as Clear also aligns with Project TERRE proposals and has the potential to reduce undue advantages held by incumbent participants.

Q12: What other changes need to be made to other markets, such as the Balancing Mechanism, wholesale market and capacity market?

Ancillary services reform is part of a wider set of system changes, and it is crucial that reforms are designed and implemented in conjunction with other ongoing work streams and other markets. We would urge any market based reform to consider the multiple work streams on network charging, and (as we comment on below) the transition from DNOs to DSOs.

We would welcome further work to consider technology neutral access to the capacity market. this could be achieved through reform of derating, penalties and secondary trading.

In addition it is important that embedded assets area able to be utilised and allowing access to the balancing market (as proposed by P355) may be a useful step forward to achieve this while enhancing competition within the BM more generally.

³See for example. DNV GL 'The Benefits of Pumped Storage Hydro to the UK' <https://www.scottishrenewables.com/publications/benefits-pumped-storage-hydro-uk/>

Finally, in order to ensure that the system operates efficiently while securing 'best value' for consumers it is important to review the balance of mandatory and competitive service procurement.

Q13. What considerations should be made during this work to ensure that any future DSO developments (i.e. the procurement of balancing services by or from distribution networks) are coordinated?

Renewable electricity generators already provide a number of balancing services including frequency response, reactive power and intertrip through contracts with National Grid, the System Operator (SO). Largely these services are provided by generators that are connected to the transmission network and therefore have an existing contractual relationship with the SO.

At the distribution level services provided directly to the Distribution Network Operator are not yet well defined - beyond existing innovation projects - and there is some uncertainty around the DNO's ability to pass on cost savings to the service provider.

With that in mind a number of distributed generation projects have been able to work with the SO and develop a contractual route to provide necessary services to the SO despite their connection with the (DNO).

As the system changes and DNO's seek to take on the role of DSO this could have the potential to create conflicting signals. It is important therefore to ensure that embedded service providers contracting with National Grid do not drive costs for the DNO and where generators or other service providers are able to lower costs for the DNO that there is an appropriate mechanism to realise or recover this value.

Q14. Any Further Comments

Regarding the section of the SNAPs document which describes the challenges with system inertia and the tools the SO has to deal with this – the renewables industry is concerned about how curtailment of wind (and other renewables) is seen as a cheap option by the SO. While it may appear so in the very short term – the wider economics need to be assessed. Curtailment leads to substantial additional costs of building extra low carbon capacity to meet carbon budgets. Therefore curtailment of renewables really should be a last resort.

Another point relating to the section on the inertia challenge is that the description overlooks that part of the primary problem is caused by the large and increasing size of generation plant that may be lost. If all generation plant was infinitesimally small, or indeed below 300MW, loss of system inertia would be less of an issue. Instead of getting smaller the largest generation load on the system is set to increase. The SO should acknowledge this part of the challenge too so that it can design appropriate solutions.

We are concerned about the rushed timetable for change implementation. While making changes to enable higher renewables penetration should not be unduly delayed - the timetable is extremely condensed and rushed. The proposals in this consultation were not defined clearly enough to support the implementation of changes so soon. The energy industry need to be given the opportunity to understand the concrete proposals that stem from the theoretical SNAPs approaches before implementation.

We would welcome further clarification of the following;

Whether NGET's intend to use any scalars while considering new system services payment methods, i.e performance scalars for reliability or temporal scarcity scalars for when the system is most stressed?

How NGET will learn from the experience of other SOs that have encountered similar technical, regulatory and policy issues and appear to be further ahead in this process (e.g. Eirgrid, Hydro Quebec)? What steps is NGET taking to ensure that the GB process will be optimised through learning from the experience in other countries and that we will not attempt to "re-invent the wheel"?