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To: Dylan Ashe
Commission for Regulation of Utilities
The Grain House, The Exchange
Belgard Square North
Tallaght D24 PXW0

Bronagh McKeown
Utility Regulator for Northern Ireland
Queens House, 14 Queen St
Belfast BT1 6ED

2nd October 2020

Re: System Services Future Arrangements Scoping Paper (SEM-20-044)

This response comes from GridBeyond but mirrors GridBeyond – Demand Response Aggregators of Ireland, response. We fully support GridBeyond response but felt it was important to also submit the response directly from GridBeyond as well.

Executive Summary

Our response is set out in the following sections.

- A context section, setting out the requirement for flexibility and the important role for demand-side flexibility in meeting it cost-effectively;
- Answers to the specific questions posed in the scoping paper

1 CONTEXT

The electric power systems of Ireland and Northern Ireland are undergoing an unprecedented transformation. The generation mix is increasingly integrating non-synchronous, variable renewable energy sources (VREs), which inherently deliver a less predictable, reliable and controllable power system than do conventional generation. In addition, it is moving away from a linear 'one-way' flow of electricity from centralised, large generators to passive consumers, towards a 'two-way' system where generation and storage is increasingly distributed and embedded deep into the network. As the system transforms, flexibility across the grid will need to dramatically improve in order to continue to deliver a safe and reliable service to all consumers. Fundamentally, activation of flexibility on the demand side will become ever more imperative to delivery of the 2030 70% renewable energy share in electricity (RES-E) target.

1.1 Requirement for Flexibility

The graphic below shows the portfolio of flexibility improvement measures, indicating both the time to deploy and the expected increments in cost. It indicates that demand response services, such as those provided by GridBeyond, provide a low-cost quick-to-deploy solution that can deliver a substantial portion of the

require



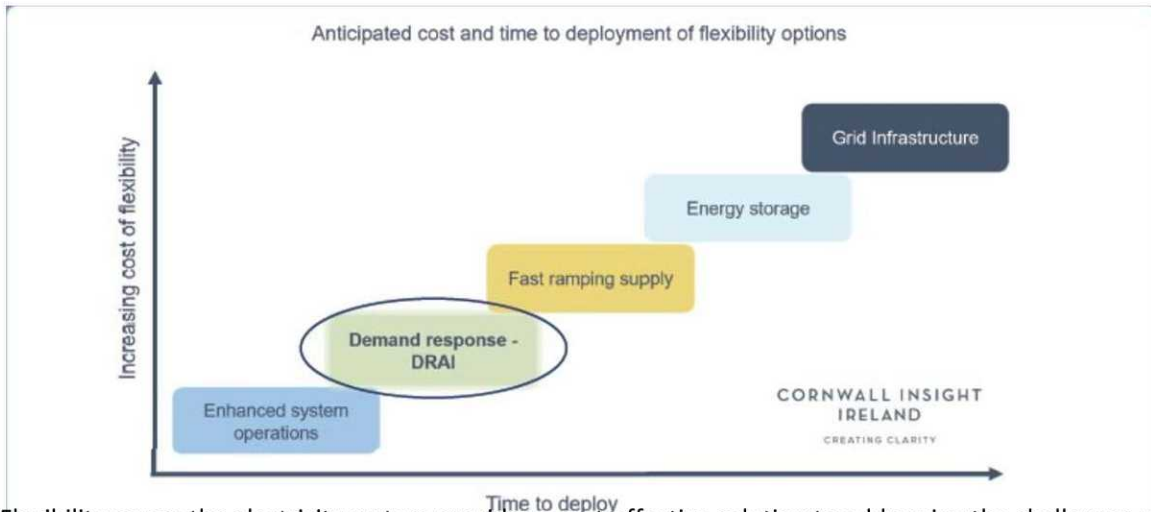
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d flexibility. For this reason, demand-side flexibility has the potential to play an increasingly important role in the transition to a low carbon economy across Europe.



Flexibility across the electricity system provides a cost-effective solution to addressing the challenges within the *Climate Action Plan*. Looking forward to 2030, as the system becomes increasingly dominated by VREs, grid flexibility will need to dramatically improve in order to continue to deliver a reliable service to all consumers. If no action is taken to increase flexibility the result is likely to be higher costs to the end consumer, accruing from increased energy market volatility and more expensive grid reinforcement requirements.

1.2 Facilitating Flexibility

Within the SEM GridBeyond and GridBeyond are committed to making a significant contribution to the low carbon vision, by

facilitating the integration of the high levels of renewable generation envisaged in both Ireland's and Northern Ireland's energy policy, at fair cost and without the need for large up-front investment, long planning times and additional grid network changes. Our members therefore believe that the network operators should be required to activate the full suite of grid flexibility across the curve, starting from the most-cost efficient forms. Specifically, the DSOs should have access to the resources and be incentivised to use flexibility to defer or avoid investments, support cheaper and more timely connections, or to better manage issues on their networks.



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1.3 Benefits of Demand-Side Flexibility

Demand-side flexibility holds the potential to contribute significantly towards meeting the needs of Ireland's ever-evolving power system. However, since the genesis of the DSU unit type in the SEM in 2007, the utilisation of some of their most beneficial characteristics have continued to be constrained by the lack of progress made by the TSO to appropriately account for their operational characteristics in the system scheduling tools. Continued efforts to force these unit types to conform to operational characteristics defined by conventional generation plant mean that the system only benefits from the limited subset of their capabilities that align with those of conventional generation plant, and results in unfair appraisal of their value to the power system. Some key benefits of demand-side flexibility include:

1. *Delivery of reserve from no-load state*

Demand-side flexibility delivers increasingly valuable DS3 System Services Reserve services from a no-load state. This avoids considerable cost and carbon emissions associated with scheduling thermal plant to operate at their minimum stable generation thresholds, where they perform at their lowest thermal efficiency, in order to provide the reserve services needed to support zero carbon generation on the system.

2. *Load-following availability of resources*

Increasing the volume of non-synchronous renewable generation results in a corresponding reduction in the availability of essential grid services. This is due to the corresponding reduction in volume of conventional generation, which includes inherent characteristics that have traditionally provided these services. In contrast, the availability of demand-side flexibility remains broadly proportional to the total energy consumption on the power system, matching availability and expenditure with the time-of-need on the system.

3. *High confidence of delivery of declared availability*

Since DSU and AGU unit types contain several individual sites in an aggregated demand-side portfolio they have an inherent toughness. For instance, in the case where one or more individual consumers fail to respond to an event, this will have a comparably small impact on the delivery of a required volume. In contrast, a failure to synchronise or a forced outage by conventional generation results in a binary outcome, whereby required volumes are either delivered in their entirety or not at all. Optimal/Appropriate utilisation of the high confidence delivery characteristics of DSU and AGU units can therefore reduce the system requirement for contingency, in the form of replacement reserve and ramping margin.

4. *Retention of value in the economy*

A lack of generator and battery OEMs, or indigenous fossil fuel sources in on the Island of Ireland results in the majority of energy, capacity, and DS3 System Services payments leaving the Irish and Northern Irish economies through the recovery of capital expenditure and fuel costs. Conversely, payments to providers of demand-side flexibility result in a much greater share of electricity market expenditure remaining in the economy; returned to indigenous consumers that actively support the operation of the electricity system.

5. *Reduced life-cycle carbon emissions*

The provision of demand-side flexibility is supplementary to the primary activities of the individual demand



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sites that provide it. It is provided using equipment and processes that already exist and, as such, the build phase of their life-cycle carbon emissions will have been amortised and are not related to their availability to provide flexibility services.

2 RESPONSE TO CONSULTATION QUESTIONS

2.1 Overview

To achieve the ambitions of our Association, *to advance DSF on the island of Ireland*, GridBeyond and GridBeyond needs to be supported by a power system that is capable of effectively utilising flexibility resources. We therefore support the proposed objective of the project: *to deliver a competitive framework for the procurement of System Services, that ensures secure operation of the electricity system with higher levels of non-synchronous generation.*

GridBeyond and GridBeyond are also supportive of the following underlying principles:

- Moving to market competitive procurement of services, once the systems (market, scheduling, availability declaration processes, system frequency standards, etc.) can be demonstrated to be sufficiently understood and mature to manage the scheduling of the system in a secure manner;
- In the interim, the existing regime of regulated tariffs should continue. New procurement regimes should not be developed if the intent is to move those services ultimately to market-based procurement;
- Long-term contracts for system services may be required as part of the mix, where the TSO has identified a projected shortfall in same, and market signals are not driving adequate investment;
- The market-based procurement of system services should be co-optimised with energy closer to real time to allow the efficient participation of DSF and variable renewable sources. This will require integration within Real-Time Commitment timeframes within the TSOs processes. Other markets (E.g. New Zealand, See case study in Appendix) demonstrate that this opens up low-cost provision of reliable services from DSF, reducing prices for consumers and limiting potential market power concerns. The reliability of closer-to-real-time declared services from DSF is evidenced in SEM with the strong performance of provision of frequency-based system services by GridBeyond under DS3 to date; and
- A review of the System Services product design should be undertaken, including inclusion of upwards and downwards Balancing Capacity and, once the procurement methodology is understood, an appropriate commitment model can then be developed.

This over-arching position is reflected with further detail in our response to the questions raised in the scoping paper.

1) **Are there additional requirements in EU legislation or national policy that should be considered as key guidance for the project?**

GridBeyond and the GridBeyond welcome the legal review across the Clean Energy Package in relation to System Services and the highly related elements of the Guideline on Energy Balancing. We do, however, note that several important elements were not included, most importantly Article 1 of EU Regulation 2019/943.



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*“Balancing markets, including prequalification processes, shall be organised in such a way as to:
(a) ensure effective non-discrimination between market participants taking account of the different technical needs”*

Given the legal protections guaranteeing non-discrimination for different types of electricity market participants, GridBeyond and GridBeyond emphasise the need to facilitating participation of flexible demand side technologies, which offer cost-effect sources of system services, in the design of the new arrangements.

We specifically, draw attention to the day-ahead procurement proposal, as we have concerns that a focus on this proposal would limit the ability of variable renewable generation and demand side flexibility to participate. This is because these providers are unlikely to be in a position to predict their full capability a day ahead, and would therefore be forced to declare a sub-optimal forecast in line with the day-ahead procurement timelines. The ability of these providers to accurately declare and offer their availability improves the closer procurement timeframes move towards real-time. Therefore with shorter procurement timeframes, there will more optimal participation and integration of different providers of system services. This will help to increase competition and lead to more optimal outcomes for consumers.

GridBeyond notes that the requirements set out in the Clean Energy Package are minimum requirements rather than targets. For the reason outlined in the example above, our members very much caution against an interpretation of the requirement for auctions to be held at least daily to become “only daily”. In our view this will restrict the overall participation of flexible cost-effective sources of balancing capacity and reserves.

2) What should the role of DSOs be in development of the new arrangements?

Interactions with Flexibility Services and Involvement of DSO

Recent consultations such as the CRU’s Call for Evidence on Energy Consumers and Active Customers and on the consultation on the Price Review in Ireland for ESB Networks have drawn attention to the anticipated role of flexible demand and generation to support the distribution system. Northern Ireland is also exploring such concepts through the FLEX (Demand-Side Response, DSR) project. Flexible demand and generation have a role as a potential alternative to investment in capital infrastructure to resolve every distribution related issue. The DSO needs to interact with the TSO to ensure that such initiatives (“Flexibility Services”) are complementary to, are procured in a coordinated manner with, or are consistent with the design of any market-based obligation to provide System Services.

GridBeyond support both DSOs having the adequate resources to monitor, dynamically manage, and reinforce where necessary their respective distribution networks so as to minimise the restrictions on distribution connected aggregated providers providing services to the wholesale market in general. Instruction sets for distribution-connected generation (the times or a description of the system conditions where a distributed resource is restricted in delivering response to the wholesale market) are a barrier to the provision of system services, for example, and should be minimised or resolved where possible.

While, subject to Regulatory Approval, there is potential for the DSO and TSO to support their own networks with their own storage devices (as long as such devices do not participate in the energy markets), GridBeyond is, however, of the view that as long as the requirements of Article 36 and 54 are rigorously upheld, i.e. allowing other parties to tender for such provision first, with equivalent access to information as that held by the DSO, this should not be necessary or encouraged. The TSO and DSO should not be allowed to set the requirements for, and subsequently deliver into, their own System Services or Flexibility markets, irrespective



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of the potential initial headline savings which the Regulatory Authorities may perceive.

3) Should any further assessment criteria be included in this workstream?

First and foremost GridBeyond advocates that where possible the selection of assessment criteria should be based on evidence, such as the learnings from other jurisdictions where applicable and relevant.

GridBeyond have the following comments in relation to the assessment criteria proposed:

- “Consumer value” appears to be inappropriate titled, as refers to a commitment to market-based procurement, unless there are market power issues.
- “Accuracy”, “System Need”, and “Adaptability” are highly related and difficult to differentiate.
- It is unclear whether “System Need” implies a framework where there is sufficient investment certainty for providers so that system needs are met. If not, Investment Certainty needs to be included as another criterion.
- “Alignment” is defined as coordination of the design across energy, capacity and System Services markets so there is value for the consumer. However, we also consider that the financial sustainability of System Services providers within the context of all such markets is equally important. By means of example, if there is a reduction in System Services revenues within a year where the capacity market has closed and the bidding code of practice applies, the lower costs for consumers will be reflective not of value but of an unsustainable market for participants. As per our response to Question 2, Flexibility Services should be included within the assessment of “Alignment”.

We would like to emphasise that the legal requirements of the Clean Energy Package require “non-discriminatory treatment” of all System Services providers. In the past both individually and through DRAI, GridBeyond has made several references to how demand side technologies have been discriminated against, we therefore consider that going forward it would be beneficial to introduce an evaluation criterion that would focus effort in including these technologies and discourage discrimination.

4) Is the general approach to the Project appropriate and complete?

Learnings from international markets

In general, GridBeyond agree with The DRAI that we believe that the project is missing the opportunity to learn from the successes and failures from other jurisdictions. While our system is world-leading in many respects, this does not mean that there is nothing to be learned from elsewhere.

For example, international experience in New Zealand, a similar market to the SEM with low inertia on an isolated power system, shows that where one has short gate closures and granular provision of services (e.g. 30 minutes, rather than an entire day), aggregators and variable sources of generation have higher confidence – and the TSO can have equivalent confidence in them – regarding their capability to deliver reserves. In contrast, if for example such resources had to make an offer by day-ahead gate closure, then they would be relying on a longer-range forecast, with a lot more uncertainty, and would only be able to offer the minimum capability that they were very confident would be available during the interval. The same resources would end up providing much less capacity to the market, leading to the system operator having to procure more capacity from other, higher cost resources, such as generators, and concentrating market power concerns. Closer to real-time procurement therefore opens up these markets to greater participation



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from inexpensive sources of reserve. This creates savings for consumers. We provide more detail in relation to the New Zealand experience in an appendix to our response.

GridBeyond also note that in markets where a non-discriminatory approach to procurement is adopted, a broader base of technologies participate, which assists in mitigating market power concerns.

Learnings from the Existing DS3 System Services Procurement Process

The paper states:

“The SEM Committee aims to carry out a detailed review of the existing gate tendering process, the Qualification Trial Process, the Protocol and Market Ruleset documents and associated governance processes, and the funding arrangements, as part of this workstream. This review will be carried out with a view to adapting these processes to the new arrangements, which will include market-based procurement of System Services. Stakeholder views are welcome on the scope of this review and what considerations should be taken into account.”

GridBeyond support the DS3 system services review suggested within the paragraph above, and have no further comments as to its scope.

GridBeyond is supportive of the competitive based model, and we believe that most services should, subject to certain criteria being met, move to market-based procurement. We therefore consider that the experience of the design, implementation and testing of the Balancing Market during the ISEM Programme will be relevant. Competitive tendering for co-optimised energy and Balancing Services has as much to do with the experiences of the ISEM Trading & Settlement Code implementation, as it does with the nature of the products themselves, i.e. System Services. For example, compressed testing of Balancing Market systems prior to the implementation of those systems being complete led to participants being unable to use much of the testing time that was made available, and as evidenced by the Imbalance Settlement Price resettlement project, allowed issues to progress into live market operation.

Interim arrangements

In the interim, while the market-based arrangements are put in place, GridBeyond propose that we move to more frequent procurement rounds (in line with our response on our preferred approach to the *Mitigation of COVID-19 Impact in Procurement of DS3 System Services* consultation) for those services.

We strongly argue against wasting efforts in developing “interim” procurements designs. The existing regimes, with whatever legal derogations are required, should remain in place until they are replaced with an enduring arrangement.

European Legislation, System Services, the SEM’s Renewable Ambition and Brexit

The scoping paper is silent on the impacts that the differing potential forms of Brexit may have on this programme of work. The elements of the Electricity Balancing Guideline that must or may be followed should be clearly set out for industry under the different Brexit outcomes. GridBeyond support the established and developing decarbonisation ambitions of both jurisdictions.

GridBeyond stress the importance of not treating the European legislative requirements as a target. Ireland’s and Northern Ireland’s renewable ambitions, delivered around non-synchronous energy technologies, far exceed current European ambitions with such technologies under similar timeframes. It is likely that every



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opportunity will need to be taken to push the limits of what is legally allowable in the System Services design under the Clean Energy Package. This will mean going beyond the requirements of the Clean Energy Package, and paradoxically, may also require seeking derogations from Clean Energy Package requirements in order to find what works for Ireland and Northern Ireland's specific context in order to meet the intent of the Clean Energy Package's objectives.

System Services Product Design

A review of the existing services definition is likely to be a necessity, to meet decarbonisation objectives, to maintain existing security of supply, and the requirements of the Clean Energy Package itself. GridBeyond suggest that the following requirements are given further consideration in the System Services Product Design:

Design requirement: The project needs to review the design and need for the System Services, such as the body of work which preceded DS3 in 2012, the Facilitation of Renewables study;

Technical design: The Climate Action Plan notes an EirGrid deliverable under Action 26 for Q4 2021, which is "Technical and market design, using findings from Flex Tech initiative, for the evolution of System Services to enable renewable electricity targets for 2030". There may be changes to the technical design of services as part of this process.

Separate procurement of upwards and downwards balancing capacity: The Clean Energy Package makes references to upwards and downwards Balancing Capacity. The existing System Services design for the Operational Reserves are upwards only. It is important that upwards and downwards Balancing Capacity is procured, and that such procurement is carried out separately (in line with Article 6 of Regulation EU/2019/943).

Jurisdictional requirements: Furthermore, there are jurisdictional (Northern Ireland / Ireland) and technology specific (synchronous / non-synchronous) constraints on the real-time provision of certain services, which may need to be taken into account in the definition of any product.

Discrete procurement of services: GridBeyond is against bundling of services in any market design or procurement, as such bundling is technology specific and distorts the competitive market in providing those services. For example, DSUs may provide more fast response services than slow response services, batteries may provide equal amounts of all services, and conventional generators may provide more slow response services than long-response services. Similarly, some technologies are better at providing upwards services and others at providing downwards services. The nature of such bundling may promote one technology class over the other.

Delivery requirements: Clarification is required within the product design for the industry as to how generators that have committed to providing the service when successful in the System Services market / tender will need to demonstrate delivery. This is likely to require a redefinition of the delivery requirements as required under the Volume Capped or Uncapped rulesets.

System Services Product Need

Where a market moves to volume-based price-competitive procurement of services, the providers of those services need information from the single buyer, i.e. the TSO, as to the projections of the required services.



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Within the context of the existing DS3 System Services design, this was of less importance to participants, given that payments were made to all technically capable providers based on an existing tariff. Ultimately, however, and as noted recently by the TSO's recent DS3 budgetary projections, this potentially can lead to "over-heating" on the supply side of the market. It has been difficult for providers of System Services to understand the basic supply/demand balance of the market.

The Clean Energy Package is filled with the requirements for TSOs and DSOs to provide information to support generation investment decisions. System Services are no different. Correspondingly, alongside the System Services design, it is important that the TSO provide information to support investment decisions for system services providers, similar in scope to the Generation Capacity Statements but with a focus on System Services.

Timeframes and Acceptance of Planning for Transition

Given the importance and longer-term nature of the overall decarbonisation agenda, and the critical role System Services will be required to play, GridBeyond advocate an approach which strives to achieve the correct solution rather than strict adherence to the May 2023 timeframe.

We therefore support a transitional system (with extensions to the existing DS3 tender framework as required) as a fundamental principle of this programme of work. We also strongly recommend that the scheduling of reserves, availability declaration methodologies, etc., need to be at a level of maturity to progress to a market-based procurement of system services, this requirement is discussed in more detail in response to Question 5.

5) For which products is a market based approach appropriate? What sort of market based approach is most appropriate?

Fundamentally, GridBeyond fully support transition to market procurement of DS3 System Services, where the overriding ambition is to procure system services in a co-optimised framework with energy (which is deliverable over the same period as the commitment of those services). We believe that facilitating closer to real-time participation of DSF and variable generation will unlock the true potential of these resources and will ultimately deliver best value (lowest cost) to the consumer, and also serve to mitigate against potential market power issues.

We are therefore in favour of an approach that from the outset aims to transition all market services towards a market based approach. We do however also acknowledge that during the course of the programme development, as the specific requirements of the system services unfold, it may become apparent that a market based procurement may not be appropriate for all services.

Implementation considerations

Key to the transition to a market based procurement is the "maturity" of the overall system. A set of conditions precedent should therefore be developed to trigger commencement of market-based procurement of services. These include:

- Ensuring the scheduling of reserves closer to real-time does not impact system security;
- Ensuring that the availability declarations and scheduling tools are non-discriminatory in nature, i.e. they are fit-for-purpose for demand-side flexibility; and



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- Delivering on a reasonable period of parallel market trialling with real-time live market signals reflective of actual market conditions.

If certain System Services meet these criteria but other System Services do not, then a phased introduction of market procurement of some services could be considered while outstanding issues for the remaining services are resolved.

GridBeyond consider that different approaches may be appropriate for the following services:

- Faster services:** Co-optimised market-based procurement of system services with energy, including the introduction of reserve offer pricing into the scheduling process in line with the Real-Time Commitment timeframes, would allow efficient coordination with the Balancing Market gate closure.
- Ramping services:** Longer commitment services, such as the Ramping Services, may be appropriate to procure with the day-ahead timeframes, in line with the Long-Term Scheduling process.
- Other services:** Other services appear less suited for market based procurement. For instance
 - Reactive Power* has highly locational requirements, it is therefore difficult to see how “pooling” with a single market requirement could be defined for its procurement.
 - Dynamic Reactive Response* and *Fast Post Fault Active Power Recovery* also require further consideration, as to whether these are global market requirements or have highly locational aspects such as Steady State Reactive Power. The potential research and development into the technical delivery these services also imply that a stable procurement-based tariff regime (such as today) may be appropriate to allow recovery of development costs.

In the interim period where the System Service remains procured on a non-market basis, for simplicity the existing tariff regime should remain in place, with the required derogations from the requirements to be competitively procured sought in relation to the EBGL and the Clean Energy Package.

Timing

Fundamentally, the success of the new System Services programme will be dictated by its ability to attract appropriate levels of investment to meet the System Services requirement. It is therefore critical that the timing of the transition does not undermine investment certainty. For this reason GridBeyond request that consideration be given to the procurement timeframes under the Capacity Market. In particular, we advise due consideration ahead of any material changes for years where the Capacity Market auction has already closed. In the absence of reasonable foresight, the scope of these changes has the potential to be problematic, especially for new entrants.

6) For which products is a market based approach not appropriate? Why is a market based approach not appropriate for these products? Will an alternative approach be more economically efficient? What sort of alternative approach should be considered?

As stated in the response to the previous question, GridBeyond are therefore in favour of an approach that from the outset aims to transition all market services towards a market based approach. We do however also acknowledge that during the course of the programme development, as the specific requirements of the



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system services unfold, it may become apparent that a market based procurement may not be appropriate for all services.

7) Do stakeholders believe the current qualification process, is the most efficient approach? Do stakeholders have any alternative proposals?

As a basic principle GridBeyond are in favour of access to market-based System Services procurement being made available to providers on the basis of achieving sufficient accreditation, rather than access based on procurement rounds. This is similar to the approach adopted for access to the Balancing Market, where a generator can only act as a Balance Service Provider under the Trading & Settlement Code when it has achieved its Operational Readiness Confirmation. If these same principles are applied to market-based System Services procurement, a provider would need to prove its reserve capability under business-as-usual Grid Code testing before accreditation and the market registration processes can be completed.

In the case of entirely new technologies we believe it is appropriate for them to continue to be brought to market through the Qualification Trial Process.

In line with our proposal under Question 5, non-market procured services, such as Steady State Reactive Power, we consider that the existing tendering rounds can continue to apply, noting DRAI's preference for more frequent contracting rounds.

8) What are stakeholder views on the overall current governance arrangements including the contractual principles, the Protocol Document and the market ruleset? Should these be modified into an overall protocol document which captures all of the rules for providing and procuring System Services with increased regulatory oversight?

In general, GridBeyond supports collation and coordination of market rulesets into a single location, where it is efficient to do so. We therefore consider that the focus needs to be on the development of an enduring contractual ruleset, with external ongoing Regulatory approvals on certain parameters sought only as required. For example, the equivalents of certain parameters which are consulted on by the Regulatory Authorities periodically such as Long Notice Adjustment Factors (scheduling and dispatch), de-rating factors (capacity mechanism) or Imperfections Charges (market rules). We also suggest that for services where the intent is to transition to market-based procurement, only changes to the current documentation that are absolutely necessary to maintain the ongoing/transitional tariff regime are considered.

The purpose of the Protocol Document within the current programme is to allow the TSO to adjust the definition of system services as needs arise without the full requirement for Regulatory Authority approval each time. However, in the case where procurement of System Services transitions to a market-based model, possible co-optimised with energy or impacting on energy bidding behaviour, GridBeyond consider that this type of unilateral flexibility is no longer appropriate. Within the new market-based model, providers will become participants rather than tenderers. They therefore should have the right to engage fully in the process, to suggest appropriate changes that will facilitate their technological innovations and capabilities, and to review all proposed changes.

GridBeyond are therefore in favour of a rules-based committee, in line with the T&SC Modifications Committee, where there is a formal process for modifications to be raised, assessed, and adjudicated by the Regulatory Authorities, is appropriate. GridBeyond suggests that this committee should be separate to the T&SC Modifications Committee, as it will deal with technical issues of Grid Code compliance and products which



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are outside the scope of the activation of Balancing Services. It should be accessible to representative organisations and indeed new innovative technology providers who might not yet be System Service providers.

9) Should System Services continue to be funded through network tariffs? Are there views on any alternative arrangements?

Article 18(1) of EU Regulation 2019/943 states:

“Charges applied by network operators for access to networks, including charges for connection to the networks, charges for use of networks, and, where applicable, charges for related network reinforcements, shall be cost-reflective, transparent, take into account the need for network security and flexibility and reflect actual costs incurred insofar as they correspond to those of an efficient and structurally comparable network operator and are applied in a non-discriminatory manner. Those charges shall not include unrelated costs supporting unrelated policy objectives.”

The Regulation is unclear whether ongoing charges for use of the network (Use of System Charges, of which SSS charges are an element in Northern Ireland) continues to be appropriate.

As a general principle GridBeyond supports the continued recovery of ancillary services charges via a levy on demand customers. However, we are not in favour of levying such costs on generation market participants as this will either result in a non-recoverable straight-line unexpected cost for certain participants, e.g. subsidised renewables, or result in higher energy, capacity and system services offers in order to recover the fixed costs from other System Services providers. The latter is likely to raise clearing marginal prices of energy, capacity or System Services for consumers.

We recognise that transition to market-based system services procurement will mean that the quantum of those costs becomes less predictable, in which case network tariffs may no longer provide a suitable mechanism to recover System Services costs. Whilst we acknowledge there are likely to be several options available to recover the costs, we would caution against passing this risk on to suppliers, as we expect the volatility will ultimately be reflected in increased retail tariffs. GridBeyond do, however, consider that mechanisms available to the TSO may be more appropriate to managing this risk. We therefore suggest that an annual fixed market-based charge on demand could be introduced to recover these costs, akin to the Imperfections Charge which was introduced to recover the dispatch balancing costs associated with re-dispatching generation.

10) Should all services be procured through a single daily auction framework or should bespoke arrangements be developed for the separate products?

All services that are capable of market-based procurement once the market has become sufficiently mature should be procured through a single market framework.

In designing the auction, GridBeyond encourage consideration of the unique characteristics of variable renewable generation and demand side flexibility, which determine their ability to participate in the market. As the ability of these providers to accurately declare their full availability improves the closer the procurement timeframes move towards real-time. The shorter the procurement timeframe can be made, the greater the participation across all market participants in the provision of System Services.



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Procurement of non-market-based services should continue through the existing tariff-regime structure.

11) What are stakeholders' views on the timing of auctions?

GridBeyond support transition to market-based procurement of system services, co-optimised with energy closer to real time to allow the efficient participation of DSF and variable renewable sources.

12) Do stakeholders have further views or proposals in relation to auction design?

Auctions should be aligned with the Real-Time Commitment scheduling process within the TSO, co-optimising energy and demand. This will require coordination with energy offers in the Balancing Market arrangements around Gate Closure, and coordination of the equivalent Gate Closure of System Services offers.

13) Do stakeholders have any proposals on how best to ensure commitment obligations are met?

In our view, it is premature to discuss the nature of commitment obligation before the auction timeframes (frequency, gate closure) for the procurement of the services have been agreed, and also the definition of those services.

14) What are the significant interactions within potential System Services product markets and between Systems Services markets and the energy and capacity markets? How should issues arising be addressed?

The interaction of System Services market with the energy market and capacity market is critically important. The design of a new market-based System Services model is also likely to necessitate a review of certain aspects of both the energy and capacity markets. In our view the scheduling and dispatch process are likely to be impacted. We request that specific attention be given to the potential for higher-priced energy bids to trigger reliability option events (in the absence of genuine capacity shortages). GridBeyond believe that the System Services development should therefore not be constrained by the existing energy and capacity designs, and that changes/improvements to these markets should also be considered as part of the overall design process.

15) Do stakeholders believe there would be benefit in maintaining the Fixed Contract Arrangements for future procurement runs?

Based on experience of international best practice, GridBeyond has a high degree of confidence that the transition to short-term procurement of System Services will lead to an adequate supply of these services. However, we also recognise that within Ireland, we do not have experience of market-based System Services procurement, and therefore no indigenous evidence that this model will encourage adequate investment.

GridBeyond therefore suggest that it would be prudent to include provision within the overall framework, for the TSO to develop adequate forecasts of the required System Services (in line with the Generation Capacity Statement), as this will assist in the identification of potential shortfalls/services that may require long-term contract arrangements to encourage investment.

In the case where such long-term contracts are introduced, we believe that they should not restrict procurement flexibility within the wider framework. Therefore any long-term contracted providing unit should also be allowed to participate in the market-based auctions and provide non-contracted capability from that same unit.

GridBeyond acknowledge that under the current arrangements for System Services procurement, fixed



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contracts provide a secure form of revenue for a limited class of market participants, i.e. storage units. However, we would also draw attention to the limited scope of the existing long term contracts. Bundling the System Services and requesting “commitment” through an availability standard that can only be achieved by battery storage has made them implicitly technology specific. In the case where long-term contracts are considered necessary under the new arrangements, GridBeyond suggests that consideration be given to broadening their scope.

Finally, we consider that the firm commitment obligations under long-term contract agreements may also need to incorporate a level of flexibility. The long-term providers may not always be in a position to reasonably predict close-to-full-time commitments for delivery of the required services, and equally the TSO may not require same. For this reason a “*pay-as-available*” type contract with a competitively set tariff, may be more appropriate, than the existing Volume Capped type of arrangement, for these new long-term contract agreements.

16) Do stakeholders have views on the list of additional considerations above? Are there any further issues to consider?

In our view further consideration should be given to the following:

Investment Certainty

Mature functioning markets can allow for an element of investment certainty. If System Services are not to have longer-term Fixed Contract Arrangements, it is noted that investment certainty becomes dependent on the Capacity Mechanism (or possibly Flexibility Mechanisms).

A review of the Existing Capacity Price Cap may be appropriate, given the increased uncertainty in long-term System Services revenues.

Smoothing Transition

In response to Question 5, GridBeyond proposed that a set of conditions precedent should be developed prior to triggering commencement of market-based procurement of System Services. We also suggested that a phased introduction of market-based procurement may be appropriate, in the case where certain System Services meet these criteria ahead of others.

We also reiterate previous comments in relation to changes in system services which occur within cleared capacity market year timeframes. If there is a reduction in System Services revenues within a year where the capacity market has closed and the bidding code of practice applies, this may result in an unsustainable transitional market for system services providers. Specifically, we draw attention to the fact that AGUs and DSUs have already committed capacity post 2023 within the T-4 Capacity Market auctions. At the time of the auction aggregators responded to the market signals available and organised their individual demand sites (IDS) accordingly. Under the capacity market rules these IDS configurations are required to remain in place post 2023. This rigidity is a concern for DRAI members as it is expected to create difficulties/inefficiencies in the case where there are changes to DS3 product definition, as the choice of IDS configurations within each unit may no longer be optimised.

GridBeyond has previously raised this issue in our regular bi-lateral meeting with the TSO, within the context of “Joint Market Registration”. Joint Market Registration is a guiding principle which is designed to facilitate flexibility within aggregated units, by allowing each individual site to participate fully within the energy,



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capacity and DS3 system services markets. By means of an example, aggregation of all sites contracted to an aggregator into a single DSU/AGU may be appropriate for a Capacity Market contract. However, the blended single ramp rate of response across all sites in this single DSU/AGU is unlikely to optimise the capability of these individual sites to participate in the System Services market. In which case offering aggregators the flexibility to create different configurations of sites for the capacity, energy and system services markets is expected to open up greater participation in System Services provision, leading to reduced costs for consumers and more pressure on potential market power. GridBeyond therefore suggest that “Joint Market Registration” is considered within the future arrangements.

17) What are stakeholders’ views on the potential existence of, and options for mitigation of, market power?

In our view, it is premature to comment in detail on the assessment of market power before we have a more comprehensive understanding of system services definitions and the procurement mechanisms.

GridBeyond do however have the following observations:

Market power mitigation

We support closer to real-time procurement, as it opens up system services markets to demand-side flexibility and variable sources of generation to compete with other providers of system services, thus reducing market power through increased competition. We recognise that some system services may also be only subject to market power issues for a small percentage of the year. Shorter-term procurement, therefore, also limits the potential damage of that market power to those smaller number of hours. In contrast, a daily contract with a firm commitment obligation for 24 hours and a daily price can have that single daily price impacted by market power in a single hour. We are not in favour bundling of products as it can restrict competition from providers that can provide some services but not others

Definitional review

A definitional review is needed to set out the projections for the requirements for the system services (along with how those requirements might change dynamically if appropriate), with similar projected timeframes as for the Generation Capacity Statements and the Transmission Forecast Statements.

Alongside the definitional review of System Services, the definition of the need for System Services needs to be reviewed also. There are, for example, jurisdictional (North-South) requirements for System Services. Potential measures to mitigate these jurisdictional requirements, such as the construction of the North-South Interconnector, and the impacts of such mitigations, should be clear to industry;

The requirements for specific percentages of System Services to come from synchronous or asynchronous sources should also be challenged. It may be that certain technologies, such as rotating stabilisers can assist in breaking down requirements for such percentages. If, however, the combined system services, capacity and energy market do not facilitate investment in these technologies when it is efficient to do so (i.e. the cost of the technology is lower than the benefits to consumers which arise), this is a structural market failure which needs to be addressed.

Learnings from the SEM



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Tools which have been used in the Single Electricity Market to manage market power include setting global bidding controls, price caps, and requiring mandatory participation. GridBeyond notes that the use of these tools should be proportionate and time-limited, and should only apply where other structural mitigations, like those proposed above, have been fully explored. Should such “global participant-control” mechanisms apply here, their interaction with the other forms of regulation present in the energy and capacity markets need to be considered, i.e. does the cumulative impact of all such price control regulation result in unsustainably low regulated revenues. GridBeyond want to emphasise that we are fully supportive of the development and delivery of a competitive market structure for the procurement of System Services. We have identified the above market power concerns as we believe they are important considerations at this early stage of planning for the new arrangements for System Services. However, do not believe that these potential concerns should in anyway halt progress in opening up the market, as it is the development of a competition within the System Services that will ultimately resolve market power issues.

New Zealand Experience

Appendix

Introduction

Internationally, it is common to co-optimize system services markets with energy markets. Specifically, it is standard practice in most US markets, and (most relevantly) in New Zealand and Eastern Australia.

In these markets, frequency control ancillary services are procured in real-time markets that run alongside the energy markets: they have the same time granularity (30 minutes in New Zealand; 5 minutes in Australia), and the same gate closure time (30 minutes in New Zealand; none at all in Australia).

The co-optimisation objective

The main aim of co-optimisation is to consider energy and system services offers together, and how the energy dispatch affects volumes of system services needed, to find the overall least-cost solution. By considering the two issues simultaneously, it avoids needlessly distorting the energy market merit order to meet previous system services commitments.

The combination of fine granularity and late gate closure needed for effective co-optimisation has a significant additional benefit: it means that aggregators have a very accurate picture of what response their customers will be able to provide during each interval, and so can safely offer a high proportion of that capability. This means that larger volumes of system services can be offered at lower cost.

In contrast, in the case where aggregators are required to make an offer a long time ahead of delivery (e.g. day-ahead), or for a long period (e.g. 4 hours), they need to rely on a longer-range forecast. This inherently brings a lot more uncertainty, so they are only be able to offer the minimum capability that they have high confidence will be available during the interval. So exactly the same resources would end up providing much less capacity to the market, leading to the system operator having to procure more capacity from other, higher cost resources, such as generators, and concentrating market power concerns.

Exactly the same issue arises with wind and solar generators: if they can offer close to real time, for a short period, then they can confidently and safely offer more capacity than they would otherwise be able to do so.

Demand-side flexibility is a cost-effective source of fast frequency raise ancillary services (particularly static),



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whereas renewable generators can be very cost-effective at frequency lowering.

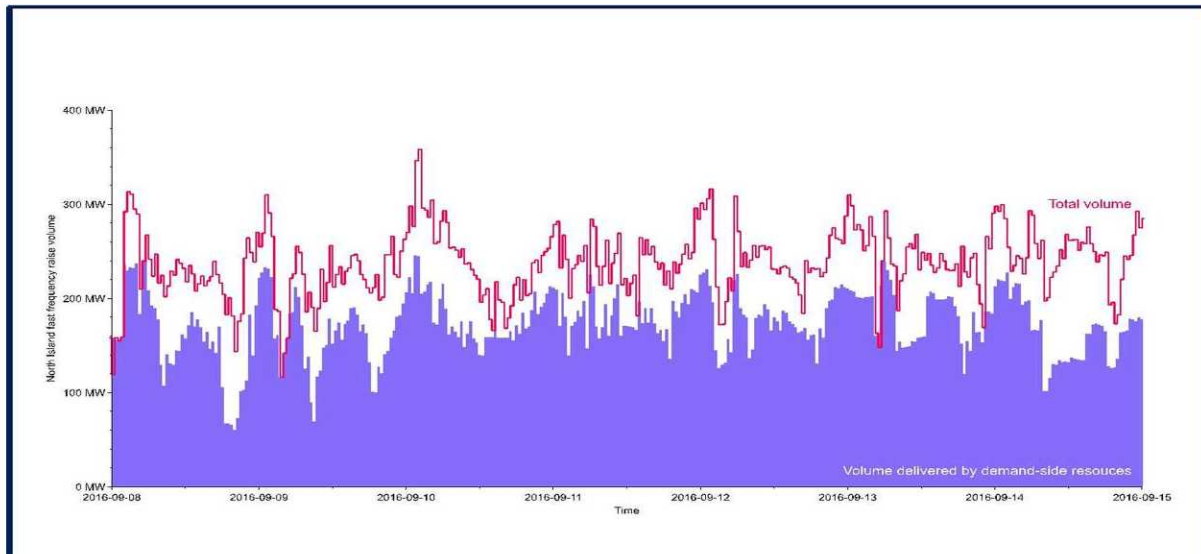
Co-optimisation benefits

New Zealand is a great example of what can be achieved. The market is designed to:

- procure half-hourly;
- close to real time;
- in merit order; and
- with a simple product design;

Each of the above characteristics mean that the market can fully utilise the fast frequency response that is available from demand-side resources. Demand-side resources compete with generators to provide these services, but are generally able to offer at lower cost, because they do not have to incur opportunity costs and efficiency penalties to leave headroom to respond.

Figure 1 below demonstrates using real data from a DRAI member active in New Zealand that demand-side flexibility provides a large proportion of the market requirements for fast frequency raise services. On average, loads provide around 80% of the requirement, leaving the generators that would otherwise have capacity held in reserve for system services instead able to offer more energy.



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