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Dynamic Containment Terms and Conditions

Dear Sir/Madam,

In accordance with Article 18 of COMMISSION REGULATION (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing (EBGL), National Grid ESO is required to propose terms and conditions related to balancing.

This letter confirms terms and conditions for a new service, Dynamic Containment (DC), and how they comply with Article 18 of EBGL. Detailed references to the relevant service terms for the DC service have been included in Table 1 in Annex 1 of this letter.

If approved, these DC terms will then form part of the Article 18 terms and conditions as envisaged in CUSC section 4, paragraph 4.2B.5 and as required in that paragraph any subsequent amendments to the Article 18 terms within the DC terms will follow an amendment process which is compliant with the EBGL amendment process requirements.

DC has been developed in order to mitigate operational risks of larger system loss and lower inertia. With lower inertia on the system, the frequency changes more quickly. The DC service will provide fast-acting response that will reduce the overall volume of response needed and enable the system to be secure for a range of loss sizes & types.

In accordance with EBGL, a consultation on the Article 18 DC terms was launched from 21st August to the 21st September 2020. During this period NGESO also engaged with industry. Following the EBGL consultation for DC, we have made several changes to the relevant DC service terms reflecting the responses we received which in our view improve the terms. In total, we received 19 consultation responses, and have responded to each of these. Table 2 in Annex 2 of this letter includes these responses, and NGESO's reply to the points raised.

If you have any queries regarding this proposal, please contact Bernie Dolan on Bernie.Dolan@nationalgrideso.com.

Yours sincerely

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Annex 1

Amendment of EBGL Article 18 mapping for Dynamic Containment Terms and Conditions requirements

Please note: In accordance with EBGL Article 18, this table provides references to relevant parts of the GB codes and additional Service Terms which place obligations on registered service providers.

This document does not constitute compliance with Article 18 of the EBGL. Its purpose is to demonstrate where new Terms and Conditions for DC in the scope of EBGL Article 18 can be found. Where there is any conflict between this document, the Service Terms and GB Codes, the Service Terms and GB Codes shall take precedence.

Table 1

Below is the mapping of EBGL Article 18 with references for DC service terms:

Article	***Text***	***Code***	***Section***
18.2	The terms and conditions pursuant to paragraph 1 shall also include the rules for suspension and restoration of market activities pursuant to Article 36 of Regulation (EU) 2017/2196 and rules for settlement in case of market suspension pursuant to Article 39 of Regulation (EU) 2017/2196 once approved in accordance with Article 4 of Regulation (EU) 2017/2196.		
18.4	The terms and conditions for balancing service providers shall:	-	-
18.4.a	define reasonable and justified requirements for the provisions of balancing services;	Standard Contract Terms	**DC Service Terms** 5-Service Availability 6-Service Delivery 7-Availability Payments 15- Monitoring and Metering Data

18.4.b	allow the aggregation of demand facilities, energy storage facilities and power generating facilities in a scheduling area to offer balancing services subject to conditions referred to in paragraph 5 (c);		**DC Participation Guidance document** – Service parameters -Transitional Arrangements **DC Glossary** Part 4 Dynamic Containment Specific Terms- - Eligible Asset definition - Response Unit definition
18.4.c	allow demand facility owners, third parties and owners of power generating facilities from conventional and renewable energy sources as well as owners of energy storage units to become balancing service providers;		
18.4.d	require that each balancing energy bid from a balancing service provider is assigned to one or more balance responsible parties to enable the calculation of an imbalance adjustment pursuant to Article 49.		
18.5	The terms and conditions for balancing service providers shall contain:	-	-
18.5.a	the rules for the qualification process to become a balancing service provider pursuant to Article 16;	Standard Contract Terms	**DC Participation Guidance Document** -Service Parameters -Registration -Testing -Baselines -State of Energy -Data - Capacity Market -Active Network Management -Transitional Arrangements

			DC Tender Rules - 4 Registration

Article	*Text*	*Code*	*Section*
18.5.b	the rules, requirements and timescales for the procurement and transfer of balancing capacity pursuant to Articles 32, 33 and 34;	Standard Contract Terms	**DC Participation Guidance Document** Registration Tenders
			DC General Terms and Conditions 7- Assignments and transfer
			DC Tender Rules 5 – DC Tender Submissions 7 - Disqualification of DC Tenders 8 - Tender Assessment 9 - Acceptance and rejection 12 – Exceptional Circumstances
18.5.c	the rules and conditions for the aggregation of demand facilities, energy storage facilities and power generating facilities in a scheduling area to become a balancing service provider;	Standard Contract Terms	**DC Participation Guidance Document** Service Parameters Transitional Arrangements
18.5.d	the requirements on data and information to be delivered to the connecting TSO and, where relevant, to the reserve connecting DSO during	Standard Contract Terms	**DC Participation Guidance** Registration

	the prequalification process and operation of the balancing market;		Tenders Testing Settlement Baselines Data Transitional Arrangements **DC General Terms and Conditions** 8 - Confidentiality and Announcements 18 - EMR **DC Service Terms** Section 5 Service Availability 5.1, 5.2, 5.3 Section 6 Service Delivery 6.2, 6.3, 6.4, 6.5 13 -Communication 15 - Monitoring and metering data
18.5.e	the rules and conditions for the assignment of each balancing energy bid from a balancing service provider to one or more balance responsible parties pursuant to paragraph 4 (d);		**DC Service Terms** 16- ABSVD **DC Participation Guidance Document** Settlement
18.5. f	the requirements on data and information to be delivered to the connecting TSO and, where relevant, to the reserve connecting DSO to evaluate the provisions of balancing services pursuant to Article 154(1), Article 154(8), Article 158(1)(e), Article 158(4)(b), Article	Standard Contract Terms	**DC Service Terms** 13 -Communication 15 - Monitoring and metering data **DC Tender Rules**

	161(1)(f) and Article 161(4)(b) of Regulation (EU) 2017/1485;		4 - Registration 5 - DC Tender submissions
18.5. g	the definition of a location for each standard product and each specific product taking into account paragraph 5 (c);		
18.5.h	the rules for the determination of the volume of balancing energy to be settled with the balancing service provider pursuant to Article 45;		
18.5. i	the rules for the settlement of balancing service providers defined pursuant to Chapters 2 and 5 of Title V;	Standard Contract Terms	**DC Participant Guidance Document** Settlement **DC Service Terms** 7- Availability Payments 8- Payment procedure Schedule 2 - Availability Payments **DC General Terms and Conditions** 4- Payments
18.5. j	a maximum period for the finalisation of the settlement of balancing energy with a balancing service provider in accordance with Article 45, for any given imbalance settlement period;	Standard Contract Terms	**DC General Terms and Conditions** 4- Payment
18.5. k	the consequences in case of non-compliance with the terms and conditions applicable to balancing service providers.	Standard Contract Terms	**DC General Terms and Conditions** 6- Termination of Balancing Services Contracts **DC Tender Rules** 7- Disqualification of DC Tenders **DC Service Terms** 4, 5, 6, 11, 12, 14

			5.5 - settlement period of unavailability 5.6 - complied with SOE rules 5.7 - Unable to meet requirements - deemed unavailable 6.5 - failure to prep baseline - deemed unavailable 6.12 - non com SOE rules - deemed unavailable
18.6	The terms and conditions for balance responsible parties shall contain:	-	-
18.6. a	the definition of balance responsibility for each connection in a way that avoids any gaps or overlaps in the balance responsibility of different market participants providing services to that connection;		
18.6. b	the requirements for becoming a balance responsible party;		
18.6.c	the requirement that all balance responsible parties shall be financially responsible for their imbalances, and that the imbalances shall be settled with the connecting TSO;		
18.6. d	the requirements on data and information to be delivered to the connecting TSO to calculate the imbalances;		
18.6. e	the rules for balance responsible parties to change their schedules prior to and after the intraday energy gate closure time pursuant to paragraphs 3 and 4 of Article 17;		
18.6.f	the rules for the settlement of balance responsible parties defined pursuant to Chapter 4 of Title V;		

Article	*Text*	*Code*	*Section*
18.6.g	the delineation of an imbalance area pursuant to Article 54(2) and an imbalance price area;		
18.6.h	a maximum period for the finalisation of the settlement of imbalances with balance responsible parties for any given imbalance settlement period pursuant to Article 54;		
18.6.i	the consequences in case of non-compliance with the terms and conditions applicable to balance responsible parties;		
18.6.j	an obligation for balance responsible parties to submit to the connecting TSO any modifications of the position;		
18.6.k	the settlement rules pursuant to Articles 52, 53, 54 and 55;		
18.6.l	where existing, the provisions for the exclusion of imbalances from the imbalance settlement when they are associated with the introduction of ramping restrictions for the alleviation of deterministic frequency deviations pursuant to Article 137(4) of Regulation (EU) 2017/1485.		

Non- Mandatory elements

Article	*Text*	*Comment*
18.7. a	a requirement for balancing service providers to provide information on unused generation capacity and other balancing resources from balancing service providers, after the day-ahead market gate closure time and after the intraday cross-zonal gate closure time;	
18.7. b	where justified, a requirement for balancing service providers to offer the unused generation capacity or other balancing resources through balancing energy bids or integrated scheduling process bids in the balancing markets after day ahead market gate closure time, without prejudice to the	

	possibility of balancing service providers to change their balancing energy bids prior to the balancing energy gate closure time or the integrated scheduling process gate closure time due to trading within intraday market;	
18.7.c	where justified, a requirement for balancing service providers to offer the unused generation capacity or other balancing resources through balancing energy bids or integrated scheduling process bids in the balancing markets after intraday cross-zonal gate closure time;	
18.7. d	specific requirements with regard to the position of balance responsible parties submitted after the day-ahead market timeframe to ensure that the sum of their internal and external commercial trade schedules equals the sum of the physical generation and consumption schedules, taking into account electrical losses compensation, where relevant;	
18.7. e	an exemption to publish information on offered prices of balancing energy or balancing capacity bids due to market abuse concerns pursuant to Article 12(4)	
18.7. f	an exemption for specific products defined in Article 26(3)(b) to predetermine the price of the balancing energy bids from a balancing capacity contract pursuant to Article 16(6)	A derogation has been requested under Regulation (EU) 2019/943 Article 6(14) from the requirements of Regulation (EU) 2019/943 Article 6(2)
18.7. g	An application for the use of dual pricing for all imbalances based on the conditions established pursuant to Article 52(2)(d)(i) and the methodology for applying dual pricing pursuant to Article 52(2)(d)(ii).	

Annex 2

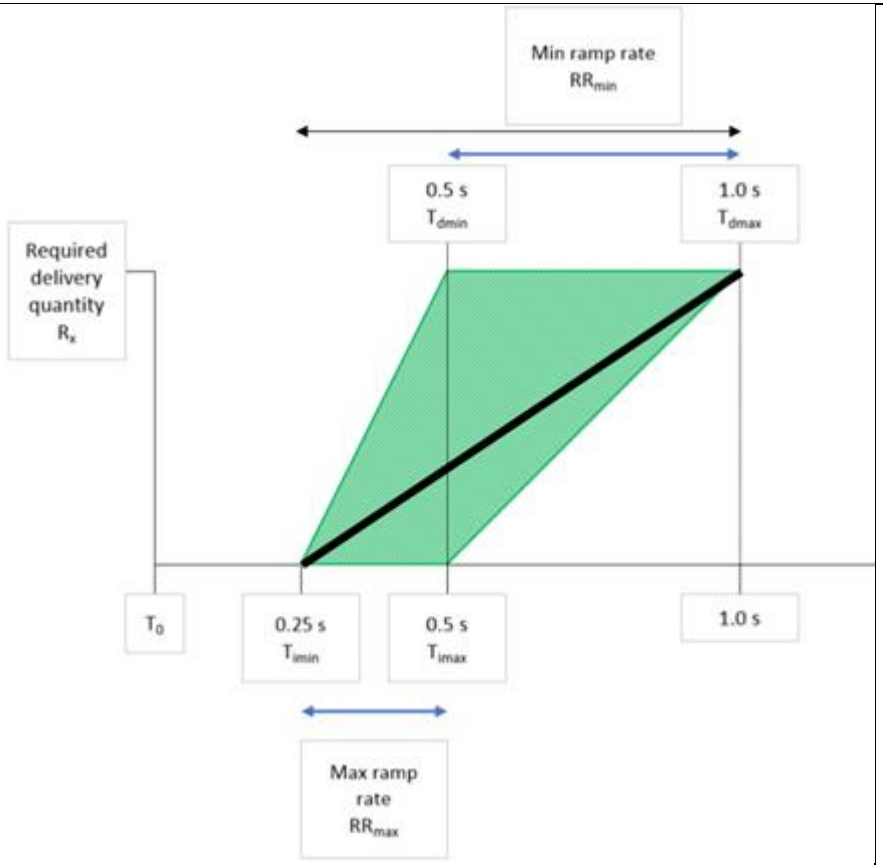
EBGL Article 18 Dynamic Containment Terms and Conditions Consultation Responses summary

Table 2

Summary of responses and key themes from the consultation responses and NGESO comments. For responses provided on the official template we have only included the specific questions the provider responded to, all other questions should be assumed as "no comment" from the provider. Where providers have submitted detailed letters or their response is very detailed on the response template NGESO has summarised the response into key themes.

Respondent	***Response or Key Theme***	***NGESO Comments***
Origami	**Q1. Do you agree with the approach taken in the proposal?** We support the proposal, which appears clear and comprehensive. In particular, we appreciate the day-ahead procurement process and the intent to support 'service stacking'. We believe that these are important enablers to fair and efficient markets for energy and balancing. The guidance on managing state of energy is welcome, and clearly set out, as is the approach to units that cannot initially meet the full data exchange requirements. **Q2. Do you have any comments on the proposal letter?** This is clear. We understand the requirement for faster-acting response, particularly as Great Britain transitions to new sources of inertia.	NGESO thank you for taking the time to provide feedback you have provided and look forward to working with you in the future. Thank you for your response.
Fraser Norris	**Q4. Do you have any other comments in relation to the proposal?** Minimum Ramp Rate for Response Delivery Page 16 of the Service Terms document defines the minimum ramp rate for response delivery as $$RRMin=RXTdMax-TiMax$$	NGESO would like to thank Fraser Norris for their response. We appreciate the graphic is potentially misleading as it is trying to illustrate a number of different elements, however the formula on page 16 of the Service Terms is correct.

	where TdMax is 1.0s and TiMax is 0.5s. The description states that RRMin is "the slowest ramp rate acceptable between change in response delivery and reaching the required delivery quantity". This description makes it very clear that a response rate slower than this is considered unacceptable, but can you confirm that the formula wasn't intended to be RRMin=RXTdMax−TiMin where TiMin is 0.25s. This would result in the minimum ramp rate possible within the area highlighted green in the response figure below.	**Regarding Testing guidance** Test 2.1 and 2.2 have been amended in the testing guidance and analysis tool to reflect the 0.25 minimum delay. The tolerance bands now reflect the time to reach the required delivery Table 5 has now been amended with all references to “b” removed. The table has also been simplified to be more user friendly format



Testing Guidelines Document
Figure 20 in the Testing Guidelines document relates to Test 2.2. It doesn't look like the minimum delay of 0.25s has been observed once the frequency drops below the threshold of 50.5Hz. Please can you confirm this?

	As an aside, Table 5 makes a reference to Tests “2.1b” and “2.2b” – is the 'b' reference a typo? A minor point - I appreciate that these are draft documents! Many thanks in advance, Fraser Norris	
Flextricity	**Q1. Do you agree with the approach taken in the proposal?** Flexitricity Limited broadly agrees with the approach in the proposal that the EBGL Article 18 terms and conditions are amended to include the Dynamic Containment terms and conditions. We acknowledge that the service is launching on “soft” terms in relation to 20Hz metering, but that this widening of requirement is for a time-limited period. We trust that verification checks are in place to ensure providers of DC are delivering a true service which can be verified through data analysis. The procurement cycle is day ahead and it is recognised by Flexitricity that for an initial period, tendering for the period 23:00 Saturday to 23:00 Monday will be executed on a Friday by 10:00. This does not cause a foreseeable issue however when systems allow after the 6 month period, true day ahead tendering is imperative. Flexitricity is comfortable with the proposal to require baselining for aggregated DSR assets which can deliver the service at one hour ahead.	Thank you for taking the time to provide feedback and we look forward to working with industry moving forward from soft launch. As part of the soft launch we have several transitional arrangements in place. One of which is a period of 6 months for providers to upgrade to 20Hz. ESO can confirm during the soft launch we will be running verification checks to ensure accurate delivery. We may use interpolation on 10Hz data to assess performance. Following engagement with Ofgem we will be running daily tenders, 7 days a week, procuring in 24 hour blocks 23:00-23:00.
National Grid Interconnectors	**Q1. Do you agree with the approach taken in the proposal?** The approach seems reasonable; however, it would be useful to understand what the reasoning/rationale is behind the linear increase to a maximum of 5% of Contract Quantity at 0.2 Hz, but beyond that figure, there should be a linear increase to 100%.	In response to Q1, there are two linear sections: 1. From 0.015Hz to 0.02Hz 2. From 0.2Hz to 0.5Hz At 0.5Hz deviation the required delivery is 100% of contracted quantity. The deadband of the service exists between 0Hz and 0.015Hz and is constrained by SOGL Article 155 (and Annex V).

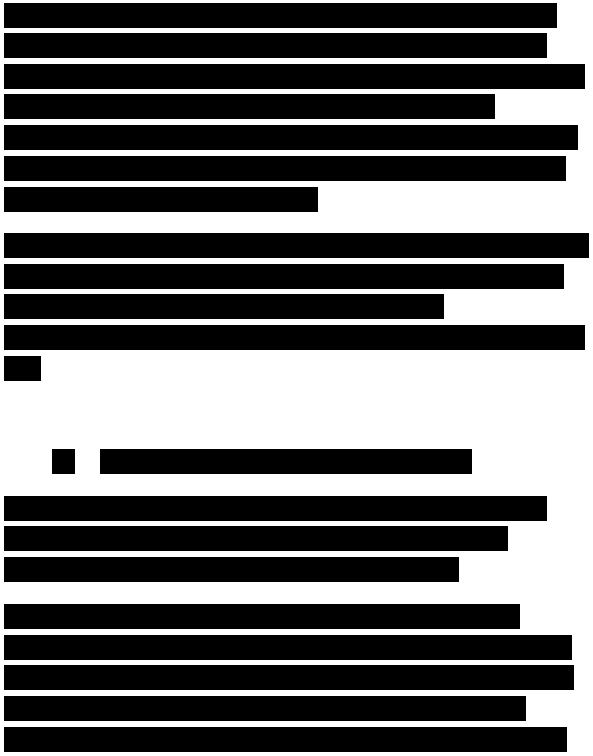
		In the first section between 0.015Hz and 0.2Hz only a small quantity of response is required to demonstrate that the service is performing as expected. The rapid rate of change in the second section is required to allow the service to arrest the change in frequency before it breaches the statutory limit past 0.5Hz
	Q4. Do you have any other comments in relation to the proposal? • With this being the soft launch, additional time will be needed to solve market access issues for Interconnectors, due to the involvement of continental partners. NGESO will need to facilitate the development of said market access in order to ensure a level playing field for all participants	In response to the **1st bullet point in Q4**, we recognise that some potential providers may face policy/regulatory/market barriers to participation and that for the soft launch and beyond there will be continuous engagement with industry in order to develop the service further. NGESO is fully supportive of working with all stakeholders to remove those barriers. This will speed the development of a competitive market that can deliver lower balancing costs to the end consumer. We look forward to this interaction and learning with industry.
	• We would like to see a greater push for daily auctions for the DC service to take place sooner. Whilst understanding that this is in the plans once the service expands, for participants such as Interconnectors, the sooner this move takes place, the sooner we can take part with greater comfort and assurance. When can we realistically expect the move to daily auctions?	In response to the **2nd bullet point**, our soft-launch will include a daily tender ESO will be running daily assessment and contract award for soft launch of Dynamic Containment Parties will have the ability to update their prices/withdraw bids daily should this be desirable. ESO are also excited to progress the service to a more automated procurement platform as we learn and develop the DC service.
	• In relation to the first response to Question 1 above, is there an absolute requirement for participants to meet all technical parameters or is there scope for participants to adjust them to enable an easier route to market? Perhaps even participate at specific frequency deviations as opposed to the entire range?	In response to the **3rd bullet point**, to ensure an equal and level playing field, it is important that all providers are able to meet the minimum technical requirements so that all bids can be assessed on the same basis. We have no plans to adjust the technical parameters for any particular participant or technology type. ESO have included several transitional arrangements to support the growth and entry in the DC market as it is launched.

	• Please could NGESO clarify how this service, and the suite of dynamic services, will operate in conjunction with the Phase 2 Auction Trial?	In response to the **4th bullet point**, DC is the first of our new suite of frequency products. The auction trial currently procures static and dynamic frequency response. The soft launch of DC is not anticipated to impact the volumes procured from the auction trial at this time and DC will be procured in addition to our current response procurement. Changes to requirements across all response procurement will be communicated to the market accordingly.
Peak Gen	**Q4. Do you have any other comments in relation to the proposal?** **Integer Physical Notifications / Baselines** We have a 3.5 MW battery which we could upgrade to deliver dynamic containment (DC). Against the DC specification the battery could deliver 3 MW of service and use the remaining 0.5 MW to manage state of charge. However, if we submit integer baselines we have to reserve 1 MW of the capacity for state of charge management, leaving 2.5 MW to provide service. As we are only able to offer integer service levels we have to round the service volume down to 2 MW. We think that requiring providers to submit integer baselines has the effect or removing volume from market (in the case of one of our batteries 33% of potential service is lost) which is both economically wasteful and reduces competition with knock on price rises to customers. Integer baselines also make charge management difficult. A 2 MW service can ramp at 0.1 MW/minute, taking 20 minutes to ramp from 0 MW to 1 MW back down again. This means that the minimum amount of energy you can add to your battery is 0.17 MWh. For a smaller battery this is a considerable volume and makes it harder to maintain an appropriate state of charge. Finally, the baseline has to be specified at the start of every half hour and has to be an integer – adding another constraint to state of charge	**Integer Physical Notifications / Baselines** Thank you for the insight provided. ESO BM systems use integer values for the planning and optimisation process. In the soft-launch phase of DC we have decided to remove any integer-only restriction on baselines. This will be achieved by allowing all participants to use up to four decimal places in their operational baseline as part of Performance Data. In practice this means that the issues described opposite can be mitigated. All providers using the data concentrator service to submit Performance Data will be able to specify the operational baseline in MW to four decimal places. We will use the operational baseline for performance monitoring. Response delivery will be calculated as: active power minus operational baseline. BM participants will need to ensure that their physical notification submissions are aligned with the operational baseline submitted via the data concentrator. The Service Terms will make it clear that any divergence of these two forms of

	management. For our battery it means that we effectively can't ramp over a settlement period start/end. From a service delivery perspective, or from the purposes of settlement calculation we don't see any advantage in requiring integer baselines. *Will you to reconsider and allow baselines to be specified to the nearest kW rather than MW* – this is a really important point for us? **Testing Parameters** Generally, in your test programme, you allow a tolerance of 3% of contracted service – this makes sense and is consistent with the contract performance requirements. However, when frequency is in the deadband, the tolerance reduces to 0%, and there is going to be some slight error (even if it is just metering noise). We suggest that you extend the 3% error allowance to cover this period to avoid the need for ITEs having to make extra engineering judgement. **Unavailability** When a service is unavailable, we need to be able to notify you – if you could publish a specification of how to do this, it would be incredibly helpful!	baseline should be explained by the provider and may lead to performance penalties. **Testing Parameters** We understand that there may be some meter noise and would ask that the ITE use sound engineering judgement to verify that the asset can meet the service specification in the deadband. The tolerances in the testing guideline are relative to the expected response quantity, not the contracted response quantity. Please see FAQ item 118. **Unavailability** We will be happy to provide a template for the notice of unavailability. This will be published before service go-live. Please note that the transitional arrangements will allow for unavailability to be communicated to NGESO via a template. Aside from the transitional arrangements, unavailability will be communicated via data concentrator as detailed in our recent onboarding communications.
Renewable Energy systems Limited	**Q4. Do you have any other comments in relation to the proposal?** We understand that Dynamic Containment is unlikely to create a business case in its own right for the financing of essential new flexibility assets. It is therefore key to the success of Dynamic Containment that it be "stackable" with other services. We note question 60 in the DC FAQs, which explains that Dynamic Containment is not currently considered a "Relevant Balancing Service" under Schedule 4 of the Capacity Market Rule but NGESO is engaging with the EMR Delivery Body on getting the	Thank you for your feedback and for taking the time to respond to this consultation. ESO can confirm that we are planning to ensure that the enduring DC service is stackable with other services. We recognise this is a crucial element to the success of our enduring products.

	new suite of frequency response products into the Capacity Market rules. We encourage NGESO to continue with this process in the timeliest manner possible and to ensure that DC terms are generally as "stackable" as is practicable. In particular, if DC is not stackable with a Capacity Market contract, then any battery project with a Capacity Market contract (the majority of the GB battery fleet) will be unable to participate.	Whilst the new suite of frequency response products is not currently considered under Schedule 4 of the CM Rules (Relevant Balancing Services), we are working to understand the timelines and requirements associated with CM rule changes, and how we remove these administrative blockers. Our intention is to add DC into Schedule 4 as soon as is practicable. Please also refer to the Ofgem consultation on Capacity Market rule change proposals, which is open until 22/10/20. We encourage providers to submit a response regarding Schedule 4: Relevant Balancing Services.
Zenobe	**Q1. Do you agree with the approach taken in the proposal?** We welcome the creation of a new service that aim to exploit the full use of new technologies to help stabilise the grid. Nevertheless we a have concerns about the strict requirements that some <1 year old battery assets are not able to meet and an even stricter performance calculation which doesn't take in account real expected behaviours of batteries and would penalise assets providing the required service and responding to frequency event **Q4. Do you have any other comments in relation to the proposal?** **This is a summary of the response due to the length of response and confidentiality stated by Zenobe** [redacted]	In response to Q1, we recognise that some assets may need investment in order to participate in our first major frequency reform product. ESO are considering modifications to the performance calculations after the soft launch. There is further information below regarding our thoughts on your proposal. Responses to the topics highlighted in **Q4**: [redacted]

[redacted]

		
Drax	**Q1. Do you agree with the approach taken in the proposal?** We understand the need for faster-acting frequency response products to address lower inertia levels as well as larger and more numerous losses. We agree that the number of significant losses and their absolute size will continue to increase as more interconnection, new nuclear (Hinkley Point C), and large offshore wind farms connect onto the system in the coming years. We have no comments in relation to the mapping exercise required by EBGL Art. 18, but make the following remarks on the substance of the ESO's proposal:	NGESO would like to thank you for taking the time to respond to the consultation. In response to **point a**, when designing our products we have worked with industry to ensure we can both meet the needs of the system and maximise participation from the market in order to drive competition. Over the last few years we have run a series of engagements to seek industry's input on our response product design, including workshops and webinars and believe that dynamic containment as designed will strike the right balance between being a product that maximises participation from a range of

	a) Technical specifications: While we recognise the need for a fast-acting product such as Dynamic Containment (DC), we believe that the ESO should have placed more emphasis in designing this new service in a way that enables participation from a wider range of technologies, maximising liquidity and competition. We note that other products, like Enhanced Frequency Response (EFR), have enabled the provision of fast-acting frequency response to the ESO from a wider range of resources. We encourage the ESO to engage with the industry and review the technical specifications of DC to ensure that they do not unduly exclude participation from potential service providers.	technologies whilst meeting the fundamental requirements of the system for a fast-acting response product. Dynamic containment is the first of three new response products and dynamic regulation and dynamic moderation will be introduced in the future as additional services participants can offer to NGESO, with slower response times in their technical specifications. We are committed to working with industry to ensure the success of these products and are open to exploring specific aspects of technical specifications for these products and opportunities to improvement where raised by providers.
	b) Interaction with other products: It is unclear why the ESO intends to compartmentalise the frequency response products in the way proposed. As DC will ultimately interact with the other two new frequency response products that the ESO has announced in its Product Roadmap - Dynamic Moderation (DM) and Dynamic Regulation (DR) - we would welcome further engagement to understand the basis on which the proposed frequency ranges corresponding to each of the three products have been selected. A balance must be found between the three products (and the volumes procured for each service), making good use of existing and new resources to maximise competition for the provision of frequency response, whilst not compromising system security. Also, it is important that the ESO makes clear that an asset will be able to provide all three envisaged frequency response products as the frequency shifts between 49.5Hz and 50.5Hz at any point in time. It seems inefficient to exclude a provider from one product while the asset is providing another and neither product diminishes the other.	In response to **point b**, the three response products in the Product Roadmap address different system needs. We intend to procure them separately as we require different volumes of each service, which will vary according to system conditions. Details of product stacking and market structure will be determined as the products are developed.
	c) Inertial Response: The need for the new frequency response services seems to be driven by reducing system inertia. As the presence of inertia moderates the need (MW) for these new frequency response services, we believe it is essential that the ESO creates effective investment signals for the provision of inertia by synchronous generators. We note that inertia secured through the Stability Pathfinder requires 0MW active power output. We would welcome engagement with the ESO to examine	In response **to point c**, thank you for this feedback. We welcome continued engagement with our other projects such as the Stability Pathfinder. Note this consultation does not have the scope to directly change the stability pathfinder work and

	cost-efficient options that ensure inertia provided by synchronous assets when they generate electricity is explicitly and appropriately valued.	we encourage these discussions to take place through your account manager and Stability team.
Arenko	**Q1. Do you agree with the approach taken in the proposal?** Arenko agree with the approach taken in the proposal and are supportive of the intent of a new Dynamic Containment service as a post fault service to be provided by fast acting assets. **Q2. Do you have any comments on the proposal letter?** Arenko are very much engaged in the process of bringing this service to market and would reference the number of outstanding clarification questions we have emailed to the markets design team on the detail of the service terms. **Q4. Do you have any other comments in relation to the proposal?** We would recommend earlier engagement with industry on service terms and testing for future services. We feel there is a disconnect between the technical requirement of the service and the testing process. Quality of initial service must be maintained to ensure success of the service. Relaxing standards would lower quality of the service, hindering competition and result in an uneven playing field where low-quality service wins over correct service provision. The final service design needs to ensure that this can be stacked with other markets specifically the balancing mechanism.	In **response to Q1 and Q2,** National Grid ESO is pleased that Arenko have been engaged with the Dynamic Containment service and are supportive of the proposal. In r**esponse to Q4,** National Grid ESO would like to thank Arenko for this feedback. Whilst the ESO is initially procuring a 24/7 service our plans for the enduring service is to ensure that this is stackable with other services. ESO take on board the desire for us to maintain high standards to demonstrate a high quality product.
Centrica	Centrica provided NGESO with a detailed letter, NGESO has summarised the letter here; 1) The proposed requirements impose barriers for participation of residential flexibility to the market	**1) The proposed requirements impose barriers for participation of residential flexibility to the market** Thank you for taking the time to respond to the consultation. When designing our products we

	2) Proposed baselining requirements will unduly limit participation of non-dedicated assets (i.e. behind-the-meter), such as residential IoT and Solar PV 3) Proposed baselining requirements will unduly limit participation of non-dedicated assets (i.e. behind-the-meter), such as residential IoT and Solar PV 4) The last-minute performance monitoring scheme proposed in the service terms are highly concerning as they set out disproportionate requirements that will not contribute to enhance quality of performance 5) The procurement details for the soft launch add unnecessary complexity and risks for market participants 6) Clarification on margin error for frequency measure 7) Errors and missing data resulting from service terms 8) Testing guidance clarificaition 9) Relevant Balancing Service & Capacity Market impact	have worked with industry to ensure we can both meet the needs of the system and maximise participation from the market in order to drive competition. Over the last few years we have run a series of engagement activities to seek industry's input on our frequency response product design, including workshops and webinars and believe that Dynamic Containment as designed will strike the right balance between being a product that maximises participation from a range of technologies whilst meeting the fundamental requirements of the system for a fast-acting response product. Dynamic Containment is the first of three new response products and Dynamic Regulation and Dynamic Moderation will be introduced in the future as additional services participants can offer to NGESO, with slower response times in their technical specifications. We are committed to working with industry to ensure the success of these products and in our learn-by-doing approach for the soft launch of DC, we are open to exploring specific aspects of technical specifications for these products and opportunities to improvement where raised by providers. **2) Proposed baselining requirements will unduly limit participation of non-dedicated assets (i.e. behind-the-meter), such as residential IoT and Solar PV** We appreciate that for certain types of assets the forecast of a baseline is difficult and we note with great interest the technical solution you have described. However, for the soft launch of DC this solution could not be accommodated at this time and so this is something for future consideration. There are some general points that we would like to make:

		• Each provider should provide a baseline or NGESO cannot use this to forecast future system conditions • To provide a baseline, knowledge is needed of the local configuration of assets – the provider has this and NGESO should only see an aggregated output. • The raw data described in your proposal is available to the provider, and it is the responsibility of the provider to convert this to a baseline for NG ESO • We agree that each individual asset is random in nature but when aggregated the provider should be able to give an "average" output Getting accurate data is of great interest for NGESO so we would not rule out the developments described here but they will need development for future enhancements. **3) Proposed baselining requirements will unduly limit participation of non-dedicated assets (i.e. behind-the-meter), such as residential IoT and Solar PV** As DC is a faster service it requires greater granularity of meter readings. The ESO will monitor this during the six month transitional arrangement and review, sharing our findings with industry. All units will need to pass pre-qualification before participating in the soft launch. Performance Data can be provided at 10Hz for up to six months after go-live. A pre-qualification of the ability to provide data at 20Hz will be required (for those units that upgrade their capabilities from 10Hz to 20Hz). For the avoidance of doubt, testing must take place at 20Hz granularity.

		4) The last-minute performance monitoring scheme proposed in the service terms are highly concerning as they set out disproportionate requirements that will not contribute to enhance quality of performance After the soft launch we will consider modifying the error calculation. Potential changes are to use a high percentile error rather than the maximum across the whole settlement period, or to set a minimum duration that an error must be sustained to be registered. We cannot offer an average error calculation as it would drastically reduce the sensitivity of the measure. Performance during the seconds after a frequency event are significantly more important, and this is especially true for Dynamic Containment. We would be interested to hear whether you think these options would help. Please can you get in touch via your account manager, or email us at box.futureofbalancingservices@nationalgrideso.com **5) The procurement details for the soft launch add unnecessary complexity and risks for market participants** We understand your feedback on multiple platforms – it is our intention, over time, to rationalise the auction platforms but in the interests of getting DC operational as soon as practicable we have implemented the current approach The 'random selection' approach is not perfect, but it is used as it is fair on all participants. We will look to improve this element of the procurement

		process as we gain experience in the soft launch, at which point we will have an understanding of provider performance [something which we cannot implement from day 1]. We will look at the timing of auctions and will also consider the use of divisible bids in the future. Thank you for your questions and suggestions regarding the testing guidance and analysis tool. We have amended Appendix B table 8 and Appendix C to reflect injection and measured output granularity. To summarise these amendments, it now says that the injected frequency is required to be at 2 decimal points accuracy and the provider must be able to record the input frequency to 3 decimal points accuracy. **6) Clarification on margin error for frequency measure** The required margin error of 0.001Hz is suitable and we believe is not too onerous. The service specification includes a deadband up to 0.015Hz and this is why we changed the margin error to 3DP (0.001Hz). It is paramount that assets are able to meet the service specification in order to participate in delivering DC. **7) Errors and missing data resulting from service terms** We will continue to work with industry throughout the soft launch of DC, taking on board feedback and learnings for the full delivery. Gaps in the real-time data are to be expected but there is not

		currently a view on what level of data streaming quality is acceptable. We will develop this aspect throughout the soft launch. **8) Testing guidance clarification** We do not believe our work to change LoM relays through the ALOMCP is contradictory with the DC service specification. Both projects are necessary to secure large losses on a low inertia system. We are happy to work with all stakeholders if elements of the testing guidance have negative impacts on service delivery. **9) Relevant Balancing Service & Capacity Market impact** Whilst the new suite of frequency response products is not currently considered under Schedule 4 of the CM Rules (Relevant Balancing Services), we are working with our EMR colleagues to understand the timelines and requirements associated with CM rule changes, and how we remove these administrative blockers. Our intention is to add DC into Schedule 4 as soon as is practicable. Please also refer to the Ofgem consultation on Capacity Market Rules change proposals, which is open until 22/10/20. We encourage providers to submit a response regarding Schedule 4: Relevant Balancing Services.
ADE	**Q1. Do you agree with the approach taken in the proposal?** The ADE agrees with the EBGL mapping but believes that Dynamic Containment's service design risks going against the spirit of EBGL requirements, particularly avoiding undue barriers to entry for new	NGESO believes that the product is compliant to all relevant regulations. The DC product has been developed to be technology agnostic (as prescribed by our license obligations). Within the license obligations also is to manage operational

	entrants (1(e)), facilitating participation of demand response (1(f)) and facilitating participation of renewable energy sources (1(g)). The ADE would like to acknowledge that NGESO has made a clear effort to engage on the service design over the past six months and has taken providers' comments into account on a number of parameters, particularly around the need to be able to aggregate over a wider geographical area than GSP. We look forward to continuing this engagement, including on how to provide more certainty of location without introducing overly restrictive locational requirements, and on the topics below. Currently, however, the requirement to submit a baseline an hour ahead of service delivery presents difficulties for many providers, with a consequent risk of assets capable of providing the service not entering the market. The ADE believes that the ESO should consider alternative approaches to addressing the needs that the requirement seeks to meet. Providing a baseline an hour ahead of service delivery is difficult for assets other than standalone batteries (that are not entered into any other service or being used for self-consumption) and interconnectors due to the risk of the baseline changing. If this requirement is maintained, there is a risk that this number will often be inaccurate. As this requirement excludes many assets, there is a risk that it is not reasonable and justified under clause 4(a).	security, for which DC is critical. With a changing energy landscape, we are seeing new operational scenarios that we need new products to manage. DC helps to reduce some of the risk we are seeing as a result of this changing energy landscape. When designing our products we have worked with industry to ensure we can both meet the needs of the system and maximise participation from the market in order to drive competition. Over the last few years we have run a series of engagement activities to seek industry's input on our frequency response product design, including workshops and webinars and believe that Dynamic Containment as designed will strike the right balance between being a product that maximises participation from a range of technologies whilst meeting the fundamental requirements of the system for a fast-acting response product. We are committed to working with industry to ensure the success of these products and are open to exploring specific aspects of technical specifications for these products and opportunities to improvement where raised by providers. For the soft launch of DC we have introduced several transitional arrangements that provide a six month grace period to allow for wider aggregation of existing assets. As the quantities and significance of DC increases the ESO requires greater granularity on the locational detail of providers. This is required to allow the ESO to efficiently manage locational constraints and network configurations that may result in some quantities of response being sterilised. We are committed to engaging further

	Baselining requirements should be scoped so that they are suitable for the variety of different assets and portfolios that can provide the service. This will help to fulfil the ESO's license obligation around encouraging competition, as well as compliance with the spirit of EBGL, by facilitating participation of a wider pool of assets, including demand response and renewable assets. A reformed approach is likely to involve accepting that it should be possible to fulfil three functions - measurement of service delivery, visibility of what will happen system ahead of real-time and preventing herding - in three different ways, rather than requiring them all to be fulfilled via use of an hour-ahead baseline. The ESO should therefore either: - Allow submission of baselines to measure service delivery five minutes or less before real-time - Do all measurement via a derived signal that excludes the non-Dynamic Containment elements For either option, measures would need to be put in place to prevent gaming – this is a relatively common and easy problem to solve through use of statistics. For the derived signal option, a change would need to be made to clause 6.2 of the Service Terms, to allow a derived signal to be sent in place of Active Power Output. In order to reduce the risk of herding, ramp constraints and recharge delays should be put in place.	on this topic throughout the soft launch period of DC. We appreciate that for certain types of assets the forecast of a baseline is difficult, and we note the possible ideas you have suggested. However, for the soft launch of DC these solutions could not be accommodated at this time and this is something for ongoing consultation during the initial learnings from the soft launch of DC. There are some general points that we would like to highlight around baselines. Baselines are required for several reasons; to assist the ESO in system planning, to act as a datum for performance monitoring and to facilitate state of energy management. To provide a baseline, knowledge is required of the local configuration of assets. NGESO are not responsible for parties' assets and providing a baseline for ultimately what will be a significant sized market cannot be the responsibility of the ESO. The raw data described in your proposal is available to a provider and this should the responsibility of the participant to convert this to a baseline. NGESO are not close enough or have the detailed knowledge of operation, technical setup, running schedules of every asset participating to undertake this activity. We agree that each individual asset is random in nature but when aggregated the provider should be able to give an "average" output. Getting accurate data is crucial for NGESO so we would not rule out the developments described here, however they will need further review for future enhancements.

	The ADE would also note that, while not as significant a barrier as the baselining issue, the requirement for 20Hz metering is likely to exclude smaller assets, particularly domestic ones, from participating in the service, thereby reducing market liquidity and increasing costs to end consumers. The ESO should monitor the need for 20Hz metering throughout the first six months of the service and demonstrate where the increased granularity has been key in communicating an essential piece of information.	Our position on 20Hz metering remains unchanged. As DC is a faster service it requires greater granularity of meter readings. The ESO will of course monitor this during the six month transitional arrangement and review, sharing our findings with industry.
	Finally, the ADE would recommend that Dynamic Containment be considered a Relevant Balancing Services for the purposes of the Capacity Market. If this is not to be the case, NGESO should clearly justify why not.	Whilst the new suite of frequency response products is not currently considered under Schedule 4 of the CM Rules (Relevant Balancing Services), we are working with our EMR colleagues to understand the timelines and requirements associated with CM rule changes, and how we remove these administrative blockers. Our intention is to add DC into Schedule 4 as soon as is practicable. Please also refer to the Ofgem consultation on Capacity Market Rule change proposals, which is open until 22/10/20. We encourage providers to submit a response regarding Schedule 4: Relevant Balancing Services.
Enel X	**Q1. Do you agree with the approach taken in the proposal?** No. While NGESO's team has made a good effort to engage with stakeholders since January this year, they have not yet fixed enough of the serious problems with the original design of the Dynamic Containment product for it to be workable. The current proposals are not consistent with the EBGL objectives, as specified in Article 3(1) of the EBGL. Specifically, objective (e) is for procurement to be fair and to avoid undue barriers to entry, objective (f) is to facilitate the participation of demand response, and objective (g) is to facilitate the participation of renewable energy sources.	Thank you for taking the time to provide your response. NGESO believes that the product is compliant to all relevant regulations. The DC product has been developed to be technology agnostic (as prescribed by our license obligations). The license also requires us to manage operational security, for which DC is critical. With a changing energy landscape, we are seeing new operational scenarios that require new products like DC. DC helps to mitigate some of the risk we are seeing as a result of this changing energy landscape.

	In addition, Article 3(2)(a) puts an obligation on NGESO to “apply the principle of proportionality and non-discrimination”, and Article 18(4)(a) requires the terms and conditions to be “reasonable and justified”. The terms and conditions as currently proposed include unreasonable and disproportionate requirements which needlessly discriminate against participation by demand response and renewable energy sources. No attempt has been made in the provided documents to justify these requirements. Ideally, the design process should be re-started, with NGESO genuinely acting on stakeholder input from the start, so that we can arrive at a suite of frequency response products which makes efficient use of the capabilities of all relevant technologies. If we can only make only minor changes from the currently-proposed design (because so much effort has been invested in the current design, despite its evident flaws, and there’s now some urgency to implement faster products), then we will be stuck with a product mostly suitable for batteries (and maybe interconnectors and renewable generators). However, there is at least the opportunity to allow participation by **non-dedicated batteries** and renewable generators, and to **reduce the needless degradation** of participating batteries. The first will allow much broader participation and hence more competition, bringing down costs; the second will directly reduce wasteful costs. Fixing both these issues should bring the terms and conditions closer to being reasonable and proportionate. It would be inappropriate to start procuring Dynamic Containment before these issues are resolved. **Participation by non-dedicated resources** The terms and conditions propose that the response of each unit is measured relative to an Operational Baseline specified an hour ahead of delivery. For a dedicated resource, such as a battery only being used to provide frequency response, this is not a problem: the operator can straightforwardly identify exactly what the battery will be doing, including managing the state of charge in accordance with the management rules.	Alongside DC, further products are also being developed (Dynamic Regulation and Dynamic Moderation). We will continue to work with industry and develop the product such that it meets the system requirements and takes on broad feedback from market participants. In response to the points raised around **Participation by non-dedicated resources;** 1. EBGL Article 3(f) highlights the delicate balance required between facilitating wide

	Where the resource is not dedicated to providing frequency response services, however, this can cause an insuperable barrier to participation. To give some specific examples: 1. An uninterruptible power supply in a telephone exchange or a data centre could provide the Dynamic Containment service by charging or discharging its batteries. The technical capabilities are just the same as for a dedicated battery, except that flow through the inverters consists of the flow to and from the battery superimposed on the flow through to the site load: there is no one place that a meter can be placed that will measure just the flow to and from the battery. Attempting to measure the response relative to an hour-ahead Operational Baseline, as proposed in the terms and conditions, would treat the provider's errors in predicting the consumption of the site load as errors in the site's Dynamic Containment response. This is particularly problematic because such sites can typically only offer a fraction of their demand for frequency response service, which has the effect of magnifying any demand prediction errors. We have assessed data from many of our customers' sites and found that, even for the most stable of the data centres, the hour-ahead prediction error on the site's demand would make a perfectly accurate Dynamic Containment response appear to exceed the performance bounds. They therefore could not participate, despite being a highly accurate, reliable, and cost-effective source of fast frequency response. 2. A wind or solar farm could provide Dynamic Containment by reducing its output below its available power by the amount needed to deliver the Dynamic Containment service. There is nowhere that a meter can be placed to measure this reduction. Using the proposed hour-ahead Operational Baseline approach, any errors in the hour-ahead wind/solar power available forecast would be treated as errors in the delivery of Dynamic Containment. We suspect that this would preclude such resources participating, despite them having the potential to be an extremely cost-effective source of downward frequency response. 3. A fleet of electric vehicle chargers could provide the Dynamic Containment service by modulating its charging rates. It is the available modulation depth that determines the volume of Dynamic Containment the fleet can provide. The operator should	participation and ensuring competition on a level playing field. We believe that the service terms for DC, in particular the requirement for a baseline, offer a reasonable compromise between participation and competition. - Dynamic containment is a valuable addition to our frequency control toolkit, both now and in the future. As such we need confidence that all providers can deliver adequately in the event of a major frequency deviation. Requiring a baseline allows the ESO to measure performance. It is important that all providers have their performance assessed on the same terms. In the GB market baselines are submitted 1hr before delivery. We acknowledge that reducing the lead-time and duration of baselines could increase participation. However this would require significant changes to core ESO operating processes and methods. This is not something we have the capability to do during the soft-launch. We do not intend to introduce shorter baseline requirements for DC however we see the value in continued engagement with the whole industry on this topic. 2. We agree that wind and solar can provide DC via the creation of suitable headroom and footroom. We also agree that these resources will be extremely cost-effective in the provision of high-frequency response. We are happy to work with industry to improve the

	be able to predict this with good accuracy, by modelling the minimum number of vehicles likely to be charging at each time of day, then allowing a margin. They will then be able to provide that volume of Dynamic Containment service reliably. However, they cannot predict with anything like the same accuracy the total charging load across the fleet at any given time. This figure is irrelevant to the delivery of the actual Dynamic Containment service, but under the proposed terms and conditions, they would need to predict this as the Operational Baseline, and any prediction errors would be treated as errors in the delivery of the service. This shortcoming of the measurement methodology would needlessly prevent such resources from participating, despite them having the potential to be an extremely cost-effective source of upward frequency response. In each of these cases, the resource can reliably and accurately provide the actual response required for Dynamic Containment, but the proposed measurement methodology would treat prediction errors in the Operational Baseline as if they were errors in delivering Dynamic Containment. [In theory, such resources could actively modulate their response to follow the Operational Baseline, but this would be extraordinarily wasteful, often requiring much larger responses than delivering the required service, sometimes in the opposite direction. It would be absurd to waste real resources merely to work around the shortcomings of a measurement methodology, rather than fixing the measurement methodology.] The ADE has proposed that this issue be avoided by taking measurements relative to a baseline that's specified as close to real time as possible, so that prediction errors are minimised. This would be a sensible approach, which would work for all the examples above. It would, however, mean that the other functions of the Operational Baseline – avoiding herding behaviour and limiting ramp rates for state of charge management – would have to be implemented explicitly in some other way. It would also require some monitoring, to ensure that participants could not cheat by moving their near-real-time baseline figure in response to the frequency, but this should be straightforward to detect through statistical tests.	robustness of forecasting for operational baselines. 3. We will continue to consult on potential changes to the baselining regime during the soft-launch.

	We would also support an alternative approach, suggested by NGESO at its meeting with ADE members on 10 September, of using a derived measurement of the resource's Dynamic Containment response, rather than raw measurements of Demand or Output. This has the advantage of allowing the Operational Baseline structure (and multiple functions) to be retained, so it does not need many changes to the proposed terms and conditions. Considering our examples above: • For data centres, this signal could be derived by difference metering between the input and the output of the uninterruptible power supply. • For telephone exchanges a similar difference metering approach could be used, although the output meter would have to measure direct current. • For wind and solar generators and for electric vehicle chargers, there's nowhere that meters can be placed to isolate the Dynamic Containment response, as there's no way of directly measuring what the output (in the case of wind or solar) or demand (in the case of chargers) would have been if it had not been reduced to provide Dynamic Containment. However, that information is available from the control system – for the renewable generators, it's the "power available" signal. Since this is not a direct measurement, it may make sense to involve an Independent Technical Expert to verify that this signal is genuine, not frequency dependent, and not being somehow used to mask state-of-charge management activities. Either of these approaches – near-real-time baselines, or measurement from derived signals – would make it possible for some non-dedicated resources to participate. Shortcomings of the measurement methodology cannot possibly be a justification for preventing them from participating, so one or both of these approaches should be adopted. **Reducing needless degradation of batteries** Despite the stated intention that Dynamic Containment be a post-fault service to deal with large frequency deviations (beyond +/- 200 mHz), the terms and conditions specify a dead-band of only +/- 15 mHz.	On the points raised about **reducing needless degrading of batteries.** The wording of SOGL Article 154 is: *1. Each reserve connecting TSO shall ensure that the FCR fulfils the properties*

	This would be an appropriate dead-band for a regulation product (such as Dynamic Regulation), but not for a dedicated containment product. When we shared this requirement with an expert in using batteries for frequency response, who wasn't previously familiar with NGESO's proposals, their response was "They've got to be kidding." We understand that the purpose of requiring this response to small frequency deviations is to give NGESO confidence that units are responsive, by seeing small responses frequently. We agree that there may be some benefit in this (although we note that other system operators manage to have sufficient confidence without any real-time visibility at all), but only if the costs are not disproportionate. In this case, they are. Even though the response required between 15 mHz and 200 mHz only ramps up to 5% of the contracted quantity, since the system spends so much more time in that range than beyond 200 mHz, this "small" response comes to completely dominate the throughput of the battery. Our modelling using 2019 frequency data shows that a battery providing Dynamic Containment would have 83x more energy throughput providing this confidence-giving response between +/- 15 mHz and 200 mHz than it would providing the real containment service when it is actually needed at deviations beyond 200 mHz. The degradation of battery packs is roughly proportional to their energy throughput. Hence requiring a 15 mHz dead-band instead of a 200 mHz dead-band increases the battery degradation component of the cost of providing this service by a factor of over eighty. It seems very unlikely that the benefit of "added confidence" is worth quite this much, so the requirement is unreasonable and disproportionate. After made this point in a previous consultation, we received the verbal response that it is required under the System Operation Guideline. Indeed, Schedule 1 of the proposed Service Terms indicates that the +/- 15 mHz dead-band was chosen to align with SOGL Article 154 Annex 5. However, we do not believe that SOGL requires NGESO to specify a dead-band this small for this service. In particular, we note that other TSOs have interpreted SOGL differently. Specifically, EirGrid and SONI allow providers of dynamic Fast Frequency Response under their DS3 programme to choose what dead-band they	*listed for its synchronous area in the Table of Annex V.* Annex V states: (our emphasis) ***Maximum*** *combined effect of inherent frequency response insensitivity and possible* ***intentional frequency response dead band*** *of the governor of the FCR providing units or FCR providing groups.* The value given in the table for GB is 15mHz. We have worked within this limitation to specify a service that reduces, as much as possible, the energy throughput of storage assets. Other TSOs and their National Regulating Authority are free to interpret and implement the regulation to ensure the secure and economic operation of the system.

	offer, which affects the value of the service through a "frequency trigger scalar". For low-frequency services, 49.985 Hz (i.e. 15 mHz deviation) is the **smallest** dead-band they will accept, not the largest they believe is allowed under SOGL: > "We retain our position, as outlined in the consultation paper, that the upper threshold for the trigger scalar of 49.985Hz is appropriate as it reflects the maximum frequency dead-band of 15mHz for Governor Control Systems allowable under the Grid Code and differentiates between the containment of frequency events and the pre-fault regulation of reserve." [p.29 of DS3 System Services Scalar Design recommendations paper, 23 Oct 2017.] We also note that the text in SOGL Article 154 Annex 5 is not new: exactly the same requirements were included in Article 44(1) of the predecessor to SOGL, the Network Code on Load-Frequency Control and Reserves, back in 2013. And yet NGESO was able to introduce the Enhanced Frequency Response service, with a 100 mHz dead-band, without any similar concerns. We therefore recommend that the dead-band be widened, so as to reduce the energy throughput required from participating batteries. This will make participation attractive for a range of non-dedicated batteries, increasing competition and hence reducing the total cost of the service. The simplest way to do this would be to remove the knee-point in the response at +/- 200 mHz. If the response beyond 200 mHz were kept exactly as currently proposed, then this would lead to a 184 mHz dead-band. Alternatively, the product could be respecified with delivery starting from 0% at 200 mHz: this would be the best option, in terms of minimising needless battery degradation.	
Gresham House	**Q1. Do you agree with the approach taken in the proposal?** Yes. It is good to see NGESO finally delivering a new product from the roadmap albeit in a soft launch. It would be useful for a future roadmap to be released with timescales of how response products will be changing over the next year or two as there is currently a lot of uncertainty making investment decisions more challenging.	NGESO thank you for the feedback you have provided and for taking the time to respond to the consultation. In response to **question 1**, our existing Frequency Response and Reserve Roadmap will be updated to include the full delivery of DC. We

	Q4. Do you have any other comments in relation to the proposal? **Section 16 – DC Service Terms** We do not believe that BM units participating in DC should not automatically have response energy volumes included within ABSVD and rather it should be a tendered parameter. It does not create a level playing field between BM units and non-BM units. In the case of a low only service it is a further disadvantage to not be given the choice, the only response energy in delivering this service is for providing export – in this case it is likely to be preferred to have this energy delivery settled at imbalance. **Baseline Volume** There is a lack of clarity around how this baseline volume is to be determined, does it have to be uncontracted volume? If so, we do not believe this is necessary for delivery of an asymmetric product. The required response volume can be delivered from any baseline and SoE rules still maintained if the baseline volume is free to come from contracted volume.	have also included the roadmap dates in the ESO Forward Plan, to bring all our plans into one place. In response to **question 4** in relation to the **section 16** point raised, the current Applicable Balancing Services Methodology Statement (ABSVD) is applicable to all BM service providers in respect of Frequency Response services (NBM service providers are excluded). Our approach for the DC soft launch is consistent with this methodology statement and the P354 changes made to the statement for April 2020. However, we have an opportunity to learn as we introduce the DC soft launch. If learning from the service shows that ABSVD is not appropriate, then there is the possibility of reviewing the approach through the C16 Consultation. In response to the **baseline volume** point raised, The operational baseline is defined in the **DC Glossary** page 13 as: *the Service Provider's best estimate of Active Power Output or Demand from or attributable to a Response Unit in any Settlement Period, as notified to NGESO in accordance with the DC Service Terms;* As it is provided in MW the baseline is a quantity, not a volume. The baseline should always represent what the unit would be doing (generation or demand) if no frequency response is required. There is no firm relationship between the baseline and any uncontracted quantity. We will measure delivered response from the baseline, so it is vital that the unit can accurately follow the baseline. Section 6 of the **Service Terms** explains the requirement and rules for baselines in detail. The provider may submit any baseline that complies

		with the rules in section 6. The **Participation Guidance** document gives a worked example of baseline use and submission for an energy limited provider.
	Continued procurement of asymmetric service We believe it is in the best interests of the market for this service to continue to allow asymmetric delivery of this and future response products. This will open up the capability to renewable energy generation to contribute in these marketplaces. We note it is the intention to continue to procure the services independently when required	In response to **the continued procurement points** raised, based on feedback from our weekly Auction Trial, the standardised product design (P=S=H) was viewed as a barrier to entry for some parties who have asymmetric capabilities. ESO confirms we intend to procure the high and low element of the service separately as we transition through our soft launch. Further information will be shared with the market accordingly.
	Timescales We previously note it is pleasing to see this new product being implemented quickly, however this has caused some uncertainty in allocating resources to run tests whilst the guidance is under consultation. It would be preferred in the future if implementation of new services was not under draft documentation.	In response to the points raised around **timescales**, in order to facilitate a service that is compliant with EBGL, ESO are required to conduct a consultation on the documents and mapping we intend to use for the DC service. As a result, these are published in draft format as there may be subsequent changes from the outcome of the consultation. ESO have taken into account all the prior engagement and collaboration of DC workshops and forums in determining these drafts. However, we appreciate we are delivering the project under challenging timescales. Through a soft launch approach both ESO and providers are able to take the service live and gain real life learnings and development.
	Response Energy Payments We can see there is no mentioned of response energy payments for balancing mechanism units in any of the service documentation. This would appear to disadvantage units who may be delivering this service and incurring a fuel cost, as with other response products we believe this service should also receive a response energy payment for delivery. Especially considering the automatic ABSVD of response energy.	In response to the points raised about **Response Energy Payments**, the treatment of Response energy is consistent with the weekly auction trial service where neither BM nor non-BM is paid for response energy, and with a European FCR product that has been publicly consulted and approved. Availability payments are being paid as part of this service and energy costs should be factored into the tendered price. Response energy

		payments are not normally included within FCR products due to the very small volume that is used and occurrence which makes settlement not practicable for any party.
SSE	**<u>Question 1 Do you agree with the approach taken in the proposal? Please provide rationale</u>** **We do not agree with the approach taken in the proposal.** As we set out in our response to the equivalent Article 18 consultation in May for the ODFM balancing service, this is because, in our view, the proposed approach fails to ensure that the proposed new balancing service of Dynamic Containment is in compliance with the requirements set out in the Electricity Balancing Guideline (EBGL)[1] and the System Operation Guideline (SOGL)[2] in terms of the following: 1) EBGL Article 18 itself in terms of harmonisation etc.; and 2) SOGL pre-qualification requirements (set out in Article 16 of EBGL). Before we address these two points in turn we note that the 25 detailed questions of a legal nature that we sent to the TSO (NGESO) and the NRA (Ofgem) early last November (and subsequently shared with the Grid Code Review Panel in early December) concerning the legal status of the NRA's 8th October 2019 'decision' letter relating to the TSO's EBGL Article 18 proposal of 4th August 2019 remain unanswered. Our answer to this 21st September 2020 EBGL Article 18 proposal consultation by the TSO is without prejudice to the points we have already made in respect of the previous TSO EBGL Article 18 proposals, including the NRA's 8th October 2020 'decision' letter. If it is the case that the NRA's 8th October 2019 letter was not in fact a decision to approve the TSO's 4th August 2019 (EBGL Article 18) proposal to amend the terms and conditions related to balancing for GB then it would not be possible for the TSO to submit this current (Dynamic Containment) EBGL Article 18 proposal to the NRA according to Article 6(3) of EBGL.	In response to **Q1 of SSE's response,** we note your comments on the process of Article 18 T&C generally but as you note these comments have been made previously and we believe all of these points have been dealt with previously in other forums. The intent of the regulation is that the T&C for balancing are established and that any changes to these follow the process in EBGL in terms of a one month consultation and NRA approval. This is the approach that has been followed with these changes being treated in the same manner as other "inflight" changes. **SOGL prequalification**: Aligning national services to those of other European markets is not always straightforward but the DC service is most closely aligned to a Frequency Containment Reserve service. The prequalification is, as you note, one of self-certification. It is our view that the registration process and the data in the documents from our mapping provide the TSO with the self-certified pre-qualification in the context of the minimum technical requirements relevant to the ODFM service in accordance with the intent of SOGL Article 154. Dynamic Containment is a Frequency Containment Reserve (FCR) product). Article 158 is FRR & Article 161 is for RR. The relevant articles therefore are SOGL Article 154 & 155. FCR has no standard product and as such, at the moment cannot be traded across borders (and by extension does not affect cross border trading). It is the intention that interconnectors could provide

	Notwithstanding the above, we do not believe that it is possible for the TSO to submit this current Dynamic Containment EBGL Article 18 proposal to the NRA according to Article 6(1) of EBGL as an amendment, to the terms and conditions related to balancing for GB (in respect of the Dynamic Containment balancing service) has not been requested by the NRA. For the reasons we have detailed in our response to the initial TSO Article 18 proposal (of June 2018) and the subsequent four amended proposals for the Article 18 terms and conditions related to balancing in GB, this latest proposal from the TSO (concerning the Dynamic Containment balancing service in respect of amending the terms and conditions related to balancing in GB) does not in our view comply with the requirements as are, for example, set out in the Recitals (and various Articles) in EBGL including, but not limited to, the need to ensure harmonisation. This is because the scope of EBGL[3] and SOGL[4] is relevant to the types of parties who provide Dynamic Containment balancing services. SOGL is relevant in the context of, for example, the requirements around balancing service providers and prequalifying according to the relevant SOGL 'technical minimum requirements'[5] – see below. However, the proposed is for the Dynamic Containment balancing service to not be applied, in a harmonised way, with the same terms and conditions related to balancing as other GB market participants have to comply with. In addition to this being in contravention of the Recitals of EBGL (and SOGL) it could also affect cross border trade and as such could be in breach of the Third Package requirements. **1) SOGL pre-qualification requirements (set out in Article 16 of EBGL)** The proposed Article 18 letter (dated 21st August 2020) in the Annex 1, sets out in reference to Article 18(5)(a) '*the rules for the qualification*	DC at some point in the future – this will likely be as part of the next version of the product and thus be accompanied by a new EBGL Article 18 consultation. Beyond the regulatory obligations, there is the requirement to balance the system safely for which, DC is critical for operational security. In response to **section 1, SOGL pre-qualification requirements of SSE's response** to Q1, the definition for Balancing Service Provider has been updated to align to the EBGL definition following your feedback.

	process to become a balancing service provider[6] pursuant to Article 16' that these are to be found in the "*DC Tender Rules - Section 4*". Referring to that Document[7] we find that 'Section 4' only relates to 'Registration' and is set out on pages 3-4. However, as is stated in Article 18(5)(a) the prequalification, for the purposes of becoming a balancing service provider must be (according to EBGL) "*pursuant to Article 16*" of EBGL. The Dynamic Containment prequalification requirements (as detailed "*DC Tender Rules - Section 4*") are <u>not</u> "*pursuant to Article 16*" of EBGL. The EBGL prequalification aspects, for the purposes of Article 18(5)(a), are set out in Article 16(1) in the following terms: "*A balancing service provider shall qualify for providing bids for balancing energy or balancing capacity which are activated or procured by the connecting TSO or, in a TSO-BSP model, by the contracting TSO. <u>Successful completion of the prequalification, ensured by the connecting TSO and processed pursuant to Article 159 and Article 162 of Regulation (EU) 2017/1485 shall be considered as a prerequisite for the successful completion of the qualification process to become a balancing service provider pursuant to this Regulation</u>*" [emphasis added] As can be seen, it is the second sentence that is of particular relevance to this Dynamic Containment Article 18 proposal. It is important to note that it is the TSO who has to ensure the successful completion of the prequalification by the balancing service provider and secondly that this prequalification should be processed pursuant to the requirements of Article 159 and Article 162 of SOGL. This was recognised, for example, by the NRA in its 9th May 2019 decision letter[8] on GC0114 where it was stated that: "*<u>The prequalification processes aims to ensure that Balancing Service Providers</u>4[9] (BSPs) offering FCR, FRR or RR <u>comply with the technical and the additional requirements set out in Articles 154, 158 and 161 of the SOGL Regulation</u>. Compliance is demonstrated by successfully completing the prequalification process organised by the reserve connecting TSO*." [emphasis added]	Dynamic Containment is an FCR product and the articles you refer to cover FRR and RR. We believe that requiring a provider to prequalify for all services (rather than only for the service they want to participate in is the intention of the Article.. We believe the intention is to pre-qualify as a BSP for each type of product. Requiring prequalification for all services would be an unacceptable barrier to entry and not in the spirit of EBGL. Pre-qualification requirements for Dynamic Containment are compliant to all the relevant regulations. Forms A, B & C are the registration documents that providers must complete before entering into the DC market. Once providers are registered, they must then submit their Eligible Assets with NGESO using the DC Provider Data template. This completed form provides all the necessary information to validate the eligibility of assets for participation in DC. Alongside the provider data template, providers must also submit a testing approval report in relation to any new assets, completed by an Independent Technical Expert. These align to the requirements set out in EBGL article 155 (FCR pre-requisites).

	The approval, by the NRA, of GC0114 resulted in a new section being introduced into the GB Grid Code, known as "BC5"[10]. Of particular relevance to the Dynamic Containment prequalification arrangements are the obligations placed upon the TSO in BC5.2, BC5.3 and BC5.4. Taking the last of these as an example (but near identical wording also appears in BC5.2 and BC5.3) it states that the TSO: "*shall ensure that each relevant Balancing Service prequalification process shall, as a minimum, require the RR provider to submit a self-certification of the RR Minimum Technical Requirements as defined in BC5.4.1 and BC5.4.2.*". We have seen no evidence, with respect to the prequalification of the Dynamic Containment balancing service, that the TSO has ensured that the balancing service providers have self-certified they meet the minimum technical requirements set out in either BC5.2.1 and BC5.2.2 or BC5.3.1 and BC5.3.2 or BC5.4.1 and BC5.4.2 – if this is the case then non-compliance, on the part of the TSO, with the Grid Code may inadvertently have occurred. Turning, as per EBGL Article 16(1), to SOGL Article 159 and Article 162 (in their respective first paragraphs) they require the TSO to publish the FRR and RR prequalification processes respectively and that this will be by reference (in their respective second paragraphs) to meeting certain "*technical minimum requirements*" as detailed in the preceding Article (158 and 161 respectively). As we understand it the TSO has published its requisite FRR and RR prequalification processes and the associated "*technical minimum requirements*" for GB[11] in its eight-page September 2018 publication "EU Prequalification Processes"[12] (as well as by reference to BC5 in the Grid Code). In our view the technical requirements for Dynamic Containment is not compatible with "*technical minimum requirements*" (as detailed in SOGL Articles158 and 161 respectively) that must be complied with in order to meet the SOGL (and thus Article 16 and Article 18 of EBGL) prequalification requirements. When considering SOGL it is also important to take into account the Scope, as set out in Article 2 and in particular (1) (a), (d) and (e):	

	"*(a) existing and new power generating modules that are, or would be, classified as type B, C and D in accordance with the criteria set out in Article 5 of Commission Regulation* [RfG]"[13]; "*(d) existing and new demand facilities, closed distribution systems and third parties if they provide demand response directly to the TSO in accordance with the criteria in Article 27 of Commission Regulation* [DCC]"; and "*(e) providers of redispatching of power generating modules or demand facilities by means of aggregation and providers of active power reserve in accordance with Title 8 of Part IV of this Regulation* [SOGL]". In our view, balancing service providers of the type that includes those associated with Dynamic Containment fall within the scope of SOGL by virtue of Article 2 (1) (a) or (d) or (e). In our view (i) the TSO has <u>not</u>, in the case of Dynamic Containment, ensured that as regards the terms and conditions related to balancing in GB that the Dynamic Containment prequalification, by balance service providers, has been successful completed in accordance with Article 16(1); and (ii) balancing service providers (in terms of Dynamic Containment contracted parties) are <u>not</u> able to demonstrate that they have met the "*technical minimum requirements*" set out in Articles 158 and 161 of SOGL (as required by Articles 159 and 162 by virtue of Article 16(1) of EBGL).	
	2) The use of pre-determined prices in terms of Article 16 EBGL and Art 6(9) of the CEP In Annex 1 of the proposal, at 18(7)(f), it states that: "*There is no requirement for this exemption as prices for balancing energy bids are <u>not</u> predetermined*." [emphasis added] As we set out in our response to the ODFM Article 18 consultation earlier this year, we find this statement to be erroneous and misleading for the reasons we detailed in our response to that consultation by the TSO. Those previous comments still stand.	In response to **section 2, the use of pre-determined prices in SSE's response to Q1**, It is our view that not setting a price for balancing energy is compliant to the requirement as set out by the European FCR product which is a publicly consulted and approved product. OFGEM have disagreed with this interpretation and requested a derogation. The reference to Article 6(9) is not correct; this article relates to day-ahead procurement of

		balancing capacity and the separate procurement of upward and downward capacity.
	Question 2 Do you have any comments on the proposal letter? The letter fails to address the concerns we have noted in Question 1 above and Question 3 below.	Regarding the response to **Q2 of SSE's response**, thank you for your feedback.
	Question 3 Annex 1: Do you have any comments on the highlighted mapping for DC service? The highlighted mapping for the Dynamic Containment balancing services is incomplete and fails to address all the detailed requirements for an Article 18 terms and conditions related to balancing proposal.	Regarding the response to **Q3 of SSE's response**, thank you for your feedback. We note your comments on the process of Article 18 T&C generally but as you note these comments have been made previously and we believe all of these points have already been dealt with in other forums
	Question 4 Do you have any other comments in relation to the proposal? As with other products that the TSO has sought to include within the Article 18 terms and conditions related to balancing in GB, it is noticeable that Dynamic Containment also does not adhere to the harmonisation requirements of EBGL and, as a consequence, this means that the Dynamic Containment balancing service will (as the Commission has identified) lead to higher costs to end consumers which is both regrettable as well as being contrary to the obligations placed upon the TSO. We note that the proposed Assessment Principles of Dynamic Containment balancing service (as set out on slide 12 of the Procurement webinar[14]) and the proposed Assessment Methodology (slide 14) do not comply with Article 8 of EBGL. We note that the proposed 'Last resort rank factor approach' of the Assessment Principles of Dynamic Containment balancing service (as set	In **response to Q4 of SSE's response,** there is not a standard FCR product that we could use to harmonise with, or manage the system in a way that ensures operational security. We must develop new products to deal with the changing conditions we are facing in operating a changing system economically, efficiently and securely. NGESO believes that the assessment methodology does meet the requirements of recovery of costs under EBGL Article 8. Should last resort rank factor be required in the assessment process then for full transparency, we shall share with market participants how their bids were ranked. Article 3(2b) states we will ensure transparency and this process is compliant with this requirement.

	out on slide 13 of the Procurement webinar) do not comply with the transparency requirements of EBGL as the information is not made available to all market participants (rather than, as here, be limited to tender participants only). We note that the obligations for 10MW+ energy storage units; as set out in ECC 8.1 of the Grid Code; to provide Ancillary Services including, in particular, those relating to Frequency Control (as per ECC.6.3.7 and BC3.5.1) have been ignored in this consultation. This therefore leads to an unreasonable and inefficient outcome for end consumers. We note that the obligations for energy storage units; as set out in Article 15 of the Emergency & Restoration Network Code; to activate ahead of LFDD has been ignored in this consultation. This therefore leads to an unreasonable and inefficient outcome for end consumers. We note that this proposal for the terms and conditions related to balancing has (since 21st August 2020) been changed unilaterally by the TSO during the course of the public consultation, on multiple occasions (some in contradictory ways) as detailed in the 156 answers from the TSO to the FAQs[15]; the latest version of which is dated 16th September 2020; and that these material changes, by the TSO, to their proposal have not been subject to the minimum one calendar month public consultation according to Article 10 of EBGL (indeed some have come five calendar days prior to the public consultation itself closed). This therefore invalidates the current (21st August 2020) public consultation by the TSO for the terms and conditions related to balancing concerning Dynamic Containment for the reasons we have provided to the TSO previously, in May 2020, when a similar situation arose with the TSO's ODFM public consultation (which necessitated a further, separate, one month public consultation).	All interested parties were able to take part in this consultation, and we have received a range of responses from different providers with different assets. We have clearly set out the technical requirements – as per our license obligations, these are technology agnostic. The product has been developed to meet a clear system issue, and NGESO do not specify the technology type or asset required to provide the service. No changes were made to the documents that were consulted upon during the consultation period. Given the short timescales, we ran a number of industry engagement sessions to explain how the product works in more detail. This has led to a number of queries and clarifications from industry. NGESO strongly disagrees with the statement that it did not adhere to the consultation obligations, and that it made material changes to consultation documents. Where a change has been suggested or requested, it has come in the form of a consultation response. In order to maximise the value of the consultation, we respond to requests from, and clarify information for, stakeholders. We believe that this is in the spirit of the regulation. We are always open to work with industry to best meet their needs. We are disappointed that this has not been received positively by the provider, as we have endeavoured to work pro-actively with industry to facilitate better understanding across all parties, by providing clarity and building understanding of a new, innovative product that will help balance a changing energy system.
InterGen	**Q1. Do you agree with the approach taken in the proposal?**	

	InterGen does not agree with the approach taken in the proposal. We believe that the ESO is not being technology neutral in its procurement of fast frequency services. By their own admission (rejection criteria 1), alternative technology sources such as synchronous machines inherent inertia (or reducing the largest loss of load) can address the constraint this product is trying to resolve but are unable to access the market through the proposed auction. While inertia and fast frequency response are not the same thing they can't be thought of separately. It would not be in the consumer's best interest to procure unnecessary reserves of fast frequency response on a day where there is already adequate inertia on the system. See example of the relationship outlined by the Australian Electricity Market Operator (AEMO) for a given largest loss. Fast FCAS and Dynamic Containment are both sub 1 sec frequency services and therefore interchangeable. As the Grid moves towards more inverter based technologies, the historic coupling of energy and grid services is no more. InterGen currently dispatch into the market based on simply the price of the energy we produce. If there was a market for inertia we would self-dispatch assets across the system at the lowest possible price for the consumer. If the proposed auction procured both fast frequency response (dynamic containment) and inertia and co optimised the final result based on transparent procedures, ESO would be truly technology neutral and obtain the best result for the consumer.	Thank you for your feedback. Our assessments show that in addition to inertia we also need to procure faster response services. Our daily procurement mechanism allows us to tailor the quantity of DC procured on any day. The level of expected inertia will be one of the factors we may choose to consider when determining our need for DC. No provider is excluded from participation based on their technology. Any technology that can meet the service requirements (e.g. speed of response) is allowed to participate. The dynamic containment service is not intended as a substitute for the ongoing industry discussion on how to manage low inertia on the GB system. We welcome continued engagement with our other projects such as the Stability Pathfinder, which address the procurement of inertia. A co-optimised (for response and reserve) auction is something the ESO is considering as it works towards the end state. It is not something that we will be able to deliver in this soft launch stage of dynamic containment.
Everoze	**Q2. Do you have any comments on the proposal letter?** This response is not really about the DC Terms and Conditions, but moreover about testing. **Testing Guidance document**: There's a bit of overlap between the use of "accuracy" and "tolerance" in the guidance document (Appendix B). For power accuracy we are referred to allowable test tolerances for each test, but this is not really the same as accuracy of testing equipment, which is not specified for power in the guidance note. We have been assuming	Thank you for your questions and suggestions regarding the testing guidance and Analysis tool. Regarding the response in the **1st section of the response**, we have amended Appendix B table 8 and Appendix C to reflect injection and measured output granularity. To summarise these amendments, it now says that the injected

	that the +/- 1% power measurement accuracy stated under the old EFR guidance is a sensible guide for measurement equipment accuracy in absence of anything else, but it would make life more clear cut if this could be stated in the DC (and FFR) guidance. Just to be clear, the tolerances set out for each test are clear and make sense – so my query is regarding measurement equipment accuracy as opposed to tolerance. **Testing Guidance document**: On a similar note, I understand from item 116 of the DC FAQ, that frequency measurement accuracy is actually required to be +/- 0.001Hz. This is clearly quite demanding (order of magnitude more accuracy than for EFR or FFR). Has NG been able to get comfortable that this is achievable / realistic? [We ask all projects on which we work to provide details of their test arrangement and equipment to make sure that requirements are being met, hence important to make sure we understand this] [redacted]	frequency is required to be at 2 decimal points accuracy and the provider must be able to record the input frequency to 3 decimal points accuracy. Regarding the **2nd section of Everose's response**, thank you for your suggestions, we are not in a position to implement these for the beginning of DC soft launch, we will however consider these for the DC full launch. [redacted]
Moyle interconnector	Moyle interconnector provided NGESO with a detailed letter, NGESO has summarised the letter here; 1) Ability for interconnectors to participate in DC given the contractual arrangements & technical characteristics 2) Auction Timings and Unit Availability being a barrier to entry for ICs 3) Energy Settlement and Trilateral Agreements being problematic for participating in DC	NGESO would like to thank Moyle interconnector for their continued participation and engagement. In response to **point 1**, please be assured that we will only phase out services where more efficient alternatives are established. Any change to our product mix and procurement approach will be

	4) Technical characteristics – clarification on baseline ramp rates	communicated in advance to all market participants. Our zero carbon 2025 ambition has highlighted the key role that interconnectors will need to play in the provision of balancing services. In response to **point 2**, we have also identified this as a potential blocker to participation from interconnectors. After the soft-launch this is one of the key areas that we intend to work on collaboratively with industry and regulators. An optional availability approach might be a solution to the challenge posed above. However, we regret that during the soft-launch this will not be available. In the longer term we will need a market mechanism that allows us to procure DC (and other response/reserve services) closer to real time. We would be very happy to work with all stakeholders and especially interconnectors to develop a market mechanism that can allow participation from providers who might benefit from an optional availability approach. NGESO would like to thank Moyle for highlighting the impact of section 12 of the DC element of the Service Terms. We do not intend to change it for the soft launch. Reserve (in this case response) sharing agreements with TSOs are often complex. Developing a standardised approach with interconnectors, the ENTSO-e working group and NRAs will be a key area of focus in the next stage of dynamic containment. Interconnectors bring unique benefits but also challenges with respect to provision of market based balancing services. We encourage you to continue to engage as we develop the service.

		In response to **point 3**, NGESO would like to thank Moyle for highlighting the importance of the tripartite agreements. It is important for the ESO to facilitate maximum participation from a range of technologies while at the same time ensuring that no single party is favoured and all can compete on a level playing field. Resolving some of the challenges posed in this consultation response will require collaboration across the industry and with regulators and neighbouring TSOs. In response to **point 4**, NGESO would like to thank Moyle for highlighting this discrepancy. We will update the FAQ (Q123) to make it clear that the baseline ramp rate only applies to providers that are energy limited.
Noriker	Further to my discussion with Andy earlier we are trying to successfully run the test for dynamic containment for the soft launch. I think the spread sheet tool is well designed and the option to enter when the frequency step occurs is very useful; the samples shift to the correct locations successfully. However there some points of improvement: - Test 1.1 to 1.14 : cells C602 to C611 contain 0s or a random formula and not the Vlookup to the data in Test 1 Main. I have corrected for this in the attached. - Test 1 Main : the table for test in columns P-V, the standard deviation% just pulls through SD from the other tabs it is not divided by the expected response like it is in the Dynamic FFR spreadsheet tool. I have corrected for this in the attached. - Test 1.1- 1.14: the SD formula samples form 1 second to 2minutes 50 after the frequency step; not from 10 seconds to 3 minutes as per ITE draft in testing guidelines. *note this is consistent if you enter different values in where the frequency step occurs, so that box works just with wrong sample range. - Test 1: the actual response recorded is using Excel's MIN function so picks up over imports (due to being negative no.) and under exports. Therefore inconsistent criteria for high and low response. The statement for passing ITE draft in testing guidelines *"**Minimum of the sampled values** of active power response within each 3*	Thank you for your response to the consultation. Please find our responses below. In the analysis tool for tests 1.1 -1.14 cells C602-611 have been amended In the analysis tool has been amended for test 1 column P-V Both the guidance document and analysis tool to now reflect measurement from 1 sec to 3 minutes This has now been amended so that for low frequency when response is positive it uses the

	minute timescale fall within tolerances". - Test 2.1 and 2.2: the 0.25s delay is not included in the graph. We are also struggling to remain within the tolerances at the lower power values. The FAQ has addressed this for test 1.3 and 1.4 however this is still an issue for 1.5-1.8. You will see from the attached we were able to meet the 1.5 to 1.8 SD% but are out of tolerance on the minimum actual response (highlighted in red), where power dropped for a a row or two (0.05 secs). The level of stability required at lower power values is very difficult if not impossible to achieve. This is also evident in test 2.1 and 2.2 where the the sweep changes gradient at the lower power values as it crosses the X axis. Can we also please check the requirement for test 1 "The Unit should monotonically progress to its required response"? From our attached spreadsheet we do meet this in the 1 second ramp but naturally oscillate after this period to achieve the required ramp rate	minimum value and for high frequency when the response is a negative value it uses the maximum value Thank you for your feedback regarding this. Test 2.1 and 2.2 have been amended in the testing guidance and analysis tool to reflect the 0.25 minimum delay. The tolerance bands now reflect the time to reach the required delivery Tests 1.3 and 1.4 in the testing guidance have been amended. For tests in the lower power range your concerns have been noted and will be assessed as part of the testing work as we move towards full product launch