

Workgroup Consultation Response Proforma

GC0154: Incorporation of interconnector ramping requirements into the Grid Code as per SOGL Article 119

Industry parties are invited to respond to this consultation expressing their views and supplying the rationale for those views, particularly in respect of any specific questions detailed below.

Please send your responses to grid.code@nationalgrideso.com by **5pm on 03 August 2023**. Please note that any responses received after the deadline or sent to a different email address may not receive due consideration.

If you have any queries on the content of this consultation, please contact Catia Gomes catia.gomes@nationalgrideso.com or grid.code@nationalgrideso.com

Respondent details	Please enter your details	
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Which best describes your organisation?	<input type="checkbox"/> Consumer body <input type="checkbox"/> Demand <input type="checkbox"/> Distribution Network Operator <input type="checkbox"/> Generator <input type="checkbox"/> Industry body	<input checked="" type="checkbox"/> Interconnector <input type="checkbox"/> Storage <input type="checkbox"/> Supplier <input type="checkbox"/> Transmission Owner <input type="checkbox"/> Virtual Lead Party <input type="checkbox"/> Other

I wish my response to be:
(Please mark the relevant box)

Non-Confidential

Confidential

Note: A confidential response will be disclosed to the Authority in full but, unless agreed otherwise, will not be shared with the Panel or the industry and may therefore not influence the debate to the same extent as a non-confidential response.

For reference the Applicable Grid Code Objectives are:

- a) *To permit the development, maintenance and operation of an efficient, coordinated and economical system for the transmission of electricity*

- b) *Facilitating effective competition in the generation and supply of electricity (and without limiting the foregoing, to facilitate the national electricity transmission system being made available to persons authorised to supply or generate electricity on terms which neither prevent nor restrict competition in the supply or generation of electricity);*
- c) *Subject to sub-paragraphs (i) and (ii), to promote the security and efficiency of the electricity generation, transmission and distribution systems in the national electricity transmission system operator area taken as a whole;*
- d) *To efficiently discharge the obligations imposed upon the licensee by this license and to comply with the Electricity Regulation and any relevant legally binding decisions of the European Commission and/or the Agency; and*
- e) *To promote efficiency in the implementation and administration of the Grid Code arrangements*

For reference, (for consultation questions 5 & 6) the Electricity Balancing Regulation (EBR) Article 3 Objectives and regulatory aspects are:

- a) *fostering effective competition, non-discrimination and transparency in balancing markets;*
- b) *enhancing efficiency of balancing as well as efficiency of national balancing markets;*
- c) *integrating balancing markets and promoting the possibilities for exchanges of balancing services while contributing to operational security;*
- d) *contributing to the efficient long-term operation and development of the electricity transmission system and electricity sector while facilitating the efficient and consistent functioning of day-ahead, intraday and balancing markets;*
- e) *ensuring that the procurement of balancing services is fair, objective, transparent and market-based, avoids undue barriers to entry for new entrants, fosters the liquidity of balancing markets while preventing undue market distortions;*
- f) *facilitating the participation of demand response including aggregation facilities and energy storage while ensuring they compete with other balancing services at a level playing field and, where necessary, act independently when serving a single demand facility;*
- g) *facilitating the participation of renewable energy sources and supporting the achievement of any target specified in an enactment for the share of energy from renewable sources.*

What is the EBR?

The Electricity Balancing Regulation (EBR) is a European Network Code introduced by the Third Energy Package European legislation in late 2017.

The EBR regulation lays down the rules for the integration of balancing markets in Europe, with the objectives of enhancing Europe's security of supply. The EBR aims to do this through harmonisation of electricity balancing rules and facilitating the exchange of balancing resources between European Transmission System Operators (TSOs). Article 18 of the EBR states that TSOs such as the ESO should have terms and conditions developed for balancing services, which are submitted and approved by Ofgem.

Please express your views in the right-hand side of the table below, including your rationale.

Standard Workgroup Consultation questions		
1	Do you believe that the Original Proposal and/or any potential alternatives better facilitate the Applicable Objectives?	Mark the Objectives which you believe each solution better facilitates:
		Original <input type="checkbox"/> A <input checked="" type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/> F <input type="checkbox"/> G
		WA(G)CM1 <input checked="" type="checkbox"/> A <input checked="" type="checkbox"/> B <input checked="" type="checkbox"/> C <input checked="" type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/> F <input type="checkbox"/> G
		<p>For A – limiting ramping rates further (within an imposed ramping period and/or linked to granularity of the MTU) could reduce socio-economic welfare as it could start impacting the current commercial profile flexibility of interconnectors. As a result, it could reduce system flexibility, requiring overall more investments in the midterm to cover future system needs which is suboptimal compared to the status quo (Alternative proposal).</p> <p>For interconnectors under explicit coupling, ramping limitations during auctions cannot be easily implemented as it is unknown during the explicit capacity auctions what part of the acquired capacity would get nominated. It could also imply high market implications if interconnectors would need to start selling less Long-Term capacity rights as a result of ramping restrictions.</p> <p>Interconnectors will in any case face more structural energy imbalances as a result of increased ramping limitations. The financial implications of which depend on the size of the ramp rate limitation (halving the ramping rate leads to a doubling of the MWh energy imbalances due to ramping) and the imbalance price spread between both ends (here a feedback loop exists as the imbalance volumes caused by interconnector ramping further influence overall imbalance prices– e.g. Nemo Link’s short position may push up the imbalance price in Belgium). It can be expected that such effects result in predominantly negative imbalance price spreads and hence increased imbalance costs for the interconnector.</p> <p>For B – no impact on competition, for as long as the same limitation is considered between interconnectors and the timing aspect of the implementation.</p> <p>For C – grid security of the new proposal has not been analysed in depth in GB (only high level qualitatively with a CBA analysis) nor has it on the Continental European side. Indeed, setting the ramping period & ramping rate</p>

		<p>for interconnectors should ideally mimic the expected physical delivery of all balancing responsible parties in the EU-system (load + generation); changing the status quo without in depth analysis can still results in momentary imbalances which could be higher than currently, and hence affecting the system frequency quality on both synchronous areas. Addressing these incremental frequency quality risks (frequency quality is measured both on MTU level as well as more instantaneously by looking at standard deviation on minute/second basis) with higher volumes of containment/restoration reserves also comes at a societal cost (as these assets are not available in other energy markets).</p> <p>For D/E – System Operation Guideline (SOGL) gives the right (not the obligation) to specify ramping restrictions on BRPs or HVDC interconnectors. Both the original & alternative proposal hence comply with legislation, but strictly speaking the ramping rate limitation proposal is not required to ensure legal compliance with the SOGL.</p>
2	<p>Do you support the proposed implementation approach?</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Implementation feasibility on interconnector side is unclear and potentially infeasible - especially for those using explicit capacity sales. This is especially the case in case ramping restrictions could lead to a structural mismatch of the commercial schedule and the physical flows. In any case interconnectors will face increased pre-programmed imbalances which cannot be fully avoided.</p> <p>Implementation on Continental European (CE) TSO side is also not analysed or discussed even though it is clear that adaptation of LFC block agreements will be required for the original proposal and this on both sides (on CE side this contains already current fixed ramping rate of 100MW/min in case of Nemo Link) and the related regulatory and TSO acceptance for this.</p> <p>Implementation would also require analysis and potential adaptation of the synchronous area operational agreement (SA-OA) – which requires buy-in from ENTSO-E’s System Operation Committee.</p>
3	<p>Do you have any other comments?</p>	<p>1. Financial impact on interconnectors have not been analysed in the Baringa CBA analysis, which renders the CBA analysis not exhaustive.</p>

		<p>Interconnectors financial impact is indeed an integral part, as it links to existing cap and floor regimes and hence societal welfare impacts. This is of key importance for both existing interconnectors like Nemo Link as well as those under development, as this will negatively affect their overall CBAs (and potential societal subsidies when reaching the floor under a cap/floor regime).</p> <ol style="list-style-type: none"> 2. Financial impact on European connecting TSO side has not been analysed, whereas adaptation of ramping rate will affect the area control errors (ACE) which will have financial consequences via the financial settlement of unintended exchanges (FSUE) as well as potentially affect the dimensioning (and hence procurement costs) of frequency restoration reserves (FRR) for certain days. In addition, imbalance prices & balancing markets in general can be affected as a result of the real-time imbalance volumes created. 3. Operational security impact on EU side has not been analysed nor on GB side with the right level of detail. Impact on frequency quality in Europe is not excluded, which requires thorough analysis in order to ensure system stability & security can still be guaranteed. 4. Overall CBA analysis fails to give sufficient transparency & details on the balancing actions & cost assumptions. It is unclear whether the avoided costs of limiting interconnector ramping can in fact be solely linked to them, as other factors are also driving the imbalance. In some cases, interconnector imbalances could also help the system, whereas currently it seems only a net cost effect is modelled (potentially triggered itself by some inefficient proactive measures taken by TSO).
4	<p>Do you wish to raise a Workgroup Consultation Alternative Request for the Workgroup to consider?</p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>SOGL allows and requires TSOs to address frequency quality issues in multiple ways; a part from potential ramping restrictions on HVDC interconnectors; many other technical and markets solutions exist to tackle this issue, which might require no or less impact on interconnectors such as changing MTU on DA/ID markets</p>

		<p>and ISP (Imbalance settlement period) to 15min, adapting ramping periods/limits for physical machines/BRPs (smearing out the ramps), increasing balancing reserves, utilisation of frequency coupling over HVDCs, etc.).</p> <p>Current proposal and analysis seem hence too single sided and focussed asymmetrically on GB without focus on Continental European side. A more elaborate approach can be to take the report made by Elia¹ and Entsoe² on the matter of DFDs (Deterministic Frequency Deviations) and the different causes & solutions to this in order to evaluate alternative solutions and make the best choice for both synchronous areas.</p> <p>Moreover, in case interconnector ramping limitations would eventually still be preferred on both sides after more profound analysis, likely limitation on the overall sum of interconnector ramps would be more optimal for both systems, as it would avoid unnecessary limits on individual interconnectors year-round. This option also has not been analysed in more detail.</p> <p>In any case, any alternative should be an aligned solution on all involved synchronous areas' sides, in order to ensure a correct & exhaustive system analysis.</p> <p>Any Alternative or proposal should take the aspect of 'future proofness' into account (e.g. expected effect of EU MTU to 15 minutes in 2025, expected arrival of different interconnectors at different times, need to ensure grid criteria can remain respected such as grid security, attaining net zero targets).</p>
5	<p>Do you agree with the Workgroup's assessment that GC0154 does impact the Electricity Balancing Regulation (EBR) Article 18 terms and conditions held within the Grid Code?</p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <hr/> <p>See answers to question 6.</p>
6	<p>Do you have any comments on the</p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>

¹ [20200701_Public consultation on the Study related to the lowering of the contribution \(elia.be\)](https://www.elia.be/en/20200701-public-consultation-on-the-study-related-to-the-lowering-of-the-contribution)

² [Report on Deterministic Frequency Deviations \(entsoe.eu\)](https://www.entsoe.eu/en/reports-and-publications/reports)

	<p>impact of GC0154 on the EBR Objectives?</p>	<p>System imbalance volumes and prices will get impacted as a result of the proposal. There is hence a material impact on the balancing markets (required volumes and expected prices) which will also impact all other market participants. This should be more profoundly analysed on both sides of the interconnectors, to ensure acceptable balancing market impacts as well as system security effects on the frequency on second / minute basis and not just on ISP basis (15/30min). It needs to be assessed more dynamically / instantaneously instead of just averaged out over longer periods.</p>
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Specific Workgroup Consultation questions		
<p>7</p>	<p>Does the Original proposal or the alternative impact EU TSOs?</p>	<p><input checked="" type="checkbox"/> Yes - Original <input checked="" type="checkbox"/> No - Alternative The alternative which is to codify the current ramp rate (the Status Quo) has been tested operationally and it has proven to work effectively for GB and EU thus far. However, as noted above in answers to question 3, the original proposal of 50MW/min ramp rate will impact the frequency quality and balancing markets in the EU.</p>
<p>8</p>	<p>Has there been sufficient effort taken to seek and obtain European engagement? Other- if other what else could have been done?</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Even though there has been engagement with the EU TSOs, this was done at the very late stage of the process with no option to influence the setup of the CBA assumptions and methodology nor were sufficient detailed info shared. Potential frequency quality effects for the pan-EU system have not been discussed/analysed either; for which ENTSO-E involvement would be required (in addition to discussions with EU TSOs for the related interconnectors, as they could be affected on ACE / FSUE).</p>
<p>9</p>	<p>Does the Original proposal / alternative allow for GB to reach its net zero targets?</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No - Original More system flexibility will enable the system to sooner reach its decarbonisation goals. If arbitrary ramping restrictions are imposed compared to the status quo, then more investments will be needed overall in flexibility, hence material cost impacts can be anticipated as well as overall timing risk for such investments. This needs to be traded off to any real benefits (if any – on both sides), next to the system security analysis. Moreover, limiting</p>

		system flexibility via individual ramping restrictions, can further delay the build-out of future interconnections.
10	Do you believe the Original proposal or alternative impacts the interconnector business model? (Please consider any commercial and operational impacts)	<input checked="" type="checkbox"/> Yes - Original <input type="checkbox"/> No Due to the lack of justified details on wider impacts both in GB and EU in the CBA, the original proposal could negatively impact the investment cases for any future Interconnectors between GB and Europe and for the development of offshore infrastructures. Also, for existing interconnectors there will be a material imbalance volume and price risk exposure; which is not assessed in further detail in current CBA (missing element) – see part A under question 1. A part from IC financial impact, it also has a financial impact on social welfare benefits (e.g. when cap and floor interconnectors are below the floor or above the cap).
11	Does the Original proposal / alternative meet the requirements of Ofgem’s August 2019 decision on the implementation of the SOGL? (Check if this is incorporated in grid code objectives)	<input checked="" type="checkbox"/> Yes - Alternative <input type="checkbox"/> No The Ofgem’s August 2019 decision does not conclude that Ofgem envisaged a change to interconnector ramp rates. Instead, our interpretation is that Ofgem expected the current arrangements to be codified within the Grid Code and that was the reason why Ofgem did not consider that an Impact Assessment was required.
12	Do you believe that the Original/alternative solves the operational challenges faced by the ESO as a result of fast simultaneous interconnector ramping?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No - Original No see answers to question 3 and 4 To be clear, the alternative proposal, which is to codify that status quo on ramping rates, isn’t meant to solve any problem; however, it has less negative wider effects than the original proposal. A more thorough analysis of the problem statement and its possible solutions with cause & effects for all involved synchronous areas is required prior to changing the status quo in order to find the most efficient & future proof solution to this problem description.
13	Do you believe the Original proposal or alternative proposal/s impacts or is impacted	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No This legal obligation on EU side will have a material impact on the impacts of ramping limitations. For future

	<p>by the EU 15 MTU change?</p>	<p>proofness perspective, it's important to take this expected evolution into account in more detail.</p>
<p>14</p>	<p>Do have any comments on the reliability of the CBA conducted by Baringa? If available, please provide any analysis supporting your response.</p>	<p>See answers to question 3.</p> <p>In addition using 2022 year as basis for analysis might not be the most suited, given it's an outlier compared to normal situations.</p> <p>Moreover, changes in the available system flexibility in the future years are not clear to have been taking into account (more flexible supply/demand can be expected in future years which can drive down the cost of reserves & balancing actions).</p> <p>It has been insufficiently demonstrated when interconnector ramping provides a system benefit vs cost, depending on the imbalance profile at hand on both sides. Indeed, it's unclear whether balancing actions are modelled with a sign, as indeed in some cases where the system will get longer and NGESO would get money back from activating downwards flexibility.</p> <p>Transparency on the proactive balancing actions taken in line with the GB operational experience for ramp management alone is also insufficiently explained, which is important as this drives the amount of reserves required dependent on the flow change size. It's unclear whether those actions taken are the least cost solution to the problem. If for instance the amount of frequency containment and restoration reserves would at the basis be higher, then likely less proactive actions are needed which could still be overall more beneficial for the system.</p> <p>A big saving of £865M in balancing cost for the period 2023-2030 is communicated to the industry by NGESO from the results of the conducted CBA seems in our opinion unjustified & very large. The exact savings for the modelled 2022 base years were requested via WG members but never obtained, which casts additional doubt on this figure.</p>
<p>15</p>	<p>Are there any considerations for implementation on the Original proposal /alternative proposals? (e.g., IT impacts or considerations)</p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Business impacts:</p> <ul style="list-style-type: none"> - LFC block agreement needs adaptation on European side for all connecting TSOs and potentially also the SA-OA. This needs to be analysed and discussed in detail.

		<p>IT impacts:</p> <ul style="list-style-type: none"> - For interconnectors under implicit coupling, requires restriction implementation (allocation constraint) in market coupling (and potentially also capacity calculation) to avoid imbalance risks afterwards. - Current and future interconnectors under explicit coupling have limited means to mitigate financial balancing risks. - All side-effects unclear as they have not been analysed in detail.
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Summary:

While Nemo Link recognise the challenges faced by NGESO in managing an increasingly complex electricity system, our strong view is that any steps to further restrict interconnector ramping must only be taken following a robust, comprehensive assessment of the impacts of any such proposals, undertaken in close cooperation with affected EU partners. This is essential in fully understanding the cross-border impacts of any further ramping restrictions, as well as the wider implications for interconnectors' ability to deliver the flexibility benefits that will be critical in enabling the EU and GB's shared decarbonisation goals. In this context, we are concerned that NGESO's preferred solution appears to rely on an incomplete analysis of the impacts of any departure from the current position, omitting a number of significant factors, and moreover runs directly contrary to wider policy objectives in GB and the EU, which primarily seek to enhance the flexibility benefits that interconnectors can offer.

Nemo Link, together with the other Interconnectors workgroup members remain open to continued discussions on the operational challenges raised by NGESO, either in this workgroup (*which will require potentially a 6-month extension to the current process*) or in a new, dedicated discussion forum outside the Grid Code modification process to the process to further develop a solution that:

- Clarifying the end-to-end consumer benefits on the UK and EU side by considering all significant costs and benefits of a range of market-based tools including the ramp management option, via a new CBA realised with a market consultant. This should consider the potential benefits that an increased interconnector ramp rate could bring, particularly in light of the growing need for enhanced system flexibility as the UK transitions to net zero;
- Engaging deeply with the connected EU TSOs to get them onboard on an aligned view on how the future cross border ramping would be managed while ensuring that the model will work with future cross border capacity calculation and allocation mechanisms without the need for restrictions to these mechanisms;
- Ensuring the flexibility benefits are maintained to support further renewable intermittent wind connection.