

**Code Administrator 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](mailto:grid.code@nationalgrideso.com) by **5pm** on **07 November 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@nationalgrideso.com](mailto:catia.gomes@nationalgrideso.com) or [grid.code@nationalgrideso.com](mailto:grid.code@nationalgrideso.com)

Respondent details	Please enter your details	
<b>Respondent name:</b>	Interconnected EU TSOs including Statnett	
<b>Company name:</b>	EirGrid, Elia, Energinet, RTE, SONI, Statnett and TenneT	
<b>Email address:</b>	olivier.arrive@rte-france.com	
<b>Phone number:</b>	Click or tap here to enter text.	
<b>Which best describes your organisation?</b>	<input type="checkbox"/> Consumer body <input type="checkbox"/> Demand <input type="checkbox"/> Distribution Network <input type="checkbox"/> Operator <input type="checkbox"/> Generator <input type="checkbox"/> Industry body <input type="checkbox"/> Interconnector	<input type="checkbox"/> Storage <input type="checkbox"/> Supplier <input checked="" type="checkbox"/> System Operator <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 Code Administrator Consultation questions**

1	Please provide your assessment for	Mark the Objectives which you believe the proposed solution(s) better facilitates:
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	the proposed solution(s) against the Applicable Objectives?	
		Original <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E
		WA(G)CM1 <input type="checkbox"/> A <input checked="" type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E
		<p>For the original NGESO solution, we consider that it does not meet any of the criteria (A–E). For the WA(G)CM1 we consider that only B is met.</p> <p>The original proposal is based on the economical solution assessed in the CBA. We, the interconnected TSOs as defined in the respondent details above (EirGrid, Elia, Energinet, RTE, SONI, Statnett and TenneT, hereinafter “Respondents”), have raised concerns about this CBA which appears to be incomplete, as it considers ONLY the GB balancing costs.</p> <p>However, the social welfare on both sides of the ICs is impacted by a reduced ramping rate as it will make the ICs less energy market price responsive and therefore results in less efficient pricing as it takes more time to reach the optimal schedule. The Respondents’ view is that this will result in higher energy cost than the existing solution and so negatively impact social welfare.</p> <p>Social welfare is the benefit due to energy market exchanges minus the balancing costs to facilitate the energy flows. The argumentation from NGESO seems to only focus on balancing cost reduction on the GB side of the ICs. This is not a complete picture and therefore we consider the CBA to be misleading and does not provide the correct basis for a decision. In fact, the CBA does not take into consideration the balancing impact and therefore cost on the CE side (higher ACE and balancing costs, especially in transiting countries).</p> <p>The WA(G)CM1 proposal questions the NGESO’s CBA stating in their view that there is no direct correlation between ramp rate and balancing costs. Full disclosure from NGESO on which balancing actions directly relate to ramping and what the cost of these actions are would be necessary to understand NGESO argumentation.</p>
2	Do you have a preferred proposed solution?	<input type="checkbox"/> Original <input type="checkbox"/> WA(G)CM1
		We have communicated that we are not in line with any of these two proposals (from the GB industry Working Group) which form the basis of this consultation. The Respondents have requested NGESO to have a dialog with OFGEM in order to allow more time

for discussion with the interconnected TSOs. This request has not resulted in a prolongation of the public consultation process.

To maximise the social welfare from ICs in the GB and European synchronous areas, it is proposed to only limit the ramp rate when (a) system security is at risk or (b) there is insufficient fast reserves to manage the specified ramp rate. The specified ramp is defined by the energy market result based on the max flow defined by the TSOs from their security analysis.

A static approach which is proposed by NGESO is seen to be incompatible with the TCA Article 311 as it limits the efficient use of ICs. Furthermore, it reduces market price efficiency as it is rarely required.

Our proposal is that the NGESO ramping limitation should be calculated at the GB synchronous area level following a security analysis similar to the arrangements described in Article 75 of the Commission Regulation (EU) 2017/1485 (hereinafter "SOGL"). Such security analysis should also take congestions and generation ramping into account. This results in a maximum cumulative ramp rate in export and import mode, based on the integrity of the GB AC grid and availability of reserves.

This ramp rate should in a second step be distributed among the different ICs with a dynamic allocation based on a price delta to favour the ICs with the highest economic efficiency.

Our two-step approach above maximises social welfare, enables energy market prices to be efficiently defined and ensures that system security is maintained.

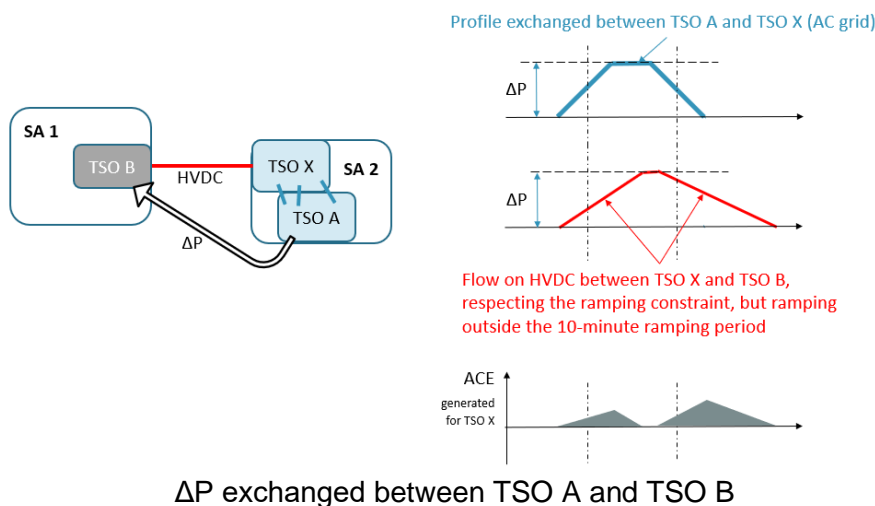
A static distribution could allocate capacity to ICs without any price delta and as a result, IC capacity would not be used.

The Respondents' view is that the maximum ramp rate should remain the current ramp rate as allocated to each IC or border.

NGESO currently uses the maximum ramp rate of up to 100 MW/min for ICs to the Continental Europe system, 30 MW/min for Nordic system and 10 MW/min for the island of Ireland (based on security assessment).

The EU security analysis methodology for day-ahead and intraday timeframes, in accordance with SOGL Article 75, are approved by NRAs and publicly available. For the sake of transparency, we expect the same from NGESO.

Dynamic ramping arrangement is more complex but the social welfare benefits of energy market plus greater flexibility in our view outweigh the implementation costs. In addition, it is more future

		proof when new ICs are coming to operation, and would ensure equal treatment of all existing and new ICs on the border to GB.
3	Do you support the proposed implementation approach?	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>The implementation approach relies on interconnectors (ICs) only to respect the ramping limitation.</p> <p>From 2025, EU TSOs &amp; respective NEMOs will implement the 15-minute Market Time Unit for the energy market and balancing time frame (Article 8 of the Commission Regulation (EU) 2019/943) along with the existing CE 10-minute ramping period obligation<sup>1</sup> (Section B-4 of the Synchronous Area Framework Agreement for Regional Group Continental Europe Annex 1) for all cross-border exchanges (AC and DC). This will ensure that TSOs that are connected to ICs (connected TSO) will not be adversely affected in area control error (ACE) terms as result of inconsistent ramping period between AC and DC borders (having direct balancing impact on the connected TSO due to transit flow). The Respondents have in accordance with SOGL ACE targets performances (FRCE) which are reported.</p>  <p>The diagram shows a schematic of two synchronous areas, SA 1 and SA 2, connected by an HVDC interconnector. SA 1 contains TSO B, and SA 2 contains TSO X and TSO A. A power imbalance <math>\Delta P</math> is shown being exchanged between TSO B and TSO X. To the right, two graphs show the power profile exchanged between TSO A and TSO X (AC grid). The top graph shows a blue trapezoidal profile with a 10-minute ramping period. The bottom graph shows a red profile that follows the blue one but has a steeper ramp, indicating it respects the ramping constraint but ramps outside the 10-minute period. Below these, a graph shows the resulting ACE generated for TSO X, with peaks corresponding to the periods of inconsistent ramping. The caption for the graphs is <math>\Delta P</math> exchanged between TSO A and TSO B.</p> <p>If the ramping period for any directly interconnected CE TSO is not harmonised for AC and HVDC borders, this results in a higher ACE and therefore an increased reserve requirement.</p> <p>The CBA does not account for the CE 10-minute ramping period, and evidence of evaluating the 15-minute MTU has not been provided. To ensure efficient use of the system, it is important to have consistent and transparent MTU arrangements with a harmonised security regime.</p> <p>NGESO's position is that ramping period is for the ICs to manage, as long as the ramp does not exceed NGESO's maximum.</p>

On European ICs, the schedule for the energy market always respects the limitation of the two TSOs who collectively agree the schedule before real time. NGESO stated to the Respondents that the ICs are responsible for meeting the maximum ramp rate and are exposed to the imbalance price on both sides of the IC if they do not. The Respondents' view is that imbalance cost is not necessarily the full cost of balancing as some balancing elements (e.g., reserves, constraint & response) are not included in the imbalance price. Secondly the failure of an IC to meet the schedule obligation imposes an additional reserve margin obligation on the directly connected CE TSOs, and it is not always possible to secure these reserves. Therefore, the issue is not simply a question of imbalance cost risk for an IC as NGESO states.

The CBA should reflect all balancing costs. The ICs are financially responsible for a deviation between commercial schedule and physical delivery, but the ICs have no reserve. Therefore, the Respondents will have to support the imbalance by activating balancing reserves. It introduces a risk of margin for these TSOs. As example below, when the market does not integrate allocation constraint, the ramping to reach the level of exchange can run over several MTUs, inducing a high imbalance, worsened by NGESO's proposal to reduce ramp rate. This imbalance is mobilising reserves that have to be dimensioned for this. Then it will increase the cost of reserves for the TSOs.

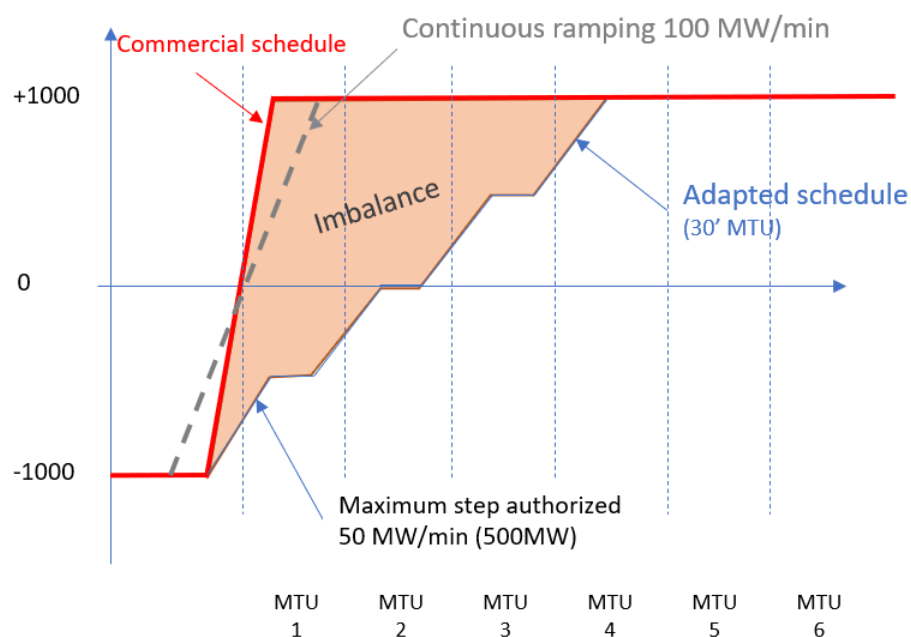


Figure 1 Imbalance impact of limiting the ramping rate.

The ICs operate with explicit or implicit allocation mechanisms. With explicit allocation mechanisms, there is additional imbalance and reserve risk as the megawatts and the cross-zonal capacity is traded independently.



		<p>The Respondents' view is that a combination of an agreed TSO ramping limitation and the shortest ramping duration results ultimately in the maximum allowed schedule change between two MTUs. The NGESO CBA, however, assumes that the ramping is continuous. This means that the benefits in terms of social welfare from the ramping proposal are substantially over estimated.</p> <p><b>The Respondents are of the view that any change to ramp rate arrangement needs to be agreed between the TSOs with a system operation responsibility and a common implementation plan be signed ahead of the entry into force of the new arrangement.</b></p> <p><b>The 10 days of implementation after the OFGEM decision is not realistic without impact assessment and is not acceptable as it will decrease the grid security without letting the time to the Respondents to put in place mitigation measures.</b></p> <p><b>The Respondents consider it unacceptable that OFGEM intends to adjust ramp rate on the GB border without allowing sufficient time to reach agreement with the TSOs and regulators on the remote end of the ICs. ICs are not generating units – they are a transport medium of electricity between synchronous areas, and they are dependent on generation portfolios to provide energy and services from those areas. IC operation is dependent on coordination with the remote TSOs (Respondents).</b></p> <p>-----</p> <p><sup>1</sup> This is used on all AC borders between LFC Blocks and currently some of the HVDC interconnectors. The Respondents plan a 10-minute ramping period on all interconnectors with a transition to 15-minute MTU.</p>
4	Do you have any other comments?	<p>NGESO stated that they need to reduce ramping due to deteriorating frequency performance.</p> <p>The Respondents understand that frequency management can be affected by simultaneous high ramping on various interconnectors and in some cases that need to be addressed by a ramping management process. But today, the existing statistics demonstrate that the GB system is only reaching these extreme values (sum of the ramp of all IC through the time) on exceptional basis and so this should not be managed with a continuous/permanent constraint. NGESO's proposal for a static and permanent limitation to 50 MW/min ramping rate seems to be inconsistent with the current frequency performance of the GB system and therefore is seen by the Respondents as highly conservative.</p> <p>From the Annual Load-Frequency Control report, frequency statistics in GB are far better than in other European SAs and better</p>

	<p>than the standard. In the Respondents' view, the GB systems balancing performance is good<sup>1</sup> considering GB's 200 mHz standard frequency range (SOGI Annex III Table 1).</p> <p>SOGI Article 152(1) states that each EU TSO should contract sufficient reserve to manage its required frequency quality within its synchronous area. NGESO has alluded to have equivalent frequency quality obligations. NGESO has not stated to the Respondents that it has considered fast reserve sourcing instead of reducing ramp rate. The Respondents had expected that the reserve sourcing plans of NGESO, including reserve market reforms, were included in the solutions explored in their proposal. The Respondents' view is that reserve sourcing should be done in the security analysis process prior to limiting cross border capacity.</p> <p>Pursuant to OFGEM's <a href="#">Decision to grant National Grid Electricity System Operator extension to derogation from Standard Licence Condition C28 for Net Transfer Capacity - September 2023</a>, NGESO must provide maximum IC capacity even if it has insufficient reserve to manage the resulting frequency deviation due to energy flows. Our view is that the cross-zonal capacity on HVDC borders should at all times enable a secure system operation and the provided capacity should be utilised in a most efficient market manner. Secure system operation requires an allocation constraint process for the energy market.</p> <p>NGESO's proposal does not seem in line with the objectives of the TCA, in particular Article 311. TSOs in a context of green energy transition are charged to unlock and increase flexibility in the power system in order to meet the environmental objectives. NGESO's ramping proposal, however, reduces flexibility. NGESO introducing new ramping restrictions would affect negatively neighbouring countries or the EU market and therefore go against the objectives of the TCA and international law.</p> <p><b>Additional questions from the Respondents:</b></p> <p>The Respondents have been given limited time to review a large consultation pack, which included discussions from the GB industry review which we were not party to. We therefore raised some questions to better understand the NGESO proposal. The questions are group into four categories which cover ramp rate, market reform and review process, fairness of process and TCA compliance.</p> <p><b>Ramp rate</b></p>
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<sup>1</sup> The 2022 ALFC report states that the number of minutes outside the normal band was 754 minutes for the GB system compared with the target of 15 000 minutes.



1. Was there any quantitative assessment to establish the proposed options for example in term of ramping rate that allowed to derive the value 50 MW/min?
2. Why has there been no evaluation of asymmetrical ramp rates given that reserve capacities are contracted separately up and down and can have different dynamic? Asymmetric ramp would allow different limitations in the import and export directions.
3. Have you considered any proportional ramp rate given the different IC technical capacities?

#### **Market reform and revision process**

4. NGESO has communicated to the Respondents that they are in a review process to market arrangements (REMA). What future changes to ramp rate management do you anticipate would result from REMA, to improve market efficiency of ICs?
5. It is not clear how the new ICs will be considered under the actual proposal, do we expect further reduction of ramping limit as more capacity is included in the system? Has any consideration been made to the impact of this proposal on Interconnectors in development since it will impact on their business case?
6. Is there any methodology and process for reviewing the ramping rate since the generation portfolio is in transition and new fast acting reserves and services being delivered may allow for different values in the future?
7. Are there any plans to revisit the analysis to incorporate the impact of the interconnected TSOs' constraints (e.g. ramping only within a defined 10-minute ramping period centred on the 15-minute MTU)?

#### **Fairness of process**

8. The Respondents view the analysis has a GB centric focus and considers that the CBA is incomplete. Given that each interconnector affects at least two TSOs, why wasn't sufficient time allocated to an international process to identify appropriate operational mechanisms?
9. Considering this, can we rely on the CBA main conclusions to take a decision on ramping rate considering the limitation in term of assumptions and lack of consideration to the impact of social welfare on the EU side?
10. The AFRY report provided as Annex 10, raises further issues on the CBA accuracy as: the higher cost of imbalance (10% of the time), limitation of system flexibility and issues in replicating the correlation between IC ramping and Balancing Volume. How is this taken into consideration in the NGESO's

		<p>proposal? The Respondents have similar concerns to those raised in the AFRY report and wishes to receive NGESO's comments to the collective ICs proposal.</p> <p><b>TCA compliance</b></p> <p>11. We understand from NGESO that OFGEM has instructed them (<a href="#">Decision to grant National Grid Electricity System Operator extension to derogation from Standard Licence Condition C28 for Net Transfer Capacity - September 2023</a>) for all hours to provide maximum technical capacity to the ICs to the day-ahead mechanisms. Therefore, NGESO does not conduct a rigorous system security evaluation for day-ahead. This, in the Respondents' view, is not consistent with the TCA Article 311. As a result, the day-ahead ramping rate and flow can misrepresent the actual capability, result in market price manipulation and put NGESO in a position where they are extremely challenged for securing reserves.</p> <p>It appears that the underlying issue to be resolved is system security. What other solutions have been explored to redress this problem and why was interconnector ramp rate limitations identified as the initial solution?</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 type="checkbox"/> Yes  <input checked="" type="checkbox"/> No         </p> <p>The ramping arrangements are an input to the energy markets and do not directly relate to the balancing timeframe. NGESO's proposal to reduce ramp rate will reduce energy exchange and therefore result in a less efficient price for energy over the IC due to a static allocation constraint implementation.</p> <p>NGESO has stated that the proposed reduction in ramping rate will reduce balancing costs in the GB system. We question if the social welfare is increased due to reduced ramping as the energy costs are expected to rise due to inefficiency and these are expected to be bigger than the savings in reducing GB system balancing cost for NGESO.</p> <p>Our view is that the CBA did not sufficiently capture the balancing impact and cost on the other side of the ICs.</p> <p>To be clear, ICs do not have physical balancing assets as they are only a transport medium. The balancing capability (reserves) is activated by the TSO on the other side of the IC.</p> <p>The Respondents' analysis estimates, based on Figure 2, that:</p>

1. Imports to GB have a combined average ramp rate of 15.8 MW/min, with a median of 0.3 MW/min and standard deviation of 39.6 MW/min. The maximum ramping rate was 466 MW/min.
2. Exports from GB have a combined average ramp rate of 14.7 MW/min, with a median of 0.3 MW/min and standard deviation of 34.2 MW/min. The maximum ramping rate was 419 MW/min.
3. **NGESO would not have needed to limit individual interconnectors to 50 MW/min 99.9% of the time.**

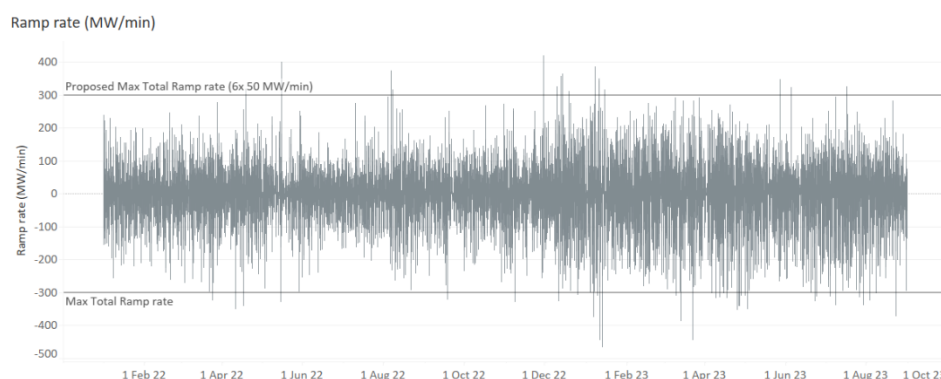


Figure 2 The total ramping rates (MW/min) over time since 1 January 2022 between GB and BE, FR, NL and NO. The calculation is based on the physical flows from the [Transparency Platform](#) with the assumption of a 10-minute ramping period. In practice, the ramping rate has been limited to 100 MW/min per IC with the Respondents being responsible for the balancing reserves.

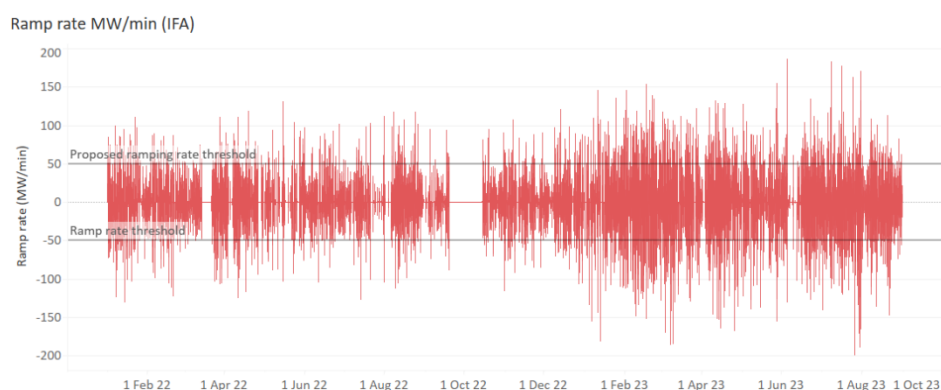


Figure 3 The ramping rates (MW/min) of IFA over time since 1 January 2022 between GB and FR. The calculation is based on the physical flows from the [Transparency Platform](#) with the assumption of a 10-minute ramping period. In practice, the ramping rate has been limited to 100 MW/min per IC with the Respondents (RTE in this case of IFA) being responsible for the balancing reserves. The proposed ramping rate of 50 MW/min would have had significant impact on the imbalance management by RTE compared to the current 100 MW/min limit.

6 Do you have any comments on the impact of GC0154 on the EBR Objectives?

☒ Yes  
☐ No

**The Respondents' view on the proposed ramping limitations of interconnectors and proposed solutions**

We are of the opinion that overseeing the whole situation (including effects in other SAs), the proposal does not benefit any of the EBR objectives mentioned in the introduction of this document. The proposal is counterproductive as it reduces market efficiency and negatively impacts our system operation.

Any change to ramping rate arrangement needs to be agreed between the TSOs with system operation responsibility and a common implementation plan developed ahead of the any new IC arrangement entering into force. A consistent policy framework is considered vital for system operators and potential investors to assess operational and financial risk. It is noted that NGESO proposes that implementation can be completed in 10 days after an OFGEM decision. We consider more time is required to facilitate bilateral agreements and adequately inform the market.

The reduction in social welfare on both sides of the ICs is impacted by a reduced ramping as it will make the ICs less energy market price responsive and therefore results in less efficient pricing as it takes more time to reach the optimal schedule. Our view is that this will result in higher energy cost than the existing mechanisms. Increased IC capacity with a proportional reduction in ramp rate limitation from NGESO would not increase the energy transferred to or from the GB system but would reduce NGESO balancing cost. This would have unintended consequences on increasing imbalance costs that should be borne by NGESO. Furthermore, the return on investment for ICs could be significantly hindered. We question if the limitation in the GB system to enable efficient energy market interaction over ICs is actually the availability of domestic reserve volumes and speed of response. Reserve market reform is therefore considered as a critical mechanism. Such a reform would be preferred and supported from the Respondents' perspective, rather than a pre-emptive static reduction of IC ramping.

NGESO's proposal does not seem in line with the objectives of the TCA, in particular Article 311. A static approach which is proposed by NGESO is therefore seen to be incompatible with the TCA as it limits the efficient use of ICs and reduces market price efficiency. Our proposal is that any ramping limitation should be calculated at the synchronous area level following a security analysis similarly to that envisaged in Article 75 of the SOGL. This gives a maximum cumulative ramp rate for export and import based on the integrity of the AC grid and available reserves. This approach maximises social welfare optimising energy market prices whilst ensuring system security is maintained in both synchronous areas. Ideally, the cumulative ramping capability would be allocated to ICs based on their relative electricity price delta. Furthermore, such an arrangement would enable that new ICs are treated equally as more ICs are planned between GB and the rest of Europe. A consistent policy framework is considered vital for system operators and potential investors to assess operational and financial risk.

	<p>The NGESO ramping proposal is based on a third-party CBA that does not account for the Continental European 10-minute ramping period change nor the 15-minute MTU. In addition, and in our view, it does not sufficiently capture the balancing impacts for both systems in terms of costs and reserves dimensioning.</p> <p>We view the NGESO proposal as a pre-emptive static action and that the reduction of IC ramping is an inflexible and inappropriate mechanism to facilitate good market efficiency, specifically in the context of the ongoing green energy transition.</p> <p>The Respondents are committed to act in solidarity with GB and NGESO in relation to coordinated security arrangements to ensure security of supply, energy adequacy and efficient market mechanisms. We remain available for any further information and discussion.</p>
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