

Common opinion
from AEEGSI, CNMC, CRE, ELCOM, ERSE and OFGEM
on TERRE project design

(Trans European Replacement Reserves Exchange)

October 2016

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1. INTRODUCTION

1.1 Context

In 2009, Regulation (EC) No 714/2009 (Article 6(2)) and Electricity Regulation and Directive 2009/72/E set the framework to integrate, coordinate and harmonise the electricity markets within the EU, with the objective of contributing to non-discrimination, effective competition, completion and efficient functioning of the internal market in electricity and cross-border trade, security of supply, providing benefits for customers, participation of demand response, supporting the achievement of the EU's targets for penetration of renewable generation, as well as ensuring the optimal management and coordinated operation of the European electricity transmission network.

To achieve these objectives, the above mentioned Regulations foresaw the development of Network Codes. In this context, ACER's Framework Guideline on Electricity Balancing (FG EB)¹, the draft network code on electricity balancing developed by ENTSO-E (NC EB)², as well as the recommendation to adopt this code published by ACER (QR on NC EB)³, paved the way to integrate the electricity balancing markets. The formal process to develop a Regulation setting binding requirement to fulfil the integration targets is expected to reach completion in 2017, as the comitology process to finalise the "Electricity Balancing Guideline" (referred to as "EB GL" in the rest of the text) started in June 2016 with the aim of a vote by Member States in late 2016.

In parallel to the formal process to adopt the EB GL, Transmission System Operators and ENTSO-E, supported by National Regulatory Authorities (referred to as "NRAs" in the rest of the text), ACER and national and EU stakeholders, have committed to work on early implementation of the EB GL through the establishment of a dedicated consultative body at European level (the so-called *Balancing Stakeholder Group*⁴) and the setting up of regional pilot projects⁵. ENTSO-E indeed proposed several cross-border pilot projects with the purpose of:

- Testing the feasibility of the European target model and the intermediate steps established in the aforesaid texts (FG EB, NC EB and QR on NC EB) ;
- Evaluating the associated implementation impact;
- Reporting on the experience gained.

In particular, the cross-border pilot projects on electricity balancing aim to anticipate the early implementation of the EB GL through the development of methodologies (eg. products, pricing methodologies, algorithms principles) required by the EB GL while ensuring stakeholder involvement at

¹ Guideline FG-2012-E-009 of 18 September 2012 the Agency for the Cooperation of European Regulators (ACER): http://www.acer.europa.eu/Electricity/FG_and_network_codes/

² Network Code on electricity balancing published on 16 September 2014 by ENTSO-E: <https://www.entsoe.eu/major-projects/network-code-development/electricity-balancing/Pages/default.aspx>

³ Recommendation of 20 July 2015 by ACER (this is the latest version of the draft EB GL): http://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Recommendations/ACER%20Recommendation%2003-2015.pdf

⁴ Terms of Reference : https://www.entsoe.eu/Documents/MC%20documents/balancing_ancillary/150317%20Balancing%20Stakeholder%20Group%20ToR%20final.pdf

⁵ ENTSO-E webpage on electricity balancing pilot projects : <https://www.entsoe.eu/major-projects/network-code-implementation/cross-border-electricity-balancing-pilot-projects/Pages/default.aspx>

an early stage and gaining bottom-up experience. Cross-border pilot projects should also shed light on any barriers during actual implementation as well as any impacts on the design of existing markets and the expected benefits in terms of social welfare.

TERRE, which stands for “Trans European Replacement Reserves exchanges”, has ENTSO-E’s status of a cross-border balancing pilot project, dedicated to the exchange of balancing energy from replacement reserves (referred to as “RR” in the rest of the text).

1.2 Scope of the project

According to the Guideline on System Operation (SO GL)⁶, RR means the active power reserves available to restore or support the required level of Frequency Restoration Reserves to be prepared for additional system imbalances, including operating reserves. TERRE therefore focuses on the exchange of balancing energy products with an activation time higher than the Time to Restore Frequency (TRF), which is 15 minutes for all TERRE countries. At this stage, the scope of the project does not cover exchange of balancing capacity from RR (which would likely require a joint procurement of RR by all TERRE TSOs as well as the reservation of cross-zonal capacity).

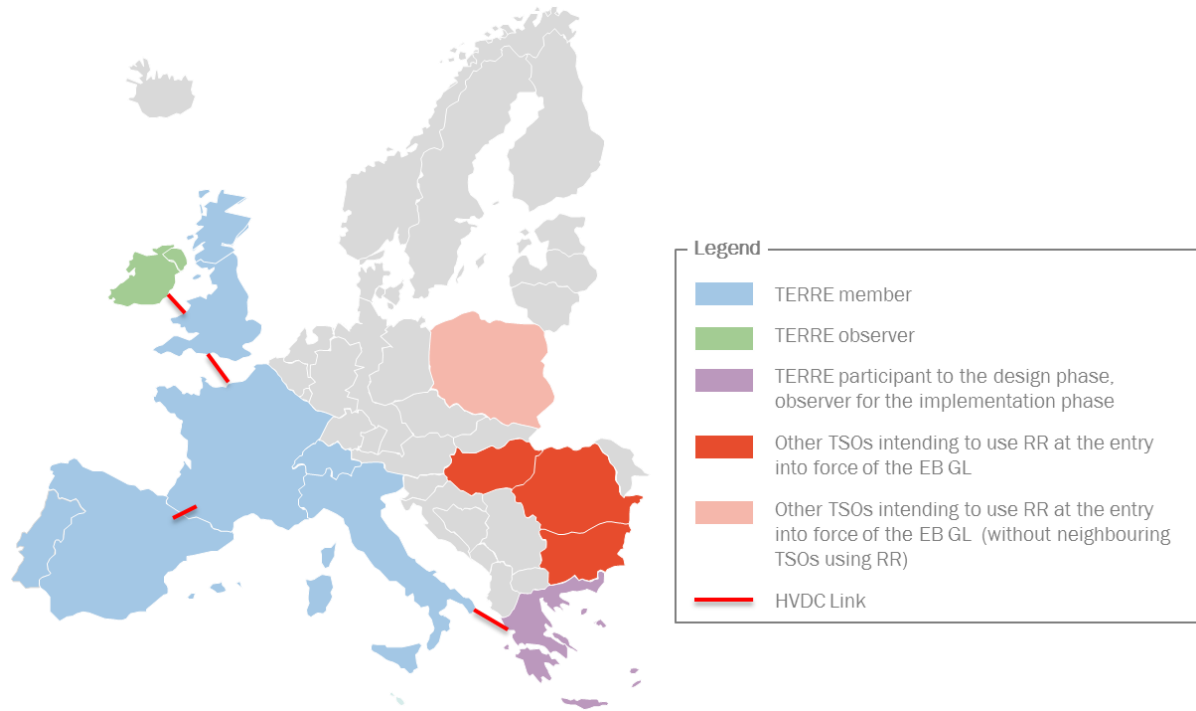
So far, the TERRE project gathers TSOs from Portugal (REN), Spain (REE), France (RTE), Italy (Terna), Switzerland (Swissgrid), and GB (National Grid) as members, as well as TSOs from Ireland (EirGrid and SONI) as observers. The Greek TSO (ADMIE) was also a member during the design phase but announced its intention to be only an observer during the implementation phase. Indeed, ADMIE no longer intends to implement RR in its balancing market at the entry into force of the EB GL.

According to the documents presented by ENTSO-E on behalf of all TSOs at the *Balancing Stakeholder Group* meeting on 30 June 2016, TERRE TSOs represent 8 out of 12 TSOs intending to use RR⁷ at the entry into force of the EB GL (one should be reminded that the use of RR is not mandatory according to the provisions of the SO GL).

⁶ The draft Regulation establishing a guideline on system operation received a positive vote in comitology on 4 May 2016 : <https://ec.europa.eu/energy/sites/ener/files/documents/SystemOperationGuideline%20final%28provisional%2904052016.pdf>

⁷ On top of TERRE’s ones, TSOs from Poland, Hungary, Romania and Bulgaria have declared their intention to use Replacement Reserves at the entry into force of the EB GL.

Figure 1 : TERRE project and TSOs using RR



Source: Supporting document from Balancing Stakeholders Group meeting on 30 June 2016

The scope of the project covers the design of a standard product to exchange balancing energy, the algorithm principles to activate balancing energy bids in order to meet TSO's expressed bids, the pricing methodology to settle the exchange of balancing energy, the management of the cross-zonal capacity, the timing and scheduling steps. TSOs also performed a Cost-Benefit Analysis, and proposed governance rules as well as transparency indicators.

During the early steps of the design phase, the project mainly focused on TSOs-TSOs exchanges. However, to ensure a level playing field amongst Balancing Services Providers (BSP) across the project, the issue of the harmonisation of TSO-BSP exchanges at local level shall be tackled to the extent they may influence fair competition amongst BSPs.

These topics will be handled in the core of this Opinion Paper.

1.3 Milestones completed

Since the earliest stages of the process, NRAs have been highly involved in the design of the TERRE project. NRAs have contributed to the on-going discussion on the choices to be made by TSOs and have provided informal guidance on the options to be further studied.

This process was formalised by the establishment of a governance structure, the so-called "TERRE Implementation Group" (TERRE IG), gathering TSOs and NRAs belonging to this cooperation. Since the launch of the design phase, TSOs and NRAs have organised two telcos and met physically four times.

TSOs and NRAs also consider stakeholders' involvement from the early steps of the project as of utmost importance. In May and December 2015, TSOs hosted stakeholder workshops in order to present the progress already achieved and to receive their feedback. National workshops have also been organised by TSOs on a case-by-case basis. From 7 March until 1st April 2016, a formal public consultation was launched on the TSOs' proposal for the project design through the ENTSO-E platform. 22 stakeholders

responded from all TERRE member countries⁸. This was also followed by an additional stakeholder workshop in July 2016.

1.4 Regulatory framework

As already mentioned the TERRE project consists of a voluntary regional initiative from TSOs. However, the project aims at providing useful insights to implement the future EB GL.

According to the provisions set in the EB GL, TSOs using RR should establish a multilateral TSO-TSO model with common merit order list to share and exchange all balancing energy bids from all standard products for RR. In its Qualified Recommendation, ACER proposed to apply these requirements to TSOs at regional level by July 2018 and to all neighbouring TSOs at European level by July 2022⁹.

The TERRE project intends to be compliant with this requirement, in particular with the objective to develop a regional integration TSO-TSO model for the exchange of balancing energy offers by mid-2018. Interrelationships between the TERRE project and the EB GL, project implementation timeline as well as next steps are tackled in the core of the document.

This opinion paper is released by all NRAs on the design of a project which is still a voluntary early implementation initiative. This opinion paper aims at anticipating, to the maximum extent, the final decision to be made by NRAs in the binding framework of the future EB GL, once it has entered into force. Therefore, the final endorsement of the TERRE project will only be given in the context of the coordinated approval phase foreseen by the future EB GL.

Due to the significant progress achieved in the design of the project, TERRE NRAs however deem it relevant to provide TSOs with early feedback and their common position on the design conclusions before the TERRE project reaches an important new milestone with the launch of the implementation phase.

As already stated, all neighbouring TSOs using RR in Western Europe are already involved either as members or as observers in the TERRE project. This opinion paper is endorsed by AEEGSI, CNMC, CRE, ELCOM, ERSE and OFGEM, i.e. NRAs from Member States whose TSOs are members of the TERRE project for the design and implementation phases.

NRAs' opinion covers the following documents which were jointly provided by REN, REE, RTE, Terna, Swissgrid and National Grid:

- An executive summary summarising the following project annexes
- Conclusions and high level principles of the design phase
- Consultation paper and assessment of responses to the consultation
- Cost Benefit Analysis
- Project Implementation Plan

⁸ Including one from a non-TERRE Member State

⁹ The proposed dates in ACER's Qualified Recommendation were based on an assumed entry into force of the EB GL in July 2016.

- The Memorandum of Understanding and the Non-Disclosure Agreement signed for the design phase¹⁰.

¹⁰ The Cooperation Agreement contract which will cover the implementation phase had not been finalized at the moment when other documents were provided by TSOs to NRAs.

2. DESIGN OF THE TSO-TSO PROJECT: TSOS' PROPOSAL, STAKEHOLDERS' POSITION AND NRAS' OPINION

Disclaimer: for the detailed presentation of the features of TERRE design and stakeholders' position, the reader is invited to consult the full documents submitted by TSOs to NRAs.

2.1 Product and needs

2.1.1 Features and formats of TERRE offers

2.1.1.1 TSOs' proposal

The standard product will be a scheduled product with a full activation time of 30 min. It has a minimum size of 1MW and will be activated in 15 min steps for at least 15 min and a maximum of 60 min. The algorithm will be able to process 5 different formats of bids (divisible, block, exclusive, multi-part and linking offers).

2.1.1.2 Stakeholders' position

Some features of the standard product were challenged by stakeholders with no major impact. Some market participants were in favour of a simplification and a reduction to only two formats while others expressed a need for all the formats. However, all stakeholders considered that the formats cover their needs except one stakeholder that requested an additional format.

2.1.1.3 NRAs' opinion

NRAs agree with the characteristics of the TERRE standard product and the different possible formats of bidding that were presented in the public consultation. NRAs agree that the design achieves the right balance between a necessary standardization – allowing market transparency and algorithmic simplicity, two prerequisites to cross-border exchanges of balancing offers following a common merit order model – and a level of flexibility that enables the participation of a wider range of market participants to the TERRE balancing platform. The current list of possible bidding formats offers market participants the possibility to better reflect their technical and economic constraints without leading to protracted computation times.

Regarding the request to add a new type of format, the expressed need seems to be already met by the existing set of formats. Consequently, it doesn't seem necessary to add complexity to the algorithm by introducing a new format.

Finally, the TERRE product was designed in order to meet the characteristics of standard products as defined in the EB GL. NRAs expect that the TERRE product belongs to the list of standard products submitted by TSOs after the entry into force of the EB GL. NRAs note that the current list of standard products presented¹¹ by ENTSO-E to EU associations through the *Balancing Stakeholders Group* contains so far only one standard products for the balancing energy from RR, which is indeed the TERRE product. NRAs welcome the definition of a single RR standard product which enables the highest level of liquidity and competition to exchange RR and will facilitate the European integration.

2.1.2 Features of TERRE needs

¹¹ Proposal for mFRR and RR standard products draft, 30 March 2016:

https://www.entsoe.eu/Documents/MC%20documents/balancing_ancillary/160404_Proposal_for_mFRR_and_RR_Standard_Products_Draft7_clean.pdf

2.1.2.1 TSOs' proposal

For each TERRE clearing run, imbalance needs will be expressed by TSOs with a time resolution of 15 min for a period of time not exceeding 60 min. TSOs will have the choice to submit inelastic or elastic needs, in which case, a price will be submitted - together with the volume - representing the willingness of the TSO to receive/pay to satisfy its needs with TERRE bids.

2.1.2.2 Stakeholders' position

Stakeholders were strongly opposed to the elasticity of the imbalance need, arguing that TSOs shouldn't behave like market agents. Some of them were against the definition of a maximum size.

2.1.2.3 NRAs' opinion

The balancing market aims at ensuring security and stability of the system. This goal can be achieved through the use of different tools (different reserve types, automatic or manual, with different activation times) at different periods of time.

At the TERRE TSO bid submission GCT (at least 45 min before real time), TSOs use a proactive approach and they can only assess the probability of their future imbalance need. This forecast only gets clearer when approaching real time. Elastic needs enable TSOs to achieve an economic optimization of the balancing process by taking into account this uncertainty. Depending on the guidance provided at local level by each NRA, TSOs could arbitrate between the different types of reserve (aFRR, mFRR and RR) based on the likelihood of an event and the prices of these reserves. However, TSOs will always be able to submit inelastic imbalance need to TERRE if they deem it relevant.

Besides, NRAs would like to underline that despite the elastic need concept appearing to be rather new, the arbitrage described earlier is already performed by all TSOs of the project who have a proactive approach. TERRE will only provide more transparency to this practice as it is foreseen that TSOs will make their optimization strategy explicit and share it with TERRE NRAs who will monitor this practice ex-post.

2.2 Algorithm

2.2.1 General principle

2.2.1.1 TSOs' proposal

The algorithm will be very similar to the ones enforced on day-ahead markets as it will consist in implicit auctions – the cross-zonal capacity is allocated at the same time as balancing offers are activated. Both downward and upward submitted imbalance needs and bids will be placed into a single common merit order list that will be cleared in a one-stage process.

2.2.1.2 Stakeholders' position

The general principles of the algorithm were quite consensual.

2.2.1.3 NRAs' opinion

NRAs agree with the principles of a common merit order list allowing counter-netting¹² actions and a one-stage clearing process as they maximize social welfare while ensuring an efficient allocation of available transmission capacities (ATCs).

¹² Netting of opposite imbalance needs

2.2.2 Counter-activations

2.2.2.1 TSOs' proposal

The primary objective of the algorithm will be to maximize social welfare. To achieve this goal, counter-netting actions and counter-activations¹³ should be allowed.

Counter-netting actions allow a reduction of activations needed to meet forecasted imbalances. This results in most cases in a higher social welfare¹⁴.

From an algorithmic point of view, counter-activations can naturally result from a clearing performed according to the merit order principle. From a market point of view, counter-activations can solve intraday market failures by activating simultaneously a lower-priced upward offer with a higher-priced downward offer. Defining the amount of counter-activations depends on the methodology to define counter-netting actions and it can be difficult to avoid counter-activations without introducing an excessive complexity that could lead to lengthy algorithmic calculation times.

2.2.2.2 Stakeholders' position

Two stakeholders expressed concerns about counter-activations and a potential negative impact on the liquidity of the intraday markets. Many stakeholders also questioned counter-activations with regards to the role of TSOs.

2.2.2.3 NRAs' opinion

The process of matching block offers in a clearing algorithm following the merit order principle can lead to counter-activation situations. NRAs believe that TSOs' duty is limited to ensuring security and proper use and functioning of the electricity transmission system, whilst minimising the overall cost of doing so. It is not in their prerogatives to solve market failures for a purpose different than balancing. Consequently, NRAs consider counter-activations serving a balancing purpose as acceptable and advisable but they propose that the TERRE algorithm should avoid counter-activations in an uncongested area when TSOs do not submit any needs and when all TSOs' needs are met –meaning the marginal activations should not involve both an upward and a downward offer as represented by the red zone 2 in Figure 3 in annex 1.

However, NRAs believe that a pragmatic approach should be favoured with regards to the algorithmic complexity that would be induced by the restriction of counter-activations. Consequently, TSOs are expected to perform a thorough analysis of counter-activations during the parallel run phase. This analysis should at least provide the following information for each type of counter-activation –meaning with and without balancing purposes:

- The frequency of each type of counter-activations and their volumes, within a bidding zone and at cross-zonal level;
- The impact of each type of counter-activations on the remaining cross-zonal capacities for further exchanges of mFRR, aFRR and for imbalance netting;
- A quantitative assessment and analysis of the impact of counter-activations on the marginal price of balancing energy;
- The impact of the algorithmic restriction of counter-activations in terms of calculation time of the algorithm;

¹³ Activation of opposite bids (upward and downward) on the same time step

¹⁴ Exceptions are possible in particular when elastic needs are defined

- The impact of the algorithmic restriction of counter-activations in terms of failures of the algorithm.

NRAs will reassess their common opinion on counter-activations prior to the go-live of the TERRE platform based on the definition of TSOs' roles and the best interest of stakeholders and the project. Given the current lack of information on the subject, NRAs will not set ex-ante thresholds.

Also, TERRE NRAs would like to remind TSOs that the EB GL states that the price of energy bids activated for purposes other than balancing shall not set the balancing energy clearing price. For this reason, NRAs insist that they expect TSOs to perform an in-depth assessment of the impact of counter-activations on the marginal price of balancing energy. In the case where marginal counter-activations would be allowed, NRAs would like to underline that they should therefore be included in the list of activation purposes to avoid any distortions to the clearing or imbalance prices.

Finally, NRAs are unsatisfied by TSOs' answer to stakeholders with regards to the impact of allowing counter-activations on the liquidity of the intraday market. The combination of an incentive gap through marginal pricing and a higher probability of activation on the TERRE platform through counter-activations could impact the intraday market liquidity¹⁵. NRAs are in favour of more thorough discussions between TSOs and the concerned stakeholders. In any case, TSOs should continue to provide best efforts to improve the functioning of intraday markets.

2.2.3 Unforeseeably accepted and rejected offers

2.2.3.1 TSOs' proposal

When a marginal offer is indivisible and only a part of it is needed to balance the system, a situation of unforeseeably accepted and rejected offers can happen. This is possible because the TERRE standard product can be submitted through block offers (indivisible offers).

TSOs are currently reviewing the different possible strategies to deal with these situations. They will take into account the stakeholders' need for transparency on the chosen strategy.

2.2.3.2 Stakeholders' position

Stakeholders requested a fair and transparent methodology for the definition of unforeseeably accepted and rejected offers.

2.2.3.3 NRAs' opinion

Given the current lack of details provided by TSOs, NRAs cannot comment on this part of the design. Further explanations and discussions involving stakeholders should also be undertaken in order to present the envisaged methodology and its rationales.

This topic will therefore be handled by NRAs in the second approval phase (see part 6 of this Opinion Paper).

2.2.4 Unavailable bids

2.2.4.1 TSOs' proposal

¹⁵ At least for the resources that can comply with a FAT equal to 30 min. Other resources with longer FAT may participate in the intraday market but not in TERRE.

Specific products will be unavailable for exchanges and won't be shared on the platform. On the top of these specific products, TSOs will be able to tag standard products as unavailable under two possible motives:

- Unshared offers that the TSO wants to keep back for its own use. In this case these should be the highest priced offers;
- Offers which can't be activated by the connecting TSO due to internal congestions or safety issues. In this case the bid is tagged as restricted.

However, for each clearing, the volume of RR offers declared as unshared by a TSO shall not exceed the volume of RR balancing capacity it has procured less the volume of specific RR bids it received.

2.2.4.2 Stakeholders' position

Stakeholders requested transparency on the methodology applied to unshare or restrict bids. Some stakeholders asked TSOs to describe the principles according to which they will activate or not unshared bids.

Stakeholders also mentioned that BSPs should be notified when their bids are tagged as unavailable and that they should receive a financial compensation.

2.2.4.3 NRAs' opinion

NRAs invite TERRE TSOs to share all TERRE products. In any case, only standard balancing energy bids with the highest prices can be unshared (up to the volume of procured RR balancing capacity less the volume of specific RR bids received).

TERRE NRAs expect TSOs to fully respect the requirements of the EB GL. Nevertheless, NRAs are in favour of a common agreement between TSOs regarding the methodology to determine volumes of unshared bids. NRAs request that TERRE TSOs at least agree to use harmonised principles for the methodology to unshare bids. Moreover, the methodologies applied by TSOs must be transparent and published according to the requirements of the EB GL.

Finally, NRAs expect TSOs to publish comprehensive information on unshared bids from standard products (for both activated and not activated products at local level) and on specific RR products which are not shared on the TERRE platform.

2.2.5 CDS bid conversion

2.2.5.1 TSOs' proposal

TSOs from central dispatch systems may have to adjust the quantity of TERRE products balancing energy offered by BSPs. No details were provided on the methodology.

2.2.5.2 Stakeholders' position

Stakeholders requested further information and were not comfortable enough to express strong views on this subject. In particular, they asked for a) transparency over the bid-conversion process in CDSs and b) clarity in terms of pricing of CDS bids into the TERRE algorithm.

2.2.5.3 NRAs' opinion

NRAs understand that the conversion of bids will allow CDS TSOs to deliver balancing resources fitting with TERRE products if the associated energy is physically deliverable at the border. In order to do so, the public consultation identified the need to develop a specific methodology at national level. However, so far, TSOs insufficiently described central dispatch systems. They have not provided any principles or technical details about the said methodology neither in the public consultation nor in their response to

stakeholders. Given the current lack of details provided by TSOs, TERRE NRAs cannot fully support this part of the design.

The EB GL foresees the use of the integrated scheduling process bids by CDSs for the exchange of balancing services and sets out principles to develop the rules to convert these bids into standard products by each TSO.

Therefore, NRAs expect that as soon as this opinion paper is submitted, TSOs within CDSs will initiate a transparent process towards BSPs, BRPs and NRAs focusing on how the conversion of bids will be performed and financially settled in case of activation. Stakeholders should have a clear view and a clear understanding on both the rationales and the way that the bid conversion process impacts the volume of bids offered by BSPs. In particular, NRAs expect TSOs running CDSs to clarify:

- What principles are behind the integrated scheduling process, how it works in co-optimising services and what services they co-optimize;
- Which technical and commercial data are required from BSPs and how the power system is represented into this integrated scheduling process;
- Which principles and criteria are used for the conversion of bids from the integrated scheduling process to TERRE products and possibly how this could be generalised to other processes in the future;
- What are the main pros (e.g. feasibility of scheduling) and cons (e.g. level of transparency of the integrated scheduling process algorithms) coming from the integrated scheduling process for BSPs willing to participate into TERRE and operating into CDSs.

Regarding the pricing of bids coming from CDSs into the TERRE common merit order, TSOs made it clear that the pricing will not be subject to changes by the local TSO. This principle is in line with NRAs' expectation and shall be better explained to BSPs in the development of local rules for bid conversion and local settlement.

2.2.6 HVDC losses

2.2.6.1 TSOs' proposal

Losses at a HVDC interconnector imply that the allocated volume in the exporting area differs from the allocated volume in the importing area. To avoid the underlying possible failures, losses at a HVDC interconnector will be directly included in the TERRE algorithm as it is already done in the day-ahead market coupling.

2.2.6.2 Stakeholders' position

Stakeholders requested further information and were not comfortable enough to express strong views on this subject.

2.2.6.3 NRAs' opinion

TERRE NRAs agree with the design proposed by TSOs in their response to stakeholders for handling HVDC losses. However, TSOs should clarify:

- Who will be financially responsible for the energy losses;
- How will the losses be handled on borders where both AC and DC connections coexist.

2.2.7 HVDC controllability

2.2.7.1 TSOs' proposal

On DC borders, contrary to AC borders, the nameplate rating is generally offered into the market (i.e. no capacity is held to prevent operational issues). This can lead to times where the market benefit that the extra capacity brings is outweighed by the operational costs of providing the capacity. TSOs manage HVDC links close to real time as the certainty of power system conditions increases. TERRE TSOs propose to manage HVDC links by submitting a 'desired flow range' which will be a constraint in the algorithm.

2.2.7.2 Stakeholders' position

Stakeholders requested further information and were not comfortable enough to express strong views on this subject.

2.2.7.3 NRAs' opinion

Given the current lack of details provided by TSOs, TERRE NRAs cannot approve this part of the design. TSOs should explain how they expect to calculate the desired flow range (including a transparent methodology) and assess what impacts this has on the total welfare of the TERRE solution. Further explanations and discussions involving stakeholders should also be undertaken before NRAs agree to this. Besides, if this part of the design is accepted, it is expected to be performed under a transparent and justified methodology.

2.2.8 Fallback

2.2.8.1 TSOs' proposal

The fallback plan is still under construction and will define the remedial actions in case of suboptimal conditions or fatal failure. In case of fatal failure, balancing will be performed by TSOs at the local level.

2.2.8.2 Stakeholders' position

Stakeholders requested further information and were not comfortable enough to express strong views on this subject.

2.2.8.3 NRAs' opinion

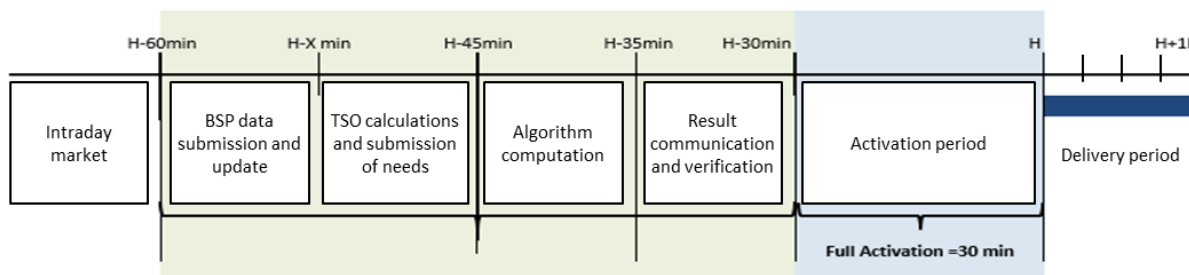
Considering the tight time conditions of the TERRE clearing process, it will likely be impossible to re-run the algorithm in case of failure. Consequently, a robust fallback plan is essential. The parallel run phase will be a good opportunity to assess the frequency and the causes of failures. If there are frequent failures, TSOs should consider identifying a fallback plan at the TERRE level. If failures are rare, the local resolution represents a pragmatic short-term solution.

2.3 Timing and scheduling

2.3.1 TSOs' proposal

The TERRE process design relies on an intraday market cross-zonal gate closure time (referred to as "ID CZ GCT" in the rest of the text) of 60 minutes before delivery. The different process phases are as follows:

Figure 2 : TERRE timing of the different phases



TSOs warned NRAs about some stakeholders' requests to move the ID CZ GCT as close as possible to the delivery time (potentially until 30 minutes before delivery) in the dedicated public consultation of ENTSO-E¹⁶ about the intraday cross-zonal gate opening and intraday cross-zonal gate closure times, pursuant to Art. 59.1 of the Capacity Allocation and Congestion Management Guideline¹⁷ (referred to as "CACM GL" in the rest of the text).

TERRE TSOs underlined that maintaining an ID CZ GCT 60 minutes before delivery is critical for the performance of the mechanism. TSOs raised significant concerns on the possibility to efficiently balance the system if the lead time after ID CZ GCT is below 60 minutes and on the possibility to proceed with RR exchanges.

The different cross-border scheduling steps that will be admissible by the TERRE platform will be 60, 30 or 15 minutes. TSOs proposed to start with a common 60min cross-border scheduling step and are investigating the reduction of this value to 30min or 15min. One should be reminded that the highest value of the cross-border scheduling step (60 minutes) hinders the possibility to have different amounts of RR cross-border exchanges for the different quarters of the delivery period, as well as the possibility to increase the number of clearings per hour.

2.3.2 Stakeholders' position

Stakeholders support a clear distinction between the intraday market and the subsequent TERRE mechanism. Most of them did not challenge the ID CZ GCT 60 minutes before delivery as suggested by the TERRE TSOs. Only one stakeholder requested ID CZ GCT closer to real time¹⁸.

The temporal distinction between offer submission by BSPs (Pre-Tendering) and TSO imbalance need submission (Tendering) was challenged by stakeholders.

With regards to the reduction of the cross-border scheduling step, most stakeholders agree to begin with 60 minutes and reduce it progressively to 15 minutes once TERRE is implemented.

For stakeholders the time available for them to update their bids is key. It was proposed to parallelise BSPs' bid submission and TSOs' needs submission, or at least to reduce the gap between the two dead-

¹⁶ The public consultation took place between the 18th of April and the 18th of May.

https://consultations.entsoe.eu/markets/intraday-cross-zonal-gate-opening-and-gate-closure/consult_view

TSOs are expected to submit the formal proposal to NRAs by November 2016.

¹⁷ <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32015R1222>

¹⁸ However, it should be noted that in the dedicated consultation of ENTSO-E about the intraday cross-zonal GCT, several stakeholders requested an intraday GCT closer to delivery.

lines as much as possible. According to TSOs some time is required after the BSPs' bid submission in order to perform the security assessment.

Finally, some stakeholders suggested to allow market participants with a full activation time greater than 30 minutes as they could offer balancing energy for the second, third or fourth 15 minutes time step.

2.3.3 NRAs' opinion

NRAs in general support the timing and scheduling processes proposed by TERRE TSOs.

To avoid any market distortions, NRAs are in favour of a harmonization of the RR balancing energy gate closure times among TERRE members. Regarding the time interval between BSPs' bid submission deadline and TSOs' needs submission deadline, NRAs request TERRE TSOs to reduce the gap between the two deadlines as much as possible. NRAs invite TSOs to make an accurate proposal for the value of "X" in the figure above at the earliest possible date.

NRAs understand the challenges posed by the simultaneous work being performed on the proposal for an ID CZ GCT according to CACM GL and the definition of timing and scheduling of the TERRE process. NRAs indeed note that ENTSO-E in its above mentioned public consultation currently proposes to have an ID CZ GCT taking place 60 minutes before the start of the relevant intraday market time unit, leading to an ID CZ GCT every 30 minutes for the FR-GB border and the FR-CH border (see Annex 2 for a detailed analysis).

TERRE NRAs note that the ID CZ GCT 60 minutes before delivery is consistent with the TERRE timings before the delivery period. However, an ID CZ GCT every 30 minutes would have an impact on the second half of the TERRE delivery period, as both intraday market and the balancing market would overlap, which is contradictory with the provisions of the EB GL.

To be ready to adapt the TERRE process depending on the outcome of the final decision on ID CZ GCT by all NRAs, TERRE NRAs therefore invite TSOs to carefully assess the consequences of ENTSO-E's proposal in terms of (i) the TERRE delivery period (ii) the frequency of TERRE clearings and (iii) cross-border scheduling steps. In particular, TERRE TSOs should provide an assessment of the impact of an intraday market time unit at 30 or 15 minutes.

TERRE NRAs also request TSOs to provide, at the earliest possible date, an assessment of the most beneficial approach to reduce the cross-border scheduling step and the related implementation plan.

Finally, at this stage NRAs are not in favour of the participation of generation assets with full activation times longer than 30 minutes, since this participation is hardly possible as long as the cross-border scheduling step is set at 60 minutes -the amount of cross-border exchanges for TERRE products shall be the same over the whole hour of the delivery period.

2.4 Cross-Border capacities management

2.4.1 TSOs' proposal

Cross-border capacities after the ID market are an input for the algorithmic optimization.

The ATC which will be calculated by TSOs at each border of the TERRE project, will be the remaining value after the intraday market.

DC interconnectors are fully controllable and therefore, the power flowing on each DC link can be set by the interconnector operator, taking into account the existing limits. However, power flows on DC links can only be modified following a predefined maximum ramp-rate, without any possibility to overload the cables. As a consequence, it may not be possible to meet the scheduled power profile as desired from one hour to the next, and therefore imbalances may occur.

TERRE results will be physically firm, and the associated cost of imbalance (on both markets) will be supported by the interconnector owner(s). In order to avoid high imbalance costs due to important commercial variations, the concept of Physical Feasibility has been developed to take into account all its constraints (e.g. maximum ramp-rates, tunnel, IC limitations). This variable represents the biggest admissible upward and downward change in flows without generating imbalance on each specific hour.

2.4.2 Stakeholders' position

One stakeholder expressed the need to consider the flexibility of Phase Shift Transformers on ATC calculations and some stakeholders raised questions about the DC link ATC calculation method proposed, between or within synchronous zones.

One stakeholder highlighted the importance of taking into consideration the update of the interconnection capacity near real time.

2.4.3 NRAs' opinion

NRAs consider that the calculation model defined by the TSOs for ATC is clear and acceptable regarding the AC links. Nevertheless, the approach for DC links still requires further explanations from TSOs before approval, namely how the concept of Physical Feasibility is used, the detailed description and model of all the constraints involved. Additionally, for NRA's view on DC controllability methodology, please refer to paragraph 2.2.7.

2.5 Settlement (TSO-TSO)

2.5.1 TSOs' proposal

The product exchanged between TSOs through TERRE will be a simple 'block' which excludes the energy associated with the increasing and decreasing power ramps. The TSO-TSO settlement will be pay-as-cleared. However, congestion at the borders will create a price difference and a congestion rent that will be distributed in line with the methodologies applied in other timeframes (such as in multiregional coupling (MRC) for day ahead trading). In the case when price indeterminacies exist, the mid-point will be used (such as in MRC for day ahead trading) or when all needs are elastic an 'opportunity price' shall be calculated.

2.5.2 Stakeholders' position

The majority of stakeholder agreed with the proposed TSO-TSO settlement rules. Stakeholders strongly supported the pay-as-cleared approach and consistency between TSO-TSO and TSO-BSP settlement. A small number of stakeholders disagreed with the exclusion of ramps from the settlement.

2.5.3 NRAs' opinion

The TERRE NRAs wish to highlight the importance of consistency between TSO-TSO and TSO-BSP settlement (see section 3 below). In line with the draft EB GL, NRAs support the proposal for pay-as-cleared settlement for TSO-TSO exchanges of balancing energy and to distribute congestion rent in line with

methodologies applied in other timeframes. NRAs note the TERRE TSOs' preference for 'block' settlement that excludes ramps and the majority of stakeholders who supported this. Nevertheless, NRAs understand that this design consideration is also taking place through the development of ENTSO-E's proposal for standard products, currently under discussion by the *Balancing Stakeholder Group*. Settling or not of the ramps should be handled in a consistent way for all manual scheduled products, be they mFRR or RR. NRAs thus expect that the TERRE product will comply with the finalized and agreed requirements for European standard products.

Therefore, NRAs invite TSOs at this stage to design an algorithm flexible enough to deal with both options, namely settling or not of the ramps of TERRE products, and to keep this flexibility until the final decision is made by all NRAs on European standard products according to the provisions of the EB GL.

2.6 Transparency

2.6.1 TSOs' proposal

TSOs referred to the obligations set in Article 17 of Commission Regulation (EC) No. 543/2013, implying that TERRE will become the European platform for the integration model for RR exchanges and therefore taking the obligation to submit data to the ENTSO-E Transparency Platform. Moreover, TSOs expect that some information could be provided by the ENTSO-E Transparency Platform even during the implementation phase.

2.6.2 Stakeholders' position

Stakeholders expected that data such as offered prices and volumes and the TERRE results to be published through the ENTSO-E Transparency Platform as well as at local level according to local rules with as much details as possible. In addition, stakeholders asked for more transparency during the implementation phase.

2.6.3 NRAs' opinion

TERRE NRAs are encouraged to see TERRE TSOs assume the responsibility for submitting data to the ENTSO-E Transparency Platform, in line with the Regulation on Transparency (543/2013). However NRAs also expect that the TERRE Project will be fully compliant with the information publication requirements outlined in the EB GL. During the implementation phase of the project NRAs expect TSOs to develop a comprehensive 'Transparency Plan' to ensure that all legal requirements are met. This plan should include:

- Precise details of what data (and in what format) will be published on the ENTSO-E Transparency Platform for the entire TERRE market and who is responsible for ensuring this data is submitted;
- What data will be published (and in what format) on local platforms and who is responsible for ensuring the publication of this data.

In addition to all EB GL obligations on the publication of information, TSOs are expected to:

- Share with TERRE NRAs the submitted imbalance needs (TSO volume and price) ;
- Officially publish information on the occurrence of indeterminacies under EB GL comparable conditions (anonymised if necessary and no later than 30min after the ending time of the validity period).

In addition, any data published on local platforms should be consistent across the TERRE region to ensure a level playing field for BSPs. This consistency should include a harmonised publication timetable and a consistent format so that data from one TERRE country can be easily compared to data from a different TERRE country. Moreover, NRAs also expect those data to be available for free and with open access.

Finally, in some countries, TERRE exchanges of standard products may run in parallel to local systems. Handling in parallel both balancing systems will result in a higher operational complexity for affected TSOs. They will have to ensure that these two systems are handled in a consistent and non-redundant way. NRAs would like to know how TSOs envisage managing these underlying operational challenges. Furthermore, NRAs would like to have a clear view on how TSOs will arbitrate between the two systems for activating balancing energy. This arbitrage should be transparent.

3. IMPACT ON TSO-BSP EXCHANGES FOR TERRE PRODUCTS: LEVEL OF HARMONIZATION

3.1.1 TSOs' proposal

Only the features of TSO-TSO settlement were included in the TERRE TSOs' design document. Moreover, the TERRE TSOs proposed that the features of the TSO-BSP settlement will not be harmonized until the RR CoBA is established. However the accompanying "Project Answers" document provided an additional indication of the TSOs' views regarding TSO-BSP settlement. This included: pay-as-cleared, 'block' settlement, removing price caps/floors for balancing energy, and harmonized (but not yet defined) balancing energy gate closure time (BEGCT).

TERRE TSOs advocated for the removal of price caps/floors in all TERRE countries to ensure a level playing field for BSPs. However, in case this is not possible, an interim 'solution through settlement' is proposed which consists of a settlement re-adjustment at national level.

3.1.2 Stakeholders' position

Stakeholders strongly supported consistency between TSO-TSO and TSO-BSP settlement. As noted above (see section 2.5) Stakeholders backed the pay-as-cleared approach and most supported the exclusion of ramps from settlement. There was also strong support for the removal of price caps/floors and the interim solution through settlement as a second-best option.

3.1.3 NRAs' opinion

It is not sufficient for only the TSO-TSO settlement features to be included in the TERRE high level design. Given the high importance of creating a level playing field for BSPs participating in cross-border balancing markets TSO-BSP settlement shall also be considered. NRAs expect a high degree of consistency between TSO-TSO and TSO-BSP settlement at TERRE go-live. This should include pay-as-cleared pricing, consistent treatment of ramps (in line with the ENTSO-E proposal for standard products), and a harmonized TERRE BEGCT. NRAs therefore request TERRE TSOs to harmonise this TERRE BEGCT sooner than the deadline proposed in the "Project Answers" document, at TERRE go-live.

The TERRE Project shall be designed to comply with the requirements of the EB GL at TERRE go-live. NRAs expect that this will include the legal requirement for all NRAs to remove caps/floors for balancing energy. However, due to local market power concerns, not all TERRE NRAs can agree to the immediate removal of national price caps/floors. If there are unexpected delays to the entry into force of the EB GL NRAs consider it prudent to have a back-up design option. In such case, the solution through settlement should be implemented until the requirements of the EB GL enter into force.

4. COST BENEFIT ANALYSIS

4.1.1 TSOs' proposal

The TERRE cost benefit analysis (referred to as “CBA” in the rest of the text), undertaken using 2013 historical data, assessed the additional benefits that would have occurred (in 2013) if the different RR markets of the TERRE member states were coupled. This was assessed against a counterfactual scenario of the historical costs of each TSO satisfying its needs using the offers from BSPs in its own area.

The CBA estimated that TERRE should reduce both upwards and downwards activations due to the netting of imbalances. Overall, the total net benefit of TERRE was estimated to be about €151 million for the single year of 2013.

TSOs also provided an early estimated cost of TERRE implementation of €25-30 million. This estimated cost does not include any expected implementation costs incurred by BSPs.

4.1.2 Stakeholders' position

The majority of stakeholders agreed with the CBA methodology, assumptions taken and the level of transparency provided by the TSO analysis. Nevertheless, several stakeholders considered 2013 data to be somewhat out-dated and not fully representative of the situation when TERRE will go live. Therefore some stakeholders requested an updated CBA using more up to date data. Some stakeholders also requested that the CBA includes consideration of BSP costs.

4.1.3 NRAs' opinion

The TERRE NRAs welcome the TSO's effort to undertake the CBA and recognise the inherent difficulties in developing a robust methodology that accounts for the many differences that currently exist between the balancing markets in TERRE member states. NRAs agree to rely upon the current CBA results using 2013 data and do not propose for the TSOs to revisit this assessment with more up to date data. This decision is driven by the fact that the need to implement exchanges of balancing energy from RR is expected to be a legal requirement of the EB GL for TSOs using such reserves. The TERRE CBA will therefore have little impact on the overall decision to progress with the implementation of the RR CoBA. Besides, the TERRE CBA and past studies give NRAs confidence that benefits will quickly outweigh the costs of the project.

Moreover, NRAs understand the significant effort that went into collecting the data and running the analysis and do not think it is prudent for TSOs to spend their limited resource on updating the CBA when there are still so many aspects of the overall TERRE design that require continued development. NRAs also expect that further analysis of the costs and benefits will be performed by TSOs as part of the parallel run phase.

As for the inclusion of BSP costs, it is difficult at this stage to isolate and assess these given that the implementation of TERRE will be part of a greater evolution of European balancing practices. BSP participation in the TERRE market is also not mandatory and will be a decision for each BSP to take. It is therefore difficult at this stage to accurately scale-up individual BSP costs to the whole TERRE region.

5. GOVERNANCE RULES AND STAKEHOLDERS' INVOLVEMENT

5.1.1 TSOs' proposal

TERRE TSOs proposed that during the implementation phase, mutual rights and obligations of the TERRE Members will be laid down in a Cooperation agreement signed by all TERRE Members. Once developed, the TERRE platform will be operated under the responsibility of all TERRE Members, who will also be the owners of the platform.

TERRE TSOs will form a TERRE Steering Committee (SC), which will be the decision making body of TERRE and a TERRE Working Group (TWG) which will be the expert body. The TERRE TSOs plan to involve stakeholders in the development of the different project stages. Stakeholder meetings and workshops will be organized at regional level and at national level and TERRE NRAs will approve the conditions and methodologies that are subject to regulatory approval pursuant to the EB GL once this enters into force.

5.1.2 Stakeholders' position

Stakeholders welcomed their involvement in the TERRE workshops and the public consultation; however, many suggested that they would like greater stakeholder involvement in the next stage of the TERRE project. Some stakeholders suggested creating a formal structure or 'stakeholder committee' to ensure stakeholders' greater involvement.

5.1.3 NRAs' opinion

TERRE NRAs have been pleased with the efforts made by TSOs to include stakeholders during the design stage of the project, in particular the three workshops organised during the design phase as well as the public consultation in March 2016. NRAs expect TSOs to continue to engage stakeholders on specific TERRE matters at regional and national levels. NRAs consider that TSOs should continue to organise workshops which allow for a wider participation from all stakeholders instead of limiting accession to nominated members.

NRAs encourage the TERRE TSOs to make best use of existing stakeholder structures, namely to report the progress made and the experience gained to the *Balancing Stakeholder Group*, and in particular when these may bring insight for the European implementation of the EB GL.

During the implementation phase, when systems are being developed and end-to-end testing is taking place, it is important to ensure that stakeholders will be involved and at go-live of the project, BSPs will be fully prepared to also take part.

NRAs also expect that the TSO-BSP harmonisation developments and the design topics identified in this Opinion Paper as having insufficient justification (eg, HVDC losses, UAB/URB, CDS bid conversion, timing and scheduling, HVDC controllability and cross-border capacities management, etc.) will also be discussed with stakeholders before being finalised. To this end, NRAs support a further public consultation in early 2017 according to the project implementation plan as described in section 6.

We also expect TERRE TSOs to further consider and explain to NRAs, and finally implement, the governance arrangements for how new members will join the TERRE project, for example, in terms of contributing to central costs, ownership of the platform and including these new members to project development.

6. PROJECT IMPLEMENTATION PLAN, POSSIBLE EVOLUTIONS AND RELATIONSHIP WITH THE REQUIREMENTS AND DEADLINES FROM THE EB GL

6.1.1 TSOs' proposal

The TERRE project implementation plan, as submitted to NRAs in the approval package, covers the period from 2016 until mid-2018 and aims at achieving a go-live window at the end of Q2 2018. This target deadline is compliant with the requirement set in ACER's Qualified Recommendation, which states that *"no later than 1 July 2018, all TSOs using Replacement Reserves shall implement the regional integration model for the Replacement Reserves"*.

The project implementation plan includes the following steps:

- Definition of the legal framework through signing the Cooperation Agreements between TSOs (both for the implementation and operational phases) ;
- Development of the centralised platform, through the selection of the service provider, the definition of functional specifications, iterative solution development phases, testing activities and further parallel run phase involving BSPs.
- Regulatory activities and compliance with the binding requirements foreseen in Articles 6, 12, 15, and 23 of the future EB GL¹⁹ in terms of proposal for an integration framework, stakeholders' consultation and NRAs' approval. In particular, a second public consultation and an approval phase are expected to take place respectively in Q2 and Q4 2017.

However, on 4th July TSOs presented during a Stakeholders Workshop an update of this implementation plan, indicating a go-live window at the end of Q3 2018.

In addition, TSOs propose to design and implement the TERRE platform so that it could further evolve in the future in order to possibly take into account:

- Introduction of additional clearings within TERRE (see part 2.3).
- Additional balancing products and processes.

TERRE TSOs indeed propose to offer the experience gained in the design and implementation of the TERRE project and consider that the design and implementation progress of the TERRE project (algorithm, IT systems, governance, etc) could be used in the construction of a platform to exchange other scheduled balancing energy products from mFRR. TSOs assume that the centralised TERRE IT platform should be implemented with enough flexibility to handle different processes and products.

6.1.2 Stakeholders' position

Stakeholders called for an early involvement to enable them to adapt and develop their local tools in order to be compliant with TERRE requirements. Therefore technical features (architecture, interfaces) should be shared in due time with them. Stakeholders also expressed a strong willingness to be involved in the parallel run process as well as in the next steps regarding the compliance with the binding requirements foreseen in the EB GL.

Stakeholders also commented on the potential evolution of the TERRE platform. They mainly wish to anticipate such evolutions so that the platform could already be designed in a way to be quickly

¹⁹ As in ACER's qualified recommendation of the 20th of July 2015.

adapted to additional clearings and/or additional products and processes. Stakeholders also noted the relationship between additional clearings and functioning of the intraday market.

6.1.3 NRAs' opinion

Considering the significant benefits arising from the exchanges of balancing energy from RR according to the outcomes of the CBA (see part 4), NRAs encourage TSOs to implement the TERRE platform at the earliest possible date and in any case no later than the target deadline set in the ACER Qualified Recommendation, i.e. 1st of July 2018. NRAs believe this target is still achievable, bearing in mind the good progress already completed in terms of design choices and stakeholders' involvement. This opinion paper should support a timely implementation of the TERRE Project through common feedback that should reduce regulatory uncertainties. It is of utmost importance that all TERRE TSOs commit themselves to meet this deadline, to avoid any delay penalising all project members. This shall also include a commitment to engage promptly and proactively with market participants to ensure the testing phase is comprehensive and completed on time so BSPs are capable of submitting bids to the TERRE platform at the go-live date.

Although the EB GL is currently still not finalised, the target model for the exchanges of balancing energy from RR will most likely require all neighbouring TSOs using RR to exchanges balancing energy bids from RR on a centralised platform. In this perspective, NRAs request TERRE TSOs to involve to the maximum extent their neighbouring TSOs using RR (such as EIRGRID and SONI) in the implementation phase of the TERRE project.

Regarding the potential evolutions tackled by TSOs, NRAs are not opposed to further development of the TERRE platform, as long as these developments meet the requirements of the EB GL. Such developments should also be consulted on with stakeholders and subject to concrete proposals to be submitted to NRAs in the approval package expected pursuant to the EB GL.

Regarding the potential extension of the TERRE project to additional balancing products and processes, NRAs recall that the target model for the exchange of balancing energy reserves from mFRR should be a European integration model according to the EB GL. To make such extension of the TERRE platform efficient TERRE TSOs should therefore quickly engage early discussions with other TSOs interested to work on the development of the exchanges of balancing energy reserves from mFRR. NRAs also invite TERRE TSOs to remain highly involved in the ongoing discussion between ENTSO-E, ACER and the European Commission on the approach towards the European integration model for the exchanges of mFRR.

7. CONCLUSION

Taking into account the promising results of the CBA, NRAs see great benefits to implement the TERRE project at the earliest possible date.

NRAs therefore expect TSOs to implement the TERRE platform by the target deadline set in the ACER Qualified Recommendation, ie 1st of July 2018 while still performing a comprehensive and complete testing phase involving BSPs. Besides, regarding the possible extension of the TERRE platform to scheduled mFRR balancing products, TERRE TSOs should engage discussions with other TSOs interested in the early development of exchanges of such products.

For the design elements where TSOs provided comprehensive information, NRAs agree to a majority of the proposed design elements of the TERRE project and request very few substantial changes. These consensual elements include the features and formats of the TERRE offers and TERRE needs, the general principles of the algorithm, the TSO-TSO settlement arrangements -taking into account a settlement of ramps consistent with the definition for standard products- and the CBA. Additionally, regarding TERRE needs, NRAs expect TSOs to make their optimization strategy explicit to express their needs and share it with TERRE NRAs who will monitor this practice ex-post.

However, NRAs found many elements where TSOs have not provided a sufficient level of information to be able to fully endorse the concerned parts of the design. As outlined below, we expect further information to be provided by the TSOs before the 2nd approval phase, or before the go-live of the TERRE platform when analysis from the parallel run is requested. The following further information is requested:

- Counter-activations
 - NRAs consider counter-activations serving a balancing purpose as acceptable and advisable but propose that the TERRE algorithm should avoid counter-activations in the absence of such a purpose. NRAs could reassess their opinion with regards to the results of the required analysis – as described in part 2.2.2.3.
 - In that case, TSOs should also present a foreseen solution to handle the issue of the impact of counter-activations on the marginal price in the absence of a balancing purpose.
 - TSOs should engage further analysis and discussion with stakeholders on the impact of counter-activations on the liquidity of the intraday market.
- Unforeseeably accepted and rejected offers
 - NRAs expect further explanations and discussions involving stakeholders in order to present the envisaged methodology and rationale to handle UAB and URB.
- Unavailable bids
 - TSOs should detail the methodology they expect to use for the determination of unshared bids. This methodology should be transparent and harmonized to the possible extent among TERRE TSOs.
- CDS bid conversion
 - Stakeholders should be granted a clear view and a clear understanding on both the rationale and the way that the bid conversion process impacts the volume of bids offered by BSPs.
- HVDC losses

- NRAs expect TSOs to define the financial responsibility of energy losses and the envisaged methodology to handles losses on borders where both AC and DC connections coexist.
- HVDC controllability
 - TSOs should explain how they expect to calculate the desired flow range and provide NRAs with an assessment of the impact of this controllability on the total welfare of the TERRE project.
- Cross-Border capacities management
 - TSOs should provide a detailed explanation of the concept of Physical Feasibility (use, detailed description and model of variables involved).
- Timing and scheduling
 - When defining the TERRE BEGCT this should be harmonised across all TERRE members and should minimise the gap between the final point at which BSPs submit their bids and the point when TSOs submit their needs.
 - TSOs should provide an assessment of the consequences for the TERRE process of intraday market time units of 30 or 15 minutes. This assessment should describe the expected impacts on the TERRE delivery period, frequency of TERRE clearings, and cross-border scheduling steps.
 - TSOs should also provide an implementation plan detailing the intended process to reduce the cross-border scheduling step to 15 or 30 minutes.
- Fallback plan
 - NRAs agree with the principle of the plan but further developments might be necessary following the parallel run phase results.
- Transparency
 - TSOs are requested to produce a 'Transparency Plan' as described in part 2.6.3. With regards to the foreseen publication of data, NRAs request TSOs to respect the standards defined in the EB GL whilst sharing extra information on:
 - Unshared bids from standard products (for both activated and not activated products at local level) and specific RR products which are not shared on the TERRE platform;
 - The frequency and causes of failures of the algorithm during the parallel run phase;
 - The occurrence of indeterminacies;
 - All submitted imbalance needs (volume and price, with NRAs only).
 - In any case, TSOs should achieve a harmonization of the published data in order to ensure a level playing field between BSPs from all TERRE countries.
 - Finally, TSOs should present how they expect to handle their respective local historical balancing systems in parallel to TERRE and provide concrete solutions to do so in a transparent way.
- Level of harmonization of TSO-BSP exchanges

- At the go-live of the TERRE project, NRAs expect the key features of TSO-BSP settlement to be harmonised across TERRE members and a high level of consistency between TSO-TSO and TSO-BSP settlements.
- NRAs underline that the TERRE project must be compliant with the EB GL at its go-live. This includes the legal requirements to remove caps and floors. NRAs note that the envisaged solution through settlement may only be implemented up to the entry into force of EB GL.
- Governance rules
 - TSOs should explain the governance arrangements concerning how new members join the TERRE platform.

8. ANNEX 1: COUNTER ACTIVATIONS

Figure 3: Algorithm clearing resulting in counter-activations

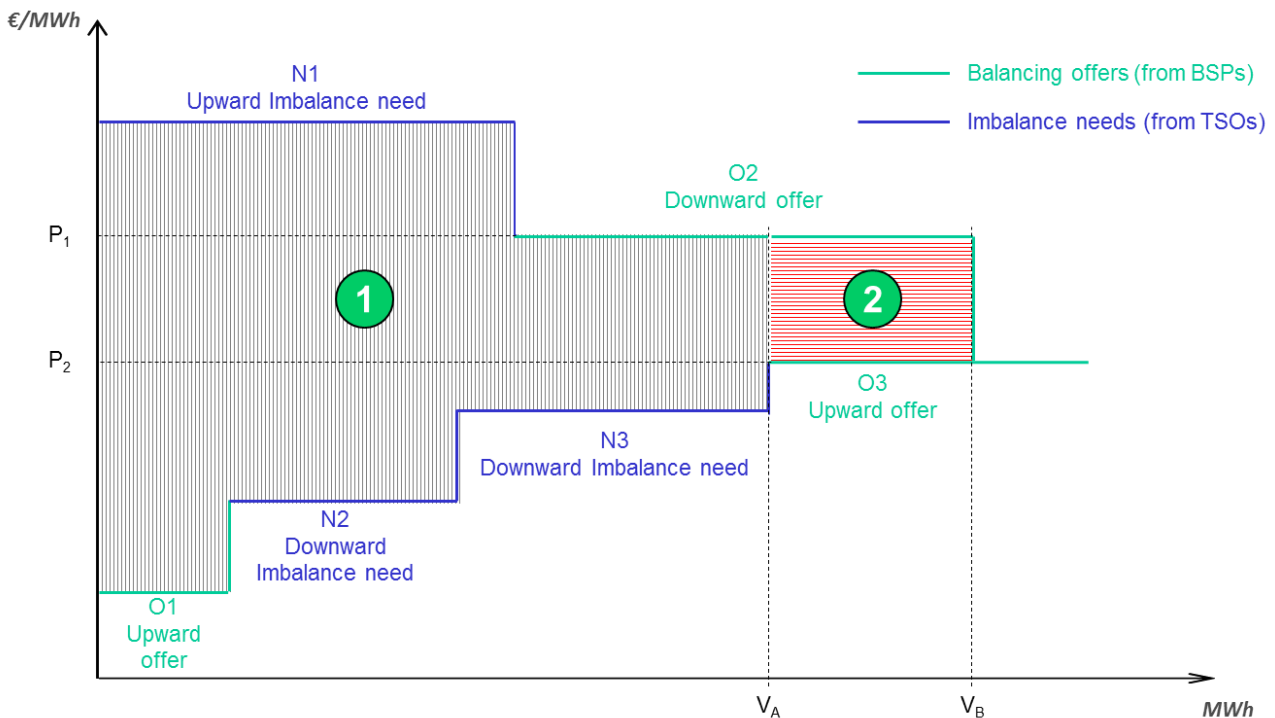


Figure 3 presents a situation where the algorithm clearing - following the merit order principle - would result in counter-activations. Assuming the area is uncongested²⁰, when following the merit order principle, an unrestricted algorithm will match offer and demand up to the volume V_B leading to the activation of both upward and downward offers (O1, O2 and O3).

A restricted algorithm could theoretically avoid the activation of O3 with the right part of O2 (assuming O2 is not an indivisible offer) and match offer and demand up to the volume V_A . Even in this case, one could still consider that a counter-activation happened between O1 and the first part of O2. However, this counter-activations depends on the methodology used to split the activated volumes into counter-netting (N1 vs N2 and N3), counter-activations (O1 and O2), and matching offers with demands (O1 with N1 and O2 with N3). For counter-activations resulting from the methodology to split the activated volumes, NRAs consider them as acceptable.

In this example, the only counter-activation that is theoretically avoidable without breaking the merit order principle would be the one corresponding to zone 2 in red. However, avoiding these activations could have an important impact on the algorithm and its convergence.

NRAs believe that TSOs' duty is limited to ensuring security and proper use and functioning of the electricity transmission system, whilst minimising the overall cost of doing so. It is not in their prerogatives to solve market failures for a purpose different than balancing. In the previous example in case TSOs would not have expressed any need, the algorithm would still have matched O2 with O1 and O3, leading to a counter-activation without any need to balance the system. The counter-activation corresponding to zone 2 in red is a subcase of this situation as all imbalance needs are already met.

²⁰ The activation of opposite offers on the same time step in order to meet opposite imbalance needs (eg N1 and N2 in the above scheme) in two congested areas constitutes a natural and expected counter-activation. That's why NRAs do not consider this case.

9. ANNEX 2: TIMING AND SCHEDULING

NRAs understand the concern expressed by TERRE TSOs regarding the challenge posed by some stakeholders in the context of the ENTSO-E consultation on intraday cross-zonal gate opening and intraday cross-zonal gate closure time (ID CZ GCT). However, TERRE NRAs' opinion is that the initial proposal expressed by ENTSO-E, i.e. ID CZ GCT 60 minutes before delivery should not be shortened for several reasons:

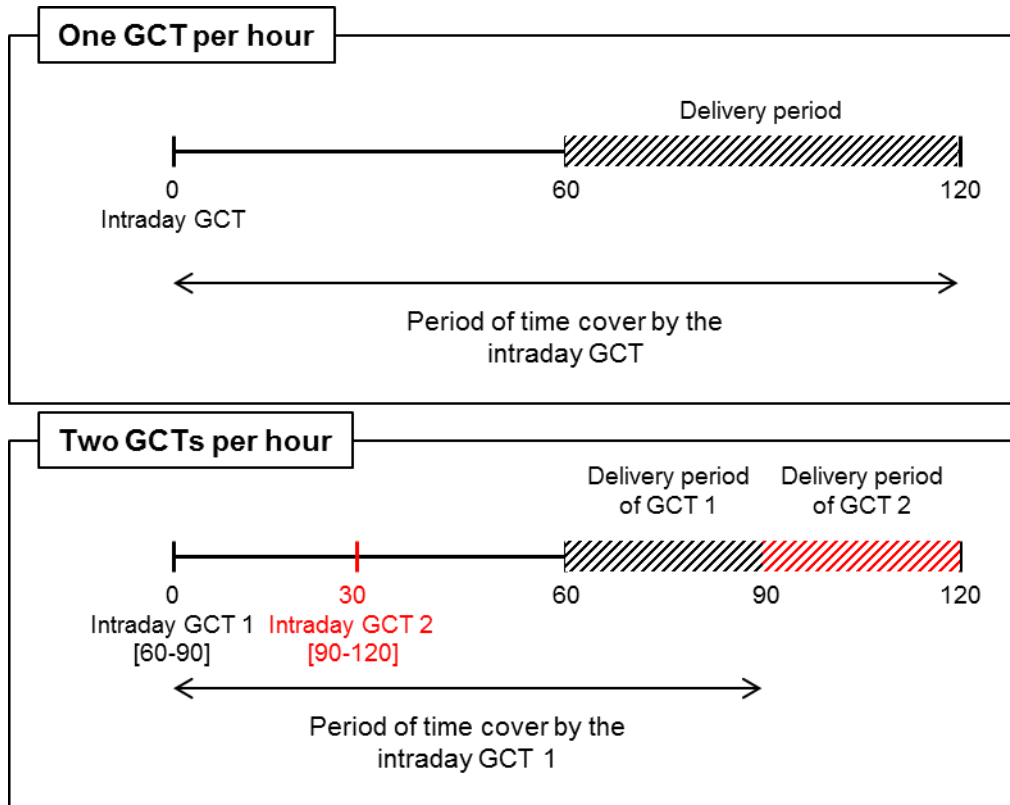
- The consensus reached during the negotiation of the CACM GL was that ID CZ GCT would be 60 minutes before delivery since TSOs would need this time for balancing and other internal processes related to operational security.
- It would jeopardise the possibility to run RR procurement with a standard product based in a Full Activation Time set at 30 minutes, thus hampering the implementation of part of the (future) EB GL.

NRAs would like to draw TSOs' attention on another topic related to the ID CZ GCT. Assuming a given ID CZ GCT 60 minutes before real time, the frequency of GCTs as proposed in the ENTSO-E consultation on intraday cross-zonal gate opening and intraday cross-zonal gate closure times can also impact the TERRE design.

In its public consultation, ENTSO-E proposes that the ID CZ GCT takes place 60 minutes before the start of the relevant intraday market time unit, where the *“market time unit is defined in Regulation N°543/2013 as the period for which the market price is established or the shortest possible common time period for the two bidding zones, if their market time units are different”*. NRAs note that France, GB and Switzerland have local intraday market time units of 30 minutes, which leads to an ID CZ GCT every 30 minutes for the FR-GB border and the FR-CH border.

Figure 4 shows the impact of a change from one ID CZ GCT per hour to two ID CZ GCT per hour that take place 60 minutes before delivery in both cases. With this change in GCT frequency, TSOs have an operational control over the system that shrinks from 120 minutes to 90 minutes.

Figure 4 : Impact of the frequency of GCTs on the period of time under the TSO's responsibility



In the current proposal on the aforementioned public consultation, two ID CZ GCT per hour would take place at the FR-GB border and the FR-CH border, having thus an impact on the overall TERRE Process. In this scenario, TERRE should perform two clearings per hour: each of these clearings would cover a 30 minutes delivery period instead of the 60 minutes as envisaged in the current TERRE design. To make this feasible, TERRE TSOs should reduce their cross-border scheduling step to 30 minutes on their borders.

In case intraday market time units are further reduced to 15 minutes, four ID CZ GCT per hour would take place. This would imply that the TERRE clearing should take place four times per hour, to clear only a quarter. In that case, the cross-border scheduling step should also be shortened to 15 minutes.

To be ready to adapt the TERRE process depending on the outcome the final decision on ID CZ GCT, NRAs therefore invite TSOs to carefully assess consequence of ENTSO-E's proposal in terms of (i) delivery period (ii) frequency of clearings and (iii) cross-border scheduling steps. In particular, TERRE TSOs should provide an assessment of the impact of an intraday market time unit at 30 or 15 minutes.