

ISSUE 60 - PROJECT TERRE/GB ARRANGEMENTS STRAW MAN

1. Introduction

- 1.1 This 'Straw man' has been developed from the industry discussions held by the BSC Issue 60 Group but also by subsequent thinking within ELEXON.
- 1.2 However, it should be noted that at this stage, this straw man does **not** constitute an ELEXON view. Indeed, it has not been reviewed or discussed widely within ELEXON.
- 1.3 **To a greater or lesser extent all the proposals in this 'Straw man' require further thought and challenge, but those parts highlighted in yellow are areas where the proposals, ideas, issues are unclear and/or where further work is required.**
- 1.4 The key proposals in this 'Straw man' have had one high level initial review by some of National Grid's Issue 60 Group members.
 - Where possible in the time available we have amended the 'Straw man' to reflect this.
 - Some areas remain where the National Grid reviewers have had comments that have significant impact on the Straw man proposals in this version.
 - In these cases, we have included both the Straw man proposal and the review comments as best we can to highlight the need for further discussion. Any misrepresentation or misunderstanding of these review comments is mine alone (Steve Wilkin), which will be corrected following this further discussion at the Issue 60 Group meeting.

2. Summary of key proposals in this 'straw man'

- 2.1 This section summarises the proposals without explanation or justification. The detailed text (section 6 onwards) explains why these have been proposed for inclusion in the 'Straw man'.
- 2.2 TERRE Product Submissions
 - **GB Parties wishing to participate in TERRE shall submit TERRE Product bids to National Grid in Euros/MWh and the process governing this submission shall be set out in the Grid Code.**
- 2.3 Gate Closure
 - **GB Grid Code/BSC Gate Closure for FPNs and Bid-Offer submissions be set to the same time as TERRE Gate Closure for market participants. So if the TERRE Gate Closure for market participants is less than 1 hour, the GB Grid Code/BSC Gate Closure should move to align.**
 - National Grid reviewers do not necessarily agree with this point on alignment – I have put more thoughts on Gate Closure in section 9 below.
- 2.4 Publication of TERRE Product Submissions
 - **National Grid shall provide the details of such submissions to the Balancing Mechanism Reporting System (BMRS) under the governance of the BSC. This shall apply both to TERRE Products on GB BM Units and on non BM Units.**
 - National Grid reviewers and I both have concerns and questions about how to treat non BM Units. We share concerns about the possible costs and barriers to participation in TERRE, which we think we must try to avoid.
 - **The BMRS shall publish the details of submitted TERRE Products from GB Parties under the governance of the BSC. This will be new for non-BMU TERRE bids, but is required to give full GB market transparency on a single platform.**
 - **GB TERRE Product submissions shall be published on the Balancing Mechanism Reporting System (BMRS) irrespective of any other TERRE country's non-publication.**

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2.5 System Operation

- **National Grid shall assess the GB TERRE Product bids against system security and operational restrictions (e.g. internal congestions) and mark restricted bids as unavailable for activation under the governance of the Grid Code.**
- **National Grid shall pass on all GB TERRE Product bids (both available and unavailable) to the central TERRE systems under the governance of the central TERRE arrangements.**
- **National Grid shall receive TERRE Product acceptances from the central TERRE systems under the governance of the central TERRE arrangements.**
- **For BMUs, National Grid will need to convert the TERRE Product acceptance (MWh per 15 minute period) into a BOA (spot MW values) given our assumption on the baseline for TERRE Product bids and acceptances (below).**
 - National Grid reviewers are not convinced this will be required; rather that NGET will send the activation request using existing EDL/EDT instructions with a TERRE flag for settlement. As I am unclear on the distinction and BSC processes are likely to need amending if it is not a BOA, I have left both proposals in for further discussion.
 - National Grid reviewers note that as Products are developed as part of the European Network Code on Electricity Balancing requirements (not only TERRE), consistency of approach with other TERRE participants e.g. in terms of imbalance adjustment, will be required.
- **The above processes should be set out in the GB Grid Code.**

2.6 TERRE Product acceptances publication

- **National Grid shall provide the details of all TERRE Product acceptances to the BMRS (both BM and non-BM) under the governance of the BSC.**
- **The BMRS shall publish the details of all received TERRE Product acceptances with GB Parties, under the governance of the BSC.**

2.7 TERRE Product acceptance settlement

- **For TERRE Product acceptances made on both BMUs and non-BMUs, these are settled under the BSC.**
 - **Again the question of non BMUs needs further discussion.**
- **The BSC shall settle directly with GB parties the TERRE Product acceptance amounts due to/from them in Euros under the governance of the BSC.**
- **TERRE Product acceptances shall be flagged as such in BSC systems.**

2.8 Non-delivery

- **Non-delivery payments can be carried out independently of TERRE Product acceptance payments.**
 - Note that TERRE might develop its own central arrangements for non-delivery. Although the question of whose non-delivery (TERRE-scheduled interconnector flow or of TERRE Product needs to be explored if that is confirmed).
- **The central TERRE systems should not calculate non-delivery payments but it should be left to local, e.g. GB, systems and arrangements.**

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- **Non-delivery charges for TERRE acceptances on GB BMUs should be calculated under the BSC and settled directly with GB Parties by BSC systems.**
- **The non-delivery charge for TERRE Product acceptances on BMUs should be calculated in the same way as the existing GB BOA non-delivery charge under the BSC but replacing the Bid-Offer Price with the appropriate TERRE clearing price.**
- **If the non-delivery charge for BMUs is netted into the Residual Cashflow Reallocation Cashflow (RCRC) payments to/from all BSC Parties, then reconciliation payments in either direction (to or from) should be netted into RCRC as well.**
- **Parties should not gain from failing to deliver the required TERRE Product acceptance on a BMU.**
- **Non-delivery payments for TERRE non-delivery on GB BMUs should be calculated in GB pounds, which will require that the appropriate TERRE clearing prices are converted to GB pounds.**
- **Currency conversion is required.**
 - **There should be set rules under the BSC for this.**
 - **The conversion rate should be defined by reference to particular source(s) at defined times.**
 - **The non-delivery calculation should be done with respect to the same point in time as the party receives the TERRE payment for the TERRE acceptance.**
 - If there are no central TERRE reconciliations of TERRE acceptance payments, then there should be no reconciliations under the BSC of non-delivery calculations except if GB data that affects the calculation changes.
 - The conversion rate used in the initial BSC non-delivery calculation should be set to be the same as the conversion rate on the date of the TERRE acceptance payment date to the party.
 - If GB data is recalculated that affects the TERRE non-delivery calculation but there are no changes to the associated TERRE acceptance payments, e.g. changes to the metered data or the GB Imbalance Price, then there should be a non-delivery reconciliation under the BSC. The conversion rate used will be the same as in the original, initial BSC non-delivery calculation.
 - If there are central TERRE payment reconciliations of elements of TERRE Product acceptances that would impact the non-delivery calculation, e.g. a change in the TERRE Clearing price or acceptance volume then there should also be non-delivery reconciliations under the BSC to reflect this. In this case the currency conversion rate will need to take account of when the reconciliation payments are made by TERRE as well as the general principle that the party should not gain from non-delivery.
- **For non-delivery charges in respect of non-BMUs, it is for further discussion as to whether this should be undertaken by National Grid or by BSC systems.**

2.9 Imbalance Volume

- **TERRE members should agree on a common approach to the imbalance treatment of ramps (both volume and price) across TERRE Member States.**
 - **Under this common approach ramps should be included as contractual elements paid by local arrangements but with an agreed price methodology across the TERRE area.**

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- But latest discussions between European TSOs on Standard Products (not only TERRE) suggest that ramps will not be settled but will be considered as imbalance.
- **If TERRE members cannot agree on a common approach from TERRE go live, then GB will need to adopt its own arrangements.**
 - **In the early stages of TERRE, GB should treat ramps as contractual elements with a zero price.**
 - **A TERRE BOA with ramps has three separate elements (BOAs), whether or not treated as imbalance, and should have flags to distinguish them both from ordinary (non-TERRE) BOAs and from each other.**
 - Both: treating ramps as contracts (without a common approach on this); or treating them as imbalances (without common imbalance arrangements) can result in a relative (dis)advantage to GB market participants. The rationale for treating them as contracts is explained further below.

2.10 Imbalance Price

- **GB TERRE Product acceptances used for balancing the GB system and TERRE scheduled imports and exports to meet GB needs should be considered in the GB imbalance price calculation.**
- **This should be achieved by including one TERRE block (the GB TERRE block acceptance) in each price stack representing the net volume of TERRE scheduled activations (both in GB and overseas), activated to meet GB needs and priced to reflect the net cost, to National Grid from TERRE, of meeting these GB needs.**
- **All TERRE Product acceptances on GB assets are published on BMRS.**
- **If ramp volumes are considered as contracts and not as imbalances then all ramp volumes are deemed to meet GB balancing needs and so included in the price stacks.**
- **TERRE Product acceptances and their associated ramp volumes should be flagged to show that not only that they are not normal BOAs, but also whether they are energy balancing or system balancing.**
- **Rules are required for determining how these flags are set and by whom.**
- **If ramp volumes are considered as contracts and not as imbalances, then we propose that ramp volumes are treated in the same way in the imbalance price stacks as they are settled i.e. with a volume but at zero price.**
- **The GB imbalance price will remain priced in £/MWh (not Euros/MWh) so conversion of TERRE Product acceptances priced in Euros/MWh in the price stacks will be required.**
- **The currency conversion rate should be set by the rate on the date at which the payments are made or received by National Grid under the inter-TSO TERRE payment arrangements.**
- **For subsequent GB BSC reconciliations, the conversion rate should only be changed from that used in the previous GB BSC Settlement Run to reflect subsequent TERRE payment reconciliations; where a previous currency conversion rate was not available (at all or for the correct date).**
- **GB Imbalance Price reconciliations should also take account of any TERRE acceptance volume or clearing price reconciliations or amendments.**

2.11 Relative timing of BSC, BSUoS and TERRE settlement runs and payments

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- **GB should develop default rules for information that is needed by GB settlements from TERRE but which may not be available in time**
- **If achievable, payment due dates under TERRE and GB arrangements should be made consistent.**

2.12 Payment Default to and from TERRE

- **Credit arrangements will be needed to cover TERRE Product payments due but not paid.**
- **Further discussion is required on developing GB credit and socialisation arrangements to interface with TERRE.**
- **Currency conversion will be required as part of any socialisation and further discussion is required on this in this context.**
- **The allocation of risk will need to be discussed.**

2.13 TERRE Governance

- **There should be close coordination of changes, e.g. for Gate Closure, settlement timing, etc. between GB and TERRE. And this is an example of the importance of publicly establishing how TERRE will be governed on an ongoing basis.**
 - **TERRE governance is currently under discussion but we understand it is likely to be a TSO Steering Committee. It is unclear whether this will be sufficient to address coordination issues with local arrangements.**

3. Summary of key principles and assumptions adopted

3.1 During the course of development of this Straw man, several principles and assumptions were adopted to inform design decisions. They are equally open to challenge as the Straw man itself. These principles and assumptions are as follows.

3.2 Principles:

- **Existing Great Britain (GB) systems are used wherever possible to accommodate Trans-European Replacement Reserves Exchange (TERRE).** The thinking here is that this will minimise the cost of change to GB industry as a whole.
- **Data and payment transfers between central entities should be minimised.** The thinking here is based on recent experience of using multiple parties in data transfer chains, e.g. for REMIT and Transparency Regulation data reporting.
- **TERRE Product acceptances and TERRE scheduled imports and exports used for balancing the GB system should be considered in the GB imbalance price calculation.**
- **TERRE Product acceptances that are not used for balancing the GB system should not be considered in the GB imbalance price calculation.**

3.3 Assumptions:

- **In respect of BMUs, a TERRE Product bid has a baseline of the last submitted or accompanying FPN.**
- **TERRE Gate Closure for market participants cannot be longer than one hour.**
- **TERRE Balancing Energy Gate Closure will be 1 hour i.e. it is the same as the current GB Gate Closure arrangements.**

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- We understand that there may be a push to shorten Balancing Gate Closures to allow time for the results of the European intraday market contracting to feed through into FPNs.
- **National Grid will receive TERRE Product acceptances for GB-based assets from the central TERRE systems then instruct the relevant GB-based assets individually.**
- **For system operation purposes, National Grid will continue to issue minute by minute instructions to the GB-based assets on which TERRE acceptances are made, i.e. they will add in the ramps to the TERRE product acceptances.**
- **TERRE Product acceptances are taken from an FPN + previously accepted BOA baseline that applies at the time of acceptance, which may itself be ramping, not a flat MW profile.**
- **Settlement between central TERRE systems with member Transmission System Operators (TSOs) will be in Euros.**
- **TERRE systems will receive Product bids in Euros/MWh.**
- **GB parties will bid in Euros/MWh for TERRE Products which they bid and will be paid or pay in Euros for any acceptances of their TERRE Product bids, i.e. we assume that there will be no conversion from £/MWh for bids from GB parties to GB Pounds for TERRE Product acceptance settlement.**
- **TERRE will not require payments from, or make payments to, TSOs that need to be shared or collected from market participants generally, i.e. the only payments will be in respect of individual TERRE Product acceptances due to, or from, specific market participants on an individual basis.**
- **Non-delivery from a central TERRE perspective is distinct from non-delivery by the GB asset on which the TERRE Product has been accepted. TERRE recognises inter-TSO energy transfers across interconnectors between TERRE member TSOs. It is for National Grid to instruct the relevant GB assets to ensure that these transfers are delivered, and it is assumed that TERRE is not concerned with the underlying (GB) reason for any non-delivery across the interconnectors.**
- **TERRE Products are intended to be used for energy balancing not system balancing.**
 - National Grid has noted that this is necessarily going to be the case anymore with National Grid seeking the option to use TERRE bids for system balancing as well.
- **The GB imbalance price will remain priced in £/MWh (not Euros/MWh).**
- **TERRE Product acceptances in a half hour GB settlement period may have different clearing prices, given that TERRE works with 15 minute duration Products.**
- **TERRE does not require any specific information from the GB settlement arrangements (though it will require information and payments from the GB TSO).**
- **There are no central TERRE credit arrangements or arrangements for socialising payment defaults across all the TERRE TSOs.**
- **GB parties will not want payment default socialisation done entirely in Euros.**

4. **Summary of the key questions for TERRE**

- What is the TERRE Product bid base lined against? For example, against FPN, in common with current GB Bid-Offers? [Answer: yes]
- Will all TERRE Product submissions be published by TERRE?

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- What are the confirmed arrangements for TERRE Gate Closure as they apply to market participants? (If central TERRE arrangements are only concerned with Gate Closure for TSOs supplying data to the central TERRE systems, then we need to ask this question of National Grid in respect of GB market participants instead.)
- How will changes to TERRE be governed in future?
- How will changes be communicated and coordinated with the local arrangements in the TERRE Member States on an initial and ongoing basis? This is a critical question for an enduring, robust set of arrangements in GB.
- Are there any cases in which TERRE will require payments from, or make payments to, TSOs that need to be shared or collected from all GB market participants generally, as distinct from payments made to some individual GB parties?
- Will there be any TERRE proposals for the common treatment of ramps in the local arrangements?
- Will TERRE set any flags for system balancing acceptances? Or will National Grid set these?
- What is the information and payments calendar for TERRE? This is critical question for which we will need answers in order to implement the local arrangements for GB as proposed in this note.
- Are there any central TERRE credit arrangements or arrangements for socialising payment defaults across all the TERRE TSOs?
- When will more information on the TERRE “design” be released?
- When does TERRE plan to start identifying the requirements for the TERRE IT solution?
- What information will the TERRE IT solution require from TSO systems?
- What is the TERRE plan for end to end testing, and what is the date for this if they are doing it?
- We understand that TERRE might develop central non-delivery arrangements? When will this be confirmed and will it apply ‘only’ to TSOs in respect of cross-border TERRE scheduled power flows?
- Does TERRE operate contractually only between member TSOs and not directly with market participants?
- If so, what does TERRE require of the TSO, e.g. to deliver or receive the scheduled energy volume on the appropriate interconnector in the fifteen minute period? To a flat profile?
- If the contractual arrangement is between TSOs, to what extent can the TSO use other assets to deliver this obligation?
- For what period is the TERRE clearing price set, .e.g. 1 hour, 30 minutes or 15 minutes? [Answer: we understand this is set for 15 minute periods; and also potentially on a local basis if interconnector constraints are actively constraining the TERRE scheduling.]

5. Issues to be addressed in this ‘Straw man’

5.1 In order of end to end process timings:

- TERRE Product submissions
- TERRE Product publication
- Gate Closure
 - If TERRE Gate Closure for market participants is not set at 1 hour

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- TERRE Product acceptance volumes
 - System Operation
 - Publication
 - Settlement
 - Non-delivery
 - By BMUs
 - By non-BMUS
 - Currency conversion
- Imbalance Volumes
 - ramps
- Imbalance Prices
 - TERRE Product acceptances
 - Ramps
 - GB balancing
 - System balancing
 - Price conversion
- Relative timing of GB and TERRE settlements
 - Information
 - Payments
 - Defaults, credit, socialisation and currency.

The 'straw man'

6. Overview

- 6.1 Project TERRE is an advance implementation project that forms part of the implementation of the European Network Code on Electricity Balancing (NC EB).
- 6.2 TERRE harmonises the TSO dispatch of Replacement Reserve (RR) across (currently) seven TSO areas from GB to Greece by introducing common TERRE Products (akin to products such as Balancing and Settlement Code (BSC) Bid-Offers or Short Term Operating Reserve (STOR) submissions). These are shared in a central common merit order between the seven TSOs, and chosen for dispatch by a central TERRE algorithm.
- 6.3 National Grid is expected to utilise TERRE Products for energy balancing in GB from TERRE go-live. Assuming regulatory approval is given to TERRE, TERRE go-live is currently scheduled for summer 2018. As all current GB balancing products feed into the BSC calculations of imbalance prices and volumes, so should relevant TERRE Products, as soon as they start to be used as part of GB balancing. This will require changes to the central GB market arrangements (BSC and Balancing Services arrangements) and market participant systems.
- 6.4 The Issue 60 Group was set up to look at the changes that would be required to the GB electricity trading arrangements, not necessarily limited to the BSC, to interface with the Project TERRE arrangements once they go live.

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6.5 Note on the terminology used: we have adopted the convention that 'bid' (lower case) is the overarching term for both bids and offers as TERRE does not distinguish between Bids and Offers in the same way that the BSC does. When Bid or Offer is used (upper case) it means that we have adopted the BSC interpretation.

7. TERRE Product submissions

7.1 TERRE Product submissions will be made by GB market participants to National Grid, who will pass them on to the central TERRE systems. But in more detail, we understand that:

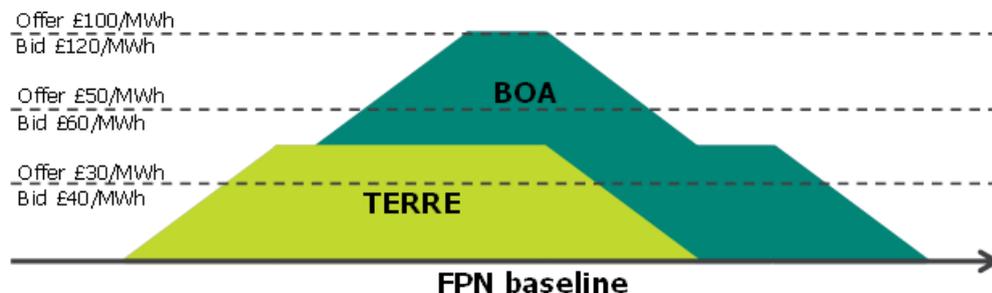
- National Grid shall assess the GB TERRE Product bids against system security and operational restrictions (e.g. internal congestions) and mark restricted bids as unavailable for activation under the governance of the Grid Code.
- National Grid shall pass on all GB TERRE Product bids (both available and unavailable) to the central TERRE systems under the governance of the central TERRE arrangements.

7.2 We need to understand what the TERRE Product bid means in GB terms, specifically whether it is a bid for a deviation from FPN (like a traditional BSC Bid-Offer); or whether it is a bid for gross generation or demand, i.e. with a zero MW baseline.

7.3 **In this note, we assume that a TERRE Product bid has a baseline of the last submitted or accompanying FPN.**

- Below we consider whether Gate Closure as seen by market participants for TERRE and for GB BM data can be different. We propose that they are the same. This proposal also gives certainty to the FPN, i.e. that there is only one (the same) FPN for both TERRE Product Bids and GB Bid-Offers.

7.4 There are some consequences from this assumption as can be seen from the diagram below.



7.5 The immediate implication is that a TERRE Product has a single price for the bid so the price ladder that applies to BOAs will not apply to TERRE products. Other implications of this assumption are considered in the section on TERRE Product acceptances.

8. Publication of TERRE Product submissions

8.1 The question is: should TERRE Product submissions be published and, if so, where?

8.2 Considerations:

- To allow a full picture of the balancing market in GB, TERRE Product submissions should be published and, for a 'one stop shop' view of the electricity balancing market in GB on the same site (BMRS) as GB Bid-Offer submissions.
- Against publication, could be any other TERRE country's non-publication. This would give other market participants a potential commercial advantage over those in GB.

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- However, in the short term, the exchange of TERRE Products from and to GB is likely to be somewhat limited by available interconnector capacity.
 - We understand that the TERRE algorithm will continue to dispatch GB-sourced TERRE Products to meet GB demand even after it has scheduled Products so that the interconnectors are fully utilised so no more power can flow into or out of GB, so TERRE becomes a key part of GB energy balancing alongside BOAs.
- 8.3 The latter two points mean that in the short term there will be limited competition in TERRE with overseas competitors. So **it is proposed, at least for initial implementation, that GB TERRE Product submissions are published on BMRS irrespective of any other TERRE country's non-publication.**
- 8.4 **It is proposed that this requirement will apply both to TERRE Product submissions from BMUs and non-BMUs as TERRE Products are competitive bids in the same market.**
- 8.5 This will require National Grid to copy the submissions it receives from GB Parties to BMRS.

9. Gate Closure

- 9.1 The precise arrangements for TERRE Gate Closure are not yet fully defined.
- 9.2 However, the Agency for the Cooperation of Energy Regulators (ACER) has stated that the intraday and balancing market trading should not overlap.
- 9.3 The Capacity Allocation and Congestion Management (CACM) Guideline (European law) requires that the cessation of trading for the cross-border intraday trading is harmonised and the indications are that this will be set at 1 hour ahead of real time.
- 9.4 Draft Article 35(4) of the NC EB currently requires that the Balancing Market Gate Closure time is after the Intraday Gate Closure time though we understand that this may be changed to allow the two Gate Closures to be the same.
- 9.5 For TERRE purposes we need to distinguish between the Gate Closure applying to GB market participants, i.e. the time by which they must submit TERRE Product bids to National Grid; and the Gate Closure applying to National Grid, i.e. the time by which it must have passed on those bids to the central TERRE arrangements.
- 9.6 In the draft NC EB:
- 'Balancing Energy Gate Closure Time means the point in time when submission or update of a Balancing Energy bid for a Standard Product on a Common Merit Order List in a Coordinated Balancing Area is no longer permitted.'
 - 'TSO Energy Bid Submission Gate Closure Time means the latest point in time when a Connecting TSO can forward the Balancing Energy bids received from a Balancing Service Provider to the Activation Optimisation Function. The TSO Energy Bid Submission Gate Closure Time is after Balancing Energy Gate Closure Time.'
- 9.7 In this note, we are only interested in the former, i.e. Balancing Energy Gate Closure.

If TERRE Gate Closure is not set at 1 hour

- 9.8 In this note, **we assume that TERRE Balancing Energy Gate Closure will be 1 hour i.e. it is the same as the current GB Gate Closure arrangements.**
- 9.9 However, we understand that may be a push to shorten Balancing Gate Closures to allow time for the results of the European intraday market contracting to feed through into FPNs.
- 9.10 So, we have also considered the situation if TERRE Balancing Energy Gate Closure for market participants is shorter than 1 hour. **We assume TERRE Gate Closure for market participants cannot be longer**

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than one hour given the restriction in the draft NC EB, then consideration should be given to whether the standard GB Grid Code/BSC Gate Closure for Bid-Offers, FPN and Bids should also change.

- If the two Gate Closures differ in time, does this mean that the FPN, on which we have assumed both are baselined, is now ambiguous?
- Should TERRE Products always be offered further ahead than Bid-Offers? Should TERRE Product acceptances be known ahead of and form the new FPN baseline for Bid-Offers?
- There is an upcoming issue with the time it takes for power exchanges to process and notify participants after the intraday Gate Closure in order to inform the participants' nominations (FPNs) into the Balancing Mechanism. It appears that TERRE could give rise to a similar issue if participants need to know about TERRE Product acceptances before submitting their FPNs for Bid-Offers.

9.11 As there appears to be only an hour to include TERRE and Bid-Offer submissions:

- to avoid any confusion between a TERRE FPN baseline and a Bid-Offer FPN baseline
- to avoid any impractically short periods between TERRE Gate Closure and Bid-Offer Gate Closure within the hour
- to avoid any competitive advantage accruing to a market participant from the release of TERRE Product acceptances shortly before the Bid-Offer Gate Closure
- to avoid any period when National Grid is constrained not to issue BOAs while awaiting the results of TERRE
- to avoid any issues with a TERRE systems failure or delay impacting on system security

it is proposed that the GB Grid Code/BSC Gate Closure for FPNs and Bid-Offer submissions be set to the same time as TERRE Gate Closure for participants.

9.12 National Grid reviewers do not necessarily agree with the above point on aligning Gate Closures.

- They also note that TERRE Gate Closure may be less than 1 hour.
- And note the Issue 61 debate - where there are differences between the intraday and domestic GB submissions. I have tried to draw these out in the detailed text, as my concern is with the market participant's Gate Closure for submissions to the local TSO, not the submissions by the TSOs into TERRE.
- Issue 61 also highlights the differences between contract and physical submissions. In this Straw man, only the physical submissions are relevant and the associated bids (for both TERRE and the GB Balancing Mechanism).
- I am also aware that the European intraday (XBID) processes could result in a shorter balancing Gate Closure as parties may not have XBID contract data before the hour to formulate their views on FPNs.

Overall, my current feeling is to leave this proposal for the reasons given above and for further discussion in the Issue 60 Group.

9.13 There is an ongoing consequence of this proposal to tie the two Gate Closures together.

- TERRE or BSC may wish to change their respective Gate Closures in future.

9.14 As with GB Codes, there should be close coordination of change and this is an example of the importance of publicly establishing how TERRE will be governed on an ongoing basis.

9.15 Finally, National Grid suggests the following approach for its own onward submission to the central TERRE arrangements:

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- **National Grid shall assess the GB TERRE Product bids against system security and operational restrictions (e.g. internal congestions) and mark restricted bids as unavailable for activation.**
- **National Grid shall pass on all GB TERRE Product bids (both available and unavailable) to the central TERRE systems under the governance of the central TERRE arrangements.**

9.16 **We propose that the above processes are set out in the GB Grid Code.**

10. TERRE Product acceptances volumes

10.1 There are four main aspects to TERRE Product acceptance volumes:

- System Operation
- Publication
- Settlement
- Non-delivery including:
 - by BMUs
 - by non-BMUs
 - currency conversion.

10.2 We consider each aspect in turn below.

11. TERRE Product acceptances and System Operation

11.1 We make two assumptions, i.e. that National Grid, as the National Electricity Transmission System Operator (NETSO) will:

- **receive TERRE Product acceptances for GB-based assets from the central TERRE systems**
- **then instruct the relevant GB-based assets individually.**

11.2 TERRE Products are accepted as 15 minute duration rectangular blocks, i.e. without explicit ramps up to, or ramps down from, the required level and the TSOs pay or are paid for the rectangular blocks of energy by the central TERRE systems.

11.3 Clearly, although central TERRE operates without ramps, this is not sufficient for GB system operation, where minute by minute expectations of generation and demand are required by National Grid to balance the system.

11.4 Therefore, **we assume that for system operation purposes, National Grid will continue to issue minute by minute instructions to the GB-based assets on which TERRE acceptances are made, i.e. they will add in the ramps to the TERRE product acceptances.**

- **In theory, it may even be possible that National Grid will not be required to instruct a flat profile for the TERRE acceptance itself if the energy volume over the fifteen minute period is the same as that accepted by TERRE. However, this raises questions as to the obligations applying to each of the TERRE TSOs and to the market participants individually.**
 - **Does TERRE operate contractually only between member TSOs and not directly with market participants?**
 - **If so, what does TERRE require of the TSO, e.g. to deliver or receive the scheduled energy volume on the appropriate interconnector in the fifteen minute period? To a flat profile?**

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- If the contractual arrangement is between TSOs, to what extent can the TSO use other assets to deliver this obligation?
- We had originally assumed for the purposes of this note, that the TSO is not permitted to use assets that were not scheduled by TERRE to make up any energy shortfall or over-delivery with respect to the TERRE scheduled energy on that interconnector. Because we thought that the principle of the TERRE common merit order list would be undermined.
- However, **we now understand that TERRE TSOs will be obliged to deliver the required volume on the border/interconnector and so will activate GB BOAs if necessary to do so. This is important because we need to consider whether any re-dispatch, e.g. of a normal GB BOA, should feed into the GB imbalance price, whether a BOA clearing price is justified; and how non-delivery payments are affected.** We have only given limited thought to this in the time available to complete this Straw man.

11.5 We adopt a general principle here that existing GB systems are used wherever possible to accommodate TERRE to avoid creating new systems at a time of considerable change.

- TERRE is only one 'small' aspect of the changes that will be required from the GB electricity market in the last four years of this decade, e.g. implementation of:
 - the rest of the Network Code on Electricity Balancing including harmonisation of imbalance settlement and imbalance prices and other Coordinated Balancing Area Products in GB
 - the other European Network Codes
 - European and British financial regulations that impact the energy market
 - the smart Meter roll out
 - etc.
- So anything that can reduce the volume of change is likely to help with a practical and cheaper implementation.

11.6 Applying that principle to TERRE would imply that the instructions made to GB-based assets would be made to GB Balancing Mechanism Units (BMUs) as BOAs in the Balancing Mechanism (BM); or where the asset is not a BMU, as a balancing service (non BM) instruction.

11.7 This implies that **TERRE acceptances will appear in BSC systems as BOA data (in respect of BMUs) and in National Grid systems as Balancing Service Adjustment Action (BSAA) data in respect of any non-BMU instructions.**

11.8 Note that National Grid will need to convert the TERRE Product acceptance (MWh per 15 minute period) on a BMU into a BOA (spot MW values) as we have assumed that TERRE Product acceptances are taken from an FPN + previously accepted BOA baseline that applies at the time of acceptance, which may itself be ramping, not a flat MW profile.

- National Grid reviewers are not convinced this will be required; rather that NGET will send the activation request using existing EDL/EDT instructions with a TERRE flag for settlement. As I am unclear on the distinction and BSC processes are likely to need amending if it is not a BOA, I have left both proposals in for further discussion.

12. Publication of TERRE Product acceptances

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- 12.1 In a similar manner to BOAs and BSAAs, **it is proposed that TERRE Product acceptances on GB assets form input into the GB Imbalance Price calculation.** As BOAs and BSAAs are published on BMRS, **it is proposed that TERRE Product acceptances are also published on BMRS.**
- 12.2 This would require that National Grid, as assumed recipient of TERRE Product acceptances for GB-based assets from the central TERRE systems, would pass these acceptances onto BMRS, as well as the GB-based assets which have had TERRE Product acceptances.

13. Settlement of TERRE Product acceptances

- 13.1 National Grid will receive or make payment for any TERRE scheduled energy transfer over interconnectors between GB and other TERRE TSO bidding areas. This will comprise payments: for both energy transfers across GB between other TERRE member states; and as a result of TERRE Product acceptances made on GB-based assets. Here we are only concerned with Settlement with GB-based assets.
- 13.2 We **assume that Settlement between central TERRE systems with member TSOs will be in Euros.**
- 13.3 However, this need not be the case if for example:
- the Prime Minister's requirement that non-Euro currencies should have equal treatment is adopted as an EU principle;
 - or it is agreed by TERRE member TSOs or required by the relevant National Regulatory Authorities (NRAs), such as Ofgem, that there should be socialisation of currency risk.
- 13.4 In line with the above assumption, we will **also assume that TERRE systems will receive Product bids in Euros/MWh.**
- 13.5 Thirdly, we **assume that GB Parties will bid in Euros/MWh and be paid/pay in Euros for TERRE Product acceptances.** This has important implications as will be seen below.
- 13.6 There appear to be two routes for Settlement of TERRE Product acceptances (as distinct from the way they are instructed by National Grid):
- treat TERRE Product acceptances as balancing services, i.e. National Grid settles directly with the relevant GB-based assets
 - treat TERRE Product acceptances as BOAs, i.e. they are settled under the BSC by ELEXON and its BSC Agents.
- 13.7 These routes are not necessarily mutually exclusive, but we consider the advantages and disadvantages of each route.
- In favour of the Balancing Services route:
 - National Grid will make or receive payments from the central TERRE systems as GB TSO, so it seems logical for National Grid to pass these on directly to the GB-based assets rather than via the BSC.
 - This will minimise the payment transfers between central entities both within GB and with Europe. Given recent experience with data transfers between National Grid and BSC, it might be appropriate to **adopt a general principle of minimising data and payment transfers between central entities.**
 - In favour of the BSC route:
 - On the assumption that Article 10 of the current public draft of the NC EB passes into law unchanged, then the role of receiving or making payments to central TERRE systems can be transferred to ELEXON and BSC Agents by delegation or assignment. Thus there may be no

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underlying difference between the two options in terms of minimising payment transfers between central entities.

- TERRE Products are similar to Bid-Offers, i.e. they are intended to be energy balancing products to enable National Grid to balance the system. And so like the Settlement of Bid-Offers their Settlement with GB parties should fall within the scope of the BSC.
- TERRE Products have a common form, as do Bid-Offers, unlike balancing services which can take many forms and be agreed bilaterally between National Grid and the balancing services provider.
- TERRE Product acceptances will all be settled in the same way, so they sit best under a Code rather than under individual bilateral contract conditions.
- It has already been proposed above that TERRE Products are treated as Bid-Offers for all bids made from Balancing Mechanism Units and that we use existing GB systems where possible to accommodate TERRE.
- It is likely that the majority of GB TERRE acceptances will be made with BMUs.

13.8 We also considered the above question in conjunction with non-delivery payments. However, it appears that non-delivery payments can be carried out independently of TERRE Product acceptance payments (see section below), so do not impact on the above considerations.

13.9 If the above routes are not mutually exclusive we could use both routes in parallel – BSC systems for settling TERRE Product acceptances on BMUs and National Grid balancing services systems for settling TERRE Product acceptances on non-BMUs.

13.10 However, to implement both routes in parallel, either:

- TERRE needs to send out two sets of invoices/payments to BSC systems and National Grid respectively; or
- National Grid would receive all the invoices payments and transfer those in respect of BMUs to BSC systems.

13.11 Because of this, it may be best to choose one exclusive route for TERRE Product Settlement.

13.12 We have proposed above that all GB TERRE Product acceptances (on BMUs and non-BMUs) and GB BOAs are published in one place for maximum market transparency, i.e. on the BMRS. So because the information needed to make settlements of GB TERRE Product acceptances is already available to BSC systems and the majority of such acceptances are likely to be on BMUs, we propose that:

- **For TERRE Product acceptances made on both BMUs and non-BMUs, these are settled under the BSC.**

13.13 This conclusion is best implemented if the BSC systems are permitted to receive payments directly from central TERRE systems.

13.14 So, summarising, the submission and Settlement proposal for TERRE Products and Product acceptances is that:

- In common with GB Bid-Offers, GB Parties wishing to participate in TERRE shall submit TERRE Product bids to National Grid in Euros/MWh and the process governing this submission shall be set out in the Grid Code.
- Gate Closure for both TERRE Product submissions and GB Bid-Offer submissions will be the same.

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- In common with GB Bid-Offers, National Grid shall provide the details of such submissions to BMRS under the governance of the BSC. This shall apply both to TERRE Products on GB BMUs and on non-BMUs.
- In common with GB Bid-Offers, the BMRS shall publish the details of submitted TERRE Products from GB Parties under the governance of the BSC. This will be new for non-BMU TERRE bids, but is required to give full GB market transparency of a common product on a single platform.
- National Grid shall pass on GB TERRE Product bids to the central TERRE systems under the governance of the central TERRE arrangements.
- National Grid shall receive TERRE Product acceptances from the central TERRE systems under the governance of the central TERRE arrangements.
- In common with GB BOAs, National Grid shall provide the details of such acceptances to the BMRS under the governance of the BSC.
- In line with the proposal above, National Grid shall also provide details of TERRE acceptances on non-BMUs to BMRS.
- The BMRS shall publish the details of all received TERRE Product acceptances with GB Parties, under the governance of the BSC.
- The BSC shall settle directly with GB parties the TERRE Product acceptance amounts due to/from them in Euros under the governance of the BSC.
- In order to enable this and prevent double Settlement, TERRE Product acceptances shall be flagged as such in BSC systems. This will also allow such acceptances to be treated as BOAs for publication purposes but distinguish them from BOAs for Settlement purposes. Not only is this required for the case where National Grid rather than the BSC settles, but also because TERRE Products will not be paid as GB BOAs because they will be paid at the appropriate TERRE Clearing Price, not 'pay-as-bid'.

13.15 The above proposals do not cover any case in which National Grid would need to recover or pay net costs from GB Parties generally, i.e. under the Balancing Settlement use of System (BSUoS) arrangements. We do not know whether TERRE will generate any such payments, but if it does, there is one particular issue that will need attention: if such TERRE payments are made in Euros, National Grid and GB parties will need to decide whether payments in Euros to all parties or conversion to sterling is the more appropriate approach.

14. Non-Delivery

- 14.1 The above proposals do not cover the case where a GB party fails to fully deliver on its TERRE Product acceptance.
- 14.2 We need to understand what the TERRE proposals are on this point, but **we also need to recognise that non-delivery from a central TERRE perspective is distinct from non-delivery by the GB asset on which the TERRE Product has been accepted. TERRE recognises inter-TSO energy transfers across interconnectors between TERRE member TSOs. It is for National Grid to instruct the relevant GB assets to ensure that these transfers are delivered, and it is assumed that TERRE is not concerned with the underlying (GB) reason for any non-delivery across the interconnectors.** Non-delivery by GB assets for TERRE instructions is considered further below.

Non-delivery by BMUs

- 14.3 For non-delivery of BOAs, this is covered in the BSC. The non-delivery rule applies in the event that a BM Unit fails to deliver Offers and/or Bids. The Non-Delivery Rule is based upon a comparison with the BM Unit Metered Volume (i.e. MWh in each Settlement Period) for a BM Unit. The Non-Delivered Offer Charge in

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relation to each Offer is the product of the Non-Delivered Offer Volume, the Transmission Loss Multiplier, and the difference between the Offer Price and BSC Imbalance Price (where the difference is capped at zero).

- 1.1
- 14.4 Under the BSC, non-delivery payments are made by Trading Parties either: for non-delivered Offers, in the event that a payment at an Offer Price to a Trading Party exceeds the imbalance price paid on the shortfall resulting from any non-delivery; or for non-delivered Bids in the event that the imbalance price paid to a Trading Party for the spill caused by any non-delivery exceeds the price paid by the Trading Party for the Bid.
- 14.5 For TERRE, if we consider the principle of minimising data transfers/payments between central entities, then we consider that the non-delivery charge for TERRE acceptances on BMUs will be calculated from metered volumes on BMUs, the expected TERRE volume (as instructed by National Grid, not as expected by central TERRE) and the appropriate TERRE Clearing Price in Euros/MWh and the BSC Imbalance Price in £/MWh.
- 14.6 All these are either held by ELEXON/BSC Agents (metered volumes and BSC Imbalance Price) or will be received by them for other purposes (expected TERRE volumes for publication on BMRS and use in calculating the GB Imbalance Price; TERRE Clearing Price for use in calculating the GB Imbalance Price). So minimising data transfers leads to the conclusion that the **non-delivery charges for TERRE acceptances on GB BMUs should be calculated under the BSC and settled directly with GB Parties by BSC systems.**
- 14.7 The principle of minimising data transfers, e.g. metered data, and payments between central entities, as well as the consideration that non-delivery in TERRE terms may be different from non-delivery as seen within GB suggests to us that **the central TERRE systems should not calculate non-delivery payments but it should be left to local, e.g. GB, systems and arrangements.**
- 14.8 In the absence of any central TERRE directions on this, **the non-delivery charge for TERRE Product acceptances on BMUs should be calculated in the same way as the existing GB BOA non-delivery charge under the BSC but replacing the Bid-Offer Price with the appropriate TERRE clearing price.**
- 14.9 We now understand that National Grid may be expected to activate local BOAs to ensure that the energy scheduled by TERRE is sent across the GB interconnectors.
- This reinforces the thought that non-delivery payments should be calculated locally as a non-delivery seen in GB may not result in a non-delivery seen by TERRE.

Non-delivery by non-BMUs

- 14.10 As non-delivery can be calculated and paid independently of TERRE Product acceptance Settlement, it is for further discussion as to whether this should be undertaken by National Grid or by BSC systems.
- 14.11 Considerations based on the proposals for non-delivery charges for BMUs:
- How non-delivery charges will be calculated and what input data they will need. The latter will help define who is best placed to undertake the calculation based on who already holds the necessary data.
 - The degree to which non-delivery charges by BMUs and non-BMUs should be harmonised, e.g. if currency conversion is required.
 - The funding arrangements and who receives the non-delivery payment (for any initial Settlement) or any reconciliations (where payment may be in the opposing direction to that in the previous Settlement).

Currency Conversion

- 14.12 For non-delivery charges on BMUs, we note that the non-delivery payment calculation includes input data on imbalance prices and the appropriate TERRE clearing price. But these are in GB pounds and Euros, per MWh respectively, so to calculate the non-delivery payment one must be converted to the other.

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- 14.13 To consider how to do this, we note that non-delivery payments calculated in initial BSC Settlement will be payments from the party in question, but that any reconciliation payments could be to or from that party. Assuming that the initial payment is netted into the Residual Cashflow Reallocation Cashflow (RCRC) payments to/from all BSC Parties, then reconciliation payments in either direction should be the same.
- 14.14 **Since RCRC payments are in GB pounds, it is proposed that the non-delivery payments for TERRE non-delivery on GB assets are calculated in GB pounds, which will require that the appropriate TERRE clearing prices are converted to GB pounds.**
- 14.15 We now come to the generic question, as we are now working in two currencies which requires conversion of one to the other, as to how currency conversion is to be carried out.
- Firstly, there should be set rules under the BSC for this.
 - The conversion rate should be defined by reference to particular source(s) at defined times.
 - The point on timing is important as there are several times at which a conversion could be considered. The obvious ones are:
 - with reference to the original settlement day itself
 - when the calculation is done for initial Settlement
 - when the calculation is done for any reconciliation.
- 14.16 For non-delivery payments specifically:
- The rationale for BSC non-delivery payments is that parties should not gain from failing to deliver the required BOA, so we proposed adopting the same rationale for TERRE non-delivery on BMUs.
 - Ideally therefore the non-delivery calculation should be done for the point in time when the party receives the TERRE payment for the TERRE acceptance (and similarly for any reconciliation payments).
 - So if there are no central TERRE reconciliations of TERRE acceptance payments, then there should be no reconciliations under the BSC of non-delivery calculations except if GB data that affects the calculation changes.
 - The conversion rate used in the initial BSC non-delivery calculation should be set to be the same as the conversion rate on the date of the TERRE acceptance payment date to the party and that payment should be required as part of initial BSC settlement.
 - If GB data is recalculated that affects the TERRE non-delivery calculation but there are no changes to the associated TERRE acceptance payments, e.g. changes to the metered data or the GB Imbalance Price, then there should be a non-delivery reconciliation under the BSC. The conversion rate used will be the same as in the original, initial BSC non-delivery calculation.
 - If there are central TERRE payment reconciliations of elements of TERRE Product acceptances that would impact the non-delivery calculation, e.g. a change in the TERRE Clearing price or acceptance volume then there should also be non-delivery reconciliations under the BSC to reflect this. In this case the currency conversion rate will need to take account of when the reconciliation payments are made by TERRE as well as the general principle that the party should not gain from non-delivery.
 - **Throughout the process, the principle should be that the party should not gain from any non-delivery and the Euro conversion rate should be set to reflect when any gains were made.** This should be both in:
 - traditional BSC terms due to the timing of reconciliation runs, i.e. applying interest for a delayed recovery of the gain or interest for a delayed repayment correcting an over-recovery; but also

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- terms of the time at which the Euro to GB pound conversion rate is derived for use in the reconciliations. For example, the party should not gain from a change in the conversion rate between the previous settlement run for that non-delivery and the reconciliation now taking place. This would happen if the TERRE Clearing Price when converted from Euros/MWh to GB Pounds/MWh fell simply because of the change in conversion rate, and no other reason. Because then the party would pay a lower non-delivery charge.
- And if payments are netted into RCRC and reconversions are done at each Settlement, the currency risk is taken by BSC Parties in general.

15. Imbalance volume calculations

- 15.1 To determine the imbalance volume, we need to decide the contracted volume on which we will base the imbalance volume. Currently BOAs are treated as contracted volumes. So the question is should we treat TERRE Product acceptances made on GB-located BM Units in the same manner? Or if not, how?
- 15.2 We know that TERRE Products will be accepted in TERRE as block products, i.e. ramp ups and downs will be ignored for payment purposes.
- 15.3 If the central TERRE arrangements do not suggest a common method for the treatment of ramps, then it will be up to local GB arrangements to determine.
- 15.4 The Issue 60 Group identified two potential models for calculating the contracted volume.
- Option 1: use BOAs as we currently do now, i.e. the contracted volume should include both the actual product delivery and any ramps either side of this (shown by the red line below).



- Option 2: the BOAs for the ramps are not counted as contracts, so the contracted volume includes only the actual product delivery (shown by the outline of the green 'Product delivery' rectangle above).
- 15.5 Considerations of which option to choose should include:
- How the choice impacts the TERRE Common Merit Order list and its robustness if different TERRE Member States/TSO areas are permitted to and do use different approaches.
 - The first option will ensure consistency within the common merit order list but only if all TERRE Member States adopt this approach and with a common pricing approach.
 - Because we anticipate that bidding parties will incorporate their expectations of imbalance cost exposure into their TERRE product prices, the second option will only be consistent to the extent that different TERRE Member States have a common imbalance price formulation. This will not be the case initially, but should eventually be the case some years after the NC EB comes into force, as draft Article 24 as currently written requires this by 1 July 2019, two years after the expected go live of TERRE.
 - We should also consider the materiality of any inconsistencies:
 - whether there are other sources of inconsistency between TERRE Member States that would affect the common merit order list would mean that an attempt for perfection in terms of imbalance price consistencies are not justified

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- whether the inconsistencies are critical to the calculation of the marginal plant/TERRE clearing price, e.g. because of the current weak interconnections between GB and other TERRE members, whether GB will be a constrained zone with its own local TERRE clearing price in many Settlement periods.

15.6 On the basis of the above considerations:

- **TERRE members should agree on a common approach across TERRE Member States.**
 - **Our preference is that in this common approach ramps should be included as contractual elements (option 1) paid by local arrangements but with an agreed price methodology across the TERRE area.** For example either pay as bid or the TERRE clearing price of the associated TERRE Product acceptance as giving the best consistency within the common merit order list from TERRE go live.
 - **However, our understanding of the latest discussions between European TSOs on Standard Products (not only TERRE) suggests that ramps will not be settled but will be considered as imbalance.**
- **If TERRE members cannot agree on a common approach from TERRE go live, then GB will need to adopt its own arrangements.** Given that TERRE members will have different imbalance price formulations, we will have the following scenarios.
 - Option 1 – the Product Delivery bid prices from GB parties will not need to include any imbalance price elements but others might, so the relative attractiveness of GB bids compared with other TERRE members may change.
 - Option 2 – the Product Delivery bid prices from GB parties may include GB parties' assessment of the likely GB imbalance price exposure from the ramping volumes. For increased generation (decreased demand) this may reduce the bid price made to TERRE so make GB bids attractive compared with those from other TERRE Member States. For decreased generation (increased demand) this may make GB bids less attractive.
- We could determine between the two options based on:
 - aligning GB with the majority TERRE view
 - aligning GB with those most likely to be competitive with GB in the common merit order at the margin
 - Or if it is likely that GB will have its own TERRE clearing price because of weak interconnections, the consistency of the Common Merit Order List is likely to be less significant for GB parties.
- **In the early stages of TERRE, the latter situation is likely to prevail. On this assumption, it is suggested that we adopt option 1** for the following reasons:
 - It avoids GB Parties having to forecast their imbalance exposure and therefore would give the most consistent solution for a Common Merit Order List where the GB clearing price is likely composed of only GB parties' bids.
 - It is consistent with our preference for option 1 where TERRE members do agree on a common approach.
 - From a BSC systems perspective, it may be easier to move from option 1 to option 2 in the future, than from option 2 to option 1; because with the former approach we will be turning off functionality rather than adding it.
- However, BSC Parties may like to consider if they agree with the above because approach:

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- they are likely to be adding to their systems for developing bid prices in moving from option 1 to option 2
- may wish to gain experience of operating with option 2 if it is believed that option 2 will be the eventual common TERRE solution.

Impacts on BSC Settlement of treating ramps as contracts

15.7 In this case, the TERRE BOA (in BSC systems) will consist of three parts:

- The ramp up volume to be settled at zero, or the TERRE bid price or at the TERRE clearing price by BSC systems (in Euros). If the latter, it is suggested that this price is the clearing price for the period immediately following the TERRE 'Product delivery' period, because there may be more than one choice if the BOA extends over several TERRE Product delivery periods. This Settlement will not be funded by central TERRE arrangements, so will be charged or paid to National Grid as part of the BSC's Daily System Operator BM Cashflow (CSOBM) (either converted to £s in the BSC or by National Grid before charging out as part of BSUoS).
- The TERRE 'Product delivery' volume (the area of the green rectangle above) to be settled at the appropriate TERRE clearing price(s) and which will be settled with GB parties by either BSCCo/BSC Agents (or National Grid) as discussed above. This Settlement will be funded by central TERRE arrangements.
- The ramp down volume to be settled at zero, or at the TERRE bid price or at the TERRE clearing price by BSC systems (in Euros). If the latter it is suggested that this price is the clearing price of the immediately preceding TERRE 'Product delivery', because there may be more than one choice if the BOA extends over several TERRE Product delivery periods. As for ramp ups, this Settlement will not be funded by central TERRE arrangements, so will be charged or paid to National Grid as part of CSOBM (either converted to £s in the BSC or by National Grid before charging out as part of BSUoS).

15.8 Clearly from the above, **we need to treat a TERRE BOA as three separate elements (BOAs) with flags to distinguish them both from ordinary (non-TERRE) BOAs and from each other.**

15.9 **On the question of whether the ramps should be settled at the TERRE clearing price, it is proposed that the answer should be 'no'.** This is because TERRE did not buy or sell these volumes as part of the TERRE acceptance, and they will often fall into a different TERRE clearing price period.

15.10 On the question of whether the ramps should be settled at their own TERRE bid prices or at zero, i.e. not settled at all (but not treated as imbalance volumes either under option 1), then there is a similar argument that TERRE did not buy or sell these, but neither did National Grid. On balance, **we propose that ramps are treated as zero priced GB BOAs under option 1.**

15.11 While it could mean that the arguments above about parties including ramp costs in the TERRE Product bid price need to be revisited, it is not quite the same as in this option 1 case, the ramps are not treated as imbalance costs to be forecast by the parties. Rather the costs of the ramps (their own costs) should be fully known by the parties so are less likely to give rise to forecasting imbalance type distortions in the Common Merit Order List.

16. Imbalance Price calculations

Consideration of the TERRE Product acceptances excluding the ramps

16.1 It is **assumed that TERRE Products are intended to be used for energy balancing not system balancing.** This is considered further below.

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- However, we now understand that National Grid is seeking the ability to use TERRE bids for system balancing as well.

16.2 We adopt the following principles:

- **GB TERRE Product acceptances used for balancing the GB system and TERRE scheduled imports and exports to meet GB needs should be considered in the GB imbalance price calculation.**
- **TERRE Product acceptances that are not used for balancing the GB system should not be considered in the GB imbalance price calculation.**
 - The rationale for this can be seen in the example developed by the Issue 60 Group with both GB and France long with additional Bids being taken in GB to resolve both countries' balancing positions.
 - This example can be regarded as a combination of balancing in GB; and balancing in France. Also National Grid would balance using the cheapest option for GB alone – the second step of importing from France and reducing generation in GB to compensate and resolve the French imbalance would not result in any financial change in GB for any party except the party being asked to reduce generation/increase demand as National Grid will receive a payment from the party which it would then pass on to France in payment for the import.

16.3 However, we don't need to include individual TERRE Product acceptances in the imbalance price stacks if:

- the central TERRE systems can supply information on the total volume of satisfied GB needs met by TERRE
- National Grid (or BSC) calculates the net cost of those satisfied needs in Euros.

16.4 If the above two bullet point conditions apply, we can **include one TERRE block (the GB TERRE block acceptance) in each price stack representing the net volume of TERRE scheduled activations (both in GB and overseas), activated to meet GB needs and priced to reflect the net TERRE cost of meeting these GB needs to National Grid.**

16.5 Ultimately given that TSOs should, according to the NC EB, prioritise the use of European Stand Products over local (e.g. GB) Specific Products when balancing, it is possible that the TERRE block may form the major part of the price stack with only a few GB BOAs and Balancing Services Adjustment Actions.

16.6 For the above reason, **we consider it essential for market transparency that all TERRE Product acceptances on GB assets are also published on BMRS, even though it may not be possible to see whether such acceptances were used to meet GB needs.**

16.7 We assume that the GB imbalance price will remain priced in £/MWh. This means that any TERRE Product acceptances (or the GB TERRE block acceptance) proposed for inclusion in the price stack must have their TERRE clearing price converted from Euros/MWh to £/MWh before inclusion.

16.8 Ordinary GB (non-TERRE) BOAs should appear at the price at which they are settled too, so if such BOAs move to a clearing price then this would apply, but this clearing price is assumed to be in £/MWh requiring no currency conversion.

16.9 Do we need to consider settling ordinary GB BOAs used for energy balancing (not system balancing) to a clearing price as part of the Issue 60 proposals, to align with TERRE?

Consideration of the ramps

16.10 **For ramp volumes, we propose that they are treated in the same way in the imbalance price stacks as they are settled as this reflects the true cost of imbalance to the System Operator.**

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- So under our proposed approach to the treatment of ramps, ramp volumes would be included as zero-priced contracts in the imbalance price stacks.

16.11 In each case where we consider how the scheduled TERRE Product acceptance volume fits into the imbalance price calculation, we also need to consider how the associated ramp volumes fit into the imbalance price calculation. This is stated as a reminder here to check that this has been done in the thinking throughout this section and because some conclusions we reach suggest a different treatment of the ramp volumes from the associated TERRE Product acceptance.

16.12 Throughout this section, if ramps are to be treated as imbalances, not contracts, by TERRE, then we must remove those ramps from the price stack, which also requires that if they are represented as BOAs then they must be flagged at special TERRE ramp BOAs to allow for this removal while leaving ordinary GB BOAs in the stack.

Consideration of TERRE Product acceptances used for GB balancing and wider TERRE balancing – what should be included in the imbalance price stacks?

16.13 The question arises as to how to distinguish between TERRE Product acceptances that are used for balancing the GB system and those that are not.

16.14 This is much easier if we use the GB TERRE block acceptance noted above because this volume and price is defined by reference to meeting GB needs and this is our preferred model.

16.15 However, if we have to use individual TERRE Product acceptances, our thoughts are as follows.

- In the example above which of the two GB Bids is actually used to meet GB balancing requirements, or is it some combination of the two? It is proposed that the volume of TERRE Product acceptances taken into the price stack is therefore constrained by the volume (TERRE acceptance volume taken on GB-located assets) – (TERRE scheduled export volume) + (TERRE scheduled import volume).
- If GB is a net importer or exporter in the TERRE schedule, then the net volume TERRE Scheduled imports or exports into GB should be included in the price stack at the price that represents the net cost to National Grid of that import or export.
- We **assume that all TERRE Product acceptances in a half hour GB settlement period may not have the same clearing price.**
- With this assumption it is proposed that the cheapest TERRE Product acceptances in the price stacks are excluded from the GB balancing volume to meet the above volume constraint. The rationale for this is consistency with the way TERRE schedules and with the European direction of travel.
- This is our understanding. TERRE schedules Products (generation or demand reduction) from across the TERRE area to meet forecast TERRE area demand (sum of TERRE TSOs' notified needs). Once an interconnector is fully loaded, e.g. into GB, then TERRE will continue to schedule local acceptances, e.g. in GB, until the local need can be met. So TERRE meets wider TERRE demand needs first before it meets any remaining unmet GB need from Product acceptances on GB assets. The latter will inevitably be the more expensive ones.
- The draft NC EB (Article 44) specifies that unshared balancing products, i.e. ones used for national/local purposes must be the highest priced ones. Our proposal takes a similar approach in that TERRE Product acceptances used for local (GB) balancing although shared are the highest priced ones.

16.16 Note that under this solution, **it is proposed that TERRE ramp volumes under option 1 will be assumed to meet GB balancing needs whether or not the associated TERRE acceptance is deemed for GB balancing.** This is reasonable as TERRE does not recognise ramp volumes in its settlement across the interconnectors, expecting only the scheduled blocks of energy.

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16.17 **If, as now seems more likely, TERRE adopts the common approach that ramp volumes are treated as imbalances (option 2), then ramp volumes will not need to be included in the price stacks.**

Consideration of the impacts of non-delivery of TERRE Product acceptances on imbalance price

16.18 We now understand that National Grid may be expected to activate local replacement BOAs to ensure that the energy scheduled by TERRE is sent across the GB interconnectors if the TERRE Product acceptances are not delivered in full.

16.19 This raises the question as to whether these replacement BOAs are being used for GB or overseas balancing, as this will determine whether they are eligible to set the GB imbalance price.

16.20 We propose that such replacement BOAs are considered as GB balancing actions and so eligible to set GB imbalance prices for the following reasons:

- TERRE Product acceptances can be used for GB balancing as well as exports/imports. In fact while GB is weakly interconnected it may be that the major part, by volume, of TERRE Product acceptances are being used to support GB balancing needs.
- it is a simple approach and aligns with the current treatment of all other BOAs
- there is no obvious perfect solution.

Consideration of whether TERRE Products might ever be used for system balancing

16.21 For imbalance price purposes, **we also need a flag on TERRE Product acceptances and for their associated ramp volumes that not only shows that they are not normal BOAs, but whether they are energy balancing or system balancing (and rules for determining how these flags are set and by whom).**

- The reason is that although TERRE Products are all intended to be solely energy balancing, it would be unwise to build a system that precluded all future TERRE Product acceptances from ever being classified as system balancing.
- In fact recent information suggests that TERRE Product acceptances might well be used for system, as well as, energy balancing. If so, will the flags be set by central TERRE systems, or by National Grid?

Consideration of the price conversion of the TERRE Product acceptances priced in Euros

16.22 As with the conversion of clearing prices in the non-delivery charge, see above, we adopt the following general principles for the conversion.

- Firstly, there should be set rules under the BSC for this.
- The conversion rate should be defined by reference to particular source(s) at defined times.
- The point on timing is important as there are several times at which a conversion could be considered. The obvious ones are:
 - With reference to the original Settlement day itself;
 - When the calculation is done for initial Settlement; and/or
 - When the calculation is done for any reconciliation.

16.23 However, there may be different considerations from the currency conversion for the non-delivery charge so it may be that we cannot apply the same rationale.

- The GB imbalance price is calculated from the cost of actions incurred by National Grid in balancing the GB transmission system. National Grid will pay or receive payments from TERRE for TERRE Product

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acceptances. We have already identified which acceptances in principle are classified as being used for balancing the GB transmission system, so we are only concerned here with price conversion of those acceptances.

- So, in principle, **we propose that the time point of currency conversion is related to the point at which the payments are made or received by National Grid under the inter-TSO TERRE payment arrangements.** If these times are well-defined and clear, i.e. public, there ought not to be an issue with this except if the TERRE payment point is later than the Initial Settlement Run (SF), in which case the initial settlement should use the conversion rate available at the time of the GB BSC Settlement Run itself.
- If we are basing GB BSC conversion rates on inter-TSO TERRE payment points (timing), **for subsequent GB BSC reconciliations, the conversion rate should only be changed from that used in the previous GB BSC Settlement Run to reflect:**
 - **Subsequent TERRE payment reconciliations** for TERRE Product acceptances, i.e. where the clearing price has changed since the previous TERRE payments for the same original acceptance.
 - Note also **that if the volume of the GB TERRE block acceptance** (or, if using them, the individual TERRE Product acceptances on GB-assets or TERRE scheduled GB interconnector flows) **changes in a TERRE reconciliation, we also need to incorporate this in the GB imbalance price re-calculation in the next GB BSC Reconciliation Run.** This is particularly required if we use the total volume of actions and scheduled GB interconnector flows as a discrimination between GB and non-GB balancing acceptances.
 - **Where the timing point for the currency conversion used in the previous GB BSC Settlement Run was not a TERRE payment point**, e.g. where there was no TERRE payment scheduled prior to the previous GB BSC Settlement Run calculation in respect of that acceptance, so a currency conversion timing point could not be established.
 - **Where the BSC defined currency conversion rate was not available** for any reason in the previous BSC Settlement Run and a default was used, but is now available for use.

16.24 As the imbalance payments to/from GB BSC Parties are self-funded by BSC Parties within the BSC as part of RCRC, and are all made in GB Pounds, there is no additional specific risk for any party from the different timing of payments to and from them given by the Euro conversion in the imbalance price calculation.

17. Relative timing of BSC, BSUoS and TERRE settlement runs and payments

- 17.1 This is a significant issue because the GB information and payment arrangements will no longer be self-contained and made internally consistent under a single GB regulator. In particular, a mismatch between the due dates for payments under the GB arrangements and under the TERRE arrangements could give rise to risks that would fall on individual parties, for which GB arrangements might be required.
- 17.2 There is no guarantee (either initially or an ongoing basis) that TERRE will:
- provide information in the timescales required for the traditional BSC (or BSUoS) Settlement Runs
 - provide payments in the timescales required for the traditional BSC (or BSUoS) payment deadlines
 - require payments in the timescales required by the traditional BSC payment deadlines from BSC Parties (or for any BSUoS equivalent).
- 17.3. This gives rise to risks of missing information and/or missing money at the times these would be required by the BSC, BSUoS or by central TERRE arrangements.

The timing of information requirements between TERRE and GB settlement

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- 17.4. Considering information requirements first, if information required from TERRE is not available, e.g. on TERRE Product acceptances, then we could:
- introduce default rules for the missing data
 - change the timing of GB settlement arrangements.
- 17.5. As it is likely that default rules would be needed in any case to cater for any problems with TERRE, and a change to the timing of GB Settlement is not a minor change, we propose that default rules should be developed. This may include ignoring any missing TERRE data, though this may have significant impacts on the GB Settlement results and subsequent GB reconciliations when the TERRE data is then available for use; or replicating missing TERRE data, e.g. by copying from the previous Settlement Period or previous Settlement Run in respect of the same period (if such data was available then).
- 17.6. We are unsure whether TERRE Settlement will need any specific information from the GB Settlement arrangements. It seems unlikely, so we will assume not unless notified otherwise.

The timing of payment requirements between TERRE and GB settlement

- 17.7. The central GB parties, i.e. National Grid BSCCo/BSC Agents (if the above proposals are adopted) will receive payments from TERRE that need to be passed on to BSC Parties and other GB market participants. If these payments are received after the relevant GB payments are due, then the central parties may not be able to make these payments due under the existing GB arrangements.
- 17.8. Similarly, for payments that are due to TERRE, the central parties may not have received the payments due under the existing GB arrangements in time to be able to make the payments due to TERRE.
- 17.9. These risks are down to two non-mutually exclusive causes:
- The relative timing of due dates for payments are inconsistent to/from TERRE TSOs and the internal GB arrangements, i.e. the TERRE rules and the GB arrangements, e.g. BSC/BSUoS, are inconsistent on the timing of payments.
 - The timings in the respective rules may or may not be consistent, but a party defaults on a due payment (this could be due to any of the parties in the chain or a failure of a relevant payment system).
- 17.10. **We can address the first cause by making the payment due dates under TERRE and GB arrangements consistent.** For example, for the GB central parties, it would mean that the rules allowed for payments to be received under one set of rules before they have to be passed on under another set. This is clearly ideal but may not be achievable initially or in future.
- 17.11. If achievable initially, it also brings to the fore how the respective governances of TERRE and the GB arrangements will align, so that future changes in one set of arrangements do not create the risk subsequent to that change.
- 17.12. This is an example of **a more fundamental question covering how TERRE and the GB arrangements will be made consistent on an initial and ongoing basis**, and how each will be made aware of:
- any potential changes in the other arrangements
 - progress in deciding upon and implementing such changes.
- 17.13. TERRE governance is currently under discussion but we understand it is likely to be a TSO Steering Committee. **It is unclear whether this will be sufficient to address coordination issues with local arrangements.**
- 17.14. If it is not possible to achieve alignment, then the risk caused by the rules and defaulting arrangements could be addressed in the same way.

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17.15. When considering this, the distinction might be that we expect the mis-alignment of rules to result in what look like payment defaults on every payment due date, i.e. on a daily basis. Whereas a traditional actual payment default would be on an intermittent basis, though reconciliation of payment defaults may mean that there will be some socialised default payments in most GB Settlement runs.

18. Payment Defaults to and from TERRE

18.1. Payment defaults might be addressed via GB arrangements similar to those in the current BSC, i.e. call on available credit from the defaulting party and, if this is insufficient, the socialisation of default amounts amongst GB parties.

18.2. So, for example, if a GB market participant fails to pay National Grid/BSC Agent the required payment due to TERRE for a TERRE Product acceptance (mostly likely in respect of a generation reduction or demand increase), then the GB central party would call on any credit or socialise the default.

18.3. However, this is no longer as 'simple' as under the BSC.

- TERRE payments are in Euros, but GB socialised payments are in GB Pounds.
- Credit arrangements will be needed to cover TERRE Product dues.
- If the TERRE TSOs default on payments due to GB parties from TERRE, will they be required or willing to lodge credit from which the GB central parties can call? (Note that as payments are expected to be in Euros to the GB party, then question of currency risk does not arise from lodging the credit in Euros).
- If the TERRE TSOs default on payments due to GB parties from TERRE and there is insufficient/no credit, will it be an acceptable solution for the GB parties to socialise these costs wholly amongst GB parties? (Note in this case, the question of currency conversion will arise, unless **all** GB parties are willing, or required, to have Euro accounts.)
- In the above point, **we have effectively assumed that there will be no central TERRE arrangements for socialising across all the TERRE TSOs more generally for TERRE payment defaults, but if there are then payments may be needed from GB parties even if the default is related to another part of the TERRE area in order to fund National Grid's share.**

18.4. It is not possible to answer some of the above questions yet, as we have not raised these with TERRE TSOs.

18.5. Theoretically payment defaults could be:

- for a TERRE Product acceptance and due to TERRE or to the individual GB party (in Euros) which has to be paid by GB parties generally (in GB Pounds)
- due to TERRE (in Euros) effectively from GB parties generally (in GB Pounds)
- due to GB parties generally (in GB Pounds) for an unpaid amount due from TERRE (in Euros) and which has to be funded by GB parties generally.

18.6. It is not clear yet that there will be any direct examples of the second bullet above. However, this could be because the role of National Grid, as a TERRE TSO, to make payments to the other TERRE TSOs under the TERRE arrangements has been delegated or assigned to another body, e.g. BSCCo/BSC Agents.

- There is an argument that, irrespective of that delegation or assignment, the amount due to TERRE should be funded by National Grid until such time as the amount can be collected from GB parties generally. In this arrangement National Grid could:
 - be required to lodge credit – appropriate for unexpected ad-hoc payment defaults

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- be invoiced for the amount in default by the other GB body – appropriate for expected payment mismatches due to inconsistent TERRE and GB payment dates in particular, but could also be adopted for ongoing ad-hoc payment defaults before any socialisation amongst GB parties kicks in.
- 18.7. It is also not clear that there will be direct examples of the third bullet above (in 18.5) and it seems a little bizarre to pursue socialisation at all from a default by TERRE where that payment is owed to GB parties generally as it would be funding payments due to all GB parties by all GB parties. But similar thinking as above could apply and that National Grid should fund payments due from TERRE until the TERRE payment is received from TERRE by the other GB body.

19. Currency conversion for payment defaults

- 19.1. Here we examine how currency conversion might work from Euros in a GB socialisation of costs if this is part of the solution.
- 19.2. In this case **we are currently assuming that GB parties will not want the socialisation done entirely in Euros, which it could be, although requiring every GB party to be able to pay and be paid in Euros.**
- 19.3. Note that even if National Grid temporarily funds the payment defaults in Euros due to or from TERRE as explored above, this merely delays the question as to the appropriate conversion to use when the amounts are eventually funded by, or payments made to, GB parties in GB Pounds.
- 19.4. For payment defaults, we cannot generally adopt the same general principle as was adopted above for scheduled payment conversions. This is because the conversion rate we used for scheduled payments was defined as the one on the day that payment was due as the default will not necessarily be known on that day.
- 19.5. We start by taking the amount due from the GB central parties' systems that is unfunded by the payment default. This must be paid out by the central party in Euros or in GB Pounds (see the three bullet example in paragraph 18.5).
- 19.6. The central party must have sufficient funds to do this so the total amount received by it from GB socialisation should be the same amount after currency conversion and currency conversion costs, etc. otherwise the central party is exposed to risk that it may or may not be able to fund itself. For example, **although BSCCo is a not-for-profit company, it currently has a credit facility in place (under the BSC Section N 4.9) of £4million, but which can be extended to £10million subject to BSC Panel approval. These arrangements may need to be revisited as part of a BSC Modification for TERRE (foreseen once Issue 60 has concluded) in the light of any TERRE risks.**
- 19.7. **We are unsure whether the proposal below should be adopted as it gives a lot of freedom to the central party which industry may not deem to be appropriate. It has also not been reviewed by any financial experts to see if it might work, even if acceptable.**
- 19.8. **However, the central party should be permitted to invoice GB parties to recover the amount required in the other currency and so a general principle is proposed that allows the central party to choose the conversion rate that allows it to do this taking account of the current conversion rate at the time of invoicing and the risk of any movement in that conversion rate by the time the payment is due from the central party. Any over-recovery can be remitted back in a future reconciliation. There will, however, always be a risk from a significant currency change between the time of invoicing and the outgoing payment due date unless there is credit or a borrowing facility is in available, in the outgoing payment currency.**

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19.9. Note that for **payment** issues due to TERRE/GB rules misalignment where the central party may have to find payments before the payment to fund it is received or is received in insufficient time to convert it to the outgoing currency by the time due, there could be a similar risk in the currency conversion issue.

Appendix: Other thoughts and questions

- Are there any impacts, e.g. on data transfers, from having different time zones in the TERRE area? Of the TERRE members most are in the Central European Time zone, but GB, Ireland and Portugal are in the Western European Time zone; and Greece is in the Eastern European Time zone. The TERRE clearing prices will need to be allocated to particular TERRE clearing periods.
- There is no need to adjust Continuous Acceptance Duration Limit (CADL) from its current 15 minute value.
 - TERRE Product acceptances when converted into BOAs including ramps will not be less than 15 minutes in duration.
 - CADL flagging applies to BOAs strictly less than 15 minutes long.
 - **However, there may be an issue here eventually about whether a three-part BOA is managed as three separate BOAs with separate flags. Does a BOA need to return to/start from the previous baseline?**
- **The above has not yet addressed any issues associated with:**
 - **dual TERRE auctions.**