Balancing Taskforce n° 5

24/05/2013

Elia ENMAN

Agenda

1. Welcome

13h30

2. Validation of Meeting minutes dd 17-04-2013 (10')

13h40

3. Feedback from experts working group "Ancillary Services provided by distributed resources" dd 14-05-2013 (20')

14h00

4. Various information and feedbacks (30')
   - Status / feedbacks for proposed ARP-contract changes
   - Confirmation update monitored capacity wind forecasting
   - Status Tendering 2014 (R1/R2/R3)

14h30

5. iGCC – Feedback from Elia regarding the first months results (30')
   - Consultation based on slides sent upfront by Elia

15h00

6. Pauze

15h20

7. "Bid Ladder" - Definition of balancing Energy products. (60')

16h20

8. Results/status "Reserve Study - Horizon 2018" (45')

17h05

9. Questions – Remarks - Next steps - next meeting date

Validation of Meeting minutes
⇒ Balancing Taskforce 17/04/2013

Minutes of meeting
Balancing Taskforce 17/04/2013

Remarks on these minutes could be sent to filip.carton@elia.be

- **Final minutes will be validated on each next taskforce.**
- **2 comments received via FEBEG:**

1. *EDF Luminus comments on article 10:* There's a link with article 11: if Elia activates something in the ARP's perimeter, Elia should be liable for this action.
2. *Febeg comments on the evolutions for short term R1/R2:* FEBEG would have preferred a larger amount of the volumes to be contracted on a short term. As a consequence the tendering process for 2014 is suboptimal: one should not expect too much of this pilot project.

=> Minutes (including both comments) will be published on our web-site

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Feedback from experts working group

⇒ "Ancillary Services provided by distributed resources"

The **goal** of this working group is to reach a **mutual consensus on new balancing products from distributed energy resources**. One of the deliverables of this expert group is to propose concrete design adaptations by for the short-term (2014-2015) and recommendations for the longer-term.

April 29th - Presentation of feedback from TF Balancing of April 17th and discussion on **final amendments to product proposal :**

- 100% availability maintained
- possibility to change margins during the year is part of long-term development (2016 onwards)
- more flexible bidding sheet constraints
- principle of notification within 15' towards BRPs in case of activation agreed, subject to availability of data

May 14th - Focus on **procedures & data exchanges**

- Presentation of prequalification, activation, metering & settlement procedures by DSOs
- Principle of data exchange & contractual framework
- Presentation of tendering timing & constraints of R3 Dynamic Profile
- Template of prequalification for discussion / review purpose
- ARP art 11,1,2 discussion

R3 connected on DSO's Network

Belgian DSO's point of view
Meeting Forbeg May 24th 2013

Preliminary remarks

- The key principles must be considered as the preliminary of a long term DSO vision
- The statements made in this document are only valid for the tender R3 2014 and for one year.
- Discussions >2014 must start (ATRIAS)
- This presentation is explaining the DSO's perspective but it is not an agreement.
- These topics will then be translated into legal text and must be accepted by the regional regulators (CWAPE – BRUGEL and VREG). This is a prerequisite before the conclusion of contracts between the parties.
- DSOs believe that clarity and transparency to Federal and Regional Regulatory Agencies is also key

Goal

- Explaining interactions (high level) between parties in the « R3 connected to DSO's Network (2014)» context.

Key Principles

- DSOs want to play their roles as facilitator
  - **To help ELIA to succeed their new tender R3 (2014)**
  - **To ensure that the level of security within the DSOs grid is maintained**
  - **To give to ELIA and the market only the necessarily data and information**
- We propose to our regulator to agree with the following principles

Key Principles

- Principle 1: If different flexibility requirements are expressed by several roles (TSO, suppliers, ARP, DSO, ...), flexibility will be first used to meet the technical constraints of DSO. Flexibility cannot create local technical constraints (such as congestion, voltage instability, deteriorating the quality of the voltage)

- Principle 2: The roles/clients offering flexibilities must be known and authorized by the DSO.

Key Principles

- Principle 3: the customer must give a clear mandate for using the metering data. As soon as possible in the process, these data can be made anonymous by aggregation
- Principle 4: Neither the balance responsible party (BRP) nor the supplier should know the EAN that provides flexibility (BSP) (otherwise distort competition). Nevertheless, they may be informed according to the process requirements
- Principle 5: The “service flexibility” settlement is based on the metering data captured by DSO
- Principle 6: The TSO will neutralize the BSP effects on the DSO’s

Overview 2014

- Only AMR
- No injection (head meter)
- > 250kVA (100kVA TBC EAN/EAN)
- DSO check for the whole year on most stringent availability

Pre-qualification

- BSPs send EAN's list to DSO
- DSO checks if there is a risk
- DSO agrees with BSP about the list and the rights/obligations
- At this point, TSO/BSP can use this flexibility
- A study cost may be applied by the DSO

Pre-qualification

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- DSO checks if there is a risk
- DSO agrees with BSP about the list and the rights/obligations
- At this point, TSO/BSP can use this flexibility
- A study cost may be applied by the DSO

Criteria's are transparent: e.g. Voltage issue, congestion when cut energy is recovered

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- DSO checks if there is a risk
- DSO agrees with BSP about the list and the rights/obligations
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- A study cost may be applied by the DSO

Agreement on list but also on relationship between parties

Activation

- TSO sends a request to BSP
- BSPs warns DSO per EAN and TSO warns DSO per BSP (at least day after)
- TSO informs BRPs about maximal power cut

Measure

- For the moment, real time measures are managed between BSP and TSO

Metering

If requested by BSP , DSO can send (contractual) to BSP

- non validated metering data (ASAP)
- validated metering data /EAN (M+10wd)
- A cost will be applied

Settlement

- DSO communicates necessary information to TSO for Settlement
- TSO sends only aggregated Settlement /BSP

= same philosophy as for supplier

Consequences principles 3 & 4

Relationship DSO and BSP/BRP/Supplier

- Confidentiality of the access register (relation data, master data) and metering data
- Consequences:
  - **Metering data:**
    - **No metering data to BRP**
    - **Mandate of the client for metering data (only) to his BSP**
  - **Maximal activated power to BRP:**
    - **Aggregated for his portfolio from TSO to BRP**
    - **By extension, DSO should help the TSO and provide him aggregated power /DSO/BRP/BSP**
  - **Settlement data to BSP:**
    - **Aggregated for his portfolio from TSO to BSP**
    - **By extension, DSO should help the TSO and provide him aggregated Settlement data /DSO/BSP**

Impact suppliers

- Supplier must accept the consequences of BSP actions on DSO metering, gridfee and allocation results
- How to formalize?

Next Steps

From DSO point of view

1. In depth within Task Forces (ATRIAS – SYNERGRID – USERS GROUP)
   - **Technical criteria**
   - **Templates (customer mandate, data exchange...)**
2. Proposals of contract formalization to regulators
   - **BSP/DSO**
   - **Supplier/DSO**
   - **Client mandates**
3. In parallel, technical pre-qualification may start

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Various information and feedbacks
=> Feedback consultation ARP Contract changes

Proposals Article 10.2 & Article 11.1.2

Comments received from:

- **Febeg,**
- **BASF,**
- **ANODE,**
- **EDF Luminus,**
- **EBL**

No version in NL: Not yet, work version

Various information and feedbacks
=> Comments on Article 10.2 (1/2)

- Inconsistency with Art. 157 Federal Grid Code & Art. 10 ARP contract => Recommendation to modify Art. 157 Federal Grid Code
  - Elia & Users Group will launch a traject for revision of the Federal Grid Code : to be taken into account
  - Federal Grid Code to be read with experience of 2013 (old text from 2001; is broadly written; see ACER FW Guidelines on Balancing having already introduced the principle of reactive balancing…)

- To avoid any uncertainty & ambiguity: wording proposals
  - Proposals to be taken into account if added value for the text proposal

- To introduce a signal from Elia to go for imbalance
  - "Signal" is the imbalance price published by Elia
  - No official request from Elia ≠ activation of ancillaries products
  - No responsibility from Elia : ARP is free to participate

Various information and feedbacks
=> Comments on Article 10.2 (2/2)

- Mechanism of 10.2 should be an exception/a derogation to general regime of 10.1
  - 10.2 is NOT a derogation to general regime of 10.1: Nominations have always to be balanced on DA & ID
  - Two different timeframes: DA-ID & real time imbalance

- Liability Elia / ARP: mechanism of 10.2 should integrate a responsibility of Elia when the activation of an AS is having impact on ARP Perimeter (link R3 Dynamic profile on Art. 11.1.2)
  - No responsibility from Elia: ARP is free to participate
  - No direct link between mechanism of 10.2 & R3 Dynamic profile (Art. 11.1.2): indirect effect on the ARP perimeter but no damages foreseen with activation of R3 Dynamic profile

- Limited to ARP with physical positions ? Discriminatory business model ?
  - Mechanism limited to ARP with physical positions
  - No discrimination: reactive balancing needed in real time ; efficacity of the action depends on the ARP portfolio (highest flexibility)

Various information and feedbacks
=> Article 10.2

10.2. Participation des Responsables d'accès à l'objectif global du maintien de l'équilibre de la zone de réglage

Sans préjudice de l'obligation d'équilibre individuel de tout Responsable d'accès telle que décrite à l'article 10.1 du Contrat, un Responsable d'accès a la possibilité de participer en temps réel à l'objectif global de maintien de l'équilibre de la zone de réglage belge, en déviant, lors de la mise en œuvre des moyens indiqués ci-dessus, de l'équilibre de son Périmètre d'équilibre, dans la mesure où il préserve sa capacité à revenir, en temps réel et à tout moment, à l'équilibre de son Périmètre d'équilibre.

Elia ne peut, en aucune circonstance, être tenue pour responsable, au sens de l'article 20 du Contrat, pour tout dommage résultant directement ou indirectement de la décision que le Responsable d'accès a prise, de manière autonome, de dévier de l'équilibre de son Périmètre d'équilibre, afin de participer en temps réel au maintien de l'équilibre de la zone de réglage belge.

[ARP] fournira à Elia, à la première demande motivée de cette dernière, des preuves suffisantes du fait qu'il disposait des moyens pour revenir en temps réel à son obligation d'équilibre de son Périmètre d'équilibre.

Cette participation en temps réel au maintien de l'équilibre de la zone de réglage belge, en déviant le cas échéant de l'équilibre de son Périmètre d'équilibre, ne supprime en aucun cas l'obligation de [ARP] d'être à l'équilibre lorsqu'il soumet ses Nominations Day-ahead et Intraday relatives à son Périmètre d'équilibre, ainsi que prévu à l'article 12.1 du Contrat.

Various information and feedbacks
=> Comments on Article 11.1.2 (1/2)

- Activation of R3 Dynamic Profile should have no financial / financial impact on ARP, due to an imbalance of his Perimeter (ARP cannot be held liable for an imbalance caused by request from Elia)
  - No negative impact : design of the R3 dynamic profile (MIP+)
  - See discussion on Art. 10.2

- R3 Dynamic Profile should allow an exception/a derogation to general regime of 10.1
  - 11.1.2 is NOT a derogation to general regime of 10.1: Nominations have always to be balanced on DA & ID
  - Two different timeframes: DA-ID & real time imbalance
  - No negative impact : design of the R3 dynamic profile (MIP+)

- To inform ARP/Supplier from participation to a pool/activation
  - In the 2014-2015 version of "R3 dynamic profile", Elia will inform ARP of any activation that might have an impact on his perimeter, in real time and on a agregated way (based on the information delivered by DSO)
  - To allow the ARP to avoid attempting to rebalanciong his perimeter
  - ARP Contract is only organizing the effects on the ARP and not describing the whole design of the product => more information flow to be organized in details in the BSP/GU contract

Various information and feedbacks
=> Comments on Article 11.1.2 (2/2)

- Can clients of a CDS be part of a pool ?
  - See discussions on TF Balancing 17/4: no restriction but CDS should be recognized and contractually in order with Elia (for pre-qualification process) => seems too early for 2014 tendering

- Quid if R3 Dynamic Profile design evolution ?
  - ARP Contract would evolve as well

Various information and feedbacks
=> Article 11.1.2

11.1.2. Fourniture de services auxiliaires

En cas de demande par Elia à un Fournisseur de profils dynamiques de modifier ou d'interrompre des Prélèvements/Injections qui auraient un impact sur le Périmètre d'équilibre de [ARP], dans le cadre des services d'ajustement de profil conclus par Elia, le Périmètre d'équilibre de [ARP] n'est pas corrigé pour la durée de la modification ou de l'interruption.

Dans le cas d'une telle modification ou interruption, sans préjudice d'une information similaire provenant du Fournisseur de profils dynamiques à [ARP], Elia en informera [ARP] au meilleur des connaissances dont Elia dispose quant aux Prélèvements/Injections concernés qui seraient dans le Périmètre d'équilibre de [ARP]. Cette information sera donnée à [ARP] dans les quinze (15) minutes suivant la modification ou l'interruption, par téléphone et/ou par e-mail et/ou par fax (contact disponible 24h sur 24h conformément à l'Annexe 6 du Contrat).

= **information from Elia (ADAPTED)**

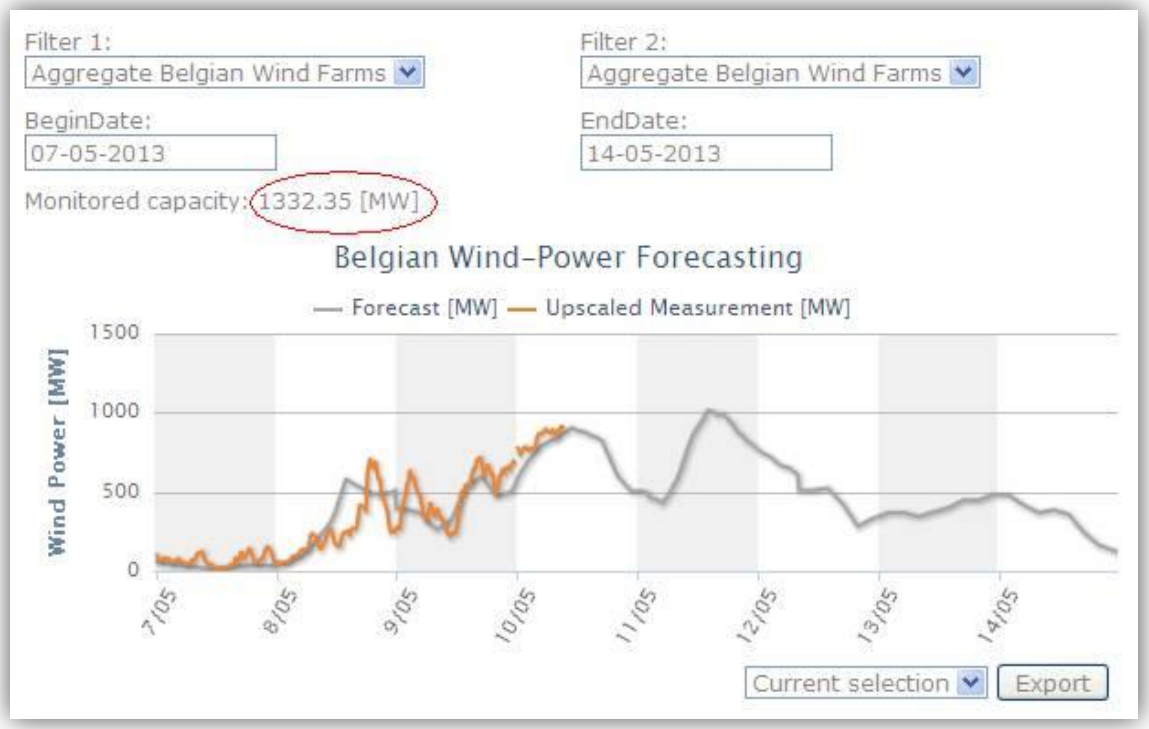
Elia ne peut, en aucune circonstance, être tenue pour responsable, au sens de l'article 20 du Contrat, pour tout dommage résultant directement ou indirectement de la modification du Périmètre d'équilibre de [ARP] en raison de l'activation d'un tel service d'ajustement de profil.

Le fait de subir une telle modification de son Périmètre d'équilibre ne supprime en aucun cas l'obligation de [ARP] d'être à l'équilibre lorsqu'il soumet ses Nominations Day-ahead et Intraday relatives à son Périmètre d'équilibre, ainsi que prévu à l'article 12.1 du Contrat.

Various information and feedbacks
=> Update monitored capacity - wind forecasting

10th of May 2013 Elia updated the 'monitored capacity' used for our wind forecasting tool - Elia now monitors 1332,35MW whereas the actual capacity was estimated to be 1350MW.

	BELGIAN AGGREGATE CAPACITY [MW]	BELGIAN ONSHORE CAPACITY [MW]	BELGIAN OFFSHORE CAPACITY [MW]
PREVIOUS	930,65	735,65	195
NEW	1332,35	952,85	379,5



R1/R2/R3/ICH evolutions for 2014 tendering

=> Status for 2014 tendering (R1 R2 R3)

- April 10th — Pre-design Freeze + Request for consultation with this note
- April 17th — Consultation of market during balancing taskforce
- May 17th — Tendering R1-R2-R3 launched for 20 working days
- June 14th — Tendering R1-R2-R3 results
- +/- July 1th — Elia send report to CREG and Minister on received volumes & prices
- CREG – has 60 working days to assess reasonability of received offers
- By early July — Tendering ICH and “R3 Dynamic Profile” launched
- September — Tendering results for ICH and “R3 Dynamic Profile”
- December — Short term sourcing for 20-30% of 2014 R1/R2 volumes
- 01/01/2014 — Start of delivery for contracted products.

On May 17th our tendering for R1 (incl R1 Load and R1 RTE); R2 and R3 Production was launched according to the initial planning, including the evolutions presented previous TF.

R1/R2/R3/ICH evolutions for 2014 tendering

=> Status for 2014 tendering (R1 R2 R3)

In short, contractual delta's 2013 ⇔ 2014:

- New version of **general conditions** for ancillary services.
- **R1+R2:** Introduction of the principle and procedure to source a share of R1 & R2 via short term products.
- **R1:** Products are now: "Symmetric 100" + "Symmetric 200" + "R1 Down"
- **R1 Load:** Allow provision of the R1 Load service from a pool of access points.
- **R3:** Contract was revised according to the structure of R1 and R2 contracts + :
  - Activation price = Free bids;
  - Secondary market was introduced;
  - A new (quarter hour based) penalty was introduced;

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*IGCC = **I**nternational **G**rid **C**ontrol **C**ooperation*

What:

- IGCC module 1 aims to prevent counteracting deployment of secondary reserves (iGCC is a technical netting of volume) in separate control blocks, by exchanging opposing imbalances between TSOs.

Presently participating:

- Energinet (DK-W), TenneT TSO (NL), SwissGrid (CH), Ceps (Czech Republic) and Elia

- Entso-e trial phase: Currently in trial phase of 1 year (10/2012 – 10/2013)
  - Normal operation with close Entso-e monitoring

- *Modification of the input of the "Load Frequency Controller":*

  – Each participating TSO sends in real time a dynamic demand representing the imbalance of the control area , exclusive manual activations.

  – IGCC adjusts the input signal (remaining imbalance) of the Secondary Controller with a value, representing the control as avoided by netting all market imbalances of the participating control Area's

    - Limited to remaining ATC after Intra-Day Closure
      - Within the limits made available to the market → no extra risk
      - After closure of the market → no impact on the market
      - Elia's exchange is limited based on the profile BE-NL & NL-GER-300MW
    - Limited to contracted volume R2 (140MW)
    - Exchange can be suspended at any moment for technical reasons
    - Does not affect the amount of control reserve required by a TSO

IGCC – Participation Elia:

► IGCC settlement between TSOs

- *Monthly IGCC settlement price determination: Two Step Approach*

  – Estimating Opportunity Prices of each IGCC Participant for each 1/4h
    - The opportunity price is the price a TSO would pay for upwards/downwards regulation without IGCC.

  – Calculating a Settlement Price as the weighted average of these Opportunity Prices for each 1/4h

  – The Energy Imports and Exports of each IGCC Participant will be valued with that Settlement Price (which is valid for both) and then charged to each other.

IGCC – Participation Elia:

►IGCC Settlement: impact Imbalance tariffs

Imbalance Tariff:

		Net Regulation Volume (NRV)	
		Negative (Net downward regulation)	**Positive** (Net Upward regulation)
ARP Imbalance	**Positive**	**MDP - α1**	**MIP - β1**
	Negative	**MDP + β2**	**MIP + α2**

- IGCC exchanged volumes are considered as a part of the NRV

- No Impact Marginal Prices
  - → Instead of activating Secondary reserves, the imbalance will be exchanged via IGCC
  - → IGCC exchanges are considered at R2 price in the imbalance tariff
  - → The potential volume at the price of R2 is increased to 280MW.
  - → iGCC Exchanges are not guaranteed: No changes in the activation strategy for Tertiary Reserves

- Calculation of alpha is based on the system imbalance, no changes

Conclusion: IGCC will not impact the imbalance prices

IGCC – Participation Elia:

IGCC: Expected effects

- Better control quality
- Less activation of secondary control

→ Less control energy

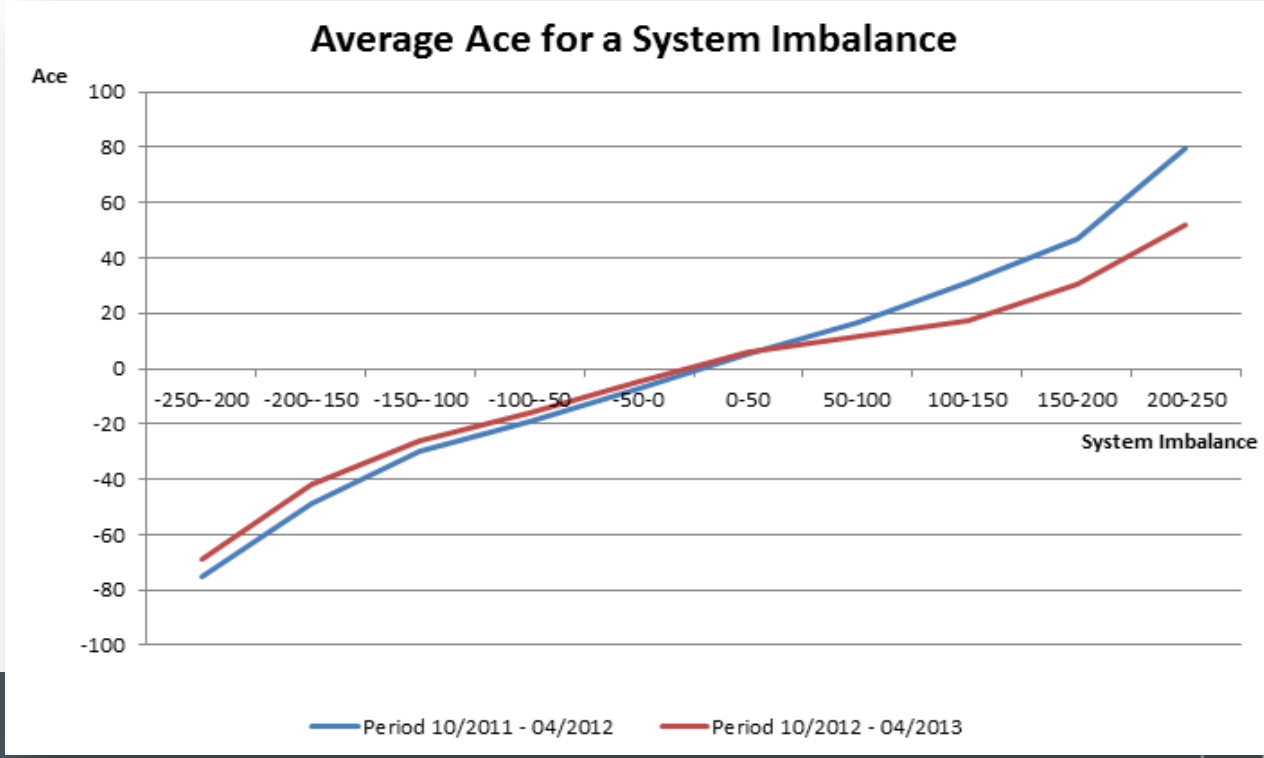
IGCC – Participation Elia:

IGCC: Expected effects

- **Better control quality**
- Less activation of secondary control

→ Less control energy

  - Following graph shows for 2 periods, one with iGCC, one without iGCC, the average ACE in function of the System Imbalance.
  - We notice a reduction of the ACE of 30% in case of positive imbalances. At that moment we are exporting energy via iGCC. We do not see this effect with negative imbalances, because of limited import capacity for iGCC.



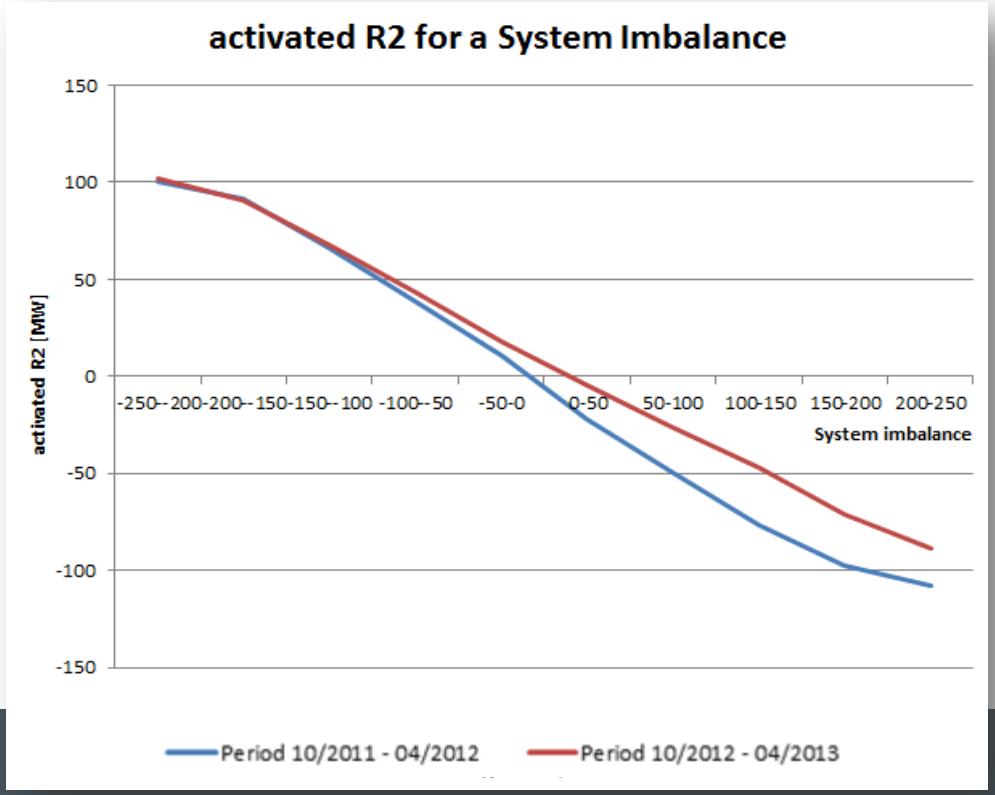
IGCC – Participation Elia:

IGCC: Expected effects

- Better control quality
- **Less activation of secondary control**

→ Less control energy

  - Following graph shows for 2 periods, one with iGCC, one without iGCC, activation of R2 in function of the System Imbalance.
  - We notice a reduction of activated secondary Reserves in case of positive imbalances. Due to limited import capacity we don't see the effect for negative imbalances.



IGCC – Participation Elia:

IGCC: Expected effects

- Better control quality
- Less activation of secondary control

→ **Less control energy**

- On a specific QH, benefits from I-GCC can be positive or negative depending on regulation cost in the participating countries; however in principle over a long period all countries should benefit.
- Calculating the exact benefits of iGCC is impossible to do, because we can't know exactly what the R2 activation would have been without iGCC.
- However by assuming that all exchanged iGCC energy would have been activated by secondary control power, it is possible to perform a high-level check.
- This would result in following estimation:

10/2012 - 03/2013	Volume [GWh]	Cost/ revenue iGCC [€]	Cost/ revenue R2 [€]
Import / Upwards	15,37	803.190	1.063.449
Export / downwards	89,32	5.485.235	4.210.188

Conclusion: Overall effect for Belgium remains positive; Elia will continue to monitor.

IGCC – Participation Elia:
Futur evolutions

- **Launch of a new optimization tool which allows a more optimal use of cross-border capacities.**
  - Current optimization tool:
    - Works with Germany as a hub.
    - Meaning that import/export capacities for Elia are determined based on BE-NL and NL-GER borders, even when TenneT NL is a possible counterparty
  - Future optimization tool:
    - No HUB anymore, all borders/ TSO's will be taken into account
  - Effect: increased potential for import of iGCC

IGCC – Participation Elia:
Conclusion

- Based on these positive results during the first months, Elia will propose to CREG a continuation of our participation into iGCC after 10/2013**.**

Questions?

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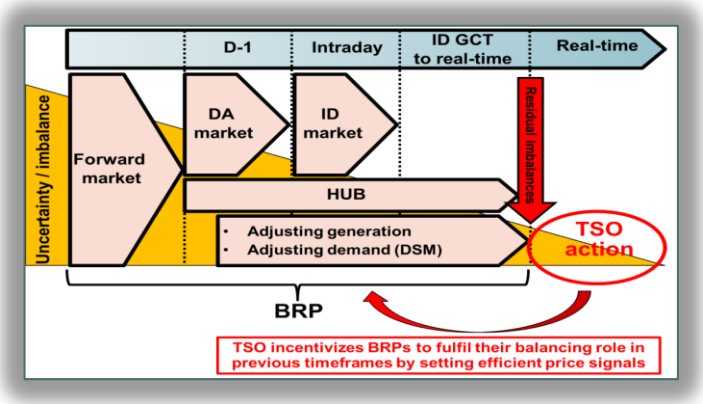
Product design on bidladder platform
=> Introduction

- **In order to determine the optimal design Elia launched a survey regarding the product definition and the bidding process.**
- **All members of the TF Balancing are invited to give feedback**
- **The survey is composed as follows:**
  - Introduction
  - Description of current products/practices
  - Proposal for new products/practices
  - Survey with questions
- **We requested feedback before current taskforce in order to facilitate discussions (limited responses so far)**
- **Final comments are expected so be sent before 04/06**
- **Current presentation deals with Elia's proposal & the questions**

Product design on bidladder platform
=> Context

- *The bidladder shall only deal with non contracted manual FRR reserves (activation time <15min). We don't consider Replacement Reserves as we believe that they belong to the intraday market in normal circumstances.*
  - *The balancing actions of a TSO in a re-active balancing market consist of fast reserves with short activation durations.*
  - *Contracted reserves are "direct activated"-products and hence are different products than the scheduled products on the bidladder platform*



- *The bid ladder platform should allow providers to offer their flexibility by submitting standard products to a platform which can easily be accessed. Elia should publish in a transparent way the available balancing bids and the use of it.*

Product design on bidladder platform
=> Grid code; obligation >75 MW

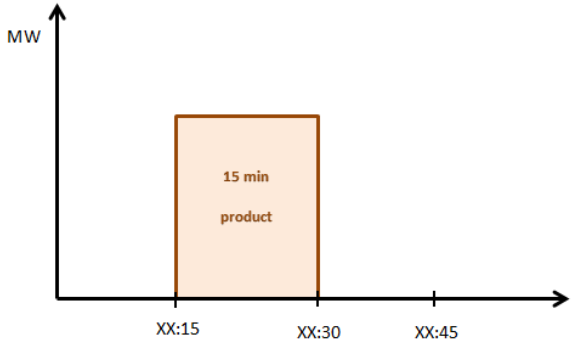
- The Grid code is imposing that all power units >75MW must offer their non-used flexibility to Elia.

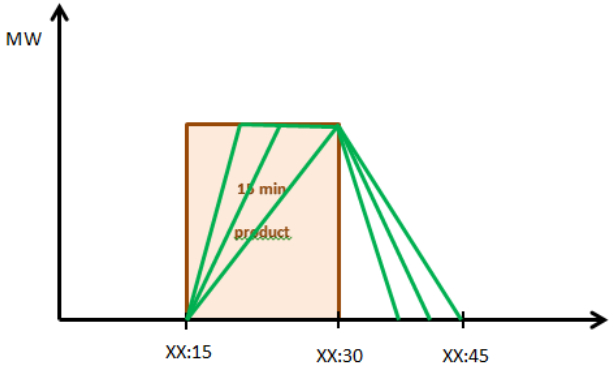
- Although Elia is focusing on a re-active balancing approach it could be required for Elia to activate slow reserves in exceptional circumstances. Therefore we will keep Replacement Reserves as an option.

- Producers will be able to fulfill the requirements of the Grid code as follows:
  - Flexibility >75MW which is compliant with Bid ladder criteria of offering bids on the bidladder platform: check of availability is possible based on locational information.
  - Flexibility >75MW which is technically not capable of offering bids on the bidladder platform: still implicit bidding through CIPU process (proposed solution)

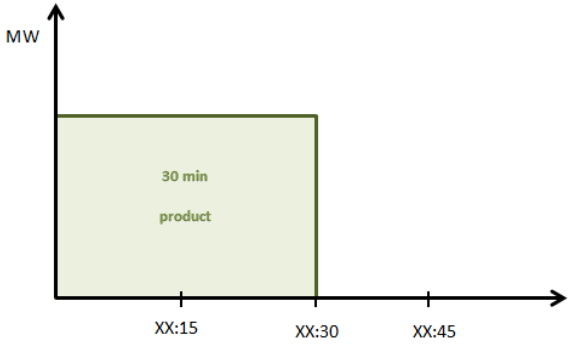
Product design on bidladder platform
=> Elia's proposal for balancing energy products

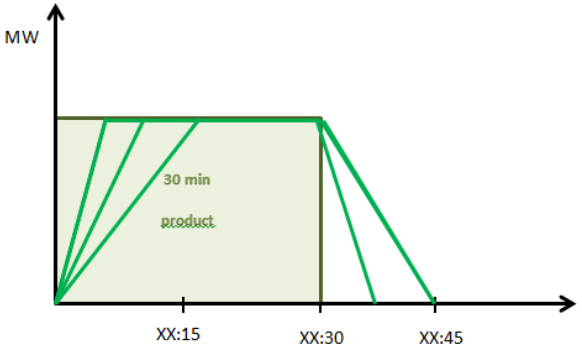
- **"15min block-product" which might be delivered by resources with a total activation time between 15 & 30min**





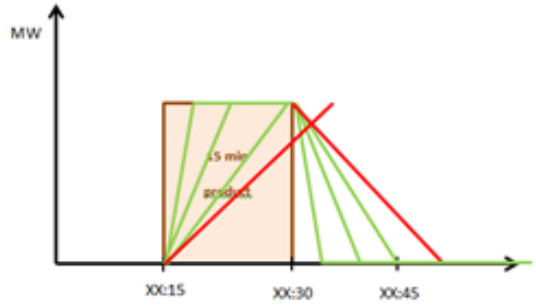
- **"30min block-product" which might be delivered by resources with a total activation time between 30 & 45min**

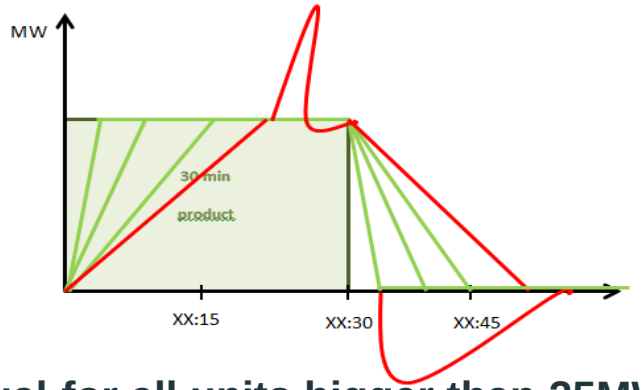




Product design on bidladder platform
=> Technical criteria for offering bids Definition

- A bid shall be based on physical regulation;
- A bid shall be capable of ramping up to its full capacity within 15 minutes from the order;
- Once the delivery of a bid is at the requested power level, it should be capable to maintain the requested delivery at a stable power level;
- Once the delivery of a bid is finished, the bid should be capable of going back to their normal level within 15 minutes and stay there;





- Technical prequalification individual for all units bigger than 25MW. For all smaller units in an aggregated way;
- All providers need to ensure that each of their bids is able to fulfil the technical requirements;
- Monitoring is possible;

Product design on bidladder platform
=> Characteristics of a bid (1/2)

- The product type 15-min or 30-min bid.
- The size of the bid in MW; the minimum bid size shall be 5MW, however a bid can consist of several units less than 5 MW, i.e. regulating flexibility can be aggregated. The offered quantity shall be always an integer value.
- Divisibility; offer the possibility to the provider to indicate whether a bid is divisible or not. The default parameter shall be set to divisible. The option of non-divisibility might lead to a situation in which the TSO skips a bid on the merit order due to technical constraints (volume mismatch between offer and request).
- Availability; indicating for which period a bid is valid (ex. 06:00 until 10:45)
- The Price of the bid
- The direction of the bid (+/-):
  - With “+” meaning that a providers want to produce more or consume less
  - With “–“ meaning that a producer wants to produce less or consume more
- Type of flexibility: Indicate whether the bid is composed from flexibility provided by generation, load or both. This information is important for the congestion management.
- Locational information: indicate from which locations in the Grid this bid is provided by flexibility. This information is also important for the congestion management. The degree of detail still needs to be discussed with the DSOs.

Product design on bidladder platform
=> Characteristics of a bid (2/2)

- We will also allow providers to send in conditional bids. In particular for resources with fixed activation costs
- is might be important for bidding in the flexibility

Example of conditional bids

Flex unit of 100MW with a variable cost of 60 €/MWh & with a fixed cost of 5.000€

The **provider** might send in multiple conditional bids (each time the fixed cost is covered by a different volume) ; once one gets activated the others will not be available anymore. *These bids cannot be combined with each other and thus are exclusive ('either…or…'):*

Bid 1: offer 100 MW @110€/MWh (indivisible)

Bid 2: offer 50 MW @160€/MWh (indivisible)

Bid 3: offer 25 MW @260€/MWh (indivisible)

Product design on bidladder platform
=> Bidding process

- All bids sent on the bid ladder platform shall be firm. This means once Elia requests an activation of a bid, its price and offered volume cannot be modified anymore. Firmness implies that, irrespective of the physical reality, Elia will adjust the BRP perimeter by the volume offered at the moment of activation.

- Providers are allowed to submit bids after 18h00 day ahead;

- Bids can be modified, updated & removed up till 1 hour before real time (Future cross-border intraday gate closure time);

- After 1 hour before real time, bids can still be modified, updated & removed; however in exceptional circumstances Elia will have the right not to accept modifications;

- In the future, when the bid ladder platform will be integrated with a cross border platform, a modification of a bid is only valid once the corresponding bid on the cross border platform has been modified;

Product design on bidladder platform
=> Activation process

- For each operational quarter-hour per product a regulation curve (merit order) shall be established for the up-regulating bids using the principle of placing the cheapest bid first, and for the down-regulating bids using the principle of placing the most expensive bid first.
- There shall be a list for half hour products and quarter-hourly products.
- Both lists shall be published ex-ante per quarter-hour and the activated bids shall be published ex-post.
- Elia shall in principle first activate all quarter-hour bids; activation of half-hour bids is subject to specific rules (to be decided).
- In case of congestions Elia will use the locational information to filter out those I and/or D bids that would increase or cause congestions. This information will be published to allow providers to alter the composition of their bids (by excluding flexibility located at congested access points).
- Elia can skip individual bids in the regulation curve in case of a mismatch between the required regulation volume and the offered indivisible bid size (e.g. need for 50 MW of regulation power whereas the next bid on the curve is an indivisible 200 MW bid).
- Activation request shall be requested to start by preference at the beginning of a quarter-hour (except in case of urgent need due to large imbalances).
- The activation notice can be as short as 1 min.

Example; a quarter-hour bid available for 15:00 to 15:15 can still be activated at 14:59

Product design on bidladder platform
=> Settlement process

- Settlement shall be done by applying a pay-as-bid mechanism; this could be reviewed in the future depending on NC and related harmonisation process (cf. proposition of ENTSOe tbd 1year after NC on balancing enters into force).

- To calculate the delivered energy we shall consider the product which has been offered (i.e. block product) to and activated by Elia, hence not the physical reality.

- For the imbalance adjustments we will also apply the offered products (i.e. block product) when calculating the imbalance volumes of the corresponding BRP.

Product design on bidladder platform
=> Questions in the survey (1/2)

1) **As explained the minimum bid size on the bid ladder platform shall be 5MW. Do you agree with this proposal?**

2) **In case of divisible products a TSO activates only a part of the total activated volume:**
   - **In case of indivisible products a TSO can only activate the full offered amount or nothing**
   - **Do you think indivisible products are required? Why?**

3) **Flexibility provided by load or production might have a fixed cost each time it is requested. There are two ways of dealing with these fixed costs:**
   - **Allow conditional bids: Providers are allowed for the same unit to send multiple bids in which the start cost is valuated each time for a different volume of activation. In such a case Elia will not activate other bids once one of the bids has been activated**
   - **Allow to send separate start costs next to an activation price. In such a case Elia need to perform an optimization in order to put this bid into competition with other bids without fixed costs.**

Elia believes that conditional bids are the most pragmatic solution.

Product design on bidladder platform
=> Questions in the survey (2/2)

4) **Elia believes that working with standard balancing energy products is the best solution to develop a balancing market for manual reserves. Do you support this idea?**

5) **There are 2 different ways for sending in bids to a platform:**
   - Sending in a bid per quarter-hour; (current system)
   - Sending in a bid with an availability period (ex. 06:00 -> 10:45) (current proposal)

   Do you have a strong preference for one of the solutions?

6) **Do you agree with the standard products Elia is proposing? If not, which characteristics should be added to the product definition? Please explain why?**

7) **Do you have other remarks regarding the proposal of Elia ? Please explain the 3 most important issues or concerns.**

Product design on bidladder platform
=> Next steps

- **04/06 Deadline feedback on survey by stakeholders**
- **20/06 Consultation Note including proposition for Free bids by BSPs for TSO clients**
- **27/06 TF Balancing**
- **05/07 Final comments on consultation note by stakeholders**
- **July: (written) feedback to stakeholders**
- **July: Start business specifications bid ladder platform**

Agenda

1. Welcome

13h30

2. Validation of Meeting minutes dd 17-04-2013 (10')

13h40

3. Feedback from experts working group "Ancillary Services provided by distributed resources" dd 14-05-2013 (20')

14h00

4. Various information and feedbacks (30')
   - Status / feedbacks for proposed ARP-contract changes
   - Confirmation update monitored capacity wind forecasting
   - Status Tendering 2014 (R1/R2/R3)

14h30

5. iGCC – Feedback from Elia regarding the first months results (30')
   - Consultation based on slides sent upfront by Elia

15h00

6. Pauze

15h20

7. "Bid Ladder" - Definition of balancing Energy products. (60')

16h20

8. Results/status "Reserve Study - Horizon 2018" (45')

17h05

9. Questions – Remarks - Next steps - next meeting date

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- **Introduction**
  - Scope of study
  - Approach
  - New reserves terminology

- **2018 estimated reserve needs**
  - R&R in Belgian system
  - System flexibility vs. reserve needs?
  - Game changers towards 2018
  - Different scenarios
  - Resulting 2018 reserve needs
  - Conclusions

- **2018 reserve resources**
  - Key aspects
  - Assumptions
  - Results

Introduction (1): scope of study

- **CREG requested this study in its decision (B)120621-CDC-1162, issued on 21/06/2012, on the approval of the proposal for the applicable reserve volumes for 2013 as introduced by Elia according to Art. 233 of the Federal Grid Code**

- **CREG requested Elia to:**
  - **Study the evolution of the reserve needs on a 5 year time horizon (2017 – 2018)**
  - **Verify whether sufficient reserve resources are expected to be available to cover these reserve needs**
  - **Publish this study on the Elia website**
    - *http://www.elia.be/en/grid-data/balancing/Reserves-Study-2018/*

- **This study is not addressing the issue of security of supply or generation adequacy. It is only looking at the responsibility of Elia to ensure appropriate ancillary services in accordance with the Electricity Law (Art. 8 §1) and the Federal Grid Code (Art. 231 & 233), under the assumption that system adequacy is ensured.**

Introduction (2): approach

- **Study focuses on 2018 situation**

- **Determination of 2018 reserve needs:**
  - **Study considers the system reserve needs for the Belgian control block based on current and projected evolutions**
  - **High degree of uncertainty**
    - Mothballing flexible power plants / XB collaboration NC LFC&R & NC EB / Introduction of an HVDC Interconnector in the system (NEMO) / increasing volumes of RES /…
  - **The simulations were performed under some strong assumptions**
  - **Part of the uncertainty is covered by working with different scenarios**

- **Determination of the 2018 reserve resources:**
  - **Cross-border reserve resources are not considered**
  - **High degree of uncertainty**
    - Mothballing of flexible power plants, evolution of economic parameters for power plants & industries,…
  - **Study investigates:**
    - whether, from a system capability point of view, the actual resources that are expected to be still available in 2018 can cover the simulated reserve needs; and
    - whether the reserve resources for the different types of reserves are sufficiently diversified to ensure an economically efficient delivery of these services.

Introduction (3): new reserve terminology

- **The NC LFC&R defines a new European wide harmonized terminology for active power reserves which is used consistently in this study.**

Old term	New term	Purpose
Primary reserves	Frequency Containment Reserves (FCR)	Contain the system frequency after the occurrence of an incident or imbalance within the Synchronous Area. Frequency Containment is a joint action of all the TSOs of the Synchronous Area.
Secondary reserves **Tertiary reserves**	Automatic FRR (FRRa) Manual FRR (FRRm)	Reserves with an activation time less than 15 minutes which are used to restore the ACE of the control block to zero in case of an imbalance in the block. The FRR consists of an automatic and a manual part.
Slow tertiary reserves	Replacement Reserves (RR)	Optional reserves with an activation lead time exceeding 15 minutes that have to prepare the FRR for further imbalances.

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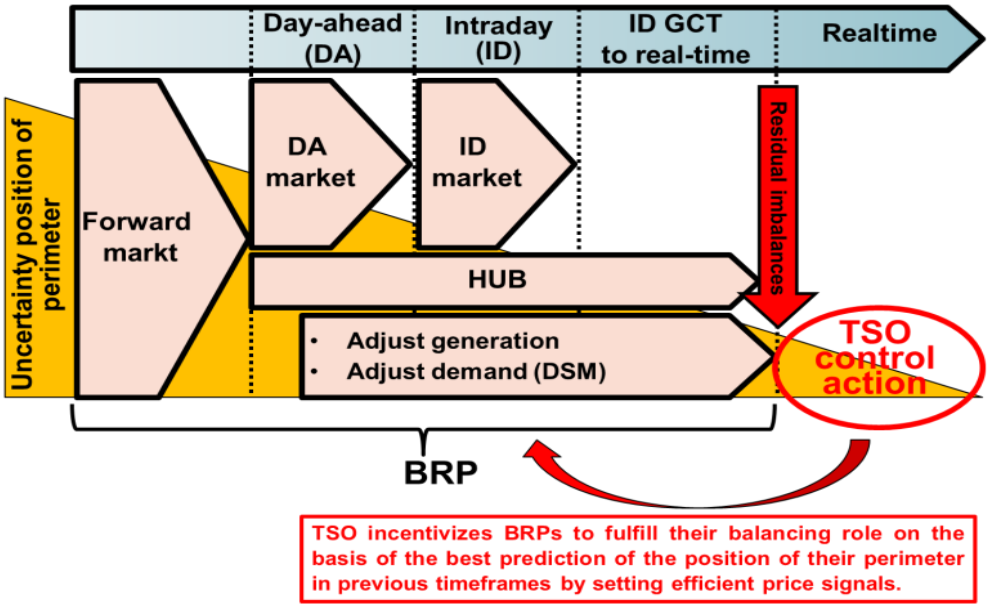
2018 Rx needs: R&R in Belgium system

- **BRPs are responsible to balance their perimeter on a 15' basis** (Art. 157 of grid code)
- **Elia resolves residual imbalances caused by unpredictable events (outages,…) or forecast errors remaining near real-time (load, RES,…)**
- **Adequate price signals by imbalance tariffs are an important tool to give necessary incentives to market parties to:**
  - Exploit all the system flexibility to fulfill their balancing role / use intraday state-of-the-art forecasts / be pro-active in the balancing market / invest in –and use- required flexibility
- **System adequacy falls under the responsibility of national authorities (adequacy ≠ balancing)**
  - Security of supply and generation adequacy are not considered in this study

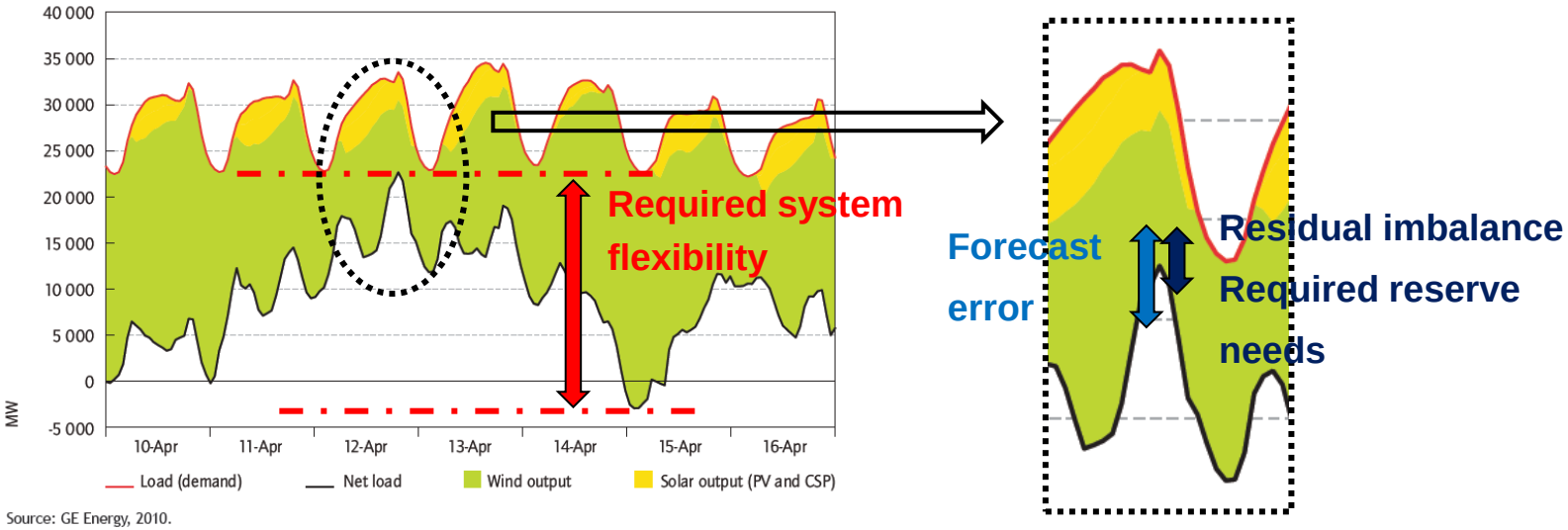


The size of the residual imbalances and hence the required amount of reserves depends on the behavior of BRPs and their ability to fulfil their balancing role.

2018 Rx needs: system flexibility vs. reserve needs?

- **System flexibility?**
  - **Flexibility of demand (DSM), generation and electricity markets required to balance generation and demand at all times (cover variability of load, VRE,…),**

- **Reserve needs?**
  - **Cover residual imbalances caused by unpredictable (partially predictable) events such as near to RT forecast errors, outages of load, generation and HVDC Interconnectors,…**

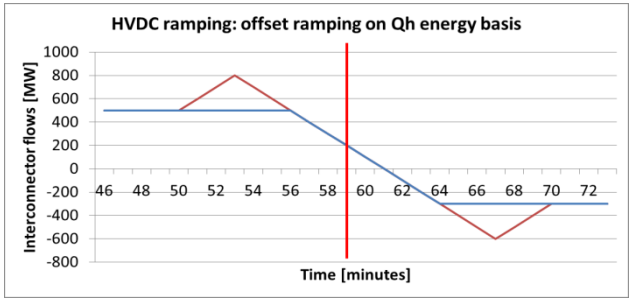


- **The reserve dimensioning process doesn't account for a (structural) lack of system flexibility introducing large and predictable imbalances in the system. This would result in a significant increase in the volume of reserves (and according costs).**
- **Sufficient system flexibility is required to ensure the sustainable integration of +/-8 GW of RES in 2018.**

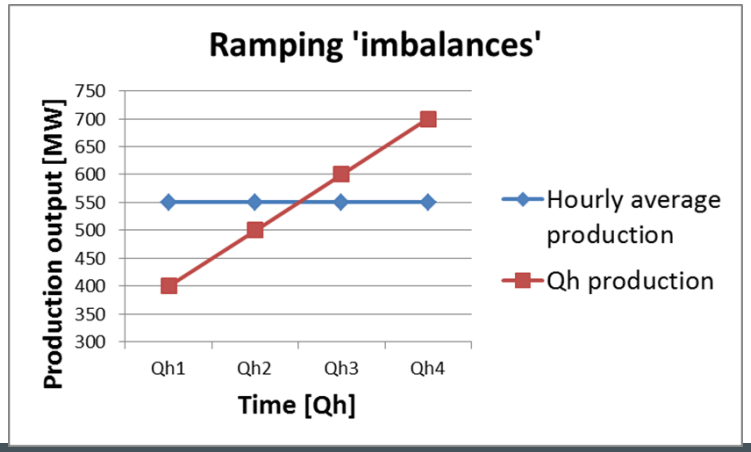
Source graph: 2010 GE Energy, *"Harnessing Variable Renewables – A guide to the balancing challenge"*, IEA 2011, http://www.iea.org/publications/freepublications/

2018 Rx needs: game changers?

- **Integration of a 1000 MW HVDC interconnector between UK and BE (NEMO)**
  - **Outage of NEMO in full import: loss of 1000 MW (⇔ loss of nuclear power plant)**
  - **Outage of NEMO in full export: excess of 1000 MW**
  - **Increase in residual imbalances due to ramping?**



- **Significant increase in installed VRE capacity (+/- 8 GW expected in 2018)**
  - **Increasing need for system flexibility (not considered in reserve dimensioning)**
  - **Increase in forecast errors**
  - **Ramping of RES within the hour might increase the volatility of the residual imbalances in case of insufficient 15-minute flexibility**



Increase installed capacity VRE 2012 → 2108 [GW]	
PV	**2**
Onshore wind	**0,9**
Offshore wind	**1,9**

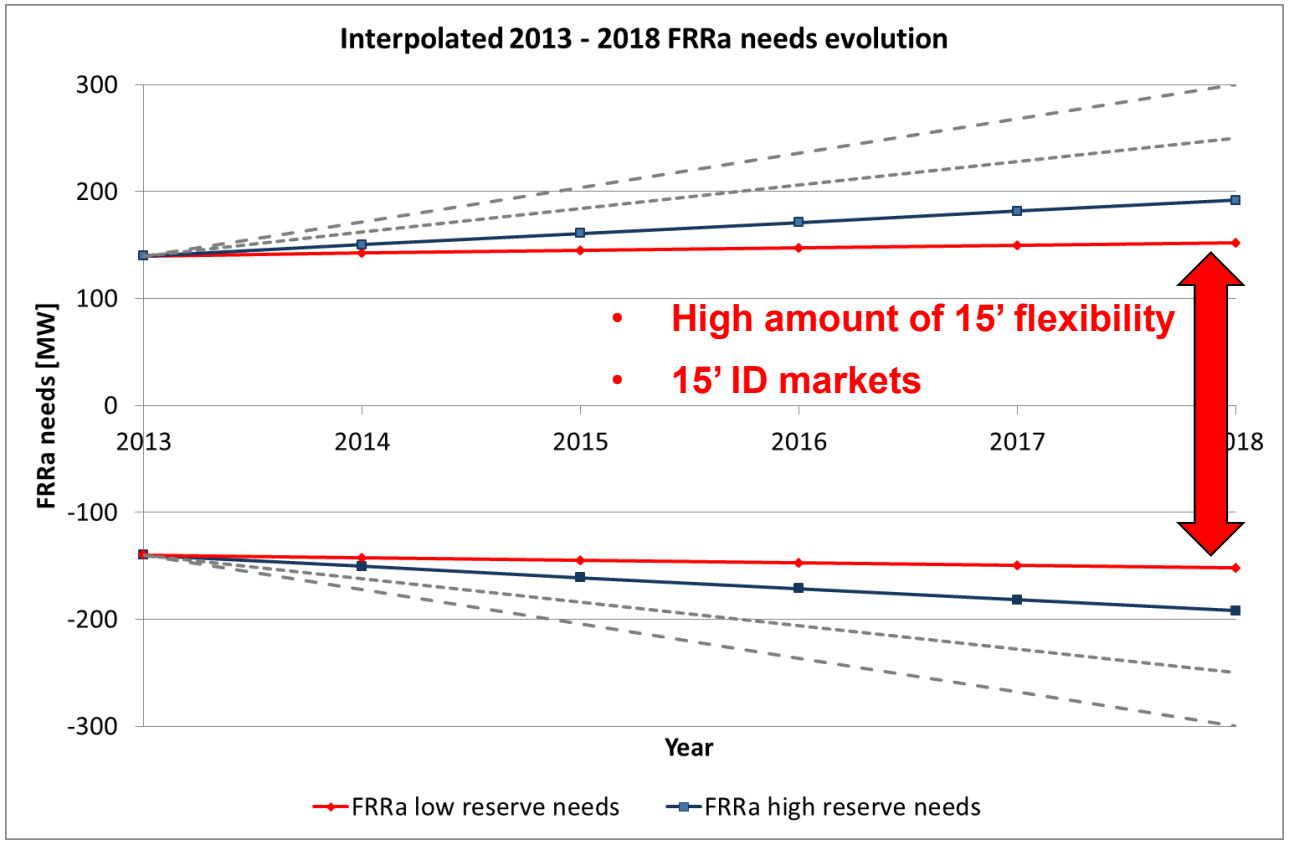
Maximum ramping [% of installed capacity]	15 minutes	30 minutes	1 hour	Estimated 2012 – 2018 additional installed capacity [GW]
PV	4,6%	8,7%	16,9%	2
Onshore wind	4,9%	7,7%	12,2%	0,9
Offshore wind	13,5%	21,3%	31,8%	1,9

2018 Rx needs: different scenarios

Assumption	Low reserve needs scenario	Medium reserve needs scenario	High reserve needs scenario
Development of forecasting, metering and profiling Investments of BRPs in accurate intra-day forecasts of VRE production and off-take. Investments in smart metering and load profiling to have a clear real-time view on the actual off-take, injection and (balancing) position of the system and BRP portfolio.	HIGH		
Balancing on day-ahead timeframe Ability of BRPs to balance the day-ahead expected position of their perimeter, including the variable output of VRE, ramping of off-take… This requires sufficient investments in system flexibility to incorporate the high shares of future VRE capacity (in combination with the standard daily ramping of off-take).			
Balancing on intraday timeframe Ability of BRPs to adjust the position of their perimeter in ID according to more accurate ID forecasts of VRE production and off-take (smart metering,…). This depends on the amount of ID flexibility within the perimeter of the BRP (load and generation) and on the liquidity of ID markets.	HIGH	MEDIUM	LOW
Intra-hourly balancing Ability of BRPs to balance the ramping of VRE (wind, PV,…) and HVDC interconnectors within the hour. This depends on: • amount of 15-minute flexibility within the BRP perimeter (load and generation); • presence of a liquid 15 minutes intra-day market.	HIGH	MEDIUM	LOW

- **All scenarios are subject to the same strong (optimistic) basic assumptions:**
  - **BRPs invest in highly accurate intraday forecasts of VRE production and off-take**
  - **BRPs foster the development of flexibility in their perimeters and make it available to the market**
  - **TSO/DSO/BRP perform additional efforts to achieve accurate metering resulting in a better view of their actual position**

2018 Rx needs: results for FRRa (R2)



Less efforts

✓ Insufficient investments

Very high efforts!

✓ Strong incentives

✓ High investments in system flexibility, ID forecasting & metering,…

✓ No structural imbalances due to lack of flexibility

Less efforts

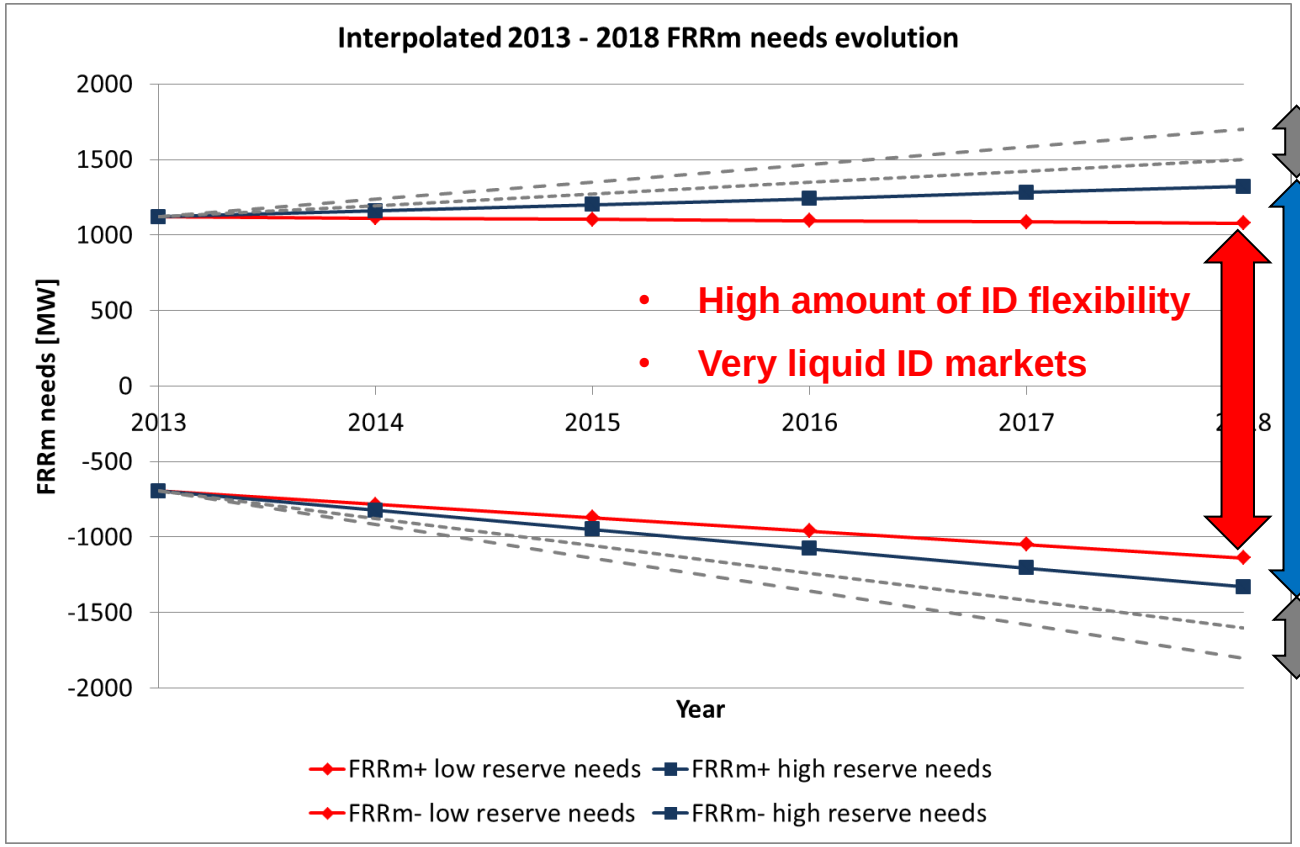
✓ Insufficient investments

	2013 (ref)	2018 low needs	2018 high needs	Less efforts
FRRa [MW]	140	152 (+10 MW)	192 (+50 MW)	Up to >300 MW

✓ **Efficient integration of 8 GW of RES with limited reserve increase requires increased efforts from all market parties (BRPs, BSPs, TSO, DSO, consumers, generators,…)**

✓ **Current efforts will not be sufficient to accomplish this (cfr. incompressibilities,…)**

2018 Rx needs: results for FRRm (R3)



Less efforts

✓ **Insufficient investments**

Very high efforts!

- ✓ Strong incentives
- ✓ High investments in system flexibility, ID forecasting & metering,…
- ✓ No structural imbalances due to lack of flexibility

Less efforts

✓ **Insufficient investments**

	2013 (ref)	2018 low needs	2018 high needs	Less efforts
FRRm+ [MW]	**1120**	**1078 (-42 MW)**	**1321 (+201 MW)**	**Up to >1700 MW**
FRRm- [MW]	**695**	**1138 (+443 MW)**	**1331 (+636 MW)**	**Up to >1750 MW**

- ✓ **Efficient integration of 8 GW of RES with limited reserve increase requires increased efforts from all market parties (BRPs, BSPs, TSO, DSO, consumers, generators,…)**
- ✓ **Current efforts will not be sufficient to accomplish this (cfr. incompressibilities,…)**

2018 Rx needs: main conclusions

- **Reserve needs (and costs) heavily depend on BRP behavior**
  - All simulated scenarios assume that no structural flexibility issues will occur!
  - Adequate incentives required to foster investments in –and use of- system flexibility!

- **Increased efforts are required to keep reserve needs (and costs) under control**
  - Investments in best practice forecasting, in flexibility on all timescales, in efficient (smart) metering,…

- **FRRa dimensioning based on perfect de-saturation of FRRa by FRRm**
  - Historically FRRm was used as a 'contingency' reserve, whereas now also very flexible FRRm, required for continuous desaturation of activated FRRa, is required!

- **Rather limited increase for upward FRRm**
  - Collateralization with large N-1 (outage nuclear unit)
  - In 2012 there was already a significant decrease of such imbalances

- **Very high increase for downward FRRm**
  - Arrival of NEMO (1000 MW excess if outage in export mode)
  - Already 'incompressibility' issues in 2012 + significant increase in VRE capacity towards 2018

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2018 reserve resources: key aspects

This part of the study investigates 2 topics:

- Whether from a system capability point of view the actual resources that are expected to be still available in 2018 are sufficient to cover the simulated 2018 system reserve needs,

- Whether the reserve resources for each reserve type are sufficiently diversified to allow the economic efficient delivery of reserves

In an economic efficient system spinning reserves (FCR, FRRa) are delivered by power plants selected in the merit order, or by available demand, in order to avoid must run costs. This requires a sufficiently diversified portfolio (CHPs, RES, biomass, CCGTs, OCGTs,…) as different types of units will run under different circumstances.

The most efficient power plants deliver downward reserves, whereas the least efficient selected units deliver upward reserves to minimize the opportunity loss.

High uncertainty as availability of resources depends of economic environment in 2018.

2018 reserve resources: assumptions

- **Only actual resources within Belgium are taken into account (XB resources not considered)**
  - **However some XB resources are already procured and Elia will continue to investigate this option.**

- **Support for existing flexible units (CCGTs) and investments in new flexible capacity currently considered by government for adequacy purposes:**
  - **Despite current observed reduced profitability and transformation of CCGT units to peak OCGT units, this study assumes that 3 existing CCGTs will still be available in 2018 (≠ sufficient for adequacy, but very high certainty that they will be available).**

- **Turbojets (R3) are considered to be decommissioned before 2018 (-210 MW upward FRRm)**

- **Some older GTs for R3 might be decommissioned (-150 MW upward FRRm)**
  - **But compensated by additional CCGTs being transformed to OCGT units**

2018 reserve resources: results

- **Diversification of all reserve types is required to enable the economic efficient procurement**
  - **FCR / FRRa dependency on CCGT units:** dependency of CSS
  - **Upward FRRm dependency on OCGT units:** dependency of CSS
  - **Downward FRRm:** already insufficient (activated?) volumes

- **Under the assumption that 3 CCGTs will still be available, that R1 load will still exist and that at least marginal CHP participation in FRRa will still be available in 2018:**
  - Simulated 2018 needs can be covered by still existing means **but very narrow margins**!
  - Participation of **biomass, wind, CHP units and if possible load** are required. **New and refurbished** units must be equipped with FCR/FRRa capability. Optimize operation strategy for **pump-storage units**.
    - Smart support schemes for RES and CHP units required

- **Up to 300 to 360 MW of additional upward FRRm has to be developed**
  - Decommissioning of TJs and some older OCGTs
  - New & refurbished power plants / DSM / sharing / further diversification
  - Very flexible ‘desaturation’ and less flexible ‘contingency’ reserves

- **Downward FRRm: insufficient (activated?) volumes (already today)**
  - **Not pre-contracted:** activate downward flexibility at real marginal cost for downward regulation as this is the only sustainable incentive!
  - Maximizing downward flexibility of existing resources / require VRE to offer downward FRRm

Questions and/or Remarks ?

Next steps & next meeting date

1. Written comments on todays presentations are welcome!
2. Elia will send meeting minutes (incl all slides) for validation.
3. **Next meeting (taskforce 6) on 27nd of June**

13hrs until 18hrs	13hrs until 18hrs	13hrs until 18hrs	13hrs until 18hrs
Mon 17 June 2013	Fri 21	Mon 24	Thu 27
15 *	12	14	15 *

- Doodle TF7 will be included in the meeting minutes

Thanks for your attention

24/05/2013

Elia