CWE Flow-Based Market Coupling Forum

Paris, March 6th, 2015

Mercure CDG Roissy Airport

Market Forum – AGENDA

March 6th, 2015

REGISTRATION AND COFFEE (09.30 – 09.50)

Introduction → 9.50 – 10.00 (10')

1. **Readiness for Go-live → 10.00 – 11.15 (75')**
   - Look back on external parallel run
   - Project readiness – latest achievements and time planning until Go-live
   - Market preparation – additional data publication

COFFEE BREAK (11.15 – 11.45)

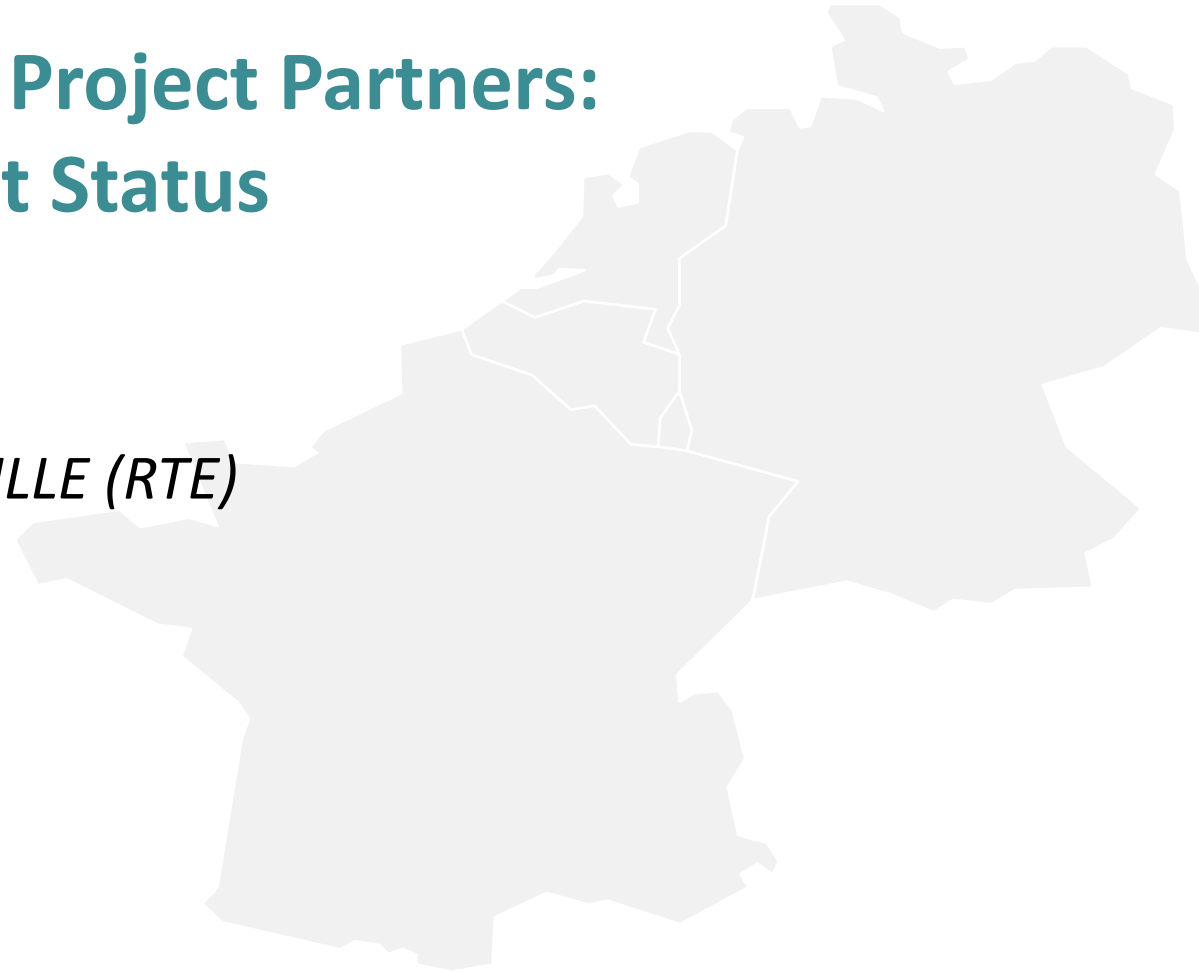
2. **Final data publication framework and procedures for FB MC → 11.45 – 12.45 (60')**
   - Data publication framework under FB MC
   - Recapitulation of operational procedures
   - Member test

LUNCH BREAK (12.45 – 13.45)

3. **Post Go-live discussions → 13.45 – 15.00 (75')**
   - Adequacy study follow-up
   - Additional data publication
   - Further improvements to be developed after Go-live for a second version of Flow Based
   - Stakeholders involvement

4. **NRAs approval status → 15.00 – 15.30 (30')**
5. **Implementation of Financial Transmission Rights in CWE region → 15.30 – 16.00 (30')**
6. **Q & A → 16.00 – 16.30 (30')**

Introduction CWE FB Project Partners: Project Status



by Jean VERSEILLE (RTE)

Market Forum – AGENDA

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   - Look back on external parallel run
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   - Market preparation – additional data publication

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   - Stakeholders involvement

4. **NRAs approval status**

5. **Implementation of Financial Transmission Rights in CWE region**

6. **Q & A**

1 – Readiness for Go-live

Look back on external parallel run – Representativeness of data

Year	wk	Wed	Thu	Fri	Sat	Sun	Mon	Tue
2013	0							01 Jan
	1	02 Jan	03 Jan	04 Jan	05 Jan	06 Jan	07 Jan	08 Jan
	2	09 Jan	10 Jan	11 Jan	12 Jan	13 Jan	14 Jan	15 Jan
	3	16 Jan	17 Jan	18 Jan	19 Jan	20 Jan	21 Jan	22 Jan
	4	23 Jan	24 Jan	25 Jan	26 Jan	27 Jan	28 Jan	29 Jan
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	6	06 Feb	07 Feb	08 Feb	09 Feb	10 Feb	11 Feb	12 Feb
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	8	20 Feb	21 Feb	22 Feb	23 Feb	24 Feb	25 Feb	26 Feb
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	11	13 Mar	14 Mar	15 Mar	16 Mar	17 Mar	18 Mar	19 Mar
	12	20 Mar	21 Mar	22 Mar	23 Mar	24 Mar	25 Mar	26 Mar
	13	27 Mar	28 Mar	29 Mar	30 Mar	31 Mar	01 Apr	02 Apr
	14	03 Apr	04 Apr	05 Apr	06 Apr	07 Apr	08 Apr	09 Apr
	15	10 Apr	11 Apr	12 Apr	13 Apr	14 Apr	15 Apr	16 Apr
	16	17 Apr	18 Apr	19 Apr	20 Apr	21 Apr	22 Apr	23 Apr
	17	24 Apr	25 Apr	26 Apr	27 Apr	28 Apr	29 Apr	30 Apr
	18	01 May	02 May	03 May	04 May	05 May	06 May	07 May
	19	08 May	09 May	10 May	11 May	12 May	13 May	14 May
	20	15 May	16 May	17 May	18 May	19 May	20 May	21 May
	21	22 May	23 May	24 May	25 May	26 May	27 May	28 May
	22	29 May	30 May	31 May	01 Jun	02 Jun	03 Jun	04 Jun
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	25	19 Jun	20 Jun	21 Jun	22 Jun	23 Jun	24 Jun	25 Jun
	26	26 Jun	27 Jun	28 Jun	29 Jun	30 Jun	01 Jul	02 Jul
	27	03 Jul	04 Jul	05 Jul	06 Jul	07 Jul	08 Jul	09 Jul
	28	10 Jul	11 Jul	12 Jul	13 Jul	14 Jul	15 Jul	16 Jul
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	49	04 Dec	05 Dec	06 Dec	07 Dec	08 Dec	09 Dec	10 Dec
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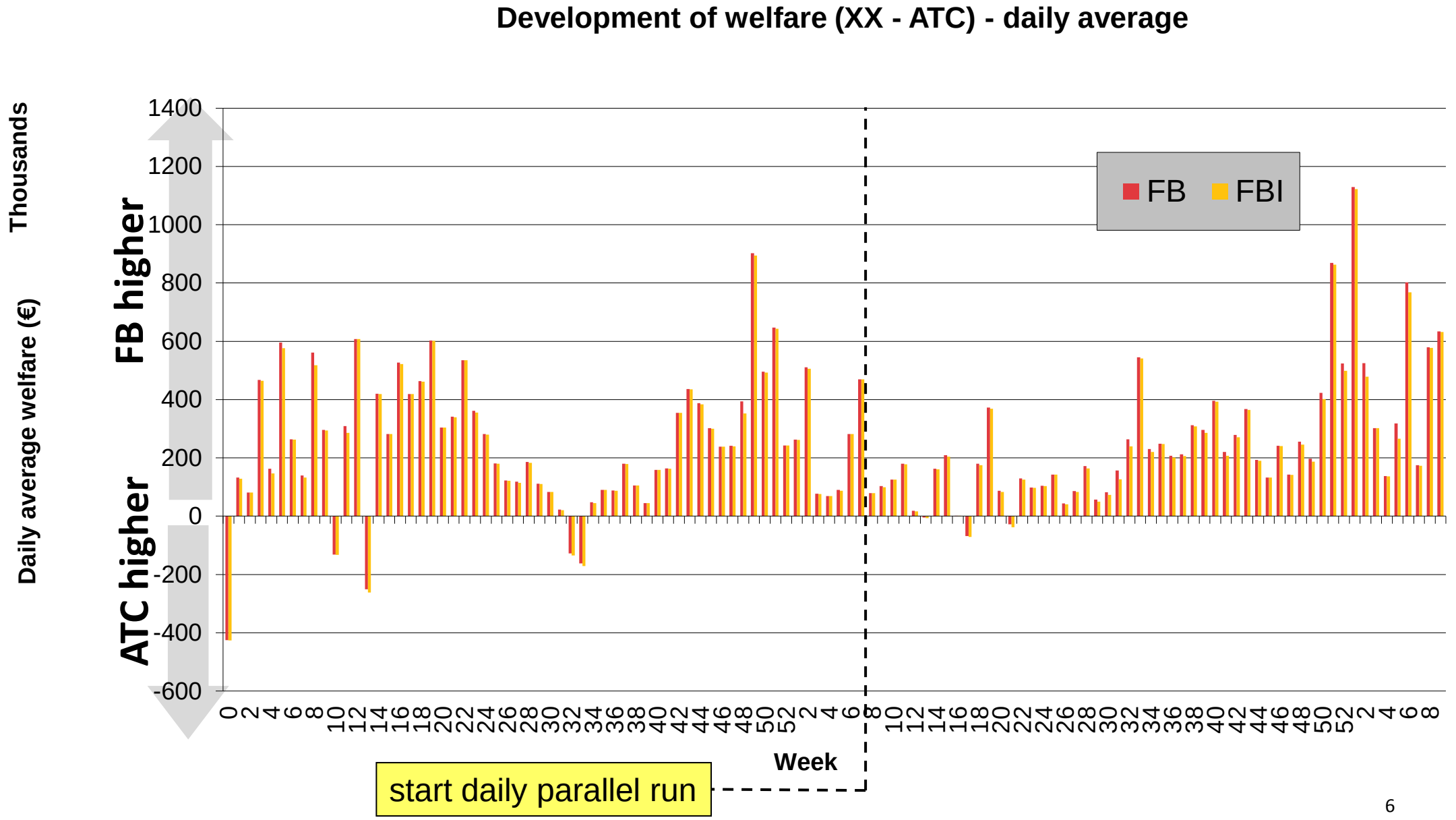
25th January was already explained to MPs and NRAs in detail in the 2/2 FBUG and 12/2 PLEF:

"A rare issue affected the quality of the Danish DACF (for the 24 TS), that is integrated within the German pre-merged D2CF, which could not be correct by EnDK"

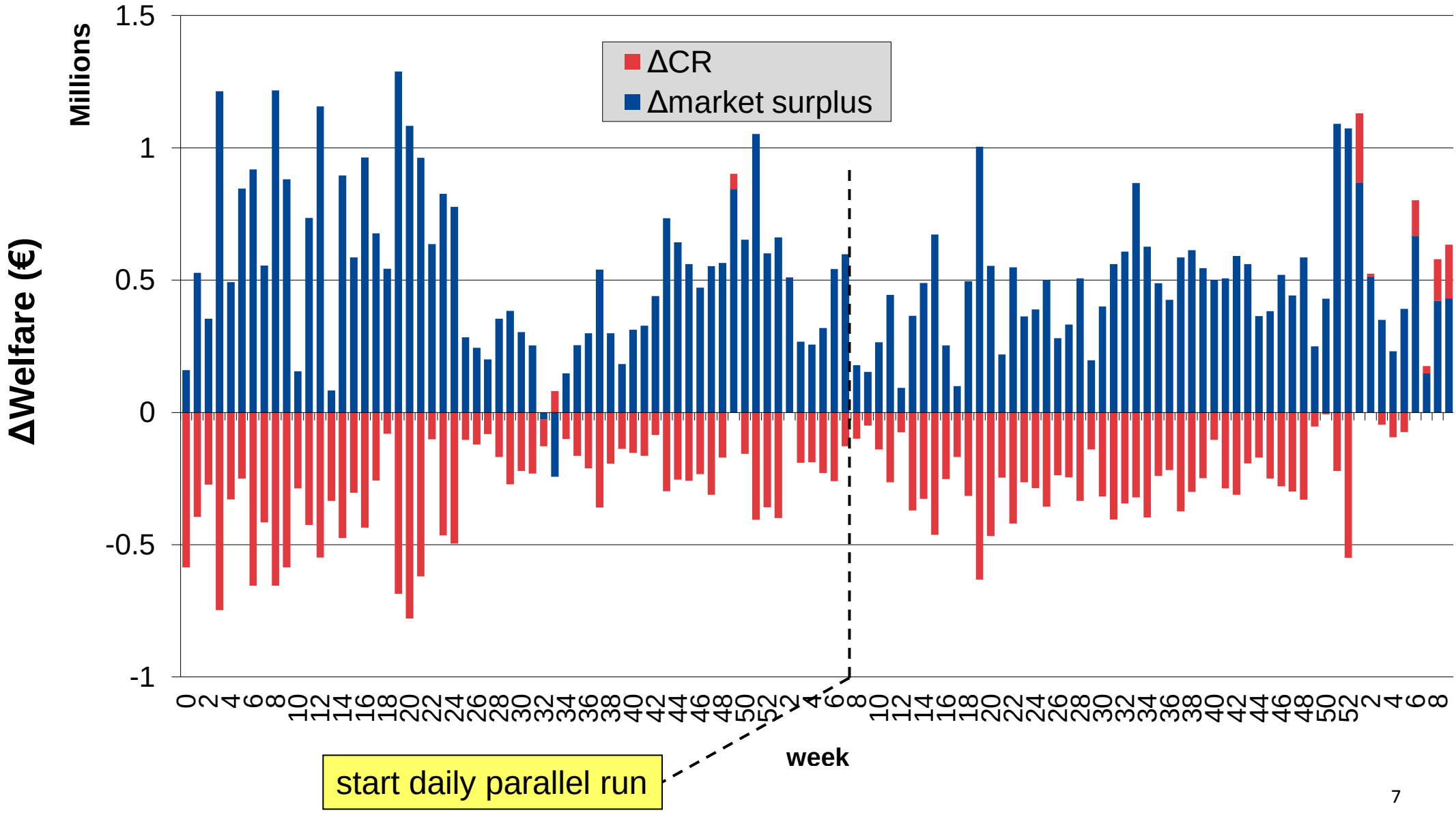
1 – Readiness for Go-live

Look back on external parallel run – Price convergence



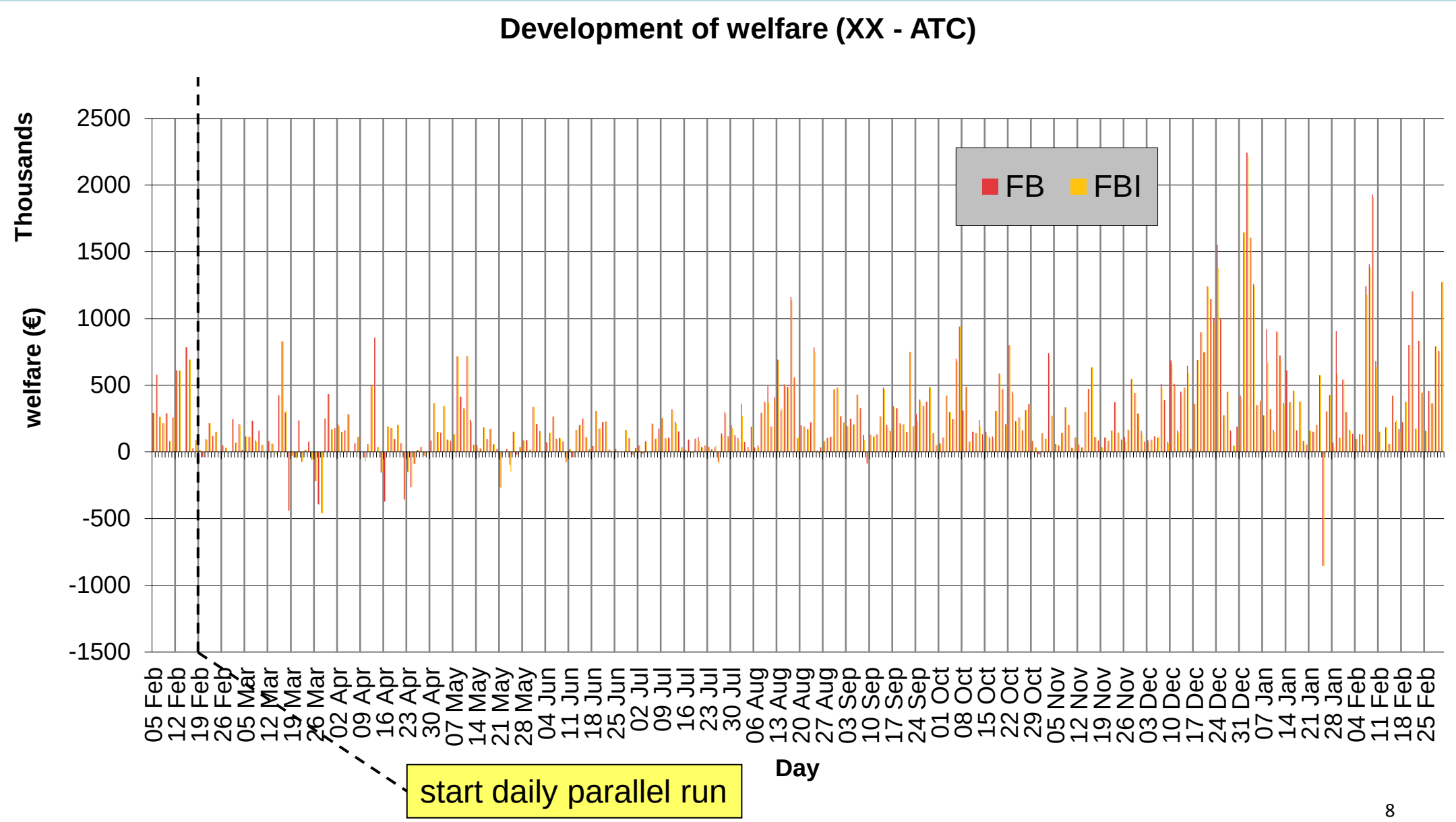
1 – Readiness for Go-live

Look back on external parallel run – Change in weekly daily average welfare



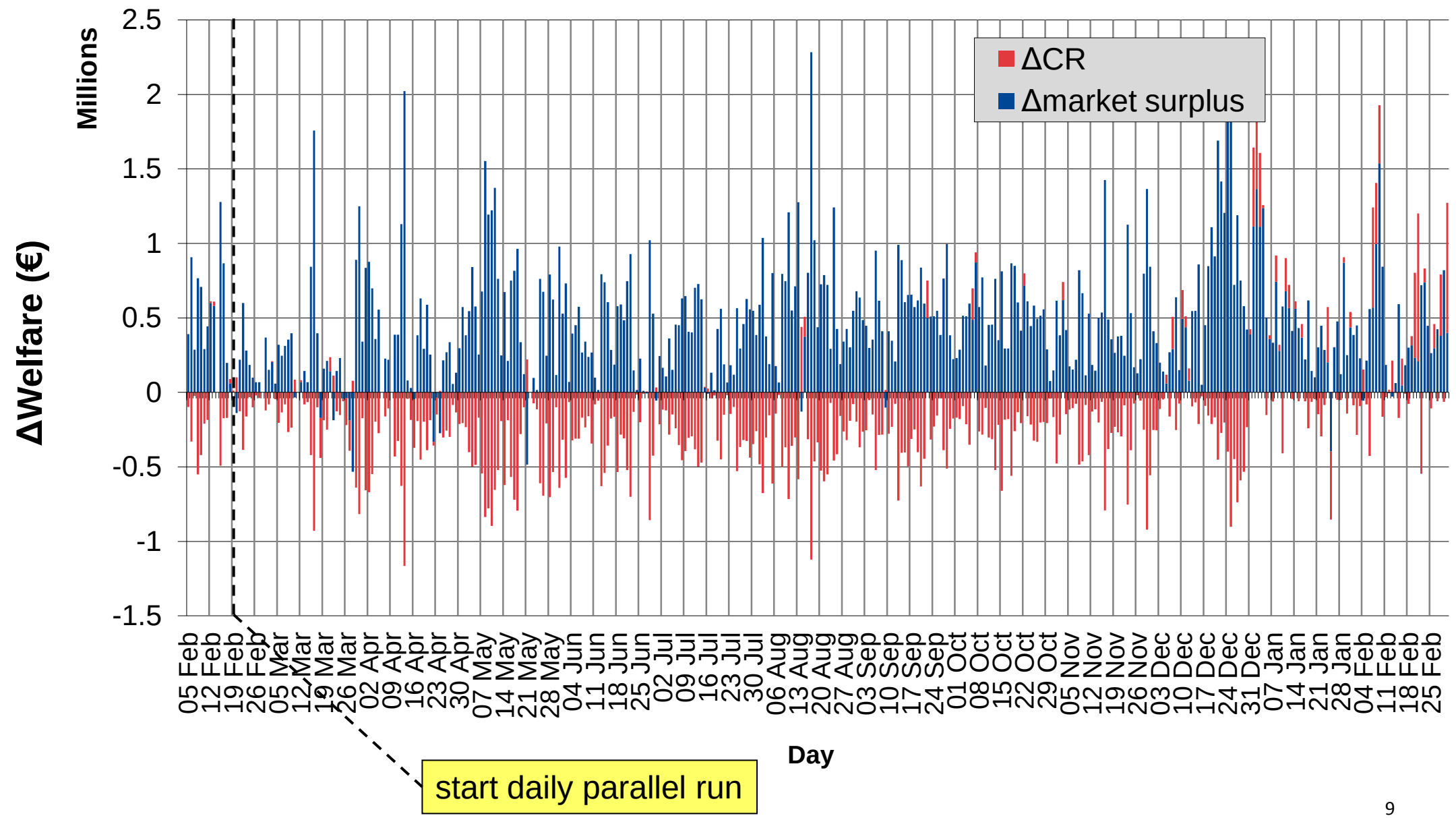
1 – Readiness for Go-live

Look back on external parallel run – Change in daily welfare since NWE



1 – Readiness for Go-live

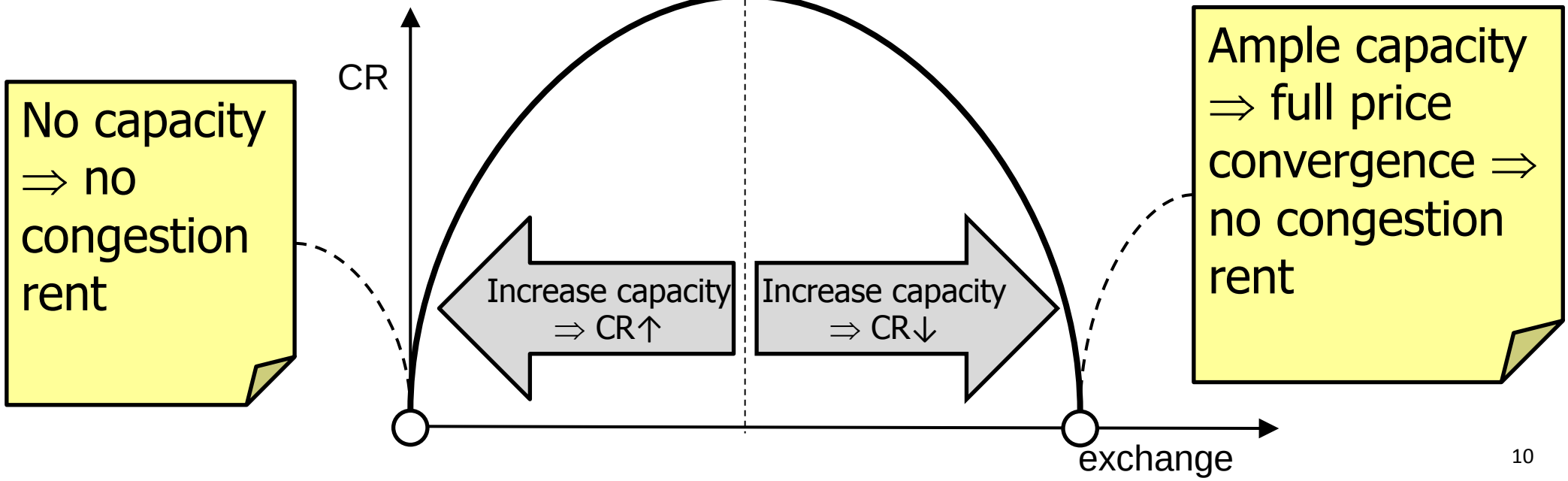
Look back on external parallel run - Change in daily welfare since NWE



1 – Readiness for Go-live

Look back on external parallel run - Change in daily welfare since NWE

- For some days both surplus and CR increase.
- Assuming the FB domain is always larger than the ATC domain this can still be explained:
  - Overall surplus should always increase:
    - Import: buyer surplus will increase by more than seller surplus decreases;
    - Export: seller surplus will increase by more than buyer surplus decreases;
  - Congestion rent:



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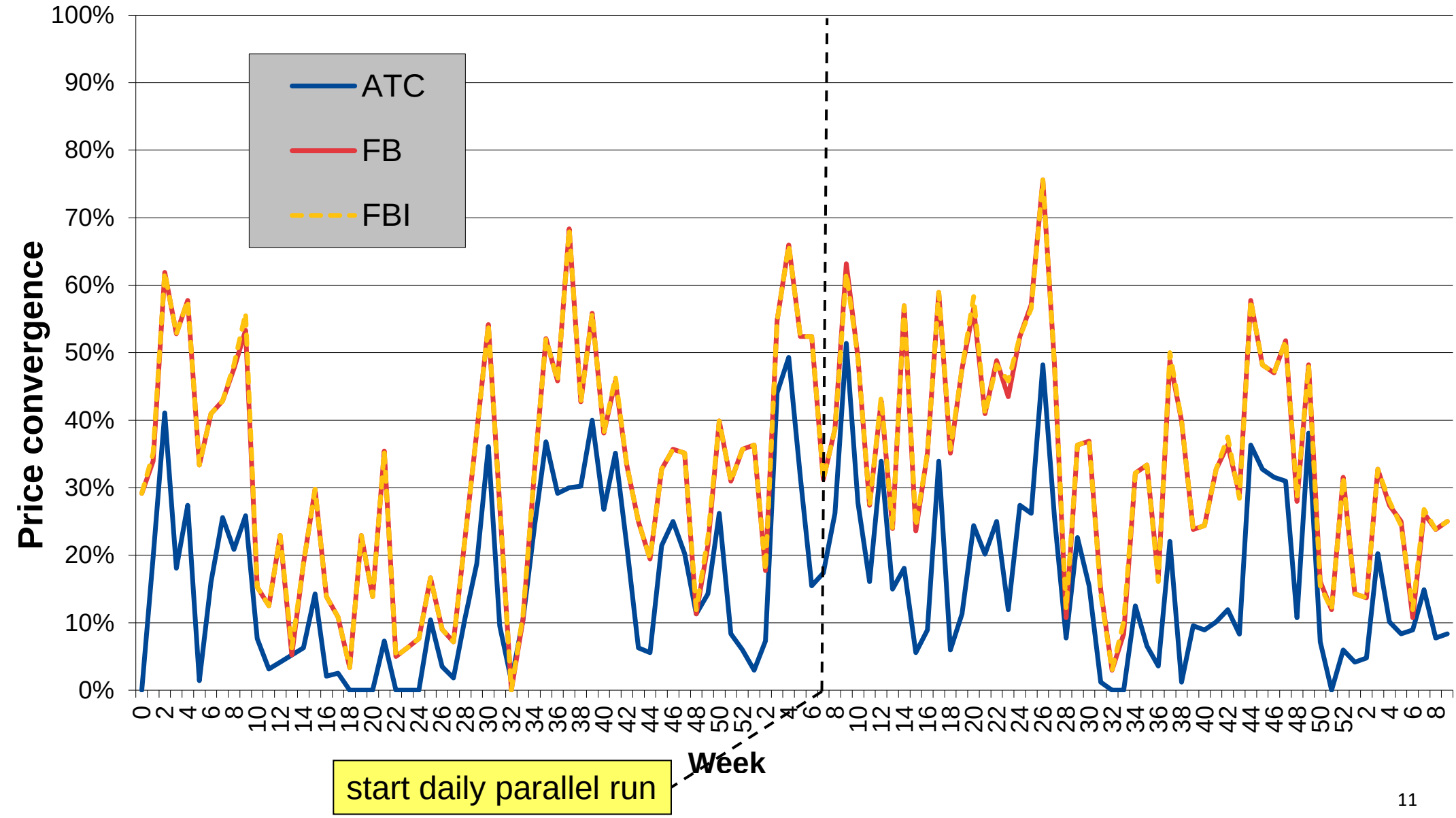
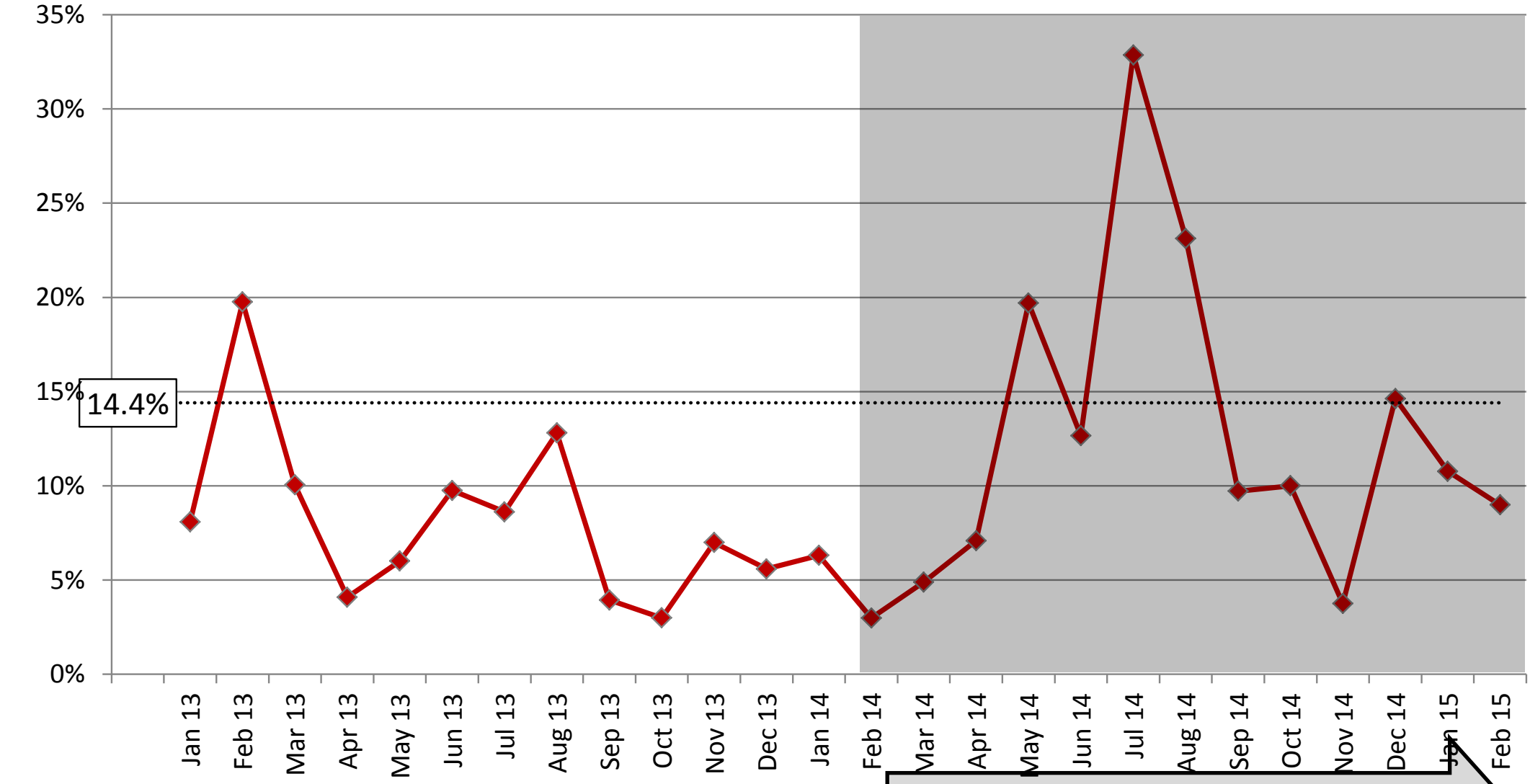


1 – Readiness for Go-live

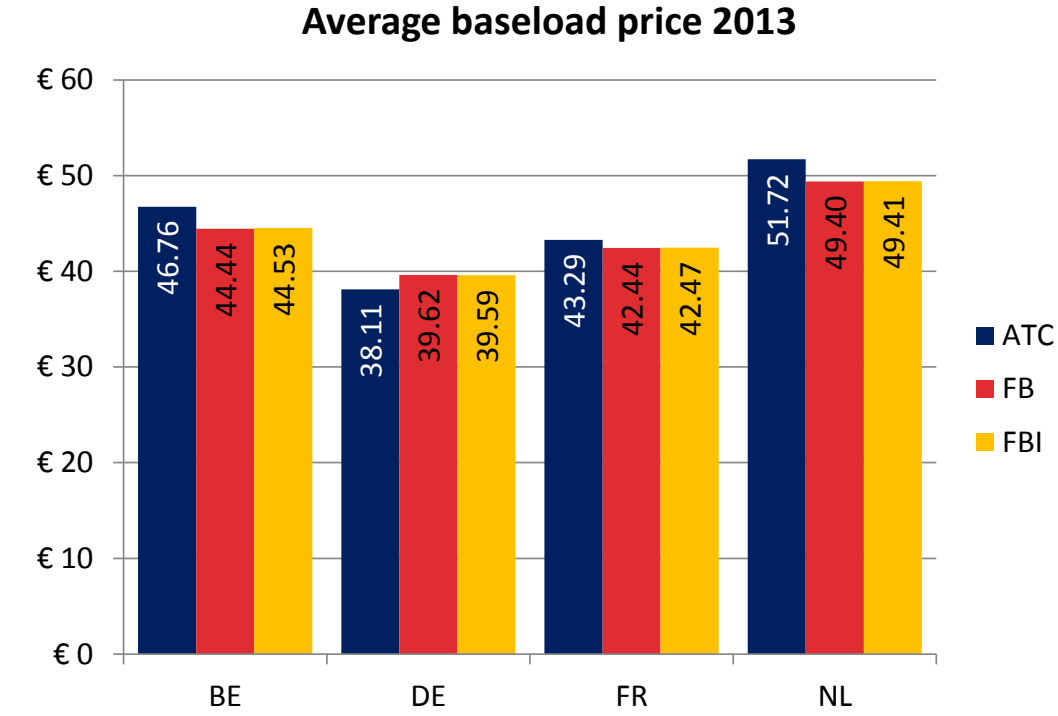
Look back on external parallel run - Intuitiveness (2013 wk0 - 2015 wk9)

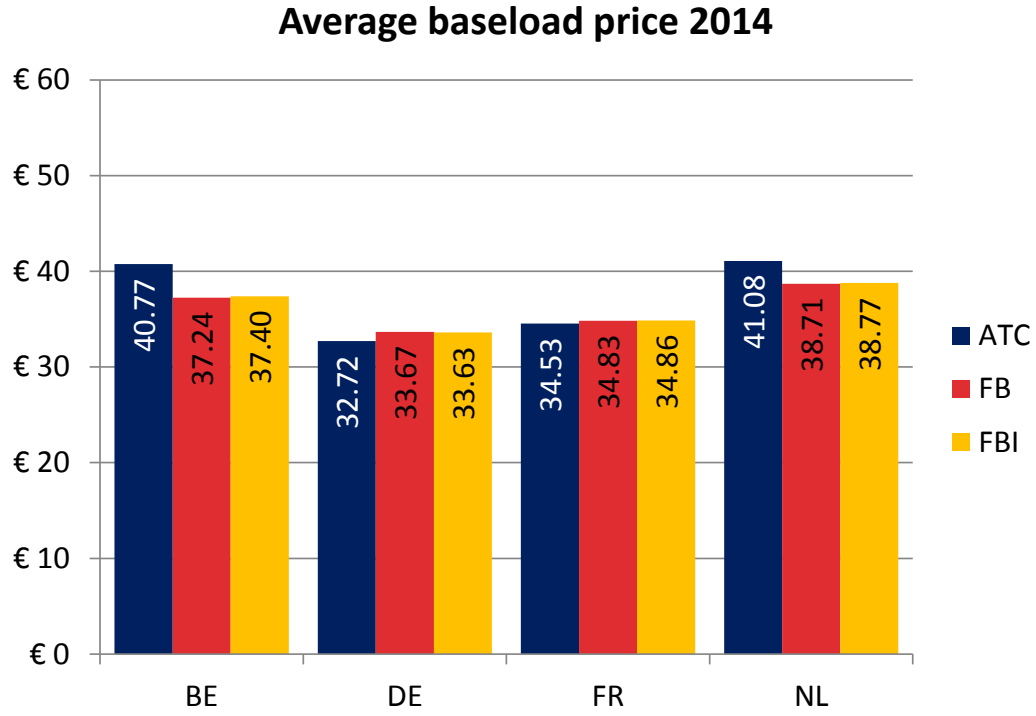


**experimental cycles reported 14.4% non-intuitive of congested hours*

1 – Readiness for Go-live

Look back on external parallel run – Aggregated data report 2014

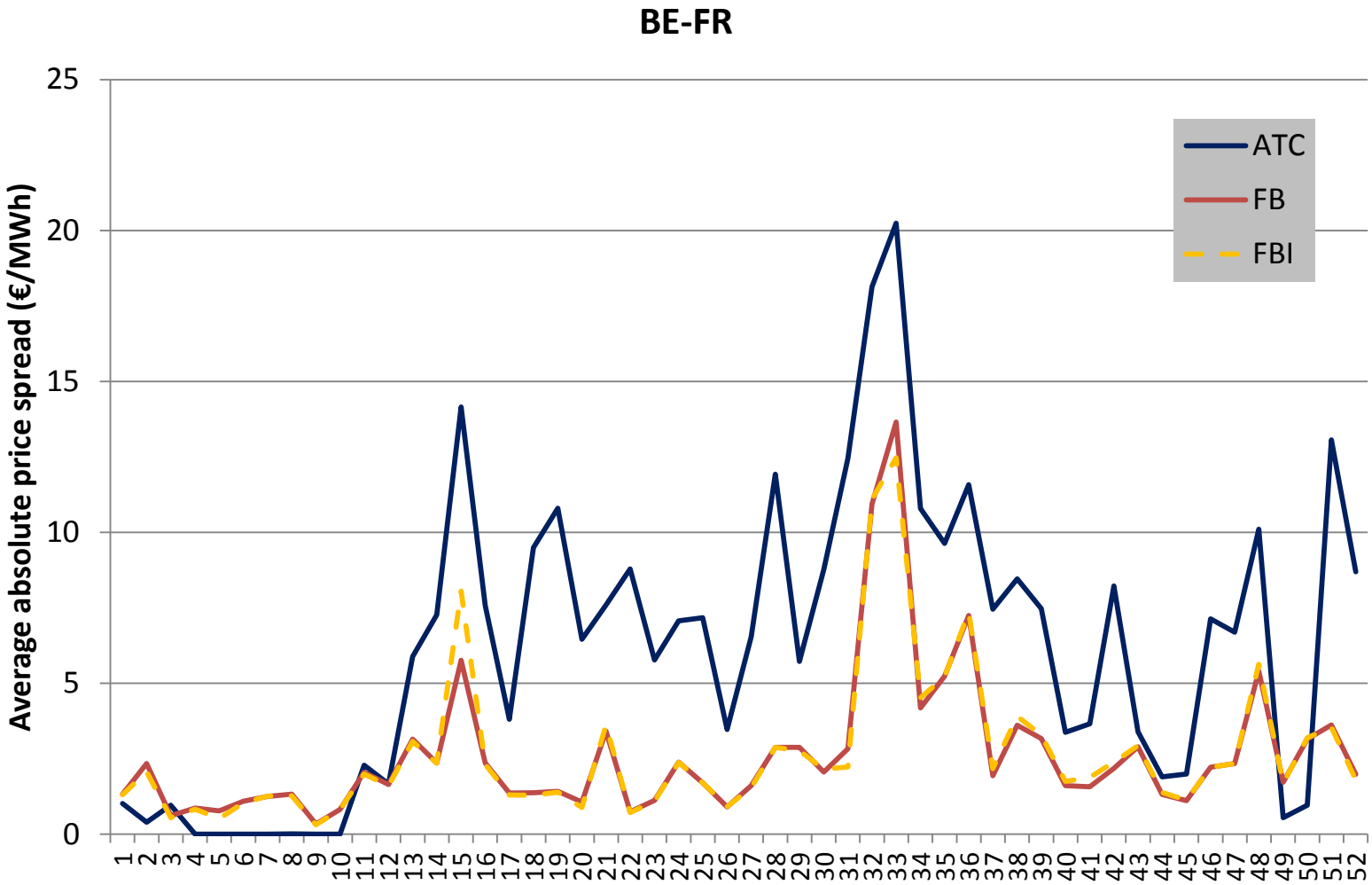




1 – Readiness for Go-live

Look back on external parallel run – Aggregated data report 2014

Cross border spreads 2014



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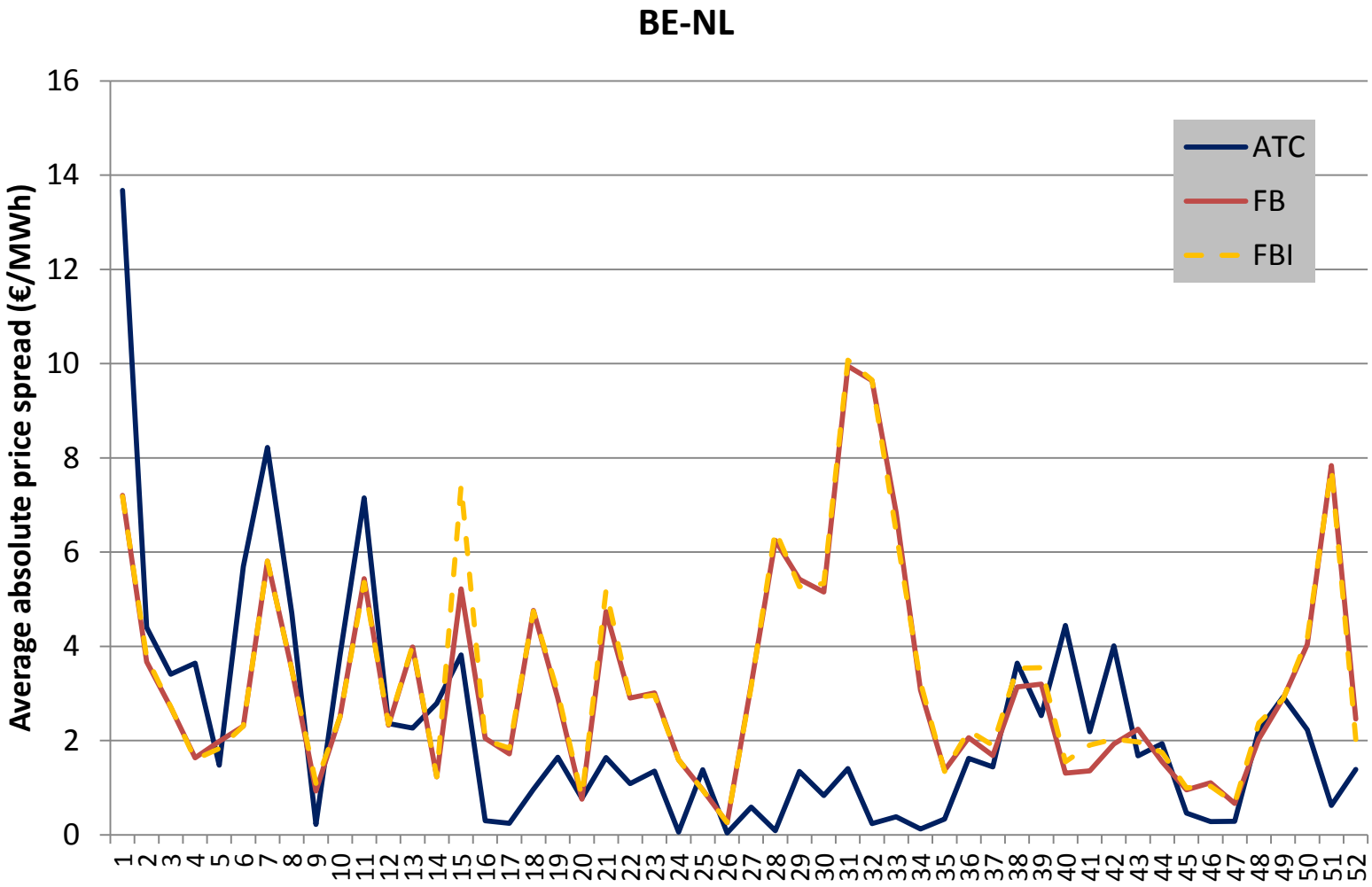

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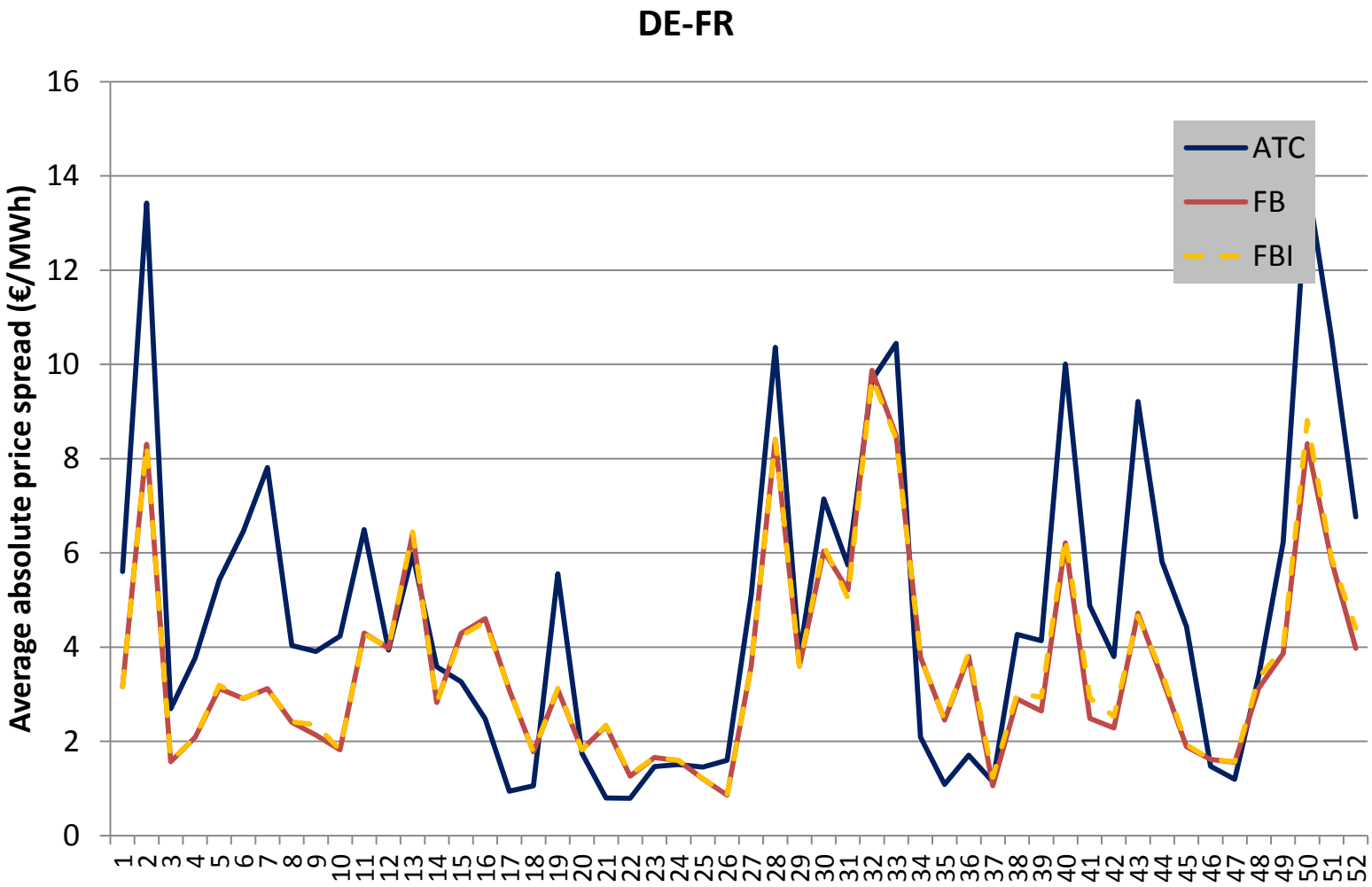
Cross border spreads 2014



1 – Readiness for Go-live

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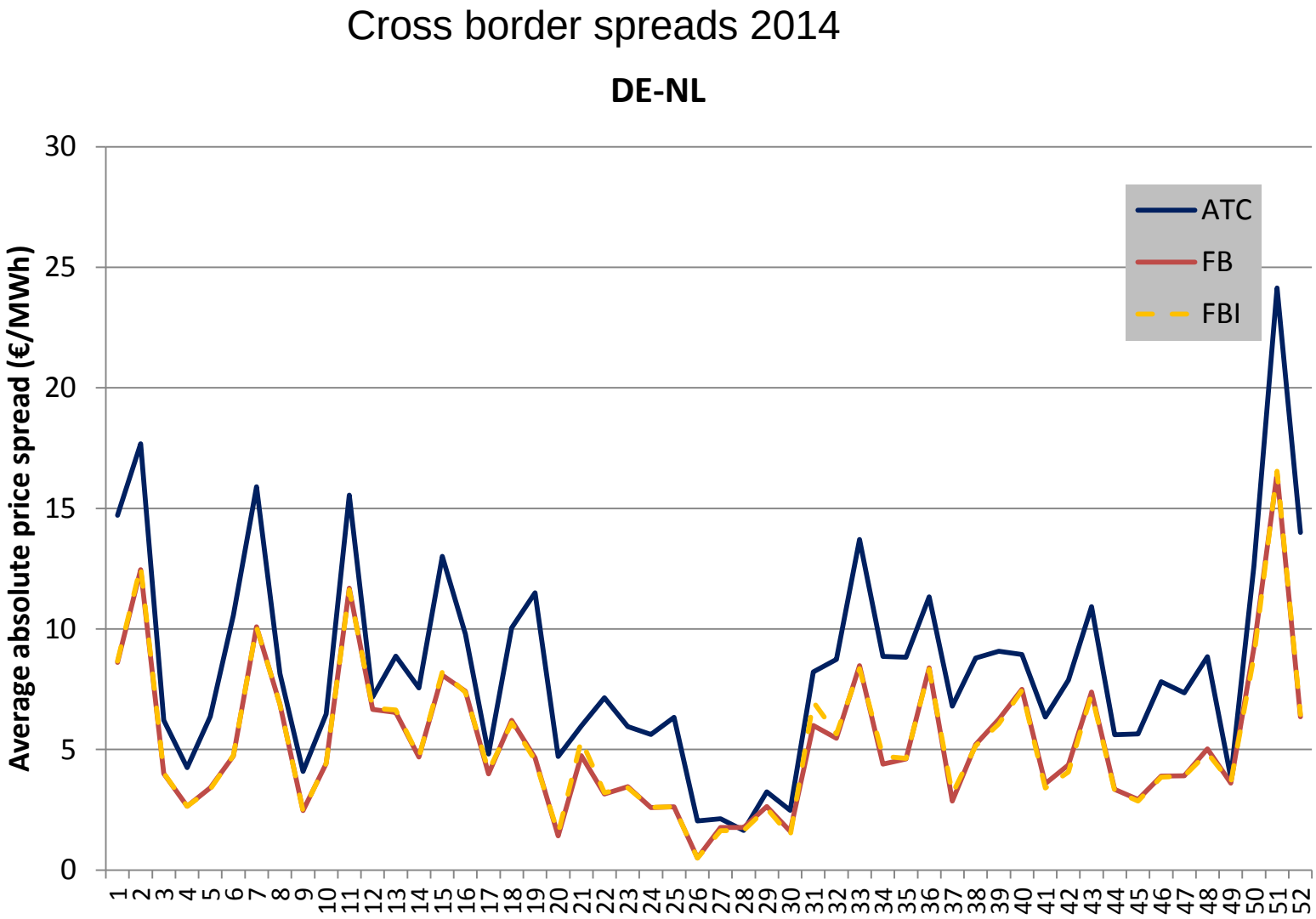

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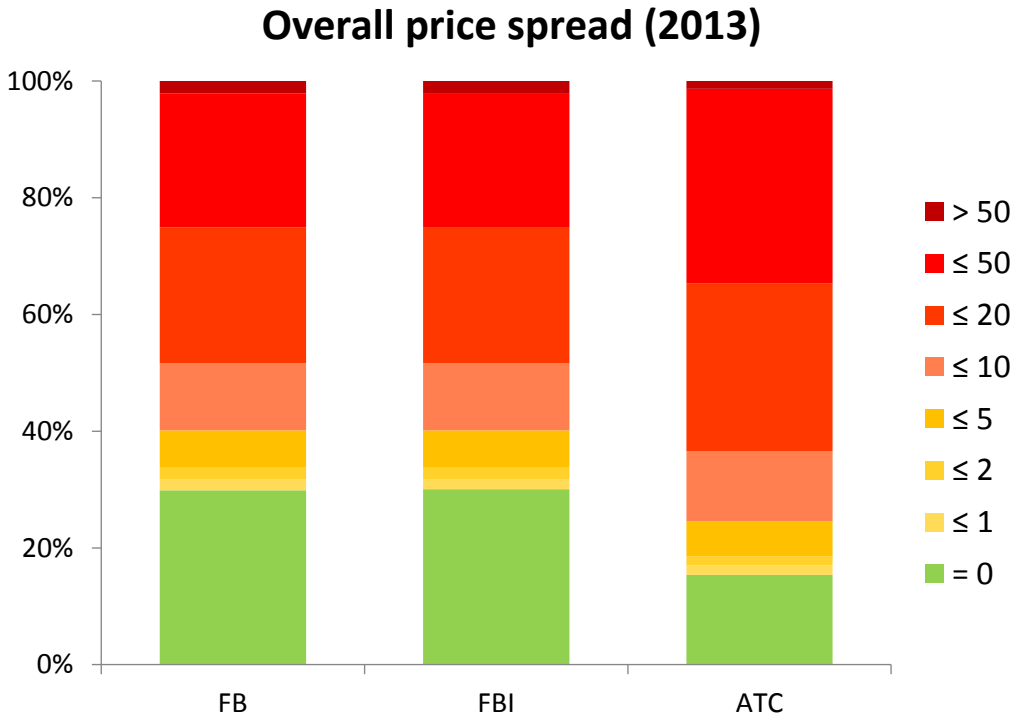
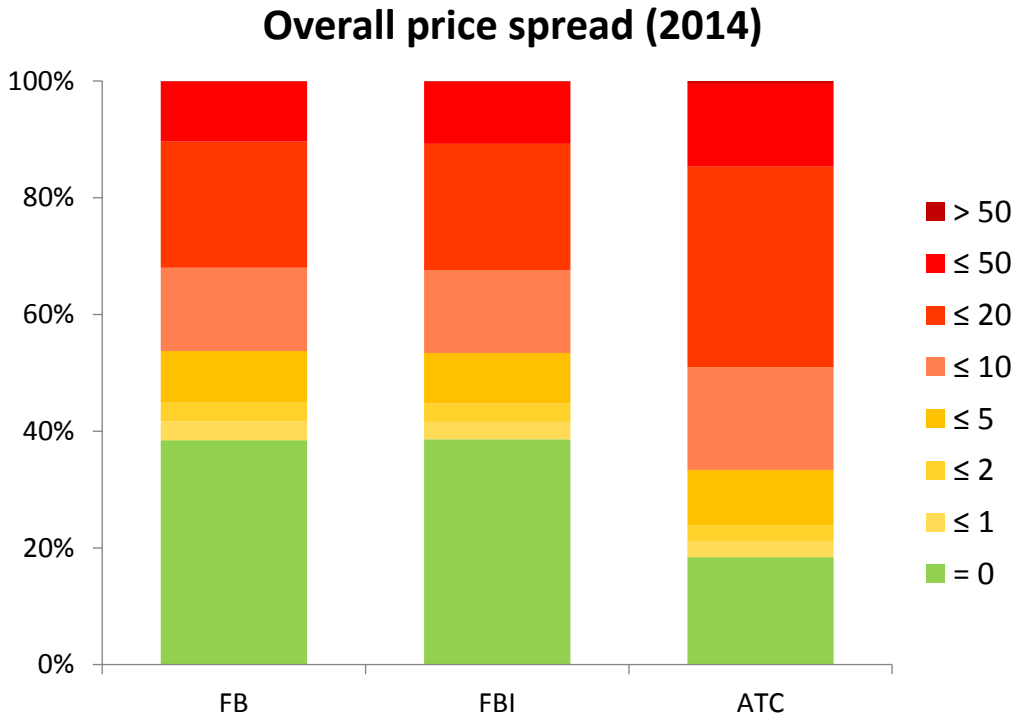
Look back on external parallel run – Aggregated data report 2014





1 – Readiness for Go-live

Project Readiness – Latest achievements and time planning until Go-live

Here are the main achievements of the CWE project since last June 2014:

- Assuming advantages and drawbacks on the project side, and provided guidance from NRAs, the project finally decided to select **FB Intuitive** rather than FB-plain
- Project Partners shared information about CWE project and discussed Market Parties requests during the two latest **FBUG meetings** (September 2014, February 2015)
- Members of **the Florence Forum** (November, 27th) took note of the postponement of Go-live date and fully support the project in order to meet the new Go-live date in spring.
- CWE chairmen presented project status and next steps at last **AESAG meeting** (January, 7th).
- **Adequacy study** which investigates the link between market coupling under FB and short term generation adequacy focusing in particular on the Belgian market and its ability to import
- **Parallel run performance report** including the analysis of observed days resulting in welfare losses or remarkable welfare gains from ATC to FB and information about the LTA inclusion
- Publication of a **PRB report** highlighting the differences of PRBs under the FB and FBI modes
- Publication of additionnal **approval document annexes** (Adequacy – first version, LTA+ and transparency)

1 – Readiness for Go-live

Project Readiness – Latest achievements and time planning until Go-live

- CWE project parties agreed on a timeline for Go-live, providing that the project will answer to latest NRAs requests on March 13th :
  - Final update of the approval documents: 13th March (noon)
  - Project readiness Confirmation date: end of March
  - Expected date for approval: 23rd April
  - Go-live :
    - TSOs D-2 operational process: 19th May
    - **Trading day: 20th May**
    - Delivery day: 21st May

- A Market communication towards MPs will be sent after Market Forum.

1 – Readiness for Go-live

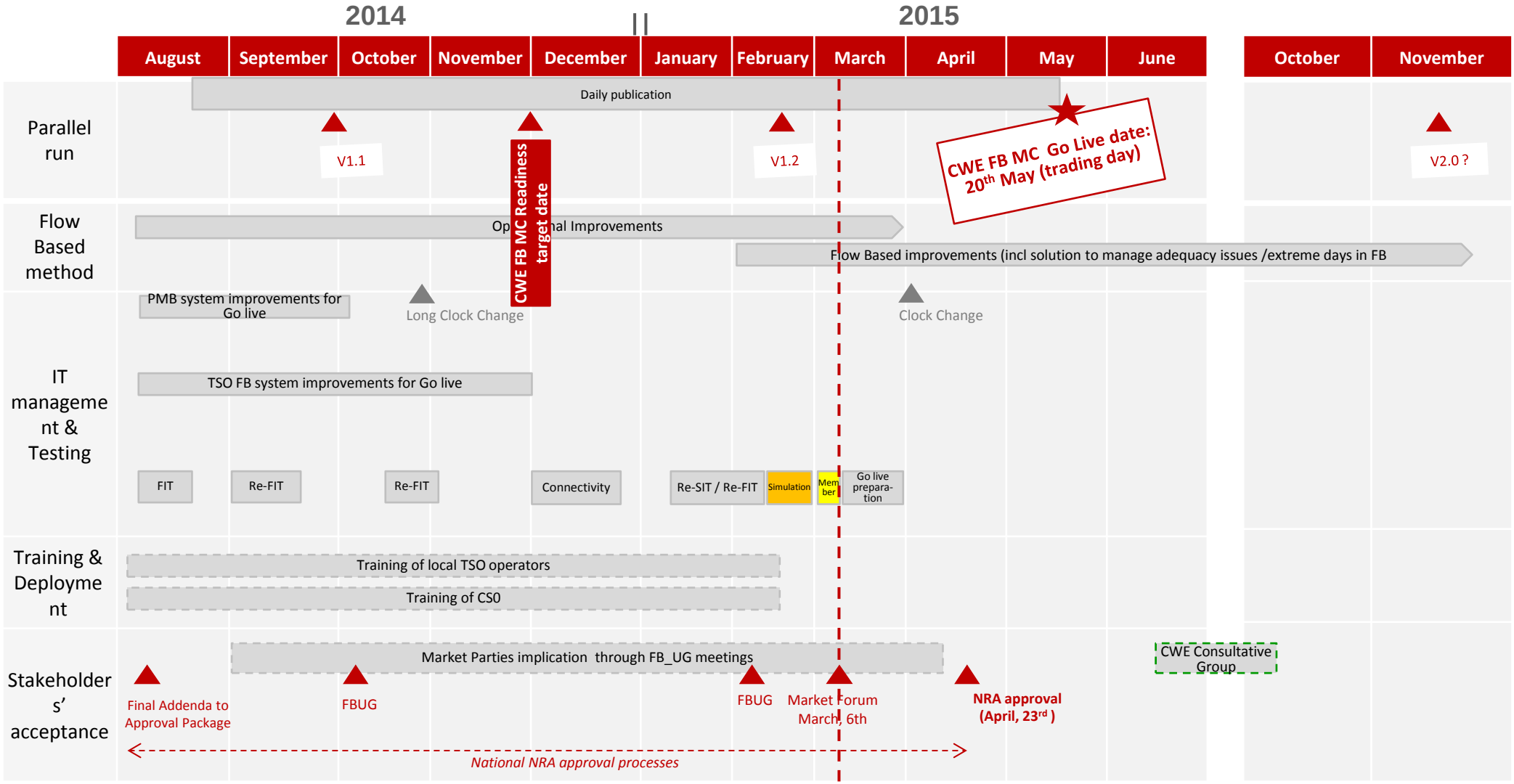
Project Readiness – Latest achievements and time planning until Go-live

- Project partners still plan to complete all acceptance criteria and be technically ready for Go-Live by April 1st. Project partners are still improving technical and operational implementation:
  - Performance of daily parallel run with TSO CS v1.1 since October; TSO CS v1.2 (Go Live version) in operations by 09/02, preparing results for BD 11/02
  - Connectivity tests and Full Integration tests between all systems (incl. Italian Borders functionalities) are currently being performed
  - Simulations testing have been performed in February
  - Final market operators training and member tests are currently being performed in March

- The project decided to perform the **parallel run process** until May, 15th to enable the best preparation for market parties.

1 – Readiness for Go-live

Project Readiness – Latest achievements and time planning until Go-live



1 – Readiness for Go-live

Market preparation – Additional data publication Overview

After the last Market Forum and following fruitful discussions within the FBUG, several additional publications were made as part of the external parallel run process:

- Historical file containing the **daily breakdown of social welfare figures for the weekly parallel run** period (from 02/14 to 03/14) – excel file on CASC website
- **Recomputed missed days based on default Flow-Based Parameters** for 4 days of the parallel run + 2 successful days for comparison and ex-post publication for the missed day 9th April 2014 – on the Ftp server on CASC website
- Two sets of **FB parameters representing typical winter day scenarios** (high load & wind – high load & no wind) – on the Ftp server on CASC website

1 – Readiness for Go-live

Market preparation – Additional data publication Overview

Amongst which some will be published on a regular basis from CWE FB MC Go-live on:

- Historical files with **fixed labeling of presolved CBCOs and of all CBCOs** since 10 July 2013 (until end of January 2015 and soon on a D+2 basis) – on the Ftp server on CASC website
- **Initial ID capacities derived after FB allocation** (not comparable to currently published ID ATCs) – utility tool on CASC website
- **Long term nominations on CWE borders** published as part of the parallel run on a daily basis – utility tool on CASC website
- Publication of **assumptions on D2CF**

The Project is confident that this additional information should further support MPs in the successful adaptation to the FB MC method in the CWE region.

1 – Readiness for Go-live

Market preparation – Additional data publication

Explanation regarding labeling of fixed presolved anonymized CBCOs:

FileId,DeliveryDate,Period,Row,RemainingAvailableMargin,BiddingArea_Shortname,Factor
255,20140912,1,18612210000,394.0,BE,0.05748
255,20140912,1,18612210000,394.0,DE,-0.05132
255,20140912,1,18612210000,394.0,FR,-0.05882
255,20140912,1,18612210000,394.0,NL,-0.03241

HUB Translation

- 11 = BE
- 12 = BE-NL
- 13 = NL
- 14 = NL-DE
- 15 = DE
- 16 = DE-FR
- 17 = FR
- 18 = FR-BE

Explanation regarding labeling of fixed all anonymized CBCOs:

FileId,DeliveryDate,Period,Row,Presolved,RemainingAvailableMargin,BiddingArea_Shortname,Factor ,BiddingArea_Shortname,Factor,BiddingArea_Shortname,Factor,BiddingArea_Shortname,Factor
255,20140912,1,16471842000,false,1479.0,BE,0.05088,DE,-0.15591,FR,0.07400,NL,-0.12173
255,20140912,1,18612210000,true,394.0,BE,0.05748,DE,-0.05132,FR,-0.05882,NL,-0.03241

- *Fixed ID for CBCO* can be found as the element 'Row' in the csv. (i.e. Row = Fixed Anonymous ID for CBCO)
- *Presolved tag* can be found as the element 'Presolved' in the csv (False = not presolved / True = presolved). Presolved CBCOs are published in both files.
- *Elements ID explained:*
- There are 11 characters in total, different characters represent various elements
  - XX – XXXXX – X –XXX (Hub – CBCO – Fmax /Spanning / Fallback – Enlarged and Virtual CBs)
  - 14439660000 (14 = Hub, 43966 = CBCO, 0 = Fmax / Spanning / Fallback & 000 = Virtual CBs)

1 – Readiness for Go-live

Market preparation – Additional data publication

Re-computed results from missed days in Flow-Based daily parallel run are published

Business Day	Description missing days	Basis for re-compuations	Mitigations available
28-2-2014	Unavailability of Private System (analysis tool to enlarge FB domain and perform risk assessment)	Default Flow Based Parameters	• Mitigation is to first restart the server or a switch-over to other environment. Finally default FB parameters would be provided as a last resort
11-3-2014	Technical error of an application server leading to impossibility for common computation		
6-4-2014	Bug in merging tool leading to choice of one reference day		• Mitigation it that merging entity selects a different reference day to be able to perform the merge, which is now available in a newer release of the tool
22-5-2014	Issue in local D2CF file creation due to failed delivery of updated local calculation module		• Mitigation is on local TSO side initially. In case this cannot be provided, deafult FB parameters will be provided
9-4-2014	Low D2CF quality leading to exceptional high PTDFs rejected by the validation check	Complete Re-computation	• Mitigation is an adjusted algorithm that can deal with more extreme LTA inclusion. Also , possibility has been implemented to increase based on FAV.

9/04/2014: ftp://ftp.cwe-sf2.com/2014/Ex%20post%20publication/

- Due to an issue at the very end of the FB parameters calculation process, it could be recomputed ex-post , after an adjustment of the algorithm, based on the valid input from TSOs already available.

28-02-2014 / 11-03-2014 / 06-04-2014 / 22-05-2014: ftp://ftp.cwe-sf2.com/2014/Recomputation%20based%20on%20default%20PTDFs/Recomputed%20missed%20days/

- For several cases, coordination/qualification/verification would need to be simulated, which is not feasible or highly arbitrary. Default Flow-Based parameters have therefore been provided for these days.

DISCLAIMER
"Please note that the risk of having missed days due to technical issues should significantly reduce thanks to the implementation of appropriate operational safeguards and mitigation measures as well as the use of the new common TSO system"

1 – Readiness for Go-live

Market preparation – Additional data publication

Simulations back-ups/Fallbacks

- A high-wind day and normal day have been selected as a basis for simulating results in case of the fallback solution (Default Flow-Based Parameters)

- 20-6-2014 (*Windy* d*ay*)
- 4-8-2014 (*Average day*)

  - ftp://ftp.cwe-sf2.com/2014/: "**Recomputation based on default PTDFs**" folder split in two additionnal sub-folders : "**Recomputed missed days**" and "**Other days for comparison**" where PTDFs and reports files are published.

  - Please note that delivery date 09/04/14 recomputation results have been published on a dedicated folder named « **Ex-post publication** ».

1 – Readiness for Go-live

Market preparation – Additional data publication

- Following MPs request the Project prepared two sets of FB parameters representing:
  - **Case A: Typical winter day – high load & wind**
  - **Case B: Stressed winter day – high load & no wind**
- Next slides give some details on the grid assumptions
- To give some indication on market results for case B (stressed winter day) the coupling was run, using OBKs of a highly stressed historical day (Feb09 h19)
  - Block order mutations:
    - BE + FR: assume all sell accepted; all buy rejected;
    - DE + NL: assume prices of adjacent hours remain as they were historically;
  - Three nuclear units in BE were offline in the case B scenario. These units were available in Feb 09, hence OBKs were update by taking off 2.6GW of generation (or actually we added 2.6GW of demand)
- The corresponding PTDFs are published on ftp://ftp.cwe-sf2.com/2015/Winter%20day%20scenarios/

1 – Readiness for Go-live

Market preparation – Additional data publication

- Aachen University built 2 forecast (load and exchanges) scenarios for German winter study:
  - **Case A: with wind**
  - **Case B: without wind**

- Coreso and SSC adjusted these hypothesis taking into account this important N-3

- Amprion , TenneT, Rte and Elia provided files respecting these hypothesis

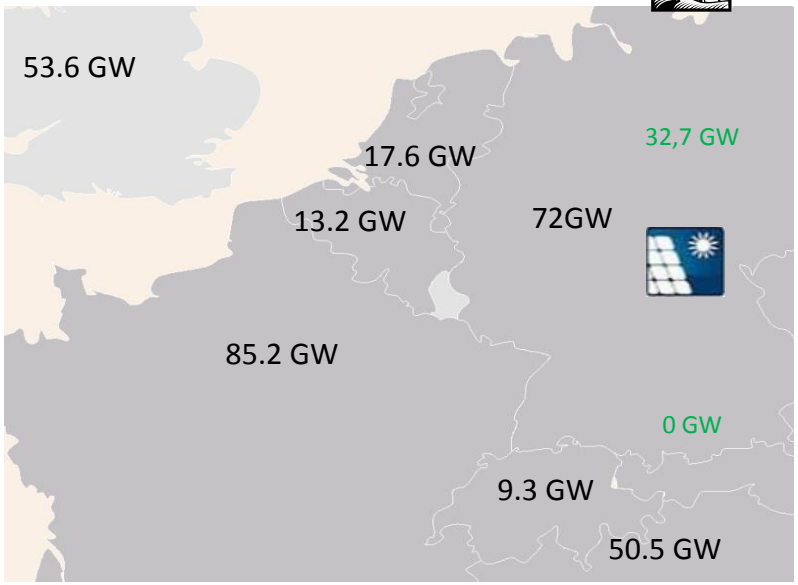
- Coreso and SSC built the 2 base cases and launched studies on it.

1 – Readiness for Go-live

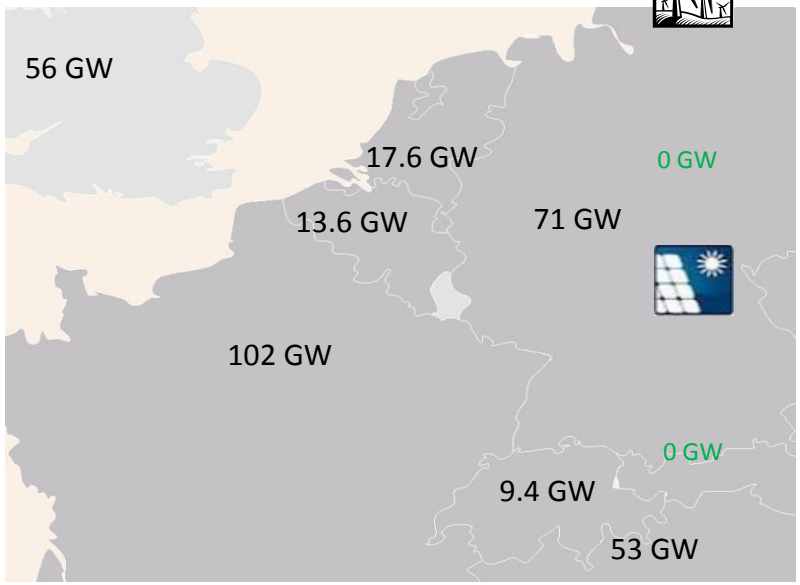
Market preparation – Additional data publication

Load hypothesis used:

Wind & high load



No wind & very high load



1 – Readiness for Go-live

Market preparation – Additional data publication

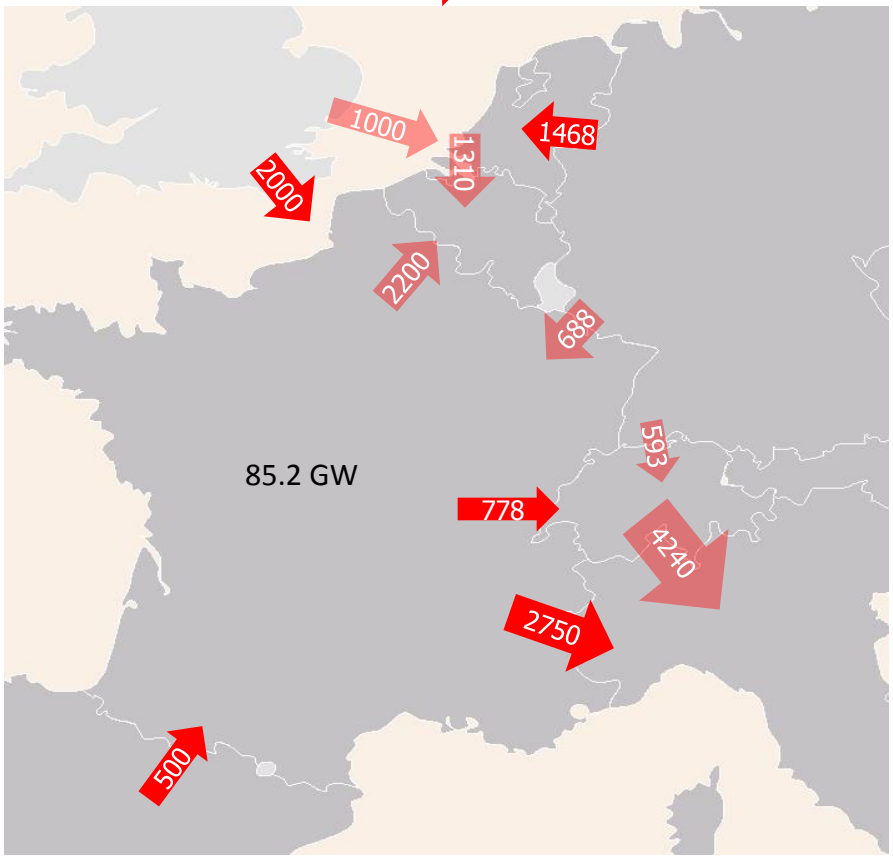
Commercial Exchanges hypothesis used:

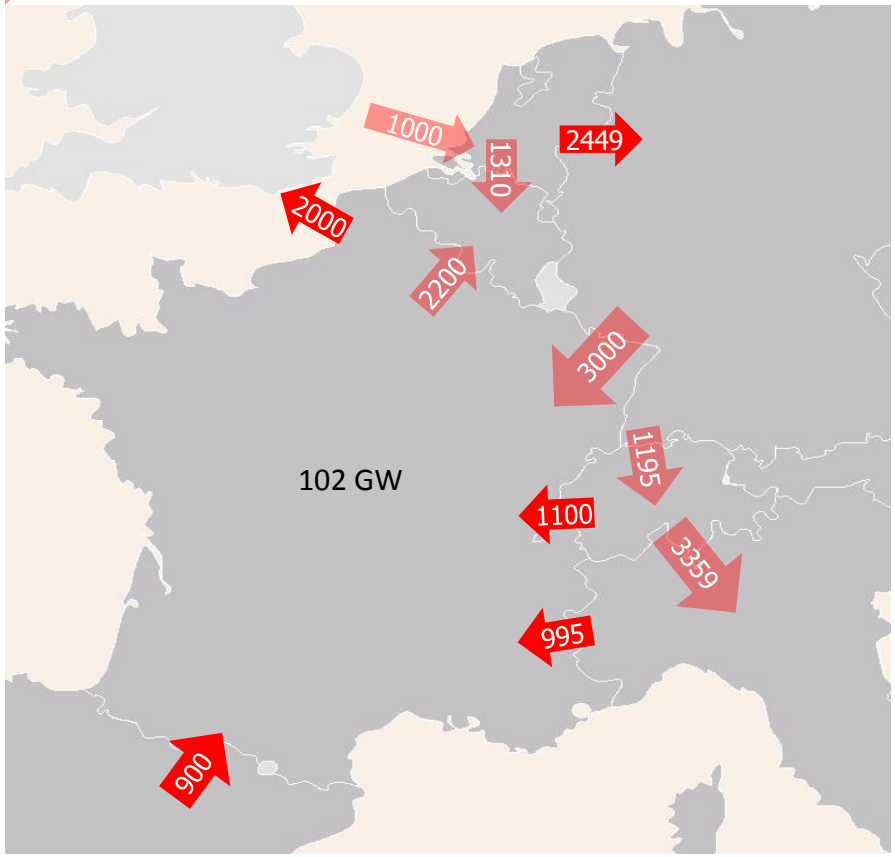
wind & high load

No wind & very high load

Different direction with other case

Similar direction with other case



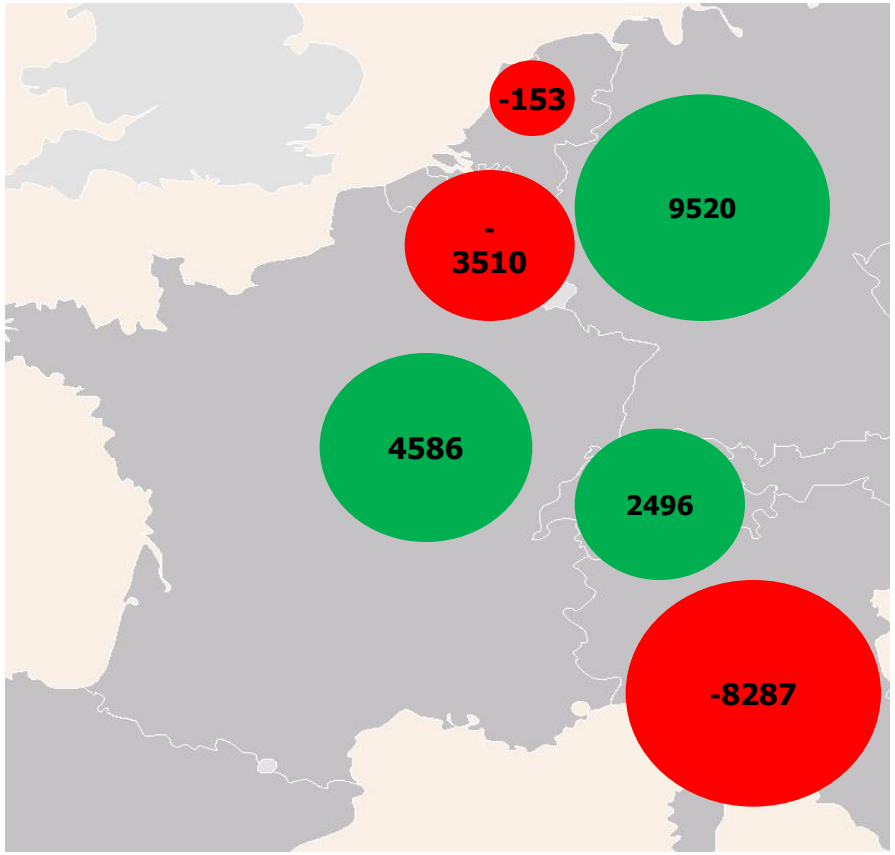


1 – Readiness for Go-live

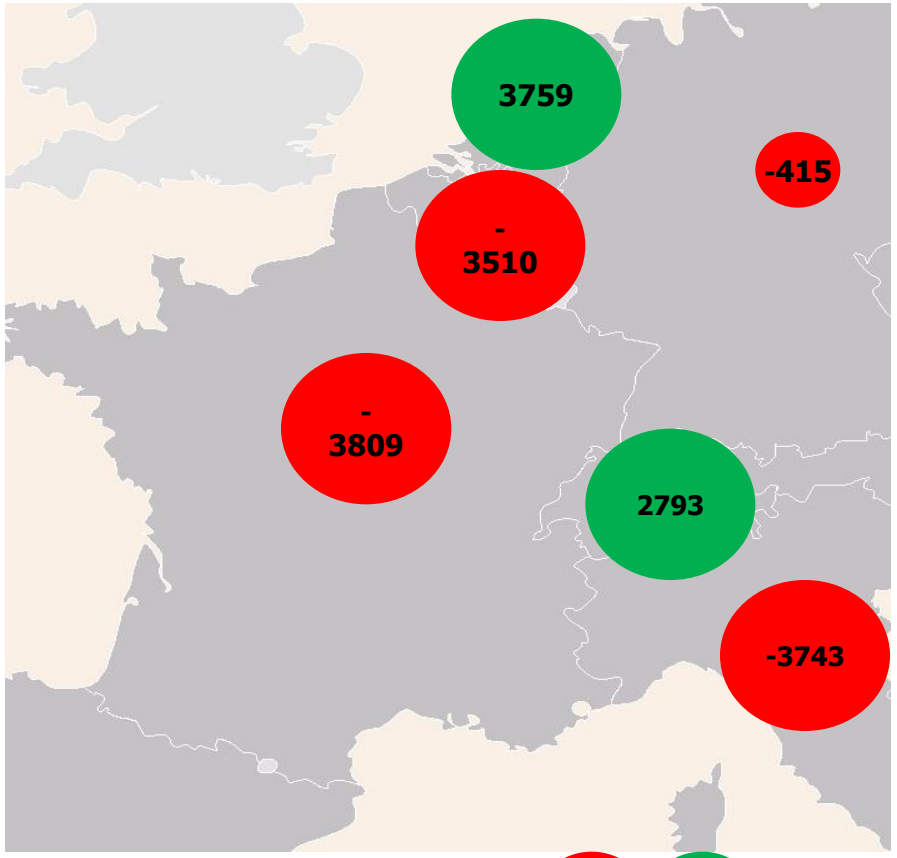
Market preparation – Additional data publication

Net positions hypothesis used

wind & high load



No wind & very high load



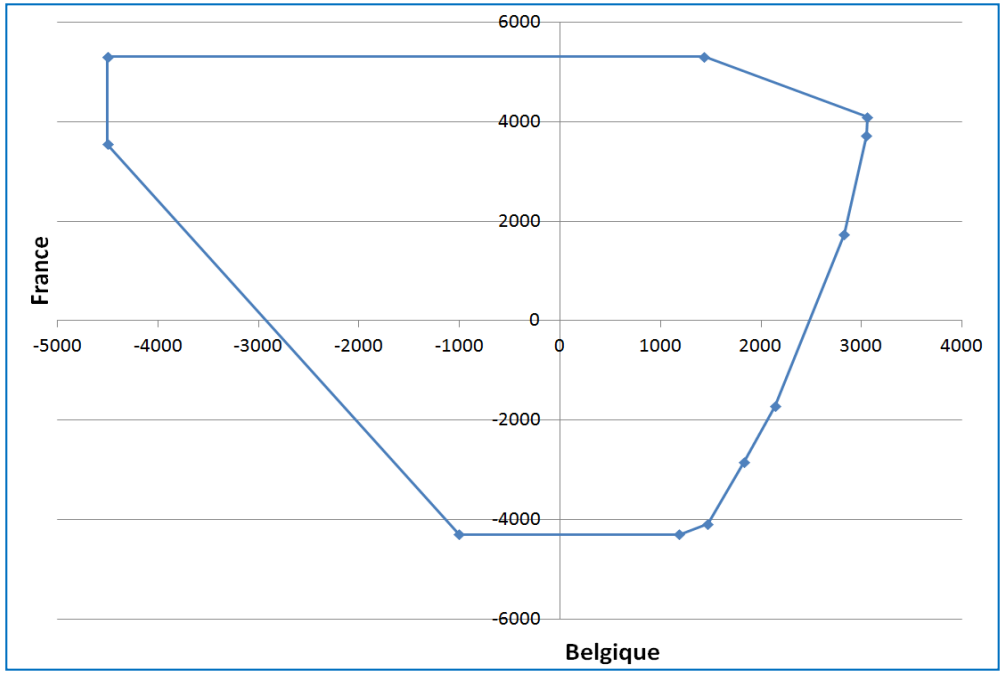
Import Export

Vulcanus balance (HVDC connection not taken into account) used

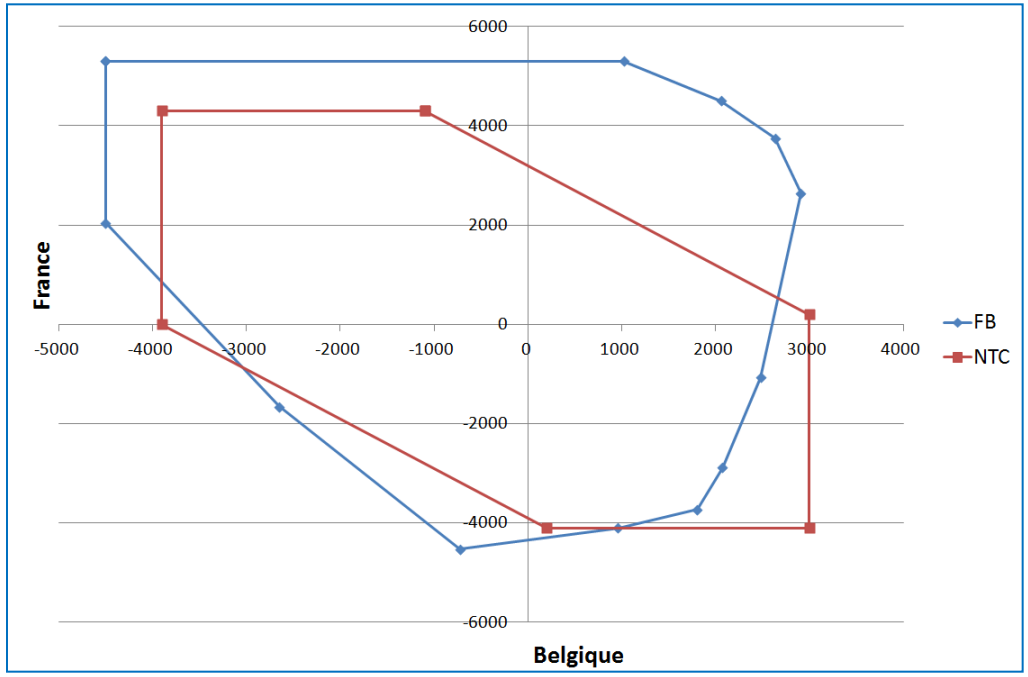
1 – Readiness for Go-live

Market preparation – Additional data publication

FBP visualisation Winter case A



FBP visualisation Winter case B

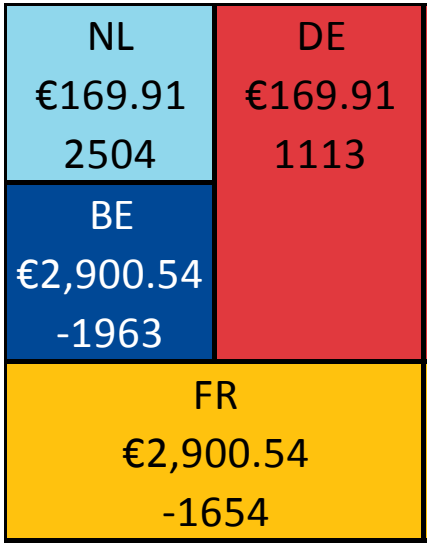


- A focus on winter cases A and B via the Utility Tool will be provided during the session (see session file)

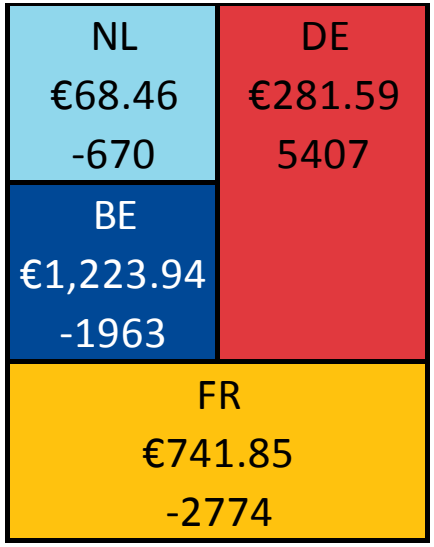
1 – Readiness for Go-live

Market preparation – Additional data publication

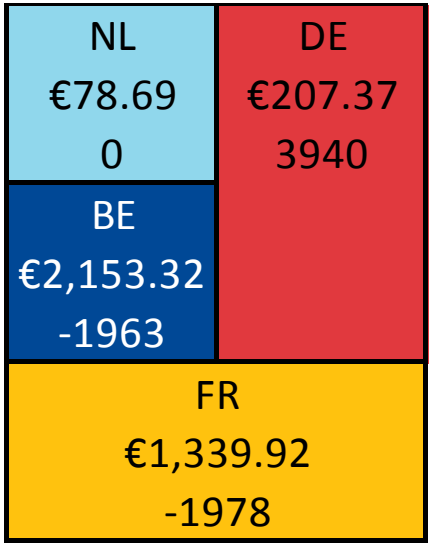
- Results:



ATC MC clearing



FB MC clearing



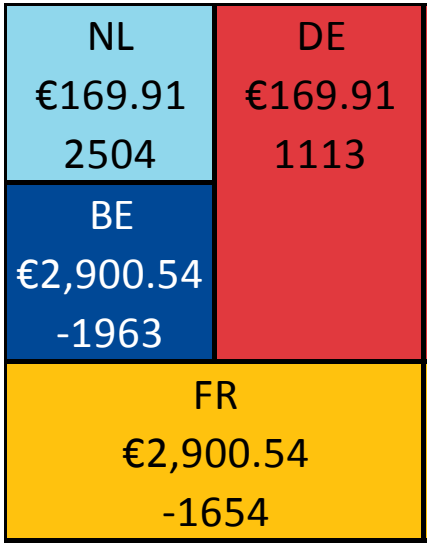
FBI MC clearing

- FB results show a non-intuitive NL import
- FBI prevented the NL import. Consequently BE + FR prices further increased
- Compared with ATC the additional import into BE and FR reduces peak prices
- Lack of BE resilience results in varying BE prices whereas its net position remain unchanged

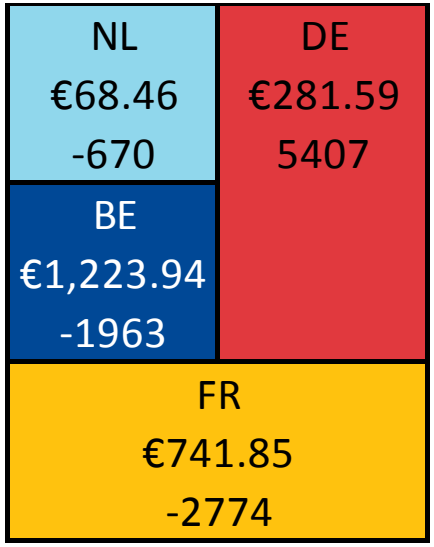
1 – Readiness for Go-live

Market preparation – Additional data publication

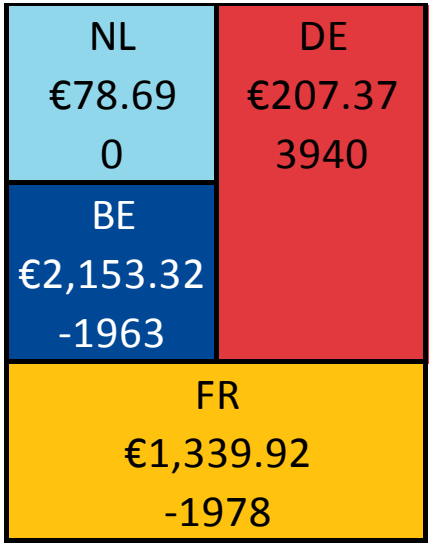
- **Results**:



ATC MC clearing



FB MC clearing



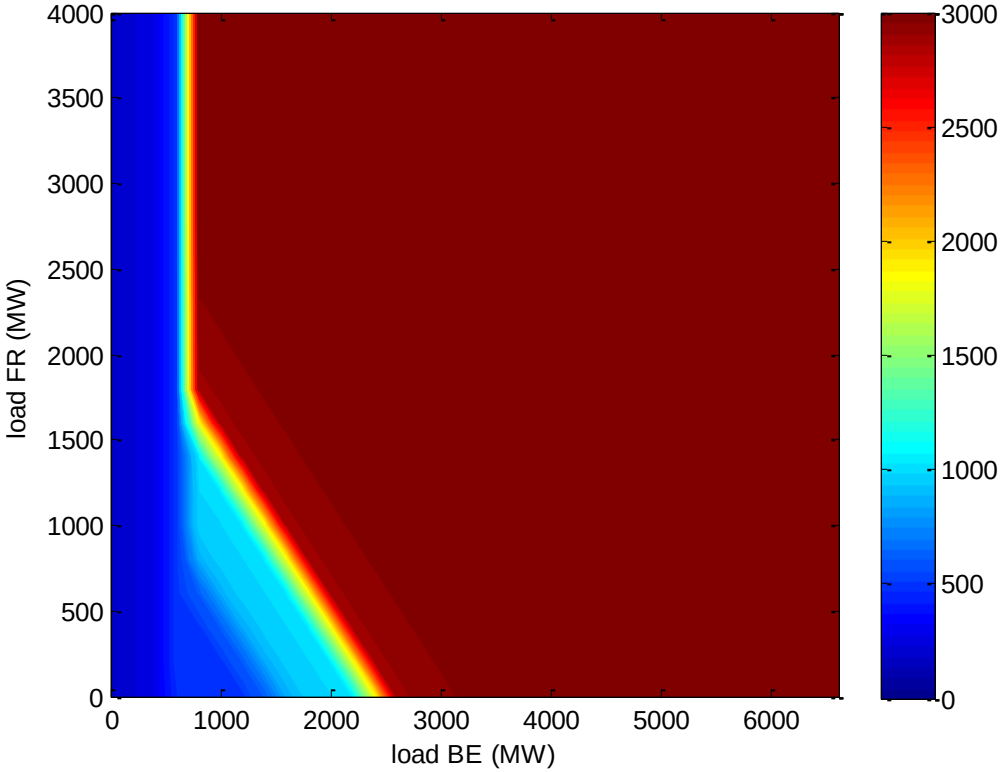
FBI MC clearing

- In light of our adequacy study it would be interesting to see how market behave in case of curtailment situations, i.e. situations where price taking demand (buy order submitted at 3000€/MWh) can only be partially met.
- For this purpose we artificially added price taking demand (or load) to the BE and FR OBKs.

1 – Readiness for Go-live

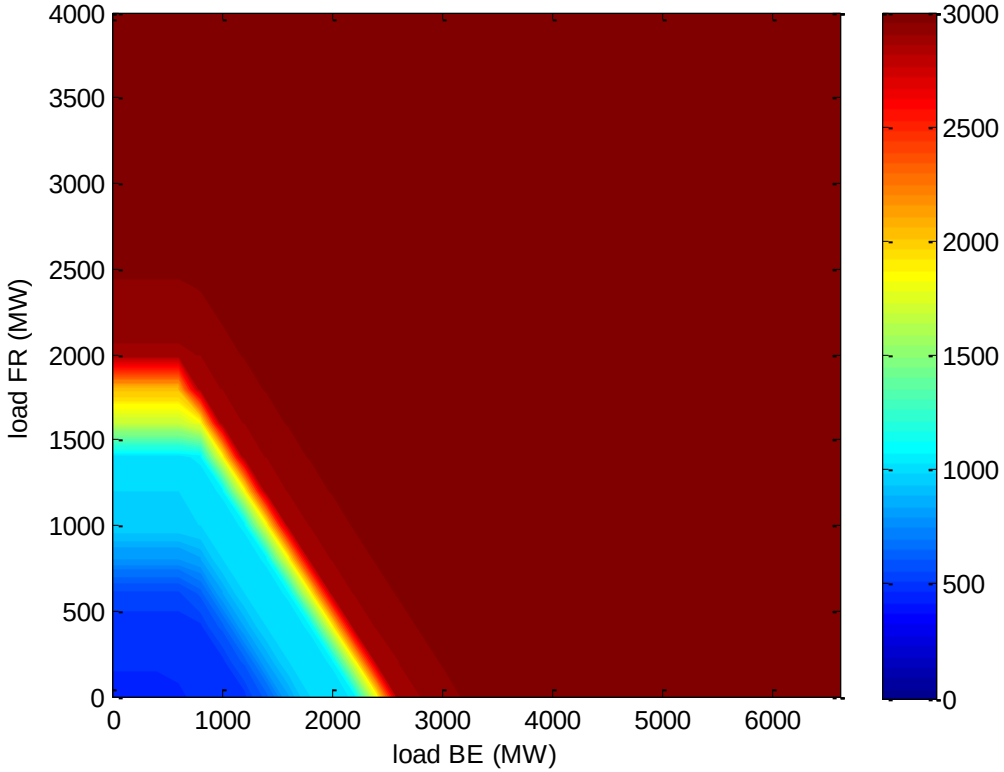
Market preparation – Additional data publication

- BE prices (under ATC)



2.6GW BE load

FR prices (under ATC)



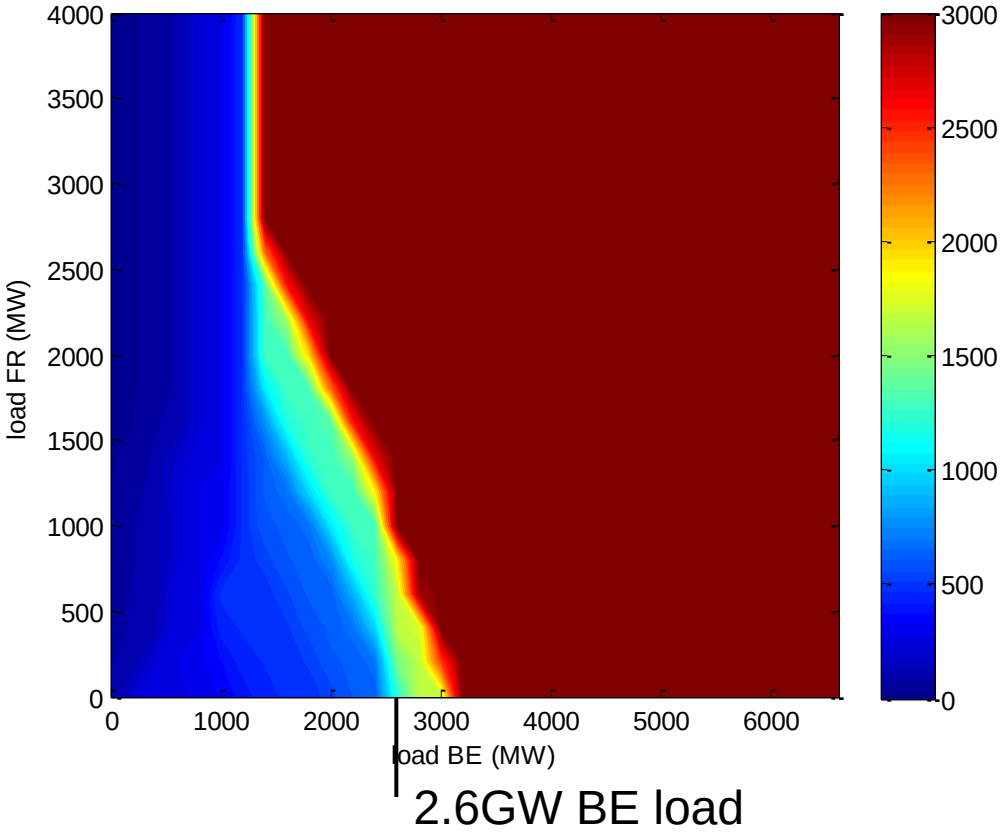
2.6GW BE load

- Under ATC additional load quickly results in curtailments (the red area)

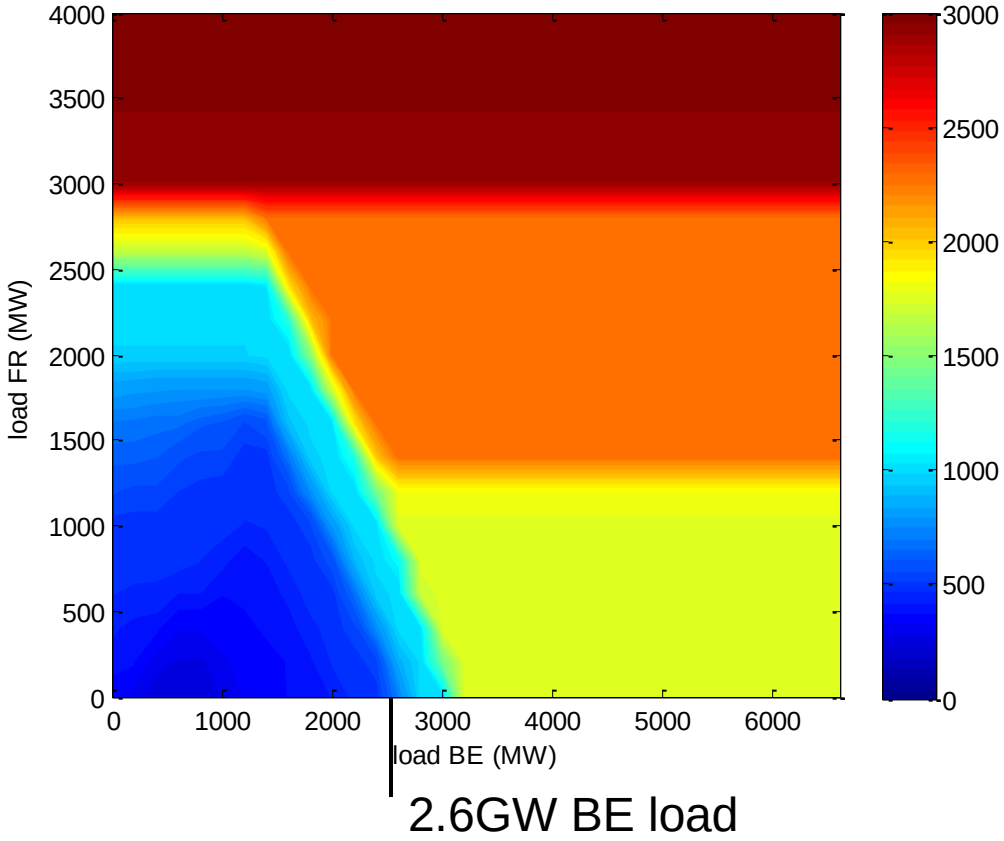
1 – Readiness for Go-live

Market preparation – Additional data publication

- BE prices (under FB)



FR prices (under FB)

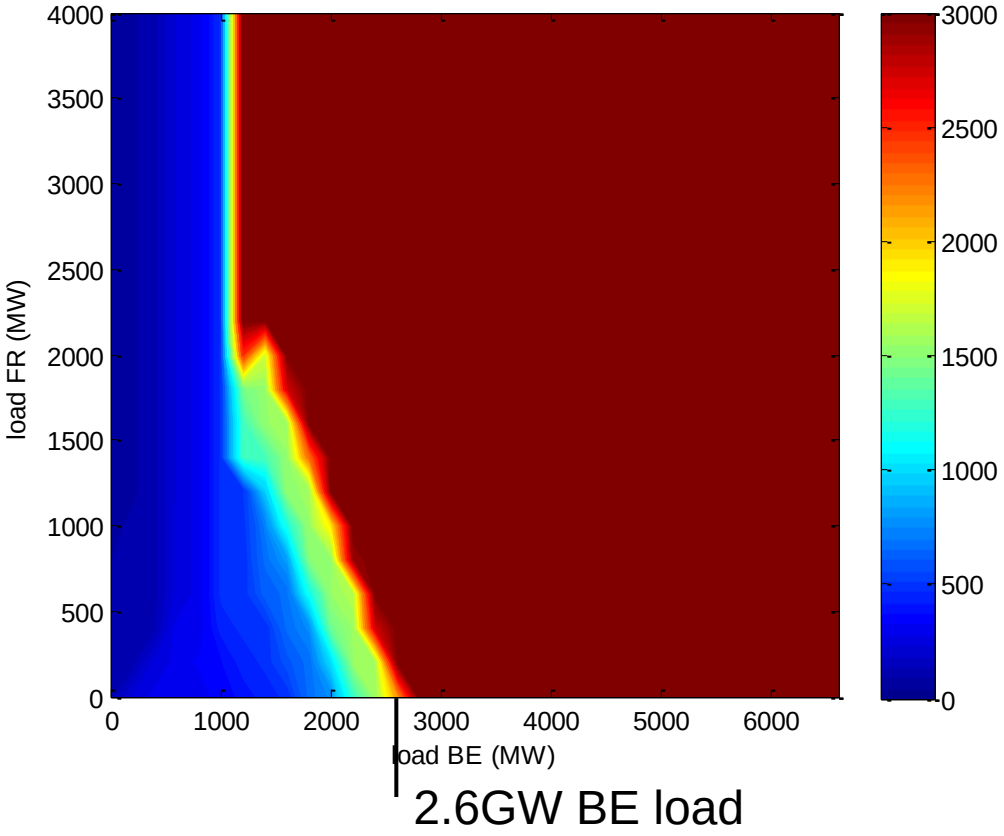


- For both BE and FR curtailment requires more load to be triggered

1 – Readiness for Go-live

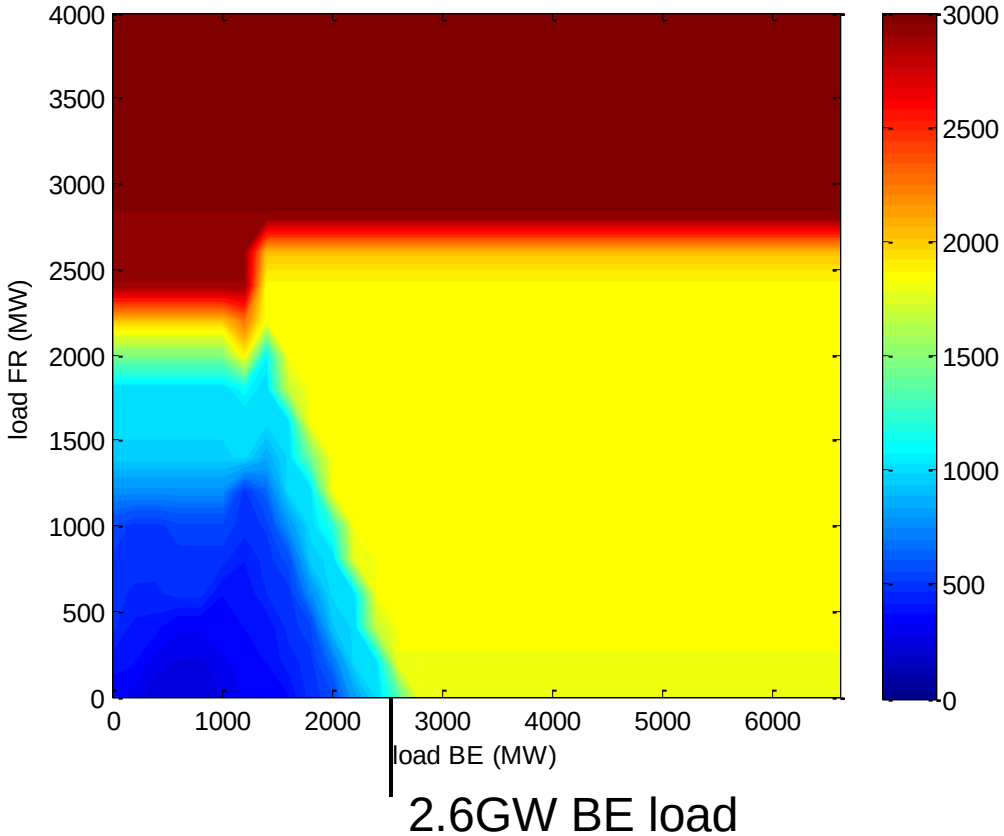
Market preparation – Additional data publication

- BE prices (under FBI)



2.6GW BE load

FR prices (under FBI)



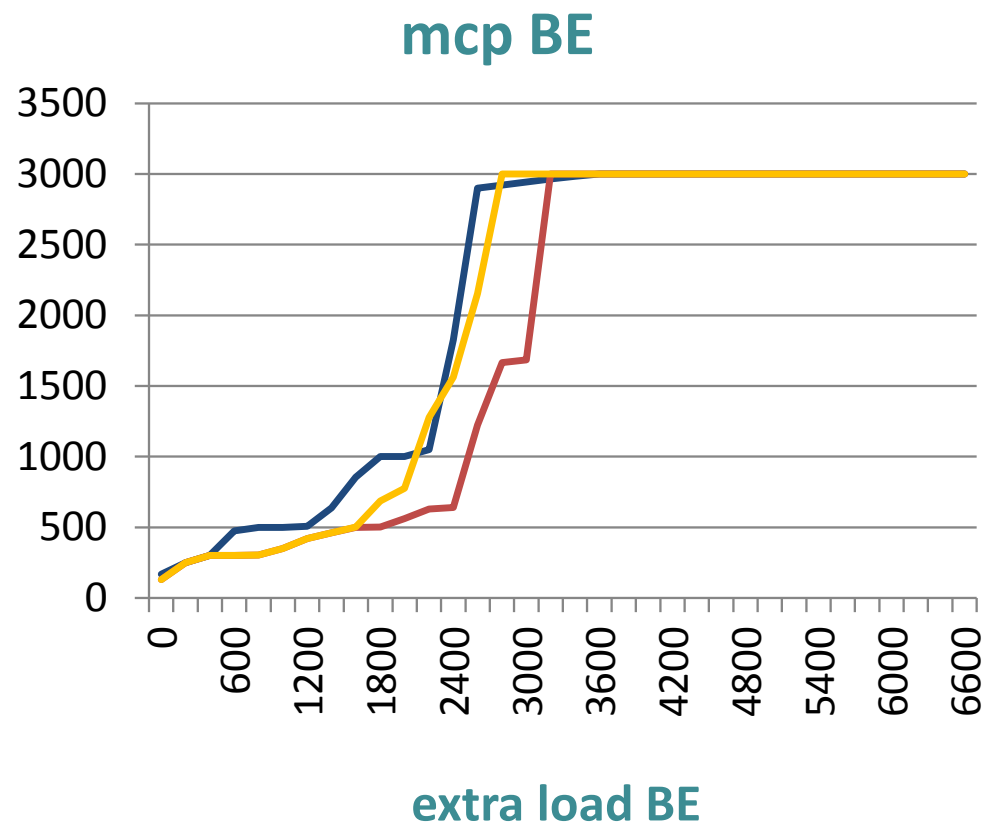
2.6GW BE load

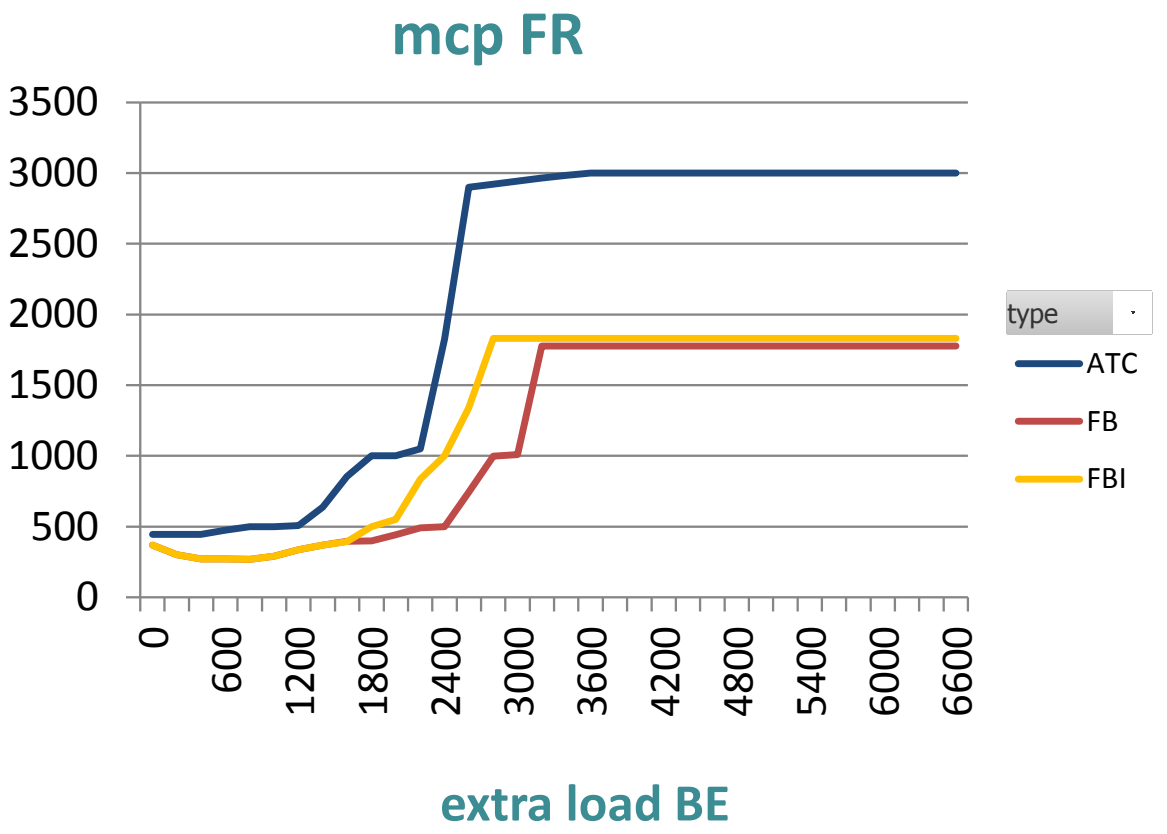
- Similar to FB results, but activation of intuitive constraints introduce some “jumps” in prices. Also see intuitive report section 2.6 smoothness of results

1 – Readiness for Go-live

Market preparation – Additional data publication

- Sensitivities: impact additional load into BE:



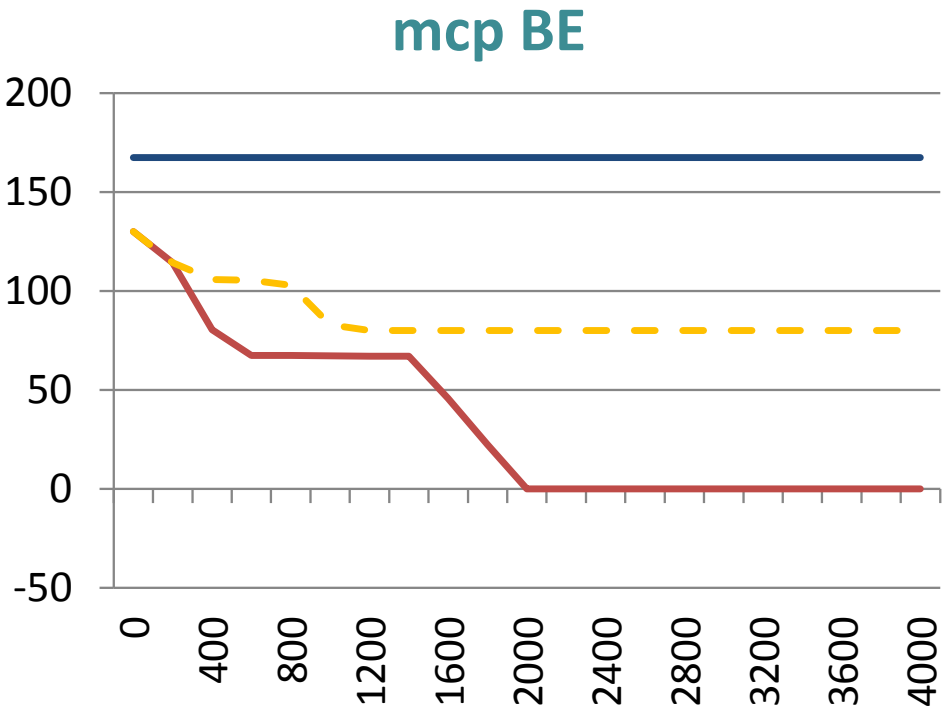


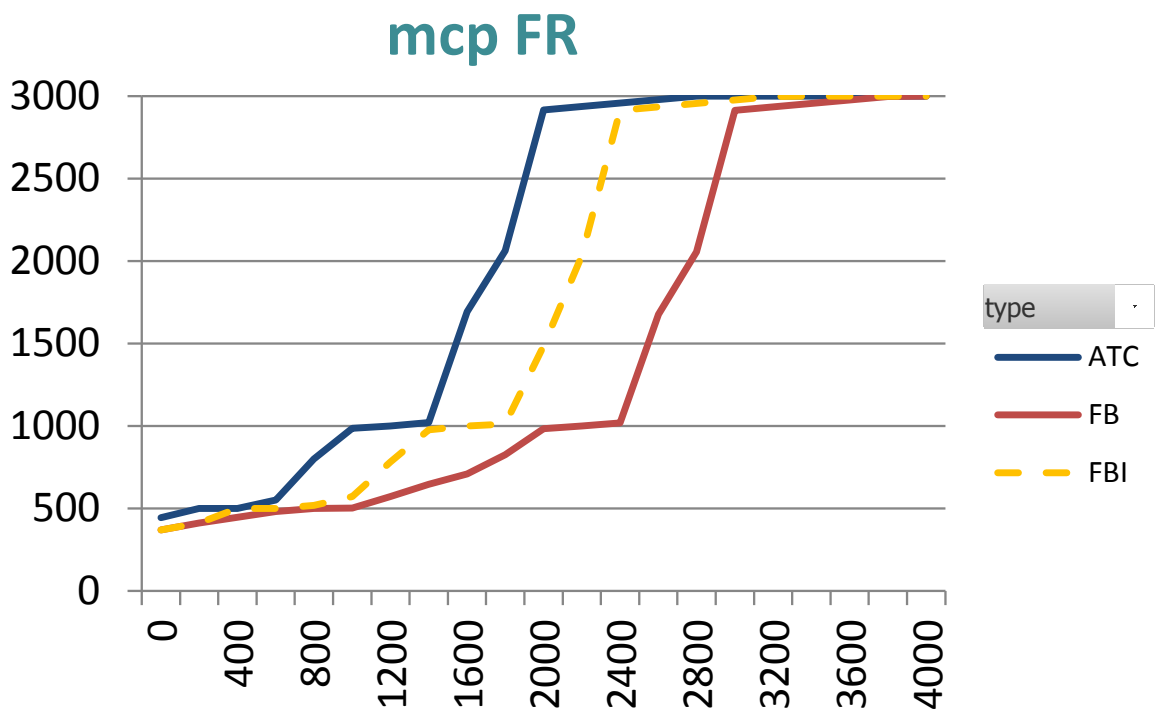
- Additional BE load increases both BE and FR prices. Unlike under ATC, under FB no FR curtailments are triggered

1 – Readiness for Go-live

Market preparation – Additional data publication

- Sensitivities: impact additional load into FR while maintaining additional load at **0MWh**





- Additional FR load **decreases** BE prices under FB

1 – Readiness for Go-live

Market preparation – Additional data publication

The Project would like to provide feedback on open inquiries raised during last FBUG meeting:

- Continue the parallel run process as close to Go-live as possible and maintain the publication of results

  The Project decided to perform the parallel run process until May, 15th.

- Communicate to Market Participants when default FB parameters are used

  The standard process will include publication of the Default FB Parameters and a communication to Market Parties via the CASC website.

- Provide Market Parties with a detailed list of further NRAs requests/improvements for after Go-live and the resolution date for each item

  Project Partners discussed and aligned with NRAs on these open requests. The resolution date of the items will be communicated to Market Parties later on.

1 – Readiness for Go-live

Market preparation – Additional data publication

- Prepare a documentation for the Market about the final Documentation framework under CWE FB MC prior to Go-live and make the publication channels available several weeks in advance of Go-live in order for the Market to anticipate data retrieval.

  The data publication framework for CWE FB Go-live is finalized and will be presented with a demonstration during this Forum. Further documentation will be shared with Market Parties.

1 – Readiness for Go-live

Market preparation – Additional data publication

- Publish the x/y value for the “LTA+x/y” on parallel run day 25/12/14

  Project Partners will investigate if the values used for this day can be published on CASC website

- Provide an overview of how D2CF assumptions will be published on a daily basis and assess possibility of publishing data with historical D2CF assumptions for the parallel run period.

  Project Partners will provide an overview of the tool before Go Live and discuss the possibility to publish also historical data for aggregated D2CF.

- Simulate forecasted scenarios to help Market Parties anticipating trend changes for the coming seasons (ex. summer simulations published in winter) and reflect the changes on the grid (lines, etc.) for the coming season

  Project Partners will assess whether it is feasible to provide 2 typical day scenario per year (1 per season) and also 2 different grid situation scenarios. However as pre-requisite and basis the Project needs detailed feedback on the provided scenarios.

Market Forum – AGENDA

March 6th, 2015

1. **Readiness for Go-live**
   - Look back on external parallel run
   - Project readiness – latest achievements and time planning until Go-live
   - Market preparation – additional data publication

2. **Final data publication framework and procedures for FB MC**
   - Data publication framework under FB MC
   - Recapitulation of operational procedures
   - Member test

3. **Post Go-live discussions**
   - Adequacy study follow-up
   - Additional data publication
   - Further improvements to be developed after Go-live for a second version of Flow Based
   - Stakeholders involvement

4. **NRAs approval status**

5. **Implementation of Financial Transmission Rights in CWE region**

6. **Q & A**

2 - Final data publication framework and procedures

Data publication framework under Flow-Based MC

The framework for publication after Flow based is defined

- See: Data Publication Framework from Go Live

There are two main publication platforms, namely the website of PXs & CASC

- CASC publication is done directly on the website and via a tool that can be downloaded, the so called “extended” Utility tool
- Publication done on PXs website will be similar to what is done in ATC

Examples can be found in the next slides

2 - Final data publication framework and procedures

Pre-Coupling and Post Coupling Data publication framework under Flow-Based MC (1/2)

Item	Publication Place	Pre/Post-Coupling Data	Publication time
PTDFs (Early publication)	Utility Tool	Pre-Coupling	8:00 am
ATC for FR-ES, DK1-DE, FR/AT/SI-IT borders	Utility Tool + website	Pre-Coupling	10:30 am
Long Term Nominations	Utility Tool + website	Pre-Coupling	10:30 am
PTDFs (final)	Utility Tool	Pre-Coupling	10:30 am
Max Net Positions	Utility Tool	Pre-Coupling	10:30 am
Max Exchanges (MaxBex)	Utility Tool	Pre-Coupling	10:30 am
Shadow Auction ATCs	Utility Tool + website	Pre-Coupling	10:30 am

2 - Final data publication framework and procedures

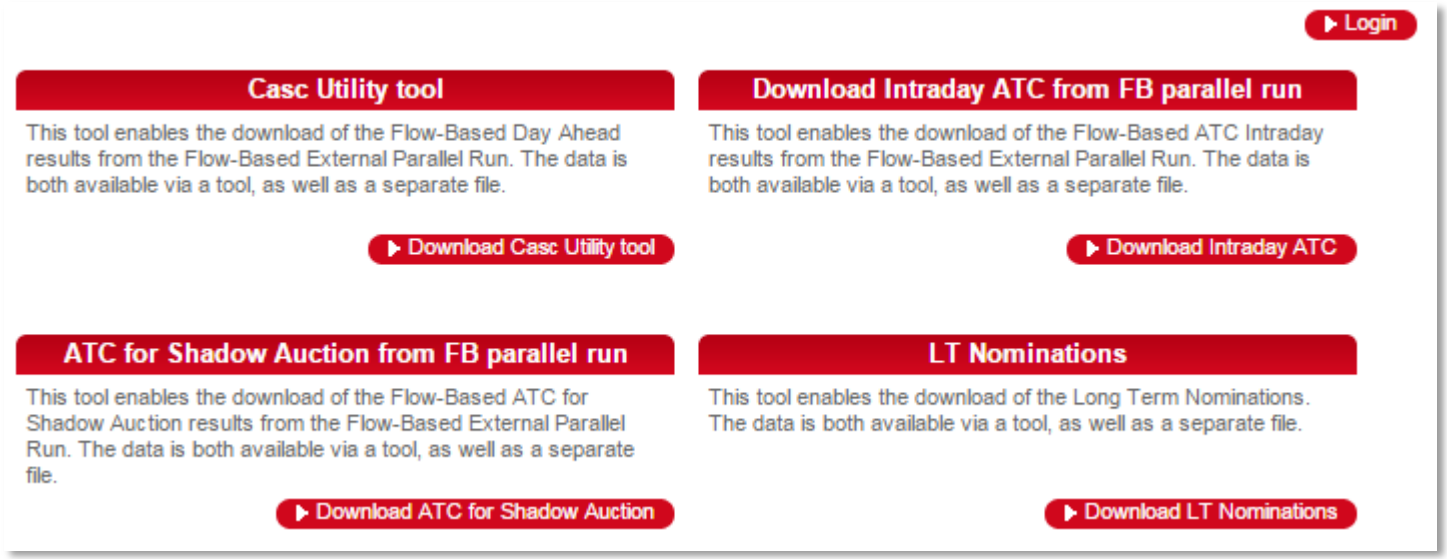
Pre-Coupling and Post Coupling Data publication framework under Flow-Based MC (2/2)

Item	Publication Place	Pre/Post-Coupling Data	Publication time
CWE Net Positions	Utility Tool	Post-Coupling	After Market Coupling 2:00 pm
Intraday ATCs	Utility Tool + website	Post-Coupling	After Market Coupling 2:00 pm
BEC/Allocated Capacity	Utility Tool + website	Post-Coupling	After Market Coupling 2:00 pm
Price Spread	Utility Tool + website	Post-Coupling	After Market Coupling 2:00 pm
Congestion Income	Utility Tool + website	Post-Coupling	After Market Coupling 2:00 pm
Refprog	Utility Tool	Post-Coupling	1:00 pm D+2
All CBCOs fixed Label	Utility Tool	Pre-Coupling	1:00 pm D+2
D2CF aggregated data	Utility Tool	Pre-Coupling	1:00 pm D+2

2 - Final data publication framework and procedures

Data publication framework under Flow-Based MC

- Majority of the indicators will be published direcly on the CASC website



- A date picker will be available to select a range of data

- After which the data is possibly displayed and can be downloaded in csv & xml format

2 - Final data publication framework and procedures

Data publication framework under Flow-Based MC

- Next to the publication on the website directly, also the "(extended) Utility tool" will be available
  - This tool can be stored locally and be used to retrieve data, by altering the business day of the respective publications
  - This tool included webservices to retrieve specific publication data, which can also used seperatly by MPs to create automated interfaces (http://test-utilitytool.casc.eu/CascUtilityWebService.asmx)

CWE Flow Based Utility Tool

Reference time:	1) Check volume *(interactive module)*	2) Max volume *(information module)*
date: 2014-10-22 hour: 1	Here you can check the simultaneous execution of trading volumes of the markets involved in the CWE Market Coupling	Here you can find the maximal trade volumes (MWh/h) which can be physically transported between two Hubs under the condition that no other trade is executed between other Hubs.

HUB TO HUB EXCHANGES

	Hub-to-Hub trade in MWh/h (please insert values)	Test 1: hub to hub inside FB space
DE=>BE	100	Trades feasible
DE=>NL	400	
DE=>FR	333	
NL=>BE	345	
NL=>FR	1222	
BE=>FR	123	

	direction -->	direction <--
DE=>BE	3294	4425
DE=>NL	2992	3917
DE=>FR	5549	3422
NL=>BE	2502	3368
NL=>FR	3290	3422
BE=>FR	3759	3395

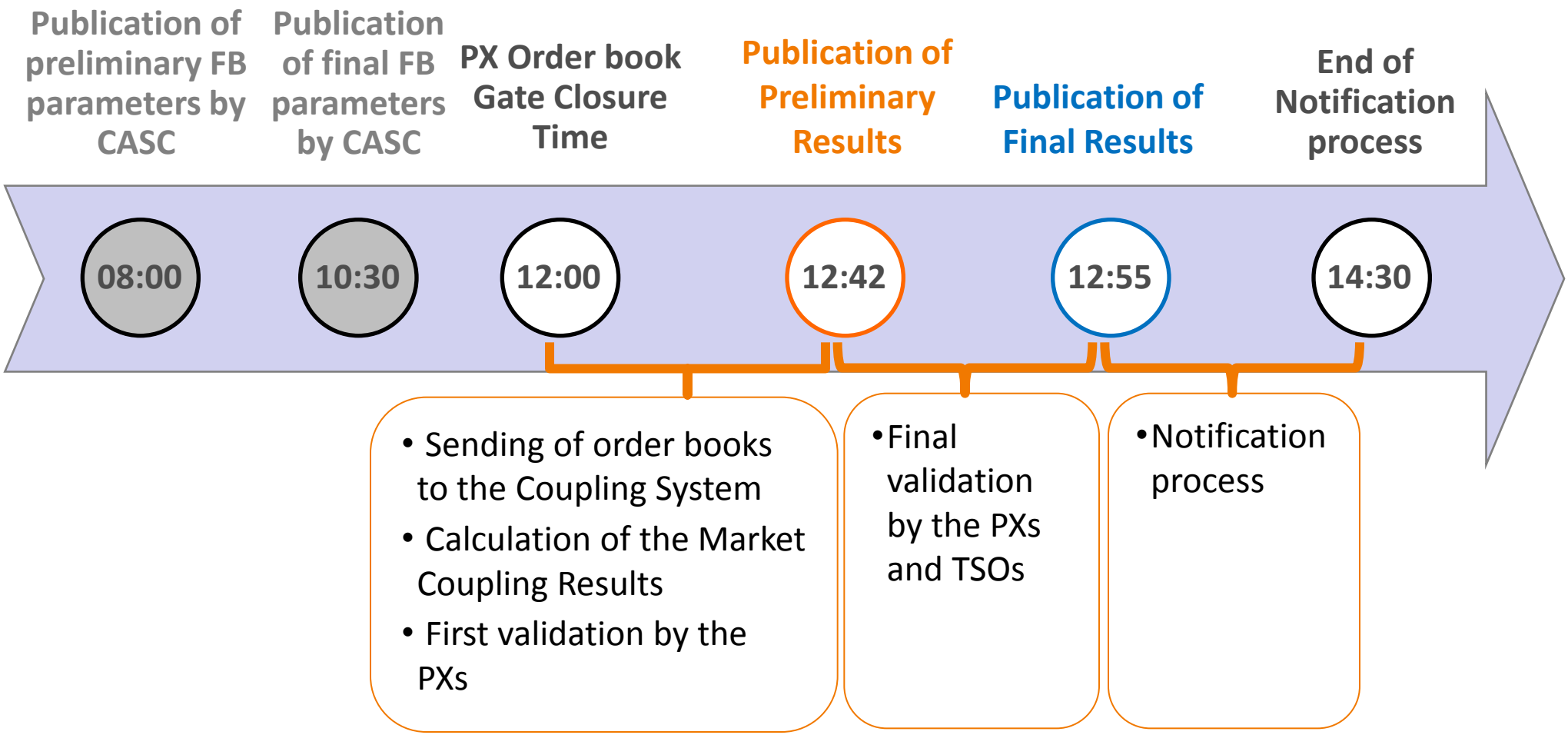
HUB POSITION

	Hub Positions trade in MWh/h (please insert values)	Test 1: sum hub positions = 0	Test 2: hub positions inside FB space
DE	0	OK	Trades feasible
BE	0		
FR	0		
NL	0		

	export	import
DE	6489	-4911
BE	5108	-3395
FR	3422	-5549
NL	4429	-3575

2 - Final data publication framework and procedures

Normal Day Timeline



- **There is no change in the normal day operational process under Flow-Based MC, only the type of Cross-Zonal-Capacity used is different (FB parameters instead of ATCs)**

2 - Final data publication framework and procedures

Market Coupling based on Default FB parameters

- In case the CZC (Cross-Zonal-Capacities) values for a certain delivery day cannot be computed, **TSOs will trigger a backup process and a CZC file with Default Flow Based Parameters** will be used instead.

- Default FB Parameters are calculated from the LTA domain with possible additional values on each border; therefore it is an altered ATC domain translated into a FB matrix. It is updated every month like the LTA domain.

- When this is the case, CASC will update their website on the Urgent Market messages section earliest at 08:00.

- The use of Default Flow Based parameters has **no impact on the process and timings**:
  - The CZC file is sent to PXs and published to Market Parties following the usual timeline.
  - The normal day coupling process and timings will be followed.

2 - Final data publication framework and procedures

Partial Decoupling

A **Partial Decoupling** is a situation where **one or more bidding areas and/or interconnectors** are temporary not participating in the Market Coupling while the remaining bidding areas/interconnectors still participate.

- The Cross-Zonal Capacities for the decoupled interconnectors are allocated via the available fallback allocation solution: **Shadow Auctions via CASC based on ATCs (not FB parameters used in normal day process).**
- If the Partial Decoupling is declared after the order book GCT, PXs are entitled to reopen their order books for **10 minutes**.
- The Market Coupling continues as normal for the interconnectors and bidding areas remaining coupled.

CWE supports 3 different types of Partial Decoupling situations, depending on the reason leading to the decoupling:

1. **Partial Decoupling during the Pre-Coupling process (11:45 deadline)**
2. **Partial Decoupling during the Coupling process (12:40 deadline)**
3. **Partial Decoupling known in advance (10:30 deadline)**

2 - Final data publication framework and procedures

Full Decoupling

A **Full Decoupling** is a situation where **all the bidding areas and interconnectors** that are implicitly coupled are not participating in the Market Coupling for delivery on the next day.

- The Cross-Zonal Capacities (CZC) for all the decoupled interconnectors are allocated via the available fallback allocation solution: **Shadow Auctions via CASC based on ATCs (not FB parameters used in normal day process).**
- If the Full Decoupling is declared after the order book GCT, PXs are entitled to reopen their order books for **20 minutes**.
- A local auction will be run by each CWE PX for its own bidding area(s).

CWE supports 2 different types of Full Decoupling situations, depending on the reason leading to the decoupling:

1. **Full Decoupling known during the current Market Coupling Session (13:50 deadline)**
2. **Full Decoupling known in advance (10:30 deadline)**

2 - Final data publication framework and procedures

Fallback Shadow Auctions: High Level Principles

- An explicit allocation of the capacities is organized: **Shadow Auctions operated by CASC**
  - Market Participants (MPs) submit Shadow Auction default bids
  - ATCs are submitted by TSOs to CASC on a daily basis
  - In case of technical problem in the pre-coupling or coupling process, decoupling risk is announced. This message should enable MPs to update their bids.
  - Shadow Auctions are run in parallel with the Market Coupling session, starting 10 minutes before the decoupling deadline. During this process the bids can no longer be updated.
  - After (partial/full) decoupling is announced, Shadow Auction results publishing starts.
  - Each PX re-opens its order book to enable MPs to adapt their bids based on the Shadow Auction Results (10’ in case of partial decoupling and 20’ in case of full decoupling).

2 - Final data publication framework and procedures

Market preparation – Member tests

A full member testing (where market parties submit dedicated orders) was organized prior Go-live. The member testing as a preparation step before Go-live was supported by a majority of Market Participants in the survey from June 2013.

- The Member tests were carried out with Exchange members during three days from Tuesday, March 3rd to Thursday, March 5th

- **Test overview**
  - **Process :** from pre-coupling to post-coupling activities (test end with the reception of the global final confirmation (GFC)/no nominations)
  - **Scope :** CWE and interconnectors (DK1-DE, NL-NO, FR-ES, FR-IT, AT-IT)
  - **Publication** : CZC data published on CASC website
  - **3 scenarios** :
    - Scenario 1: Normal day
    - Scenario 2: Delayed publication of backup Flow-Based parameters
    - Scenario 3: Partial decoupling due to missing OBK

Market Forum – AGENDA

March 6th, 2015

1. **Readiness for Go-live**
   - Look back on external parallel run
   - Project readiness – latest achievements and time planning until Go-live
   - Market preparation – additional data publication

2. **Final data publication framework and procedures for FB MC**
   - Data publication framework under FB MC
   - Recapitulation of operational procedures
   - Member test

3. **Post Go-live discussions**
   - Adequacy study follow-up
   - Additional data publication
   - Further improvements to be developed after Go-live for a second version of Flow Based
   - Stakeholders involvement

4. **NRAs approval status**

5. **Implementation of Financial Transmission Rights in CWE region**

6. **Q & A**

3 – Post Go-Live discussions

Adequacy study follow-up

- In November 2014 the project published a report on Adequacy.
  - The focus of the report was on curtailment situations, i.e. the situation where price taking demand orders (submitted at maximum price) cannot be fully filled. Curtailment situations in DA could be indicative of adequacy issues in real time;
  - It was illustrated that “flow factor competition” may lead to situations where one market that clears below the maximum price, may force a curtailment situation in another market.
- NRAs deemed this property undesirable, and challenged the project to suggest a mitigation that would prevent such situations
- The following slides suggest the solution the project will implement to mitigate these effects

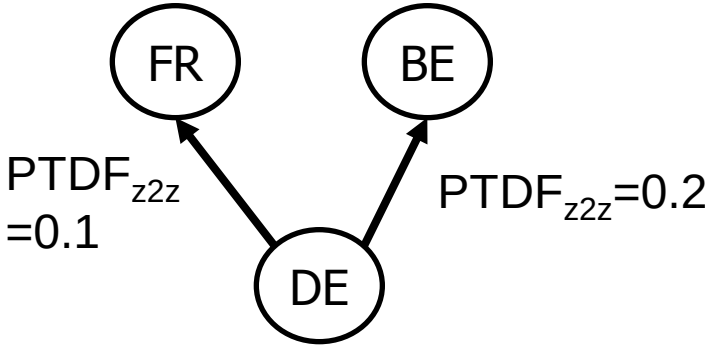
Patch in matching algorithm Euphemia – illustration of idea

- To prevent flow factor competition for price taking orders directly in Euphemia;
- Inside Euphemia the price of price taking orders will be artificially lifted. If these orders become marginal, the final clearing price will be set to 3000€/MWh rather than the lifted price.
- Since the lift of price is artificial, we get away with silly values (e.g. 1M€/MWh). This would effectively absolve price taking orders from flow factor competition
- The interaction with some other requirements can be challenging:
  - ***Losses***: a market clearing just shy of 3000€ (e.g. 2999€) will be forced to export to a market in curtailment at "1M€", which will eventually be truncated to 3000€. The final remaining price difference is insufficient to cover the losses;
  - ***Ramping***: similar as for the losses: one hour appears to generate a huge congestion rent, sufficiently large to offset some negative congestion rent from an adjacent hour (as a consequence of the ramping limit). After truncation of the price the huge congestion rent is reduced to a level it can no longer compensate the negative CR;
  - ***FB "plain"*****:** examples exist for which a non-intuitive exchange is scheduled to allow a more beneficial trade take place elsewhere, involving a market importing at "1M€". After truncation negative CR results.

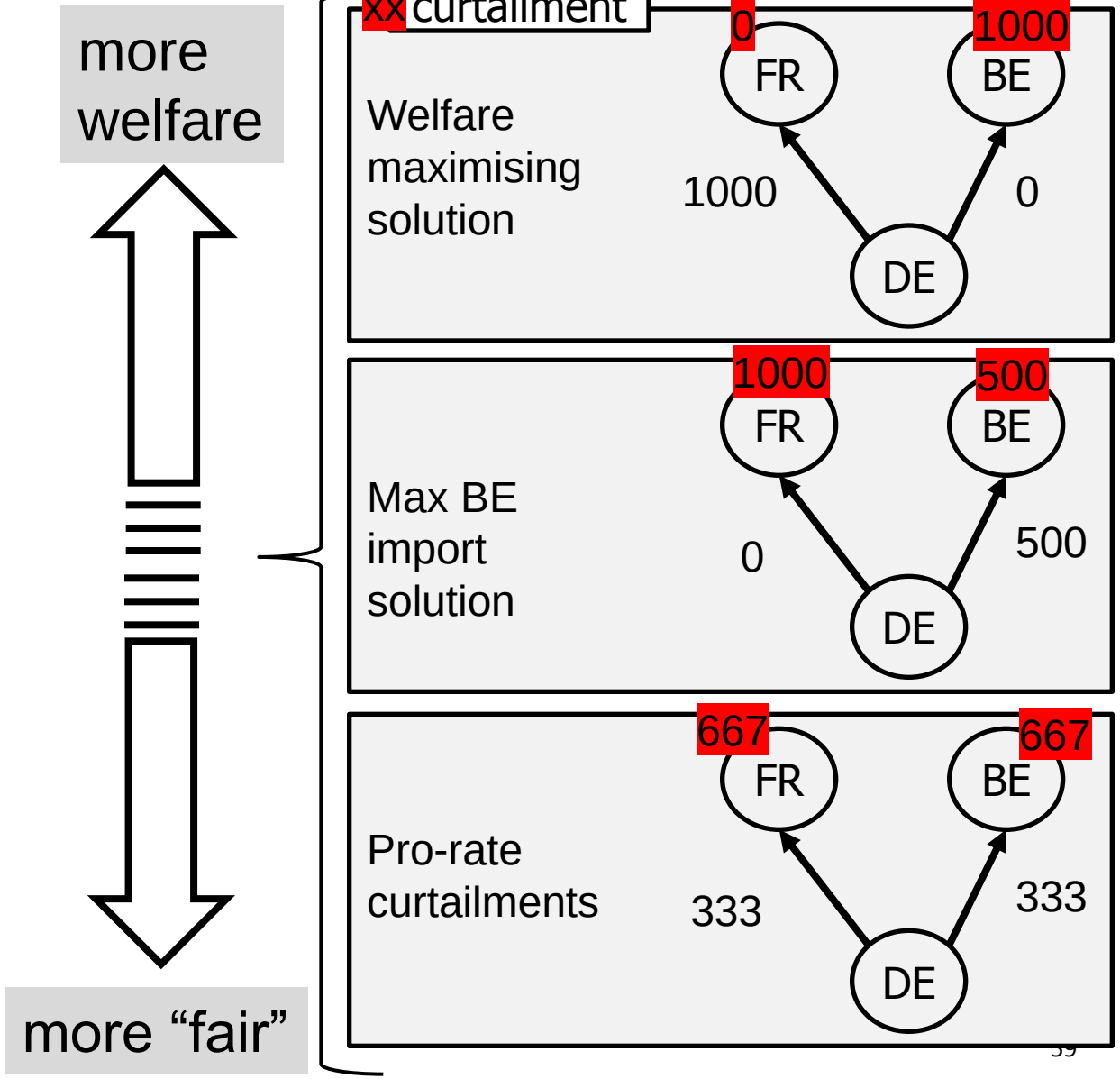
3 – Post Go-Live discussions

Adequacy study follow-up

Example involving two markets simultaneously in curtailment. Both have 1000MWh PTO



- Curtailment in BE and FR;
- DE exporting hub;
- RAM = 100MW;
- What is “optimal” solution?



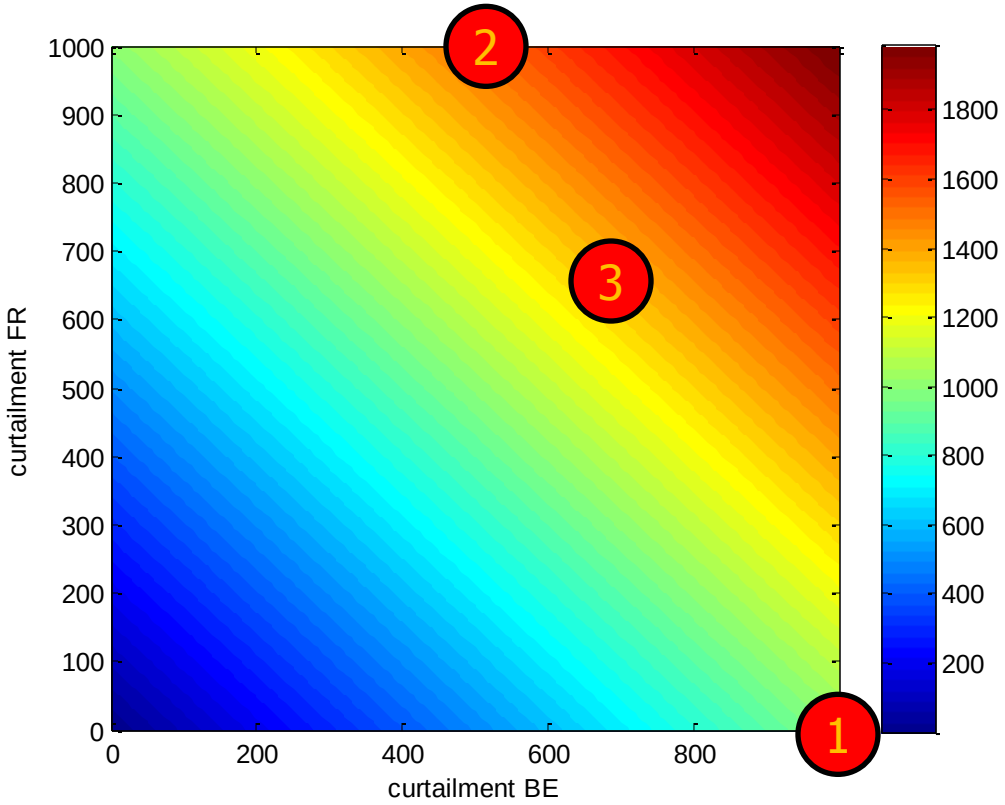
Sharing curtailments

- So far we discussed lifting the prices of price taking orders
- In case of simultaneous curtailment of orders in two or more markets, this solution will not result in sharing of these curtailments.
- Consider that lifting the prices of the PTOs is mathematically equivalent to penalizing the non-acceptance of price taking orders in the objective function of the algorithm
- This latter formulation allows different penalty strategies, e.g. rather than having a linear penalty a quadratic penalty can be considered, which balances out too extreme curtailments in any one market.
- The next slides illustrate the differences

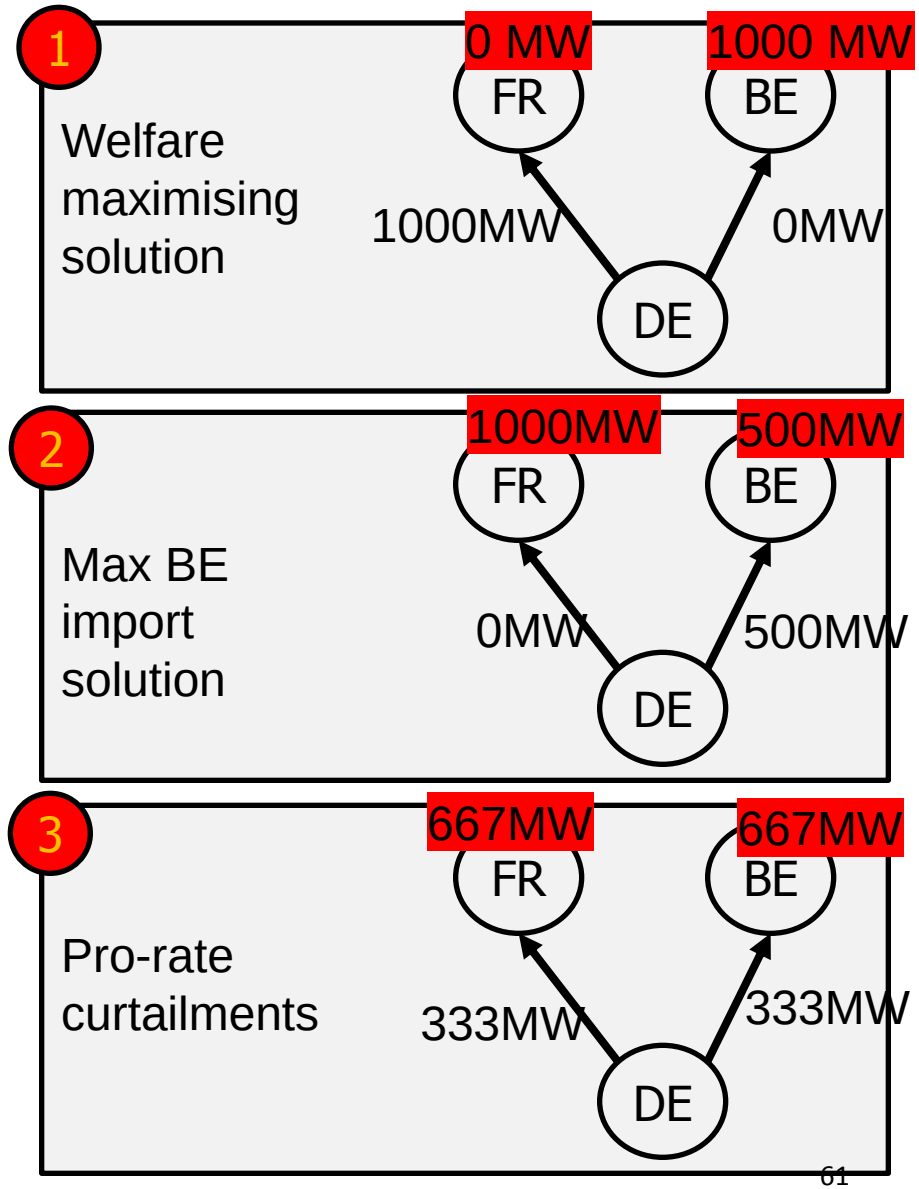
3 – Post Go-Live discussions

Adequacy study follow-up

Linear penalty function



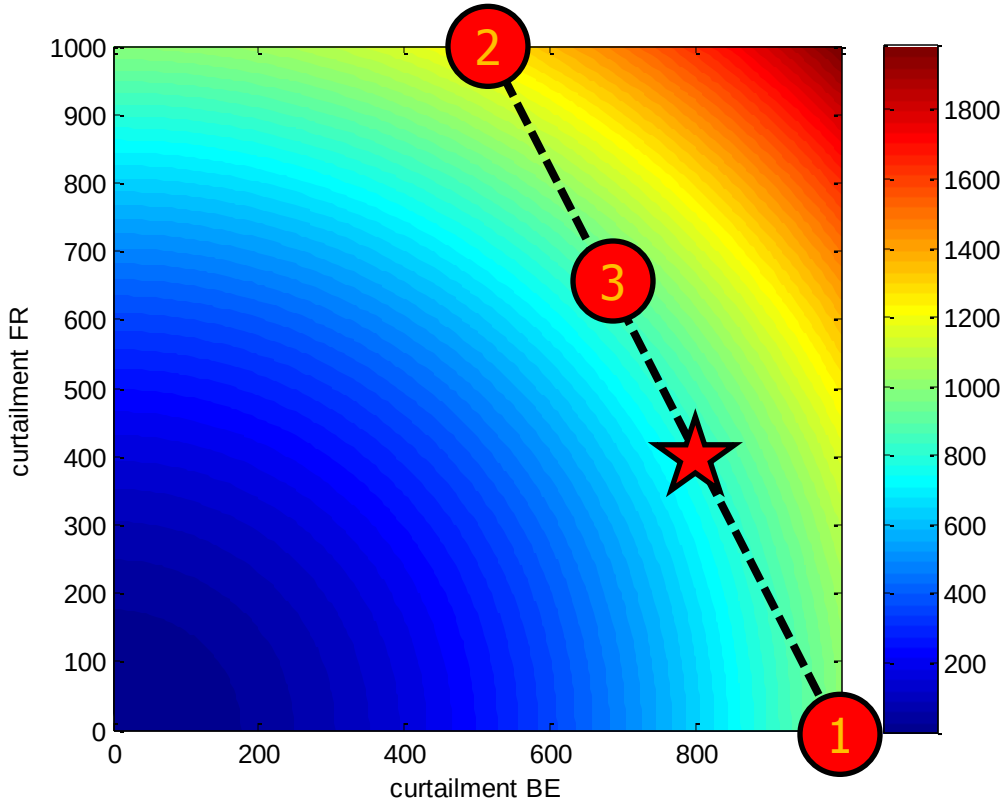
1 < 3 < 2

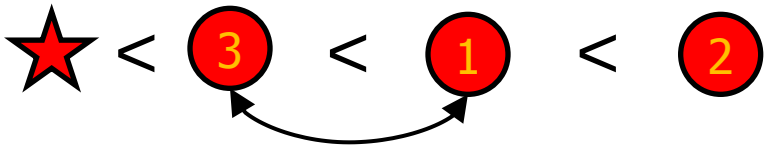


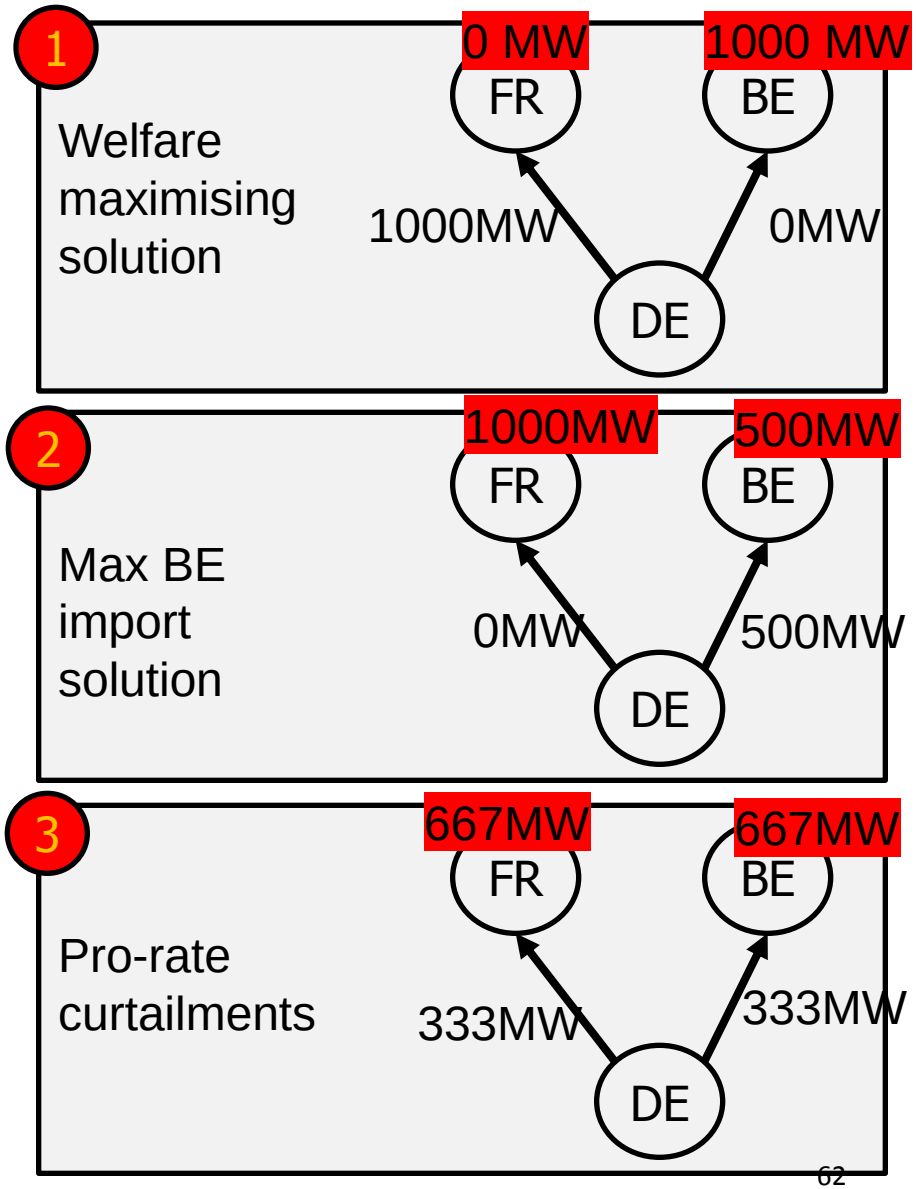
3 – Post Go-Live discussions

Adequacy study follow-up

Quadratic penalty function



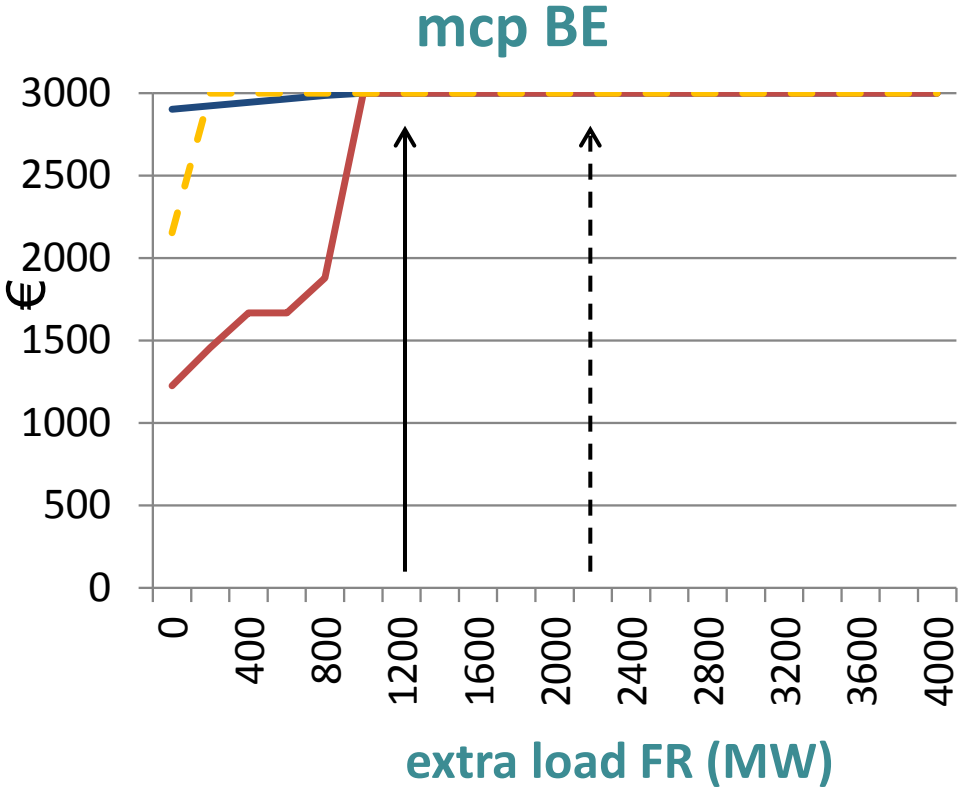


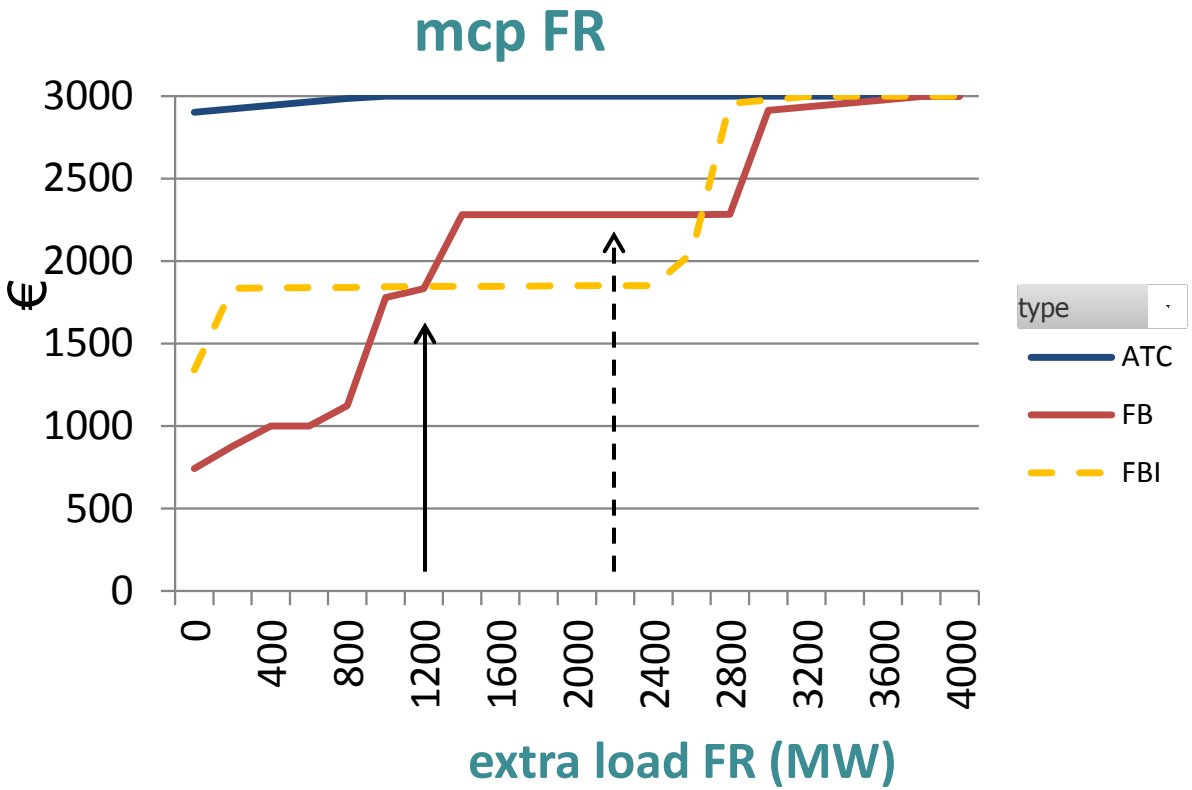


3 – Post Go-Live discussions

Adequacy study follow-up

- Sensitivities: impact additional load into FR while fixing additional BE load at 2600MWh



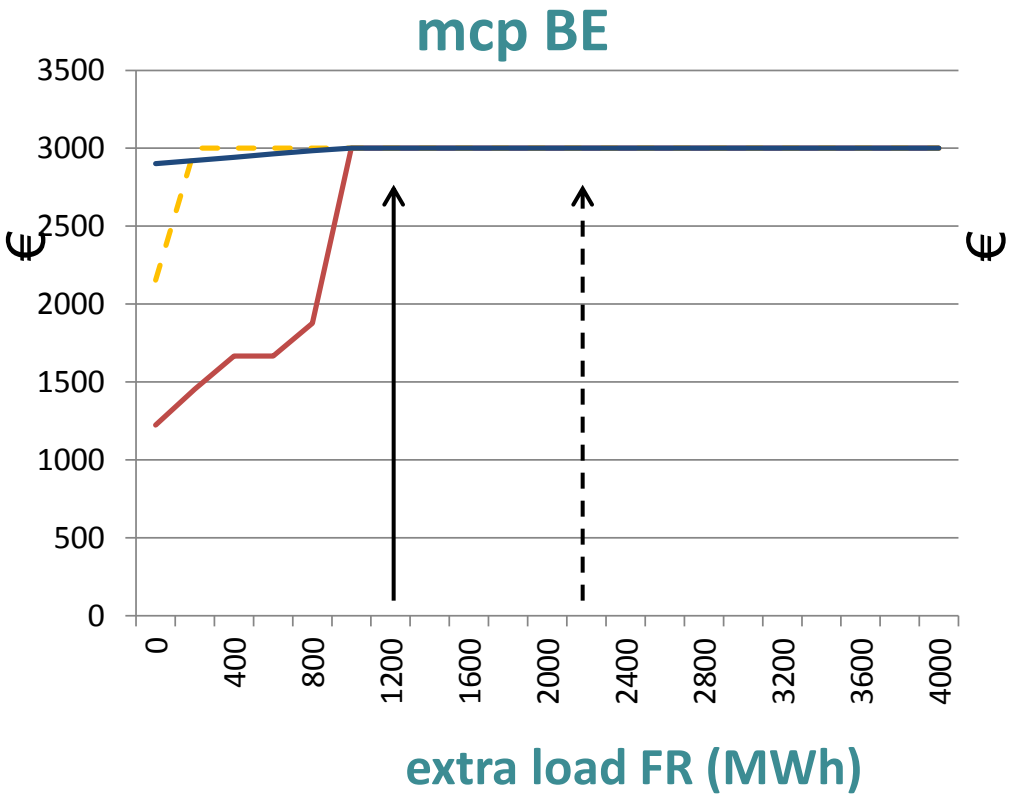


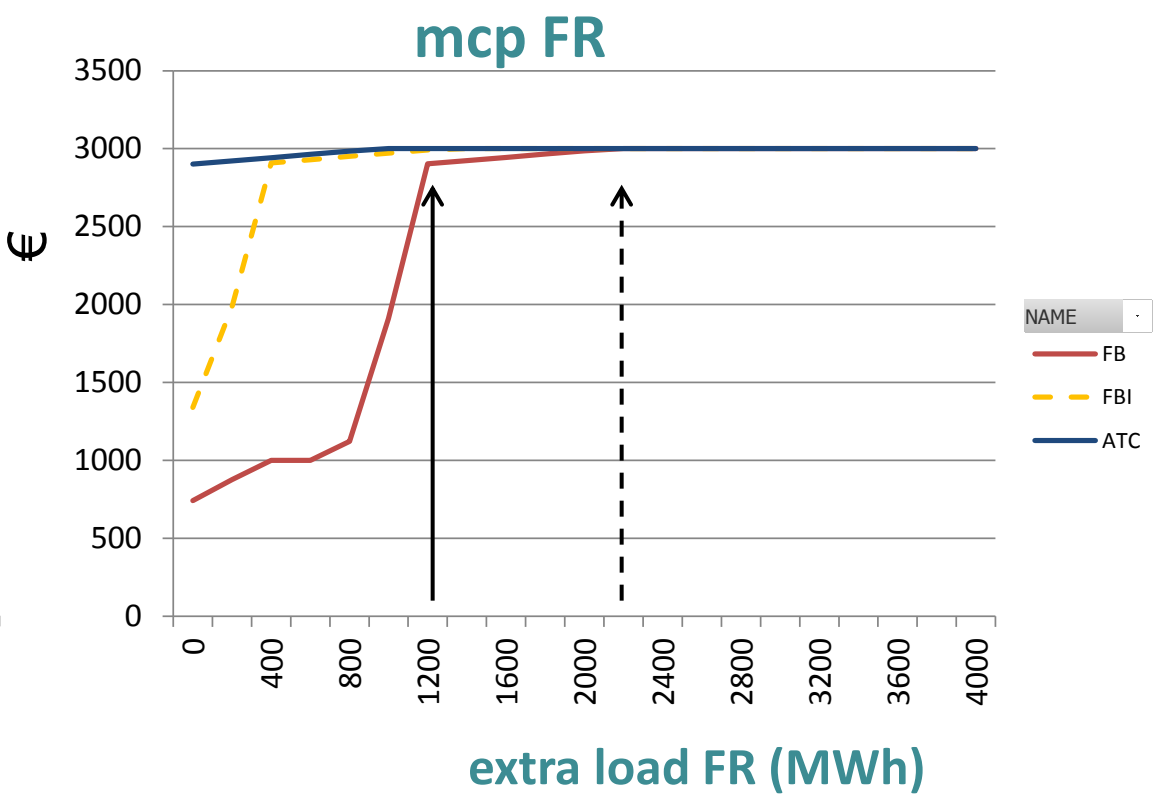
- Additional FR load increases both BE and FR prices, but BE reaches 3000 before FR does
- Note: arrows indicate situations where BE clears at 3000€/MWh, while FR does not. Is this flow factor competition?

3 – Post Go-Live discussions

Adequacy study follow-up

- Results after applying patch



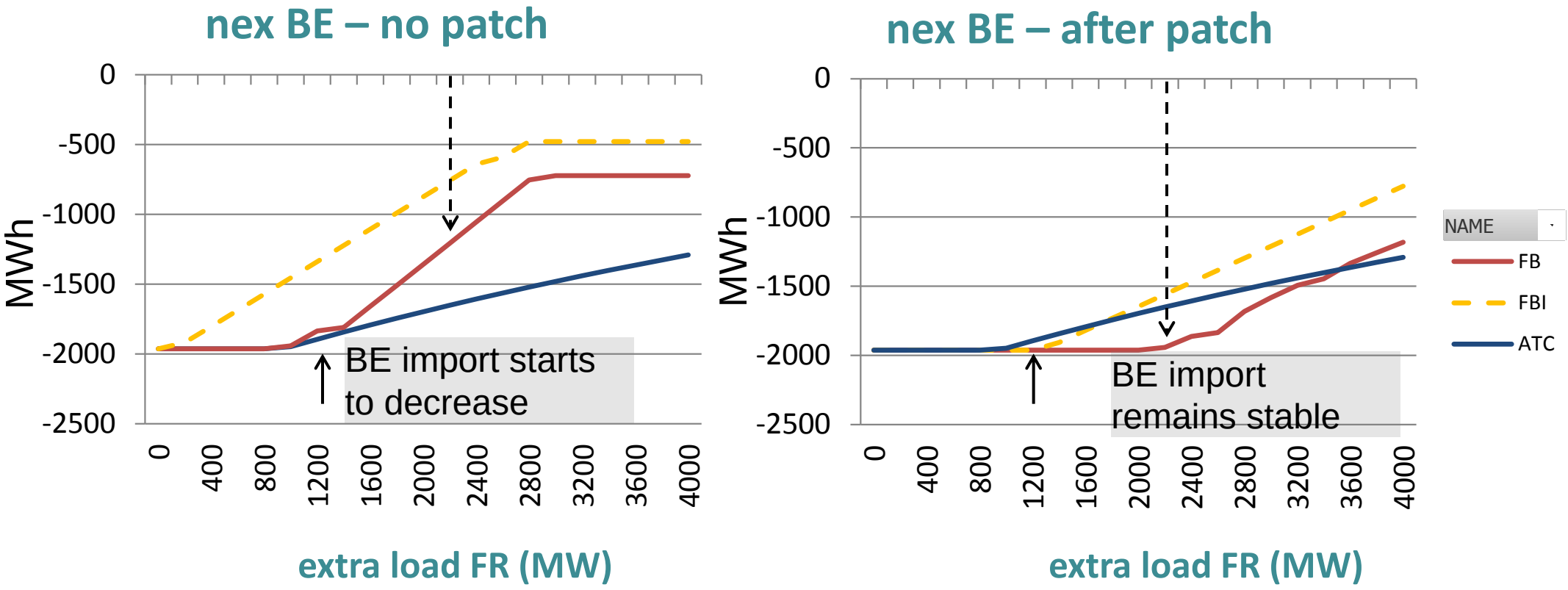


- BE maintains high price, FR price now increases too

3 – Post Go-Live discussions

Adequacy study follow-up

- Impact on net positions

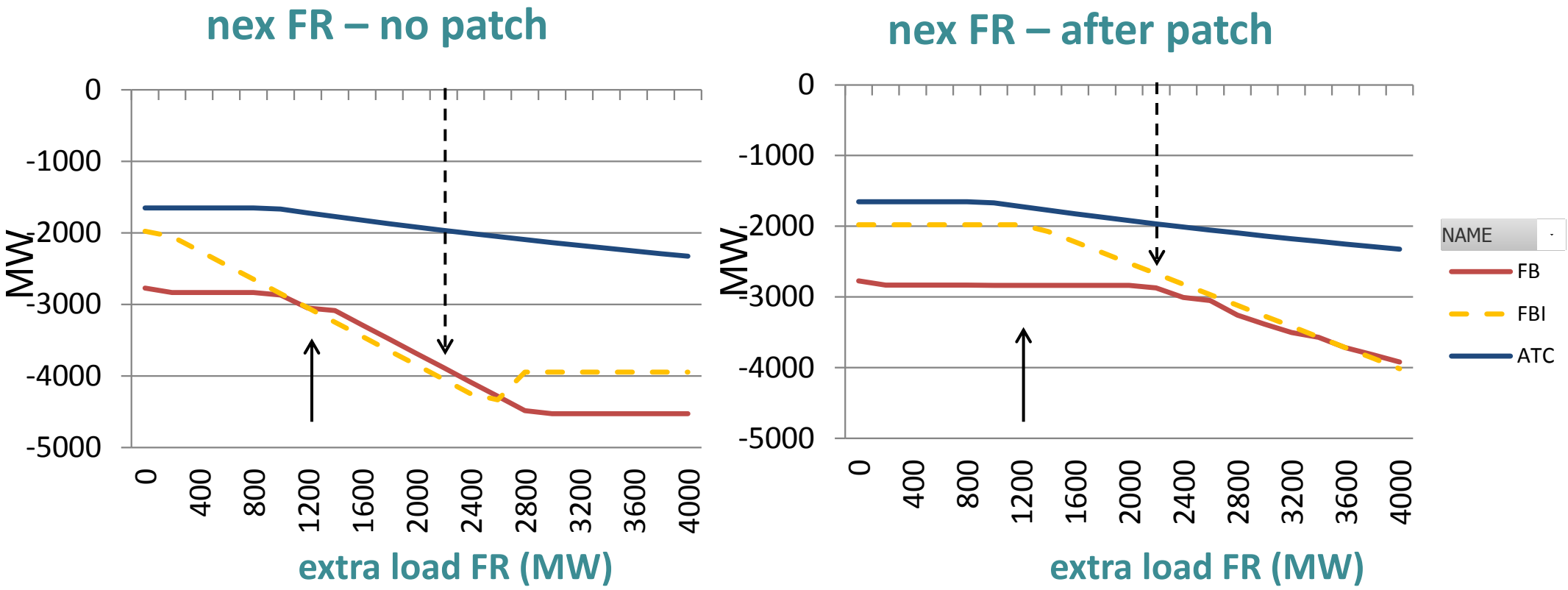


- Before patch: BE import reduced between the two arrows ⇒ i.e. flow factor competition
- After patch: BE import secured. Patch mitigates flow factor competition between PTO and non-PTO

3 – Post Go-Live discussions

Adequacy study follow-up

- Impact on net positions

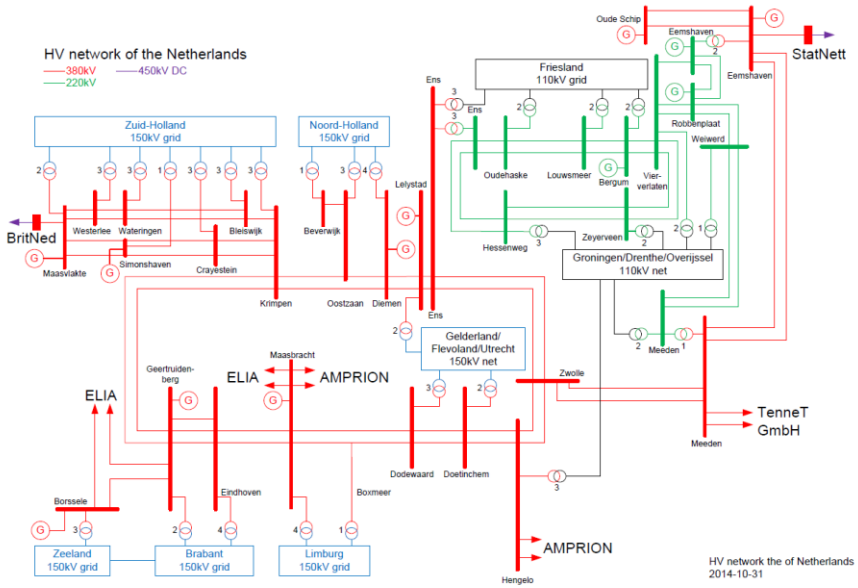


- FR net positions show inverse of BE net positions:
  - Before patch: FR import increases with additional FR load;
  - After patch: FR import is stable, until additional FR load creates order curtailments (mcp = 3000€/MWh)

3 – Post Go-Live discussions

Additional data publication

- Publication of the static grid model
  - Model can be found on: http://www.tennet.org/english/operational_management/transmission_services/Calculated_crossborder_cap/explanatory_documents.aspx
  - Will be a condition in the CWE-NRAs approval to be met after go live
  - Final discussions with German TSOs for publication are still ongoing

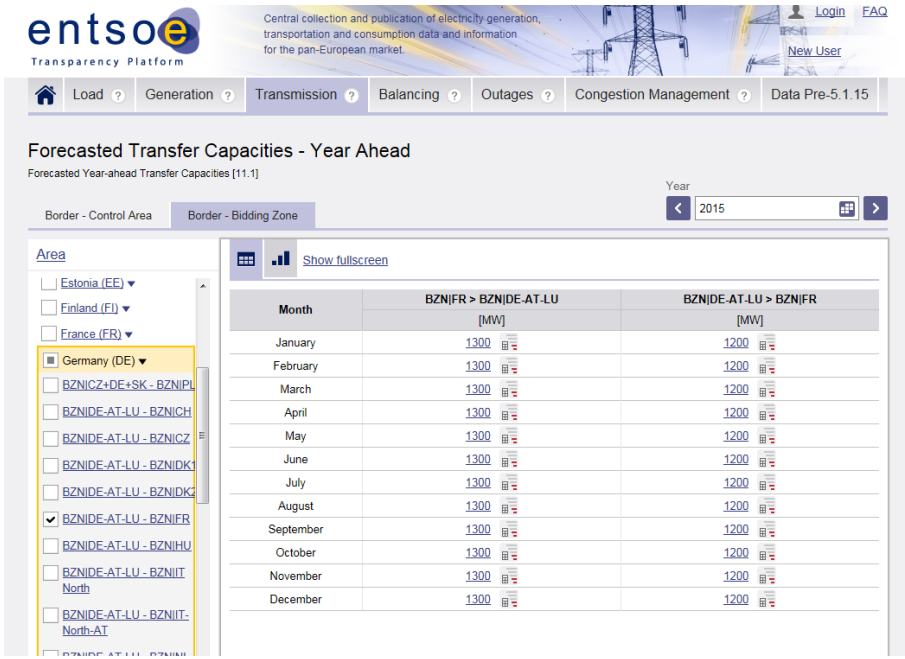


380kV-verbindingen	Lengte [km]	Weerstand [Ω]	Reactantie [Ω]	Capaciteit [µF]	Aantal circuits	Transport-capaciteit per circuit [MVA]
Boxmeer-Dodewaard	41,7	0,97	11,42	0,55	1	1645
Crayestein-Simonshaven	40,4	0,62	9,80	0,62	2	2635
Diemen-Lelystad	50,4	1,18	13,71	0,67	2	1645
Doetinchem-Dodewaard	44,5	1,16	12,37	0,61	2	1645
Doetinchem-Hengelo	58,5	1,44	15,49	0,76	2	1645
Eemshaven - Eemshaven convertorstation	1,0	0,03	0,03	0,00	1	940
Geertruidenberg-Borssele	99,6	2,44	27,43	1,31	1	1645
Geertruidenberg-Eindhoven	64,2	1,51	19,13	0,78	3	1645
Geertruidenberg-Krimpen	34,0	0,80	9,31	0,45	2	1645
Krimpen-Bleiswijk	18,6	0,28	4,52	0,28	1	2635
Krimpen-Crayestein	14,8	0,23	3,60	0,23	2	2635
Krimpen-Diemen	57,3	1,35	15,75	0,75	1	1645
Krimpen-Oostzaan	72,5	1,70	19,85	0,95	1	1645
Lelystad-Ens	21,0	0,49	5,72	0,28	2	1645
Maasbracht-Boxmeer	57,9	1,35	15,86	0,76	1	1645
Maasbracht-Dodewaard	99,6	2,32	27,28	1,30	1	1645
Maasbracht-Eindhoven	48,7	1,13	13,35	0,64	2	1645
Maasvlakte-Westerlee	20,4	0,27	3,56	1,07	2	2635
Meeden-Eemshaven	36,8	0,51	8,73	0,57	2	2635
Oostzaan-Beverwijk	15,8	0,40	4,65	0,22	1	1900
Oostzaan-Diemen	15,2	0,36	4,16	0,20	1	1900
Simonshaven-Maasvlakte	26,0	0,40	6,30	0,40	2	2635
Zwolle-Ens	31,4	0,81	8,75	0,43	2	1645
Zwolle-Hengelo	60,3	1,53	16,53	0,81	2	1645
Zwolle-Meeden	107,9	1,50	25,63	1,66	2	2635

3 – Post Go-Live discussions

Additional data publication

- After having operational experience with CWE FB MC operation, the ENTSO-E transparency platform https://transparency.entsoe.eu/ will be completed with specific FB information
  - "The relevant flow based parameters in case of flow based capacity allocation"
  - Future changes of the network and especially the impact on capacity in the framework of FB-parameters



3 – Post Go-Live discussions

Additional data publication

- Following MPs request the project prepared and published two sets of FB parameters representing:

  - **Case A: Typical winter day – high load & wind**

  - **Case B: Stressed winter day – high load & no wind**

- Based on the feedback of the FBUG/CWE Consultative Group these scenarios will be used to:
  - Develop and publish further typical / stressed days
  - Develop and publish long term scenarios (esp. impact of grid enforcements and changes in generation)

3 – Post Go-Live discussions

Additional data publication

- The complete approval document (except the confidential annexes) is already published on CASC-website

- After the Go-live this publication will be updated in case of any changes
  - At any business day, the approved framework under which CWE FB MC is operated will be transparent

File Name	Download
CWE FB MC Approval document	Click Here
16_1 Documentation of all methodological changes during the external parallel run	Click Here
Annex 16_2 Example How does FB capacity calculation work	Click Here
Annex 16_3 High level business process FB capacity calculation	Click Here
Annex 16.4: (will be provided next week)	
Annex 16.5: Confidential	
Annex 16_6 Information regarding LTA inclusion	Click Here
Annex 16.7: Confidential	
Annex 16.8: Confidential	
Annex 16.9: Confidential	
Annex 16_10 Economic Assessment based on 2013 run	Click Here
Annex 16_11 Domain Reduction Study	Click Here
Annex 16_12 Intuitiveness Report	Click Here
Annex 16_13 Intuitiveness Analysis for the FB-FB(I) selection	Click Here
Annex 16_14 Results of the survey-consultation in MayJune 2013	Click Here
Annex 16_15 Presentation of the Utility Tool	Click Here
Annex 16_16 Publication of shadow ATCs	Click Here
Annex 16_17 Monitoring templates	Click Here
Annex 16_18 Flow Based “intuitive” explained	Click Here
Annex 16_19 Preliminary LTA inclusion statistics	Click Here
Congestion income allocation under Flow-Based Market Coupling	Click Here
Letter in addition to Approval Document	Click Here
Adequacy study report	Click here
Annex C1 Transparency	Click here
Annex C2 Transparency	Click here
Annex 16_20 Adequacy (to be updated on 13th March)	Click here

3 – Post Go-Live discussions

Further improvements to be developed after Go-live for a second version of Flow Based

- Review of the external constraints based on operational experience
- Integration of the new BE-LUX interconnector/PST
- Ongoing improvement of the quality of D2CFs and to the application of better optimization of the usage of Remedial Actions (includes discussion on remedial action usage policies for capacity calculation)
- Coordinated determination of LTA, linked to Forwards Network Code implementation
- Based on the basis scenario, further developments of future scenarios in the framework of the Consultative Group
- Introduction of flow-based method for ID capacity calculation
- Improvements of the GSK (prerequisite: more binding information on D-2 from generator‘s side)
- Extension to further regions/ countries
- Coordination with the CEE-FB initiative

3 – Post Go-Live discussions

Stakeholders involvement

- The CWE Consultative Group will be a subgroup of the overall Stakeholder Committee defined in the CACM network code.

- **Objectives:**
  - Provide information to stakeholders about FB performance and market outcomes
  - Provide information to stakeholders on upcoming changes in the CWE region (when applicable)
  - Consult Stakeholders about the allocation method's efficiency and potential impact of changes
  - Coordinate evolutions with the Market for an improved efficiency of the allocation method
- **Participants :**
  - CWE TSOs, PXs, FB User Group members but also a larger scope including institutional stakeholders (NRAs and associations) at a first stage. If FB MC is extended outside of the CWE region, further participants representing those areas might join the Committee.
- **Start**:
  - the Consultative Group should be planned a few months after Go live.
- **Next steps:**
  - The Project will contact FBUG members and associations in order to nominate a delegate or representative which will be joining this committee.

Market Forum – AGENDA

March 6th, 2015

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4. **NRAs approval status**

5. **Implementation of Financial Transmission Rights in CWE region**

6. **Q & A**

ACER
Agency for the Cooperation of Energy Regulators

Autoriteit Consument & Markt
Bundesnetzagentur
COMMISSION DE RÉGULATION DE L'ÉNERGIE
CREG
E-CONTROL
ILR

Update from the CWE regulators

Flow-Based Market Forum
6th March 2015

Agenda

- Focus on progress made in the last months
- Next steps towards the Go-live from a regulatory perspective
- Next steps in improving the methodology after Go-live
- Conclusion

Progress made since the last Market Forum – Events

- 2/6/2014 – 30/6/2014: Public consultation by CWE NRAs
- 23/6/2014: CWE FBMC Market Forum, Dusseldorf
- 18/7/2014: CWE NRAs send additional requests to the CWE FBMC Project
- August 2014: Publication of synthesis of answers to the public consultation
- 1/8/2014: Sending by CWE FBMC Project of a new approval document, with additional annexes:
  - FB intuitive explained and proposed as the version of FBMC for Go-live
  - Preliminary LTA inclusion statistics

Progress made since the last Market Forum – Events

- 1/8/2014: Report "Special investigations on Market Surplus losses"
- 15/9/2014: Formalized answer on CWE NRAs request by the CWE FBMC Project
  - Follow-up on remaining open issues in technical meetings
- October 2014: Adequacy Study CWE
- End February – Beginning March 2015: last annexes to approval package delivered by CWE FBMC Project

Progress made since the last Market Forum – NRA requirements

- Based on the responses from the Public consultation in June 2014, CWE NRAs sent a list of requirements for the CWE FBMC Project
  - » List of requirements available: http://www.creg.info/pdf/Opinions/2014/FBMC/CWE_FBMC_NRA_requests.pdf

- These requirements are overviewed in the following slides

Progress made since the last Market Forum – NRA requirements

- Together with the requirements, CWE NRAs asked the Project Partners to start with **Flow-based intuitive** (FBI) and to state it in the Approval package

- Additional clarifications on FBI were asked:
  - Transparency on FBI patch
  - Impact of FBI on the algorithm convergence / performance
  - Impact of FBI on the amount of Paradoxically Rejected Bids

- The choice between FBI and Flow Based Plain is to be reassessed after a period of time
  - Project partners are asked to keep calculating the market results under FB Plain

Progress made since the last Market Forum – NRA requirements

- Look into moving the yearly 2015 auctions
- Confirm that Euphemia is ready for CWE FBMC
- Create test scenarios on the fallback operation and communicate the results of these tests.
- Notify market clearly of every change in the FBMC methodology
- Publish base case information of the FBMC

Progress made since the last Market Forum – NRA requirements

- Provide scenarios / reference days for market players' operational needs: typical days and impact of long term evolutions in the system
  - low temperature days
  - missing days
- Publish ex post redundant CBs
- Be fully transparent on maintenance of CBs
- Make overview of where to find the most relevant FBMC-related documents and data
- Answer all questions on CASC forum in an appropriate time
- Publish all data that will be published after go-live in the same format as before go-live

Progress made since the last Market Forum – NRA requirements

- Continue comparison of a proxy ATC and FBMC after go-live
- To have parallel run results with unchanged method for a long enough period of time
- To create, after go-live, a **stakeholders committee** (with NRAs to join) that will be consulted before implementing new changes.
- Promises at FBUG level are to be kept
- Give a measurement of the impact of FBMC on the combined timeframes of day ahead and intraday (welfare impact and Net export / import possibilities)
- Report on all negative welfare days reports on some specific positive days

Progress made since the last Market Forum – NRA requirements

- Further explanation on the impact of the **LTA inclusion** on CBs and welfare.
  - » "virtual CBs" that do not enter the 5% rule
  - » situations where these virtual CBs are the limiting constraints.

- Study the link between Flow Based and short term generation/demand **adequacy**

Progress made since the last Market Forum – updated NRA requirements

- Requirements update end of January 2015 (1/2):
  - Static grid model
  - D2CF aggregated info
  - Setting up of good data exchange procedure with the market
  - Flow competition during stressed situations / adequacy problem
  - ATCs in intraday
    - bilateral redetermination
  - Calculation of NTC in parallel of FB domain after go-live
    - new proposal

Progress made since the last Market Forum – updated NRA requirements

- Requirements update end of January 2015 (2/2):
  - Comments on the new proposal for the monitoring report towards NRAs
  - CBCO selection in relation to the 5% criteria
    - monitoring
  - external constraints review
    - should be exceptional
    - studies by each TSO
  - LTA inclusion

Agenda

- Focus on progress made in the last months
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Last update of NRA requirements for approval package

- On 25 February, CWE NRAs notified the Project the approval package still needed to be completed on two last points:
  - Adequacy solution
    - Additional analyses of proposed solution
    - Focus on the interaction between the adequacy solution and the local matching constraints
    - Solution is discussed with PCR
  - A proposal around the LTA+ debate (price formation / market failure risk)

NRAs checkpoint for go-live

- Most requirements have been addressed by the FBMC Project in the previous months
- Some requirements to be addressed in future FBMC developments
  - Cf. last section
- Proposed CWE NRA approach on the flow competition
  - CWE NRA MoU to monitor flow based closely to guarantee efficient market results

NRAs checkpoint for go-live

- Last requirements before go-live
  - Annexes or adaptations by 13/3/2015
    - Adequacy
    - LTA+
  - Setting up of good data exchange procedure with the market
  - ATCs in intraday
  - Positive market tests

Agenda

- Focus on progress made in the last months
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Improvements to be studied and put in place after Go-Live 1/4

- Adequacy solution
  - Implementation of the solution by November 2015
- Implementation of FTRs for BE-FR & BE-NL borders by 2016
- Intraday capacity calculation by November 2015
  - Studies and roadmaps have been required by NRAs. Within the project first thoughts is a two step approach (ATC in a first step, FB being the target)

Improvements to be studied and put in place after Go-Live 2/4

- Completion of all agreed transparency framework
  - a.o. publication of the static grid mode

- External constraints
  - Each NRA will require its national TSO(s) to provide a study justifying and assessing the way external constraints are taken into account in FB (compared to ATC).
  - This could lead to a change in their modelling

Improvements to be studied and put in place after Go-Live 3/4

- Closer cooperation with other regions
  - Advanced hybrid coupling, extension
  - Coordination with the CEE-FB operation

- Further Regulation / Entry into force of CACM
  - legal obligation for the TSOs to deliver a common capacity calculation methodology for each region to their NRAs by the 1st of January 2017 (estimation)

- GSK evolution towards hourly adaptation

Improvements to be studied and put in place after Go-Live 4/4

- CBCO selection
  - 5% rules efficiency will have to be further studied and proven by CWE TSOs
- Common grid model in the frame of the ENTSO-E workstream
- D2CF composition
  - APG network situation have to be properly taken into account in the D2CF for further integration – already ongoing in parallel to go-live preparations
  - Further improvements, amongst which application of better optimization of the usage of Remedial Actions

Agenda

- Focus on progress made in the last months
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Conclusion: General NRAs Statement

- Project Partners have met most NRA and market requirements or are going to meet them soon before Go Live
- We are positive about flow based and expect to approve the 23rd of April
- NRAs are setting up a MoU to monitor flow based closely to guarantee efficient market results
- NRAs will commit themselves via a common paper to require consistently future flow based improvements

Thank you for your attention!

Autoriteit Consument & Markt

Bundesnetzagentur

COMMISSION DE RÉGULATION DE L'ÉNERGIE

CREG

E-CONTROL

ILR

Market Forum – AGENDA

March 6th, 2015

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6. **Q & A**

5 - Implementation of Financial Transmission Rights Options in CWE region

Rationale for temporary "LTA+" replaced by implementation of FTRs Options (2/4)

Quality of price formation in smaller markets depends heavily on DA MC

- Efficient price formation on the day-ahead market is essential to guarantee a level playing field between market participants, reduce the risk of market abuse, ensure reliable and transparent prices for contract indexation/settlement, etc.
- The quality of price formation on smaller markets depends heavily on the liquidity provided by coupling with neighbouring markets – in particular, the blocks and smart orders requested by market participants require a high level of hourly liquidity.
- Therefore, it is essential that day-ahead capacity is made available to the day-ahead market coupling ("DA MC"). This is taken into account by reserving some transmission capacity for the DA MC in long term capacity allocation. In addition, the relatively low level of nomination of long term capacity rights ("LT capacity rights") resulted until recently in additional capacities made available to the DA MC due to the use-it-or-sell-it principle ("UIOSI").

FB methodology may lead to less capacity for DA MC (on some borders, in some directions, for some timestamps)

- The flow-based daily parallel run has shown that sometimes not all LT allocated capacity rights of all borders were initially covered by the flow-based domain, let alone the day ahead ATC nominally reserved by some TSOs on some borders
- Tools have been developed to artificially stretch the domain to cover the LTA in these cases, but often still less than current NTC
- May result in less capacity rights made available to the DA MC (on some borders, in some directions, for some timestamps): depends on non-nomination of LT capacity rights.

5 - Implementation of Financial Transmission Rights Options in CWE region

Rationale for temporary "LTA+" replaced by implementation of FTRs Options (3/4)

Risk of more nomination of long term rights

- Market participants' bidding behaviour is uncertain (note consultation responses of EFET and Electrabel); the risk of a rapid increase in the nomination of LT capacity rights is therefore not to be ignored (e.g., exacerbating a shift to OTC leading to more nomination of LT capacity rights)

  - Nevertheless, stress tests that were performed as part of the aforementioned adequacy study indicate that there is a lower risk of observing extreme prices and even demand curtailment under flow-based market coupling compared to ATC-based market coupling.

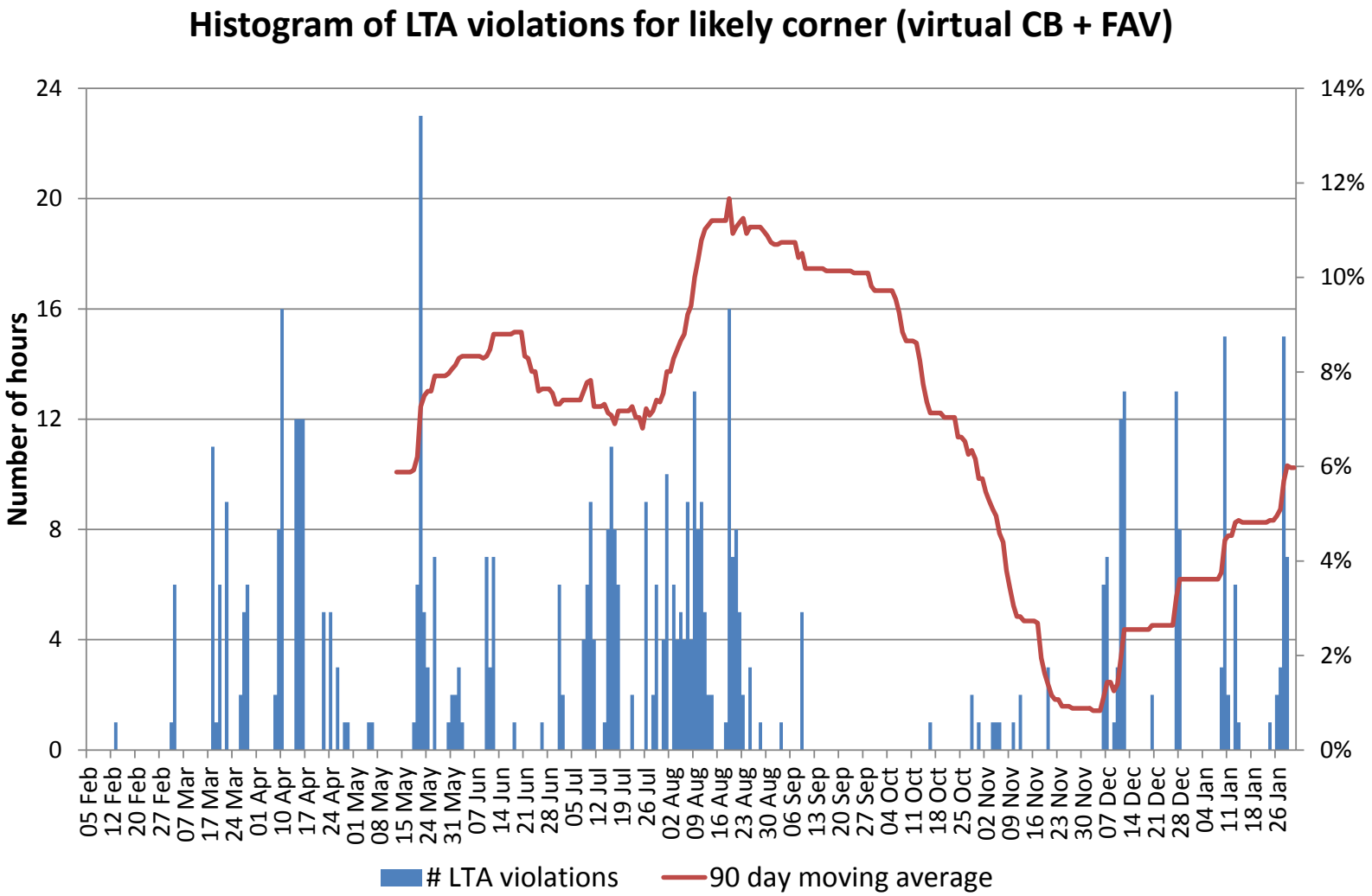
- The risk of scarcity (e.g. on the Belgian market) and hence of curtailment on the DAM could incentivise market participants to nominate their LT capacity rights to make sure they get the energy in Belgium and avoid paying very high imbalance prices. The combination with current imbalance prices above the DAM maximum prices leads to a discrimination between using vs giving back LT capacity rights (at least from a hedging point of view).

  - Although the LT nominated capacity would evade flow factor competition (i.e. a core flow-based principle), it would in this particular case however even correspond to a relieving reduction of price-taking orders in the stressed bidding zone (e.g. on the Belgian market).

5 - Implementation of Financial Transmission Rights Options in CWE region

Rationale for temporary "LTA+" replaced by implementation of FTRs Options (1/4)

- Frequency of likely LTA corner automatically covered (i.e. not covered by initial FB domain)



5 - Implementation of Financial Transmission Rights Options in CWE region

Rationale for temporary "LTA+" replaced by implementation of FTRs Options (4/4)

The need to mitigate risks of market failure

- FTRs Options mitigate the risk of having very limited capacity (potentially no capacity at all) made available to the DA MC, such risk being exacerbated by the adoption of the flow-based methodology. FTRs Options would guarantee that a capacity at least equal to the allocated long term capacity rights will be available for DA MC.

- "LTA+" (possibly in combination with reduced monthly capacities) is a potential temporary mitigation measure providing a guaranteed minimum level of day-ahead capacity on particular borders, until FTRs Options are implemented.

FTRs Options also remove the risk of gaming with FB intuitive

The absence of nomination of long term capacity rights would also remove the risk of gaming related to the activation of the intuitiveness patch which has been shown in previous studies (cf. Report on intuitiveness).

5 - Implementation of Financial Transmission Rights Options in CWE region

LTA+ **on specific borders** in the CWE region

LTA + X Coverage

- Provisional measure for this year pending on implementation of FTRs
- A mechanism to guarantee a minimum capacity on a particular border available to the day ahead market using the LTA inclusion methodology

Threshold

- At least in one hour LT nominations have reached 80% of BE import LTA:
  - LTNFR→BE + LTNNL→BE > 0.8 * (LTAFR→BE + LTANL→BE)

Solution BE-FR

- On the FR->BE border, today after the monthly NTC coordinated process the current split rules already foresee a reservation of 200MW for daily allocation ; these 200MW will be added as '+X'
  - Being a permanent reservation rule (as is today) and + 200MW for 7 days consecutive following the trigger of 80%

Solution BE-NL

- The monthly capacities for NL->BE border will be reduced with 165 MW and these 165 MW will be added as '+X'
  - Consistent with current respective regulatory rules
  - Being a monthly process and triggered by the 80% rule, applicable for the next monthly auction

5 - Implementation of Financial Transmission Rights in CWE region

FTR Options in CWE and LTA+ on specific borders in CWE region (1/2)

- CWE TSOs investigate the possibility to move from the allocation of Physical Transmission Rights with Use-it-or-sell-it Principle (PTR with UIOSI) to the allocation of FTR Options on CWE borders for long term products with a delivery period in 2016

- The EU HAR foresees in both options PTR UIOSI and FTR Options. The characteristics of the FTR Options products that may be allocated in the CWE region are described in the European Harmonized Auction Rules with a region specific annex for Firmness in the CWE region.

- The market is being consulted on the implementation of FTR options in the CWE region via the EU HAR consultation
  - Consultation is from 2 till 30 March 2015
  - Public Workshop on EU harmonized allocation rules - Brussels : 18 March 2015
    - registration is needed - deadline 11 March 2015
    - https://consultations.entsoe.eu/markets/fca-harmonisation-of-allocation-rules/events/untitled-event

5 - Implementation of Financial Transmission Rights in CWE region

FTR Options in CWE and LTA+ on specific borders in CWE region (2/2)

- The outcome of this consultation will be considered in subsequent decision processes together with the CWE NRA's on whether to implement of FTR Options on all or some CWE bidding zone borders or to keep PTR with UIOSI

- The CWE TSO's would welcome your response on the following questions:
  - What is your position regarding an implementation of FTR Options according to EU HAR for implementation on all CWE borders as soon as possible, but not earlier than for the product period of 2016?
  - What is your position regarding an implementation of FTR Options according to EU HAR on a subset of CWE bidding zone borders as soon as possible, but not earlier than for the product period of 2016?
  - What is your position of implementation FTR Options on border?
    - BE-NL
    - NL-DE
    - FR-BE
    - FR-DE

- All parties are invited to submit responses ~~to~~ via the ENTSO-E public consultation regarding the EU Harmonized Allocation Rules (https://www.entsoe.eu/news-events/announcements/announcements-archive/Pages/News/Consultation-on-the-Harmonised-Allocation-Rules.aspx)

Market Forum – AGENDA

March 6th, 2015

1. **Readiness for Go-live**
   - Look back on external parallel run
   - Project readiness – latest achievements and time planning until Go-live
   - Market preparation – additional data publication

2. **Final data publication framework and procedures for FB MC**
   - Data publication framework under FB MC
   - Recapitulation of operational procedures
   - Member test

3. **Post Go-live discussions**
   - Adequacy study follow-up
   - Additional data publication
   - Further improvements to be developed after Go-live for a second version of Flow Based
   - Stakeholders involvement

4. **NRAs approval status**

5. **Implementation of Financial Transmission Rights in CWE region**

6. **Q & A**

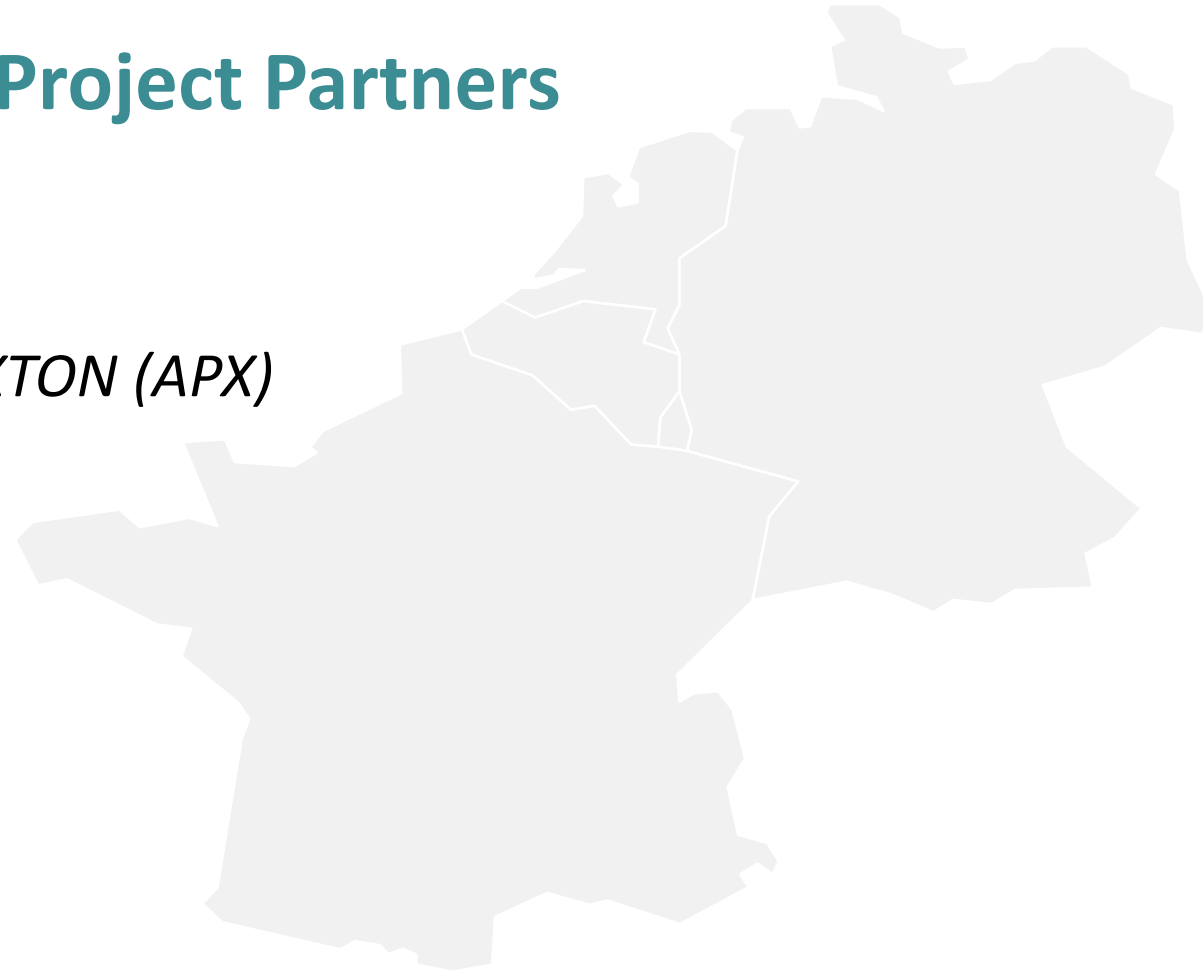
6 - Q & A

Questions from Market Participants

Thank you for your attention

- **Do you have any questions ?**

Conclusion CWE FB Project Partners



by Andrew CLAXTON (APX)