CWE FB MC project

PENTA SG1, October 24th 2014, Brussels

Agenda

0. Belgian situation overview

1. Flow Based Market Coupling project

a. Progress report by TSOs and power exchanges
b. Presentation of the CWE project planning
c. Explanation of the reasons for postponement
d. Follow-up of the consultation process
e. Reactions from Market Parties Platform & discussion
f. Status of regulators' approval process
g. Next steps

2. Annexes

a. Monitoring results ATC coupling
b. Summary of agreed transparency framework for Go Live

Special situation for Belgium: Winter 2014-15

Current concern: security of supply

Ageing generation facilities

Phase-out of nuclear energy and problems with nuclear facilities

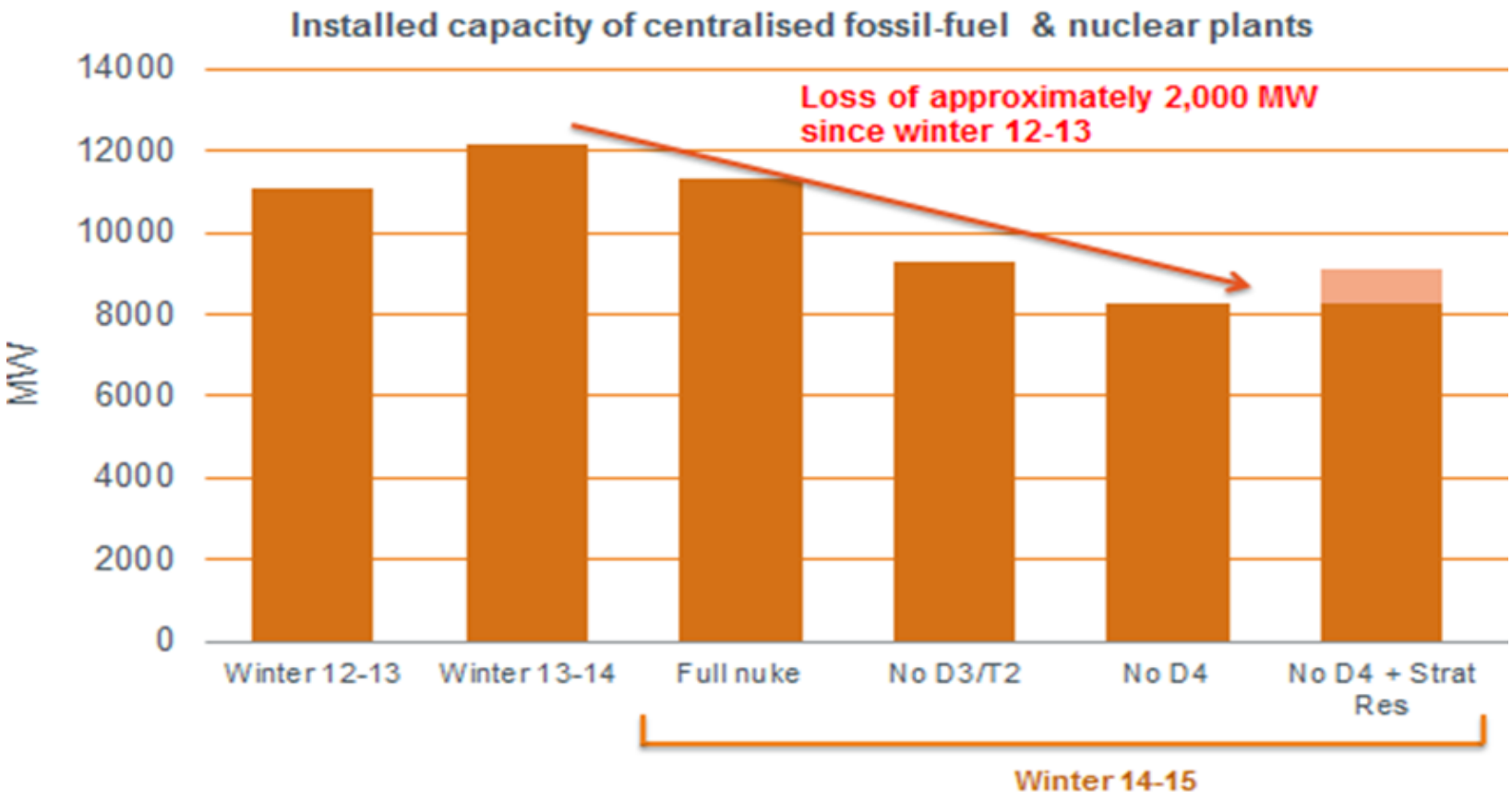
Prosumers &
Decentralised energy

Integration of renewable energies

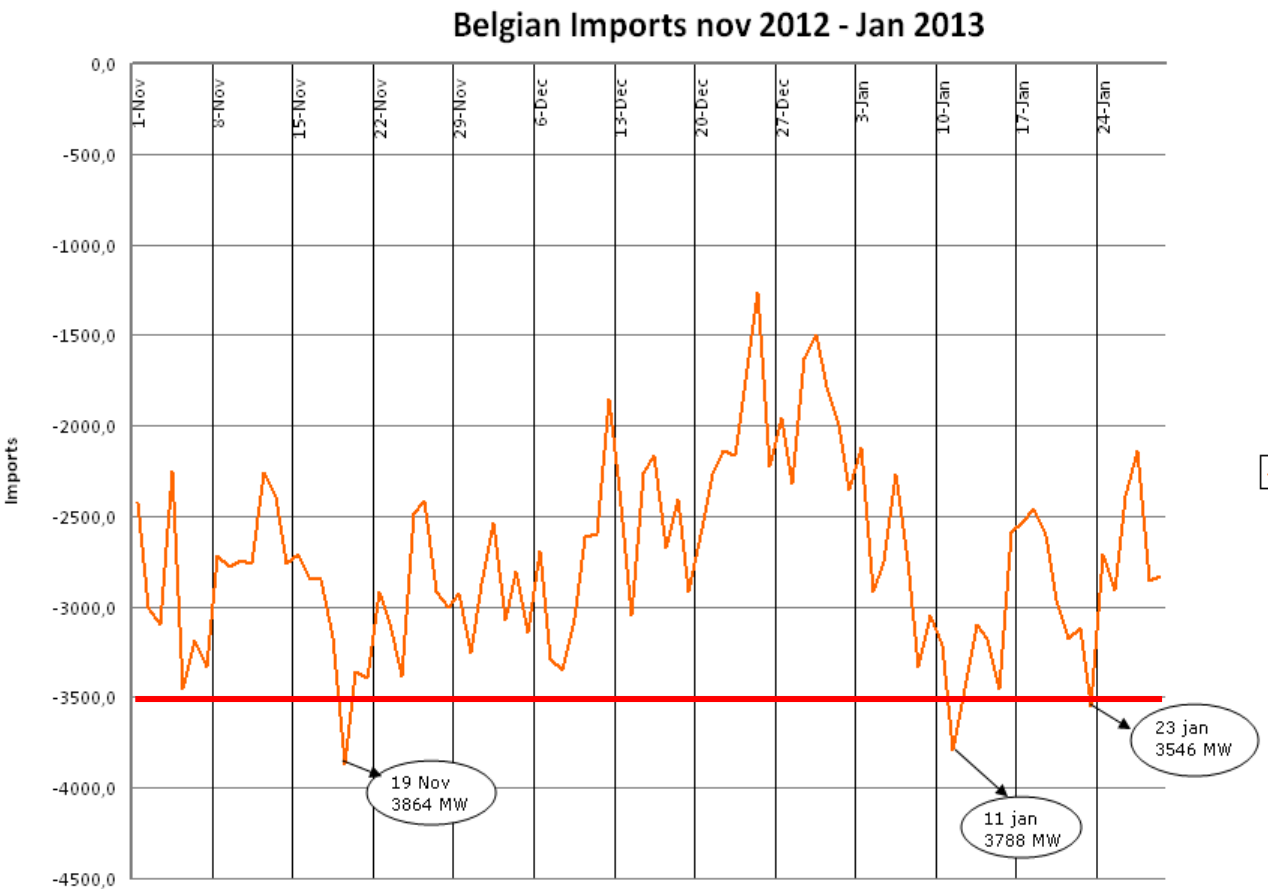
Profitability of gas-fired power stations under pressure

Change in the balance between generation and consumption

As this winter approaches, a third of centralised generation capacity (nuclear and fossil fuel) will be unavailable...



And Belgium relies on import



In <u>normal circumstances</u>
ELIA allows imports up to:

- 3500MW (winter)

and

- 3000MW (summer)

- > 3500 MW: accepted case by case, only after security check by experts
- 29 days > 3000 MW import; partly for economic reasons (e.g. 19/11/2012 max. 3864 MW)

Due to Belgium's significant **reliance on imports from neighboring zones**, it is important to evaluate the 3500 MW assumption on a regular basis with respect to the availability of energy in neighboring markets as well as the availability of the network infrastructure in Belgium and its neighbouring countries.

How do we estimate the risk of scarcity (LOLE)?

Elia uses a probability model in order to estimate the security of supply, and this method is based on the Belgian electricity law

Principe = guarantee the balance between production and load

2 measuring units:

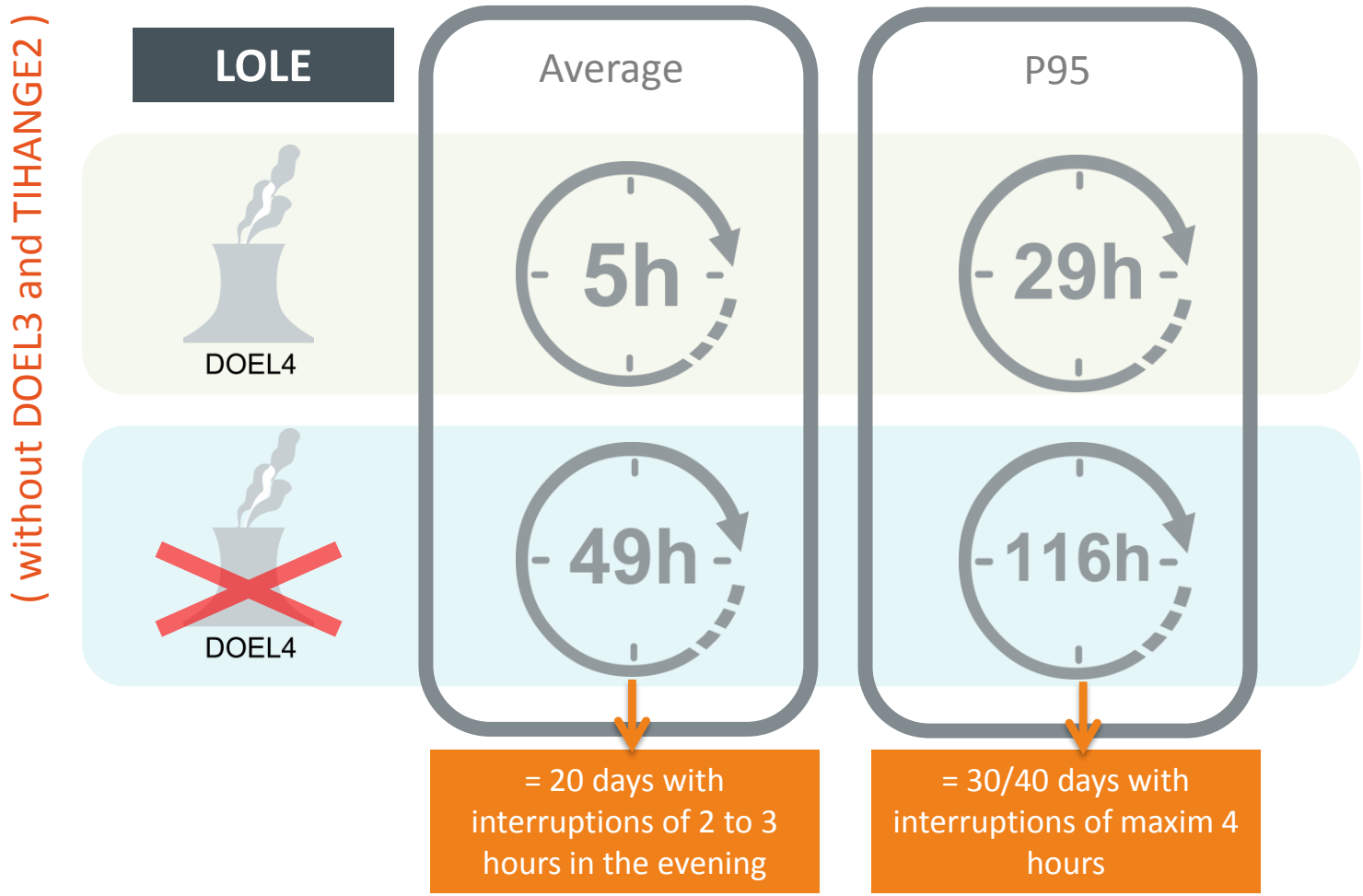
✓**LOLE** *(Loss of load expectation)* = the number of hours during the winter (**average**) during which the load cannot be covered by all means at disposal

✓**95th percentile (P95)** = the number of hours during a very cold winter (once every 20 years) during which the load cannot be covered by all means at disposal

How to interprete the results of LOLE?

**Scenario without winter maintenance,
with 850 MW strategic reserve and with 3500 MW import**

(without DOEL3 and TIHANGE2)



In order to cope with this (r)evolution measures have already been taken

- ✓ **Strategic reserve : 850 MW (745 Production and 100 Demand) as of 01/11/2014**

  Elia's role : yearly determination of required volumes, organization of the tendering, contracting and activation of strategic reserve.

- ✓ Tendering for 800 MW **new gas power plants (still pending)**

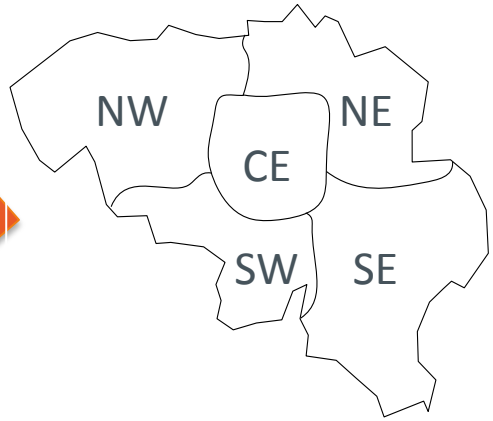
- ✓ Important incentive for the market actors (BRP's) : **€4500/MWh** imbalance risk

- ✓ Life time extension of **Tihange 1**

- ✓ Develop additional **interconnections**

What if this would not be sufficient?

If production + imports - measures to reduce consumption are not enough then the final solution = load shedding (emergency procedure)



Layer	Electrical zones				
	NW	NE	CE	SW	SE
1	~100 MW	~100 MW	~100 MW	~100 MW	~100 MW
2	~100 MW	~100 MW	~100 MW	~100 MW	~100 MW
3	~100 MW	~100 MW	~100 MW	~100 MW	~100 MW
4	~100 MW	~100 MW	~100 MW	~100 MW	~100 MW
5	~100 MW	~100 MW	~100 MW	~100 MW	~100 MW
6	~100 MW	~100 MW	~100 MW	~100 MW	~100 MW
	~600 MW	**~600 MW**	**~600 MW**	**~600 MW**	**~600 MW**
	~3000 MW				

1 - Flow Based Market Coupling Project

a) Progress report: general overview

Here are the main achievements since previous PLEF meeting in February:

- **The NRA Public Consultation** was launched from June, 2nd to June, 30th whose summary has been communicated by NRAs
- **A CWE Market Forum** took place on June, 23rd focusing on explanations for specific parallel run situations
- **The submission of final adjusted Approval Package** to CWE NRAs was made on August, 1st following the consultation outcome,
- **A FBUG meeting** took place on September, 30th (with NRAs) focused on:
  - project parties answers on NRAs list of remaining open points to be tackled before Go Live (parallel run performance study, adequacy study). This NRAs list of remaining open points is the outcome of NRAs public consultation
  - publications for and after go live

1 – Flow Based Market Coupling Project

a) Progress report: General parallel run performance - 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
	5	30 Jan	31 Jan	01 Feb	02 Feb	03 Feb	04 Feb	05 Feb
	6	06 Feb	07 Feb	08 Feb	09 Feb	10 Feb	11 Feb	12 Feb
	7	13 Feb	14 Feb	15 Feb	16 Feb	17 Feb	18 Feb	19 Feb
	8	20 Feb	21 Feb	22 Feb	23 Feb	24 Feb	25 Feb	26 Feb
	9	27 Feb	28 Feb	01 Mar	02 Mar	03 Mar	04 Mar	05 Mar
	10	06 Mar	07 Mar	08 Mar	09 Mar	10 Mar	11 Mar	12 Mar
	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
	23	05 Jun	06 Jun	07 Jun	08 Jun	09 Jun	10 Jun	11 Jun
	24	12 Jun	13 Jun	14 Jun	15 Jun	16 Jun	17 Jun	18 Jun
	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
	29	17 Jul	18 Jul	19 Jul	20 Jul	21 Jul	22 Jul	23 Jul
	30	24 Jul	25 Jul	26 Jul	27 Jul	28 Jul	29 Jul	30 Jul
	31	31 Jul	01 Aug	02 Aug	03 Aug	04 Aug	05 Aug	06 Aug
	32	07 Aug	08 Aug	09 Aug	10 Aug	11 Aug	12 Aug	13 Aug
	33	14 Aug	15 Aug	16 Aug	17 Aug	18 Aug	19 Aug	20 Aug
	34	21 Aug	22 Aug	23 Aug	24 Aug	25 Aug	26 Aug	27 Aug
	35	28 Aug	29 Aug	30 Aug	31 Aug	01 Sep	02 Sep	03 Sep
	36	04 Sep	05 Sep	06 Sep	07 Sep	08 Sep	09 Sep	10 Sep
	37	11 Sep	12 Sep	13 Sep	14 Sep	15 Sep	16 Sep	17 Sep
	38	18 Sep	19 Sep	20 Sep	21 Sep	22 Sep	23 Sep	24 Sep
	39	25 Sep	26 Sep	27 Sep	28 Sep	29 Sep	30 Sep	01 Oct
	40	02 Oct	03 Oct	04 Oct	05 Oct	06 Oct	07 Oct	08 Oct
	41	09 Oct	10 Oct	11 Oct	12 Oct	13 Oct	14 Oct	15 Oct
	42	16 Oct	17 Oct	18 Oct	19 Oct	20 Oct	21 Oct	22 Oct
	43	23 Oct	24 Oct	25 Oct	26 Oct	27 Oct	28 Oct	29 Oct
	44	30 Oct	31 Oct	01 Nov	02 Nov	03 Nov	04 Nov	05 Nov
	45	06 Nov	07 Nov	08 Nov	09 Nov	10 Nov	11 Nov	12 Nov
	46	13 Nov	14 Nov	15 Nov	16 Nov	17 Nov	18 Nov	19 Nov
	47	20 Nov	21 Nov	22 Nov	23 Nov	24 Nov	25 Nov	26 Nov
	48	27 Nov	28 Nov	29 Nov	30 Nov	01 Dec	02 Dec	03 Dec
	49	04 Dec	05 Dec	06 Dec	07 Dec	08 Dec	09 Dec	10 Dec
	50	11 Dec	12 Dec	13 Dec	14 Dec	15 Dec	16 Dec	17 Dec
	51	18 Dec	19 Dec	20 Dec	21 Dec	22 Dec	23 Dec	24 Dec
	52	25 Dec	26 Dec	27 Dec	28 Dec	29 Dec	30 Dec	31 Dec

Year	wk	Wed	Thu	Fri	Sat	Sun	Mon	Tue
2014	1	01 Jan	02 Jan	03 Jan	04 Jan	05 Jan	06 Jan	07 Jan
	2	08 Jan	09 Jan	10 Jan	11 Jan	12 Jan	13 Jan	14 Jan
	3	15 Jan	16 Jan	17 Jan	18 Jan	19 Jan	20 Jan	21 Jan
	4	22 Jan	23 Jan	24 Jan	25 Jan	26 Jan	27 Jan	28 Jan
	5	29 Jan	30 Jan	31 Jan	01 Feb	02 Feb	03 Feb	04 Feb
	6	05 Feb	06 Feb	07 Feb	08 Feb	09 Feb	10 Feb	11 Feb
	7	12 Feb	13 Feb	14 Feb	15 Feb	16 Feb	17 Feb	18 Feb
	8	19 Feb	20 Feb	21 Feb	22 Feb	23 Feb	24 Feb	25 Feb
	9	26 Feb	27 Feb	28 Feb	01 Mar	02 Mar	03 Mar	04 Mar
	10	05 Mar	06 Mar	07 Mar	08 Mar	09 Mar	10 Mar	11 Mar
	11	12 Mar	13 Mar	14 Mar	15 Mar	16 Mar	17 Mar	18 Mar
	12	19 Mar	20 Mar	21 Mar	22 Mar	23 Mar	24 Mar	25 Mar
	13	26 Mar	27 Mar	28 Mar	29 Mar	30 Mar	31 Mar	01 Apr
	14	02 Apr	03 Apr	04 Apr	05 Apr	06 Apr	07 Apr	08 Apr
	15	09 Apr	10 Apr	11 Apr	12 Apr	13 Apr	14 Apr	15 Apr
	16	16 Apr	17 Apr	18 Apr	19 Apr	20 Apr	21 Apr	22 Apr
	17	23 Apr	24 Apr	25 Apr	26 Apr	27 Apr	28 Apr	29 Apr
	18	30 Apr	01 May	02 May	03 May	04 May	05 May	06 May
	19	07 May	08 May	09 May	10 May	11 May	12 May	13 May
	20	14 May	15 May	16 May	17 May	18 May	19 May	20 May
	21	21 May	22 May	23 May	24 May	25 May	26 May	27 May
	22	28 May	29 May	30 May	31 May	01 Jun	02 Jun	03 Jun
	23	04 Jun	05 Jun	06 Jun	07 Jun	08 Jun	09 Jun	10 Jun
	24	11 Jun	12 Jun	13 Jun	14 Jun	15 Jun	16 Jun	17 Jun
	25	18 Jun	19 Jun	20 Jun	21 Jun	22 Jun	23 Jun	24 Jun
	26	25 Jun	26 Jun	27 Jun	28 Jun	29 Jun	30 Jun	01 Jul
	27	02 Jul	03 Jul	04 Jul	05 Jul	06 Jul	07 Jul	08 Jul
	28	09 Jul	10 Jul	11 Jul	12 Jul	13 Jul	14 Jul	15 Jul
	29	16 Jul	17 Jul	18 Jul	19 Jul	20 Jul	21 Jul	22 Jul
	30	23 Jul	24 Jul	25 Jul	26 Jul	27 Jul	28 Jul	29 Jul
	31	30 Jul	31 Jul	01 Aug	02 Aug	03 Aug	04 Aug	05 Aug
	32	06 Aug	07 Aug	08 Aug	09 Aug	10 Aug	11 Aug	12 Aug
	33	13 Aug	14 Aug	15 Aug	16 Aug	17 Aug	18 Aug	19 Aug
	34	20 Aug	21 Aug	22 Aug	23 Aug	24 Aug	25 Aug	26 Aug
	35	27 Aug	28 Aug	29 Aug	30 Aug	31 Aug	01 Sep	02 Sep
	36	03 Sep	04 Sep	05 Sep	06 Sep	07 Sep	08 Sep	09 Sep
	37	10 Sep	11 Sep	12 Sep	13 Sep	14 Sep	15 Sep	16 Sep
	38	17 Sep	18 Sep	19 Sep	20 Sep	21 Sep	22 Sep	23 Sep
	39	24 Sep	25 Sep	26 Sep	27 Sep	28 Sep	29 Sep	30 Sep
	40	01 Oct	02 Oct	03 Oct	04 Oct	05 Oct	06 Oct	07 Oct
	41	08 Oct	09 Oct	10 Oct	11 Oct	12 Oct	13 Oct	14 Oct
	42							
	43							
	44							
	45							
	46							
	47							
	48							
	49							
	50							
	51							
	52							

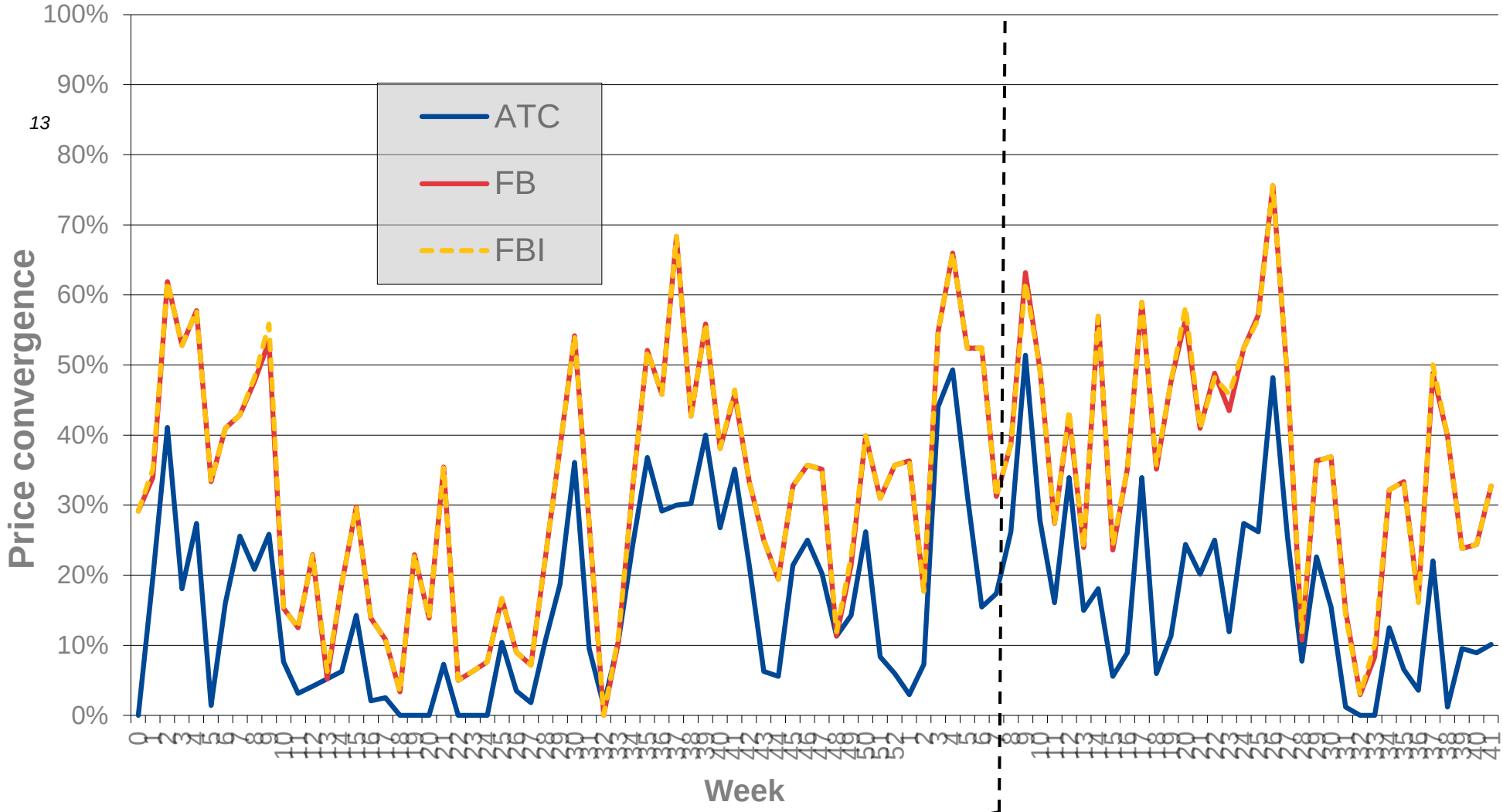
Delayed publication:

- 8 sep: interface issue preventing FBP to be send to PXs.;
- 8+9 oct: improperly managed change in interface between TSO CS and PX Euphemia.

For all three days the FBPs were computed, and the delay in publication only related to exchanging information between TSOs and PXs. The issues are specifically related to the parallel run and cannot occur in a production setting.

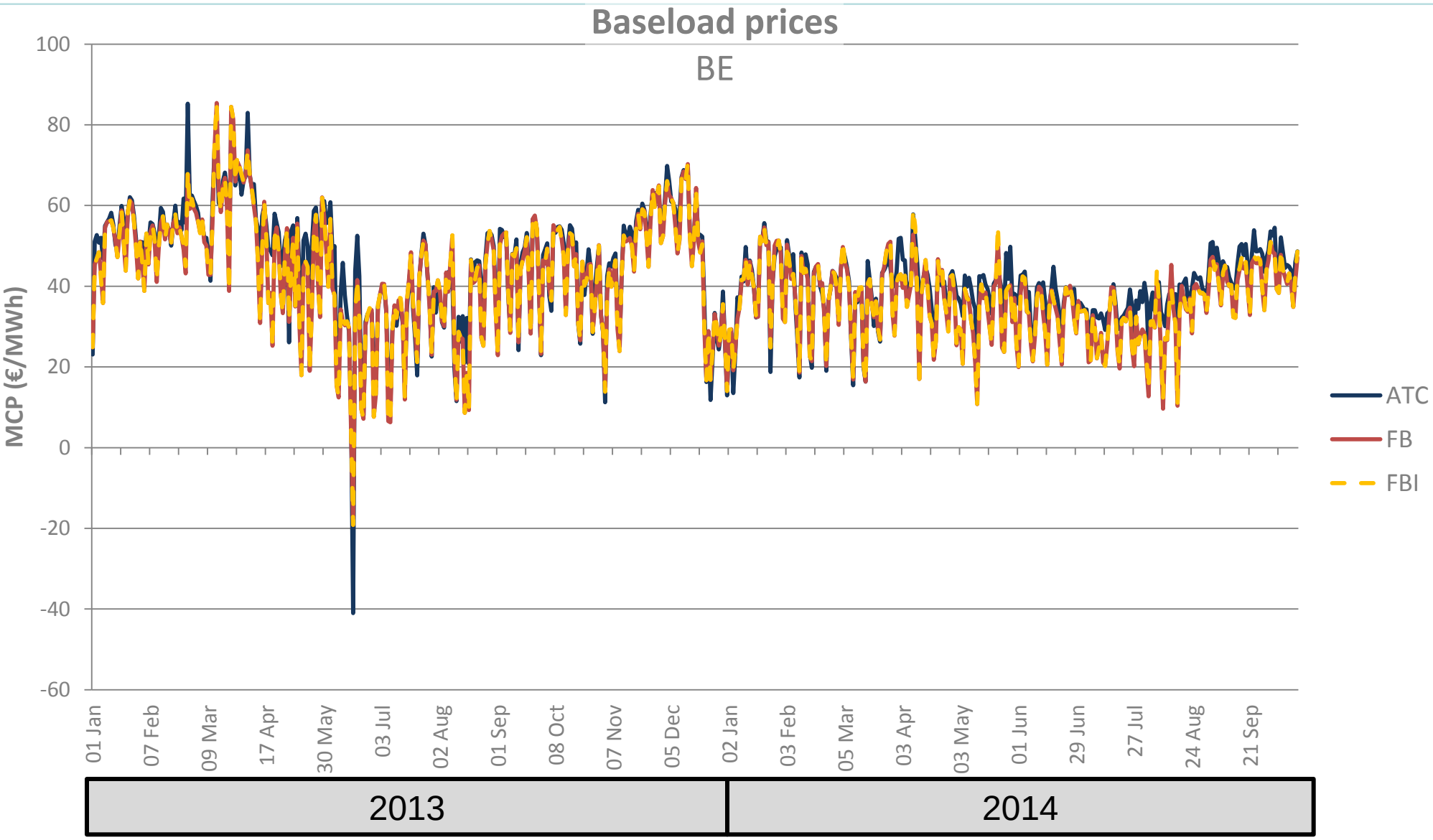
1 – Flow Based Market Coupling Project

a) Progress report: General parallel run performance – Price convergence



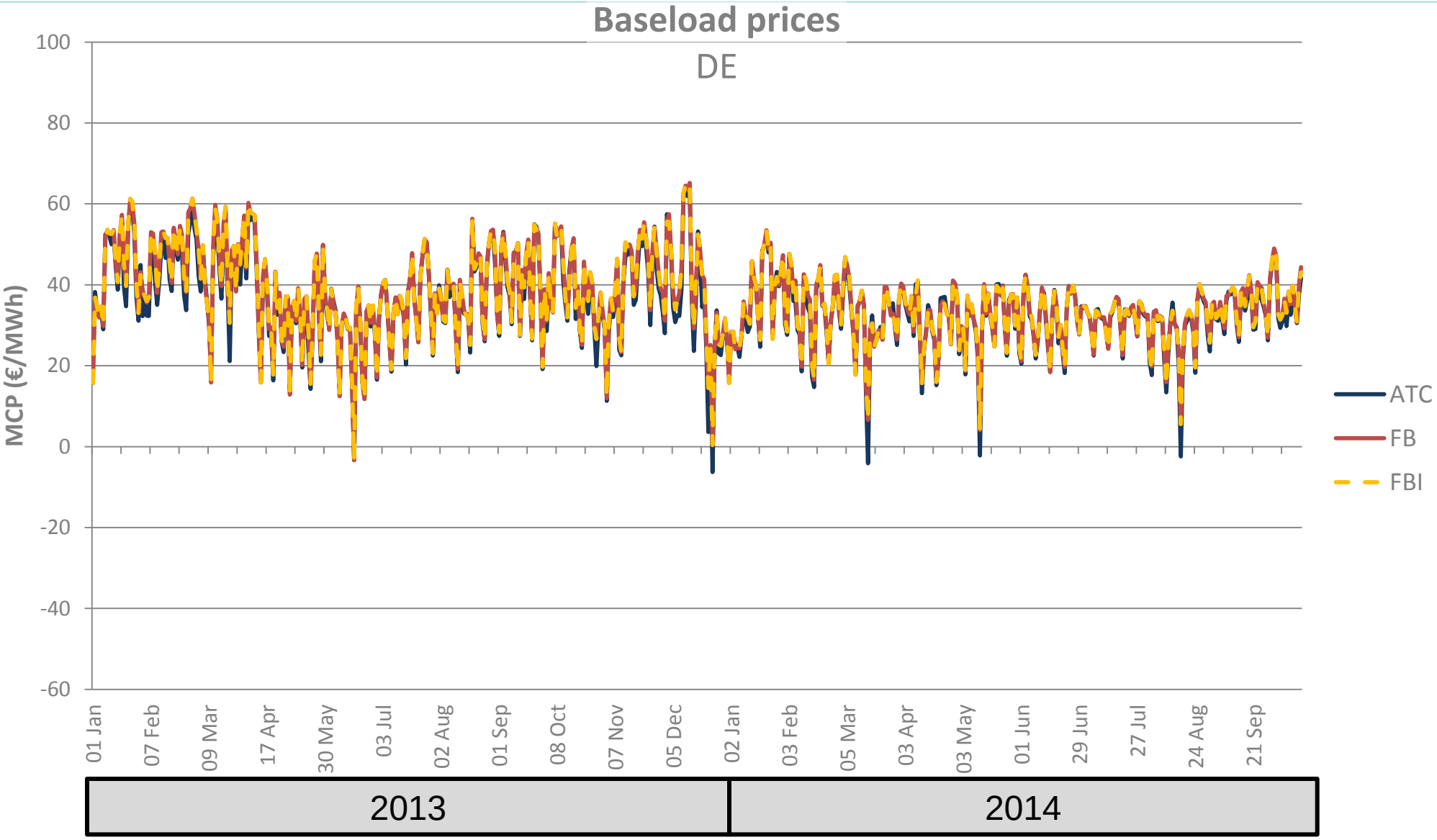
1 - Flow Based Market Coupling Project

a) Progress report: baseload prices



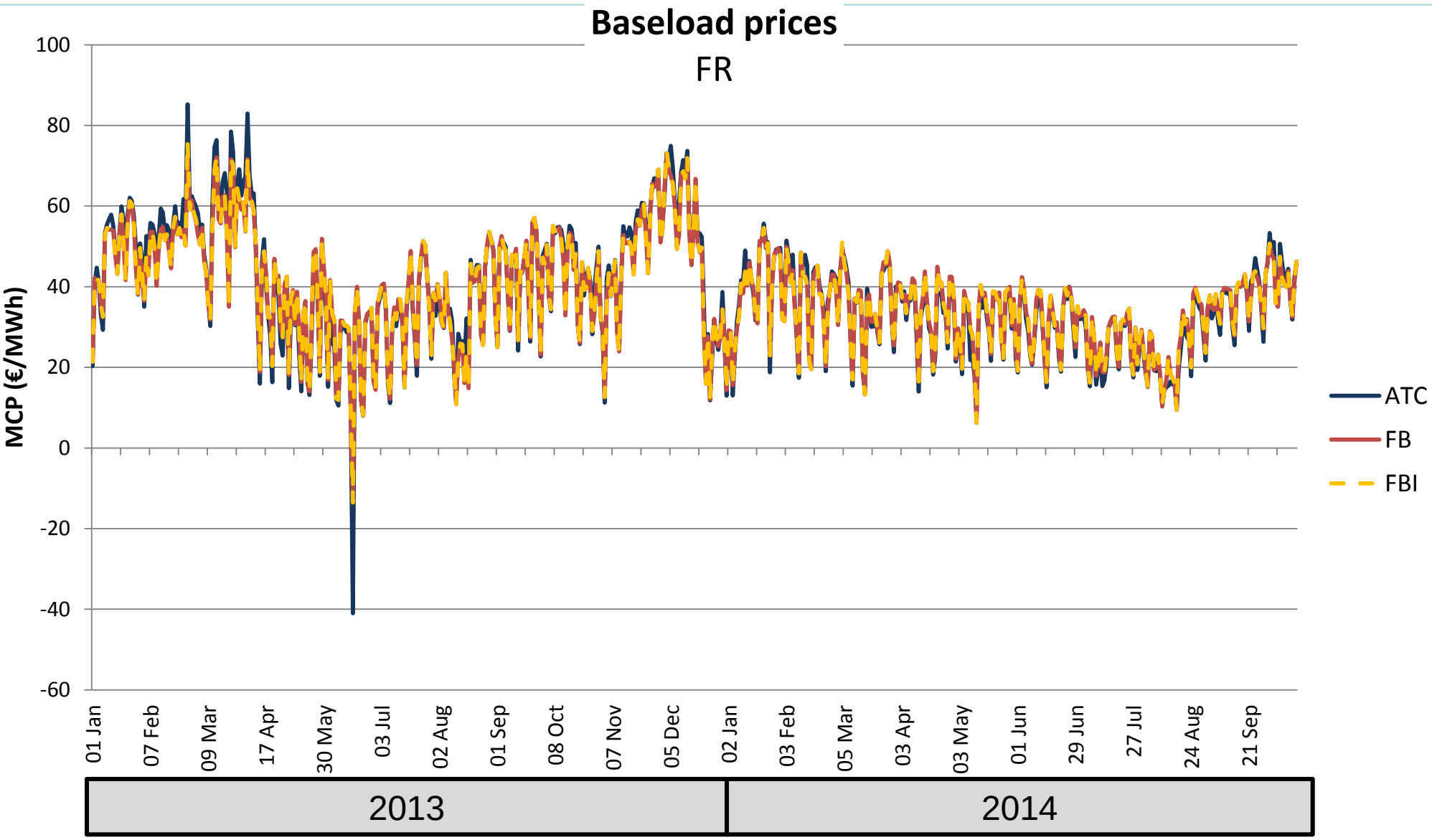
1 - Flow Based Market Coupling Project

a) Progress report: baseload prices



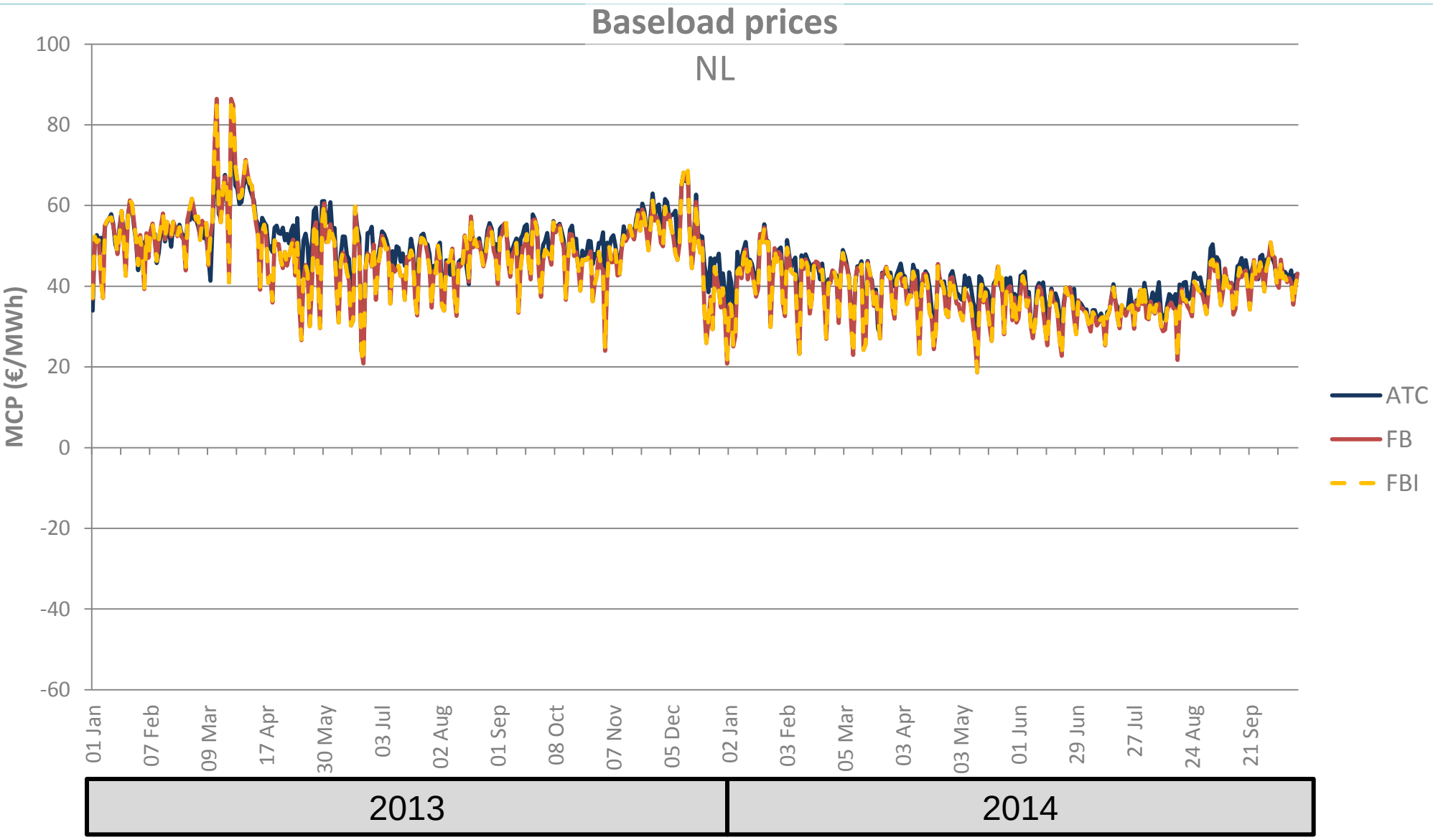
1 - Flow Based Market Coupling Project

a) Progress report: baseload prices



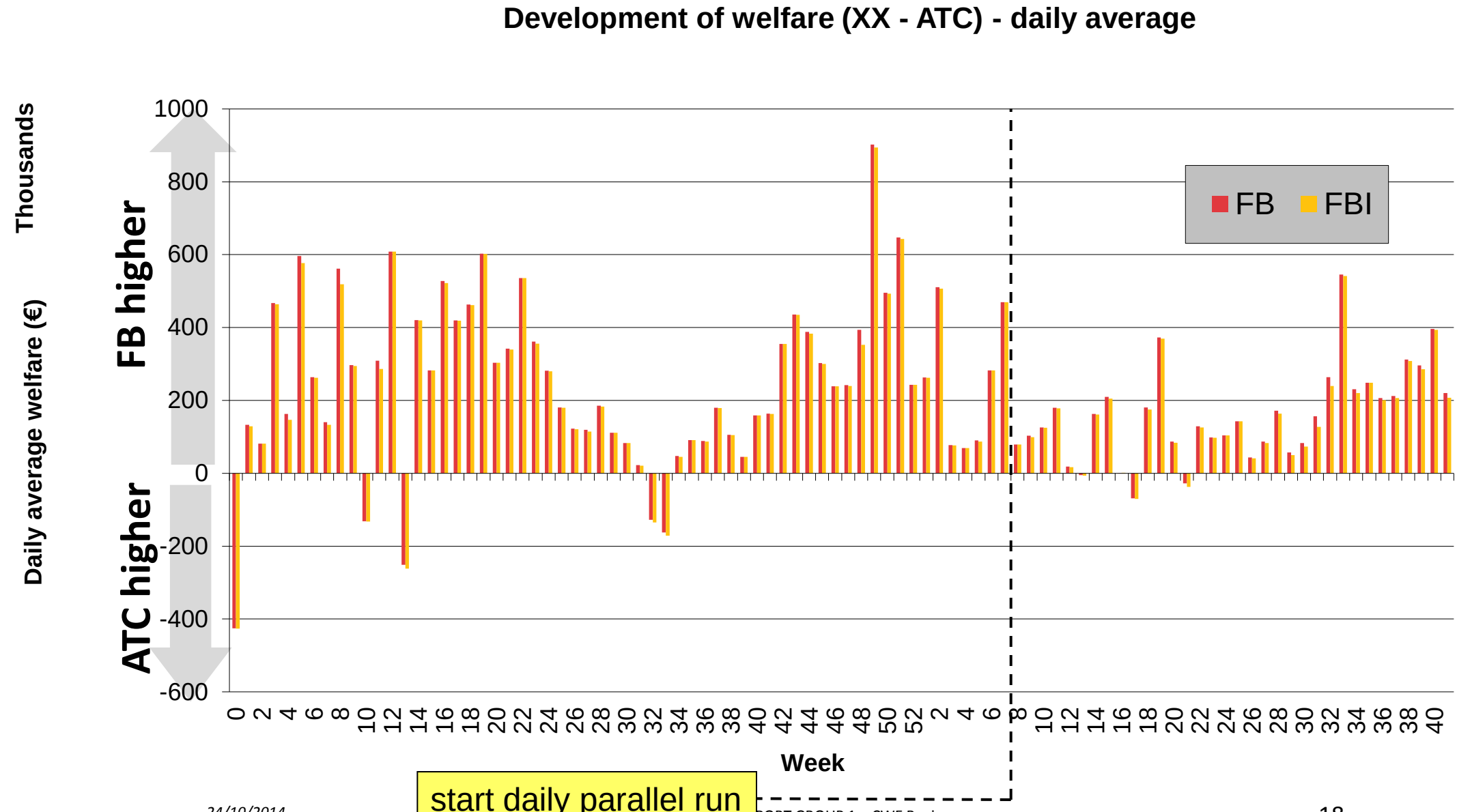
1 - Flow Based Market Coupling Project

a) Progress report: baseload prices



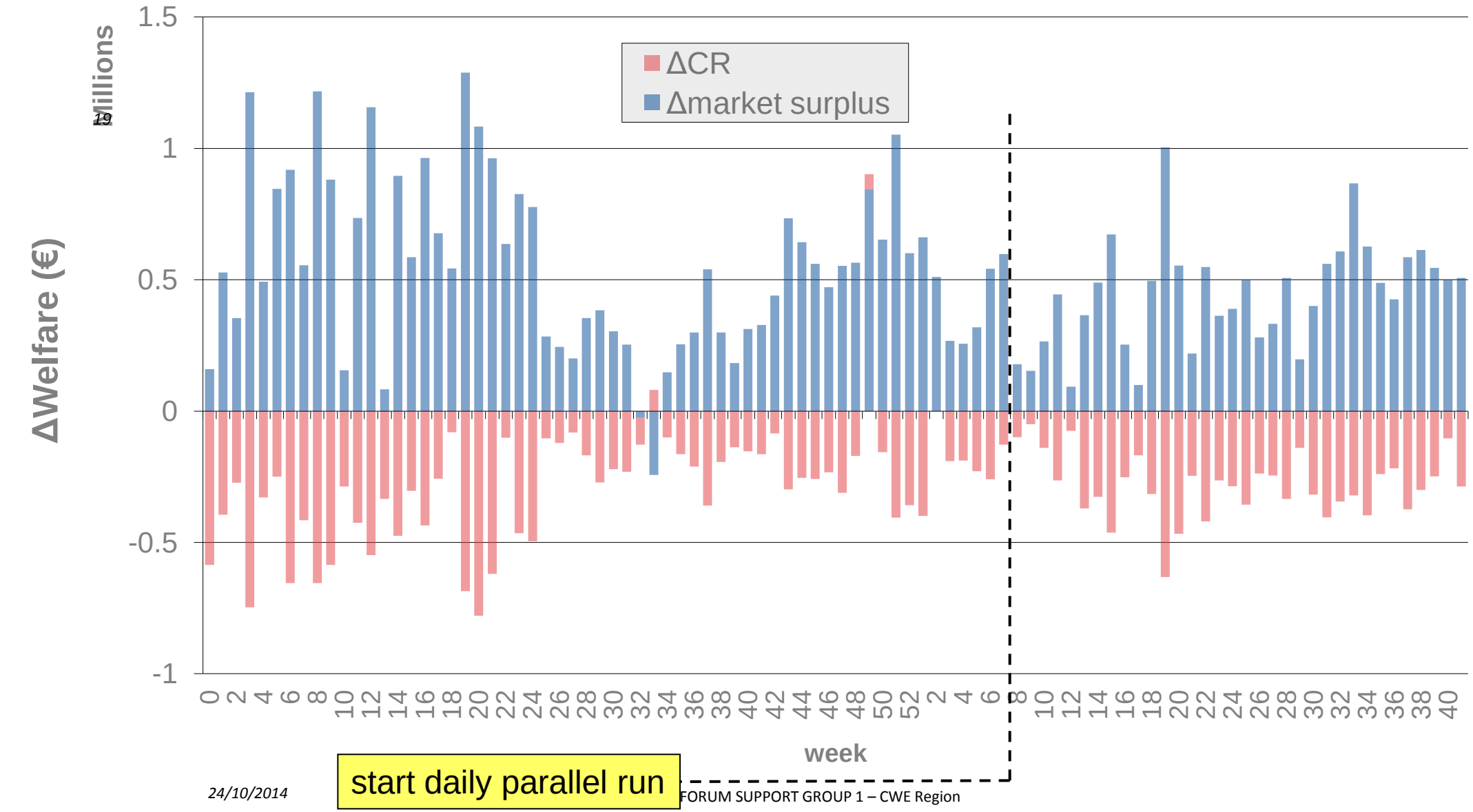
1 - Flow Based Market Coupling Project

a) Progress report: General parallel run performance – Weekly day ahead market welfare



1 - Flow Based Market Coupling Project

a) Progress report: General parallel run performance – Change in weekly daily average welfare



1 - Flow Based Market Coupling Project

a) Progress report: parallel run performance study

- Project Partners published a first report on “special investigations on Market Surplus losses » in August (http://www.casc.eu/media/14_08_01_Special_investigations_on_Market_Surplus_losses.pdf)

- CWE partners are also currently working on a full version of this report with the following aim:
  - Analysis of differences with ATC results, especially concentrating on some “highly positive days”
  - Study of specific reasons for using the “LTA coverage algorithm”
  - Further details on improvements and implementation roadmap

- The full report will be published on CASC website in October

1 - Flow Based Market Coupling Project

a) Progress report: adequacy study

- Project parties prepared a study related to “generation adequacy & FB”
- While the topic has a “universal range”, a special focus is put on the situation in Belgium for the coming winter where the concern on generation adequacy is the sharpest.
- The report is structured as follows:
  - Conceptual approach
    - Explanation related to the “order curtailment concept” (curtailment of price taking orders in some hubs) and how the optimization principles in ATC and FB could play a part in such situations.
  - Quantitative approach
    - Studies on the “import potential” and “realized imports” in Belgium (ATC vs FB) over the parallel run history
    - Analysis on the CBs active during the parallel run (statistical PTDF analyses)
  - TSO operational approach
    - Winter overview in CWE
    - Measures taken to cope with extreme cases and assessment of robustness towards FB implementation

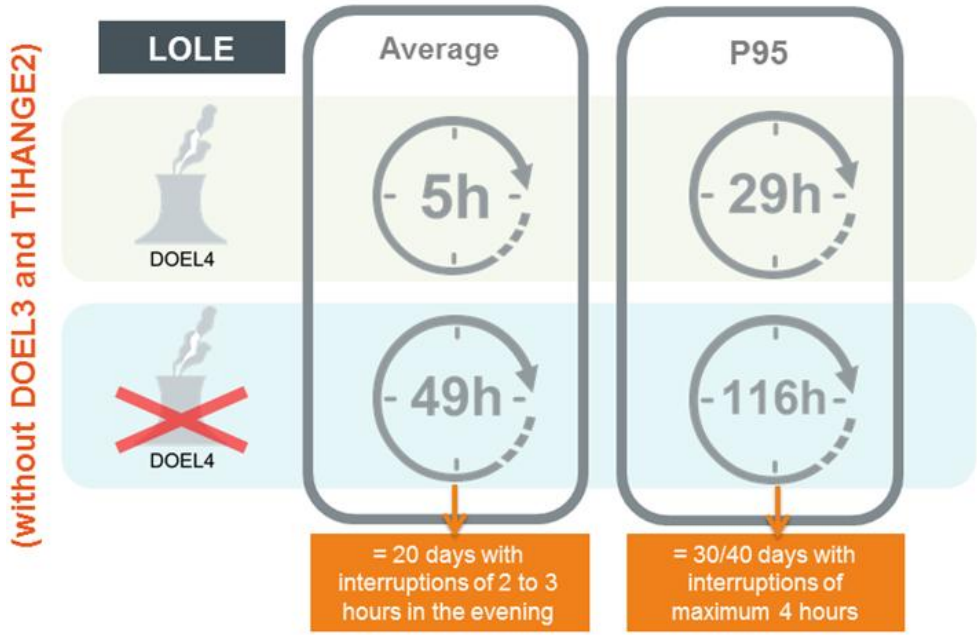
1 - Flow Based Market Coupling Project

a) Progress report: adequacy study

Belgian situation this winter

- Installed capacity decrease by ~2000MW compared to winter 2012/2013
- Belgium historically always relied heavily on import during winter
- In Elia's computed loss of load expectations for this winter an NTC assumption of 3500MW was made

Average amount of hours on which an electricity shortage appears taking into account an import level of 3500 MW, a generation of 850 MW of strategic reserve and without any maintenance during the winter



- Relation with our adequacy study: can Belgium import 3500MW under FB?

1 - Flow Based Market Coupling Project

a) Progress report: adequacy study

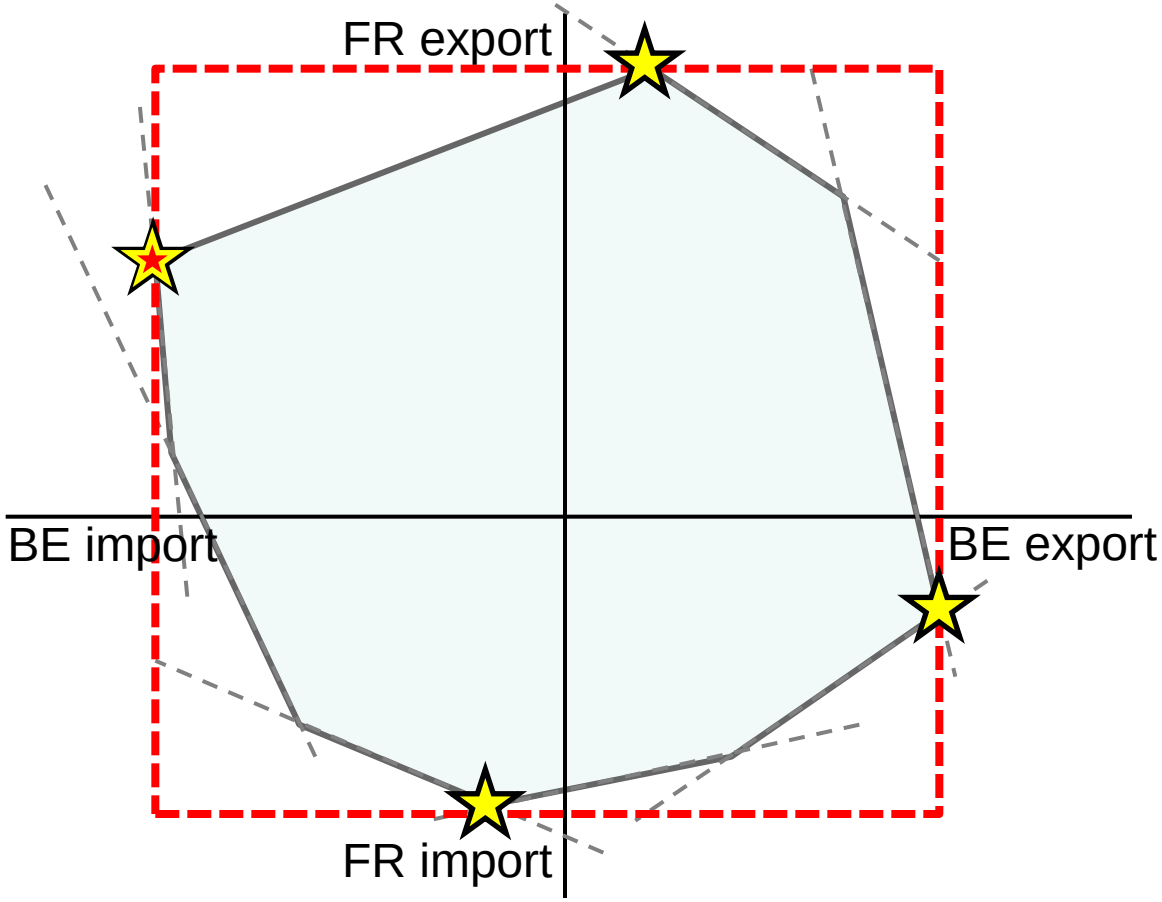
Order curtailment concept DA*

- Situation where only part of the price taking orders (buy submitted at maximum price of 3000€/MWh) can be contracted;
- Under FB market coupling competition between orders originating in different zone is not only via price, but via the flow factors of the active critical branches too, e.g.:
  - *Either 100MW A→B, and mcp_A = 50€; mcp_B = 300€,*
  - *Or 150MW A→C, and mcp_A = 50€; mcp_C = 250€*
  - *Buyers in market B have better price (300€), but network constraints allow a larger exchange with buyers in C (flow factor effect);*
- This effect is sometimes referred to as “flow factor competition”
- It is an intrinsic (and accepted) property of FBMC, and a direct consequence of welfare maximisation;
- It becomes an issue once price taking orders that are capped by the maximum price have to be curtailed.

- It is important to realize that in case the price cap is hit in DA, this does not automatically results in load shedding. However, order curtailment in Day Ahead is an indicator of increased risk of adequacy problem.

BE import potential

Quantitative approach: BE import potential



Caveat

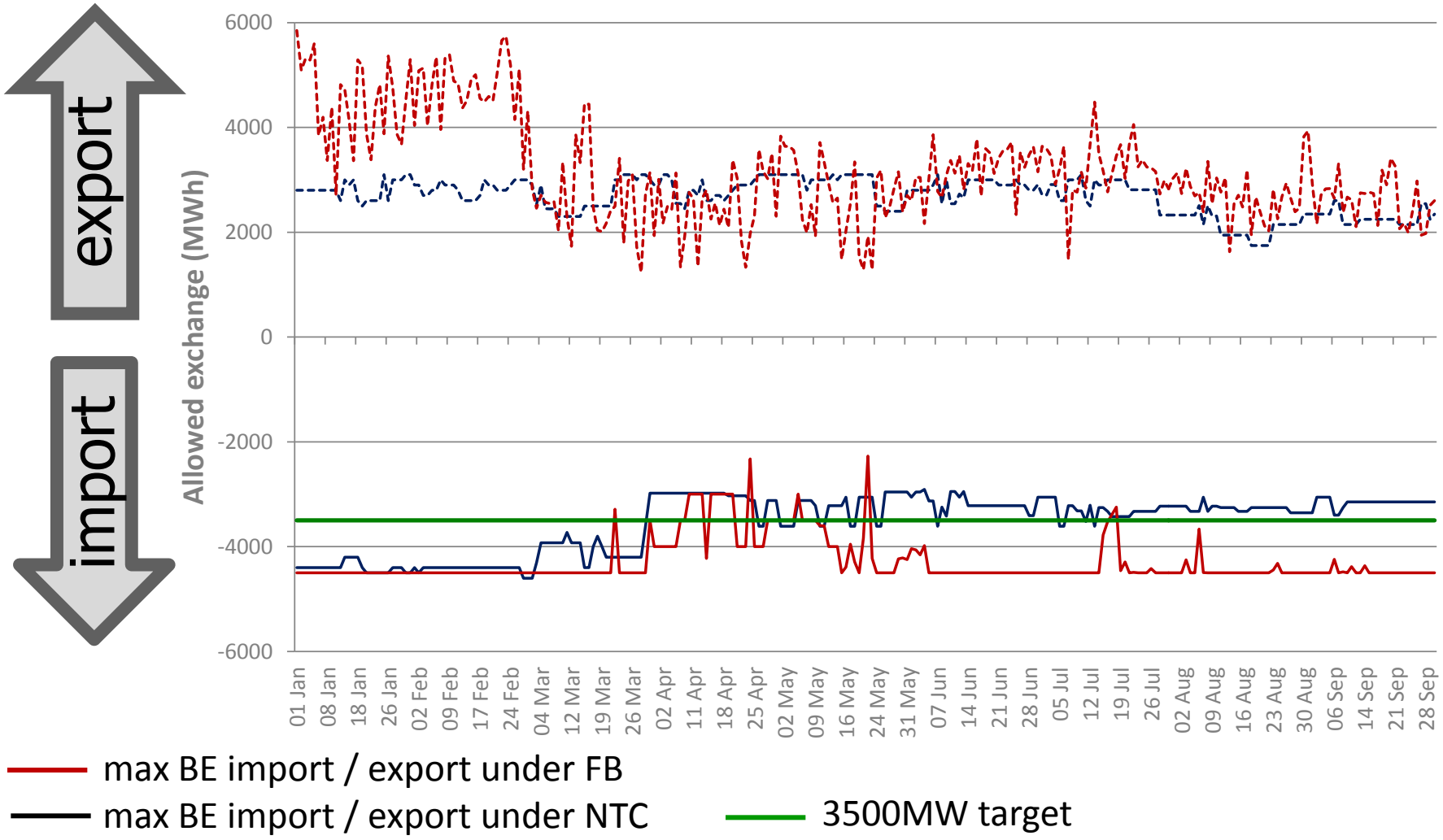
Recall: under FB max import / export correspond to extreme corners (★) of the FB domain, and consequently make assumptions on other markets.

This is not fully realistic for adequacy purposes: one can assume that in case BE faces adequacy problems so does FR, whereas the far corner (★) relies on a significant FR export

1 - Flow Based Market Coupling Project

a) Progress report: adequacy study

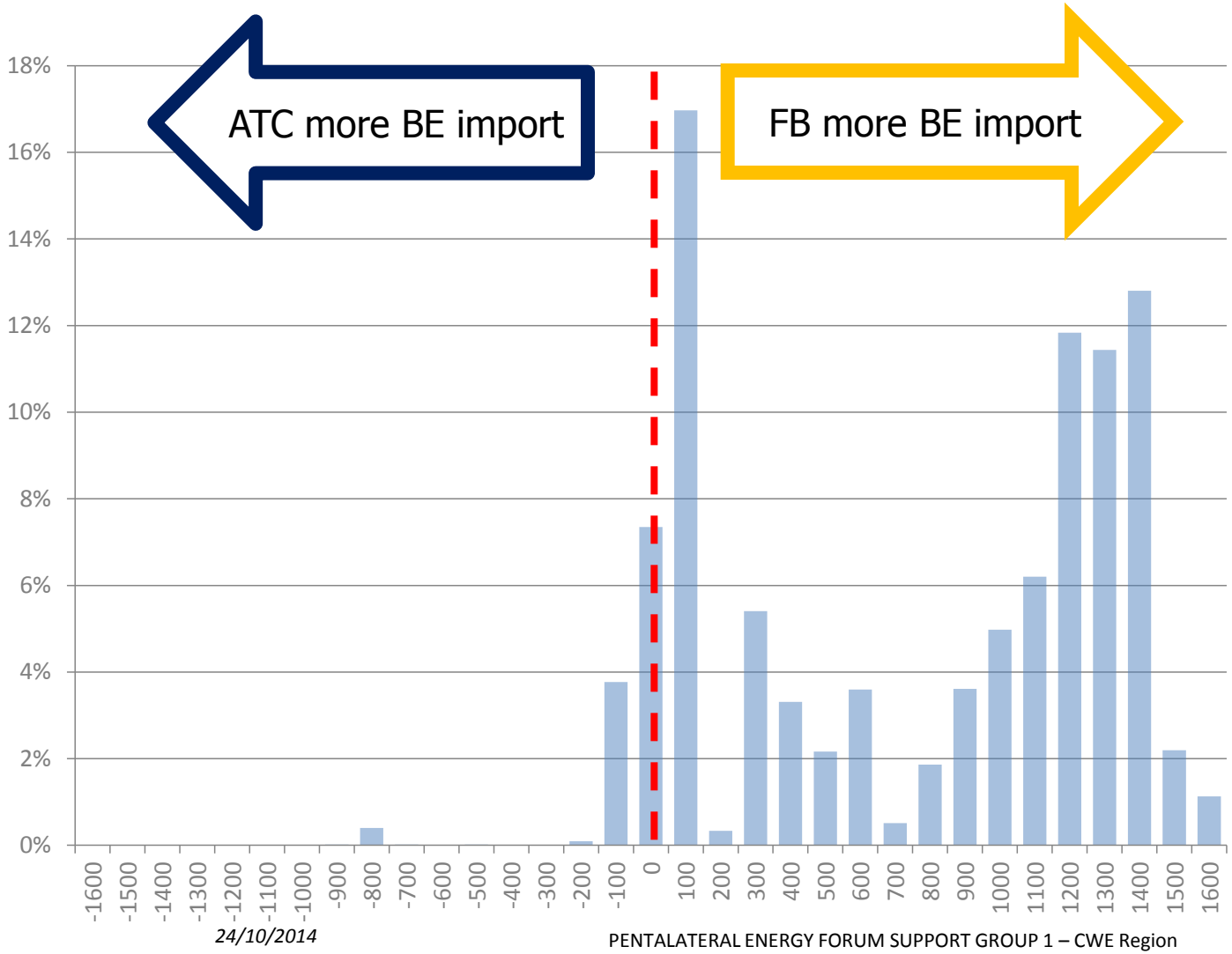
BE import / export potential (focus on hour 12)



1 - Flow Based Market Coupling Project

a) Progress report: adequacy study

BE import potential (focus on all hours)



Same data, focusing on difference between FB and ATC import:
Histogram of (FB-ATC) import potential

- Most frequently FB > ATC;
- Some time FB = ATC;
- Infrequently FB < ATC;

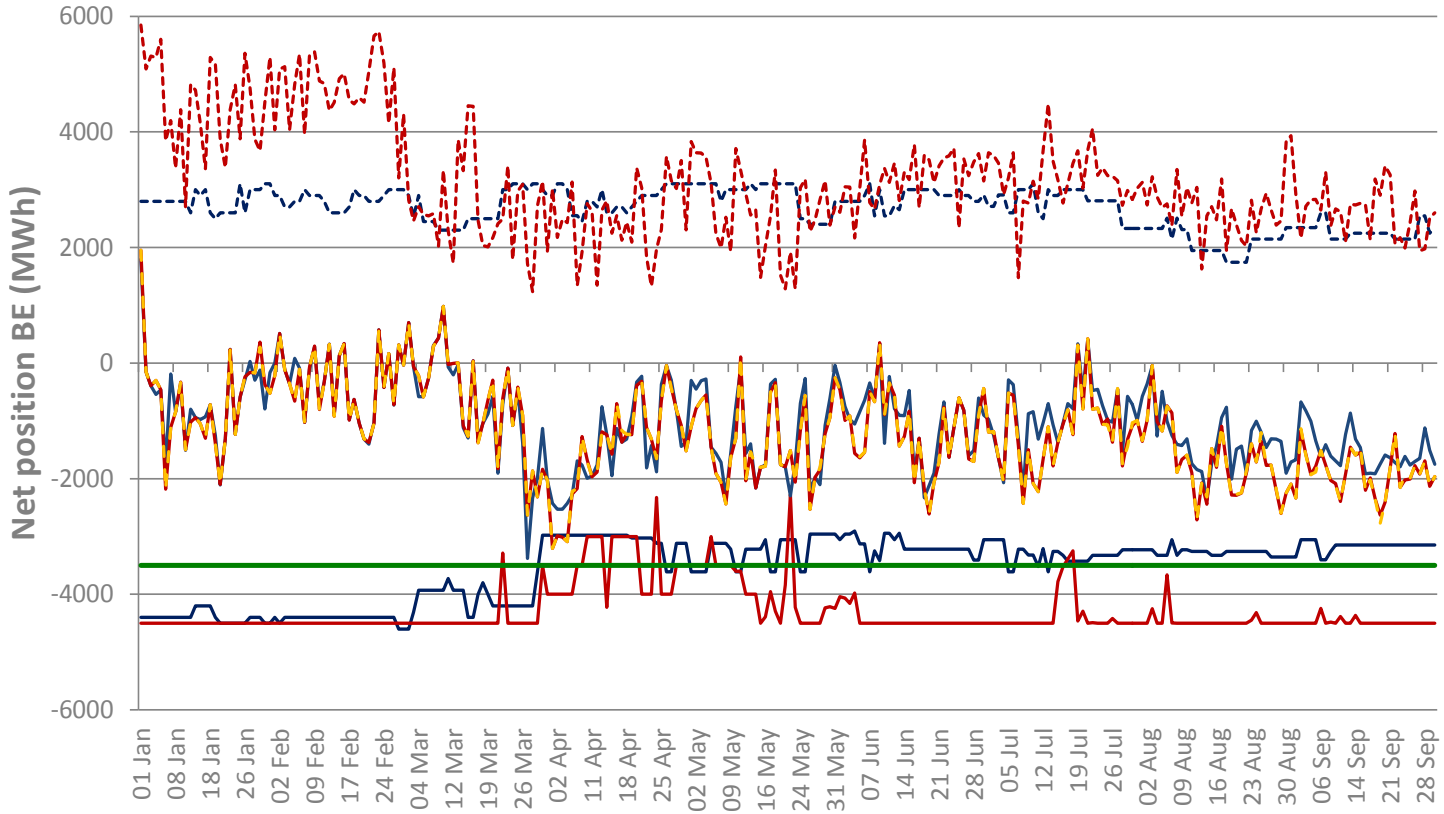
1 - Flow Based Market Coupling Project

a) Progress report: adequacy study

BE parallel run results (focus on hour 12)

export

import



max BE import / export under FB

max BE import / export under NTC

3500MW target

Parallel run results

FB

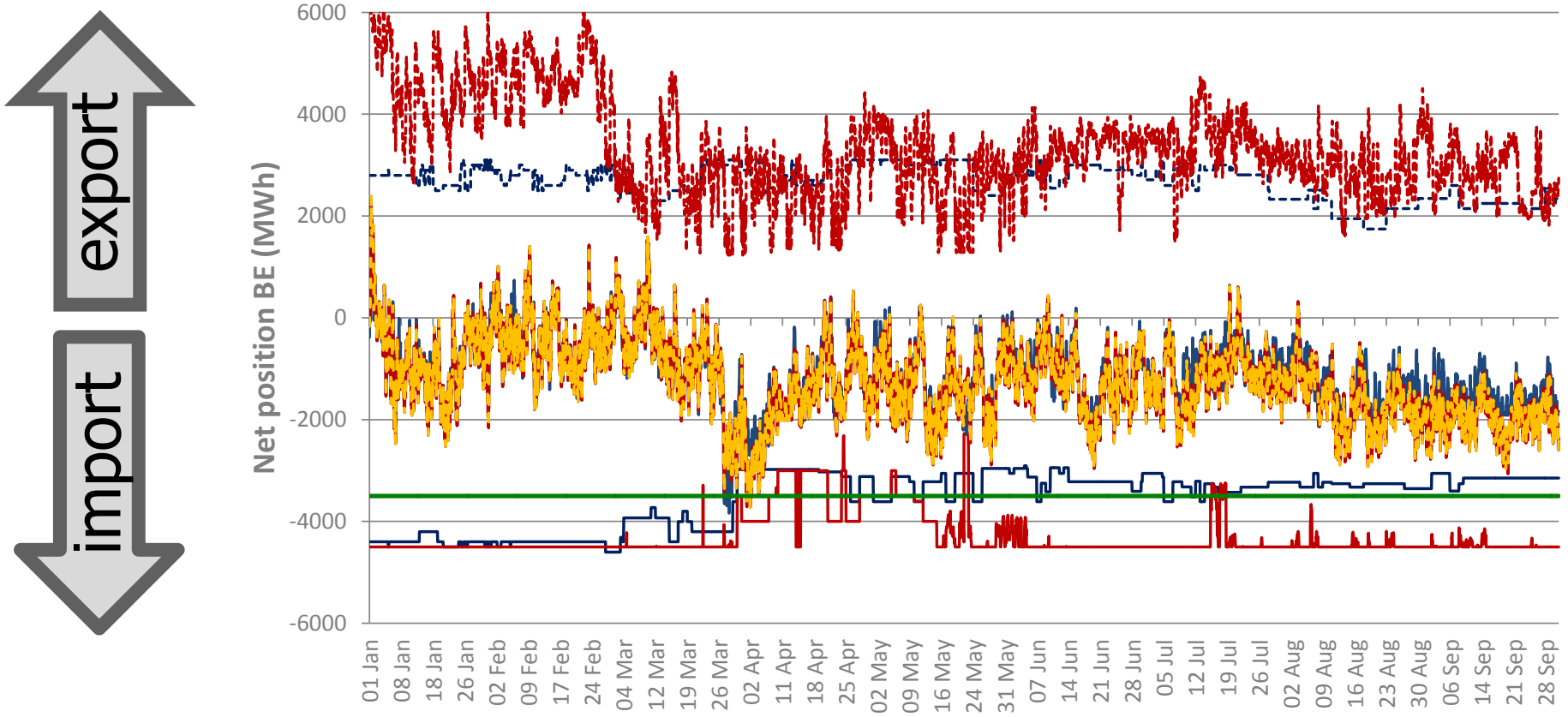
FBI

ATC

1 - Flow Based Market Coupling Project

a) Progress report: adequacy study

BE parallel run results (focus on all hours)



max BE import / export under FB

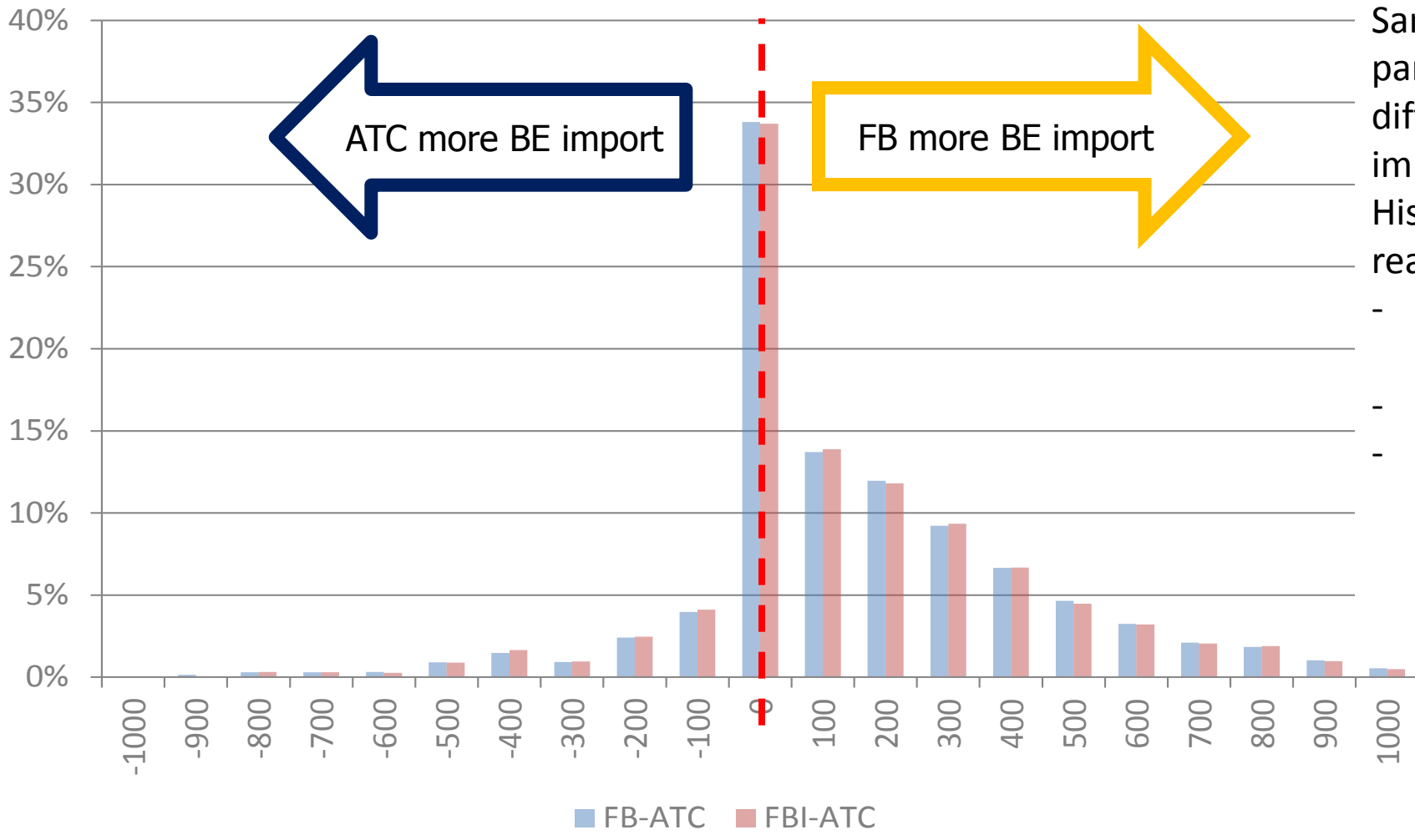
max BE import / export under NTC

3500MW target

1 - Flow Based Market Coupling Project

a) Progress report: adequacy study

BE realized import (focus on all hours)



Same data, focusing on parallel run results: difference between FB import and ATC import: Histogram of (FB-ATC) realized imports

- Most frequently FB > ATC;
- Some time FB = ATC;
- Infrequently FB < ATC;

1 - Flow Based Market Coupling Project

a) Progress report: adequacy study

- Previous findings indicate for the majority of hours FB potentially can offer more import possibilities to BE than ATC does
- However these findings do not account for the “flow factor competition” in a stressed situation
- To this end we introduce an alternative indicator:

Alternative import indicator

Set-up market coupling (welfare maximization), while making assumption on the clearing prices: we add orders:

- 50,000 MWh buy
- 50,000 MWh sell

To fix the prices in each market.

The focus is on BE = €3000, and varying assumptions for FR

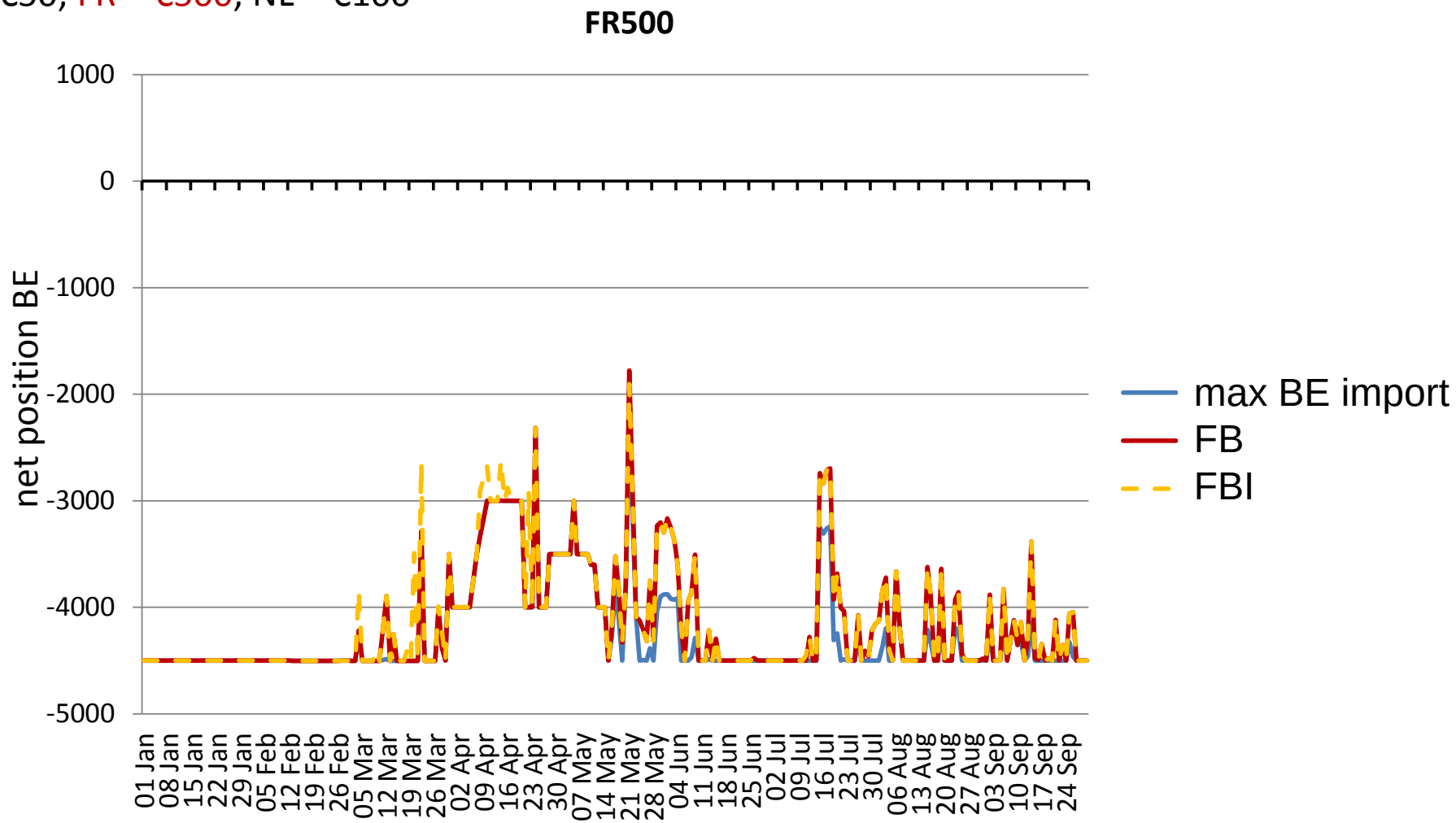
1 - Flow Based Market Coupling Project

a) Progress report: adequacy study

BE import potential

BE=€3000; DE = €50; FR = €500; NL = €100

The largest (worst) hour is depicted

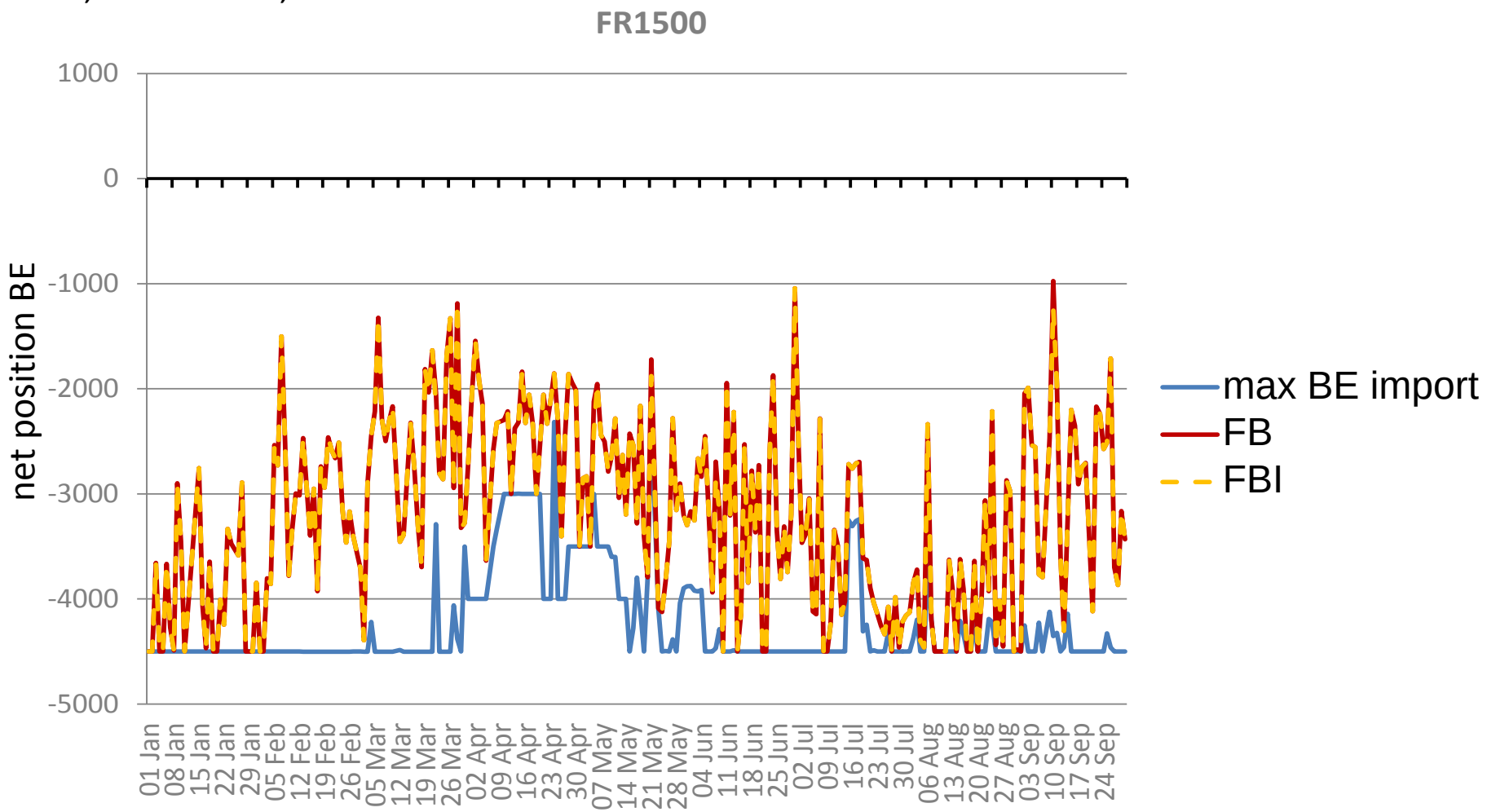


1 - Flow Based Market Coupling Project

a) Progress report: adequacy study

BE import potential

BE=€3000; DE = €50; FR = €1500; NL = €100

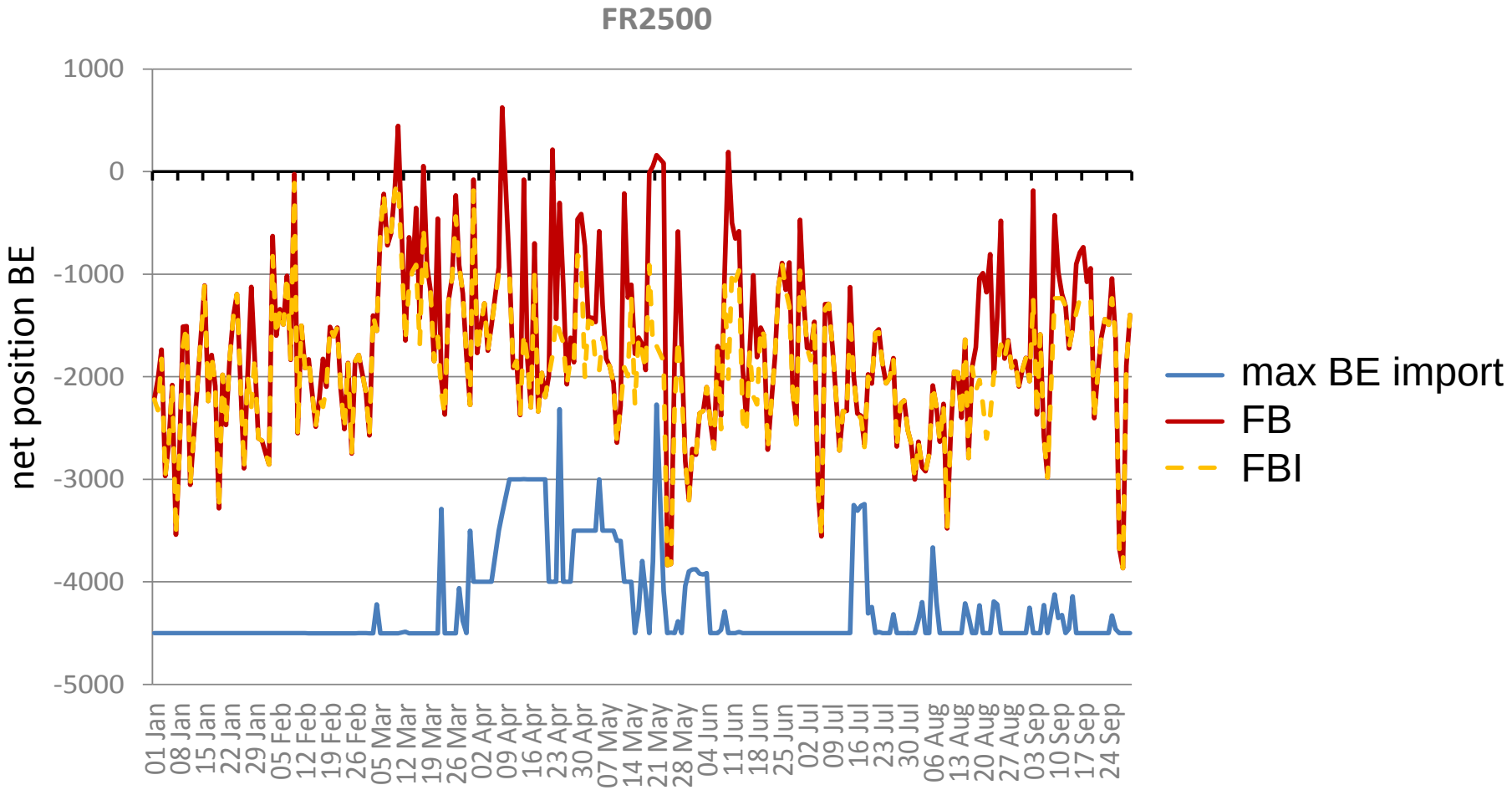


1 - Flow Based Market Coupling Project

a) Progress report: adequacy study

BE import potential

BE=€3000; DE = €50; FR = €2500; NL = €100



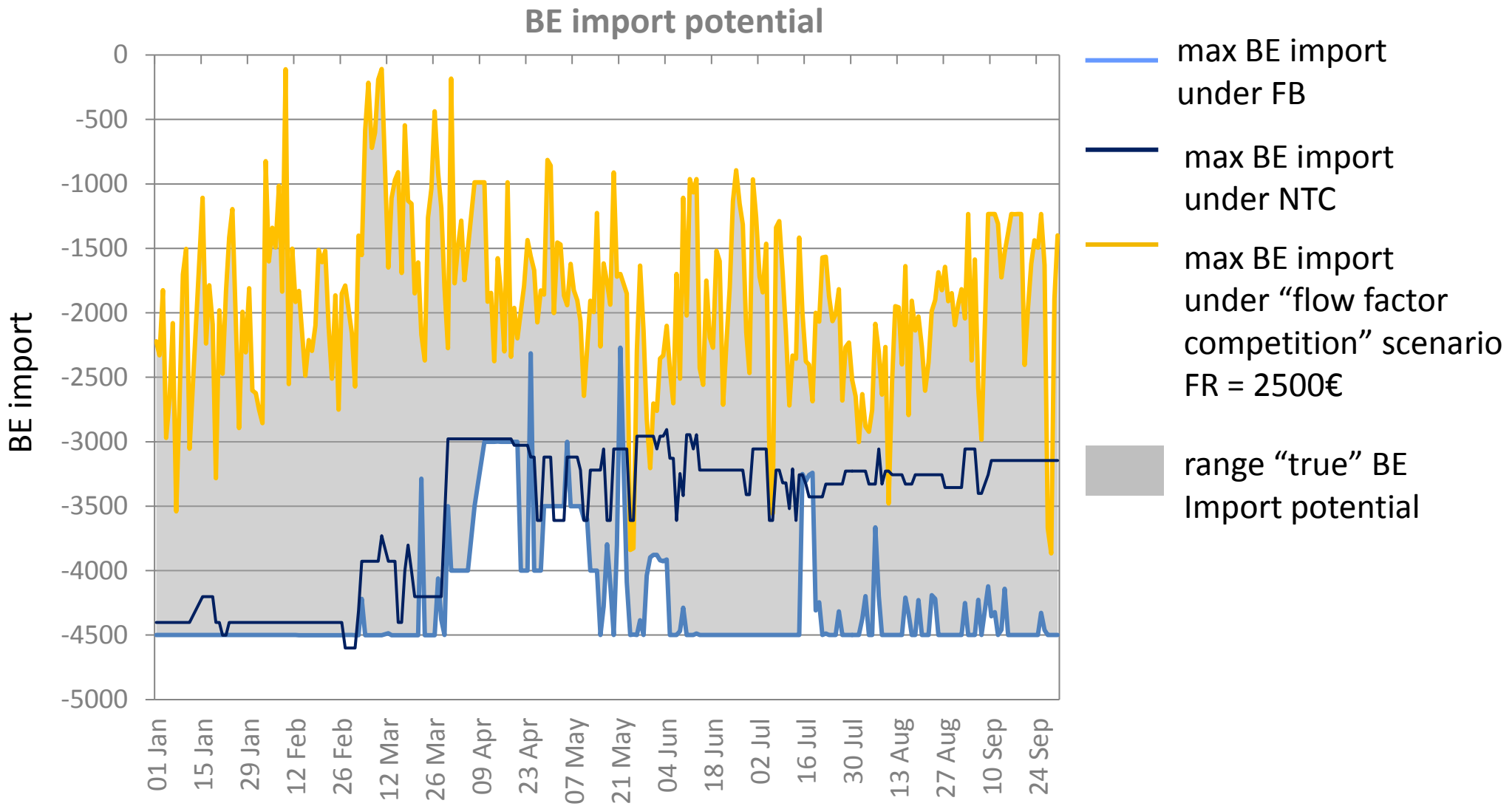
BE import potential

- **Caveats**
  - Input data (FB domains from parallel run) are not representative of the simulated scarcity scenario
  - The strong assumption of fixed clearing prices and perfect elasticity:
    - In reality there is an interaction between the clearing price and the net position
    - For example, if the model predicts an import into France of 7000MWh, it is unlikely to clear at 2500 €
    - Compare with cold spell 9 February 2012: France cleared at 2000€ while importing 3600MW on CWE borders
- **Interpretation**
  - Where the maximum import for BE overestimates the BE import potential, the new indicators underestimates BE import potential. The “true” potential is somewhere in the middle

1 - Flow Based Market Coupling Project

a) Progress report: adequacy study

Range for BE import potential



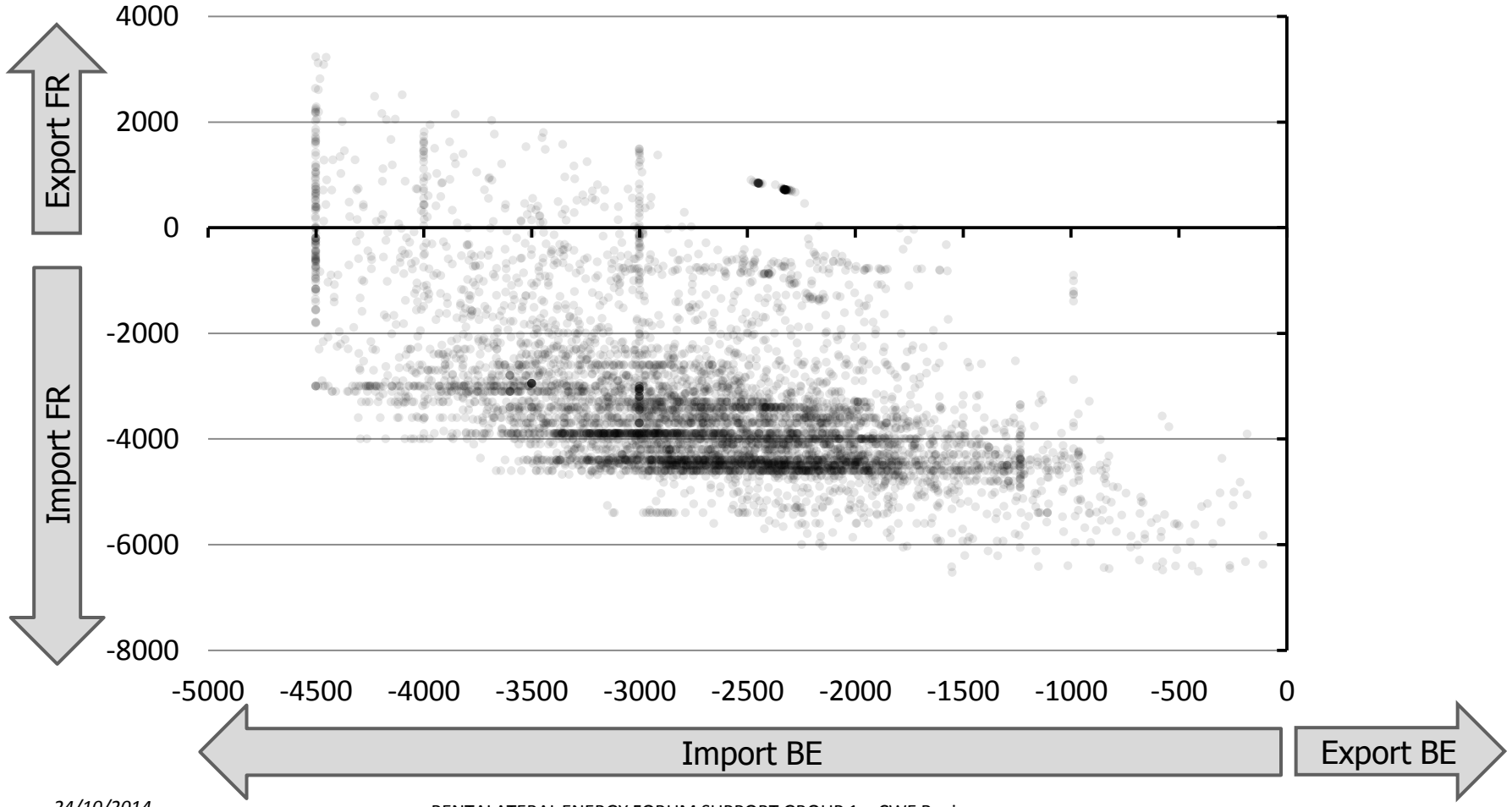
1 - Flow Based Market Coupling Project

a) Progress report: adequacy study

Simulated BE and FR nex import

BE=€3000; DE = €50; FR = €2500; NL = €100

- Perhaps we can make the following assessment:

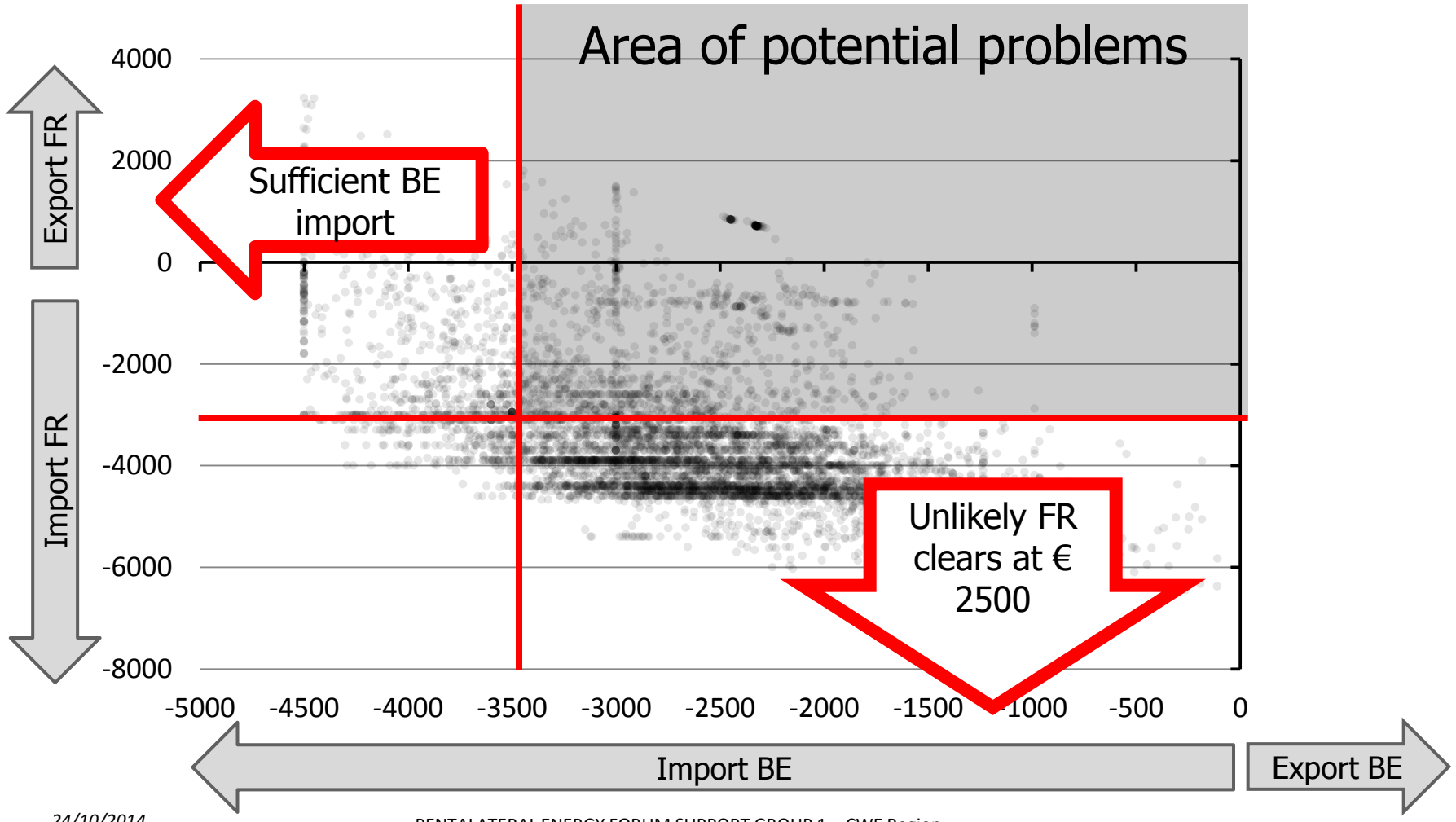


1 - Flow Based Market Coupling Project

a) Progress report: adequacy study

Simulated BE and FR nex

- Perhaps we can make the following assessment:



Mitigations

- The quantitative results have not definitively demonstrated whether or not under FBMC specific adequacy problems should be expected.
- However, we can already consider mitigations addressing the order curtailment risk related to “flow factor competition”:
    - Could an increase of the price cap avoid or limit this risk?
    - Could the Euphemia DA market coupling algorithm be adjusted to treat price taking orders with preference?
    - Could the price cap be applied after an optimisation without cap for price taking orders?

1 - Flow Based Market Coupling Project

a) Progress report: adequacy study

TSO operational approach:

- Now that the target go-live of FBMC has been shifted to the end of the winter, CWE TSOs are currently preparing the next winter by putting into place ad hoc operational procedures in order to cope with extreme situations in Belgium.
- These procedures are not finalized at the drafting of this note and are not directly related to Flow-Based market coupling.

Impact on the FB parallel run:

- An off line process is currently being designed: this off-line process aims at evaluating how the Belgium import capacities could be maximized in FB market coupling.
- Each week, some Coreso operators in cooperation with Elia will identify scarcity days, and will then monitor the limiting elements of the Belgium import, depending on the French level of import as we know that Belgium import is highly correlated to the French import.
- In case Belgium import is considered too small, CWE TSOs and coordination centers will enquire for optimized Remedial Actions when possible, and also for some exceptional Remedial Actions if needed.
- An aggregated report will be created after winter to evaluate those results.

1 - Flow Based Market Coupling Project

a) Progress report: adequacy study

Conclusion

- The contribution of FB to Belgian adequacy can be assessed by considering the ability of Belgium to import energy;
- The quantitative findings do not allow for a definitive conclusion:
  - BE tends to be able to import more under FB than under ATC;
  - Factoring in “flow factor competition” under some extreme scenarios (very high prices in both BE and FR) the ability to match BE price taking orders is impacted;
- Caveats of the analysis:
  - FB domains of the parallel run are not representative for scarcity situations;

1 - Flow Based Market Coupling Project

a) Progress report: adequacy study

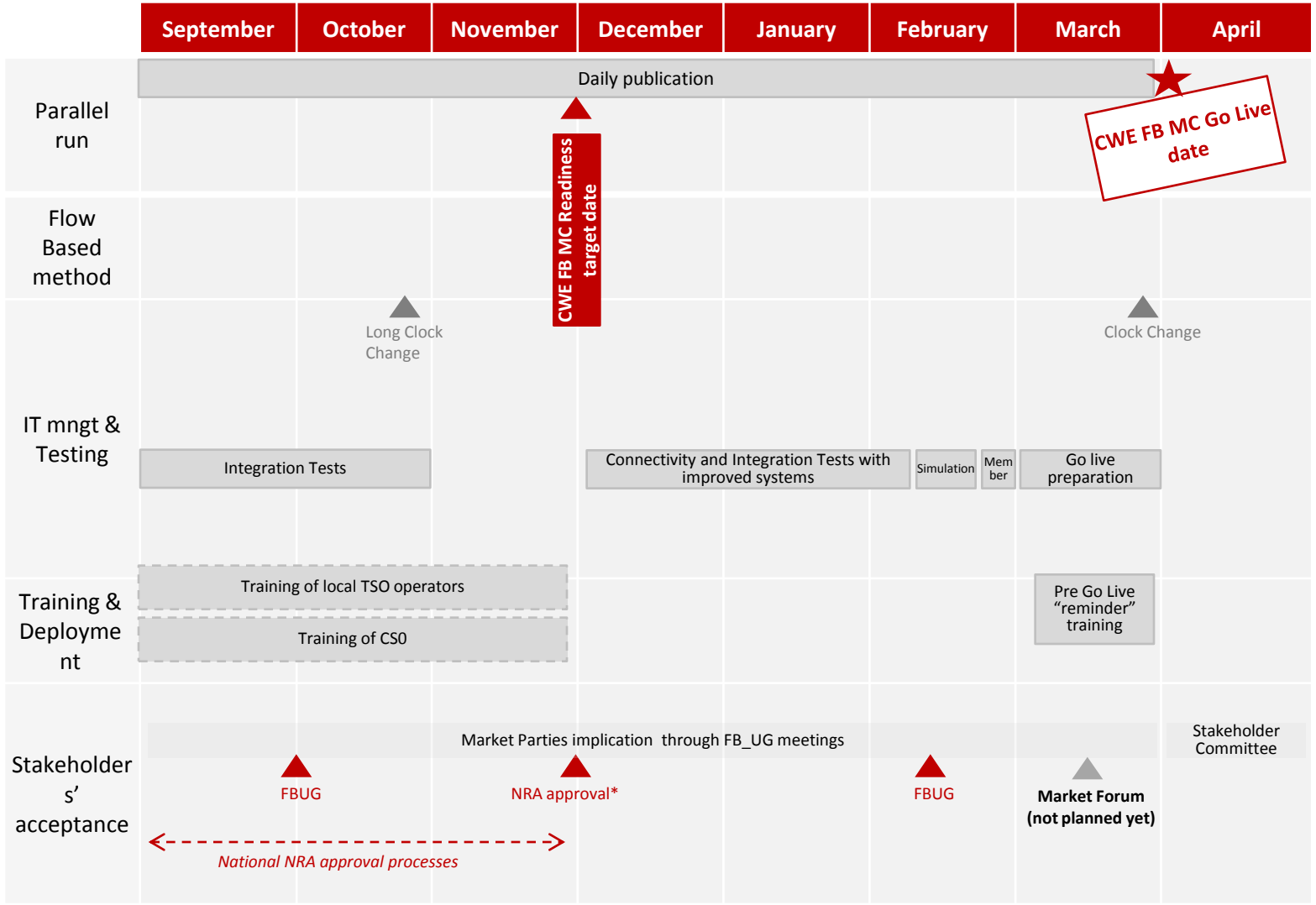
Next steps

- TSOs will prepare for this winter, putting in place ad hoc operational procedures to cope with the extreme situations in Belgium
- Study identified mitigations that can be explored in more detail
- Continue monitoring the parallel run results, especially for scarcity situations

1 - Flow Based Market Coupling Project

b) Presentation of the CWE project planning

- The technical readiness is maintained for November 2014
- Project partners are progressing in the technical and operational implementation in order to meet the acceptance criteria (tests on going until end of October, tests will be performed again in January with the systems supporting Italian Borders functionalities)
- The NRA approval is under discussion for end of November / beginning of December
- A new market forum may take place in March 2015 (under discussion with NRAs)



*Under discussion with NRAs

1 - Flow Based Market Coupling Project

c) Explanation of the reasons for postponement

- CWE project parties have decided to shift the Go Live date to March, 31st, due to the risks involved by the specific situation for Belgium this winter:
  - Unexpected unavailability of a third of centralized generation capacity
  - Risk of load shedding
  - Risk of potential price spikes on the Belgium market
- CWE project parties are addressing in the foreseen adequacy study the uncertainty regarding BE supply and imports in such exceptional conditions
- Further experience with the behavior of Flow-Based will be gained thanks to the extension of the daily parallel run

- Nevertheless, technical readiness is still planned for November 2014

- The shift of the Go Live was communicated in a press release on September, 25th

1 - Flow Based Market Coupling Project

d) Follow-up of the consultation process

- A consultation of Market Players was organized by CWE Regulators from June, 2nd 2014 till June 30th, 2014. There were 16 respondents

- Main learnings :
  - FB perception is improving:
    - higher welfare and transparency improvements (10) compared to ATC are mentioned, especially on critical branches,
    - good knowledge of FB calculation model is important to benefit from FB advantages and for price prediction,
    - 2 parties ready to go with the current version of FB
  - Key issues before Go-Life: better robustness of the calculation process (already solved)
  - Majority (9) of respondents in favor of intuitive FB
  - Understanding of FB model and of price formation is considered as intermediate by market players
  - Concerning the ability to bid properly in the new environment: 4 no, 3 yes and several improvements are mentioned by a majority of respondents related to transparency and understanding of FB
  - Transparency : level considered non adequate by 13 respondents; recent improvements have been made though
  - On parallel run performance : robustness is key, and on the duration of successful parallel runs: 2 ok with 3 months, 6 want more
  - Other comments: interaction with LT rights and intraday should be better analyzed

1 - Flow Based Market Coupling Project

d) Follow-up of the consultation process

Project answers on pending requests

- Following the consultation, NRAs requested minor additions to the approval package which have been provided to NRAs on August, 1st as well as pending requests to be investigated by the Project

- Project Partners replied to these pending requests in a formal letter towards NRAs on September, 17th

- Main important requests deal with:
  - Intuitiveness / Euphemia : provide further explanations on functioning of intuitive patch and its interaction with Euphemia
  - Fallback simulations: prove TSOs' ability to calculate Fallback parameters in tense situations and provide an idea of the results
  - Recomputation of missing days: provide reference simulation results for missing parallel run days
  - Impact of FB on generation /demand adequacy: explain the link between FB and short term generation/demand adequacy

1 - Flow Based Market Coupling Project

e) Reactions from Market Parties Platform & discussion

Feedback FBUG meeting (with NRAs) on September, 30th

- **Project status**
  - Shift of the CWE FB Go Live : some MPs fail to understand the reasons for the postponement of Go Live. The Project parties reminded that the technical and operational readiness target date is maintained for November 2014 and should be dissociated from the decision to postpone the FB Go Live date in 2015
  - The planning for NRA approval (initially due by end of November/beginning of December 2014) is still under discussion

- **Parallel run performance study**
  - The project demonstrated that over two years of parallel run simulation, welfare differences are largely in favor of FB
  - The full report on parallel run performance will be published on CASC website in October, replacing the first one published last August
  - Some MPs indicated that they consider that the LTA coverage principle should not result in the reduction of LT capacities. The Project indicates that the LT capacity rights allocated today are the outcome of an independent process, are safe and that it sees no reasons today to reduce these rights
  - The risk of 0 day-ahead capacity with LTA inclusion and increased level of LT nominations must be further investigated with the parallel run performance results (MPs do not see the impacts/risks for them)

1 - Flow Based Market Coupling Project

e) Reactions from Market Parties Platform & discussion

Project answers on pending NRA requests

- Fallback simulations : MPs requested Fallback ex-post results on successful days to be able to compare them with the normal results. They also asked to perform Fallback process in the member tests

- Re-computation of missing days : In order to provide reference simulation results for missing parallel run days, Project Parties will provide results based on default FB parameters missing days and will be published on CASC website for October

- Impact of FB on generation /demand adequacy: In order to explain the link between FB and short term generation/demand adequacy, Project Parties will provide a study assessing the respective import capabilities of CWE hubs in ATC and FB which is planned to be published in October

1 - Flow Based Market Coupling Project

e) Reactions from Market Parties Platform & discussion

- **Data publication for Go Live**
  - Project parties proposed to provide fixed anonymous CBs results plus precision on the location (border or country)
  - MPs requested aggregated hourly information (Vertical Load, Generation, Reference Bilateral Exchanges) related to the D-2 common grid model (to be investigated by Project parties):
    - On a daily basis for D+2 in order to use it for operation
    - Including also non CWE borders (assumptions for external flows)
    - Available before Go Live
  - Project Parties will also publish ex-post the redundant critical branches which has foreseen to be published as of Q1 2015
- **Data publication after Go Live**
  - Project Parties proposed to provide one full-day scenario that would be submitted via email to MPs upfront next FBUG meeting (two weeks upfront ideally) and discussed during next FBUG meeting
  - In order to focus Project Parties' efforts on the most urgent data publication and given a timeline overview, Project Parties will ask MPs via e-mail to prioritize the remaining work on publications :
    - Fixed anonymized CBCOs at D+2
    - All redundant CBs
    - Aggregated information related to D-2 common grid model
    - Scenarios on typical winter day and long-term evolutions

Next FBUG meeting: to be planned end of January/beginning of February 2015

1 - Flow Based Market Coupling Project

e) Reactions from Market Parties Platform & discussion

Creation of Stakeholder Committee after Go Live

- AESAG and NRAs requested the project to investigate the creation of a Stakeholder Committee for after Go Live, allowing a dialogue with MPs before changing the methodology or implementing any improvements

- CWE Project partners could imagine the following organization:
  - **Participants**: CWE NRAs, TSOs, PXs, MPs having a direct interest and adequate knowledge in FB implementation. Representation via Eurelectric, EFET, IFIEC…
  - **Role**: advise the JSC and AESAG
  - **Scope**:
    - Performance of FB
    - Improvements/changes in the FB methodology having an impact on the market
    - FB extensions to other regions
  - **Organization**
    - Meetings scheduled on an ad hoc basis (or on request of a majority of Participants ; minor changes and status updates may be communicated in written)
    - Publication of meeting minutes

1 - Flow Based Market Coupling Project

f) Status of regulators' approval process

- NRA approval initially planned in November 2014
- After communication of the Go live shift to March 2015, NRAs explained during the September, 25th Expert meeting that the NRA approval is currently under discussion
- For information : next Expert meeting planned on November, 4th

1 - Flow Based Market Coupling Project

g) Next steps

- In the short run, Project Partners aim at **securing the following important next steps**:
  - Continuation of daily parallel run simulation over the winter
  - Technical readiness and achievement of acceptance criteria
  - NRA approval
  - Tests performance : integration tests in 2014, and re tests in 2015 with systems supporting Italian Borders, simulation and member tests
  - Pending NRA requests answer

2) ANNEXES

a) Monitoring results ATC coupling
b) Summary of agreed transparency framework for Go Live

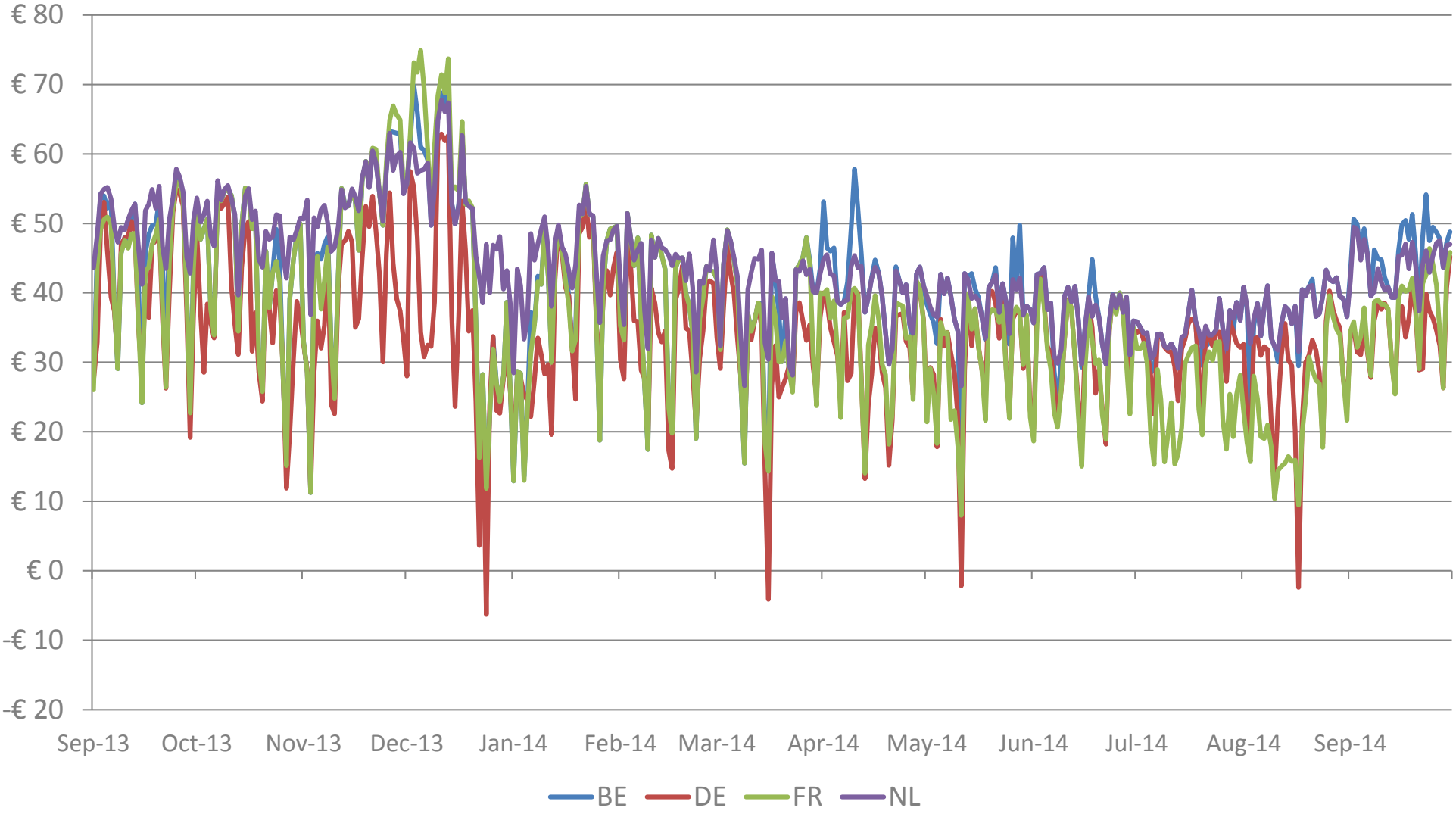
a) Monitoring results ATC coupling

Presentation of current results of ATC coupling

- CWE Prices
  - Sep 2013 to Sep 2014
- Price Convergence
  - Average: Oct 2013 to Sep 2014
- Price Volatility
  - Sep 2013to Sep 2014 per hub
  - Average: Oct 2013 to Sep 2014
- ATC Utilization Rate
  - Average: Oct 2013 to Sep 2014

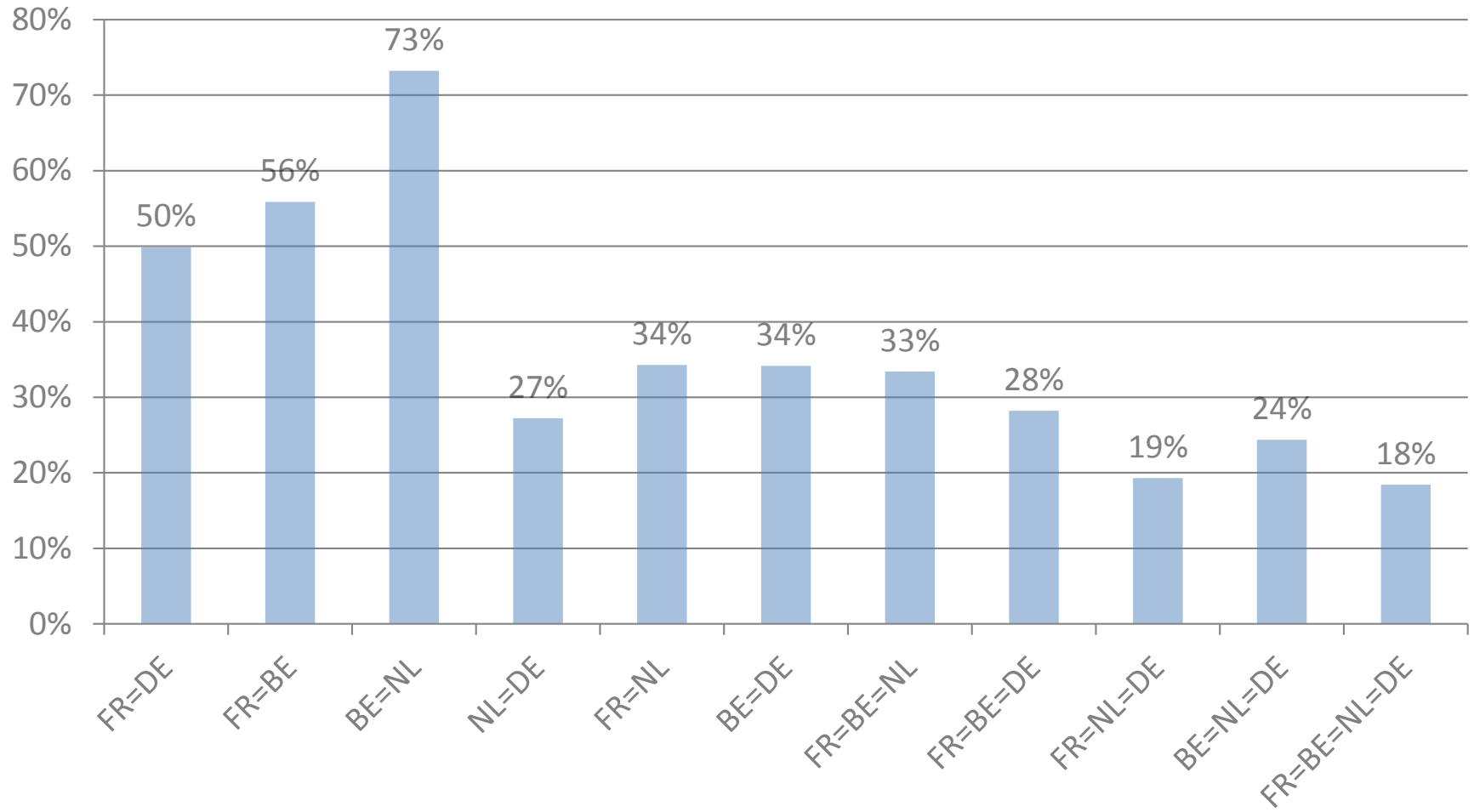
a) Monitoring results ATC coupling

CWE prices (daily baseload): September 2013 to September 2014



a) Monitoring results ATC coupling

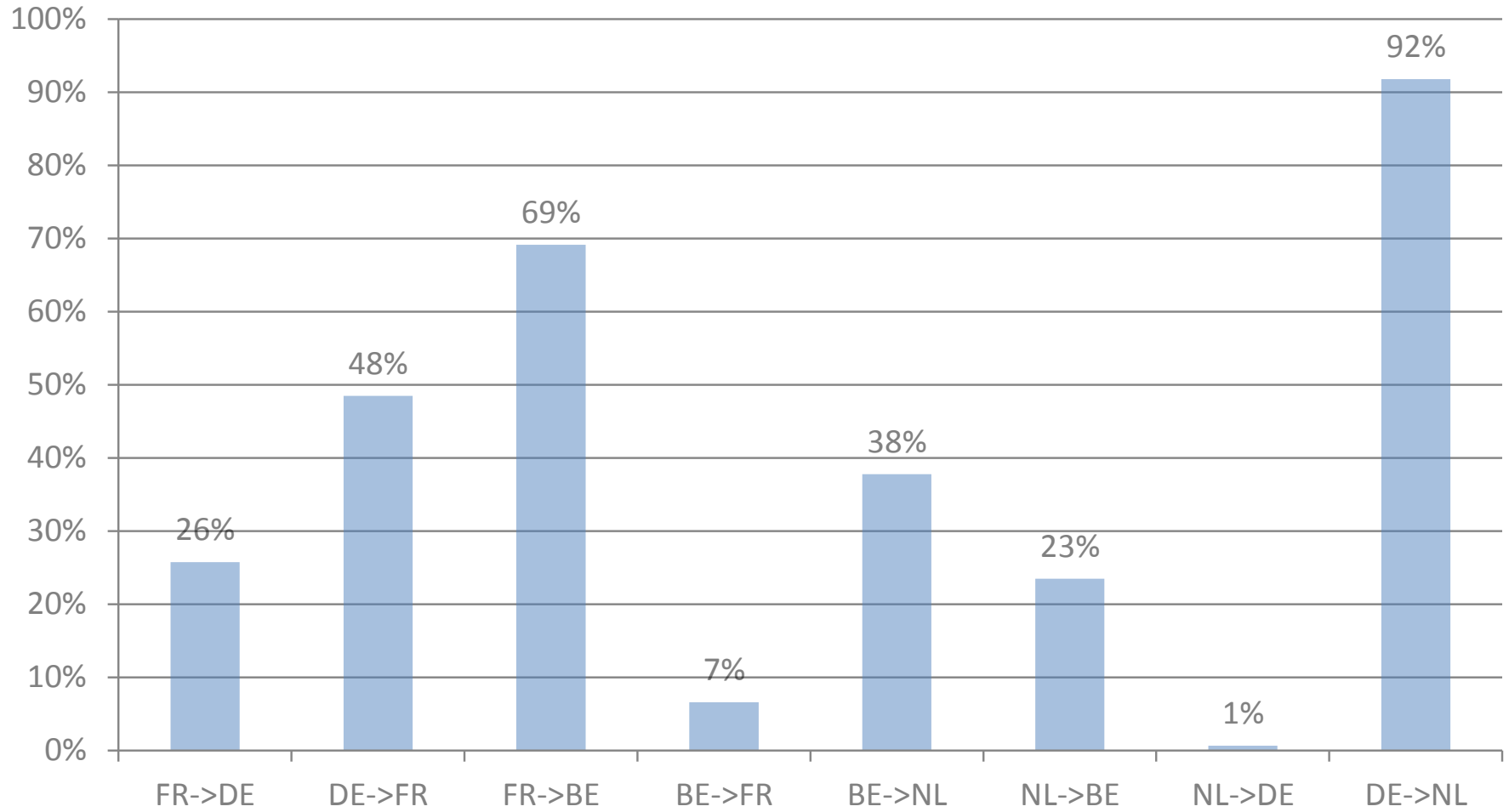
CWE Price Convergence - Average: October 2013 to September 2014



% of hours with convergence of prices (threshold is 0,005€)

a) Monitoring results ATC coupling

ATC Utilization Rate - Average: October 2013 to September 2014



Average utilization of CWE interconnectors = Cross Border Flow / Daily ATC on interconnector

If ATC on interconnector = 0 → Utilization rate = 0%

b) Summary of agreed transparency framework for Go Live

- Daily publication before GCT
  - Initial FB parameters at 8:00 (before LT nominations)
  - Long-term nominations at 10:30
  - Final FB parameters at 10:30 (Random anonymized CBs, PTDFs, RAMs)
  - ATCs for Shadow Auctions at 10:30
  - Initial Intraday ATCs available after FB MC
- Daily publication after GCT
  - Fixed anonymized CBCOs at D+2
  - On www.casc.eu:
    - Capacity allocated (used margin on CBs)
    - Congestion income
    - Hub net positions
  - On www.europeanpricecoupling.eu
    - Overview of the hourly CWE Hub prices for the day D+1
    - Bilateral exchanges for the day D+1

b) Summary of agreed transparency framework for Go Live

- Following discussions with MPs in last FBUG, project partners agree to publish **aggregated information related to the D-2 common grid model**

- Aggregated hourly information will be published monthly ex-post:

1. Vertical Load

2. Generation

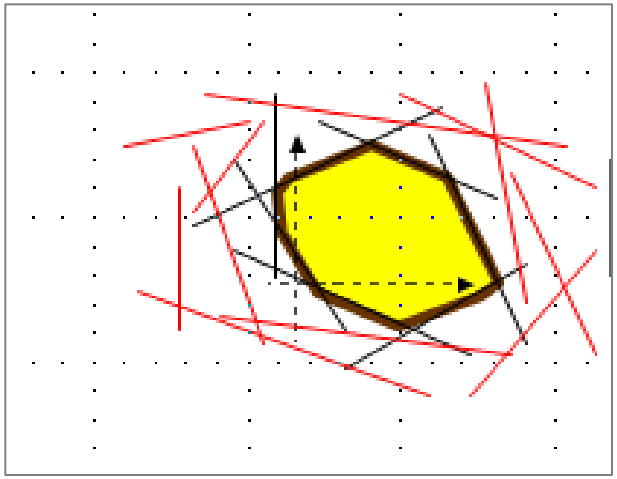
3. Reference Bilateral Exchanges

	D2CF											
	Vertical load				Generation				Reference Bilateral Exchanges			
TimeStamps	BE	DE	FR	NL	BE	DE	FR	NL	BE-NL	DE-NL	FR-BE	FR-DE
20130101_0030	7040	24468	43606	7163	6566	30875	50657	5284	1401	1602	1955	-1477
20130101_0130	6513	23632	40841	6469	5921	30022	47844	5083	1401	1602	2066	-1500
20130101_0230	6076	23302	40004	6030	5250	29831	47065	4643	1401	1602	2299	-1500
20130101_0330	5889	23167	36809	5994	5218	29569	43264	4406	1401	1803	2142	-1500
20130101_0430	5812	23041	35299	5909	5244	29424	41392	4392	1329	1803	1966	-1425
20130101_0530	5747	22429	34982	5841	5250	29244	40869	4426	1226	1803	1791	-1500
20130101_0630	5898	22714	35575	5932	5246	29929	41891	4451	1372	1702	2094	-1500
20130101_0730	5864	25435	36131	6364	5567	33002	42213	4875	1401	1702	1766	-1500
20130101_0830	6243	26670	37982	6993	5703	33876	44015	5499	1401	1702	2011	-1306
20130101_0930	6665	27460	39642	7540	5773	34301	47465	5652	1401	1602	2371	-333
20130101_1030	6971	27793	42063	8116	5744	35600	49013	6012	1394	1602	2700	-1500
20130101_1130	7198	28632	43195	8431	5834	36262	50475	6194	1254	1560	2700	-1200
20130101_1230	7229	28369	44788	8587	5833	35869	52120	6291	1223	1560	2700	-1200
20130101_1330	7065	27125	43417	8598	5794	34678	50989	6236	1344	1553	2700	-1200
20130101_1430	6937	27365	41278	8526	5806	34956	48825	6270	1401	1553	2615	-1200
20130101_1530	6916	26891	39832	8430	6014	32980	48375	6202	1401	1602	2385	449
20130101_1630	7069	26909	39748	8841	6092	32588	49022	6282	1401	1602	2463	826
20130101_1730	7816	30975	43254	9309	6876	36475	53007	6754	1401	1602	2443	550
20130101_1830	7971	31704	47895	9362	6900	36239	58093	6807	1401	1602	2580	854
20130101_1930	7890	30992	49485	9200	6857	36059	58905	6694	1401	1553	2536	87

- D2CF publication has been included in the final NRA approval package, amended after the consultation and submitted to NRAs on August, 1st

b) Summary of agreed transparency framework for Go Live

- As requested by MPs in the consultation, project partners will also **publish ex-post the redundant critical branches** (in red in below chart) with fixed labelling



- Timing of publication foreseen for Q1 2015