

***Documentation of the CWE FB MC solution as basis for the formal approval-request*** (Brussels, 9<sup>th</sup> May 2014)

**Annex 16.10 Economic Assessment**



## CWE MC external parallel run report



## Introduction

The CWE FB project has started the FB external parallel run in January 2013. At the request of the regulators, the CWE project proposes to publish the indicators described in this document on a bi-monthly basis.

The proposal of the CWE project is based on a subset of indicators given in the feasibility report as well as on the additional indicators requested by the regulators.

## Indicators

The following text will contain the different indicators comparing the following market coupling models:

ATCMC: ATC market coupling;

FBMC: Flow Based market coupling;

FBIMC: Flow Based Intuitive market coupling;

Infinite: Market coupling under infinite ATC;

## Dates included in this report

Week	Wed	Thu	Fri	Sat	Sun	Mon	Tue
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

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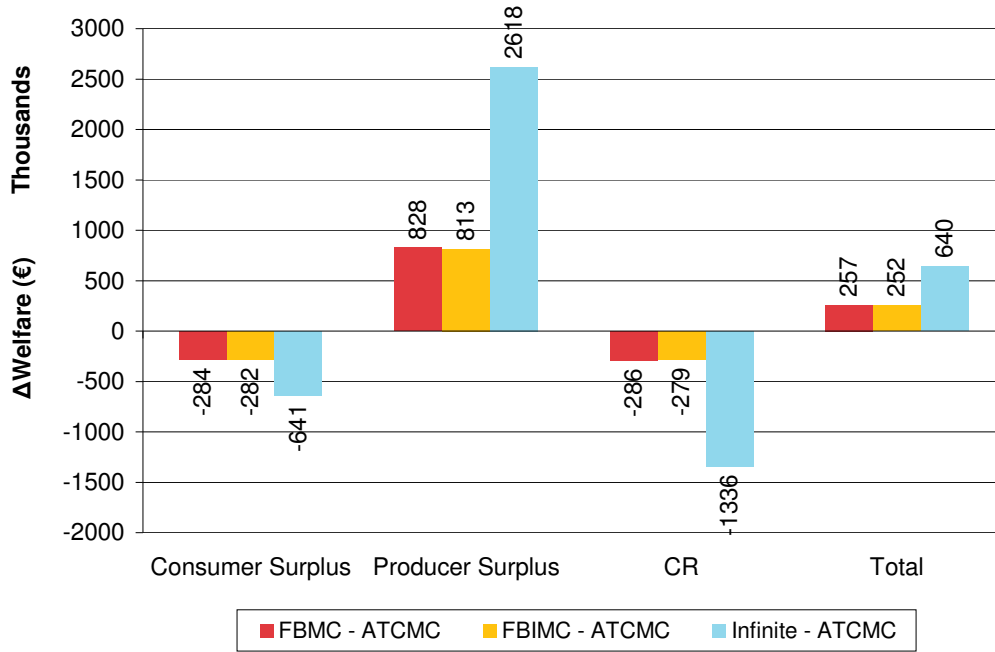


13	27 Mar	28 Mar	29 Mar	30 Mar	31 Mar	01 Apr	02 Apr
14	03 Apr	04 Apr	05 Apr	06 Apr	07 Apr	08 Apr	09 Apr
15	10 Apr	11 Apr	12 Apr	13 Apr	14 Apr	15 Apr	16 Apr
16	17 Apr	18 Apr	19 Apr	20 Apr	21 Apr	22 Apr	23 Apr
17	24 Apr	25 Apr	26 Apr	27 Apr	28 Apr	29 Apr	30 Apr
18	01 May	02 May	03 May	04 May	05 May	06 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
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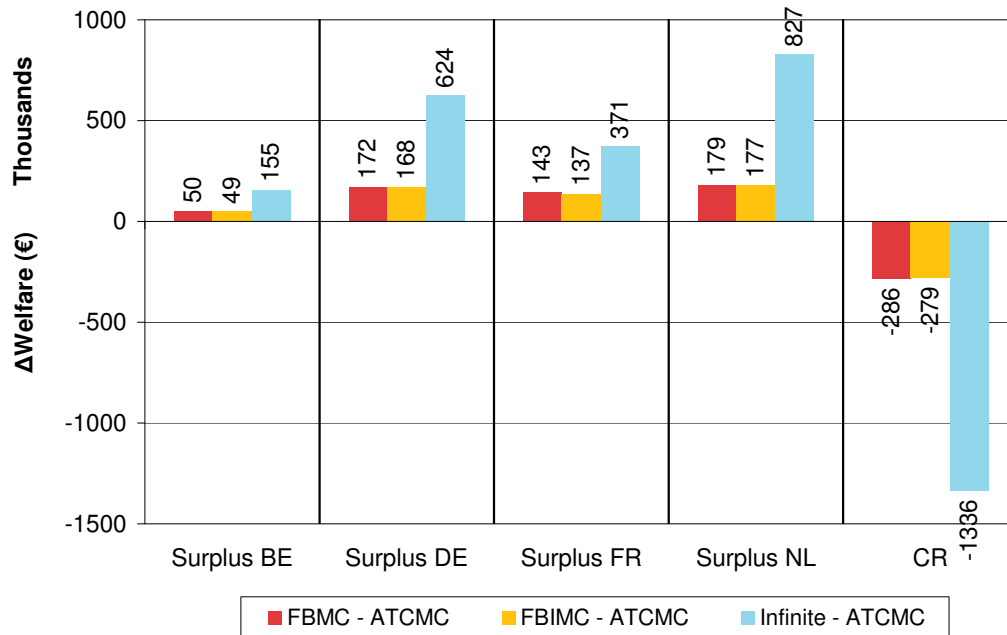


## Day ahead market welfare

### Daily average welfare difference (relative to ATC)



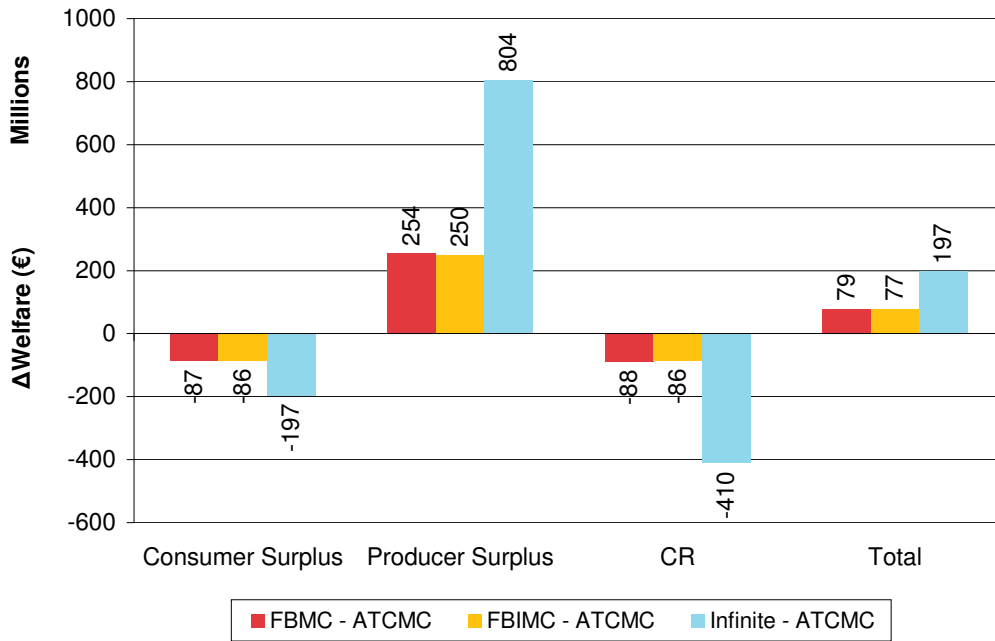
### Daily average welfare difference (relative to ATC)



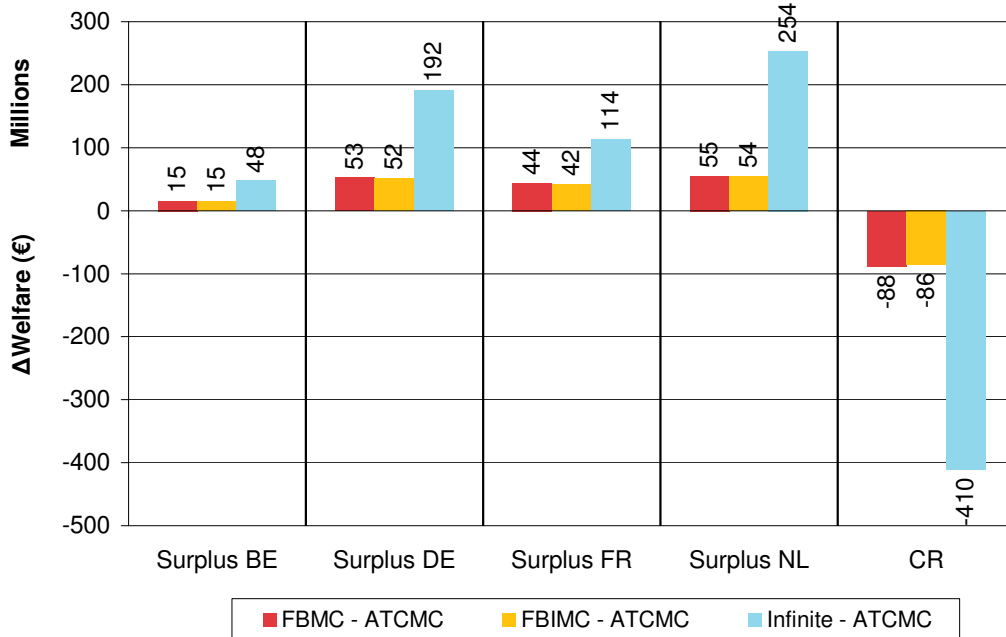


## Day ahead market welfare

### Total welfare (307 days) difference (relative to ATC)



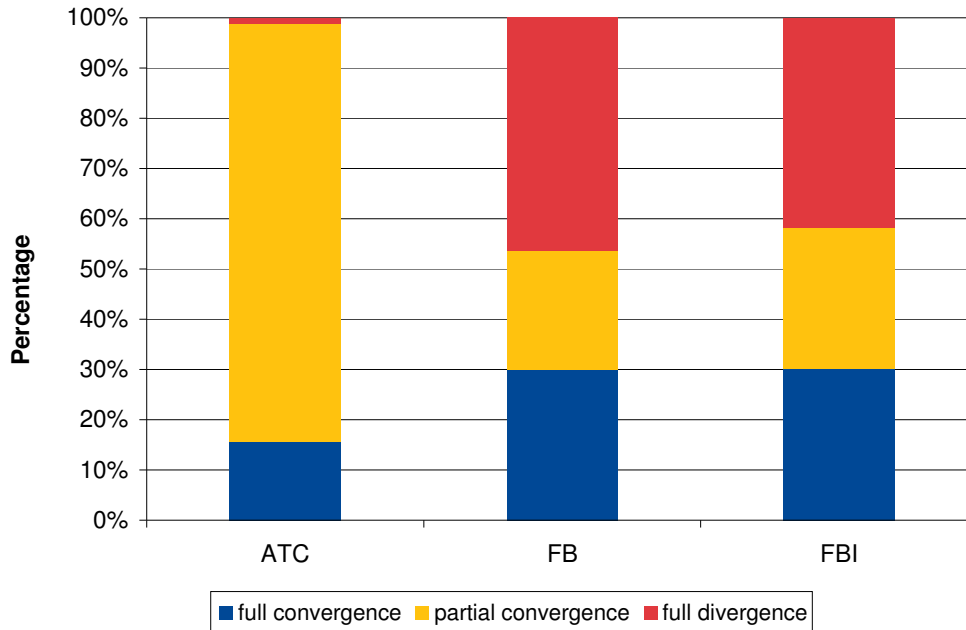
### Total welfare (307 days) difference (relative to ATC)





## Price convergence

### Convergence



Convergence of price difference between areas in proportion to the number of situations (tolerance: 0.02 €/MWh)



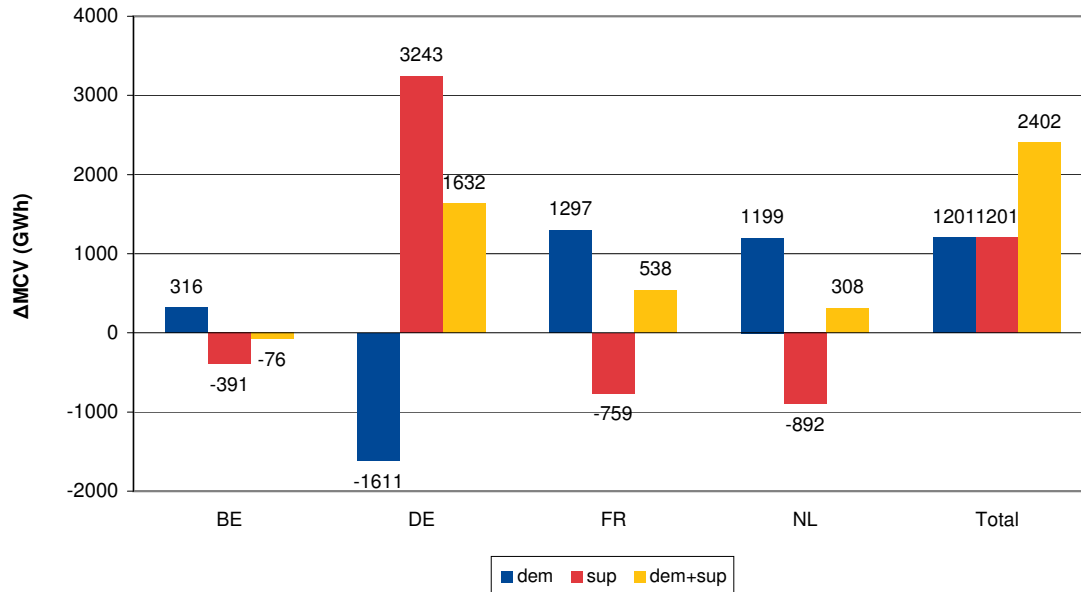
Note we distinguish three market clearing volume indicators:

dem: total accepted demand in an area

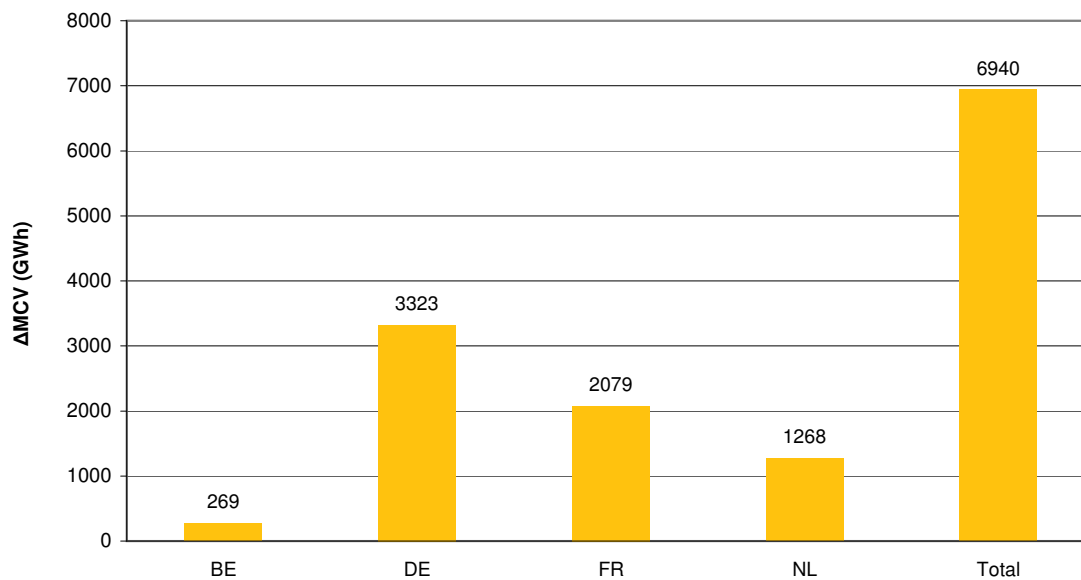
sup: total accepted supply in an area

mcv: the larger of total demand and supply in an area. The rationale is that the difference is the net position, i.e. additional supply from adjacent areas (import), or additional demand from adjacent areas (export).

### ΔMCV (FBMC - ATCMC)



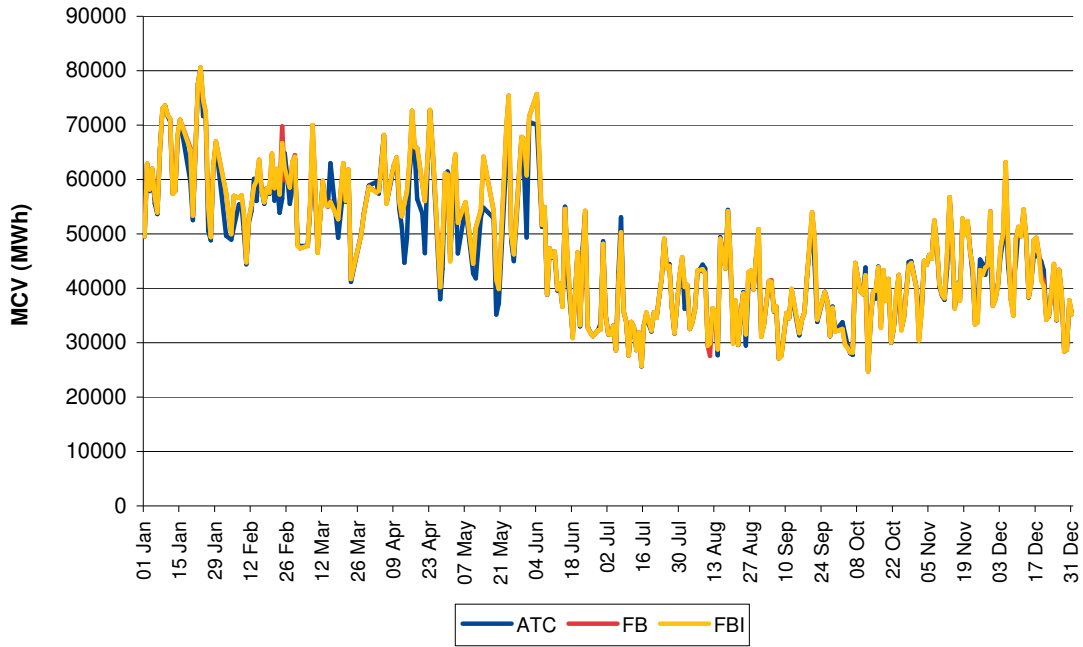
### ΔMCV (FBMC - ATCMC)



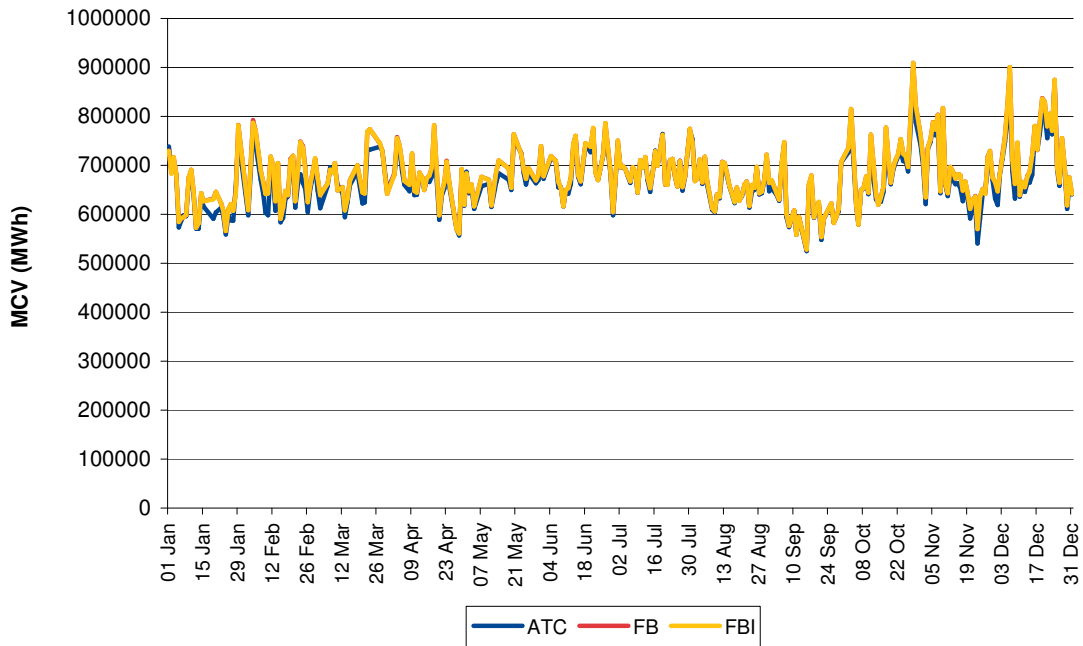




### MCV - BE

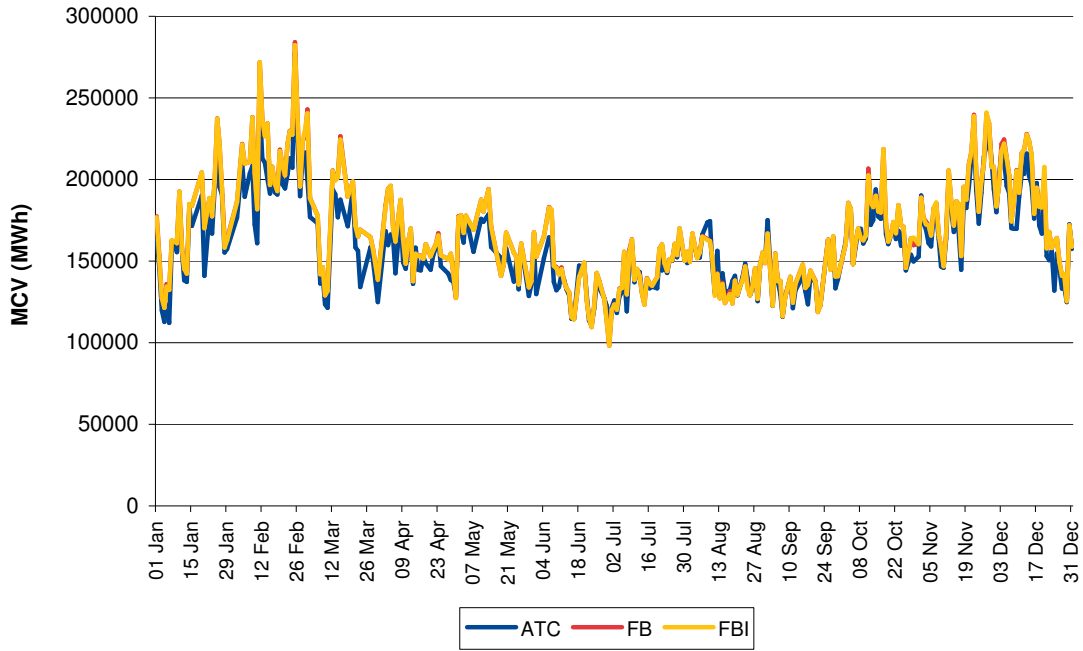


### MCV - DE

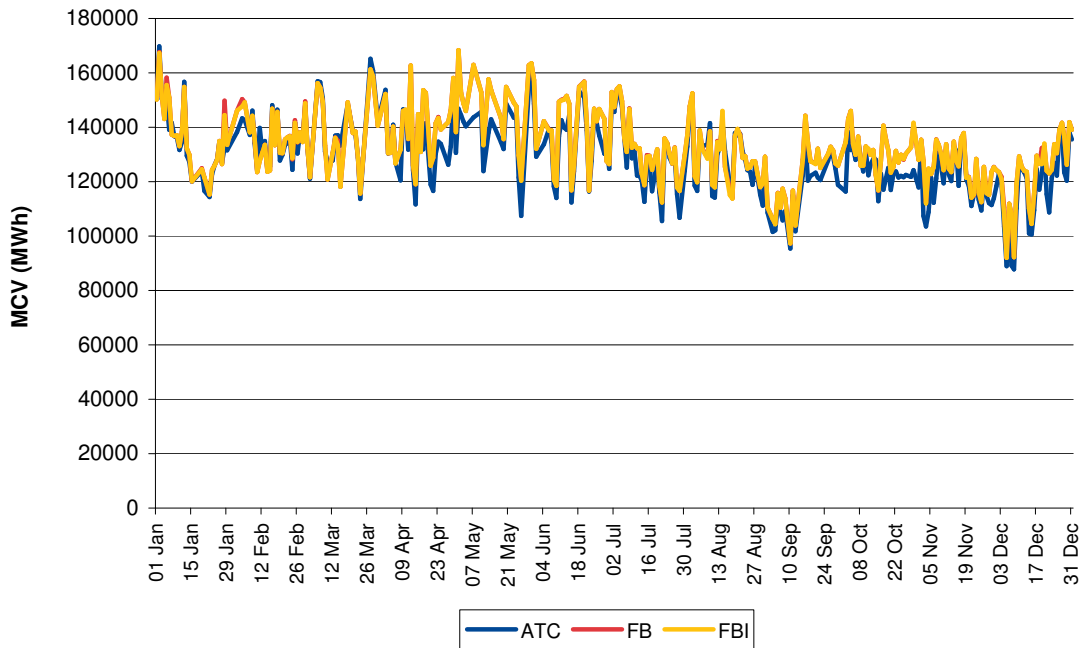




### MCV - FR

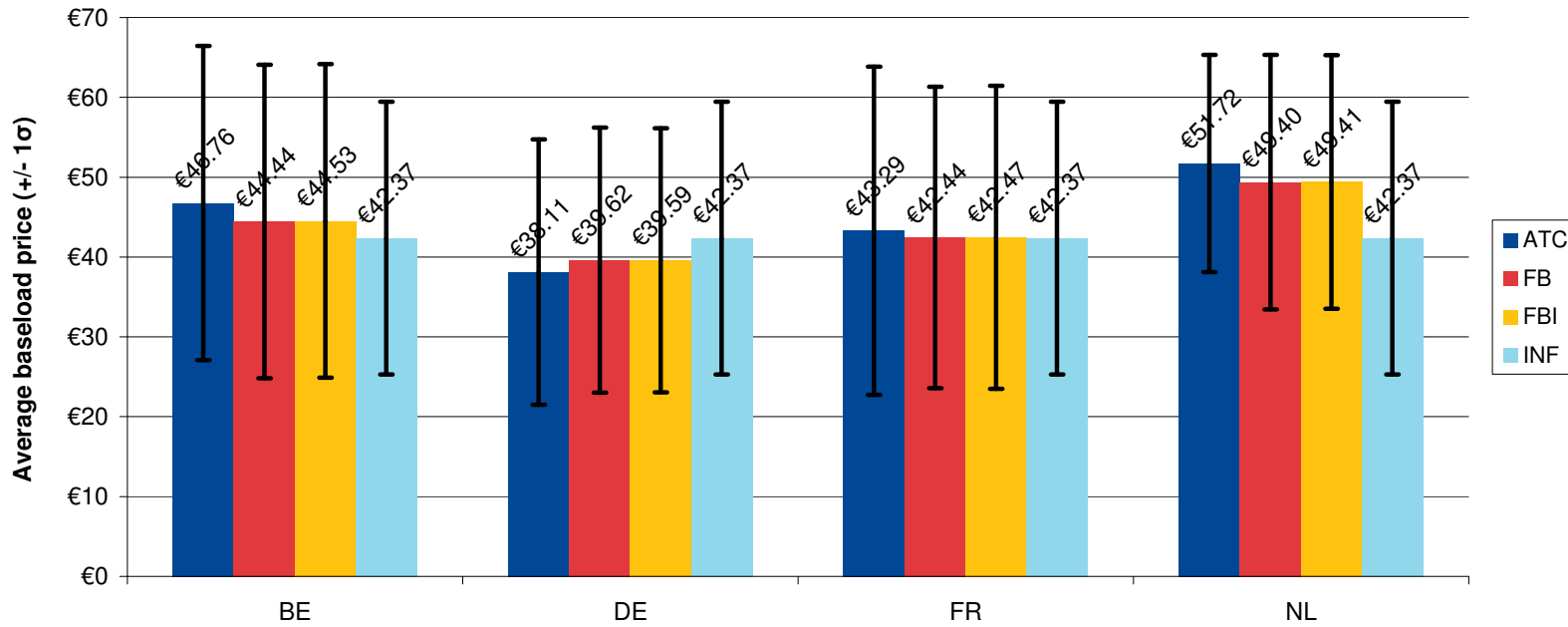


### MCV - NL



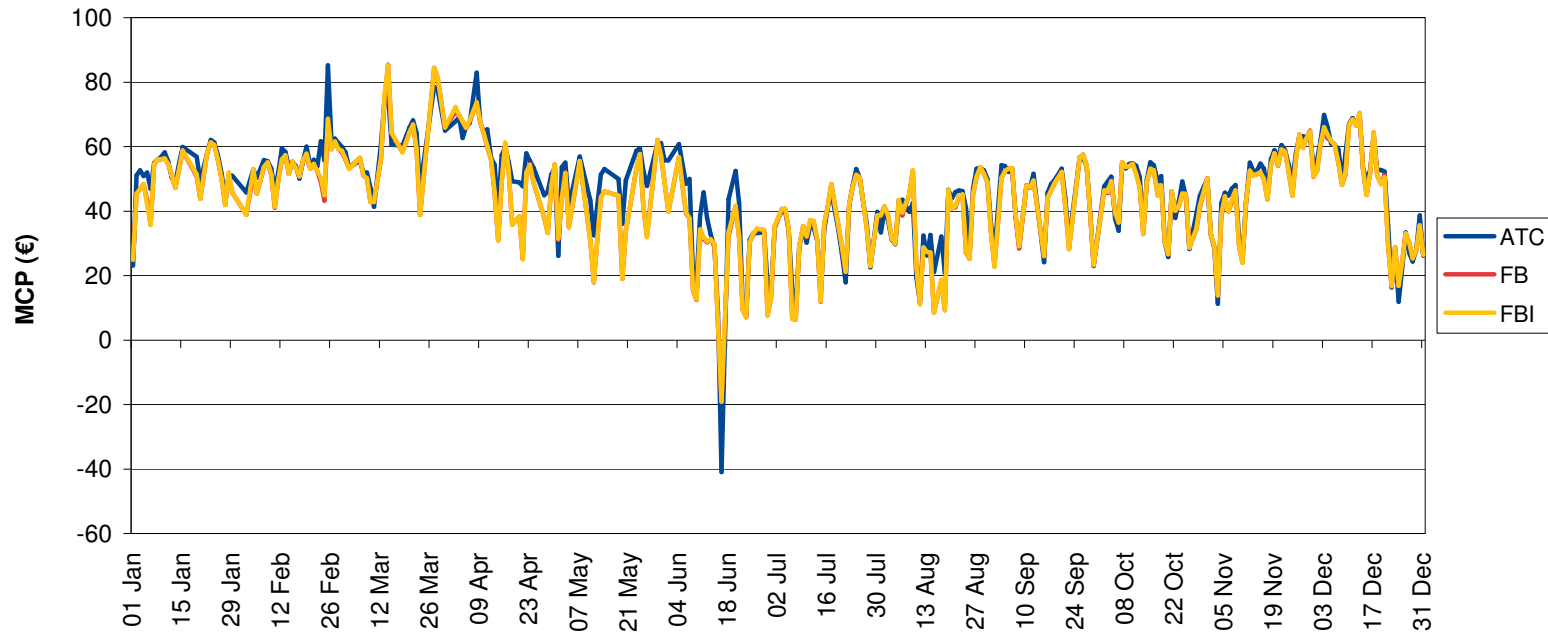


### Average baseload price



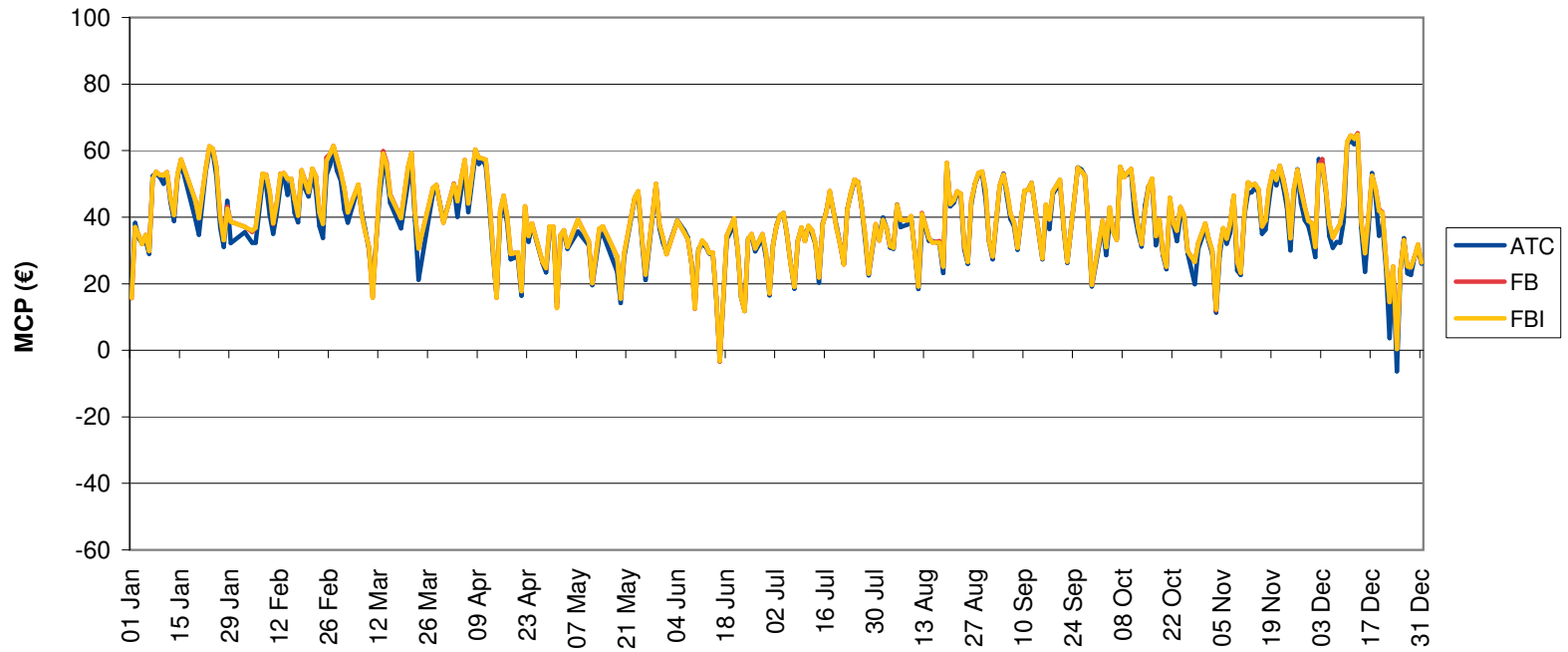


### Baseload price - BE



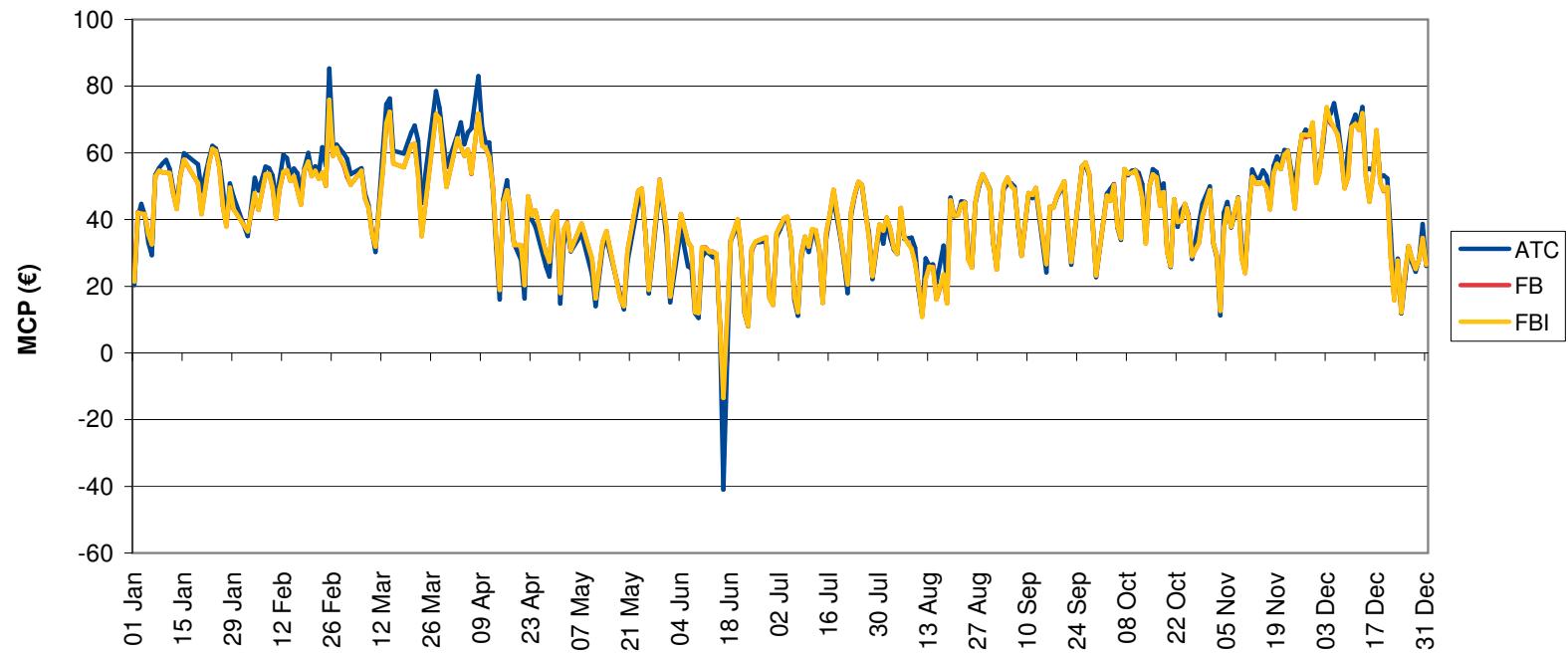


### Baseload price - DE



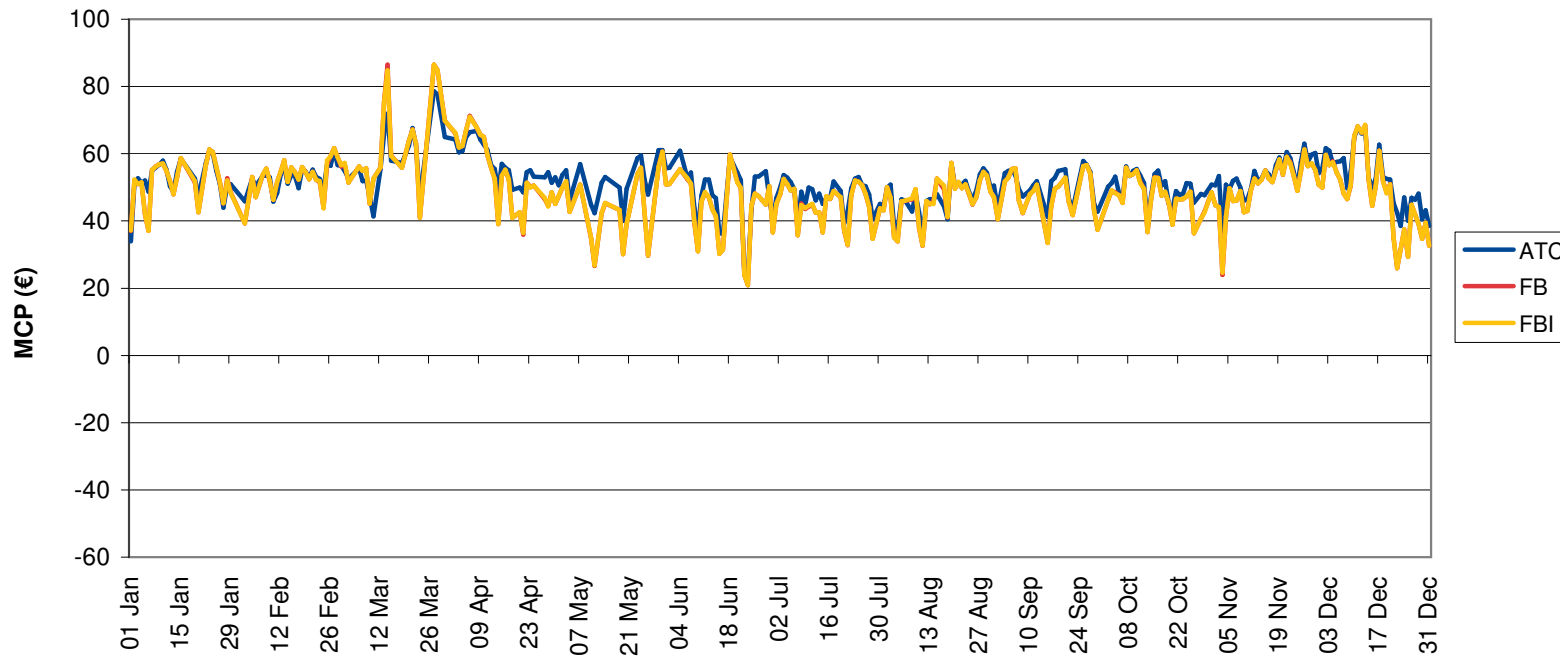


### Baseload price - FR



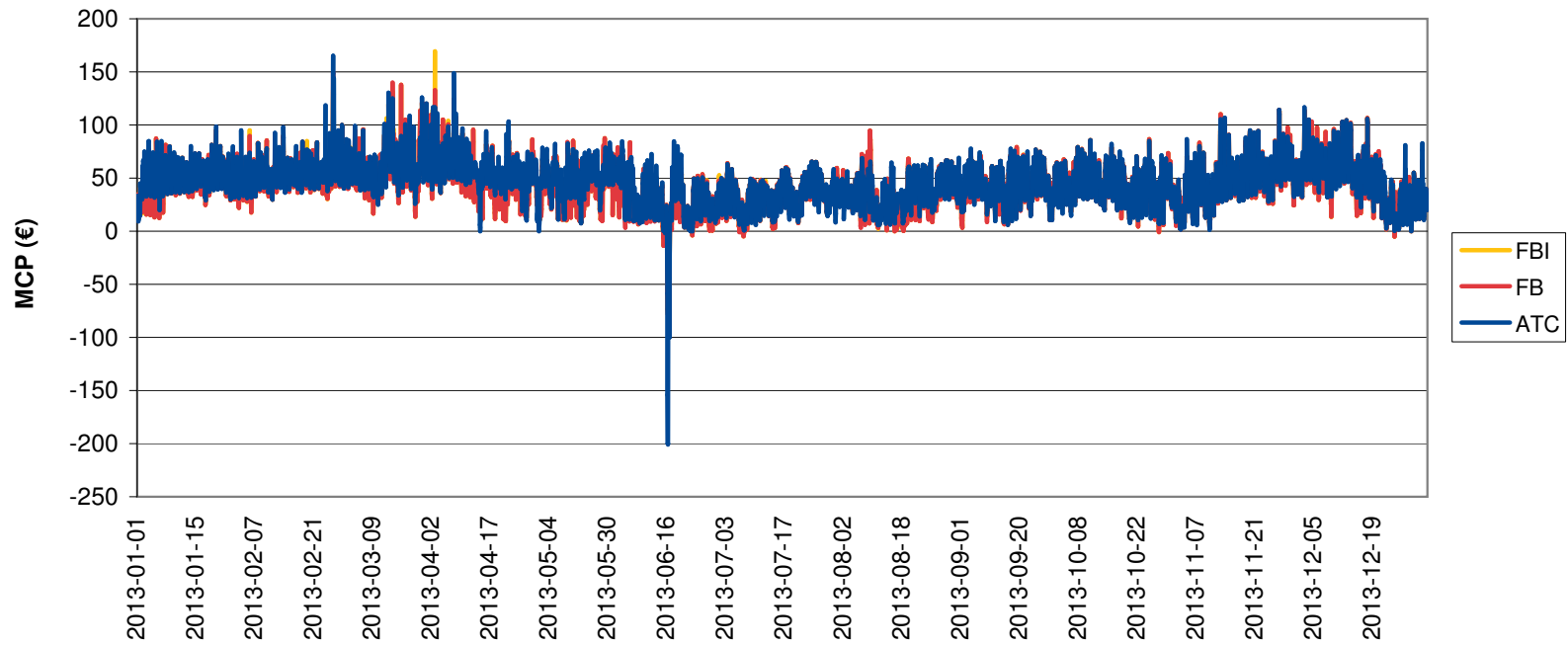


### Baseload price - NL





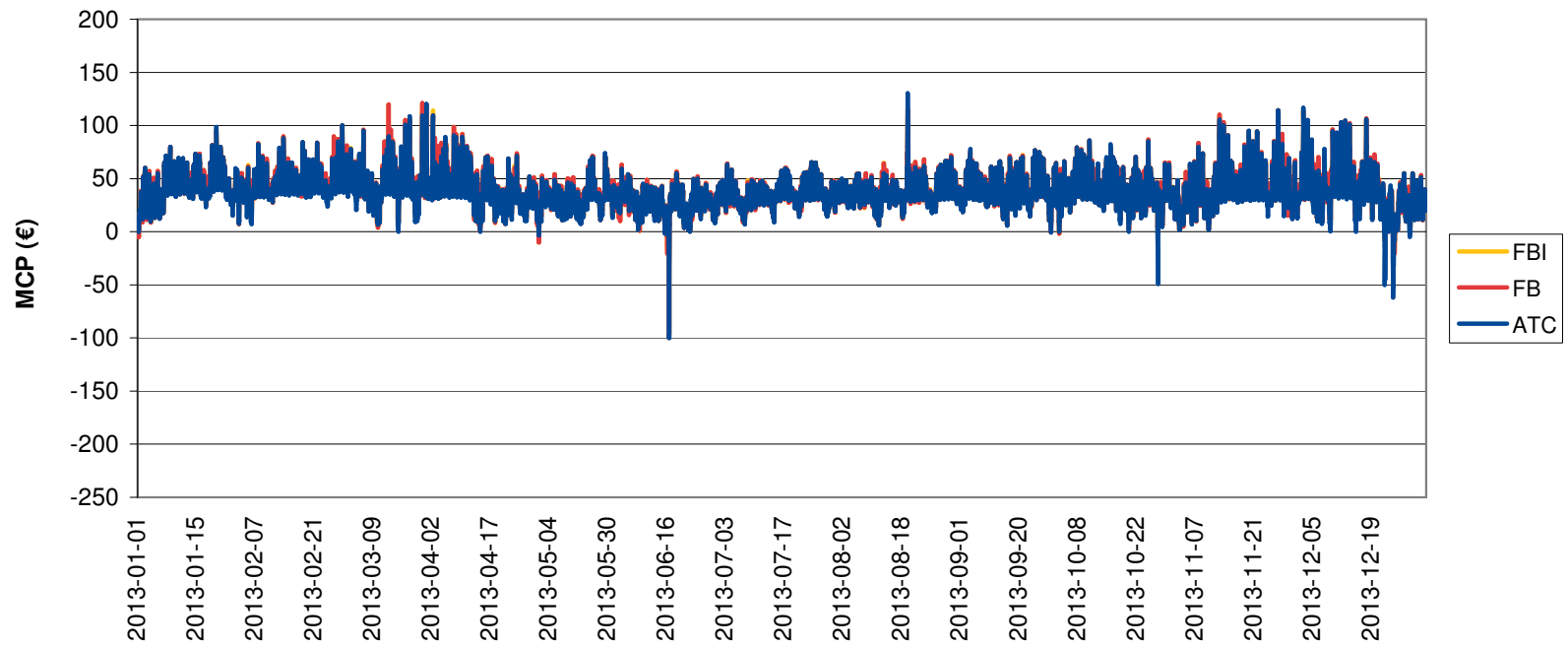
### MCP - BE





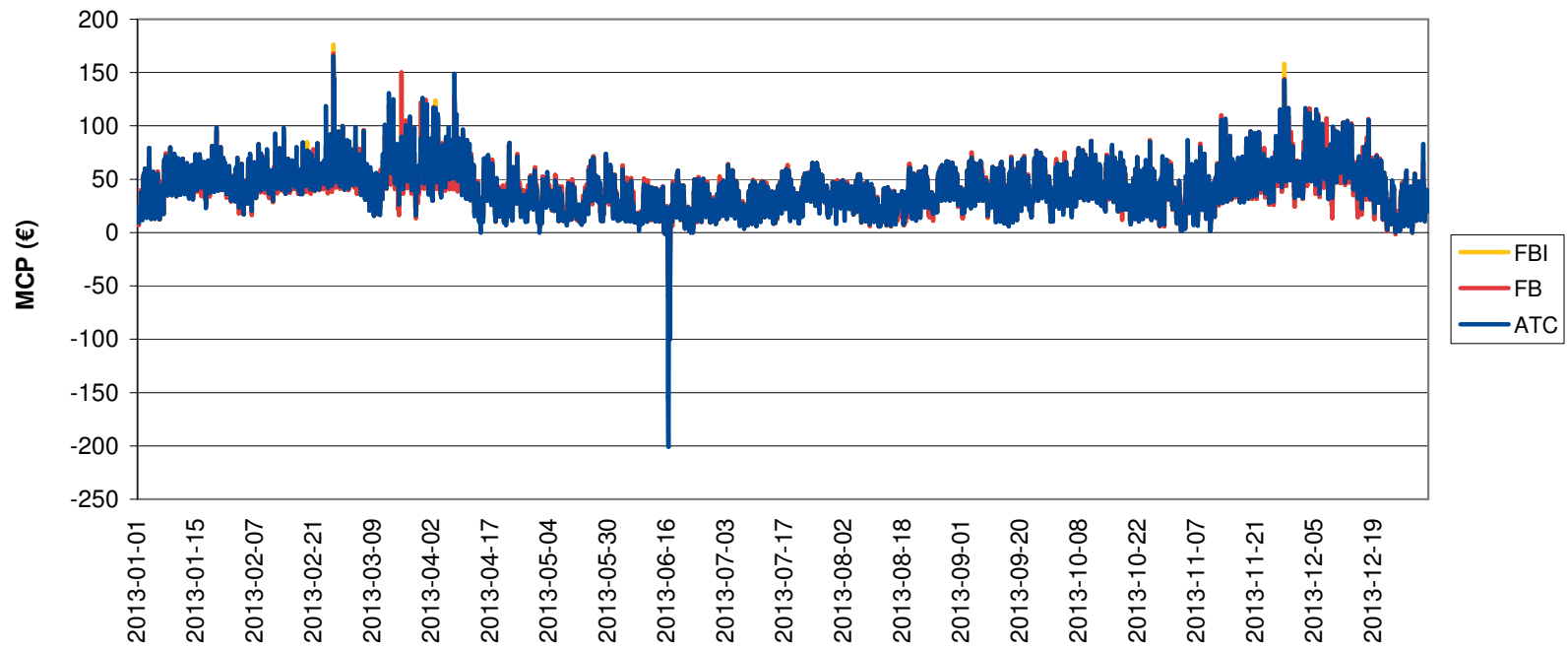


### MCP - DE



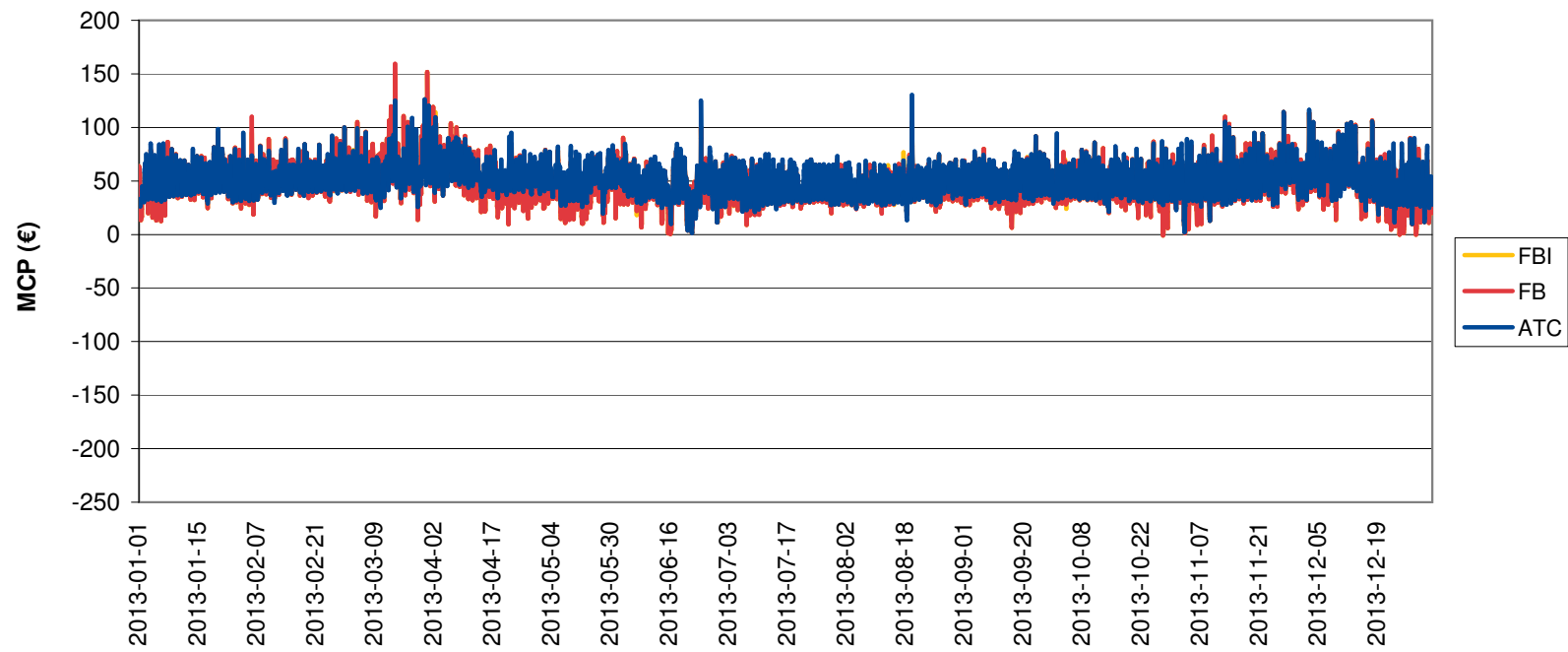


### MCP - FR





### MCP - NL





## Intuitiveness

### Frequency

The period under consideration contains 7368 hours.

#### Non-intuitiveness

	Number of hours where the situation is bilateral non-intuitive	Proportion of hours where the situation is bilateral non-intuitive	Proportion of congested hours where the situation is bilateral non-intuitive
ATC	0	0.0%	0.0%
FB	421	5.7%	8.2%
FBI	0	0.0%	0.0%
INF	0	0.0%	0.0%

### Involvement

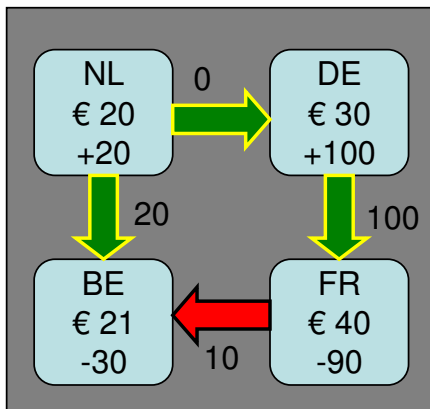
In most non-intuitive situations, the areas are said to be involved in the non-intuitive situation if they belong to one of these sets:

- The largest set of areas with the highest prices such that all areas of the set are exporting;
- The largest set of areas with the lowest prices such that all areas of the set are importing;

#### Note

With this definition of involvement it could happen that a situation is considered non-intuitive, yet none of the areas is considered to be involved.

#### Example



BE+NL are together importing, yet are the cheapest markets. This means no bilateral exchanges can be found that do not include at least one counter intuitive flow (FR-BE in our example). Yet none of the markets are involved: NL is the cheapest market and is exporting. Even though the set {BE, NL} is exporting in aggregate, they are not all exporting individually as stated in our definition. Hence no markets are involved.

Number of Involvements	BE	DE	FR	NL
FB "plain" MC	140	65	13	113



## Paradoxically rejected block orders

	Number of PRBs	PRB Utility value
ATCMC	2343	€2,617,533
FBMC	2121	€2,188,971
FBIMC	2149	€2,246,658
Infinite Capacity	814	€295,034
Isolated	5177	€34,408,656

## Block Bids

Proportion of accepted block orders in the Total	BE	DE	FR	NL
ATCMC	11.7%	4.4%	8.8%	9.2%
FBMC	11.6%	4.6%	9.2%	9.4%
FBIMC	11.7%	4.6%	9.2%	9.4%
Infinite Capacity	11.5%	5.2%	9.6%	10.5%
Isolated	21.4%	4.7%	11.3%	18.3%