CWE Consultative Group meeting

Munich, April 10th 2018

Novotel airport hotel

CWE day-ahead capacity calculation
20% minRAM Analysis results

Since implementation of the 20% minRAM is a significant change, CWE TSOs performed a Analysis to assess the impact.

- Results of this Analysis can be found enclosed:
- Analysis results will also be published on JAO website this week.

Analysis results (ZIP)

Based on the days analyzed:

- The implementation of minRAM leads to a larger flow based domain and more trading possibilities, in particular during winter time
- DE Export and FR Import Net Position (NP) are significantly higher in winter
- The NL CWE NP increases and decreases in winter, the BE CWE NP is hardly affected
- Additional capacity has to be safeguarded by additional costly RAs in real time
  - To ensure security of supply CWE TSOs will check technical feasibility for each business day
- The minimum RAM has on average a downward effect on prices in Belgium and France and an upward effect on prices in DE
- The minimum RAM has for most days a significant positive impact on CWE Social Welfare
  - but: additional costs for redispatching have not been taken into account!

CWE day-ahead capacity calculation
20% minRAM Analysis approach

The effect of the 20% minRAM process has been analyzed based on 15 days

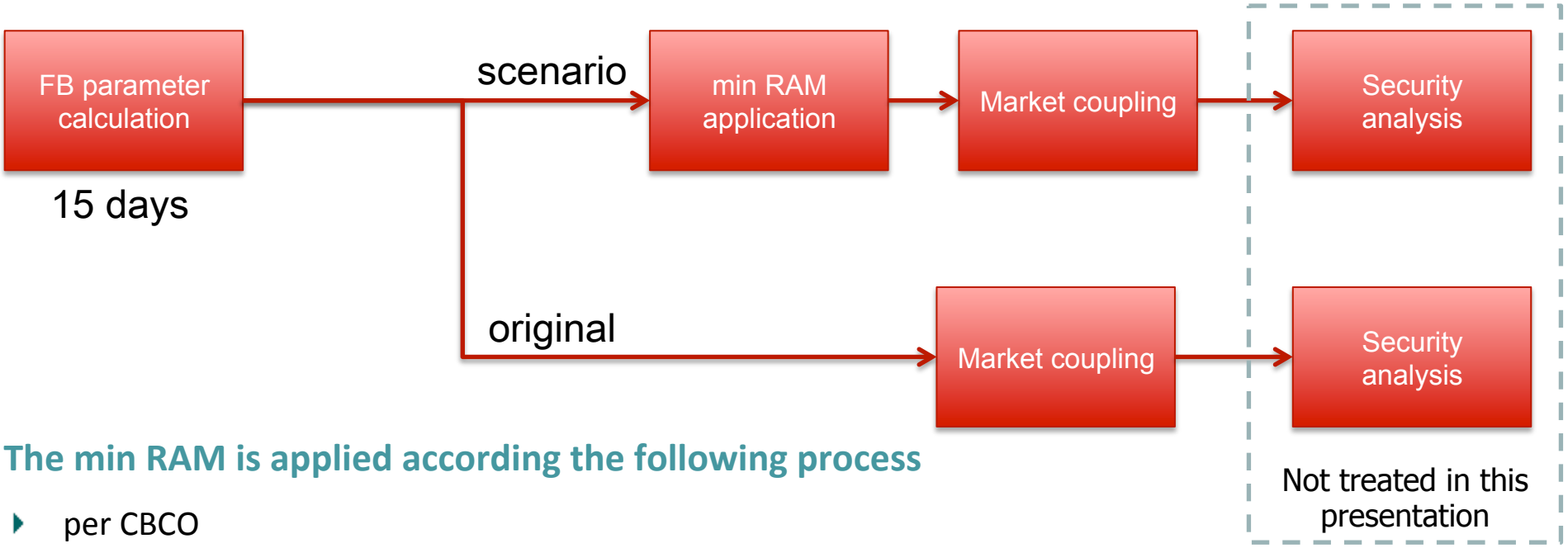
- 12 Analysis days (period 2016/09/01 – 2017/08/31)
- 3 additional days with a very high amount of redispatch (RD) in
  - DE (2017/01/03 & 2017/01/11)
  - NL (2017/11/14)

Day	Redispatch in DE* (GWh)		Type of day
2016/08/22	2,9	Interseason	Weekday
2016/01/10	6,0	Interseason	Weekend
2016/10/27	17,3	Interseason	Weekday
2016/11/12	0,0	Winter	Weekend
2016/12/21	64,5	Winter	Weekday
2017/01/19	68,3	Winter	Weekday
2017/01/23	59,6	Winter	Weekday
2017/03/30	10,3	Interseason	Weekday
2017/06/10	0,0	Summer	Weekend
2017/06/20	23,5	Summer	Weekday
2017/07/03	16,2	Summer	Weekday
2017/08/01	0,0	Summer	Weekday
2017/01/11	155,6	Winter	Weekday (additional)
2017/01/03	128,7	Winter	Weekday (additional)
2017/11/14	26,8	Winter	Weekday (additional)

* Maximum of positive and negative Redispatch in Germany
Source: https://www.netztransparenz.de/EnWG/Redispatch

CWE day-ahead capacity calculation

20% minRAM Analysis approach



The min RAM is applied according the following process

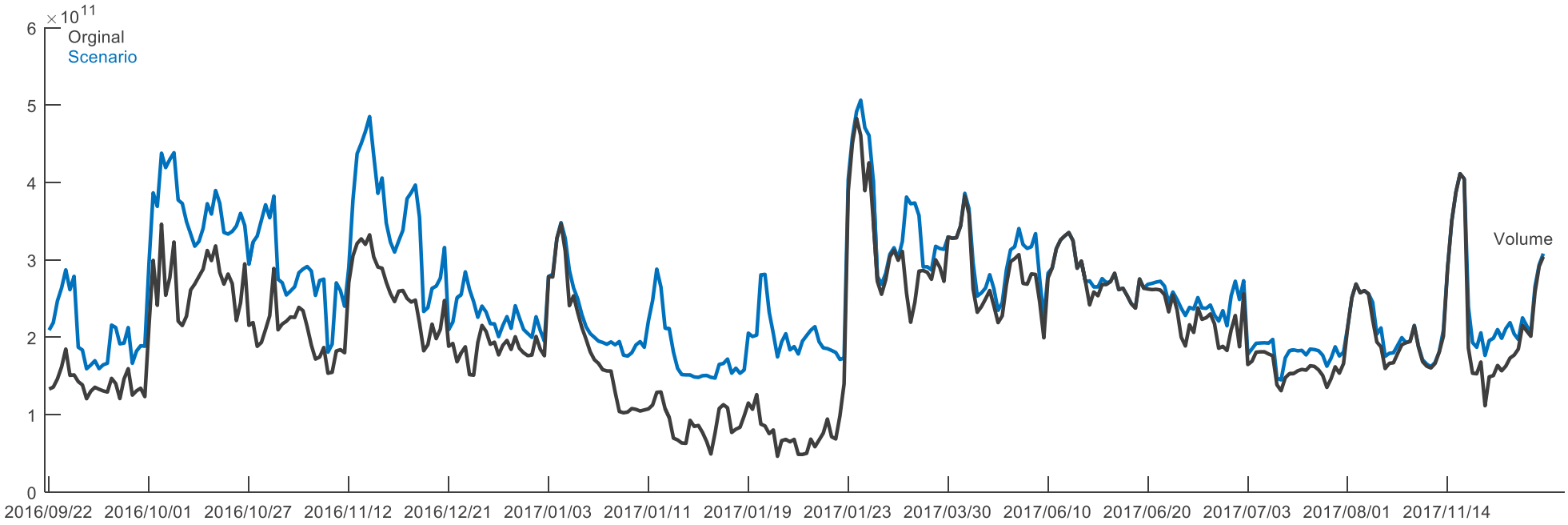
- per CBCO
- On an hourly basis
- $minRAM = 20\% \times Fmax$
- The RAM is computing including a new parameter, the AMR (**A**djustment for **M**in **R**AM) as follows (without taking FRM into account and before LTA inclusion) :
  - $AMR = Min(0;\ RAM - FMax \times 20\%)$ and $RAM = FMax - Fref - FRM - FAV - AMR$
- For example if a CBCO has $Fmax = 1000MW$ and $RAM = 50MW$, the $AMR = -150MW$ in order to reach $RAM = 200MW$ $(20\% \times 1000MW)$

CWE day-ahead capacity calculation

20% minRAM Analysis results – Impact on size FB domain

As expected, the minRAM leads to a larger flow based domain.

- The effect is significantly stronger in winter than in summer
- Also for several days, the min Ram does not increase the capacity much compared to LTA inclusion

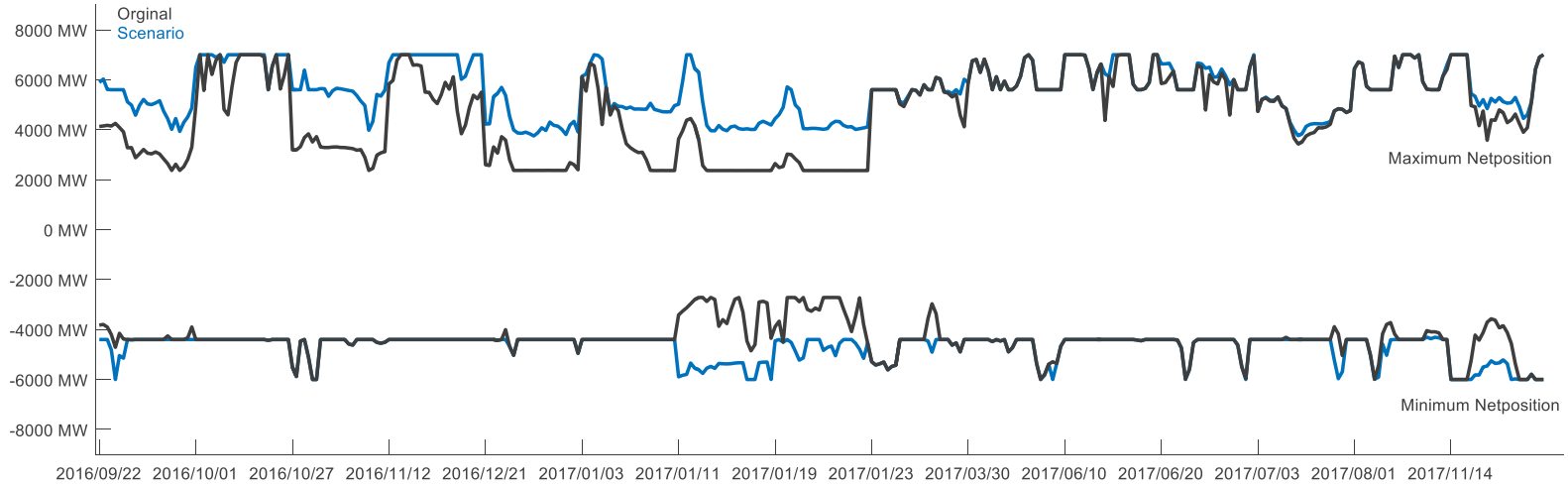


Original = FB domain including LTA inclusion, but excluding minimum RAM
Scenario = FB domain including LTA inclusion and including minimum RAM

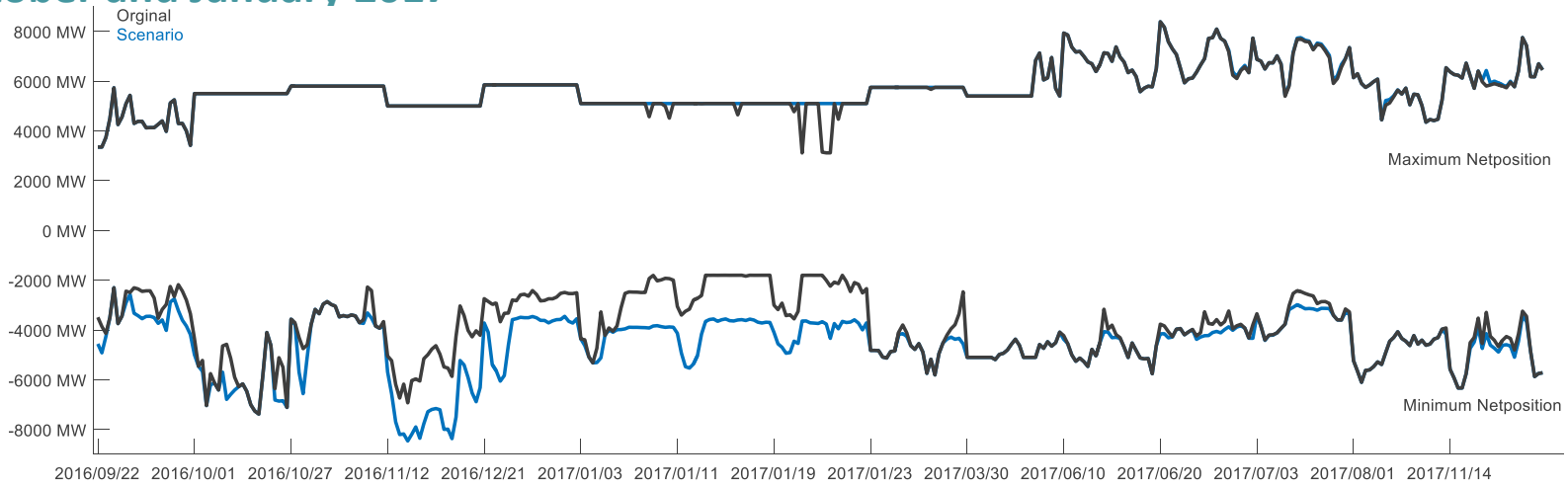
CWE day-ahead capacity calculation

20% minRAM Analysis results – Impact on min/max NP (1/2)

DE MAX Export Net Position (NP) is significantly higher in winter until January 2017; MAX Import NP changes are negligible except 2017/01/11 and 2017/01/19



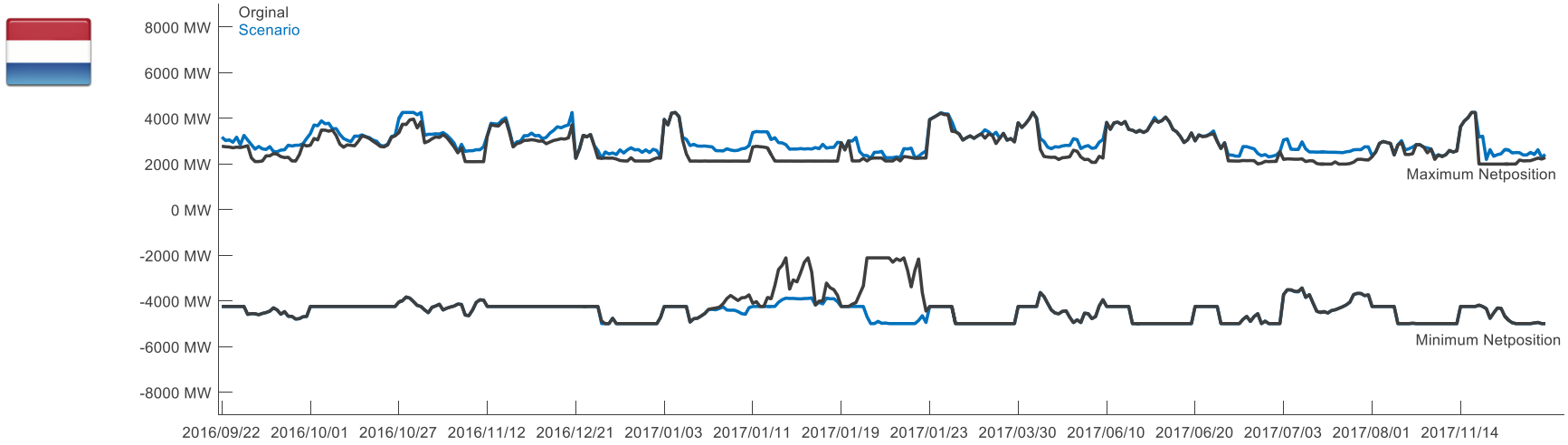
FR MAX Export NP changes are negligible whereas the MAX import NP is higher between October and January 2017



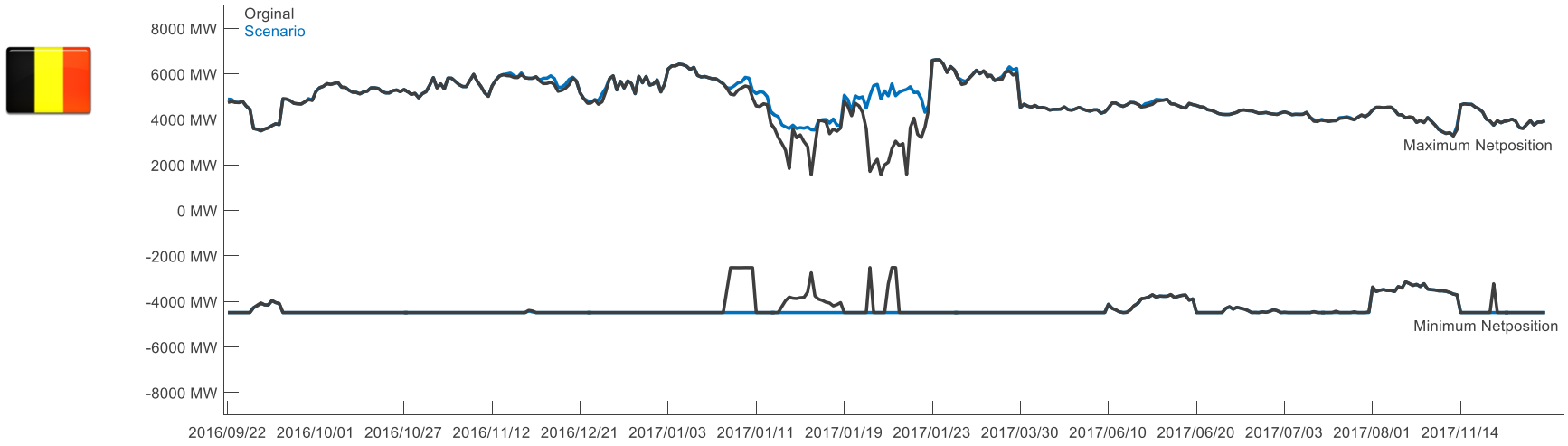
CWE day-ahead capacity calculation

20% minRAM Analysis results – Impact on min/max NP (2/2)

NL MAX Export NP increases; MAX Import NP changes are negligible except 2017/01/11 and 2017/01/19



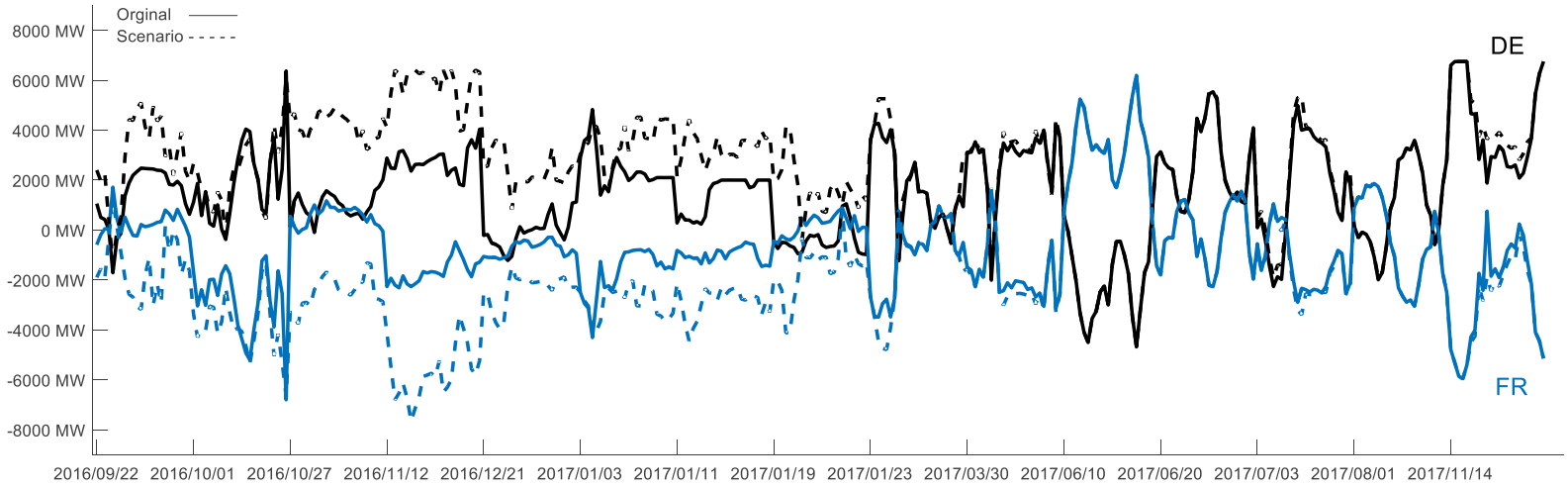
BE MAX Import and MAX Export NP only change on 2017/01/11 and 2017/01/19



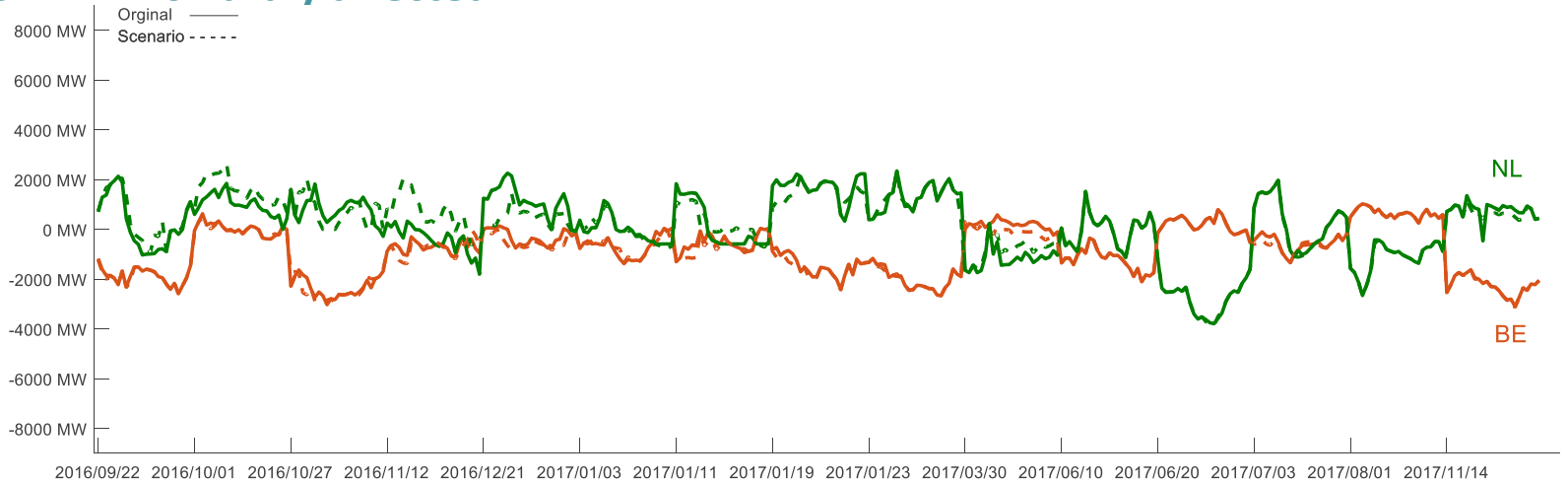
CWE day-ahead capacity calculation

20% minRAM Analysis results – Impact on CWE NP resulting from market coupling

The DE CWE NP calculated via market coupling increases in winter when the minimum RAM is applied; The French CWE NP decreases significantly



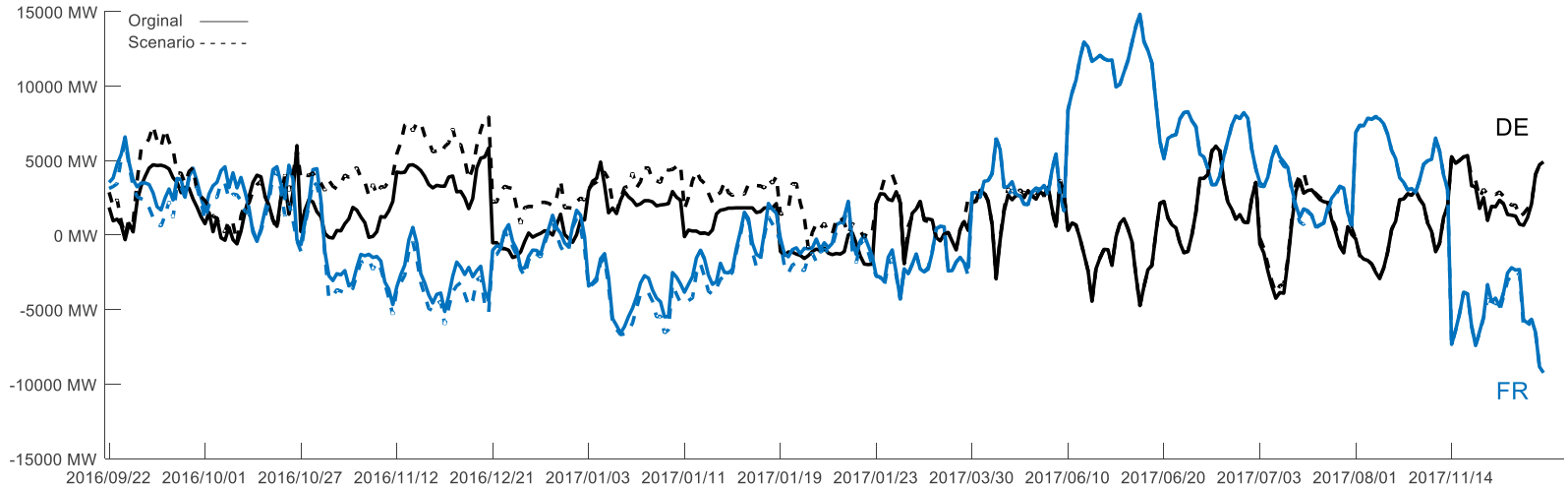
The NL CWE NP calculated via market coupling both increases and decreases in winter, the BE CWE NP is hardly affected



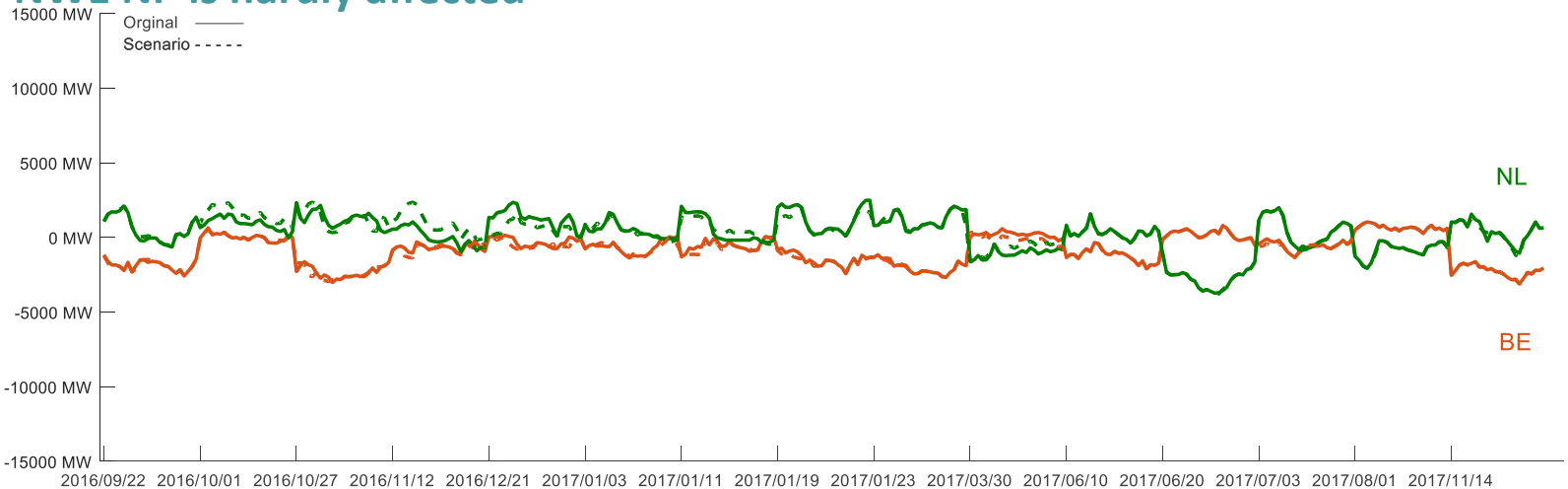
CWE day-ahead capacity calculation

20% minRAM Analysis results – Impact on NWE NP resulting from market coupling

The DE NWE NP calculated via market coupling increases in winter when the minimum RAM is applied; The French NEW NP is hardly affected



The NL NWE NP calculated via market coupling both increases and decreases in winter, the BE NWE NP is hardly affected

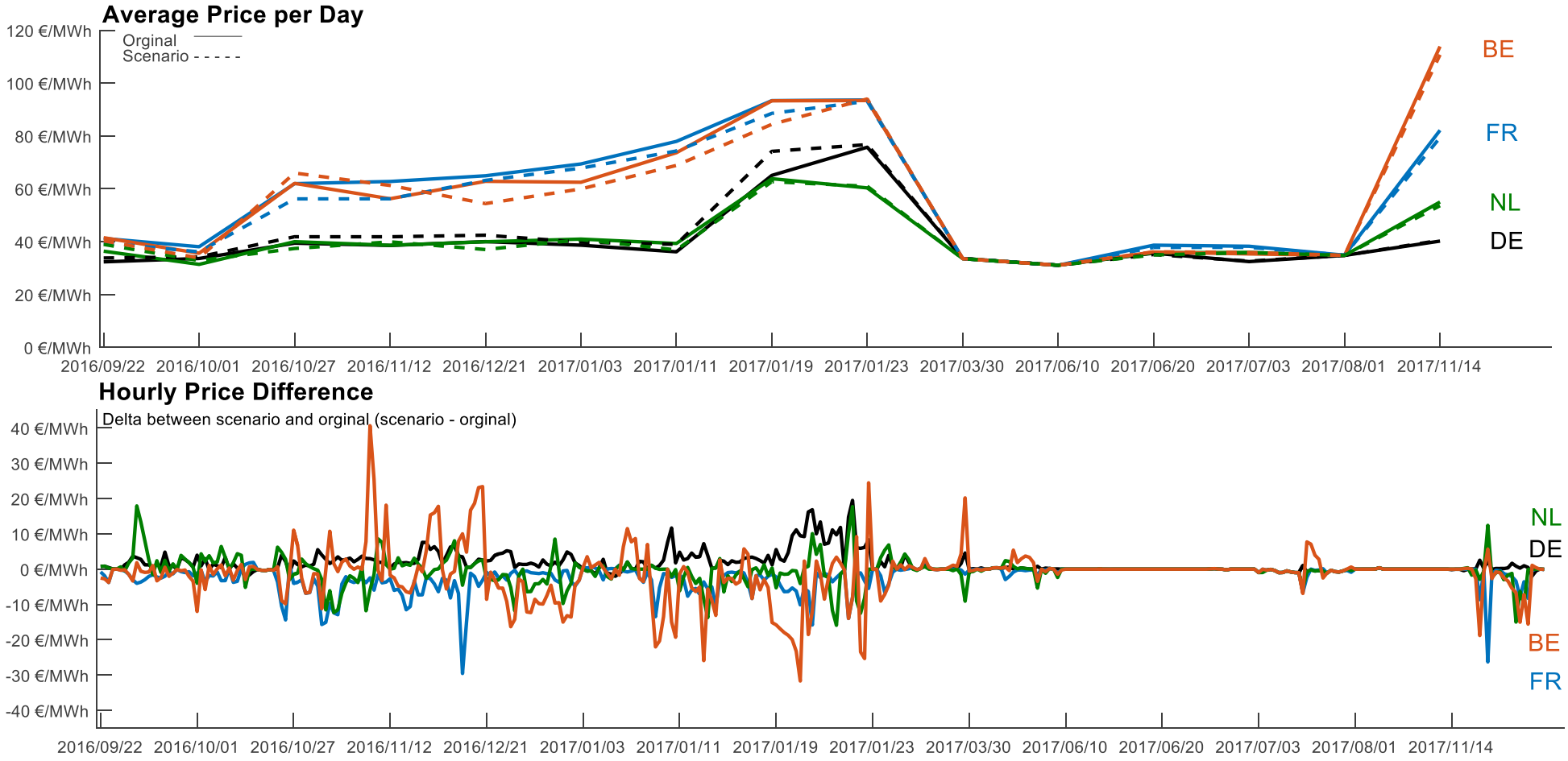


CWE day-ahead capacity calculation

20% minRAM Analysis results – Impact on prices

The minimum RAM has on average a downward effect on prices in Belgium and France and an upward effect on prices in DE

- Although the NP of BE and FR hardly changes due to the application of the minimum RAM (see previous slide), there is still an impact on the FR and BE price



CWE day-ahead capacity calculation

20% minRAM Analysis results – Impact on prices

The minimum RAM has for most days a significant positive impact on CWE Social Welfare

- On several days the minimum RAM does not have an effect on social welfare, while on other days the minimum RAM leads to an increase of social welfare between 0.8 and 1.6 M€.
- However, it should be noted that in this calculation the additional costs for the application of redispatch to enable the additional capacity are not taken into account.
- There are also three days when application of the minimum RAM leads to a decrease of CWE Social welfare of up to -170 k€. The cause is that for these days, welfare shifts from the CWE region to the rest of the MRC region.