Nordic TSOs quarterly cross zonal capacity report

Quarter 2, 2019 - TSO version

Background and Purpose

Quarter 2, 2019

This quarterly report on cross-zonal transmission capacity is produced by the Nordic TSOs by the request of NordREG, an organization for the Nordic energy regulators.

The Nordic TSOs determine the capacity on each cross-zonal corridor every hour of the day. The purpose of this report is to provide the reader with information about
• the available cross-zonal capacity on corridors between the Nordic countries and between the Nordics and continental Europe, and
• the reasons why the cross-zonal capacity has been reduced in the cases where capacity has been reduced below a threshold of 75 % of max NTC as an average over the quarter

The report consists of
• an overview over all corridors,
• detailed information on each corridor with hourly values and
• description of reoccurring and/or significant capacity reductions

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Summary

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For all corridors (34 in total) the available capacity provided by the TSOs was 84% of max NTC as a weighted average, compared to the threshold of 75%.

For AC corridors (14 in total) the available capacity provided by the TSOs was 77% of max NTC as a weighted average, compared to the threshold of 75%.

For DC corridors (20 in total) the available capacity provided by the TSOs was 91% of max NTC as a weighted average, compared to the threshold of 75%.

The number of corridors under 75% was 13. The corridor(s) with the lowest average available capacity compared to Max NTC was DE-SE4, with 36%.

Weekly day ahead capacities for all corridors – as a percentage of max NTC

Quarter 2, 2019

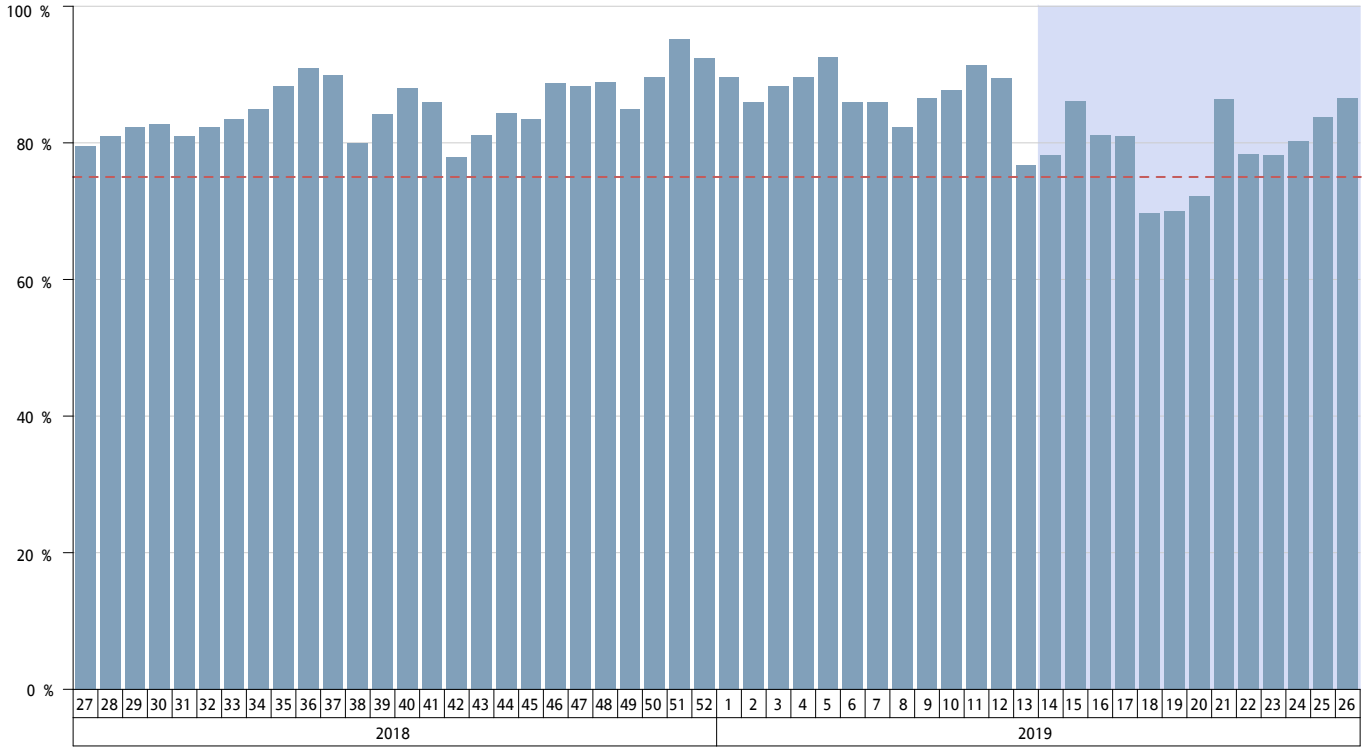

Figure 1: Cross-zonal day-ahead capacity result for all corridors, showing average weekly capacity given as a percentage of max NTC. The capacity is summed independent of direction.

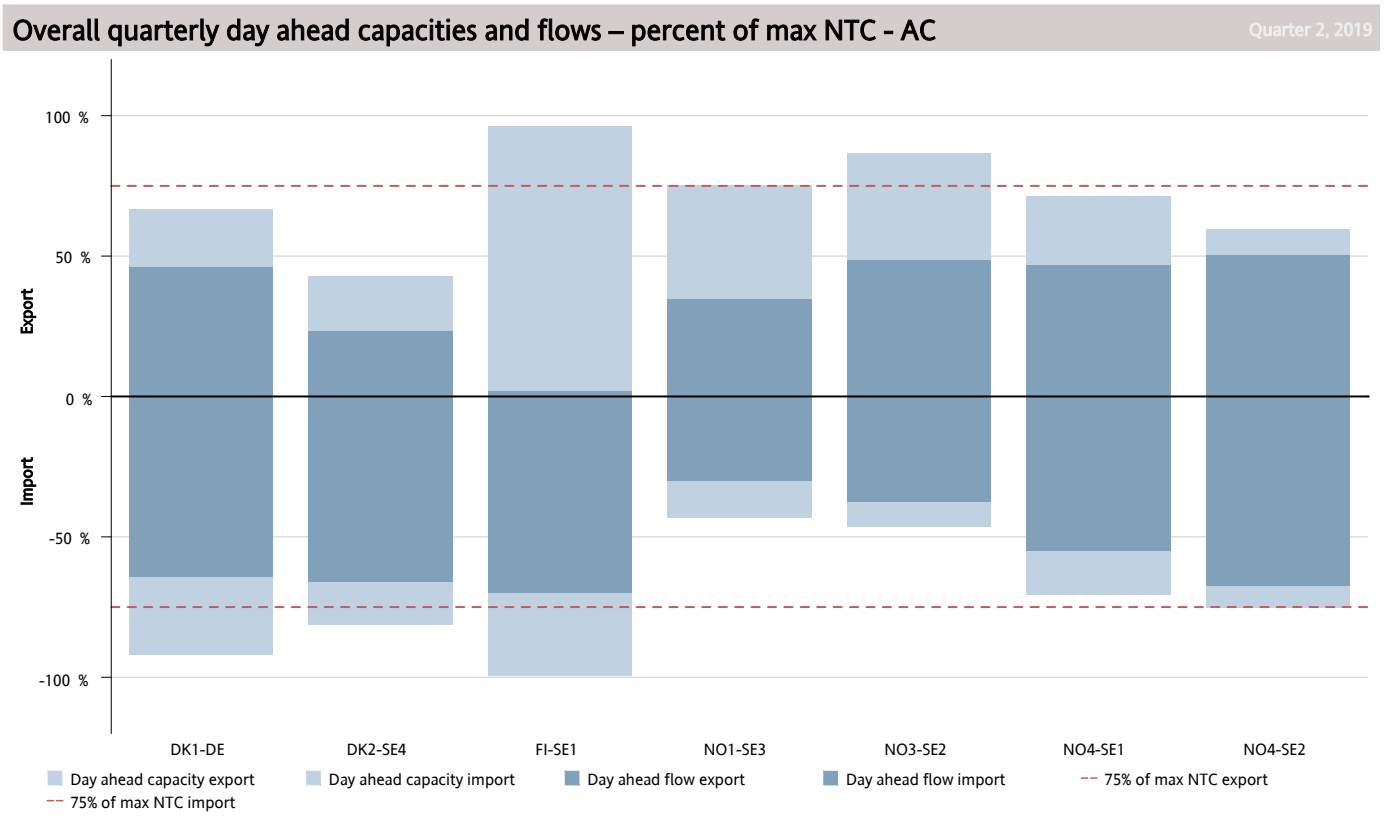

Figure 2: Cross-zonal day-ahead capacity result for AC corridors, showing average capacity given and flow as a percentage of max NTC. Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. For a corridor A-B, export means flow from A to B and import means flow from B to A.

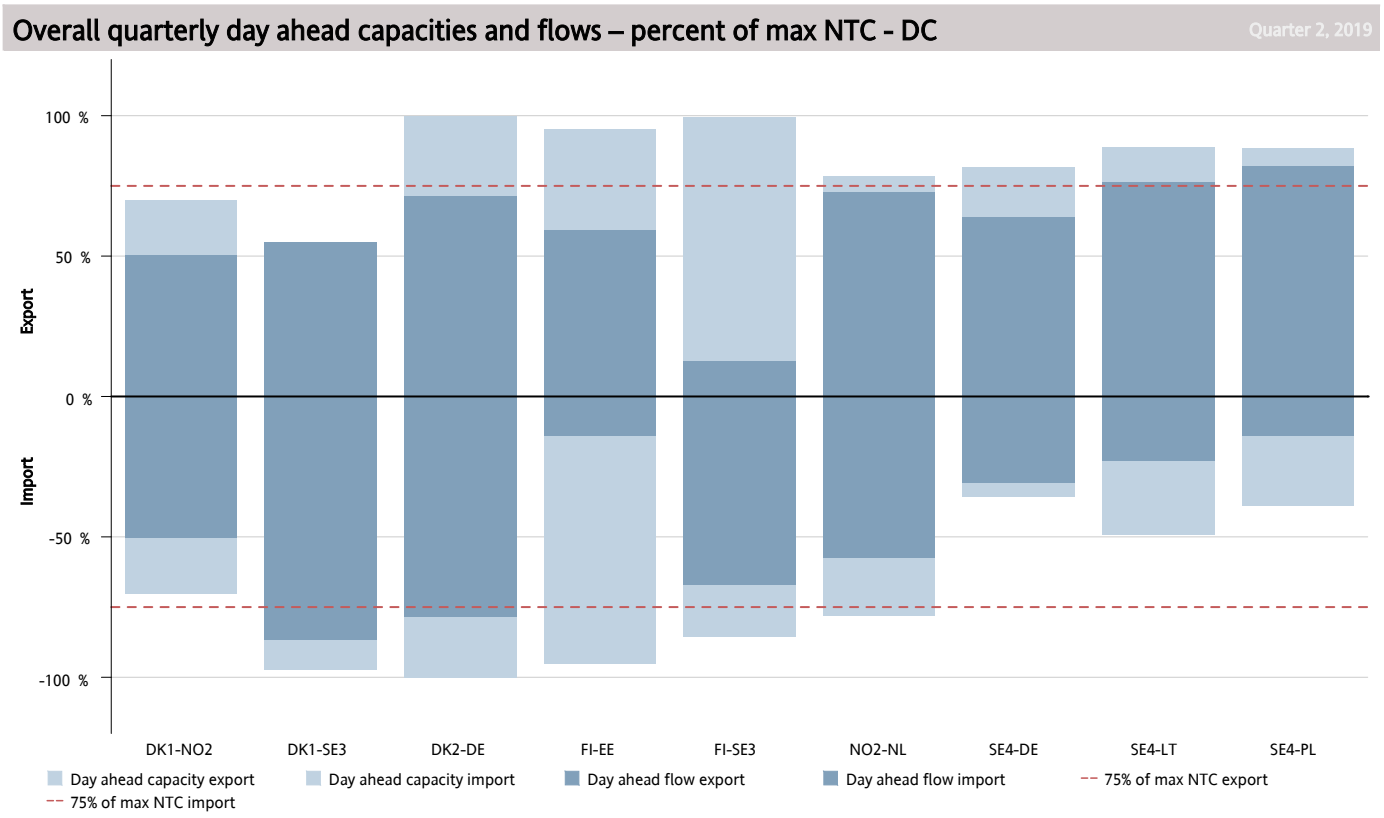

Figure 3: Cross-zonal day-ahead capacity result for DC corridors, showing average capacity given and flow as a percentage of max NTC. Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. For a corridor A-B, export means flow from A to B and import means flow from B to A.

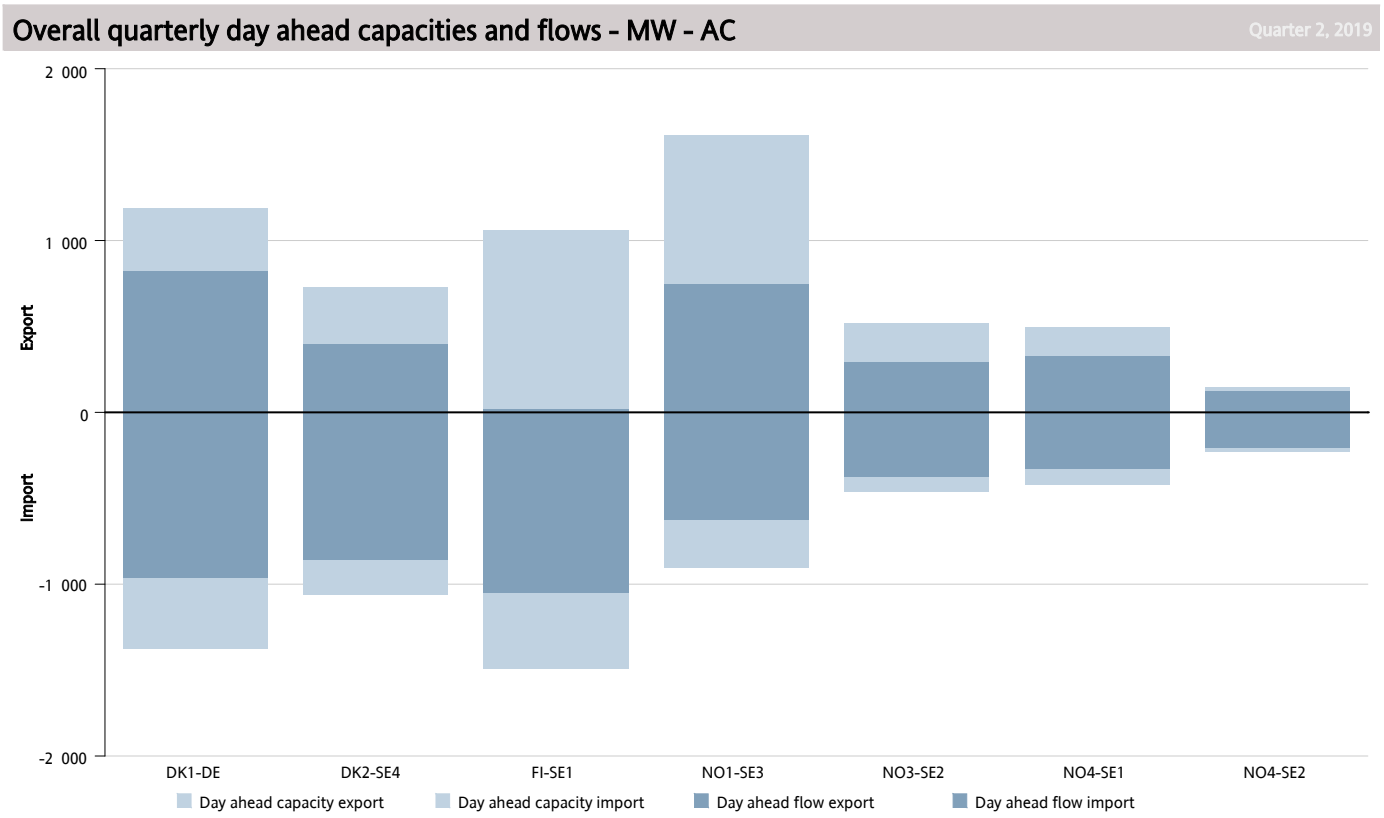

Figure 4: Cross-zonal day-ahead capacity result for AC corridors, showing average capacity given and flow in MW. Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. For a corridor A-B, export means flow from A to B and import means flow from B to A.

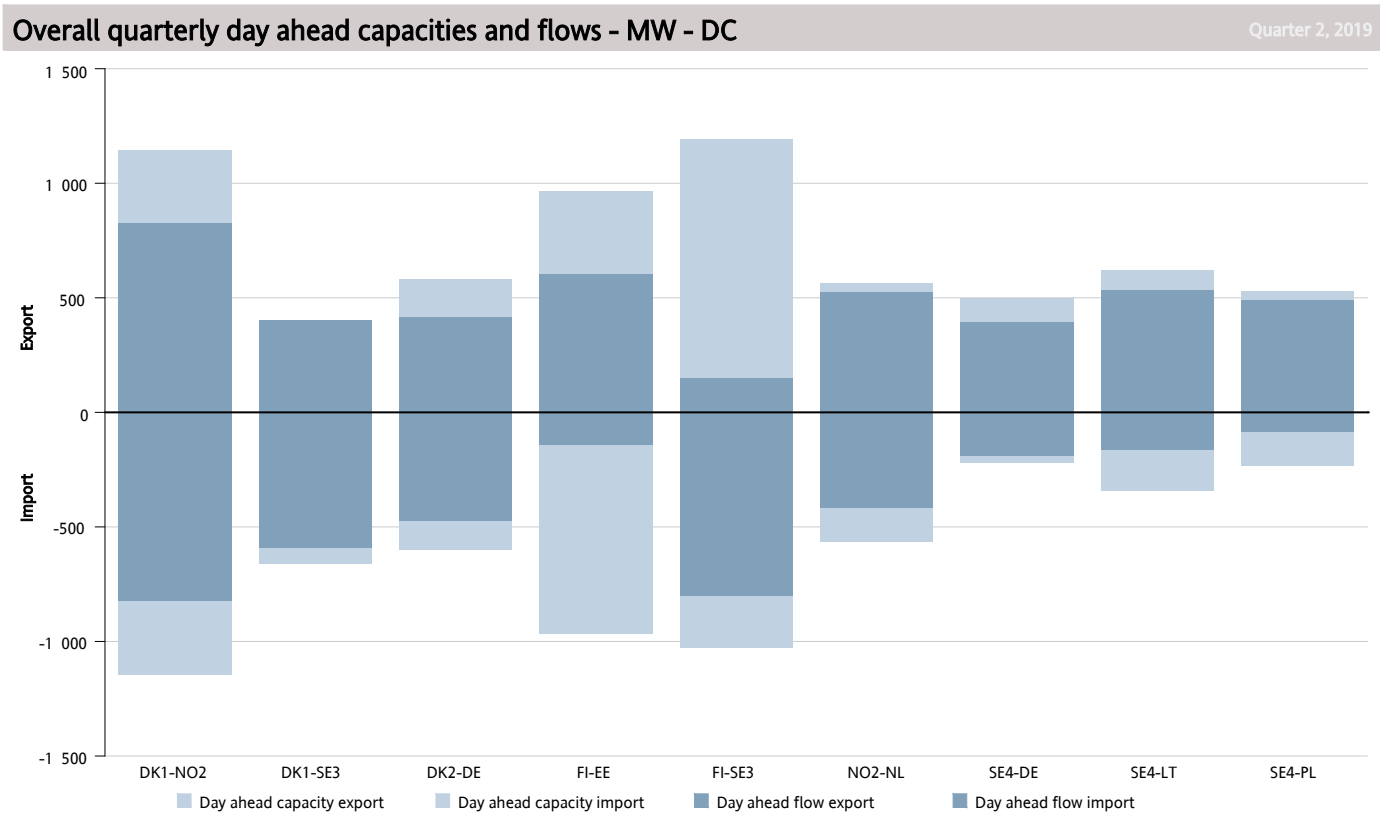

Figure 5: Cross-zonal day-ahead capacity result for DC corridors, showing average capacity given and flow in MW. Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. For a corridor A-B, export means flow from A to B and import means flow from B to A.

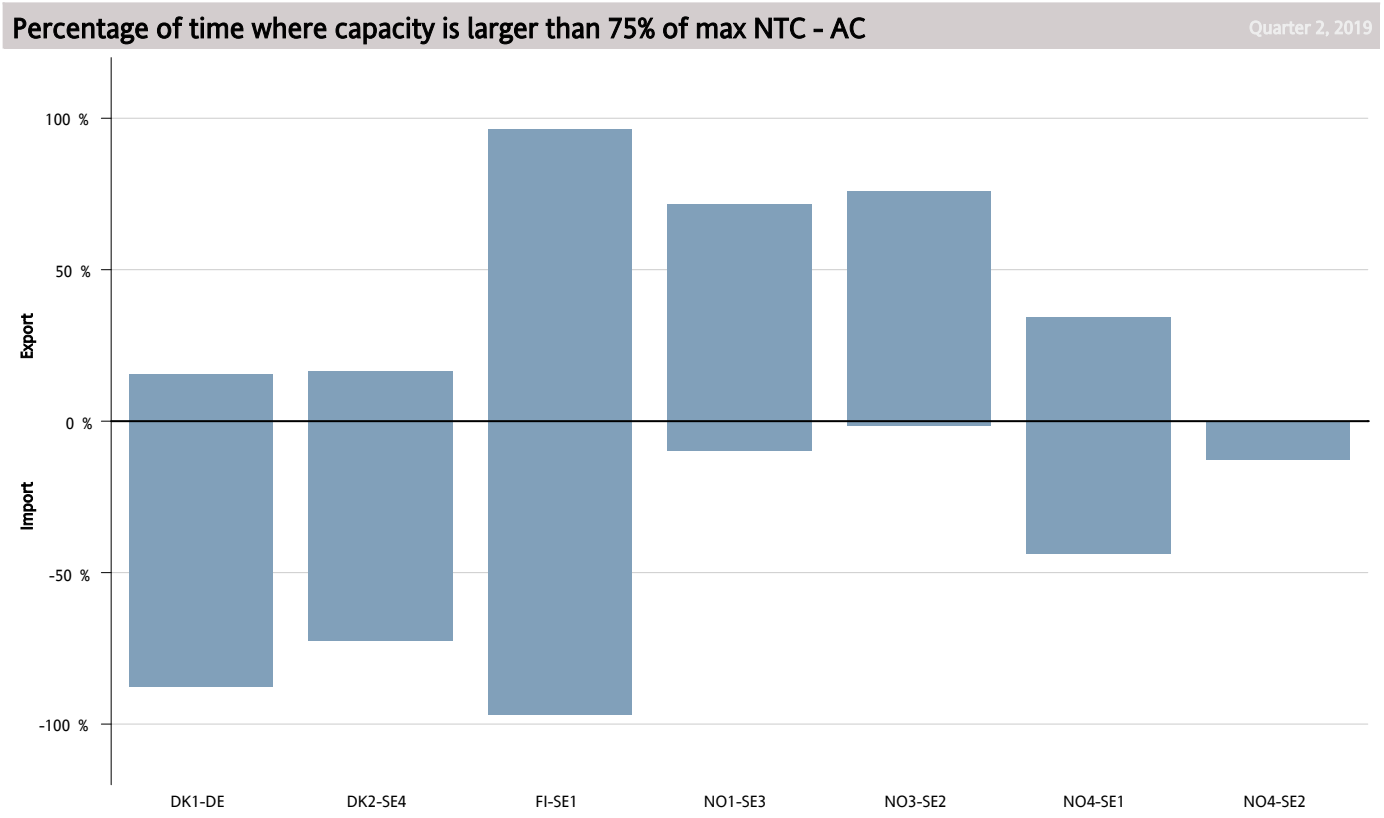

Figure 6: Shows the percentage of hours when the day-ahead capacity for AC corridors given to the energy marked is above 75% of the max NTC. For a corridor A-B, export means flow from A to B and import means flow from B to A.

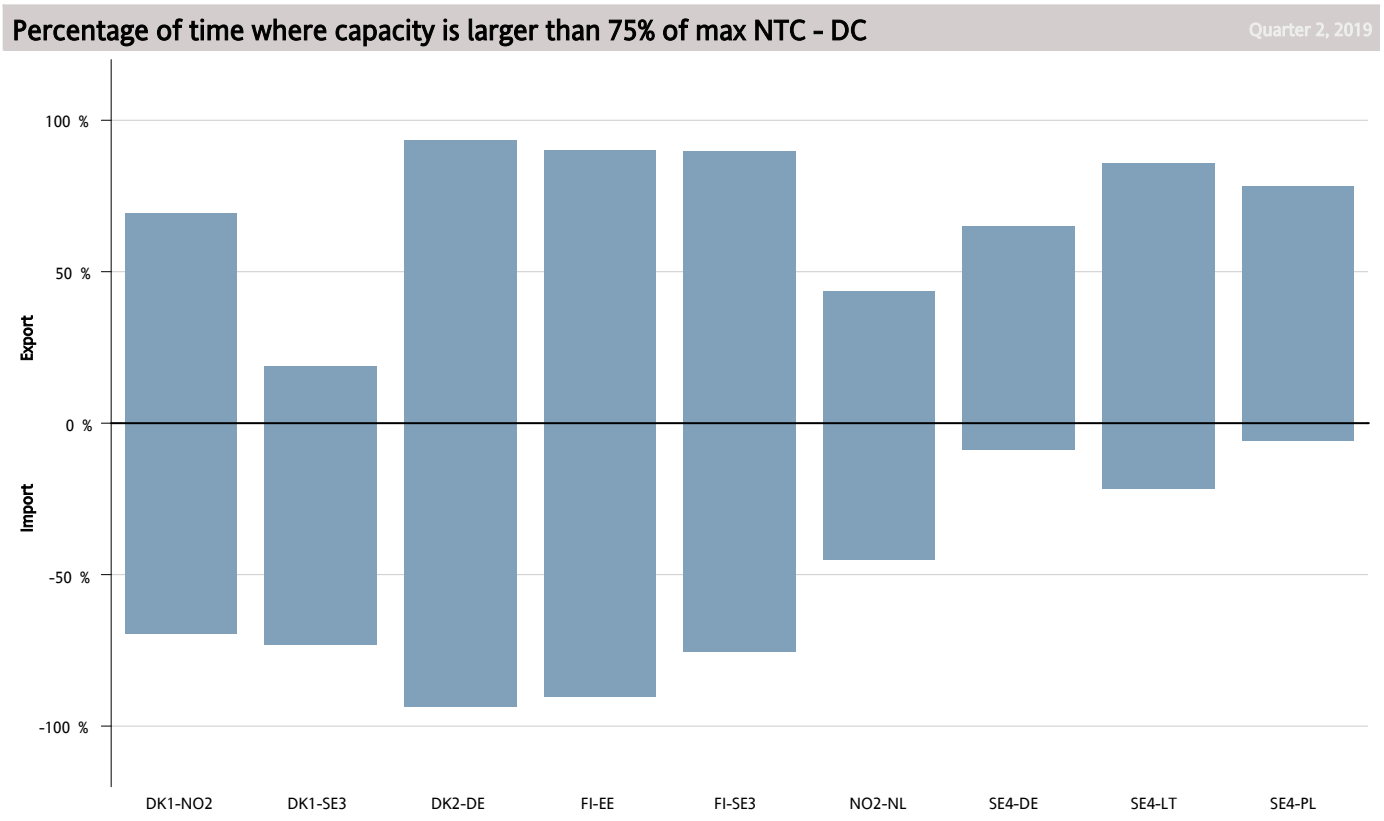

Figure 7: Shows the percentage of hours when the day-ahead capacity for DC corridors given to the energy marked is above 75% of the max NTC. For a corridor A-B, export means flow from A to B and import means flow from B to A.

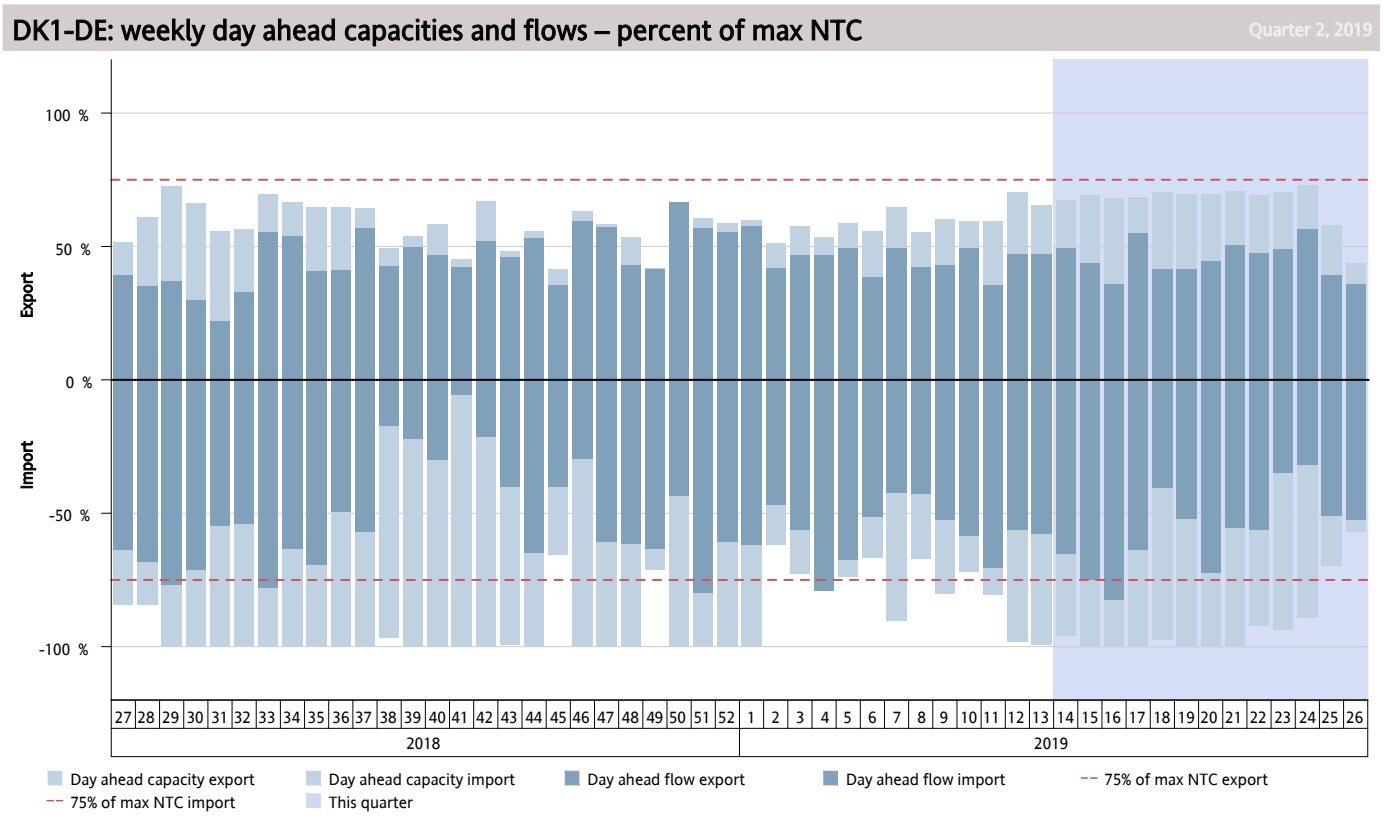

Figure 8: Shows cross-zonal day-ahead capacity result for the AC corridor DK1-DE, showing average weekly capacity given and flow as a percentage of max NTC. Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from DK1 to DE, while import indicates flow from DE to DK1.

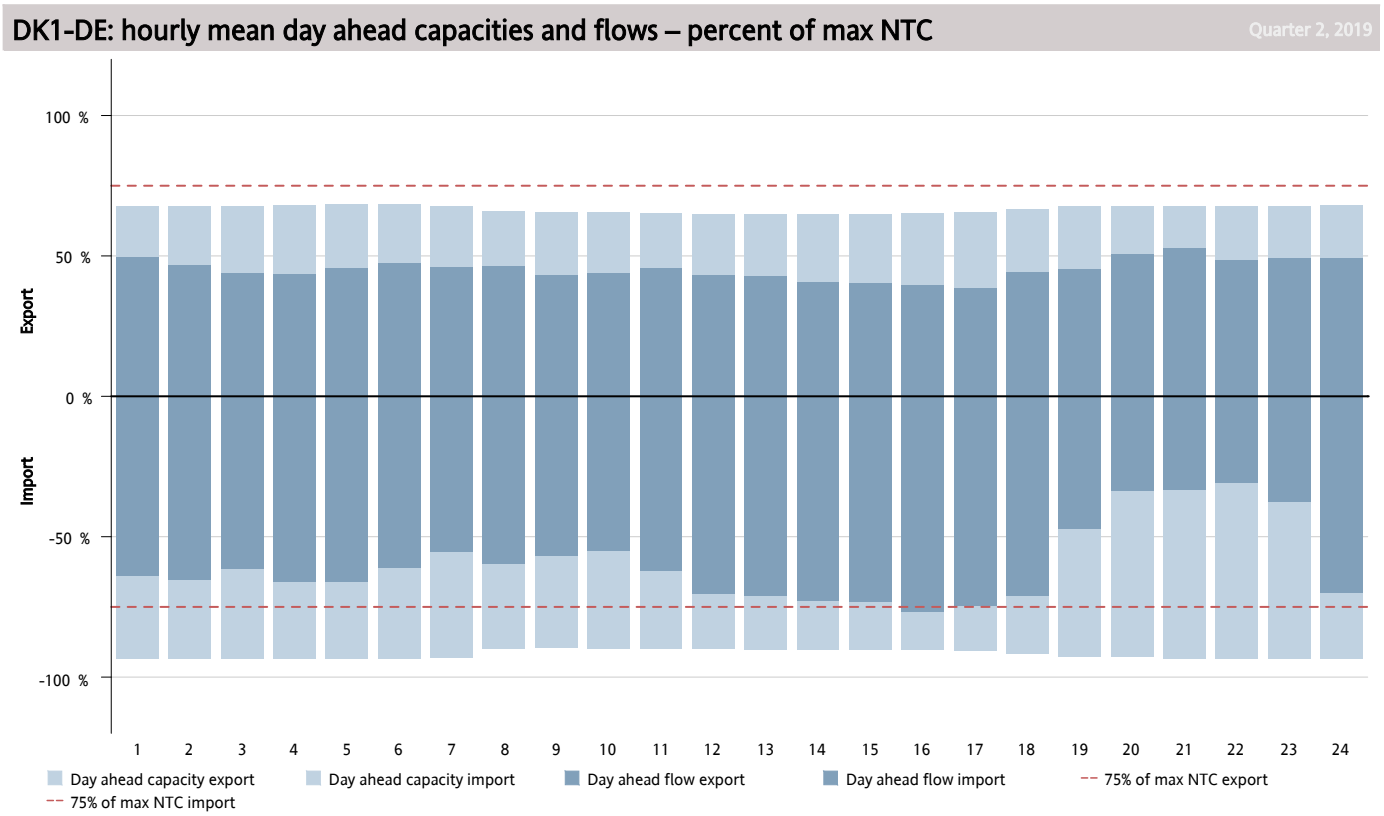

Figure 9: Shows cross-zonal day-ahead capacity result for the AC corridor DK1-DE, showing average per hour of the day (1-24) capacity given and flow as a percentage of max NTC. Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from DK1 to DE, while import indicates flow from DE to DK1.

DK1-DE: hourly day ahead capacities and flows – MW

Quarter 2, 2019

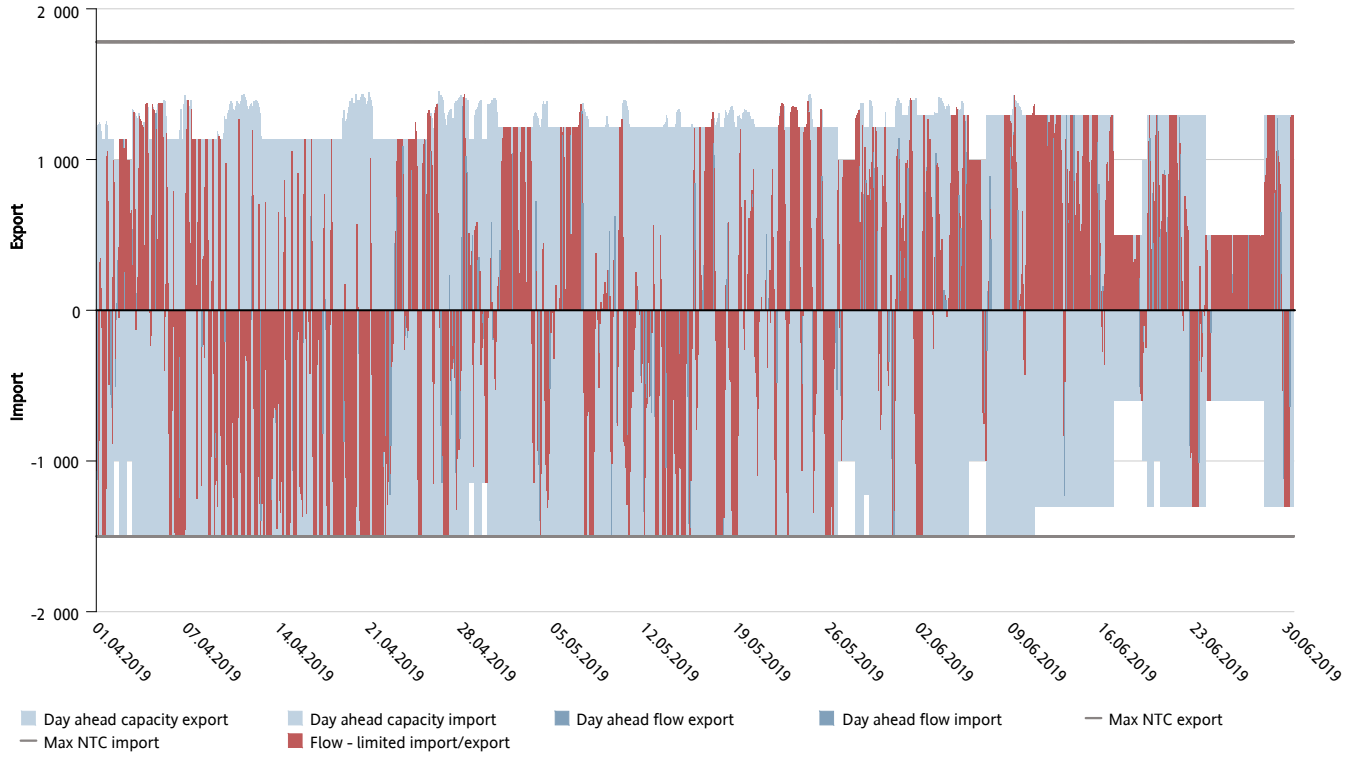

Figure 10: Shows cross-zonal day-ahead capacity result for the AC corridor DK1-DE, showing capacity given and flow (MW). Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from DK1 to DE, while import indicates flow from DE to DK1.

DK1-DE: price comparison in EUR

Quarter 2, 2019

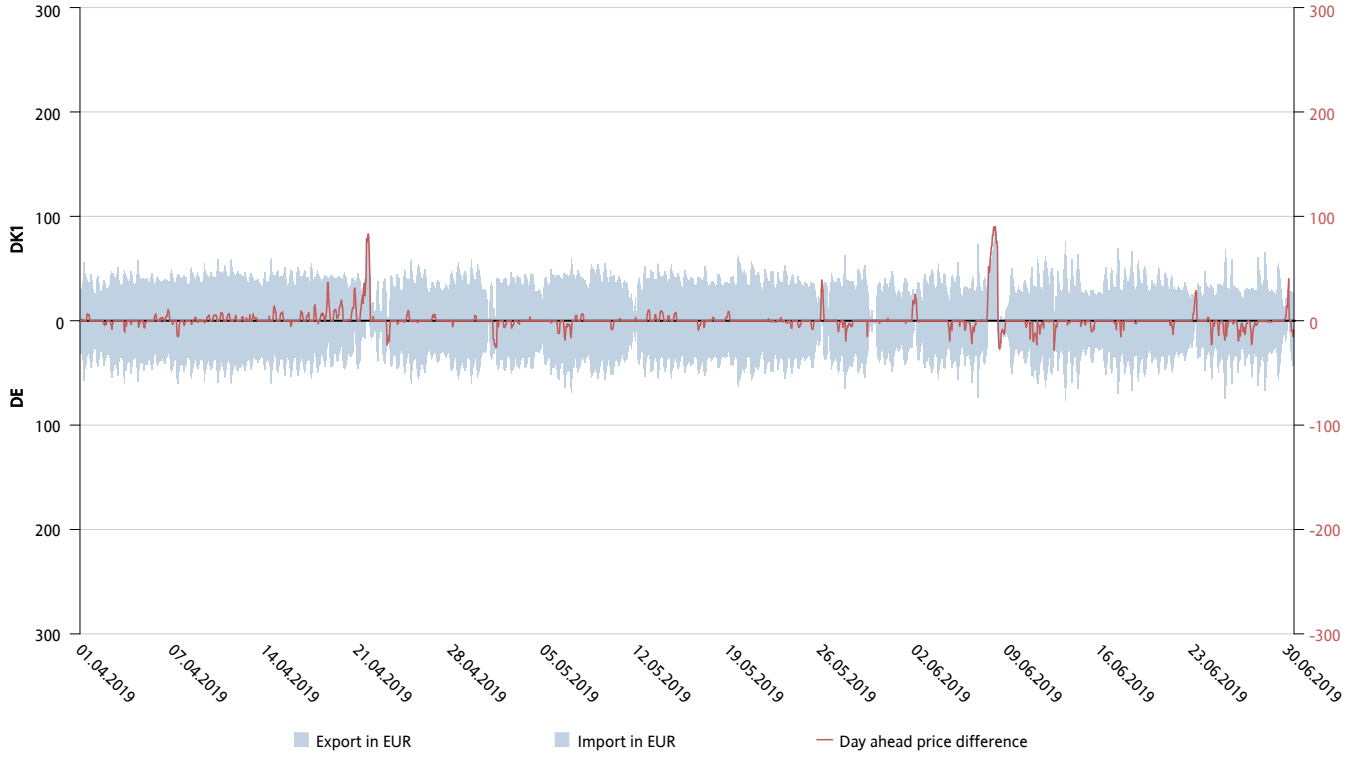

Figure 11: Shows day-ahead prices for the AC corridor DK1-DE, all prices are in EUR. The red line shows the price difference between the two areas.

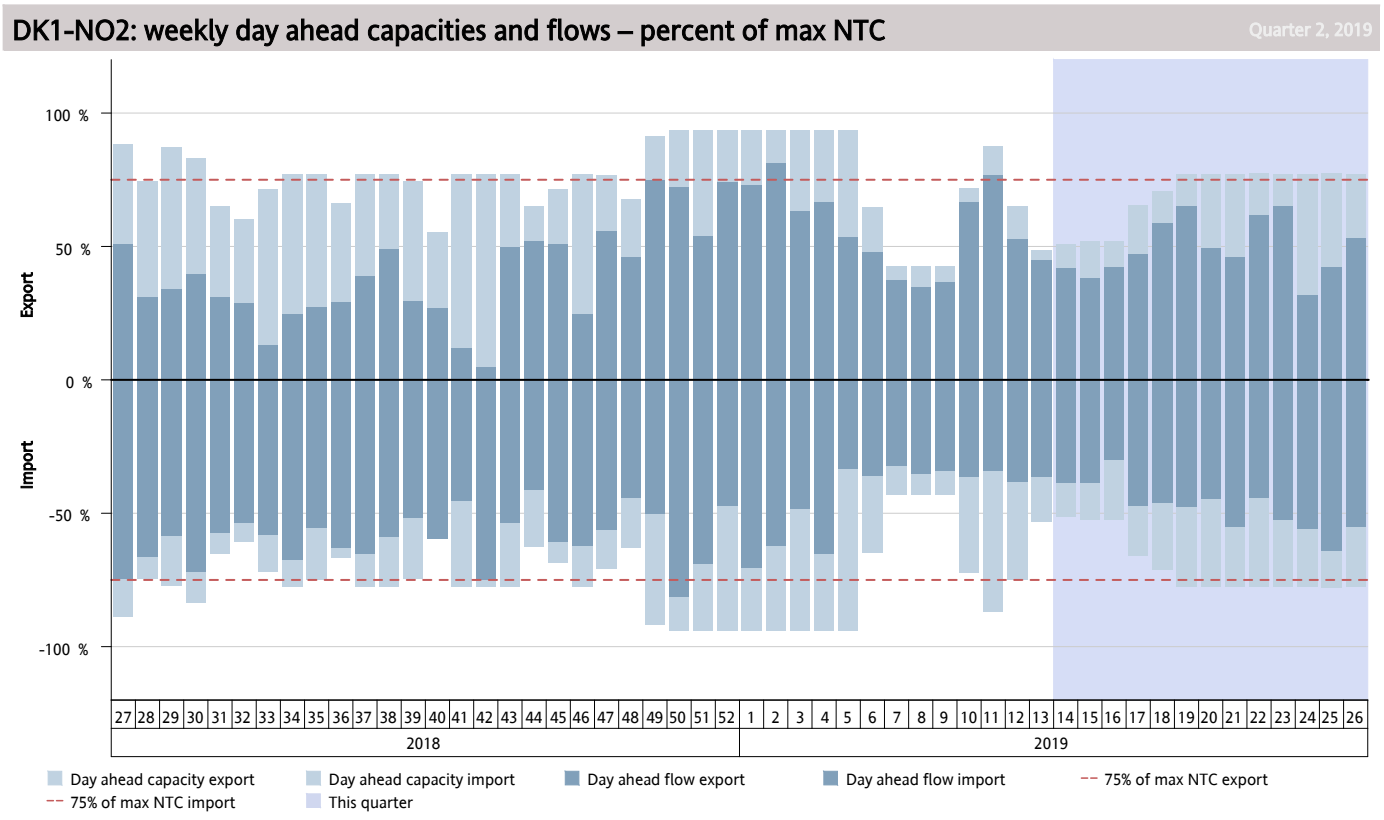

Figure 12: Shows cross-zonal day-ahead capacity result for the HVDC corridor DK1-NO2, showing average weekly capacity given and flow as a percentage of max NTC. Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from DK1 to NO2, while import indicates flow from NO2 to DK1.

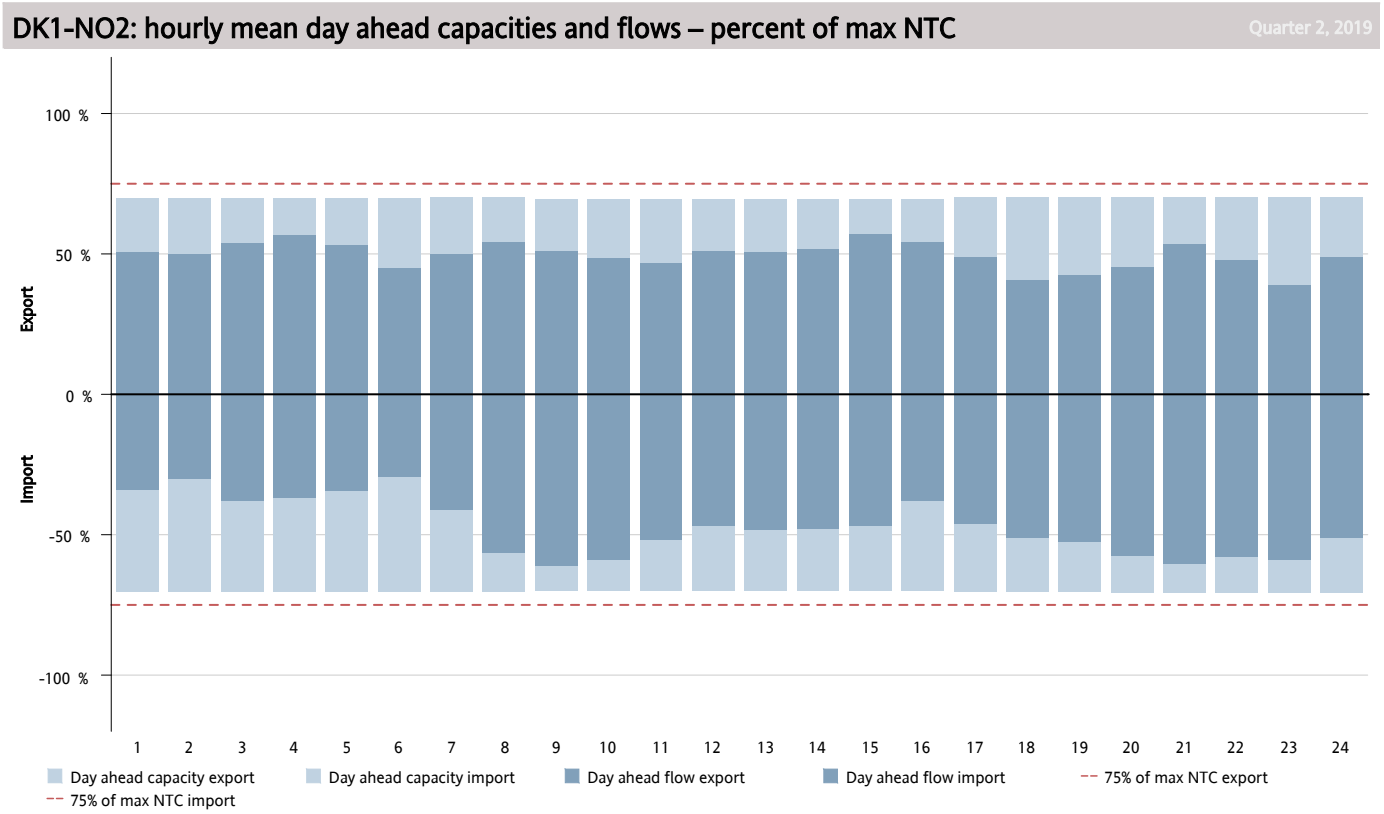

Figure 13: Shows cross-zonal day-ahead capacity result for the HVDC corridor DK1-NO2, showing average per hour of the day (1-24) capacity given and flow as a percentage of max NTC. Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from DK1 to NO2, while import indicates flow from NO2 to DK1.

DK1-NO2: hourly day ahead capacities and flows – MW

Quarter 2, 2019

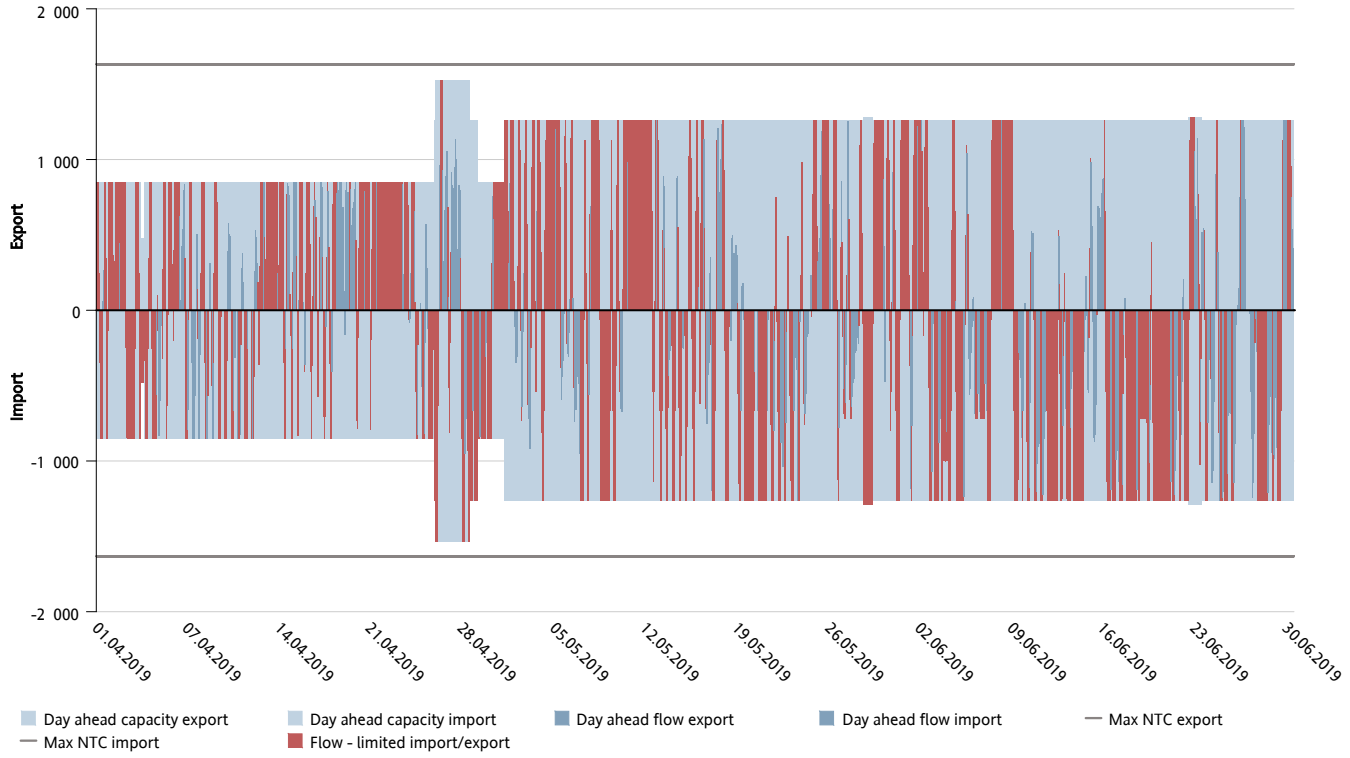

Figure 14: Shows cross-zonal day-ahead capacity result for the HVDC corridor DK1-NO2, showing capacity given and flow (MW). Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from DK1 to NO2, while import indicates flow from NO2 to DK1.

DK1-NO2: price comparison in EUR

Quarter 2, 2019

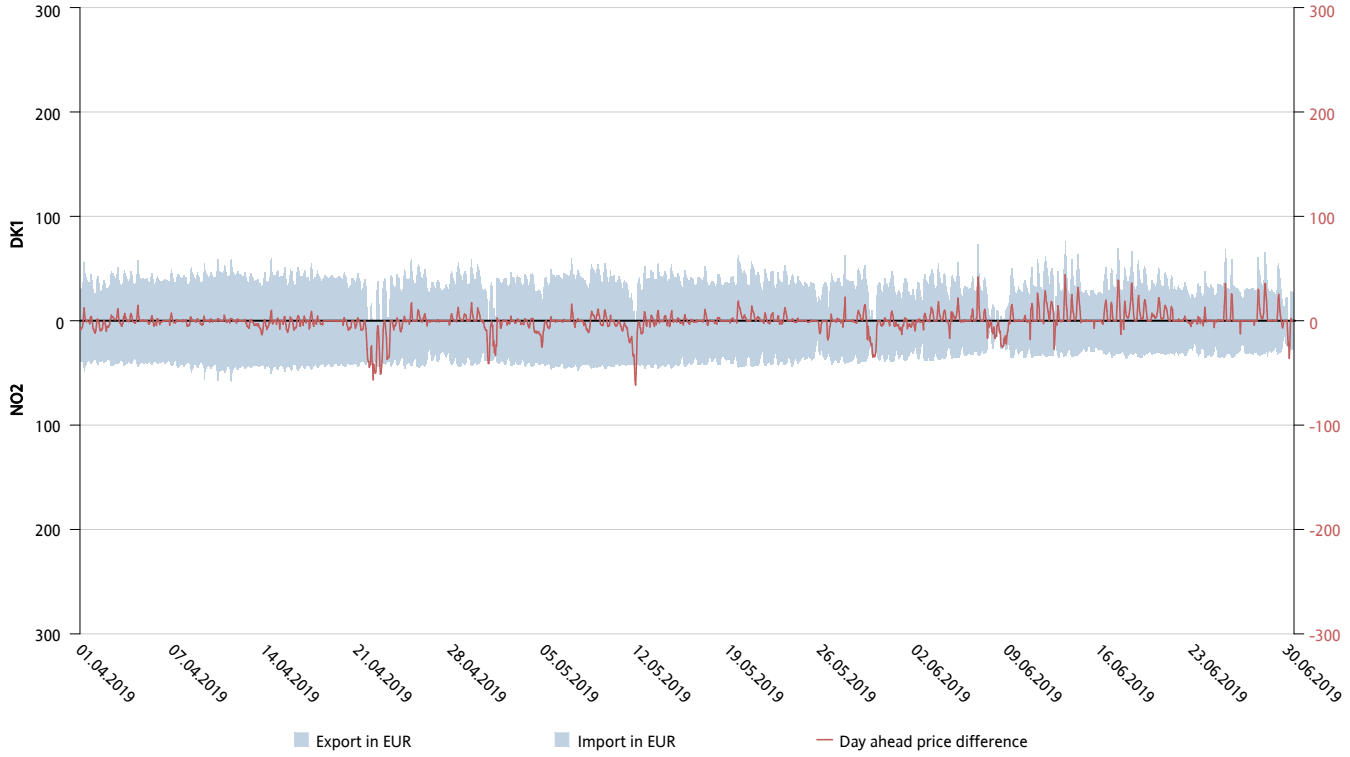

Figure 15: Shows day-ahead prices for the HVDC corridor DK1-NO2, all prices are in EUR. The red line shows the price difference between the two areas.

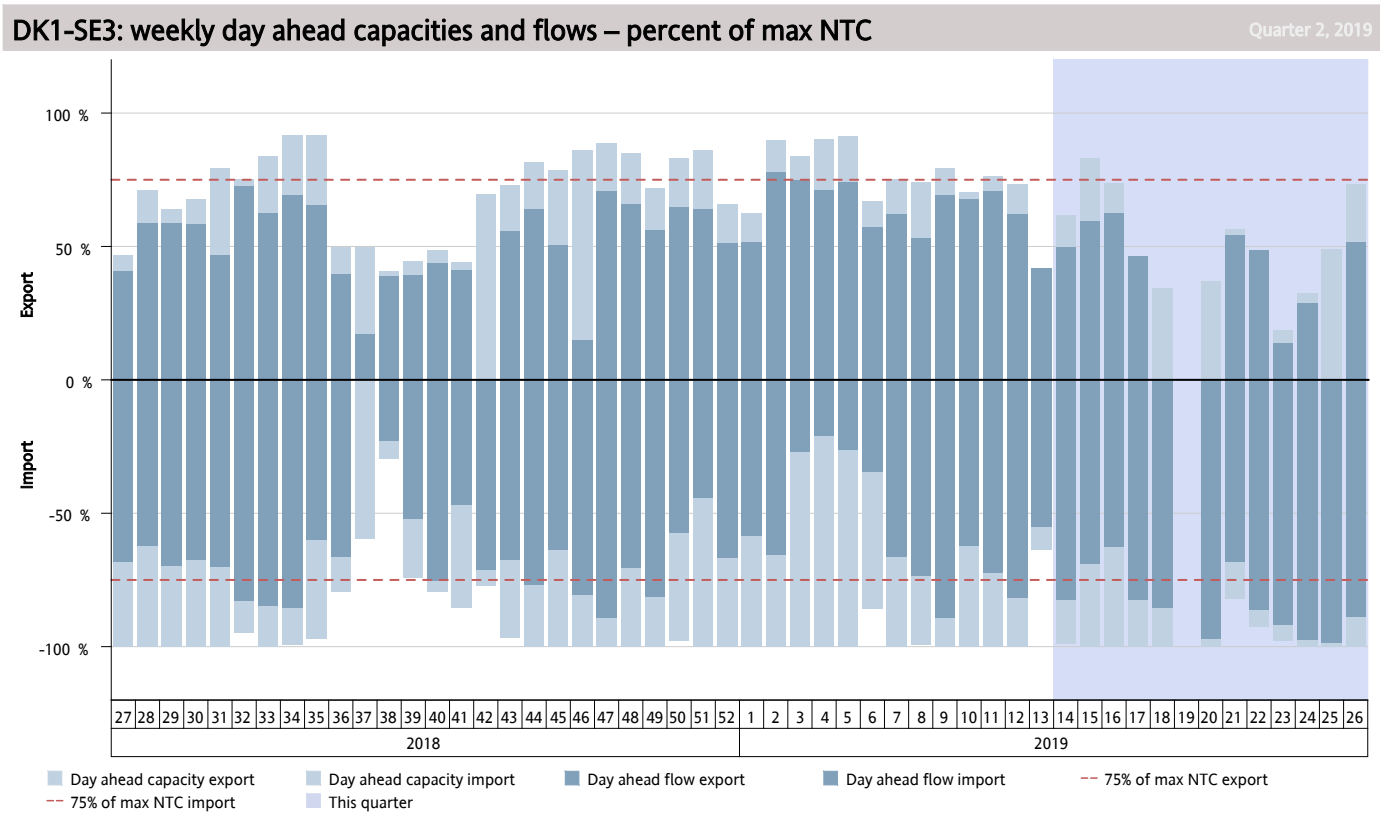

Figure 16: Shows cross-zonal day-ahead capacity result for the HVDC corridor DK1-SE3, showing average weekly capacity given and flow as a percentage of max NTC. Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from DK1 to SE3, while import indicates flow from SE3 to DK1.

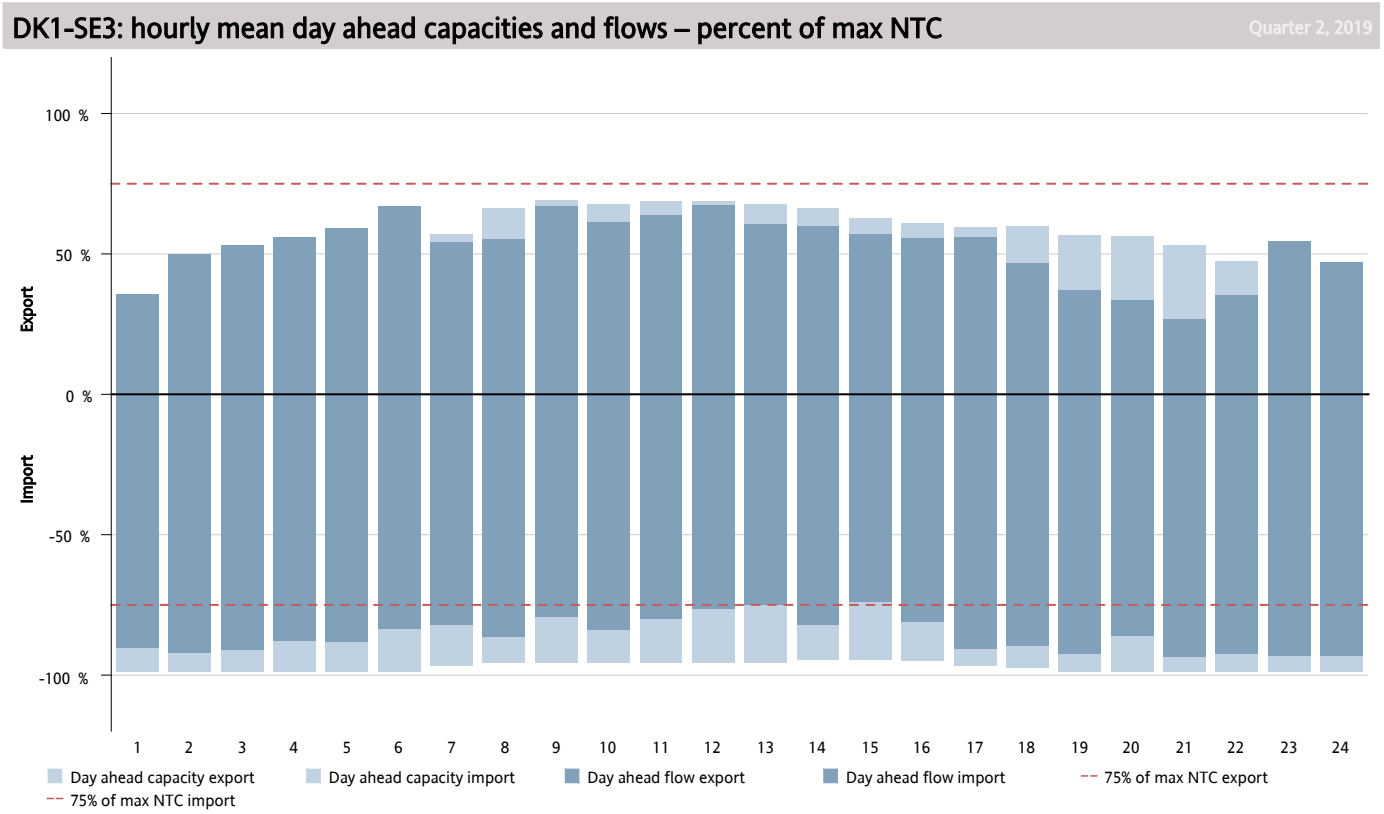

Figure 17: Shows cross-zonal day-ahead capacity result for the HVDC corridor DK1-SE3, showing average per hour of the day (1-24) capacity given and flow as a percentage of max NTC. Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from DK1 to SE3, while import indicates flow from SE3 to DK1.

DK1-SE3: hourly day ahead capacities and flows – MW

Quarter 2, 2019

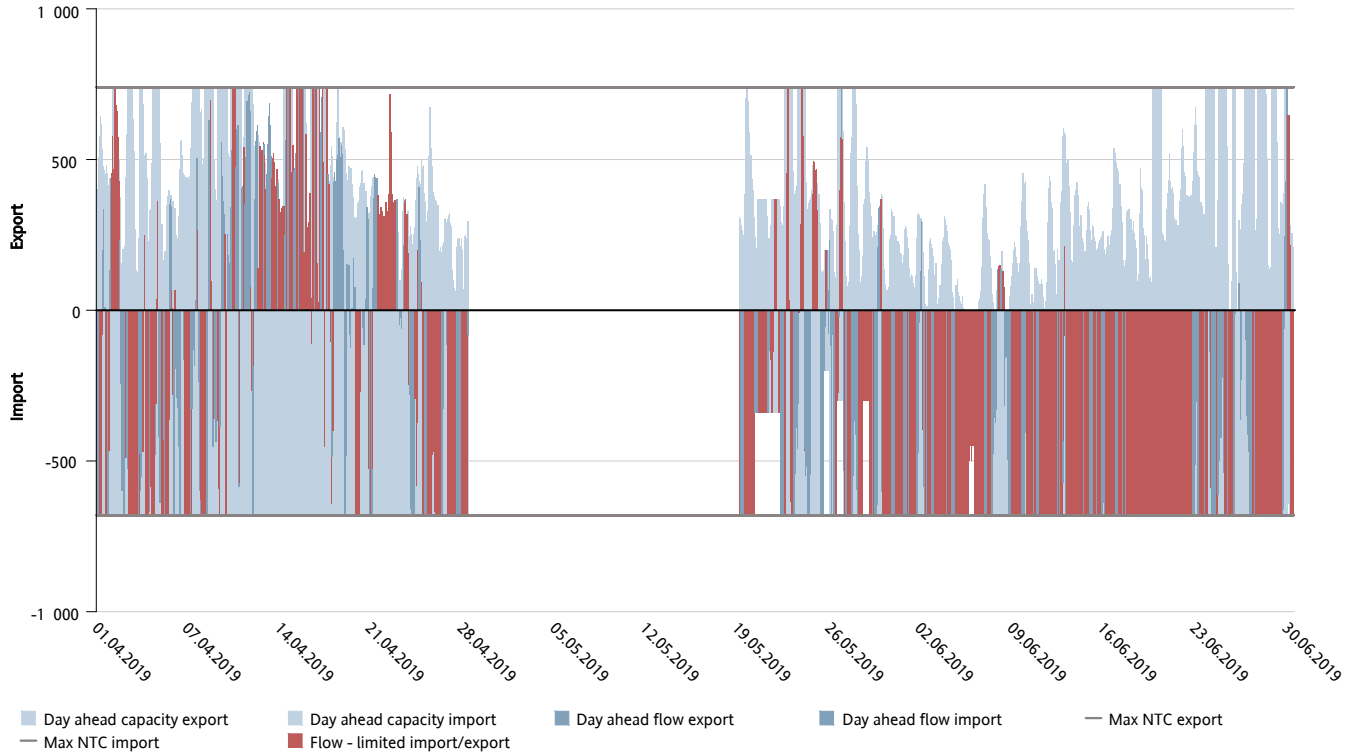

Figure 18: Shows cross-zonal day-ahead capacity result for the HVDC corridor DK1-SE3, showing capacity given and flow (MW). Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from DK1 to SE3, while import indicates flow from SE3 to DK1.

DK1-SE3: price comparison in EUR

Quarter 2, 2019

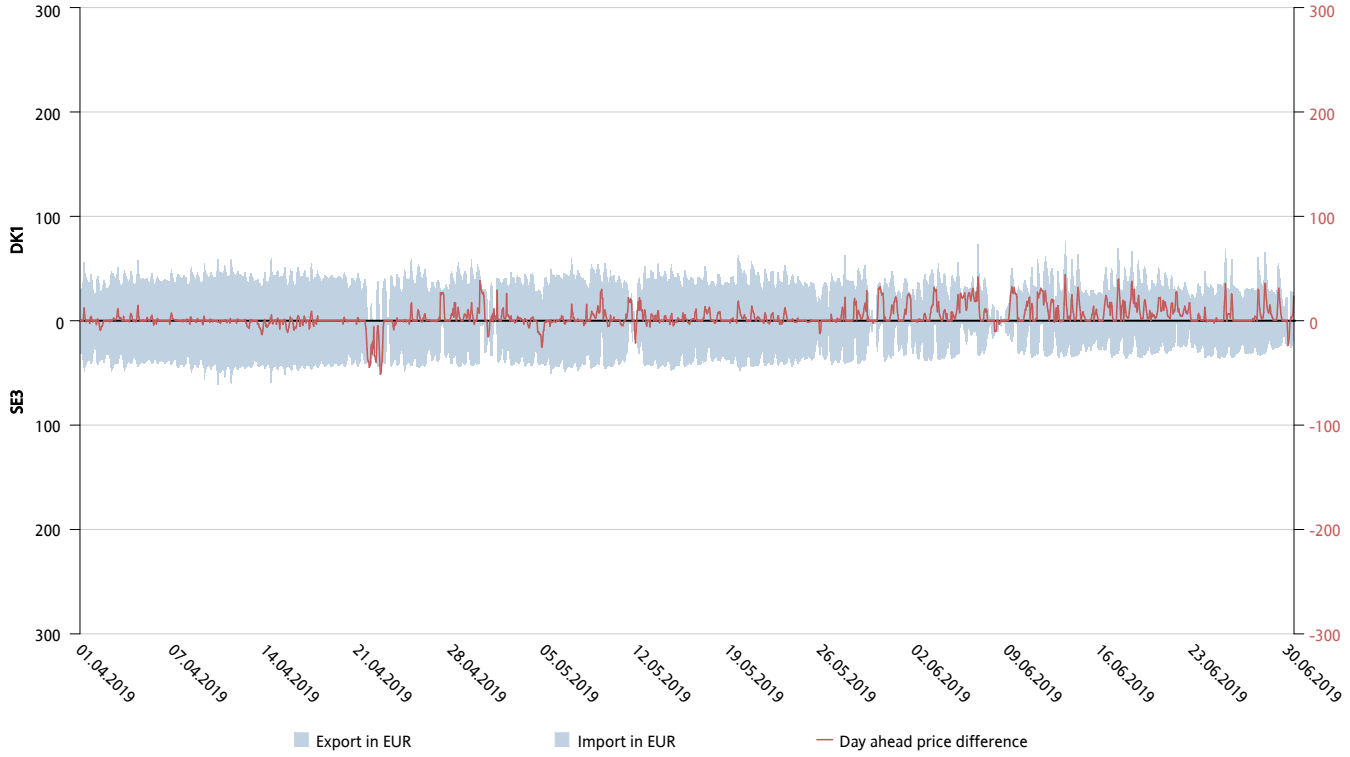

Figure 19: Shows day-ahead prices for the HVDC corridor DK1-SE3, all prices are in EUR. The red line shows the price difference between the two areas.

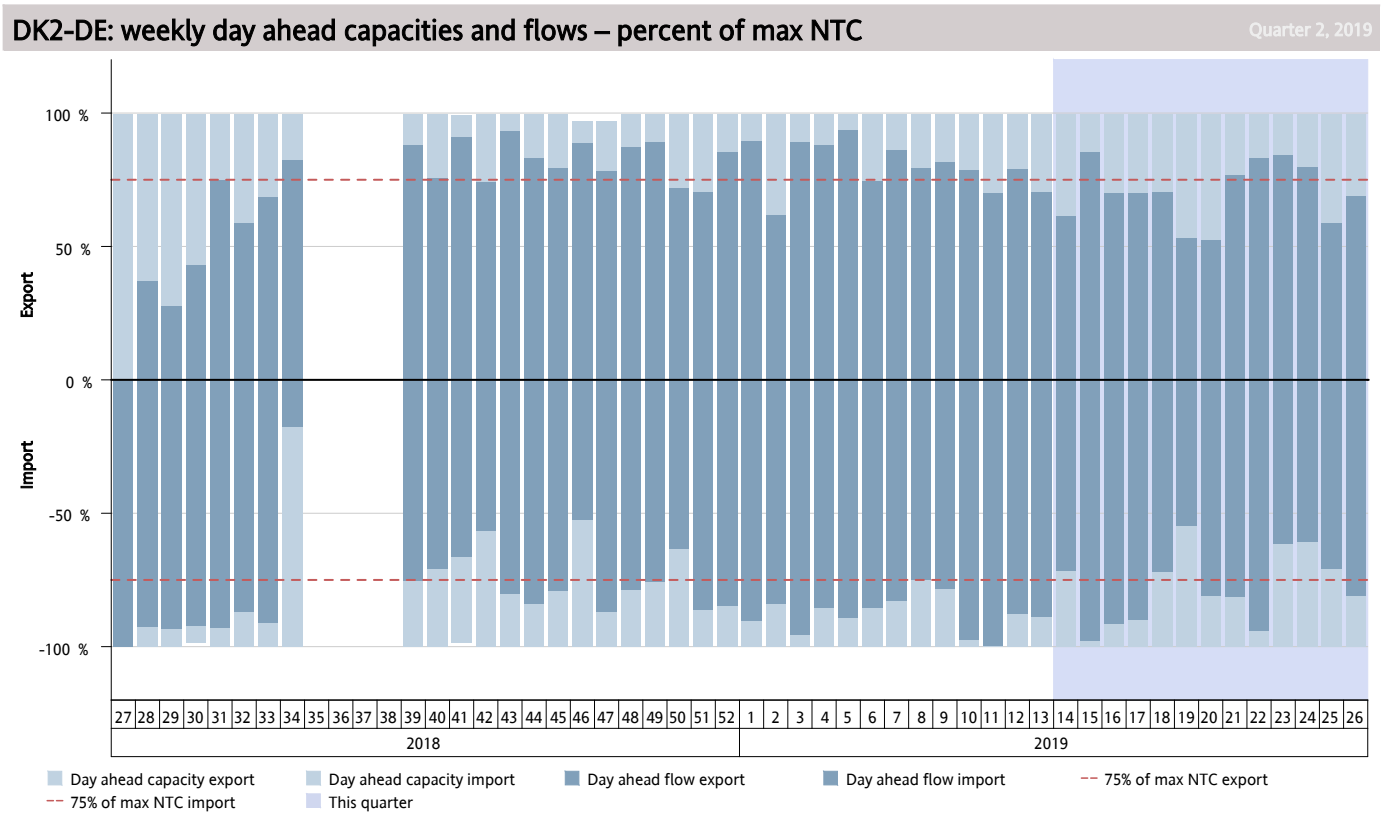

Figure 20: Shows cross-zonal day-ahead capacity result for the HVDC corridor DK2-DE, showing average weekly capacity given and flow as a percentage of max NTC. Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from DK2 to DE, while import indicates flow from DE to DK2.

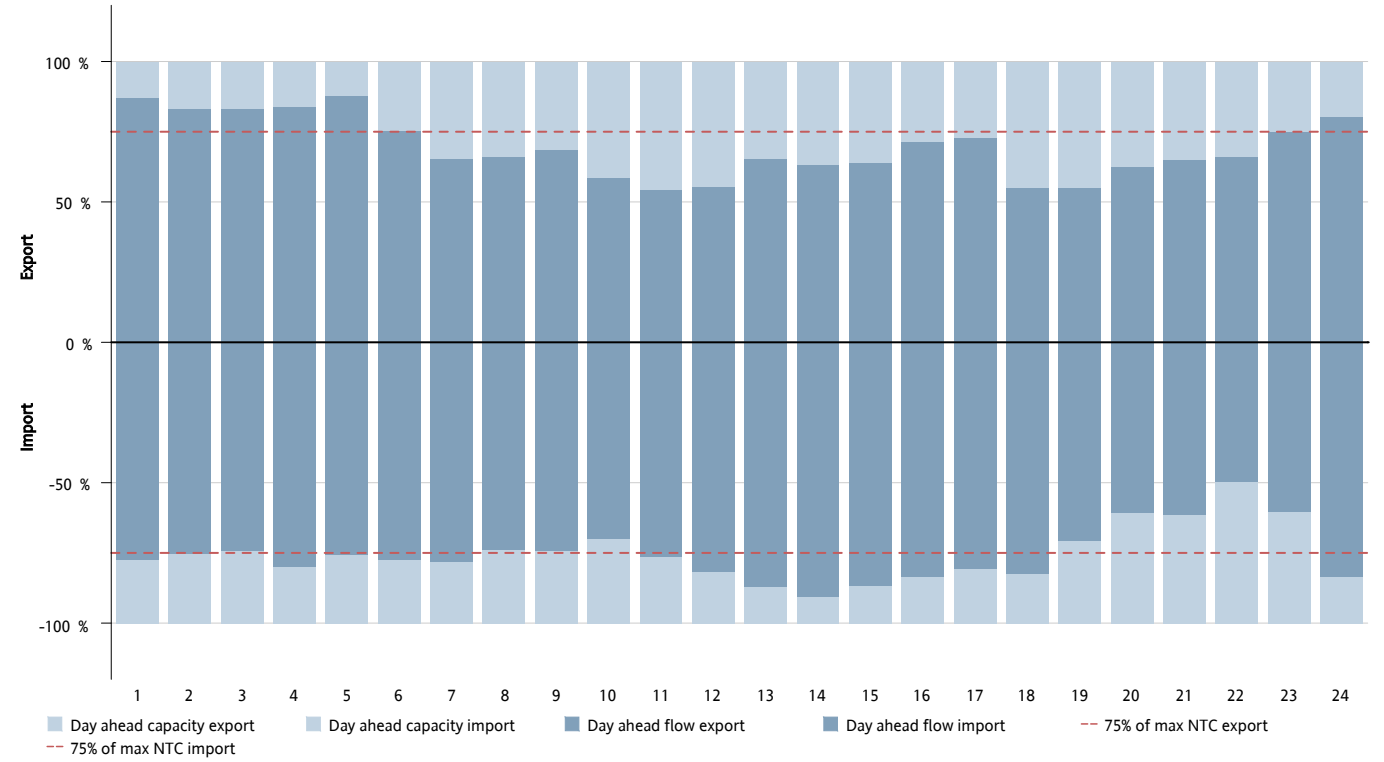

Figure 21: Shows cross-zonal day-ahead capacity result for the HVDC corridor DK2-DE, showing average per hour of the day (1-24) capacity given and flow as a percentage of max NTC. Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from DK2 to DE, while import indicates flow from DE to DK2.

DK2-DE: hourly day ahead capacities and flows – MW

Quarter 2, 2019

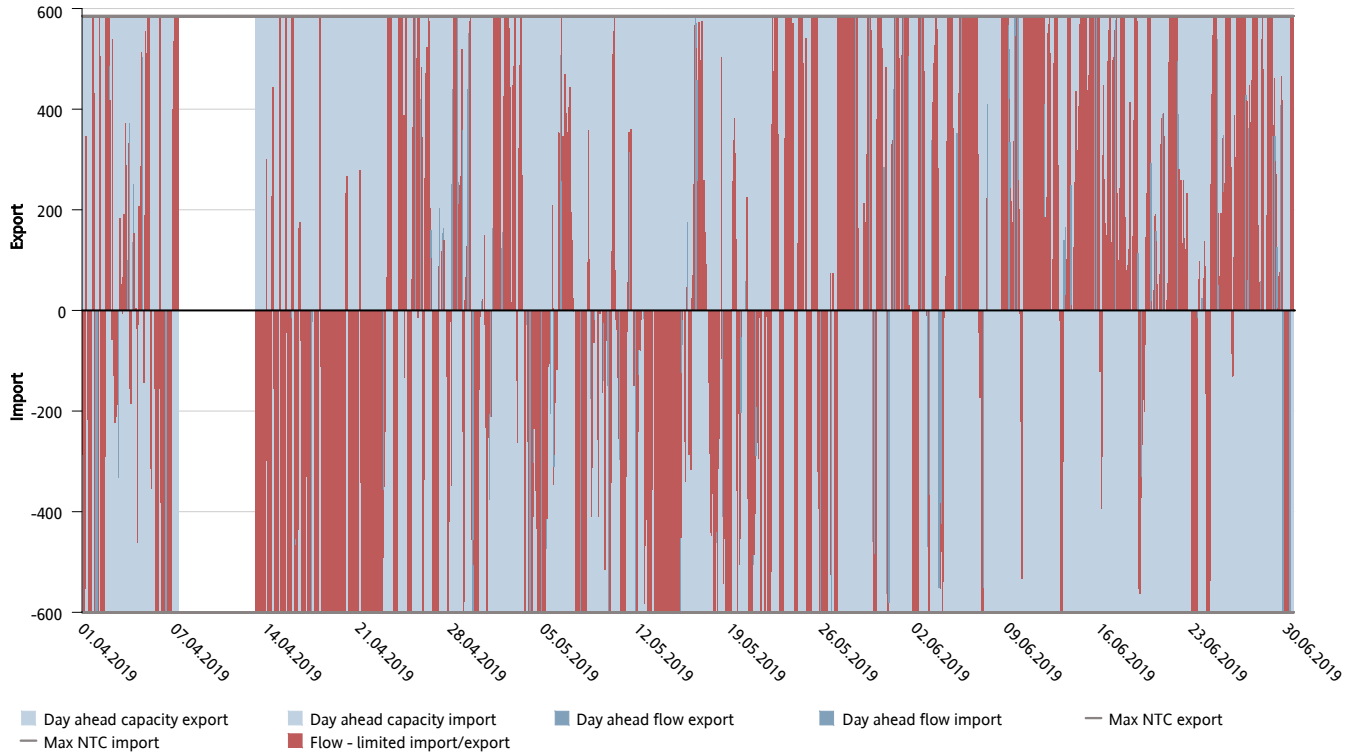

Figure 22: Shows cross-zonal day-ahead capacity result for the HVDC corridor DK2-DE, showing capacity given and flow (MW). Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from DK2 to DE, while import indicates flow from DE to DK2.

DK2-DE: price comparison in EUR

Quarter 2, 2019

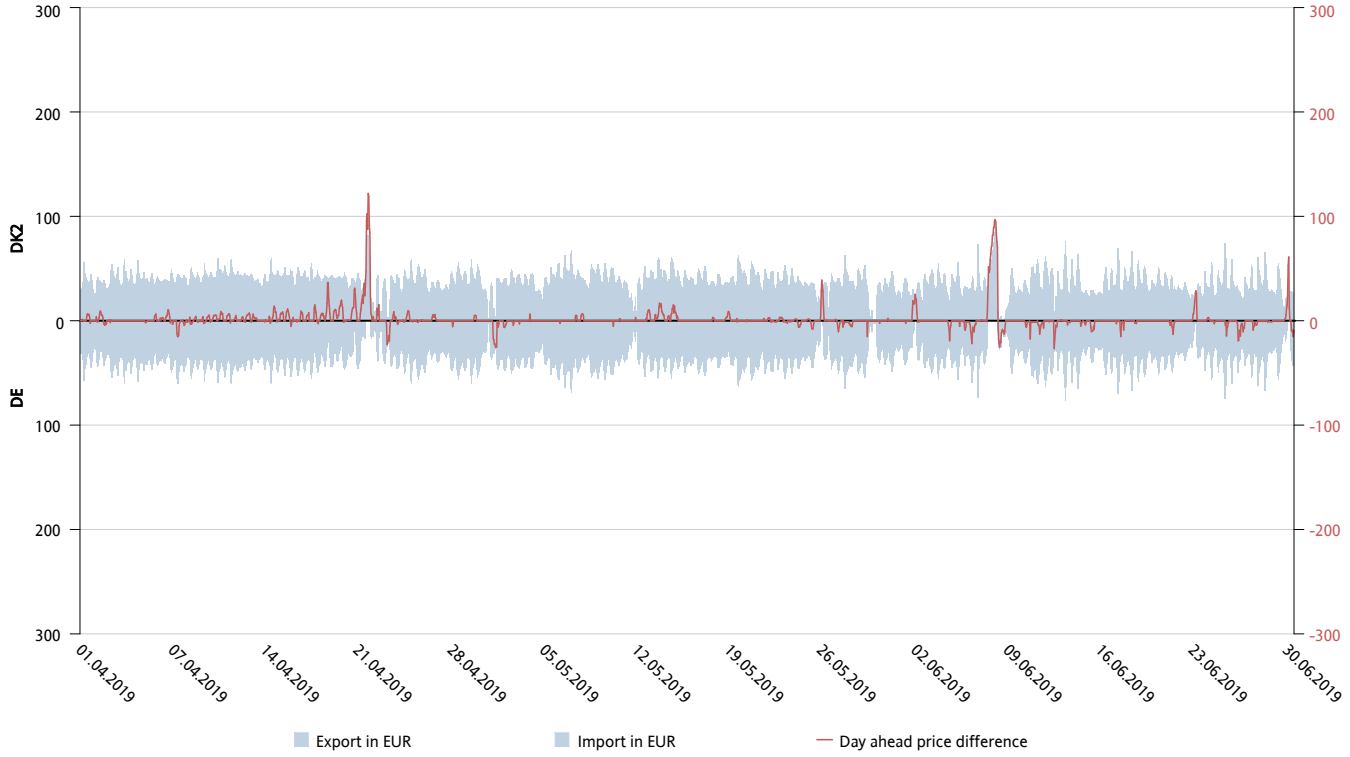

Figure 23: Shows day-ahead prices for the HVDC corridor DK2-DE, all prices are in EUR. The red line shows the price difference between the two areas.

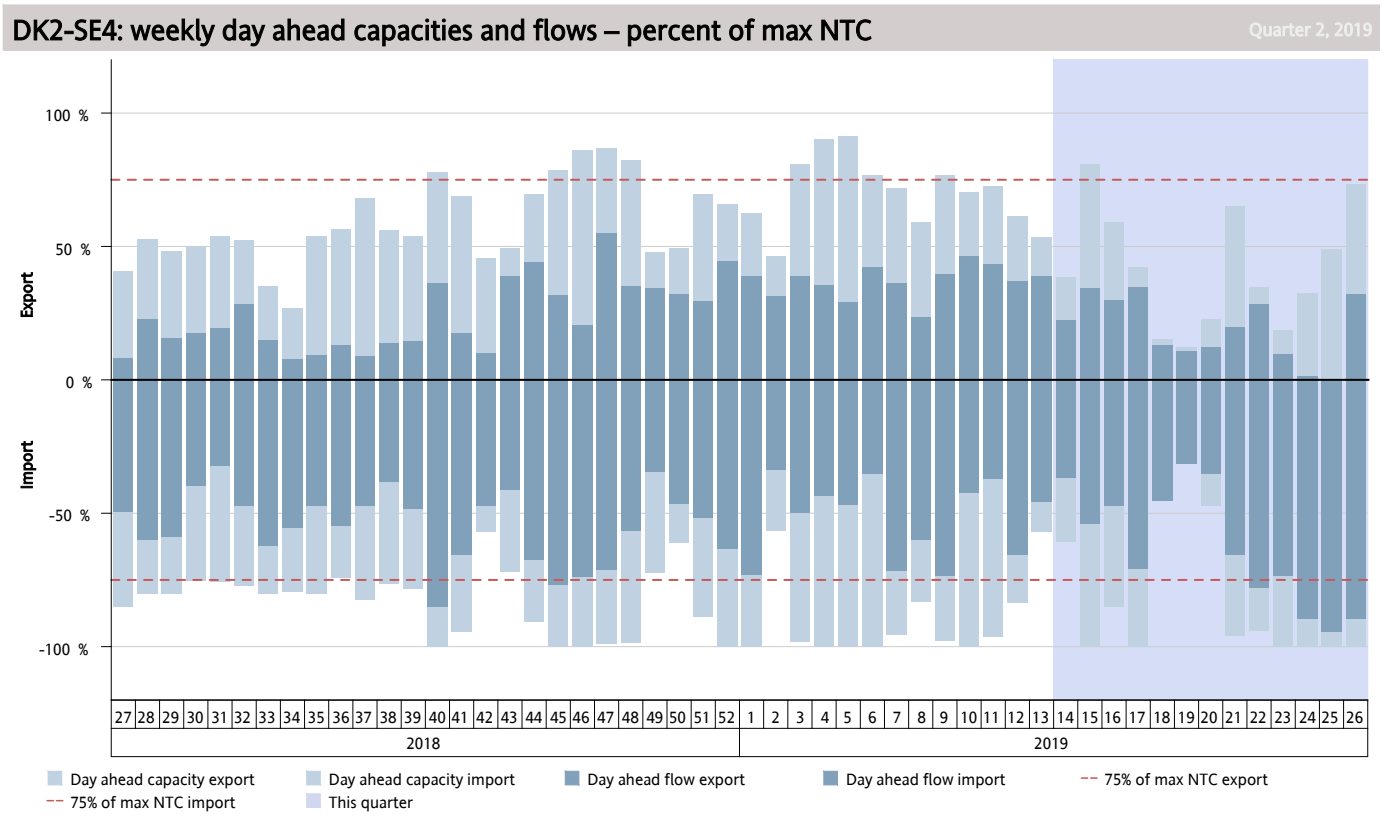

Figure 24: Shows cross-zonal day-ahead capacity result for the AC corridor DK2-SE4, showing average weekly capacity given and flow as a percentage of max NTC. Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from DK2 to SE4, while import indicates flow from SE4 to DK2.

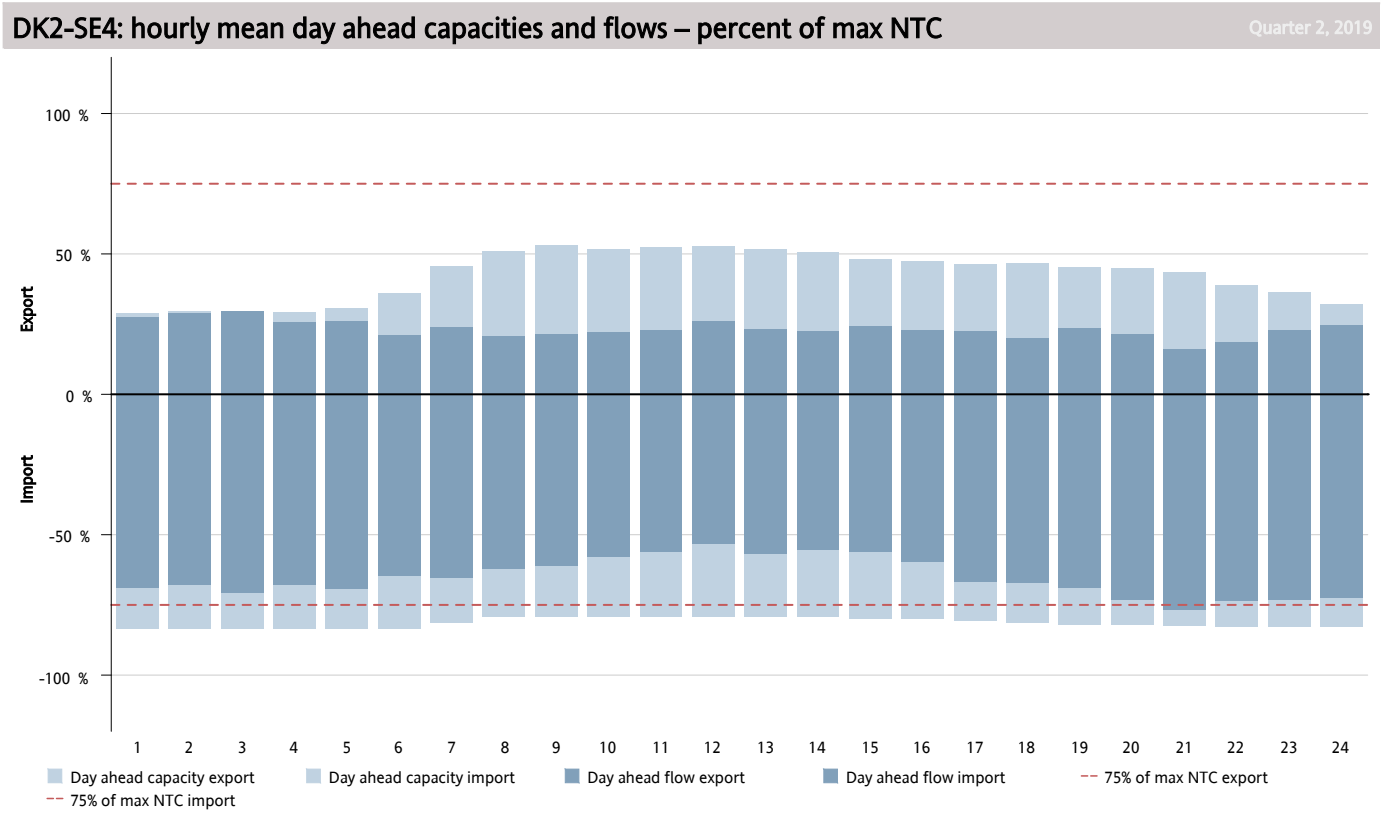

Figure 25: Shows cross-zonal day-ahead capacity result for the AC corridor DK2-SE4, showing average per hour of the day (1-24) capacity given and flow as a percentage of max NTC. Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from DK2 to SE4, while import indicates flow from SE4 to DK2.

DK2-SE4: hourly day ahead capacities and flows – MW

Quarter 2, 2019

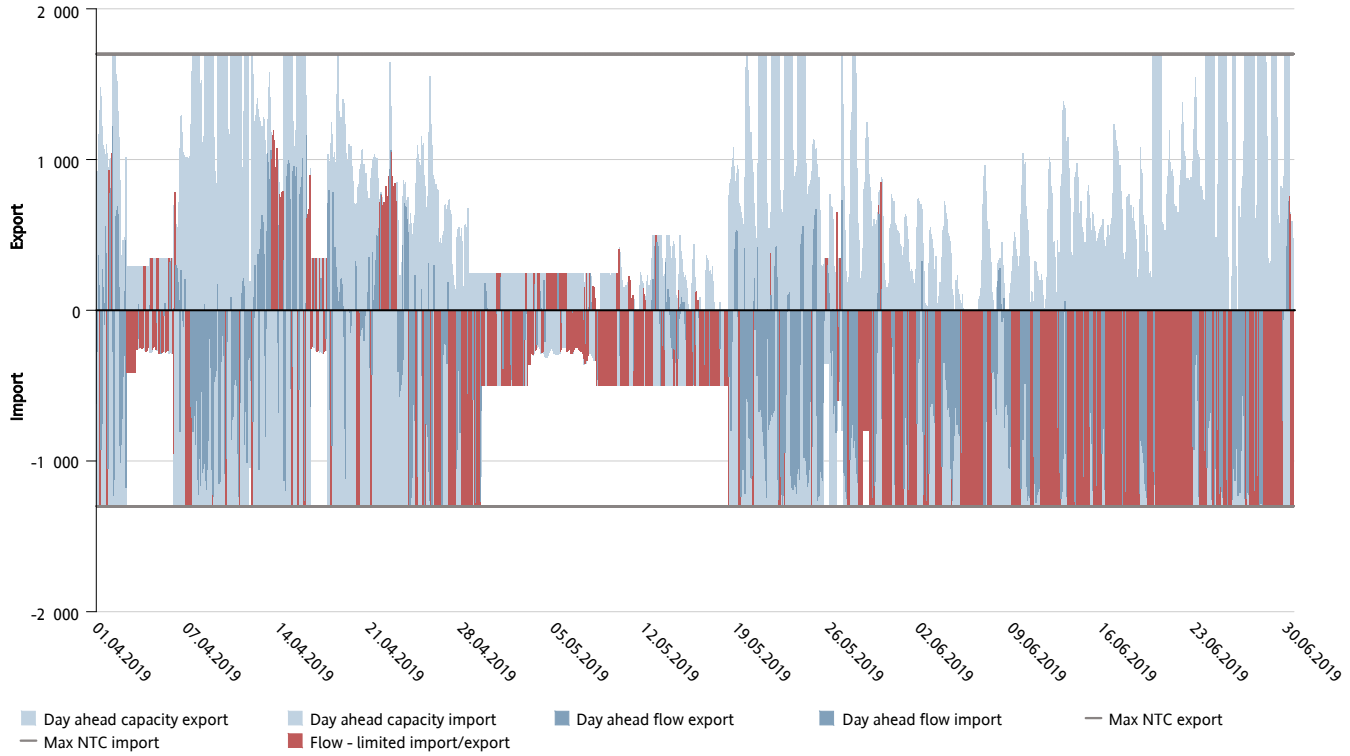

Figure 26: Shows cross-zonal day-ahead capacity result for the AC corridor DK2-SE4, showing capacity given and flow (MW). Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from DK2 to SE4, while import indicates flow from SE4 to DK2.

DK2-SE4: price comparison in EUR

Quarter 2, 2019

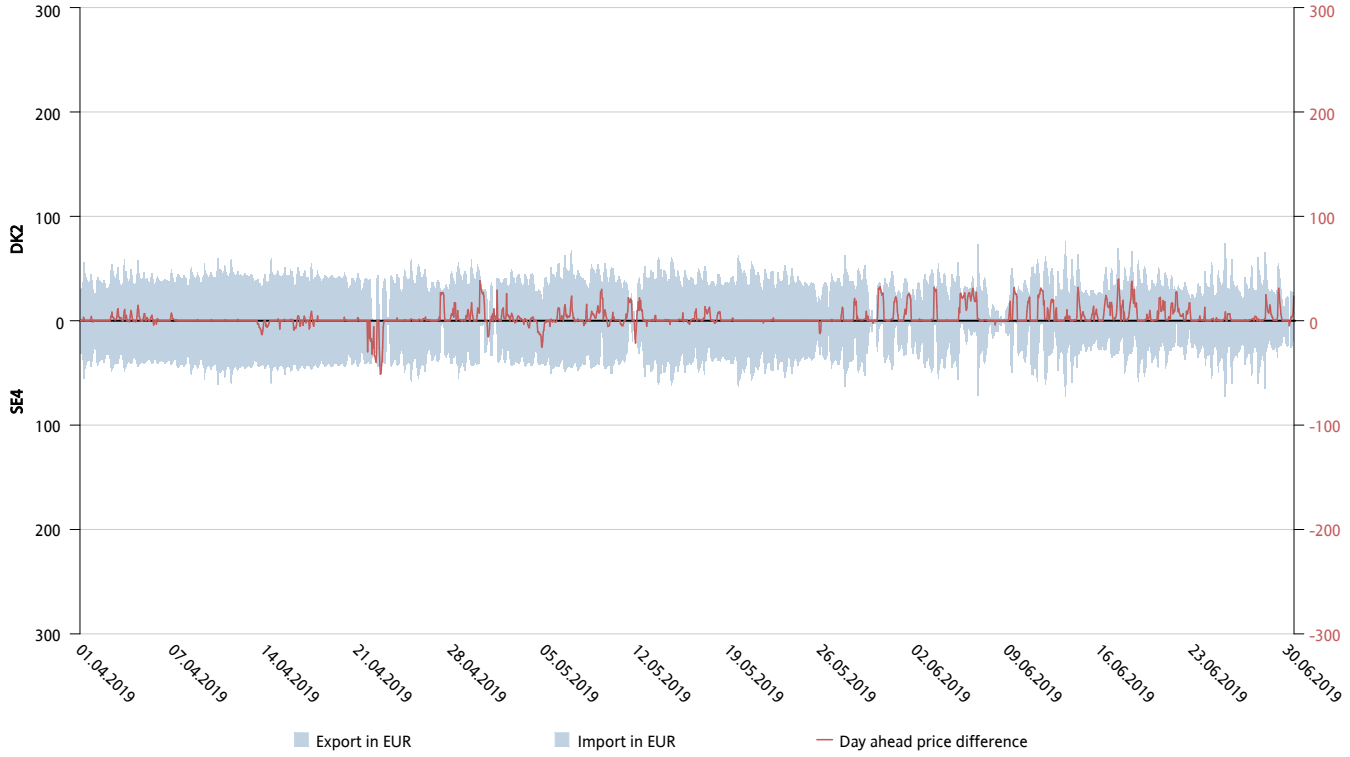

Figure 27: Shows day-ahead prices for the AC corridor DK2-SE4, all prices are in EUR. The red line shows the price difference between the two areas.

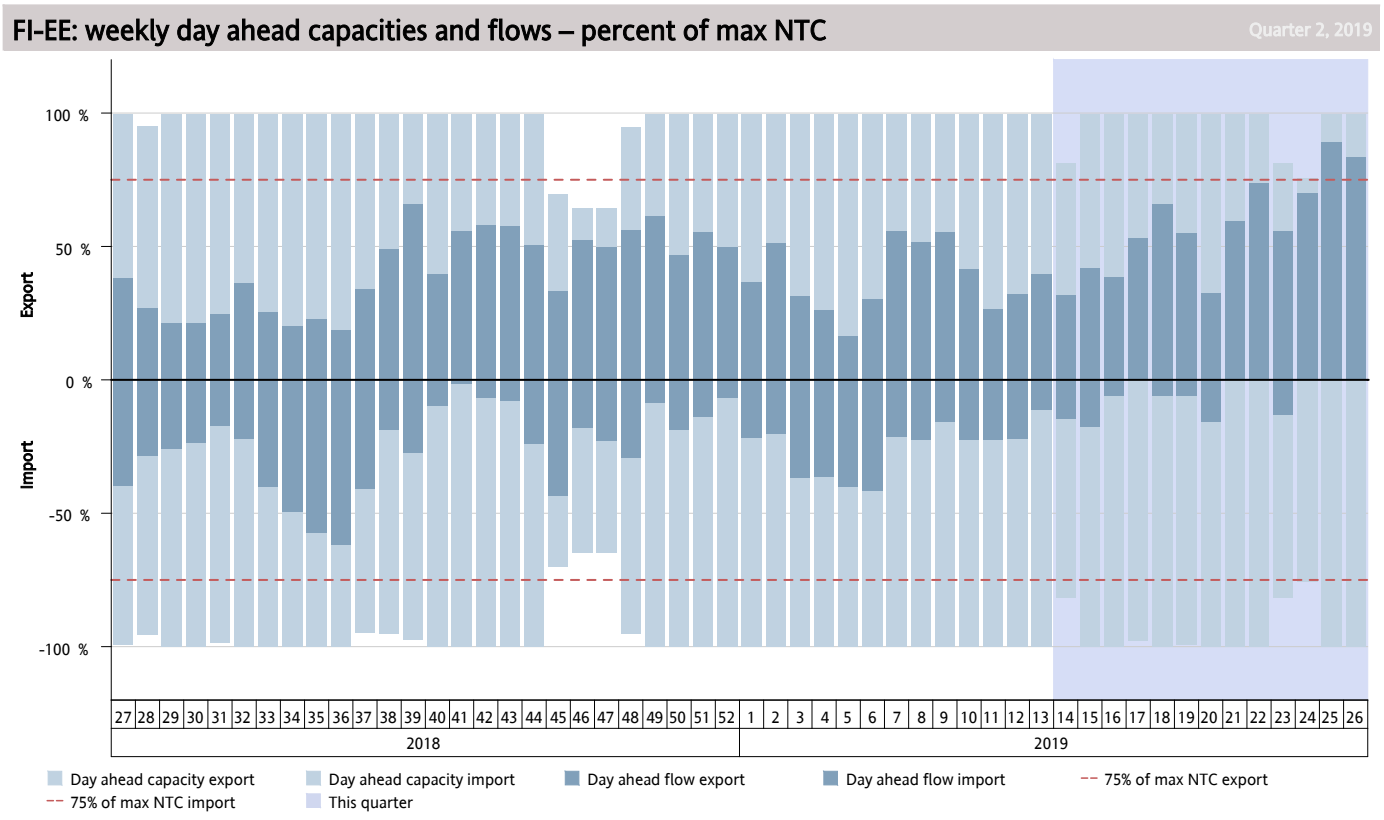

Figure 28: Shows cross-zonal day-ahead capacity result for the HVDC corridor FI-EE, showing average weekly capacity given and flow as a percentage of max NTC. Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from FI to EE, while import indicates flow from EE to FI.

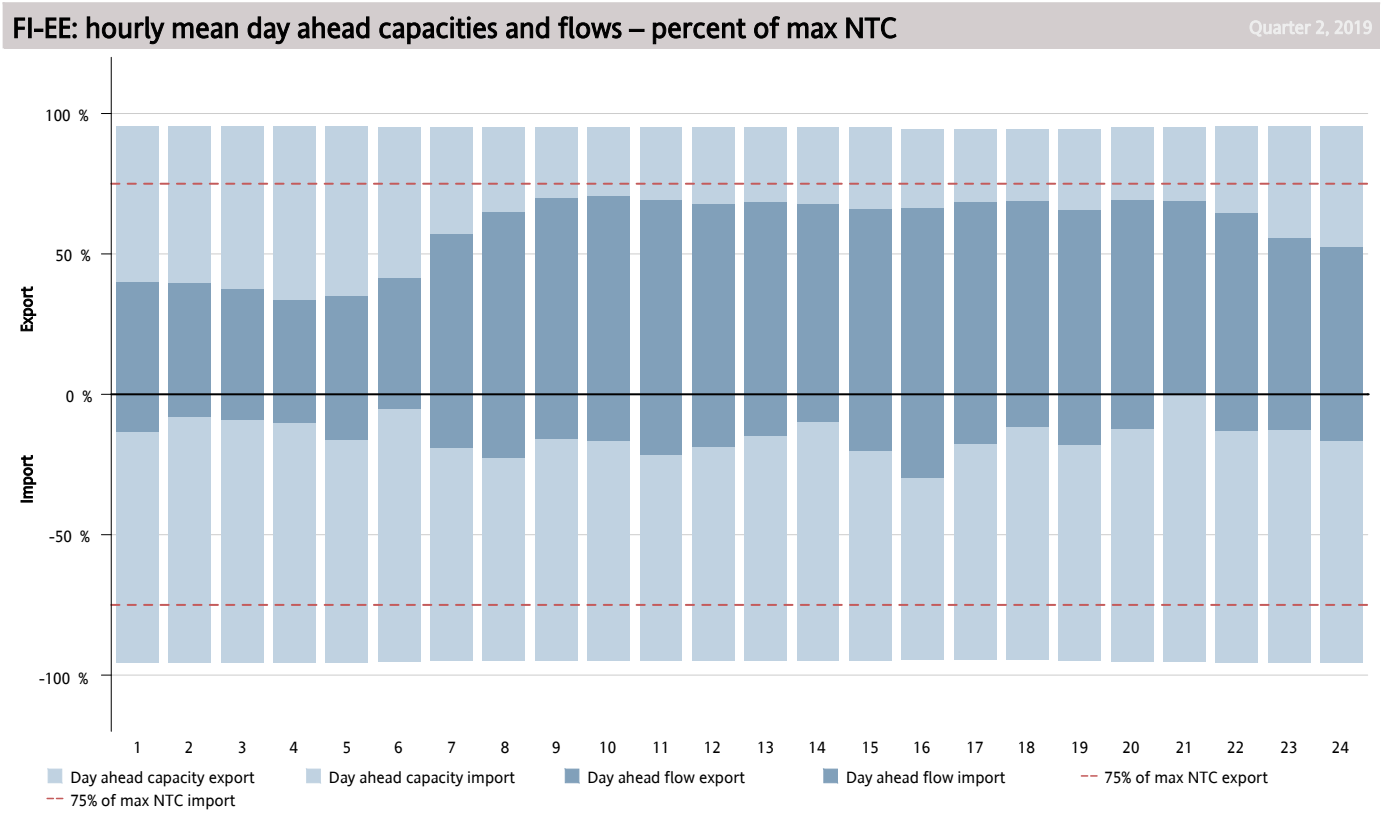

Figure 29: Shows cross-zonal day-ahead capacity result for the HVDC corridor FI-EE, showing average per hour of the day (1-24) capacity given and flow as a percentage of max NTC. Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from FI to EE, while import indicates flow from EE to FI.

FI-EE: hourly day ahead capacities and flows – MW

Quarter 2, 2019

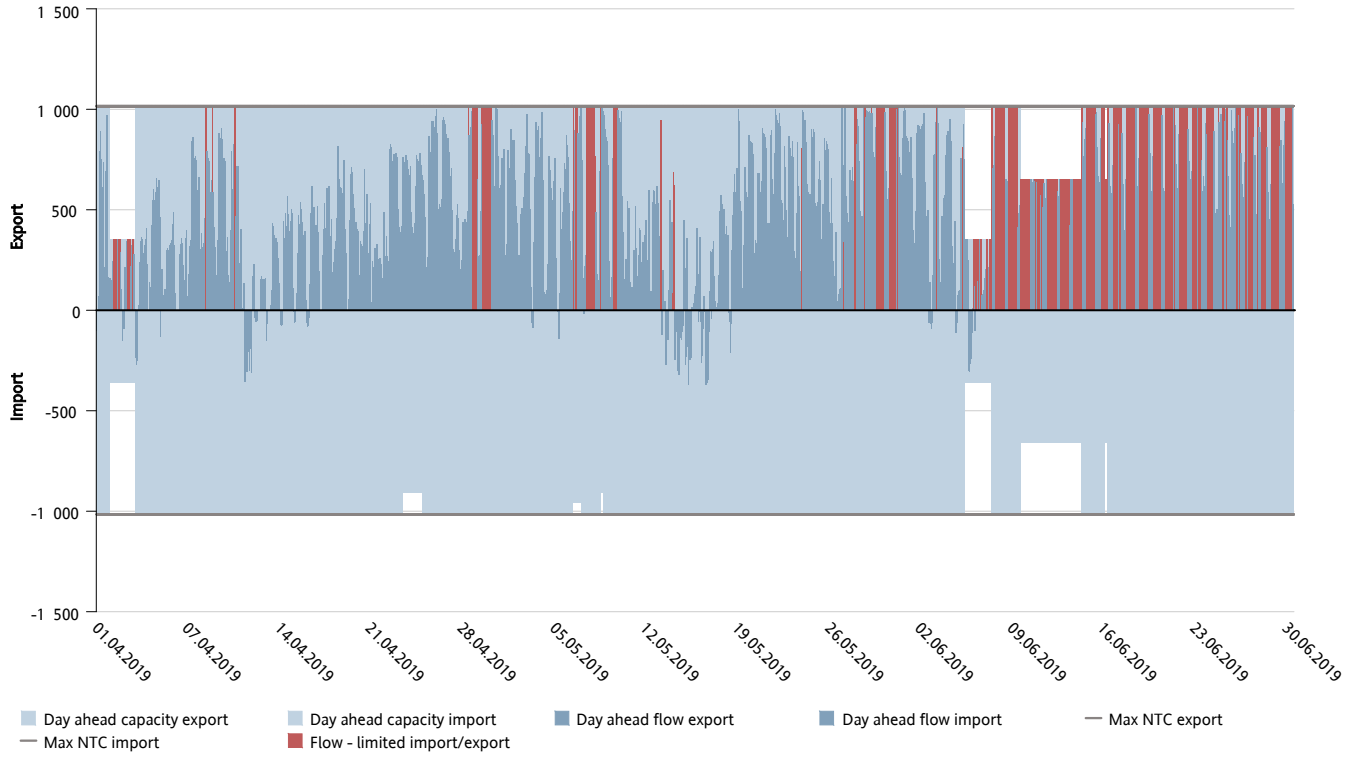

Figure 30: Shows cross-zonal day-ahead capacity result for the HVDC corridor FI-EE, showing capacity given and flow (MW). Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from FI to EE, while import indicates flow from EE to FI.

FI-EE: price comparison in EUR

Quarter 2, 2019

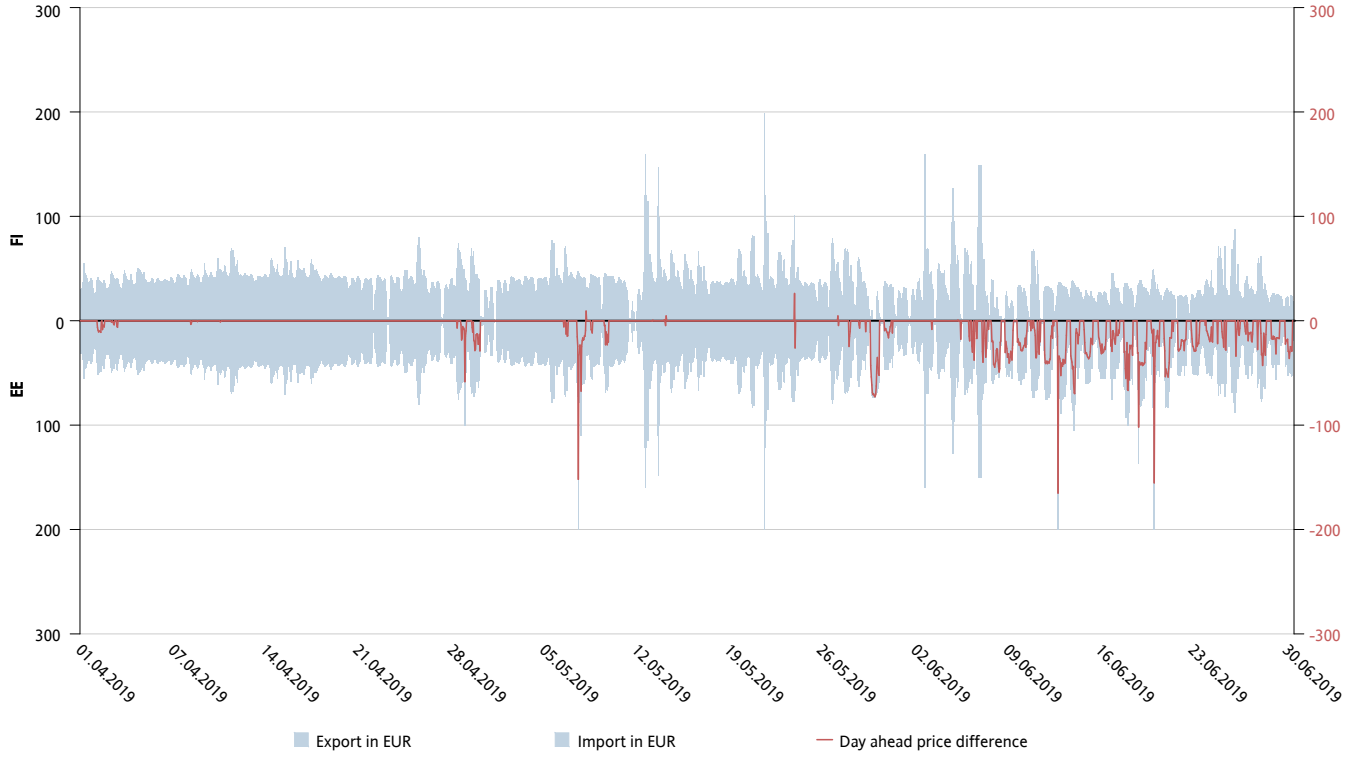

Figure 31: Shows day-ahead prices for the HVDC corridor FI-EE, all prices are in EUR. The red line shows the price difference between the two areas.

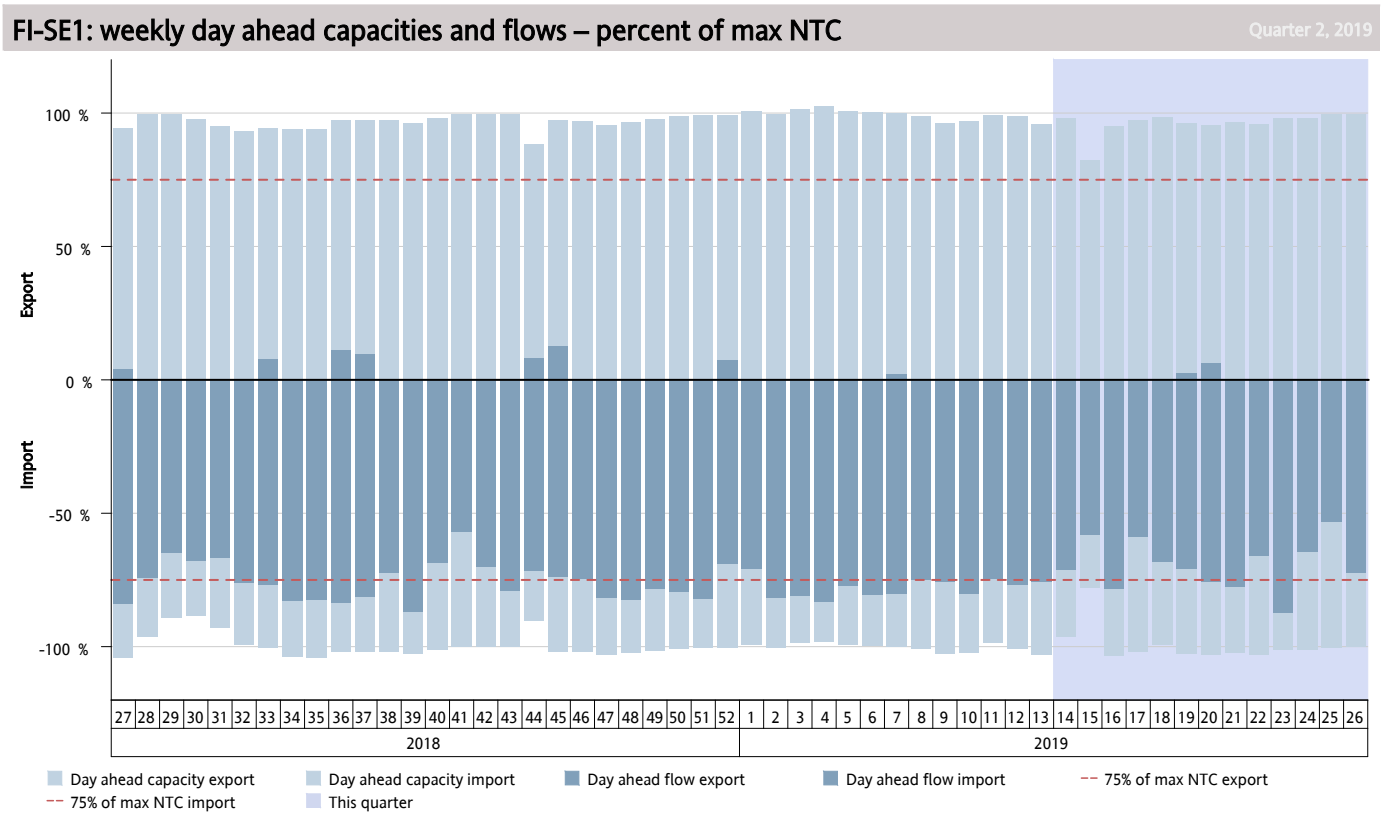

Figure 32: Shows cross-zonal day-ahead capacity result for the AC corridor FI-SE1, showing average weekly capacity given and flow as a percentage of max NTC. Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from FI to SE1, while import indicates flow from SE1 to FI.

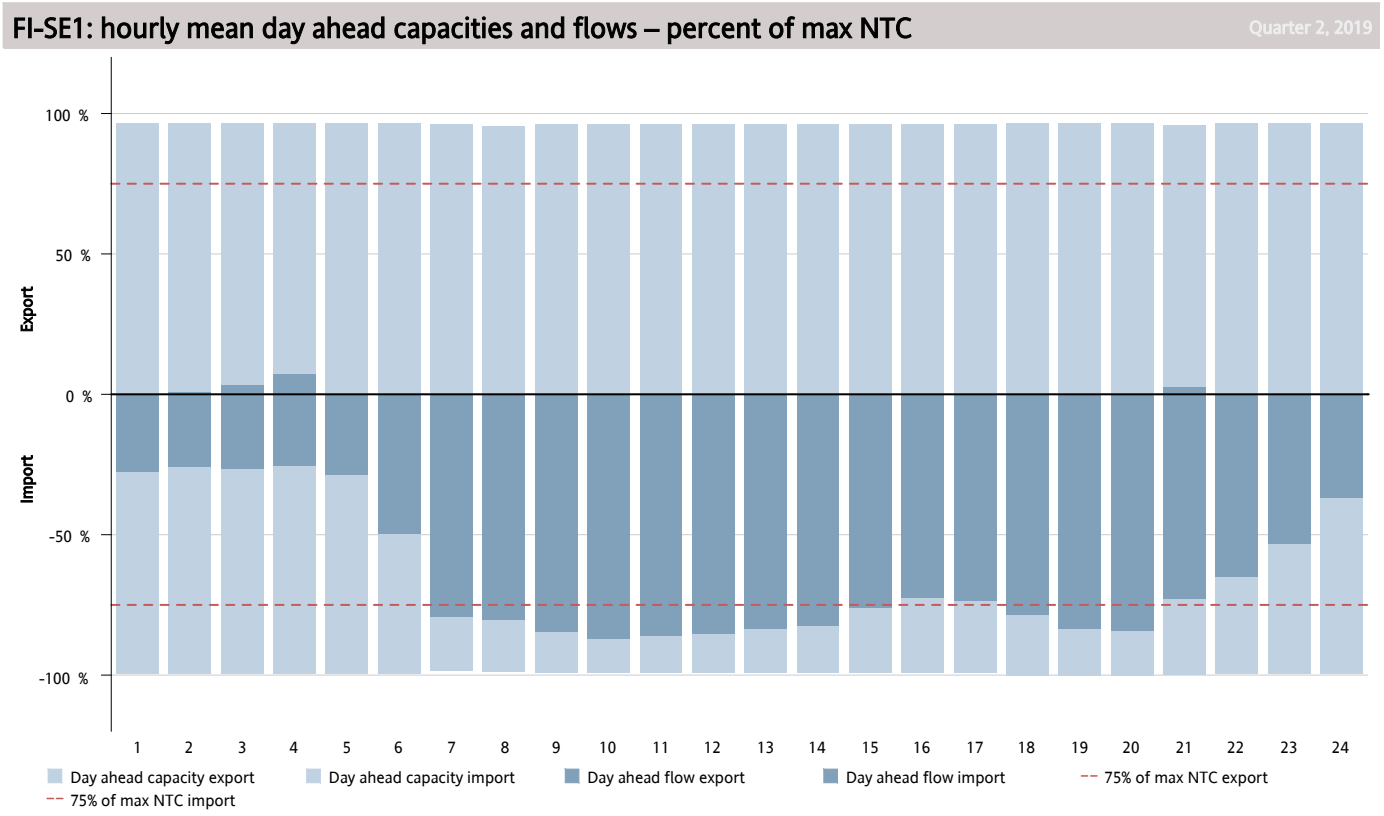

Figure 33: Shows cross-zonal day-ahead capacity result for the AC corridor FI-SE1, showing average per hour of the day (1-24) capacity given and flow as a percentage of max NTC. Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from FI to SE1, while import indicates flow from SE1 to FI.

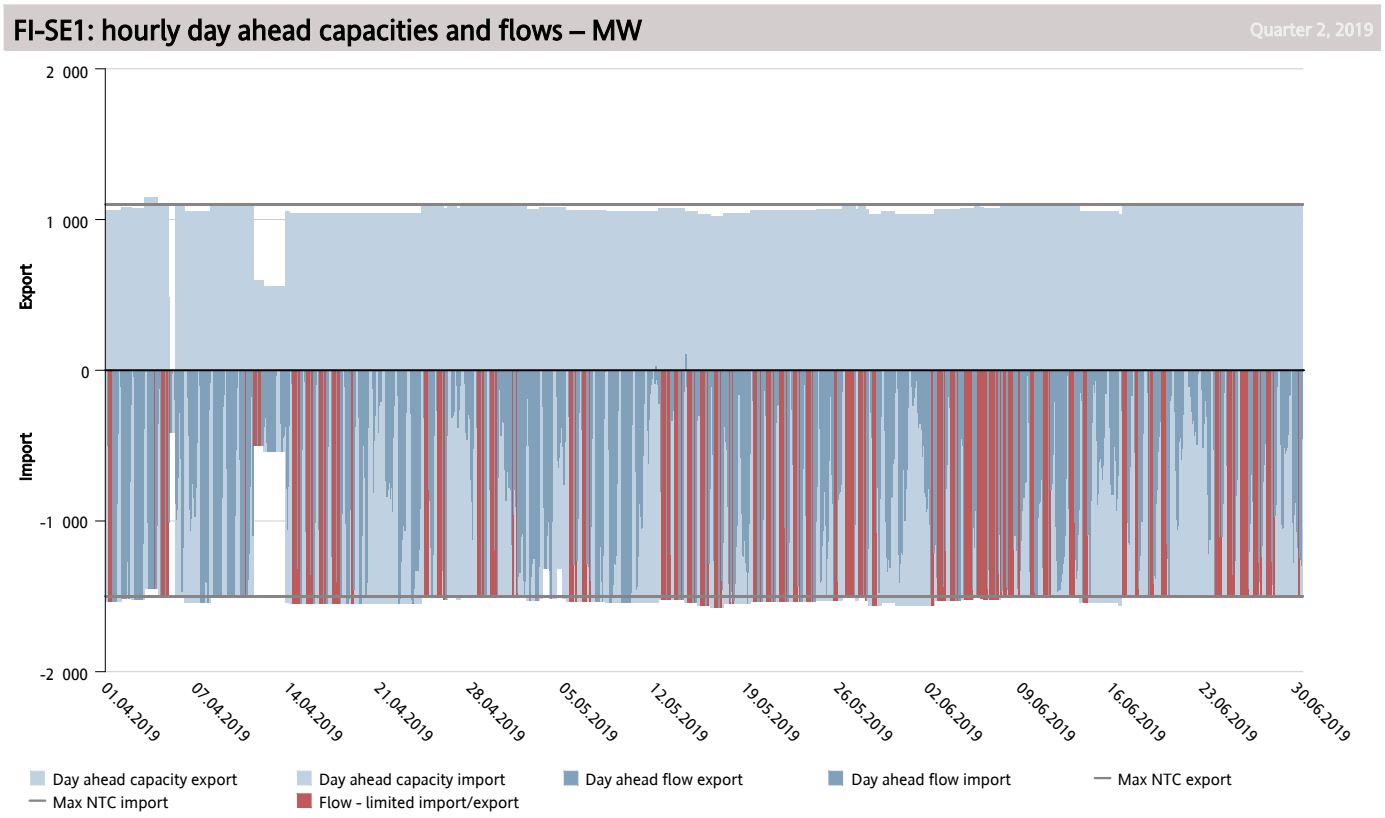

Figure 34: Shows cross-zonal day-ahead capacity result for the AC corridor FI-SE1, showing capacity given and flow (MW). Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from FI to SE1, while import indicates flow from SE1 to FI.

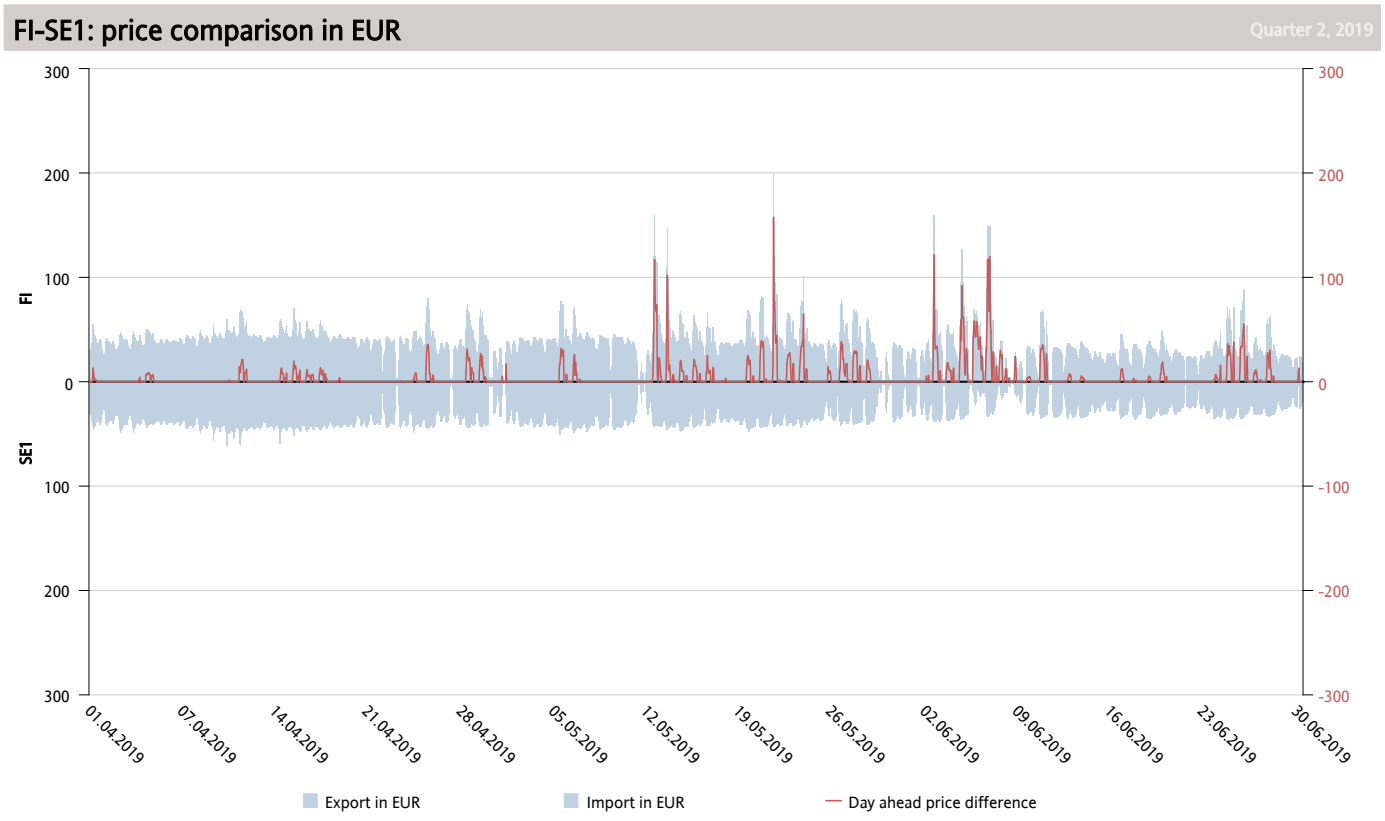

Figure 35: Shows day-ahead prices for the AC corridor FI-SE1, all prices are in EUR. The red line shows the price difference between the two areas.

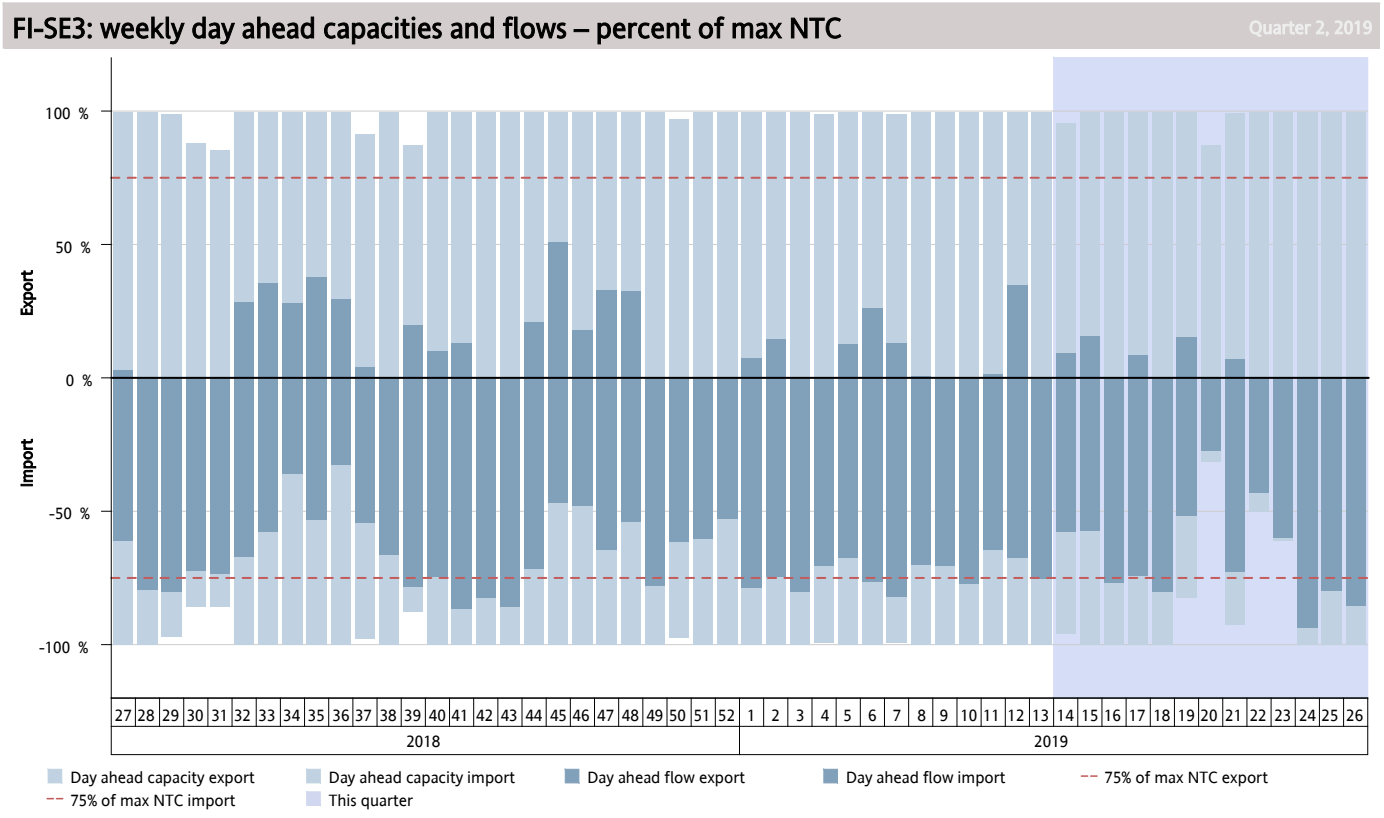

Figure 36: Shows cross-zonal day-ahead capacity result for the HVDC corridor FI-SE3, showing average weekly capacity given and flow as a percentage of max NTC. Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from FI to SE3, while import indicates flow from SE3 to FI.

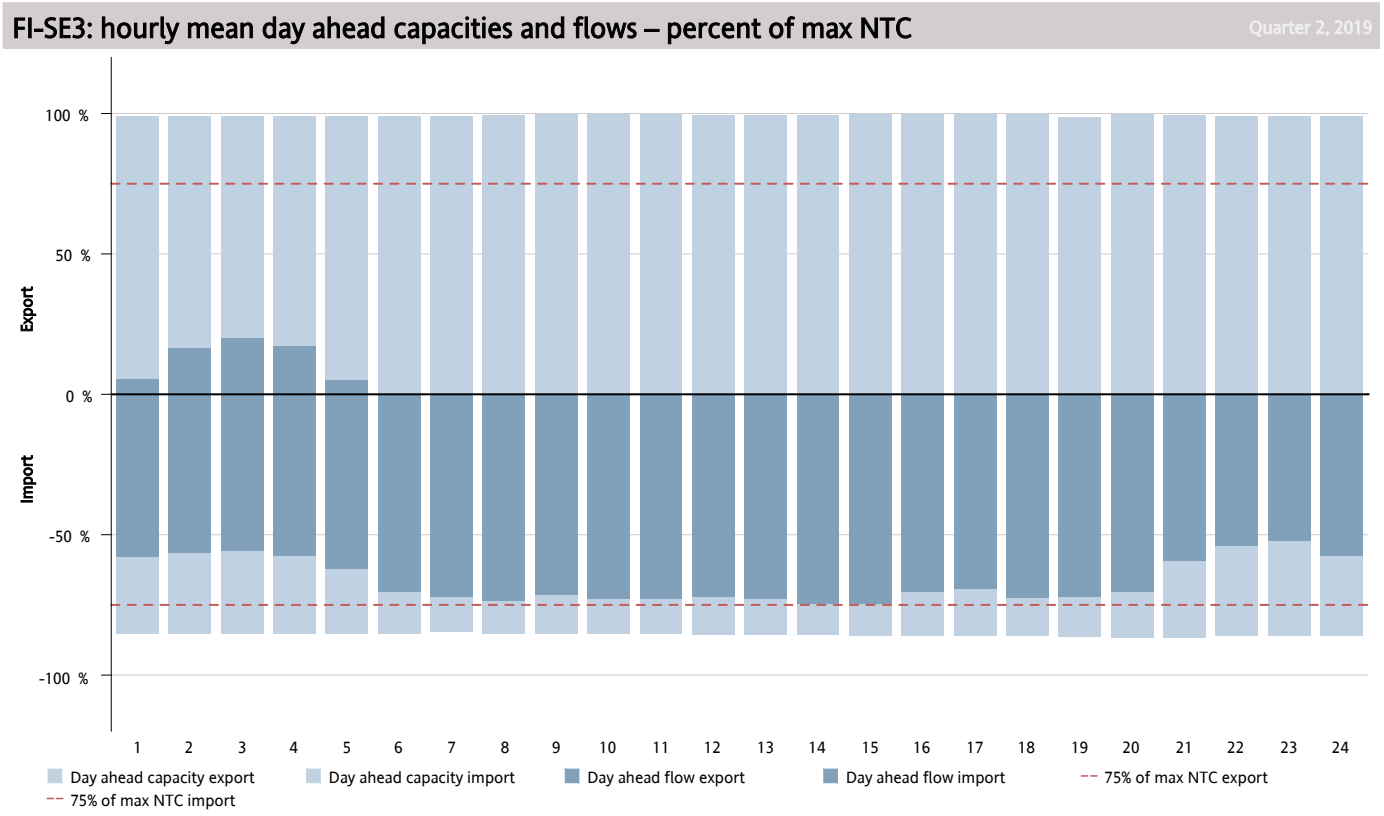

Figure 37: Shows cross-zonal day-ahead capacity result for the HVDC corridor FI-SE3, showing average per hour of the day (1-24) capacity given and flow as a percentage of max NTC. Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from FI to SE3, while import indicates flow from SE3 to FI.

FI-SE3: hourly day ahead capacities and flows – MW

Quarter 2, 2019

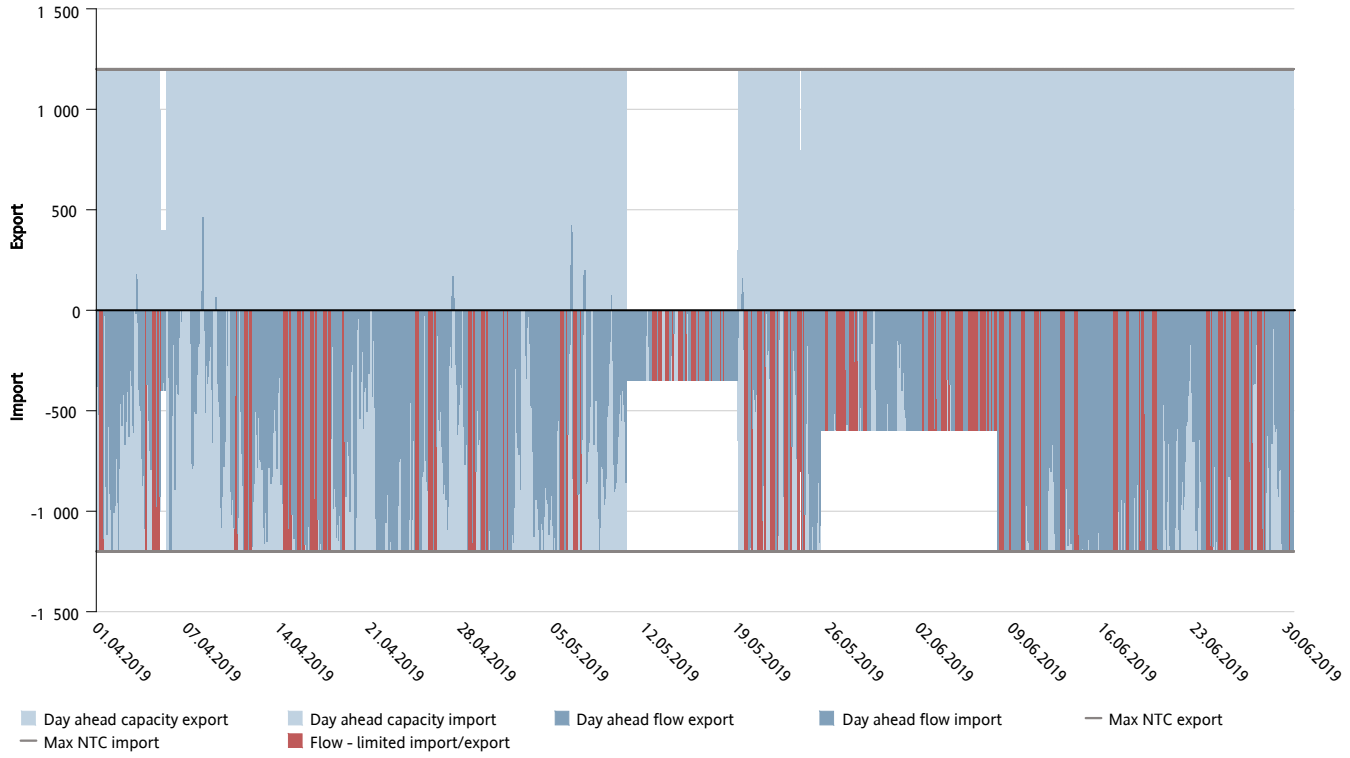

Figure 38: Shows cross-zonal day-ahead capacity result for the HVDC corridor FI-SE3, showing capacity given and flow (MW). Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from FI to SE3, while import indicates flow from SE3 to FI.

FI-SE3: price comparison in EUR

Quarter 2, 2019

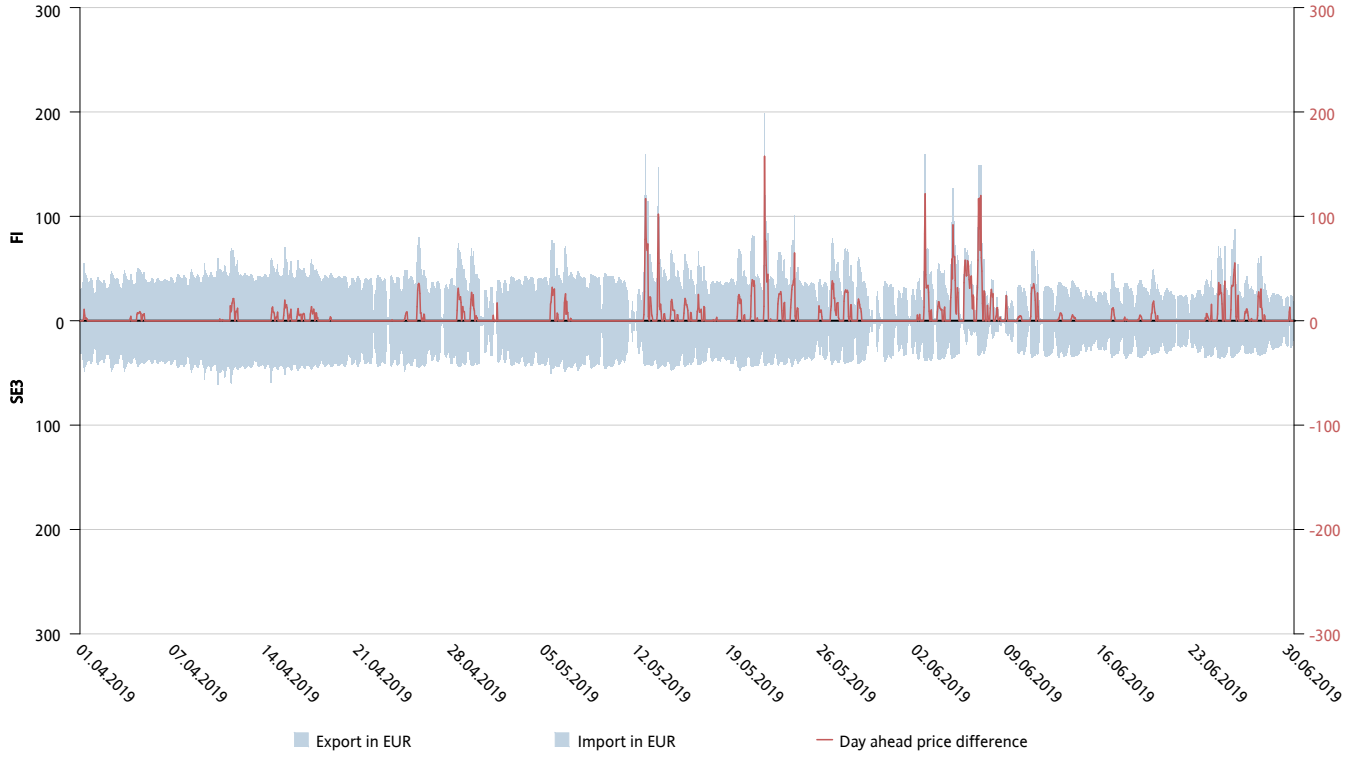

Figure 39: Shows day-ahead prices for the HVDC corridor FI-SE3, all prices are in EUR. The red line shows the price difference between the two areas.

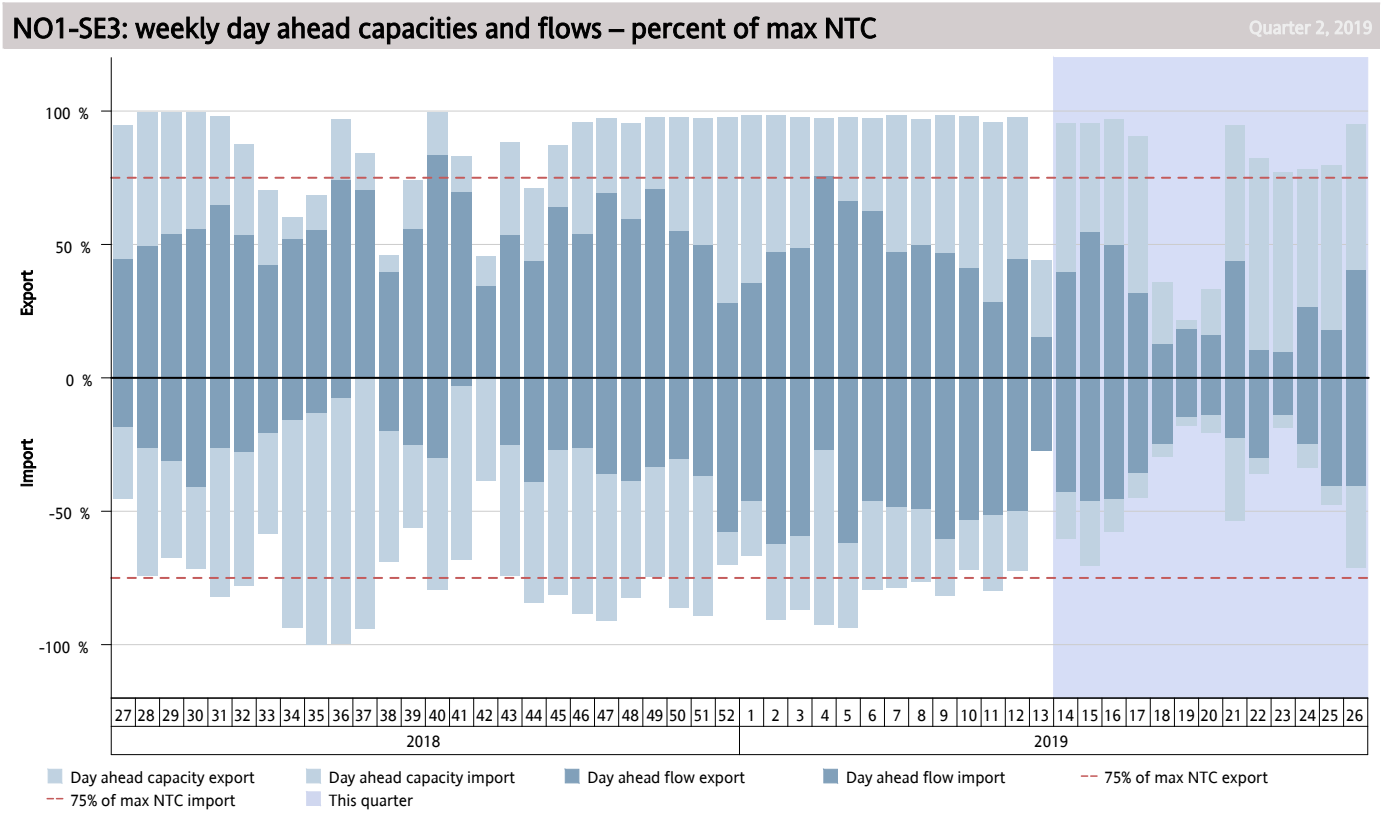

Figure 40: Shows cross-zonal day-ahead capacity result for the AC corridor NO1-SE3, showing average weekly capacity given and flow as a percentage of max NTC. Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from NO1 to SE3, while import indicates flow from SE3 to NO1.

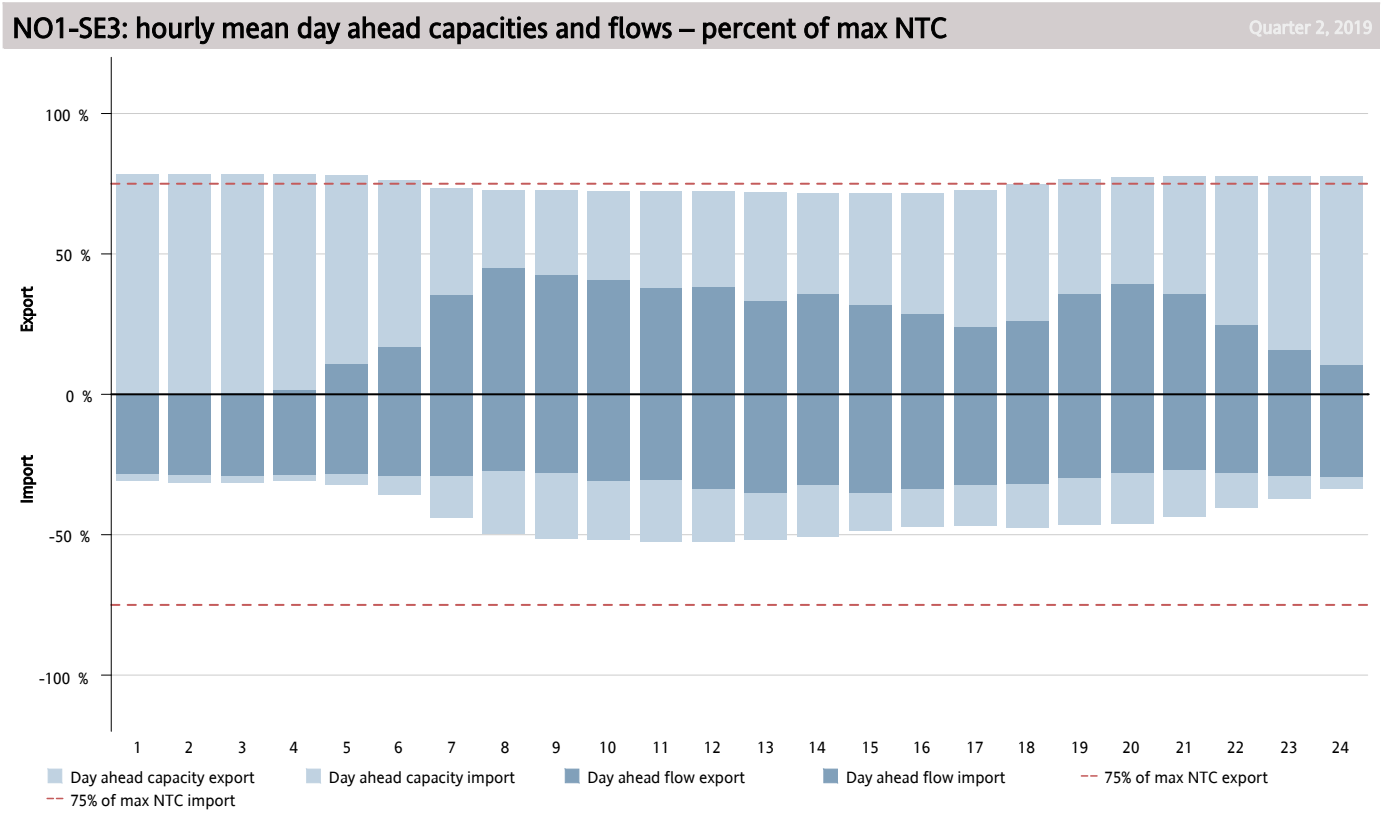

Figure 41: Shows cross-zonal day-ahead capacity result for the AC corridor NO1-SE3, showing average per hour of the day (1-24) capacity given and flow as a percentage of max NTC. Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from NO1 to SE3, while import indicates flow from SE3 to NO1.

NO1-SE3: hourly day ahead capacities and flows – MW

Quarter 2, 2019

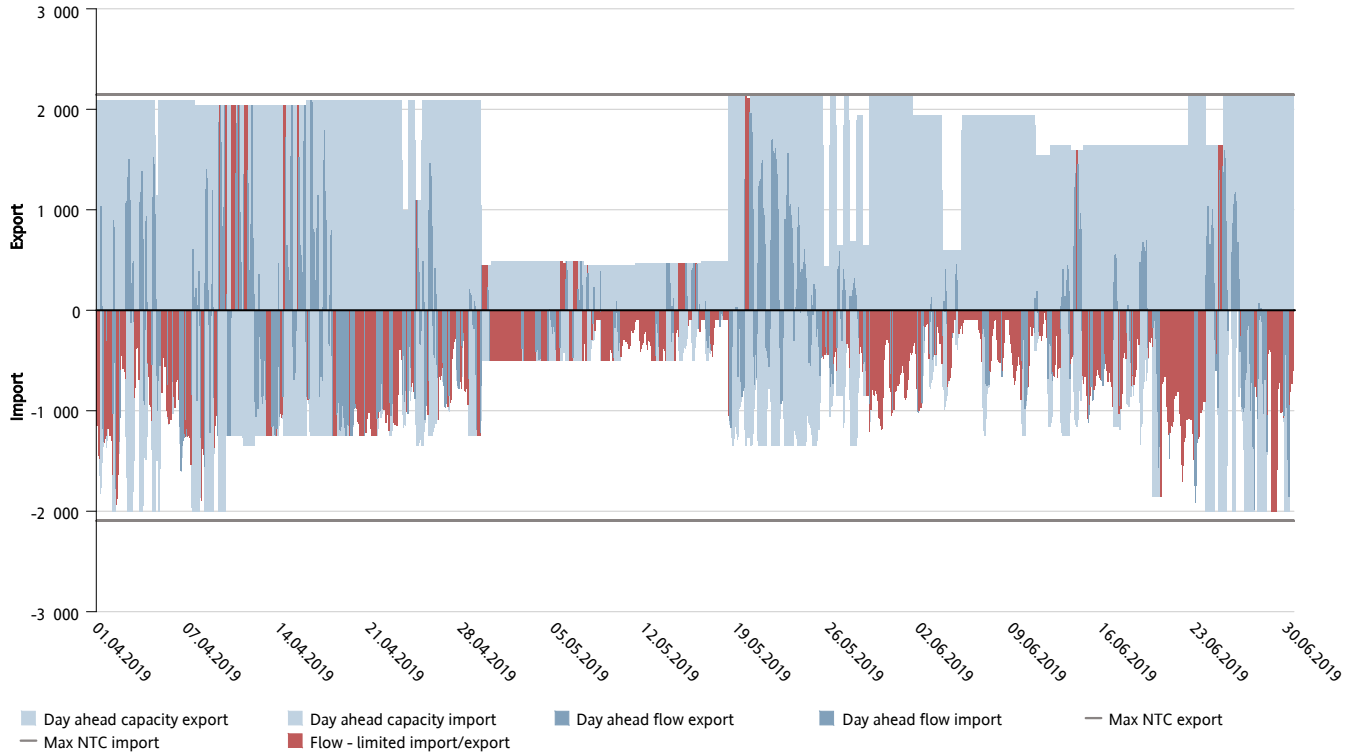

Figure 42: Shows cross-zonal day-ahead capacity result for the AC corridor NO1-SE3, showing capacity given and flow (MW). Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from NO1 to SE3, while import indicates flow from SE3 to NO1.

NO1-SE3: price comparison in EUR

Quarter 2, 2019

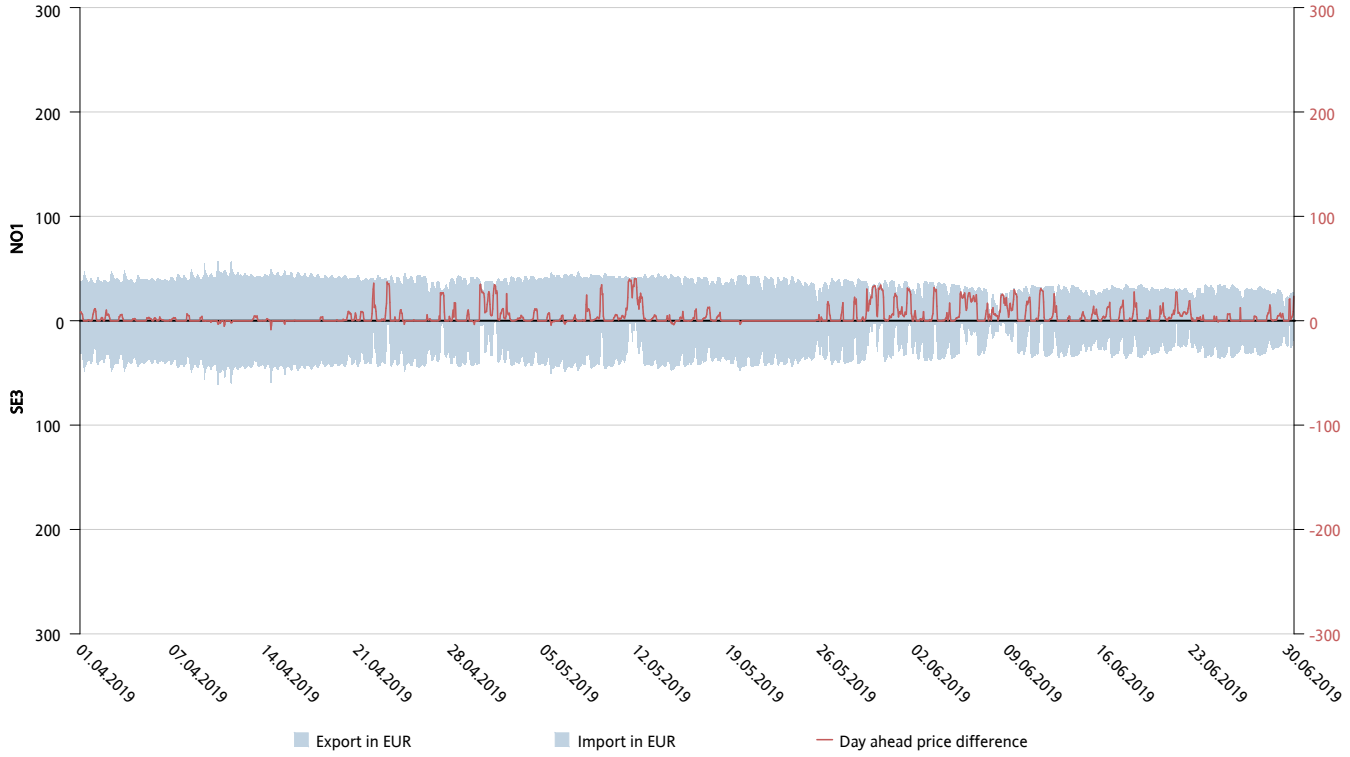

Figure 43: Shows day-ahead prices for the AC corridor NO1-SE3, all prices are in EUR. The red line shows the price difference between the two areas.

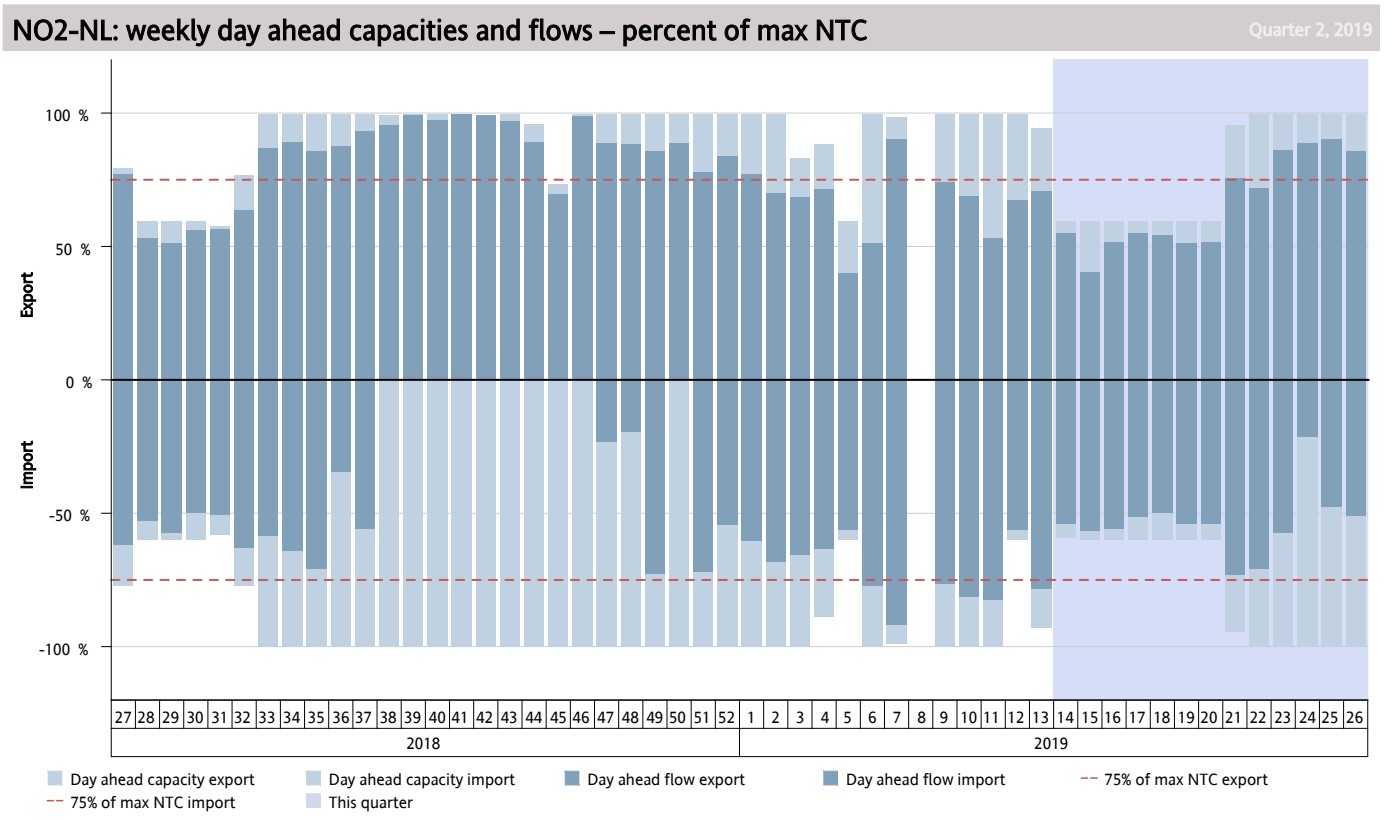

Figure 44: Shows cross-zonal day-ahead capacity result for the HVDC corridor NO2-NL, showing average weekly capacity given and flow as a percentage of max NTC. Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from NO2 to NL, while import indicates flow from NL to NO2.

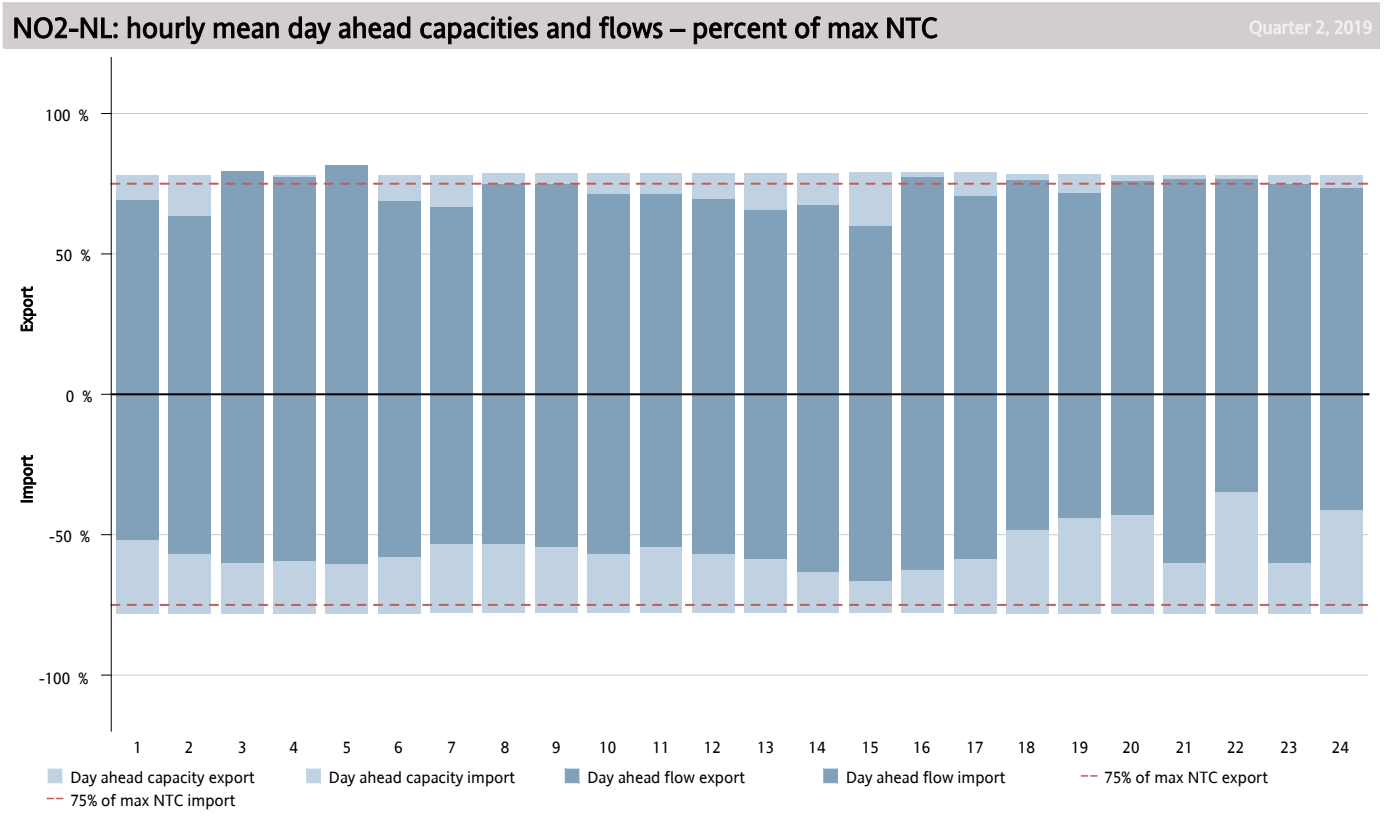

Figure 45: Shows cross-zonal day-ahead capacity result for the HVDC corridor NO2-NL, showing average per hour of the day (1-24) capacity given and flow as a percentage of max NTC. Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from NO2 to NL, while import indicates flow from NL to NO2.

NO2-NL: hourly day ahead capacities and flows – MW

Quarter 2, 2019

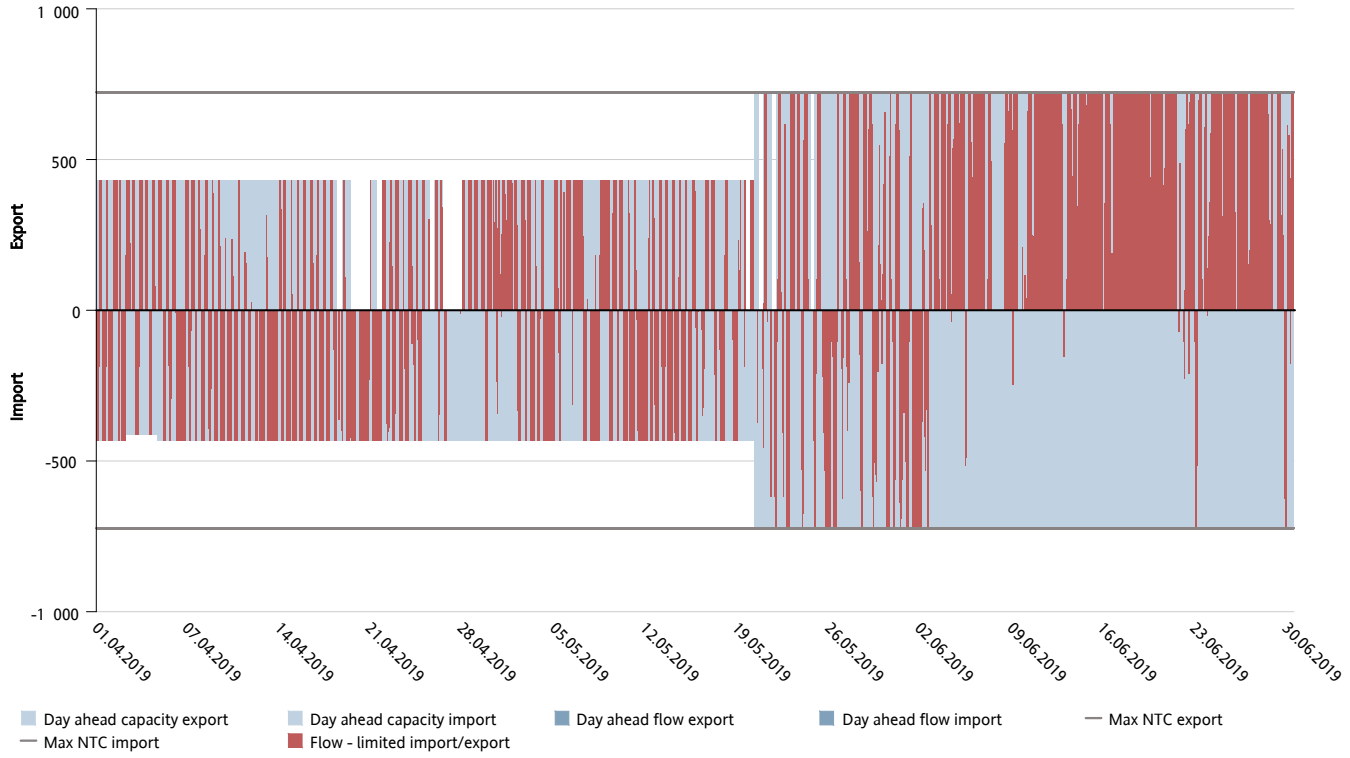

Figure 46: Shows cross-zonal day-ahead capacity result for the HVDC corridor NO2-NL, showing capacity given and flow (MW). Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from NO2 to NL, while import indicates flow from NL to NO2.

NO2-NL: price comparison in EUR

Quarter 2, 2019

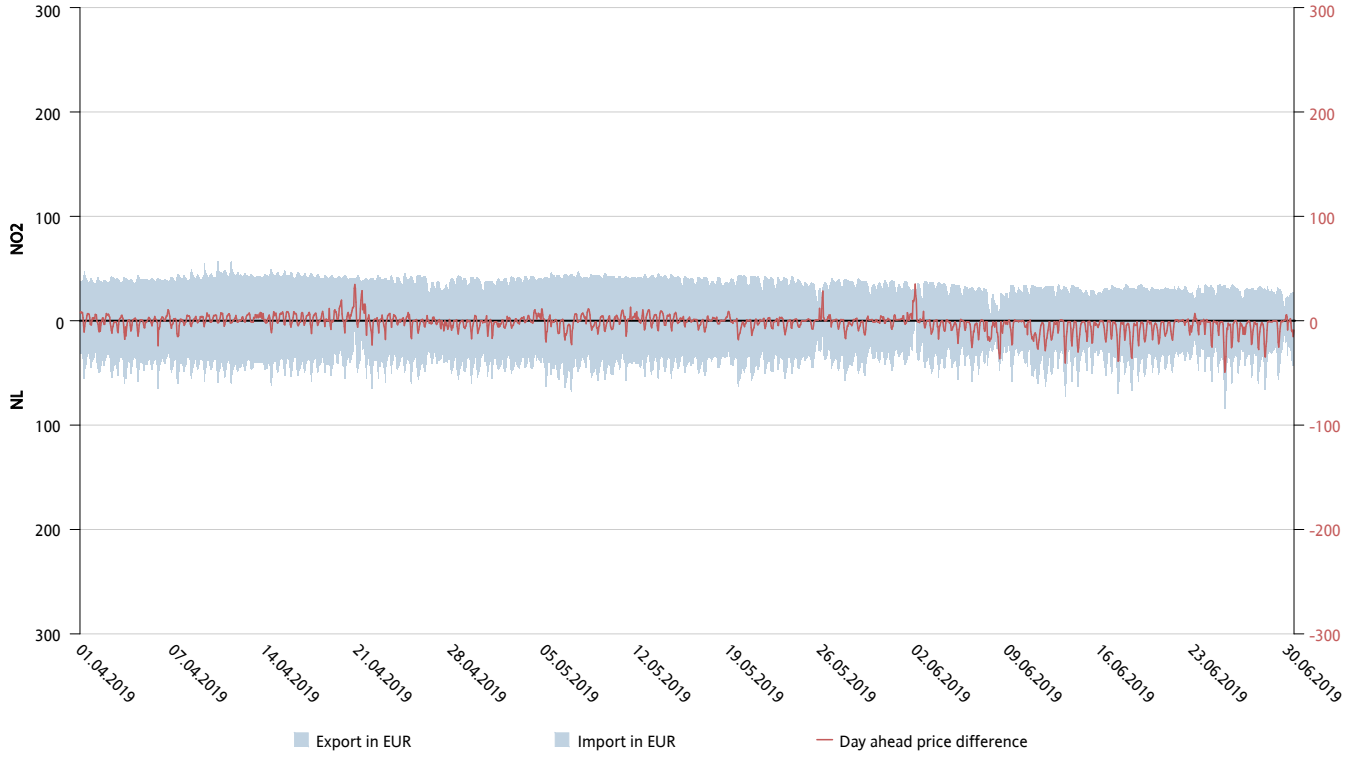

Figure 47: Shows day-ahead prices for the HVDC corridor NO2-NL, all prices are in EUR. The red line shows the price difference between the two areas.

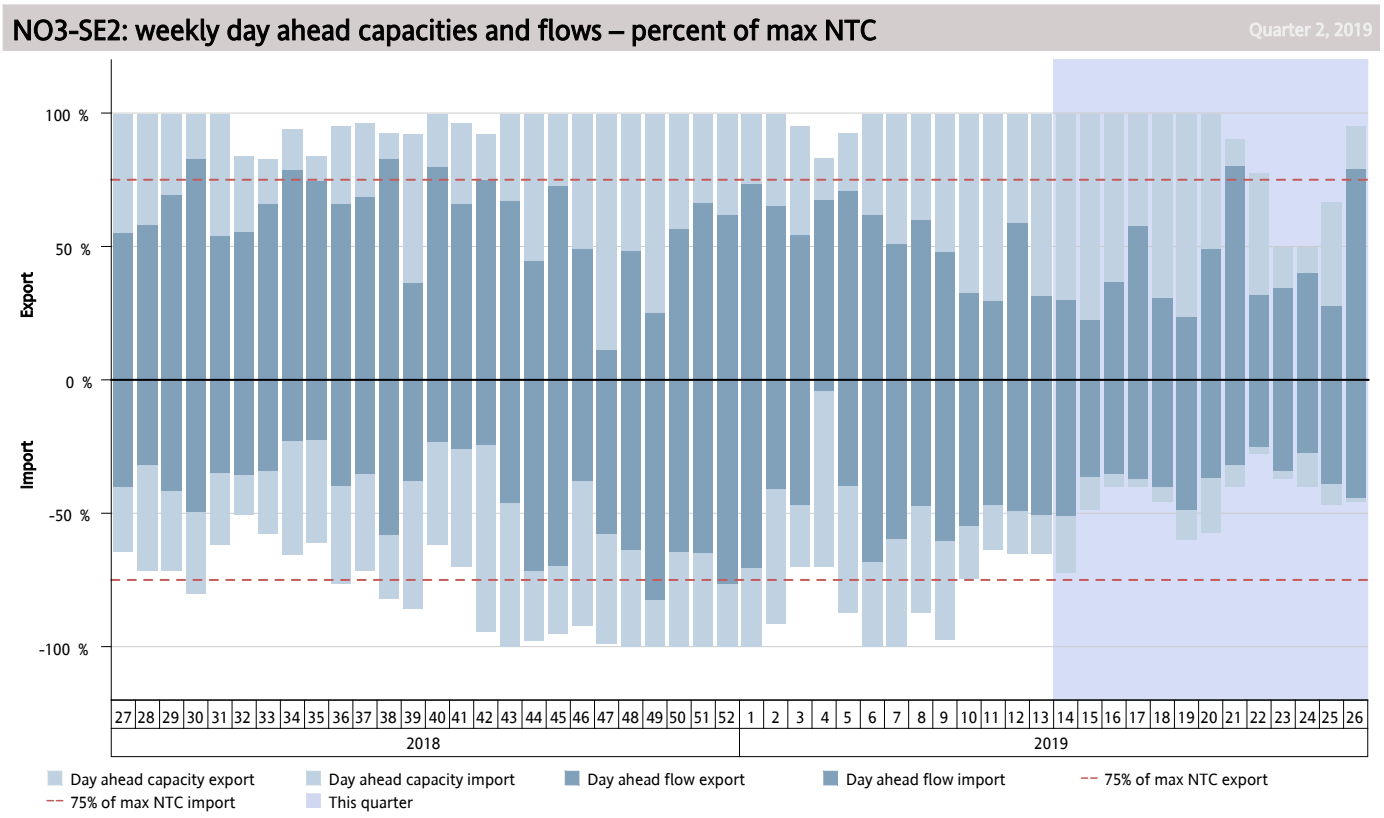

Figure 48: Shows cross-zonal day-ahead capacity result for the AC corridor NO3-SE2, showing average weekly capacity given and flow as a percentage of max NTC. Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from NO3 to SE2, while import indicates flow from SE2 to NO3.

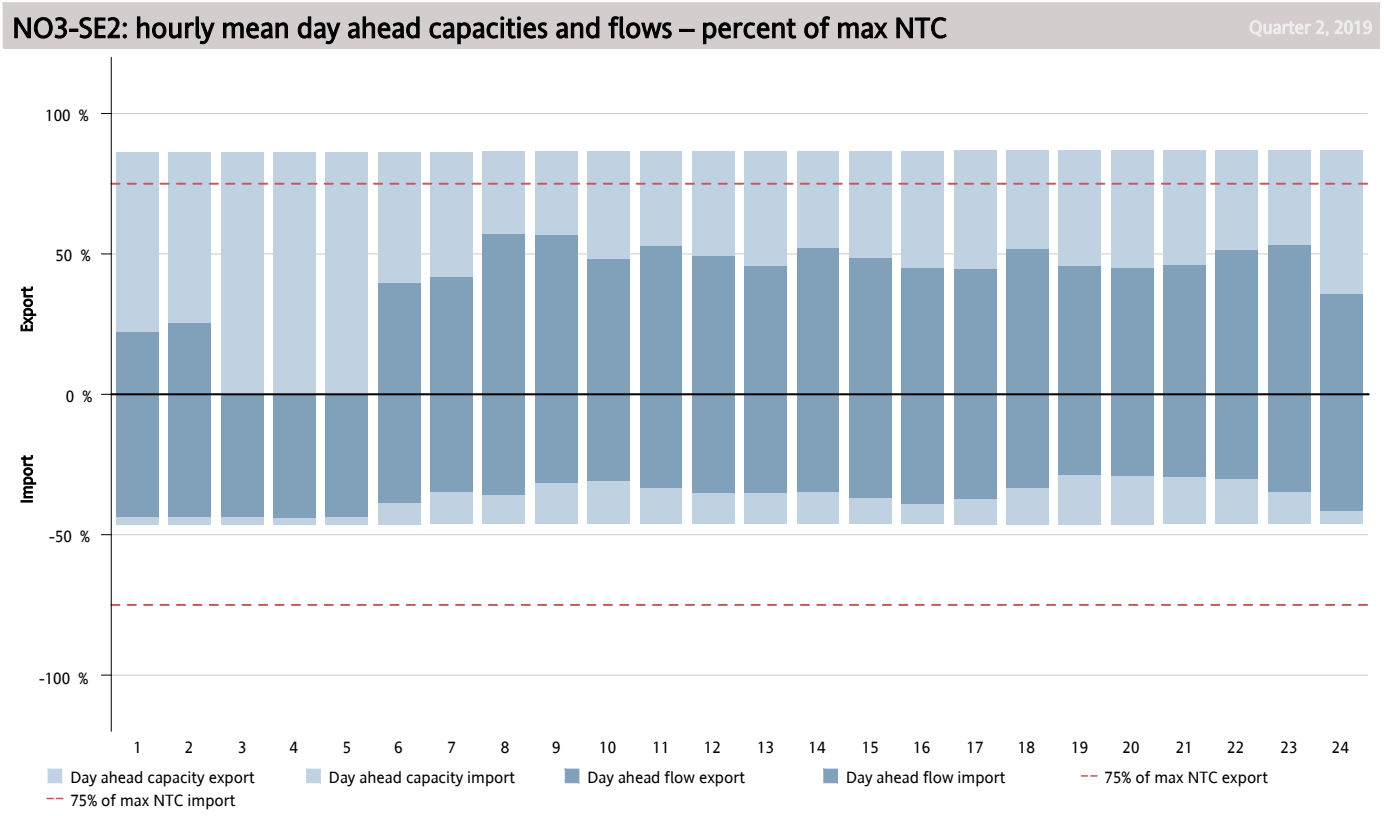

Figure 49: Shows cross-zonal day-ahead capacity result for the AC corridor NO3-SE2, showing average per hour of the day (1-24) capacity given and flow as a percentage of max NTC. Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from NO3 to SE2, while import indicates flow from SE2 to NO3.

NO3-SE2: hourly day ahead capacities and flows – MW

Quarter 2, 2019

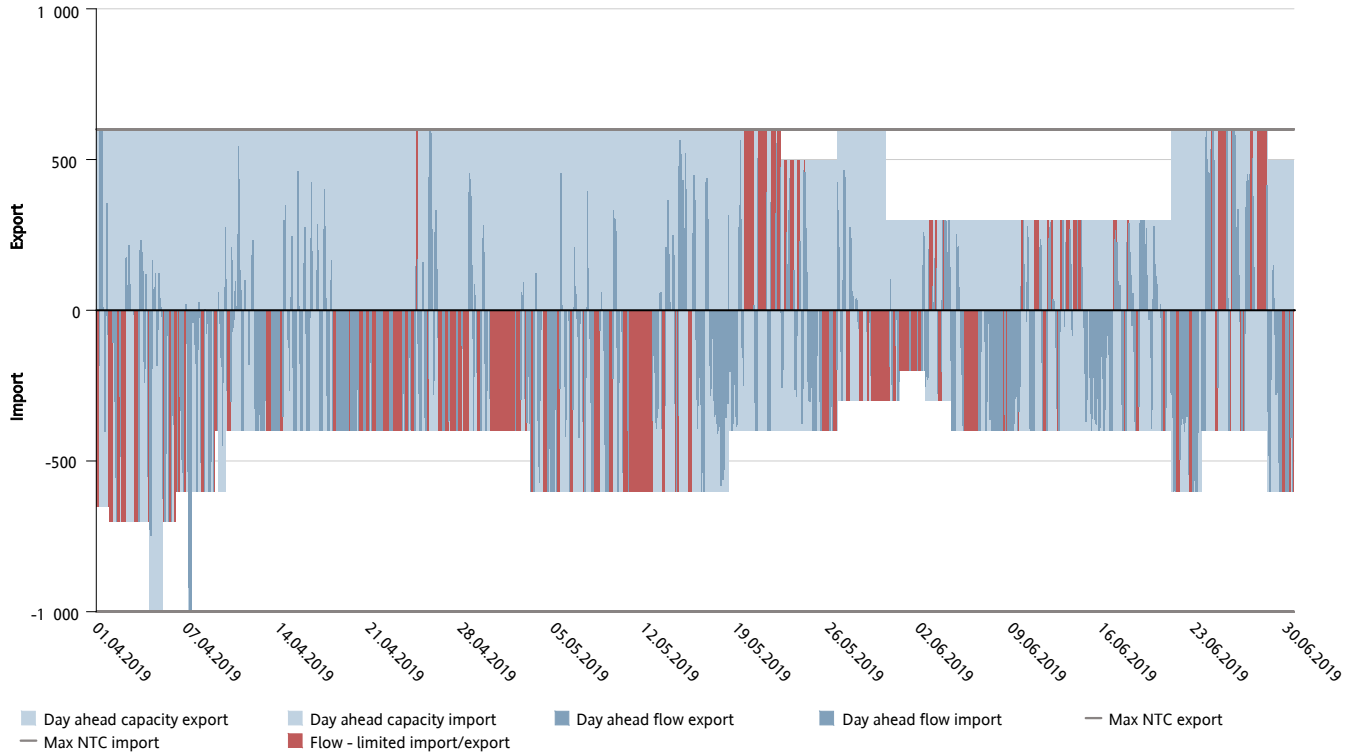

Figure 50: Shows cross-zonal day-ahead capacity result for the AC corridor NO3-SE2, showing capacity given and flow (MW). Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from NO3 to SE2, while import indicates flow from SE2 to NO3.

NO3-SE2: price comparison in EUR

Quarter 2, 2019

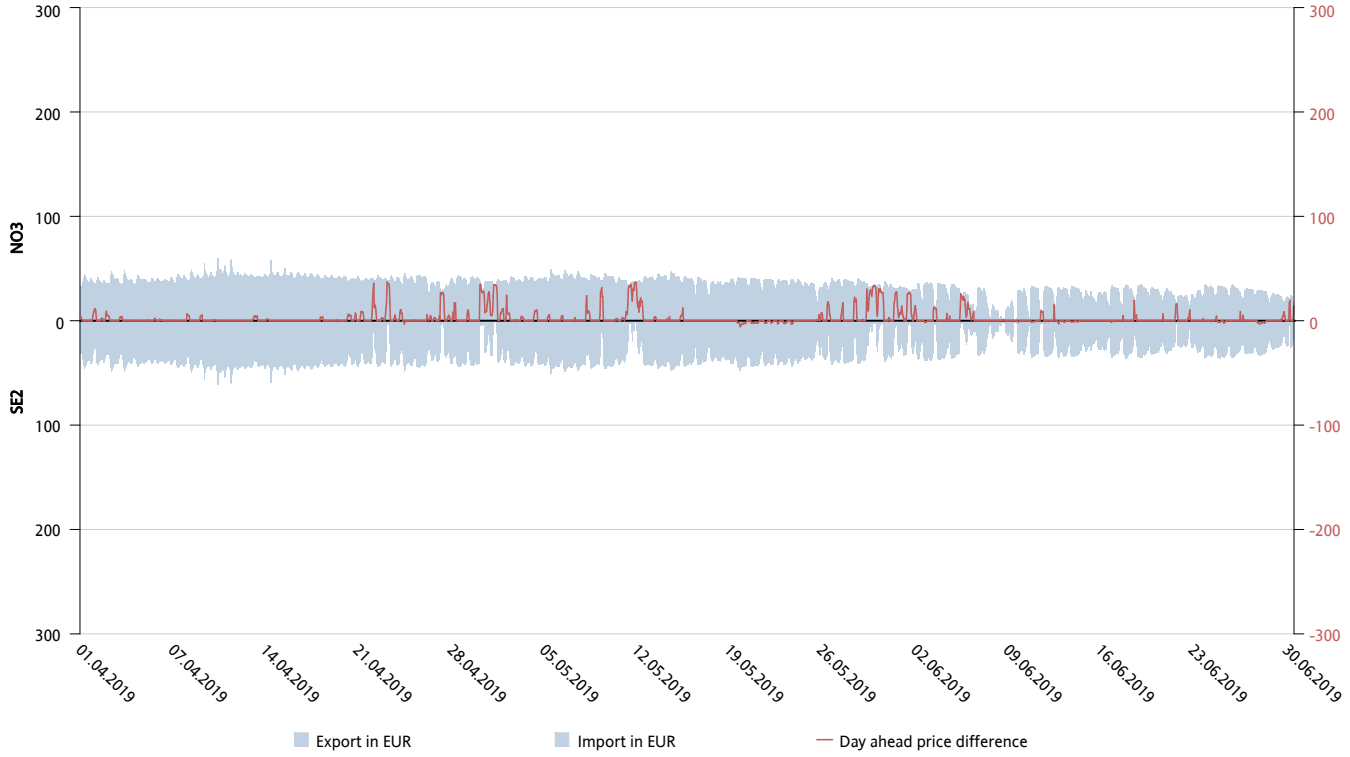

Figure 51: Shows day-ahead prices for the AC corridor NO3-SE2, all prices are in EUR. The red line shows the price difference between the two areas.

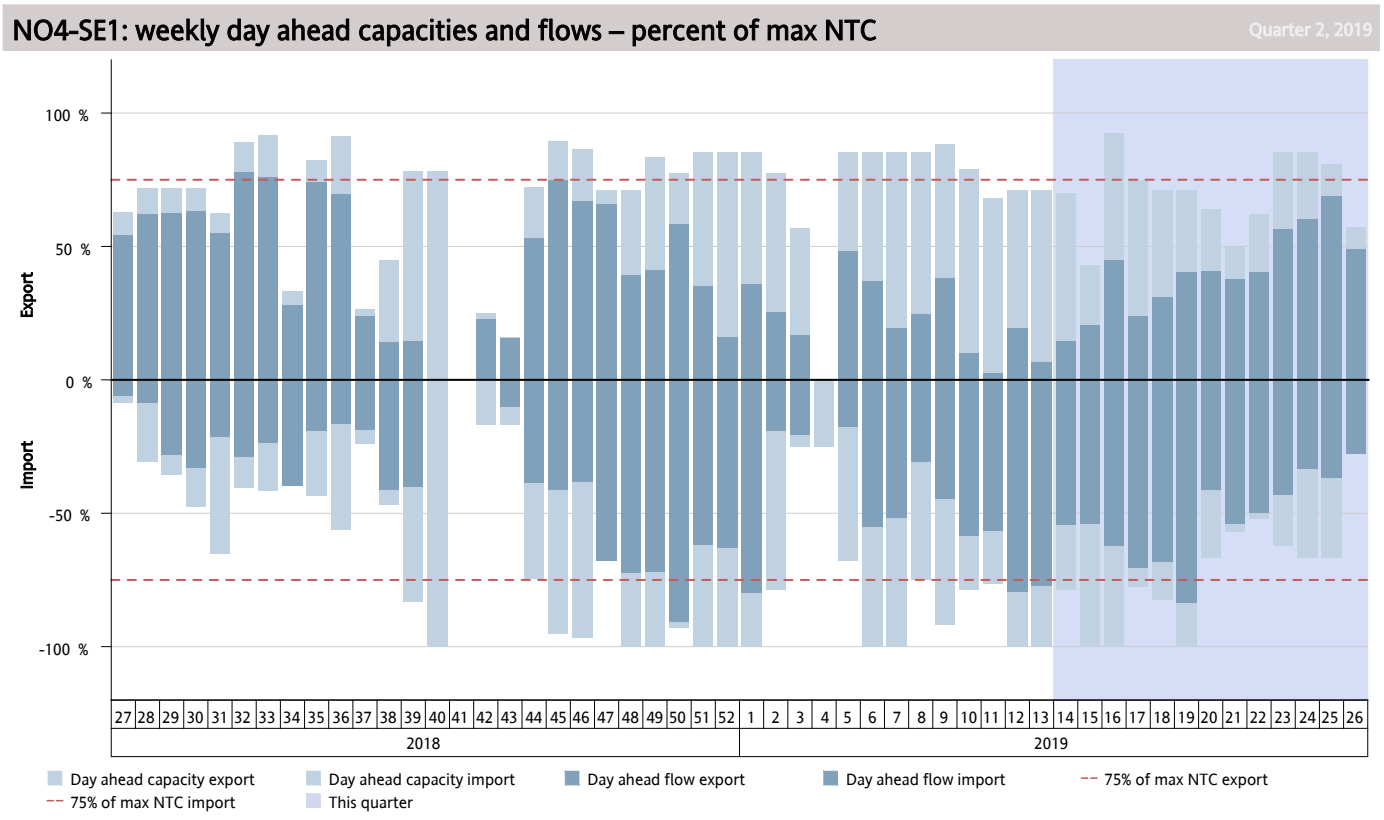

Figure 52: Shows cross-zonal day-ahead capacity result for the AC corridor NO4-SE1, showing average weekly capacity given and flow as a percentage of max NTC. Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from NO4 to SE1, while import indicates flow from SE1 to NO4.

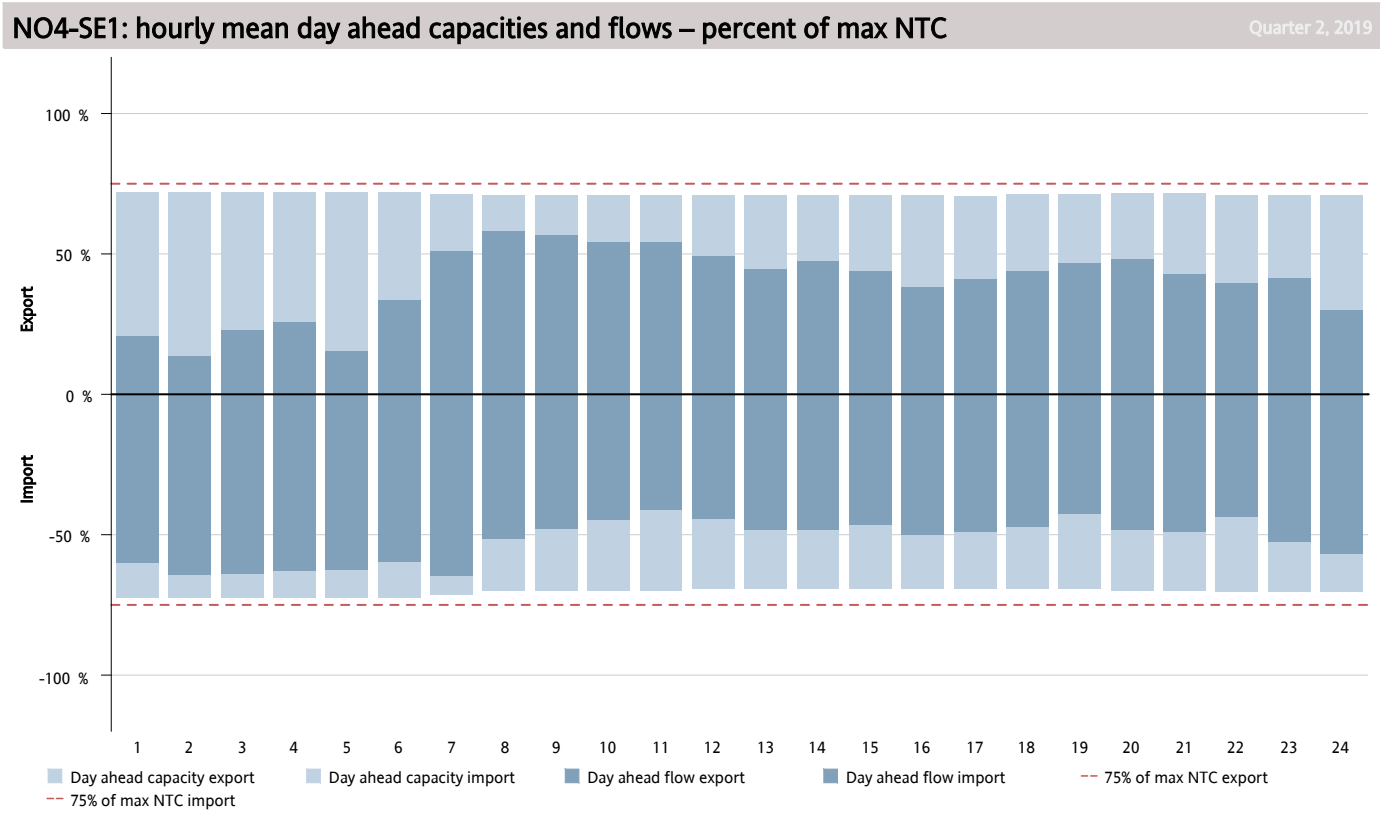

Figure 53: Shows cross-zonal day-ahead capacity result for the AC corridor NO4-SE1, showing average per hour of the day (1-24) capacity given and flow as a percentage of max NTC. Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from NO4 to SE1, while import indicates flow from SE1 to NO4.

NO4-SE1: hourly day ahead capacities and flows – MW

Quarter 2, 2019

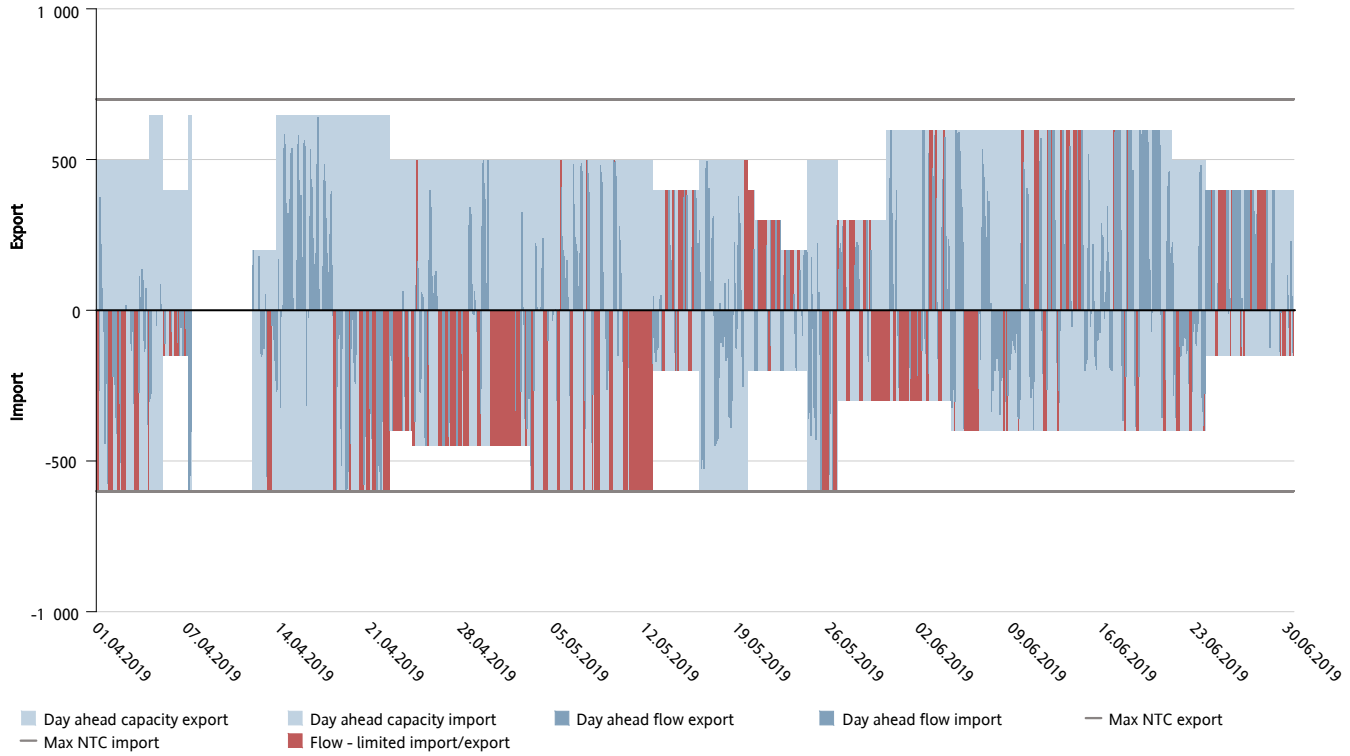

Figure 54: Shows cross-zonal day-ahead capacity result for the AC corridor NO4-SE1, showing capacity given and flow (MW). Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from NO4 to SE1, while import indicates flow from SE1 to NO4.

NO4-SE1: price comparison in EUR

Quarter 2, 2019

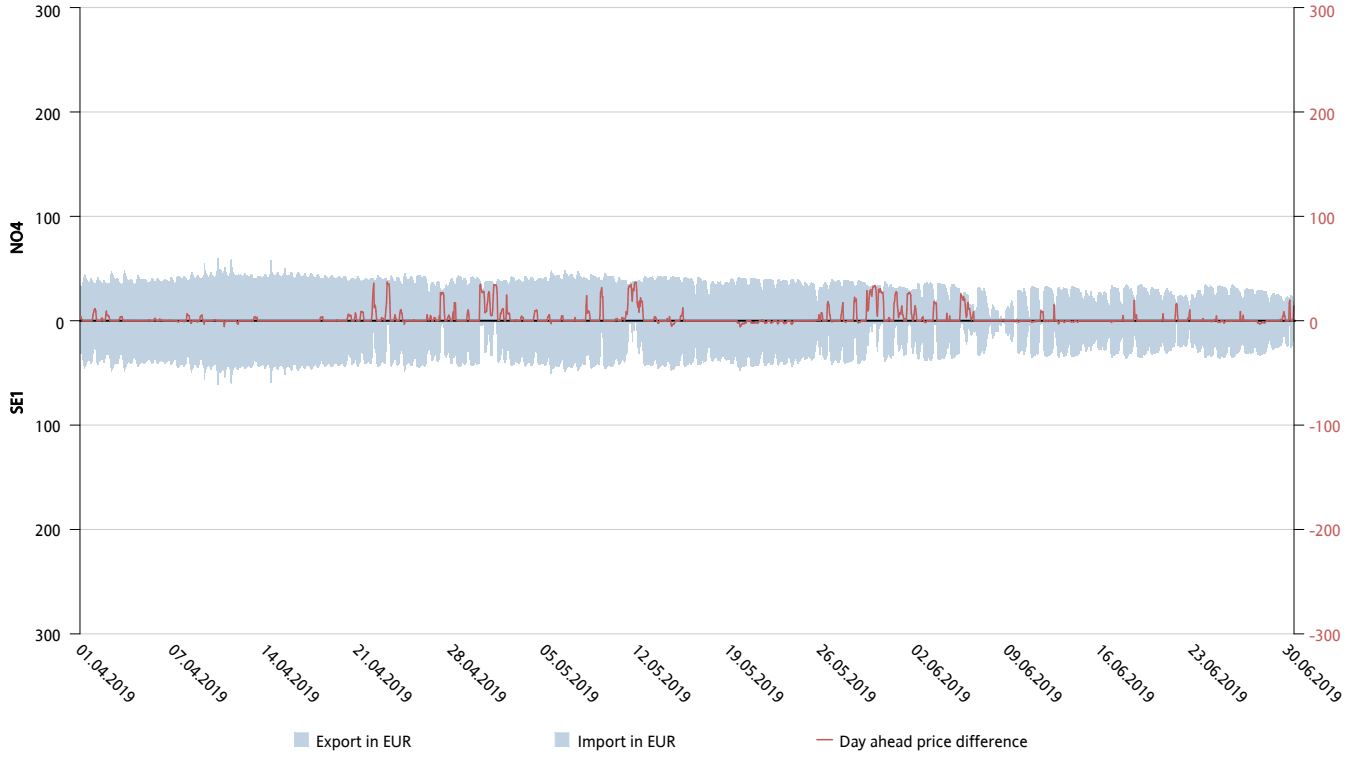

Figure 55: Shows day-ahead prices for the AC corridor NO4-SE1, all prices are in EUR. The red line shows the price difference between the two areas.

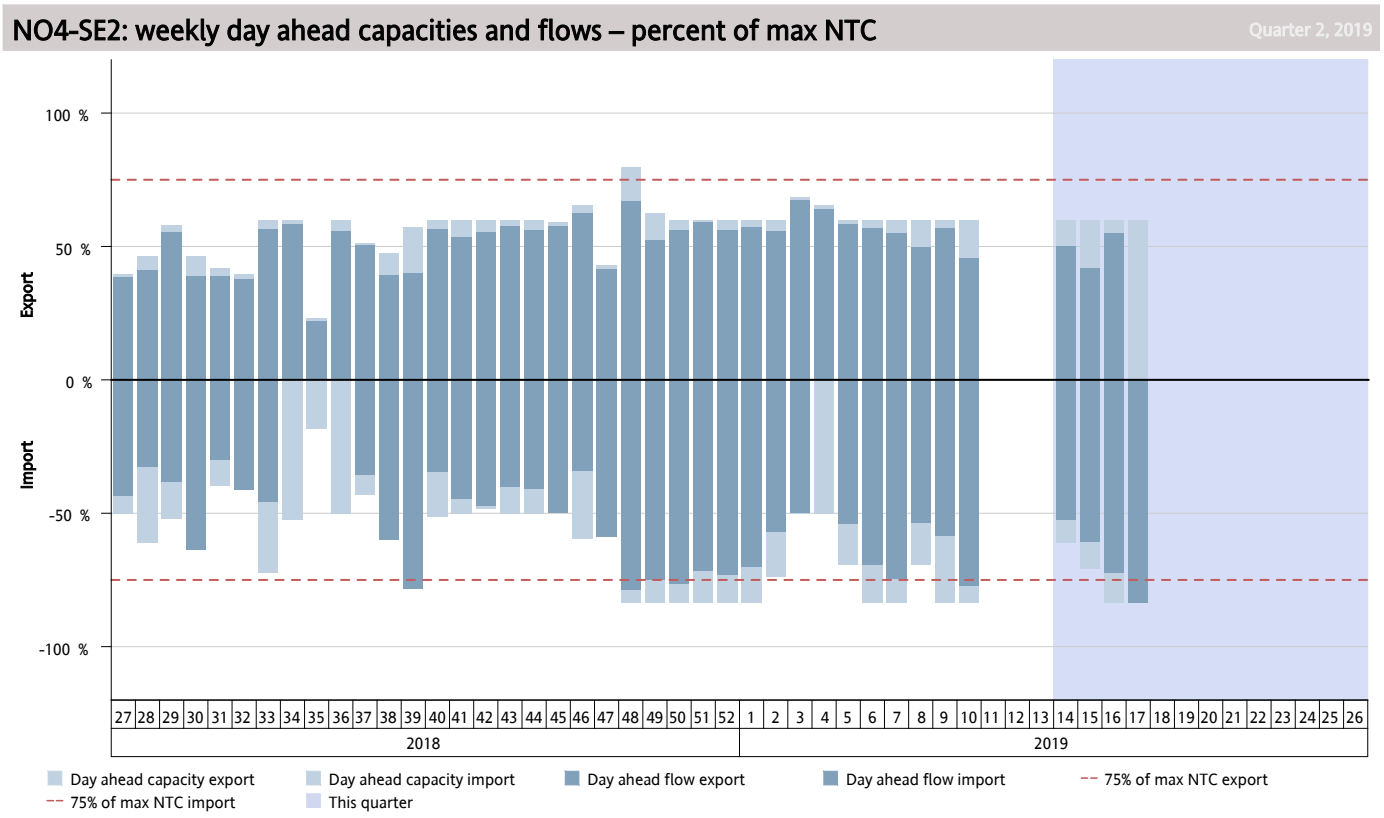

Figure 56: Shows cross-zonal day-ahead capacity result for the AC corridor NO4-SE2, showing average weekly capacity given and flow as a percentage of max NTC. Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from NO4 to SE2, while import indicates flow from SE2 to NO4.

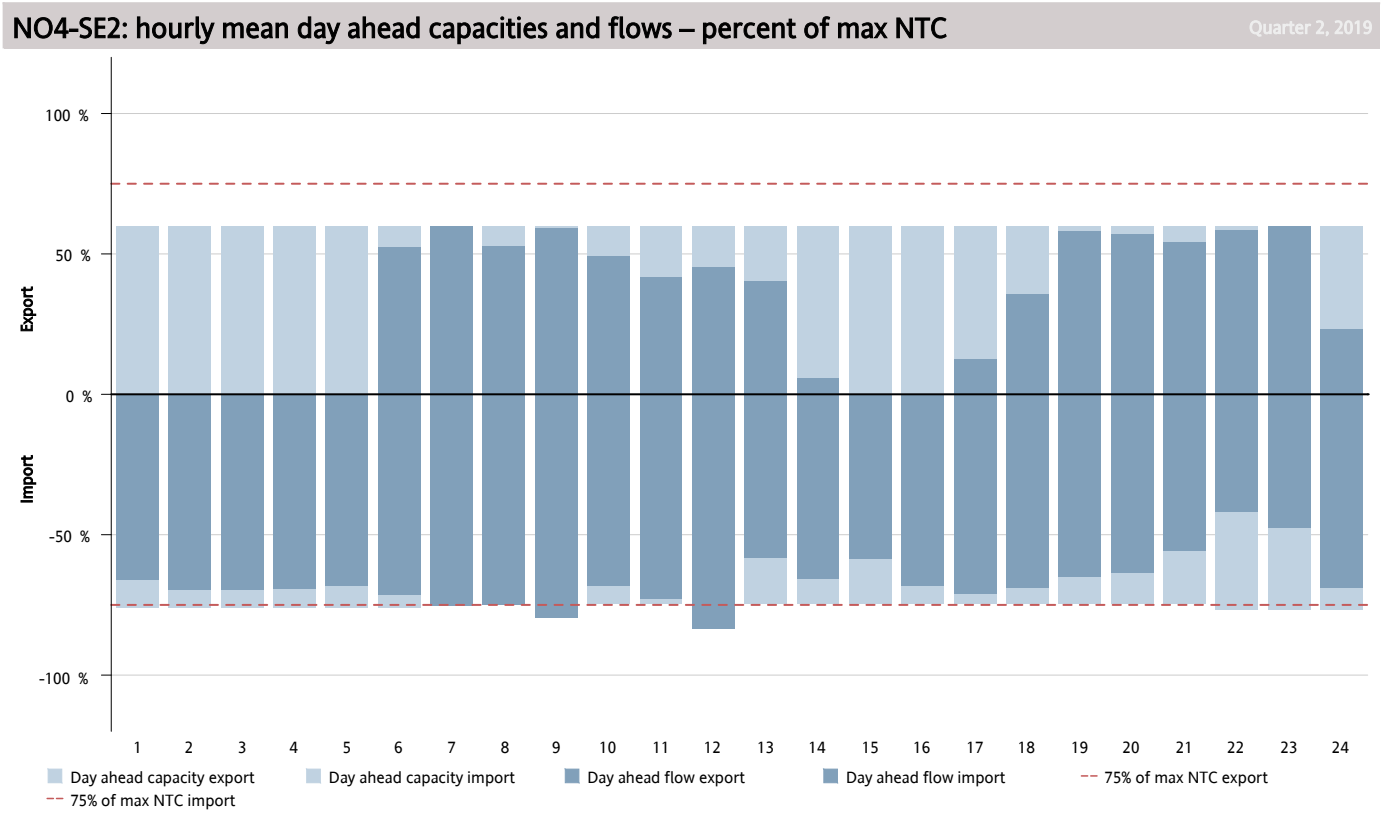

Figure 57: Shows cross-zonal day-ahead capacity result for the AC corridor NO4-SE2, showing average per hour of the day (1-24) capacity given and flow as a percentage of max NTC. Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from NO4 to SE2, while import indicates flow from SE2 to NO4.

NO4-SE2: hourly day ahead capacities and flows – MW

Quarter 2, 2019

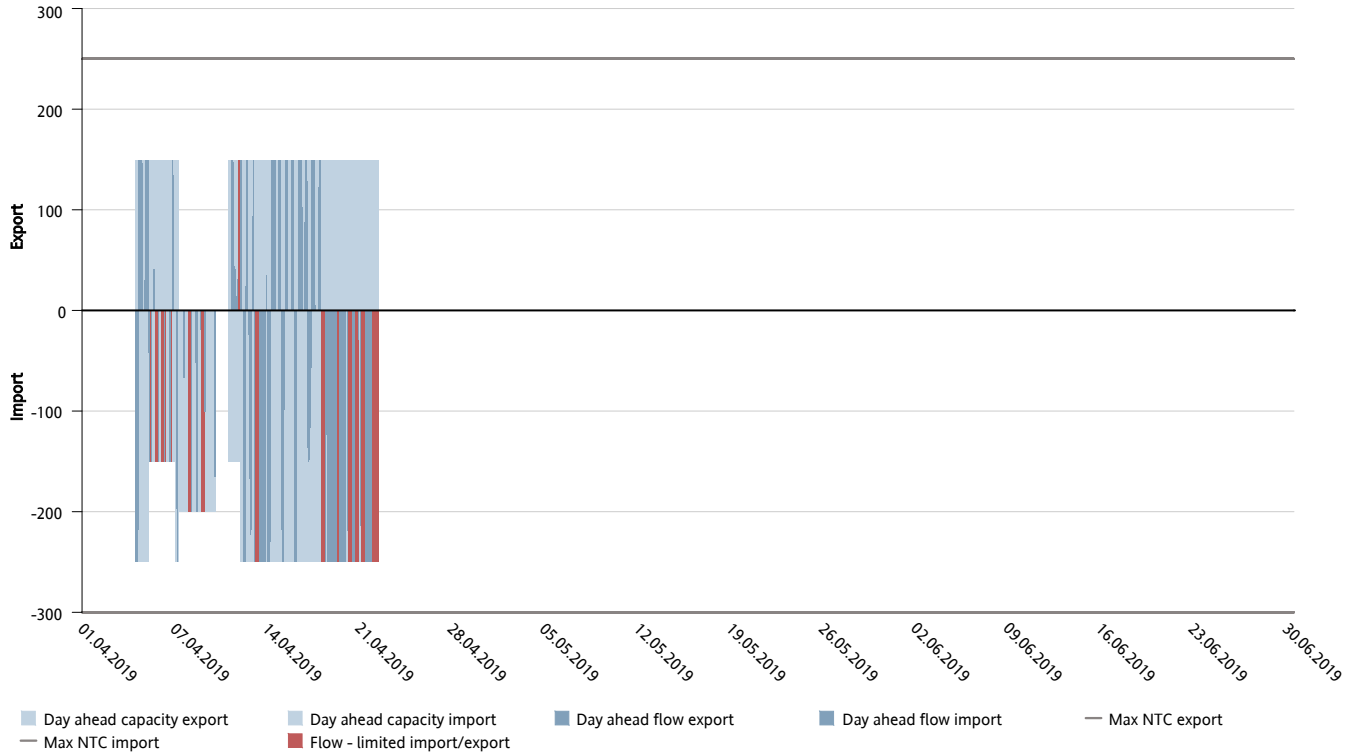

Figure 58: Shows cross-zonal day-ahead capacity result for the AC corridor NO4-SE2, showing capacity given and flow (MW). Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from NO4 to SE2, while import indicates flow from SE2 to NO4.

NO4-SE2: price comparison in EUR

Quarter 2, 2019

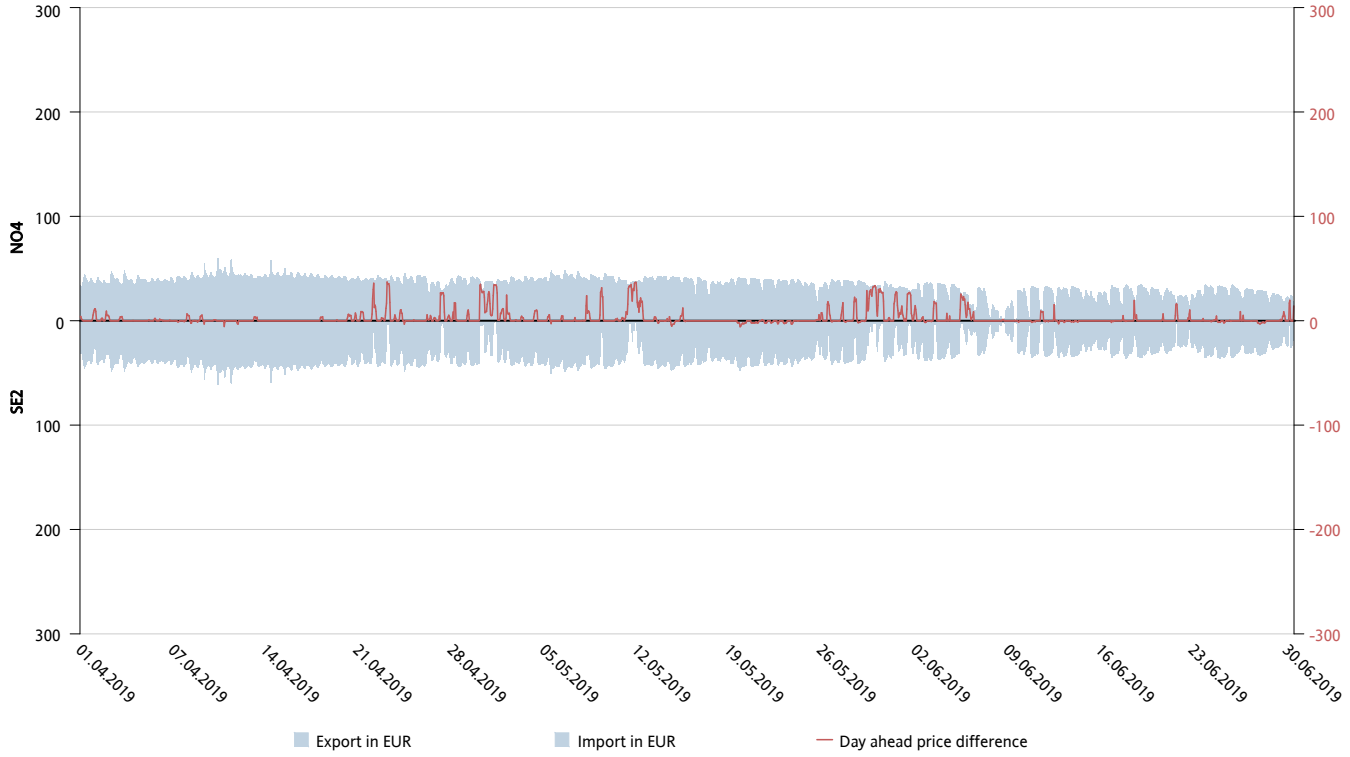

Figure 59: Shows day-ahead prices for the AC corridor NO4-SE2, all prices are in EUR. The red line shows the price difference between the two areas.

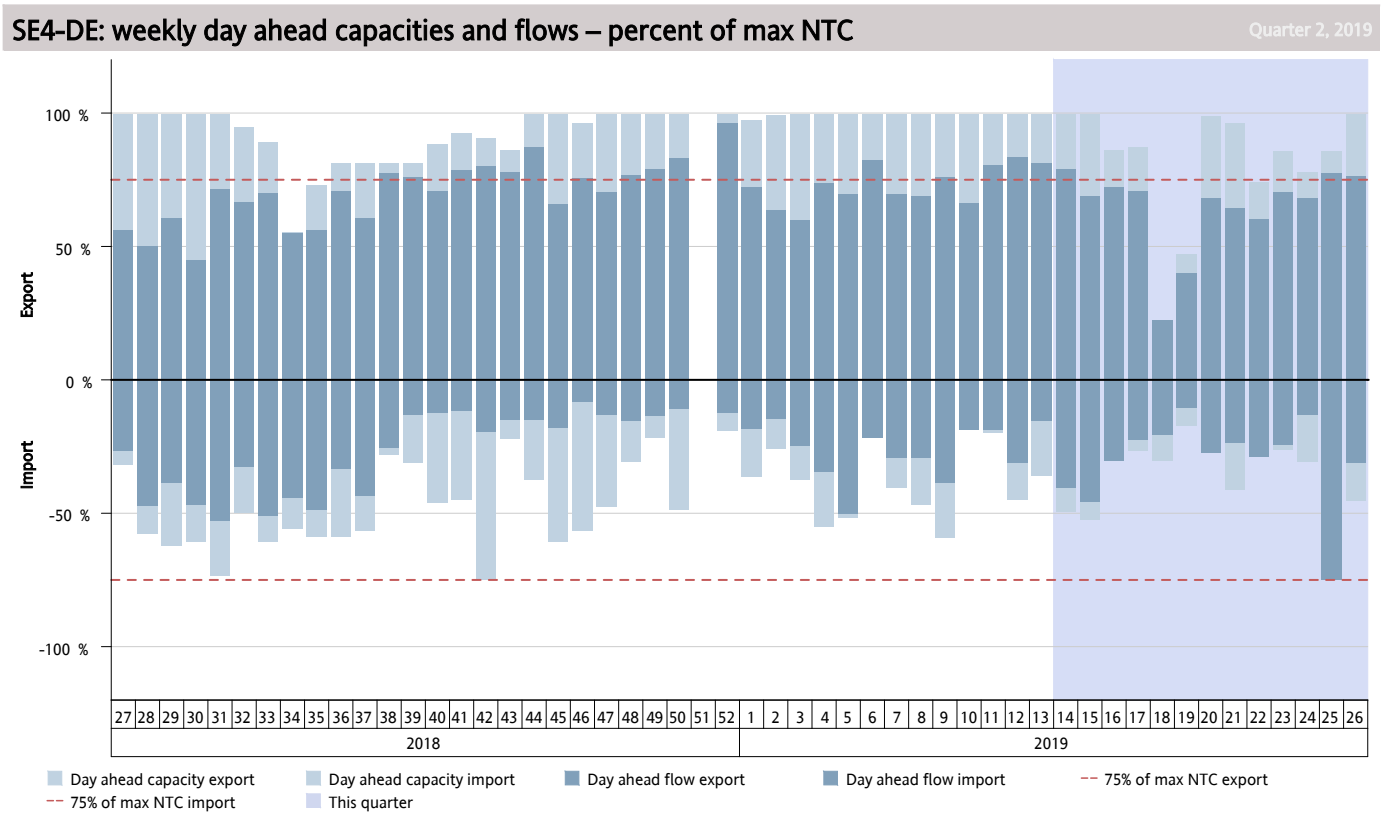

Figure 60: Shows cross-zonal day-ahead capacity result for the HVDC corridor SE4-DE, showing average weekly capacity given and flow as a percentage of max NTC. Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from SE4 to DE, while import indicates flow from DE to SE4.

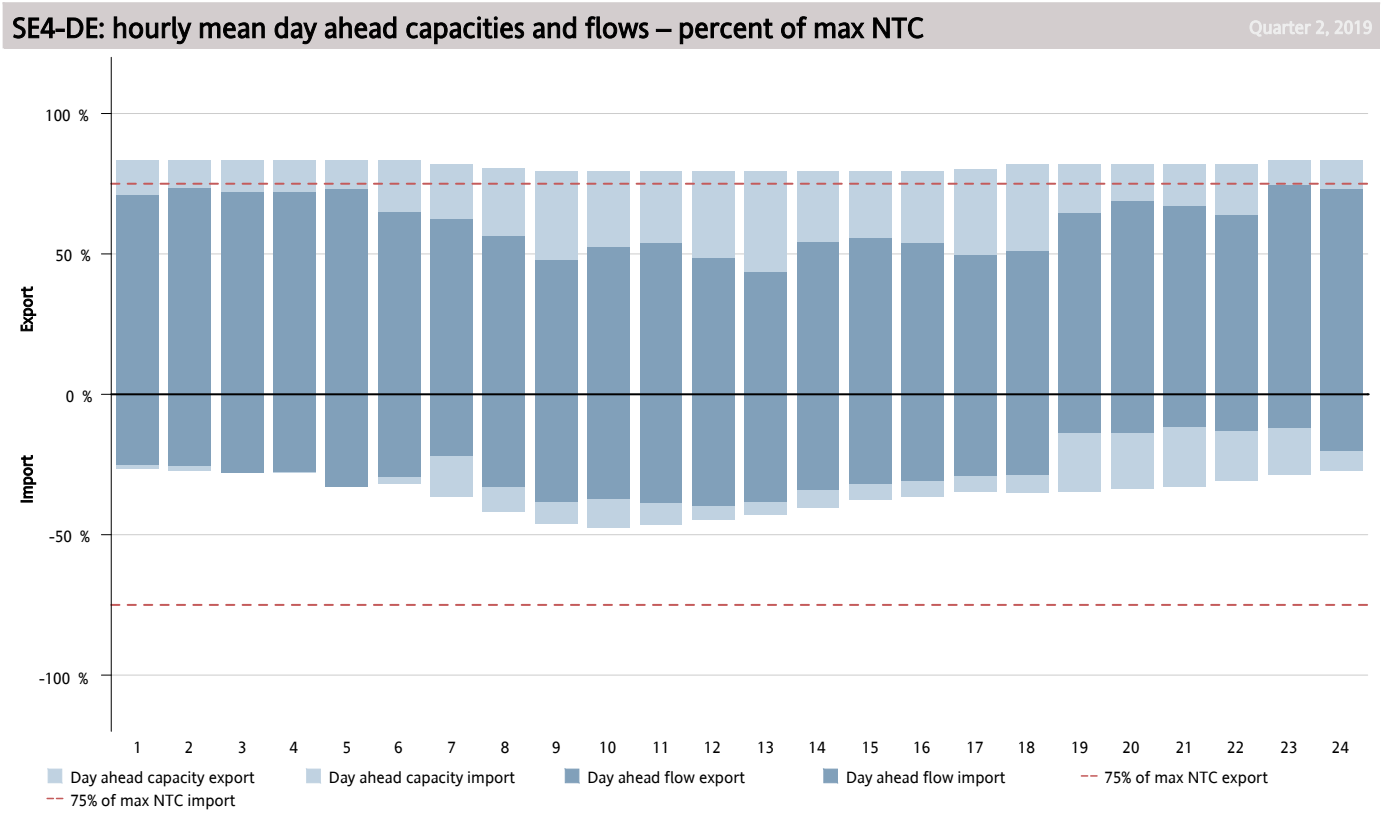

Figure 61: Shows cross-zonal day-ahead capacity result for the HVDC corridor SE4-DE, showing average per hour of the day (1-24) capacity given and flow as a percentage of max NTC. Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from SE4 to DE, while import indicates flow from DE to SE4.

SE4-DE: hourly day ahead capacities and flows – MW

Quarter 2, 2019

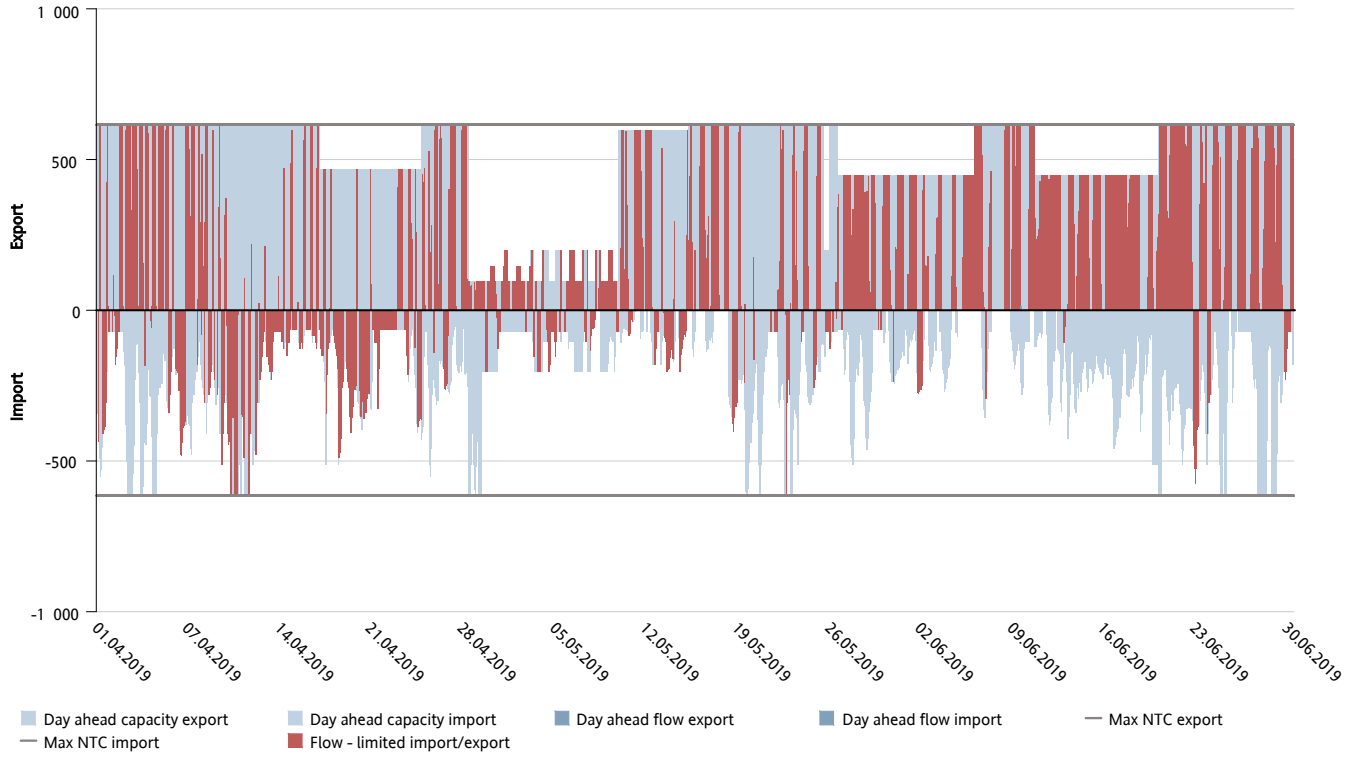

Figure 62: Shows cross-zonal day-ahead capacity result for the HVDC corridor SE4-DE, showing capacity given and flow (MW). Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from SE4 to DE, while import indicates flow from DE to SE4.

SE4-DE: price comparison in EUR

Quarter 2, 2019

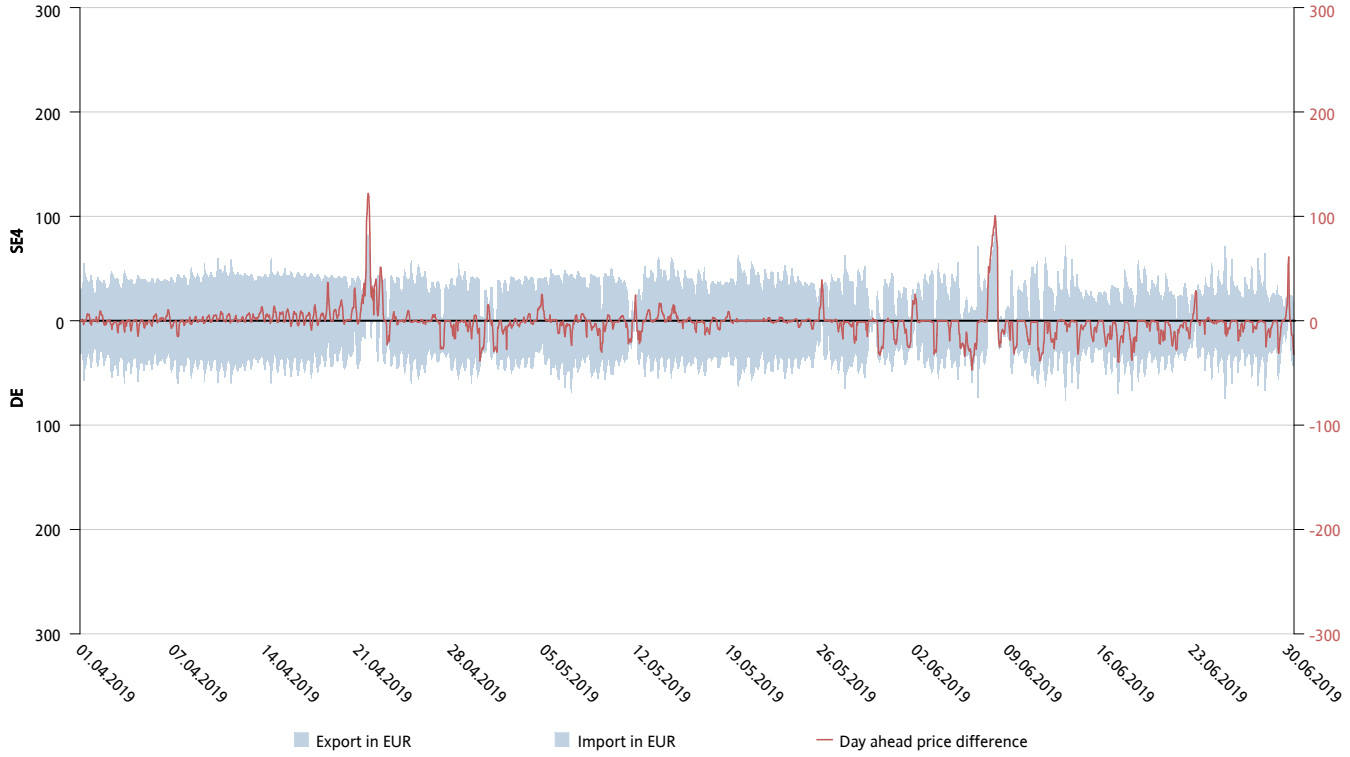

Figure 63: Shows day-ahead prices for the HVDC corridor SE4-DE, all prices are in EUR. The red line shows the price difference between the two areas.

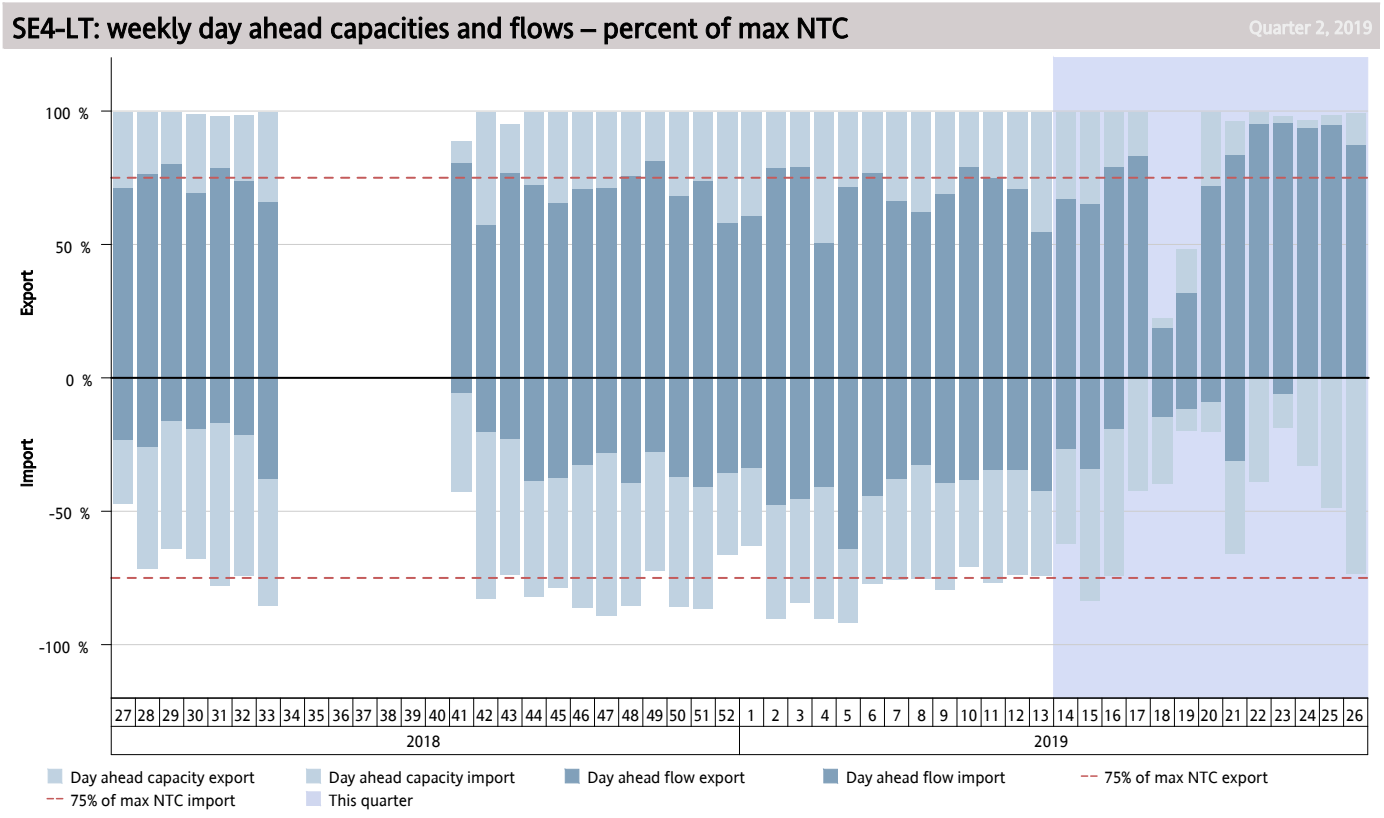

Figure 64: Shows cross-zonal day-ahead capacity result for the HVDC corridor SE4-LT, showing average weekly capacity given and flow as a percentage of max NTC. Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from SE4 to LT, while import indicates flow from LT to SE4.

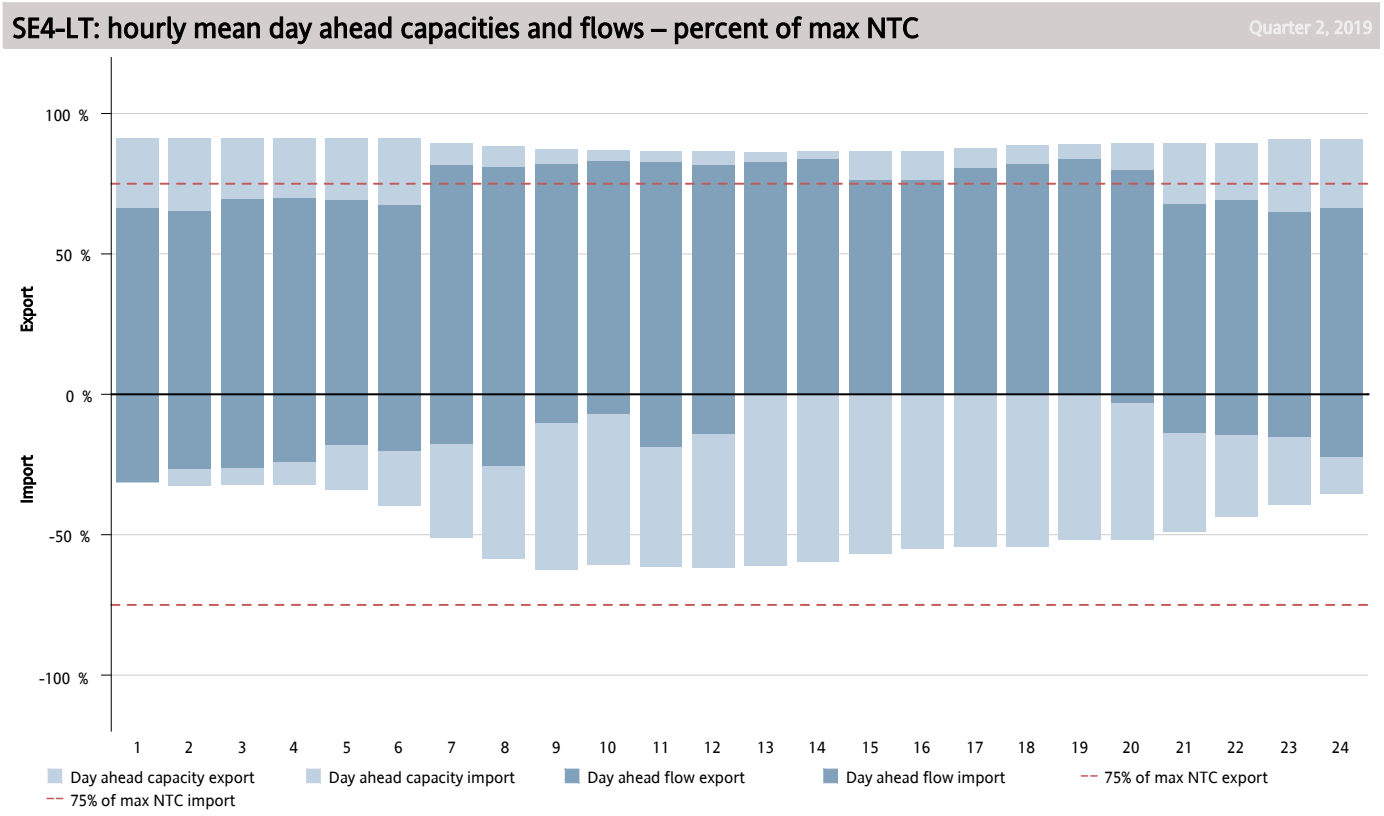

Figure 65: Shows cross-zonal day-ahead capacity result for the HVDC corridor SE4-LT, showing average per hour of the day (1-24) capacity given and flow as a percentage of max NTC. Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from SE4 to LT, while import indicates flow from LT to SE4.

SE4-LT: hourly day ahead capacities and flows – MW

Quarter 2, 2019

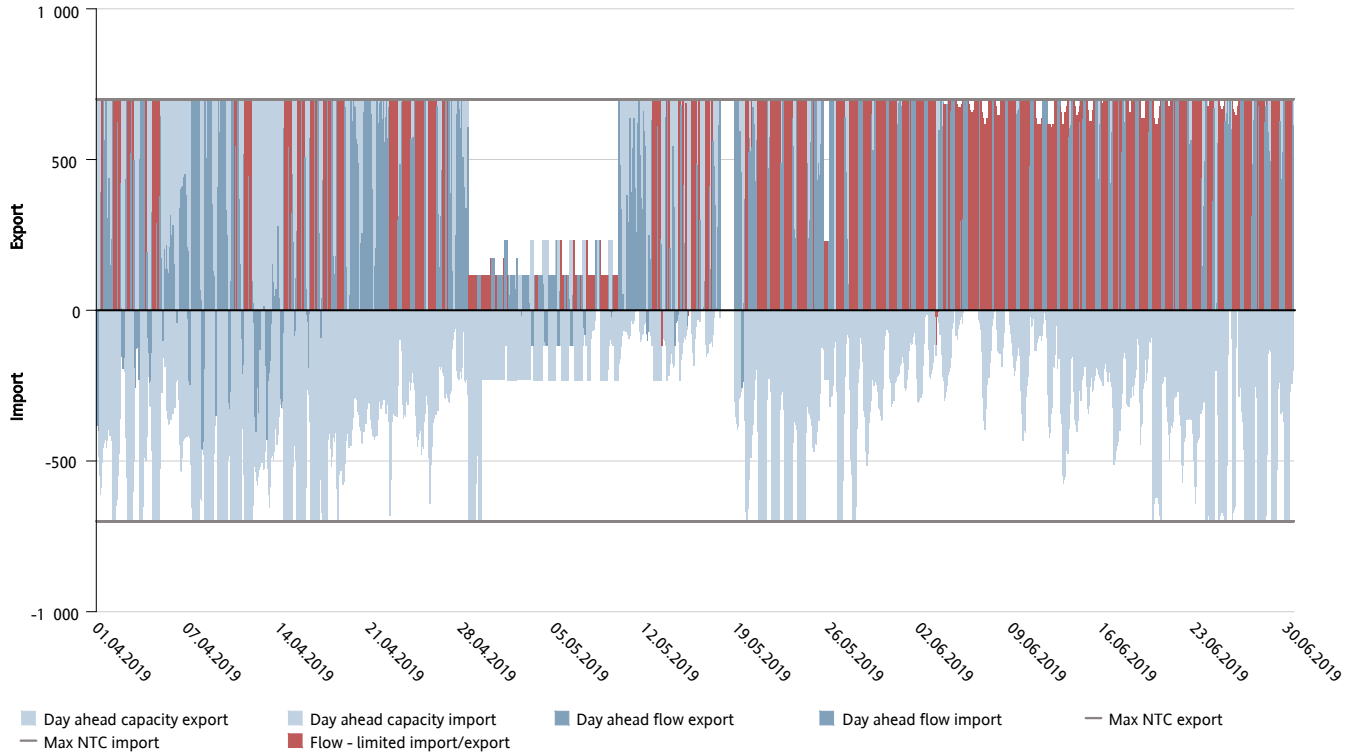

Figure 66: Shows cross-zonal day-ahead capacity result for the HVDC corridor SE4-LT, showing capacity given and flow (MW). Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from SE4 to LT, while import indicates flow from LT to SE4.

SE4-LT: price comparison in EUR

Quarter 2, 2019

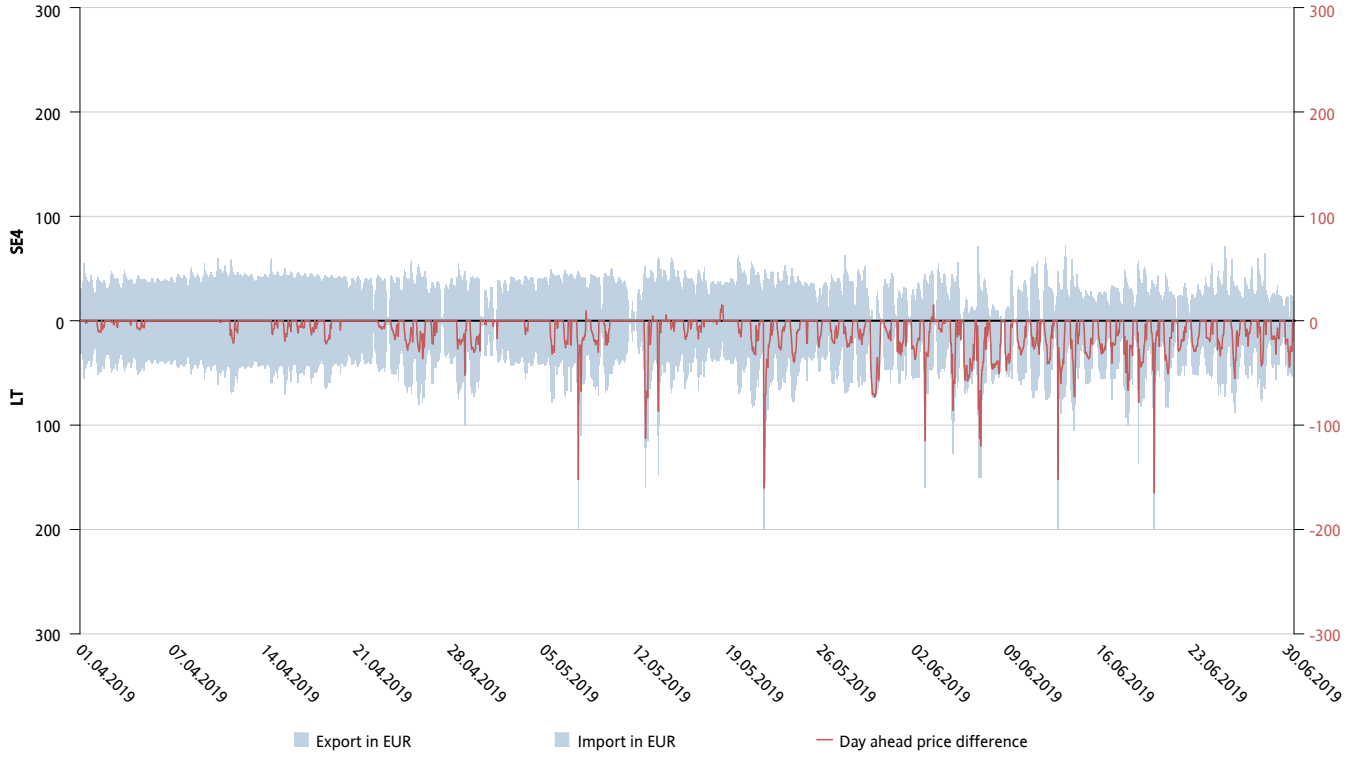

Figure 67: Shows day-ahead prices for the HVDC corridor SE4-LT, all prices are in EUR. The red line shows the price difference between the two areas.

SE4-PL: weekly day ahead capacities and flows – percent of max NTC

Quarter 2, 2019

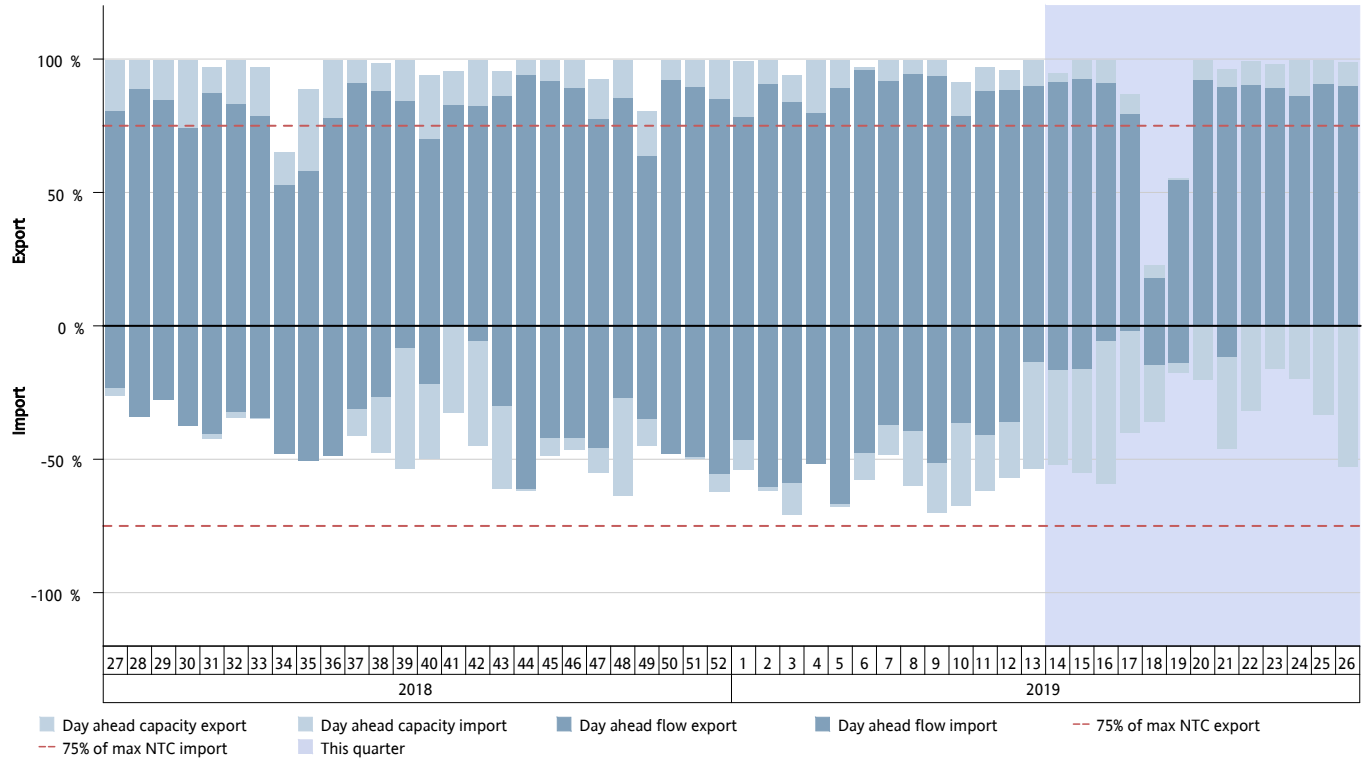

Figure 68: Shows cross-zonal day-ahead capacity result for the HVDC corridor SE4-PL, showing average weekly capacity given and flow as a percentage of max NTC. Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from SE4 to PL, while import indicates flow from PL to SE4.

SE4-PL: hourly mean day ahead capacities and flows – percent of max NTC

Quarter 2, 2019

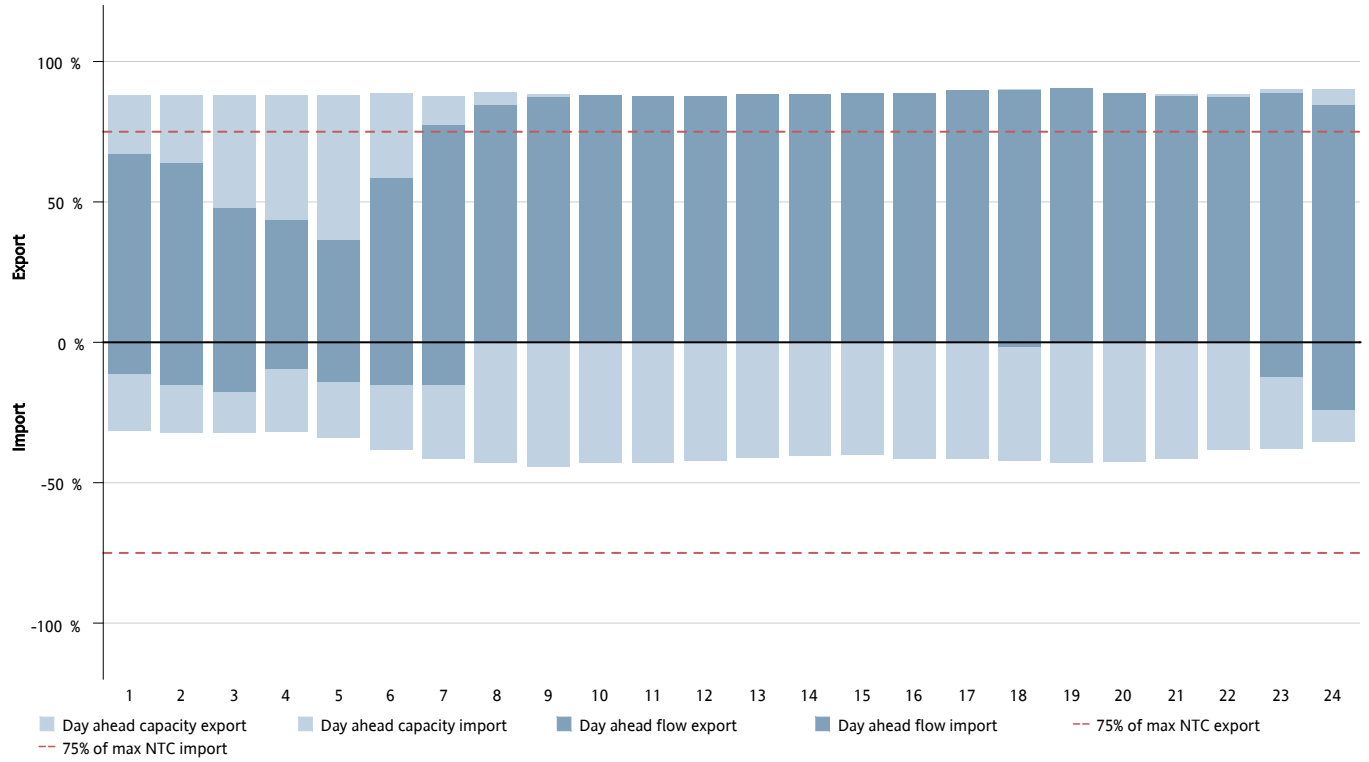

Figure 69: Shows cross-zonal day-ahead capacity result for the HVDC corridor SE4-PL, showing average per hour of the day (1-24) capacity given and flow as a percentage of max NTC. Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from SE4 to PL, while import indicates flow from PL to SE4.

SE4-PL: hourly day ahead capacities and flows – MW

Quarter 2, 2019

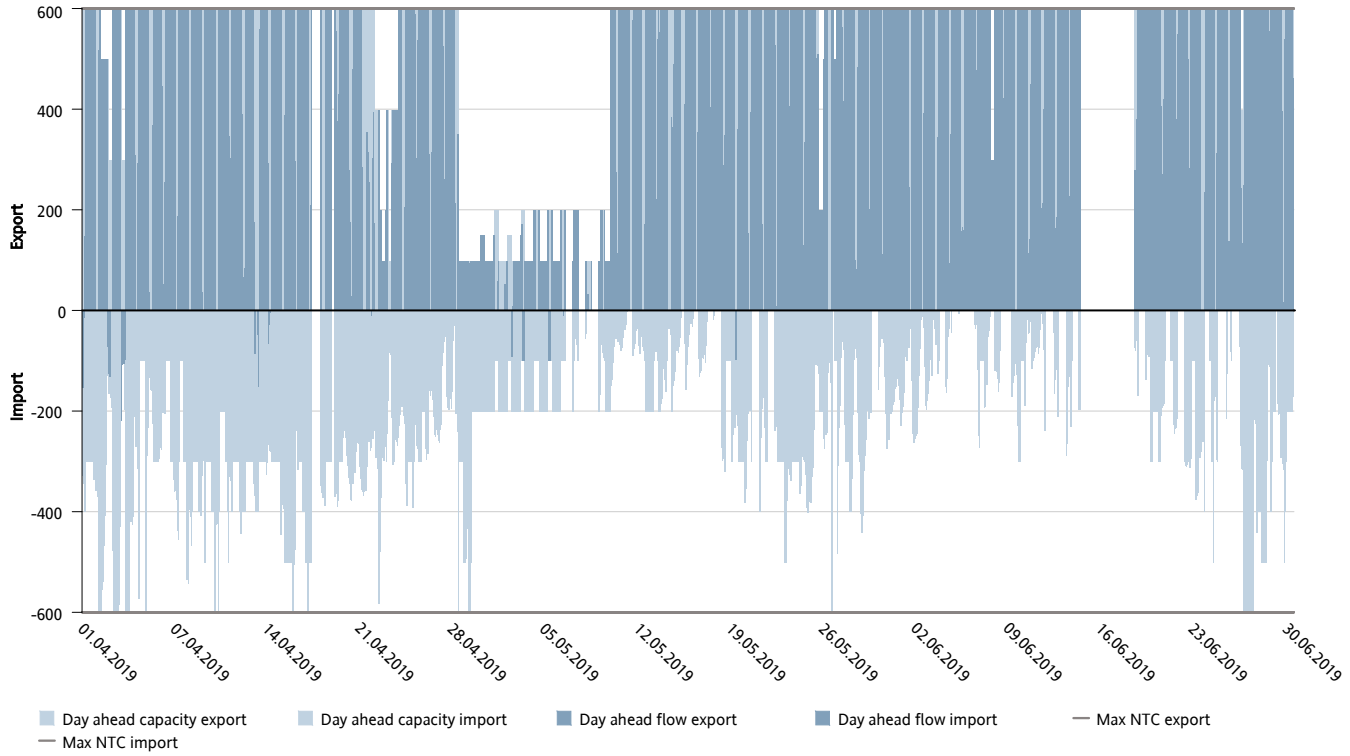

Figure 70: Shows cross-zonal day-ahead capacity result for the HVDC corridor SE4-PL, showing capacity given and flow (MW). Available capacity is given for all hours, but the average flow is only given for hours with flow in that direction. Export indicates flow from SE4 to PL, while import indicates flow from PL to SE4.

SE4-PL: price comparison in EUR

Quarter 2, 2019

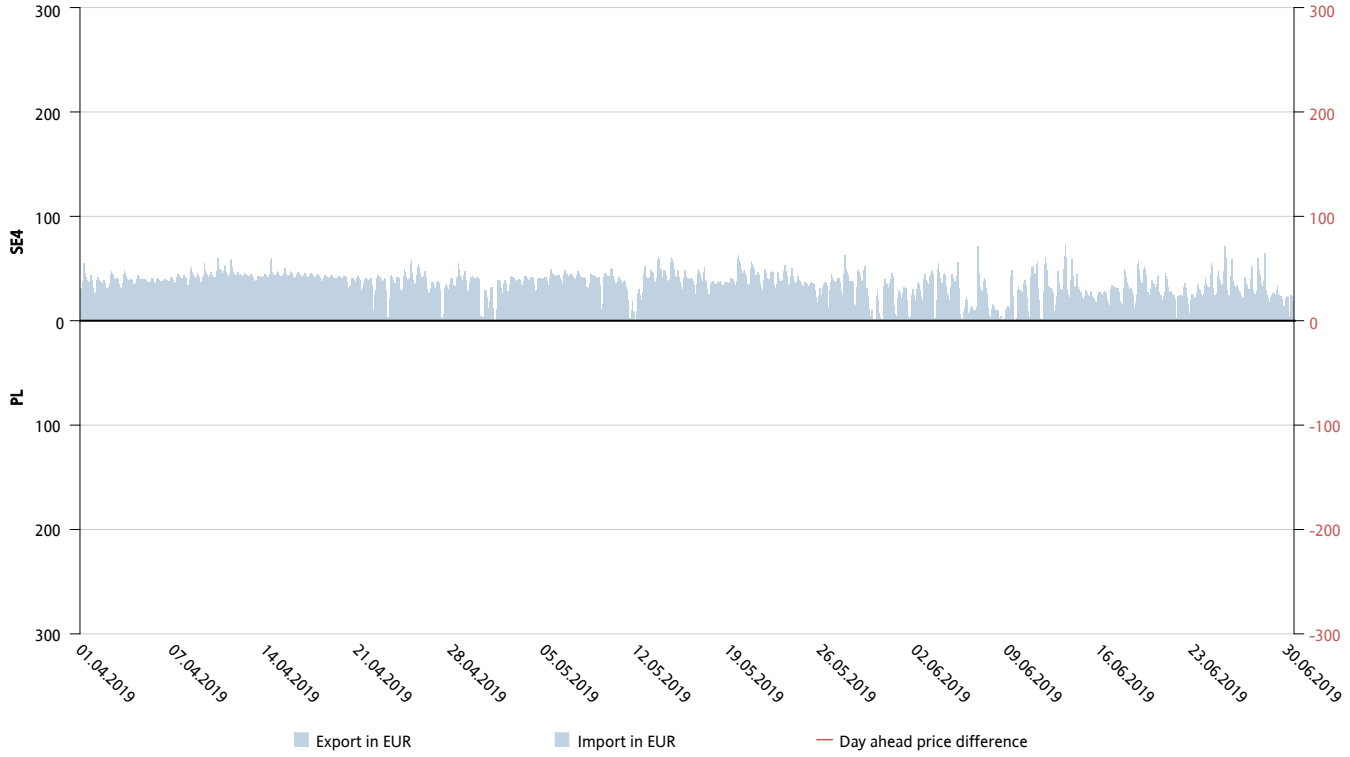

Figure 71: Shows day-ahead prices for the HVDC corridor SE4-PL, all prices are in EUR. The red line shows the price difference between the two areas.

DEFINITIONS AND CLARIFICATIONS

The table below defines the terms used in this report and provides clarifying text to assist the reader.

TERM	DEFINTION or CLARIFICATION
Net Transfer Capacity	•The Net Transfer Capacity (NTC, NTC = TTC-TRM) is the maximum exchange program between two areas compatible with security standards applicable in both areas and taking into account the technical uncertainties on future network conditions.
The Total Transfer Capacity	•The Total Transfer Capacity (TTC) is the maximum exchange program between two areas compatible with operational security standards applicable at each system if future network conditions, generation and load patterns were perfectly known in advance.
The Transmission Reliability Margin	•The Transmission Reliability Margin (TRM) is a security margin that copes with uncertainties on the computed TTC values arising from: a) Unintended deviations of physical flow during operation due to the physical functioning of load-frequency regulation b) Emergency exchanges between TSOs to cope with unexpected unbalanced situations in real time c) Inaccuracies, e. g. in data collection and measurements

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Description of capacity reductions below 75% of NTC in Q2 2019

Svenska Kraftnät

SE1-NO4
Svenska kraftnät has reduced the capacity on the interconnector between SE1 and NO4, because of planned maintenance close to the interconnector.

SE2-NO3
Svenska kraftnät has reduced the export capacity on the interconnector between SE2 and NO3, because of planned maintenance close to the interconnector.

SE2-NO4
Svenska kraftnät has reduced the capacity on the interconnector between SE2 and NO4, because of maintenance close to the interconnector.

SE3-DK1
Svenska kraftnät has reduced the capacity on the interconnector between SE3 and DK1, because of congestion in the West Coast Corridor, planned maintenance on and near the interconnector, and disturbance on the interconnector.

SE3-NO1
Svenska kraftnät has reduced the capacity on the interconnector between SE3 and NO1, because of congestion in the West Coast Corridor, and maintenance on and close to the interconnector.

SE4-DE
Svenska kraftnät has reduced the capacity on the interconnector between SE4 and DE, because of congestion in the West Coast Corridor and planned outage near the interconnector.

SE4-DK2
Svenska kraftnät has reduced the capacity on the interconnector between SE4 and DK2, because of congestion in the West Coast Corridor, and maintenance on and close to the interconnector.

SE4-PL
Svenska kraftnät has reduced the capacity on the interconnector between SE4 and PL, because of congestion in the West Coast Corridor, maintenance on and close to the interconnector, and disturbance on the interconnector.

SE4-LT
Svenska kraftnät has reduced the capacity on the interconnector between SE4 and LT, because of congestion in the West Coast Corridor and maintenance close to the interconnector.

Statnett

NO4 > SE1
Reduced due to planned outages on Norwegian and Swedish side, including 420 kV Ofoten-Kobbelv, 420 kV Vietas-Porjus and 220 kV Nedre Røssåga-Ajaure.

SE1 > NO4
Reduced due to planned outages on Norwegian and Swedish side, including 420 kV Ofoten-Kobbelv, 420 kV Vietas-Porjus and 220 kV Nedre Røssåga-Ajaure.

NO4 > SE2
Reduced due to planned outages on Norwegian and Swedish side, including Grundfors T3 and 220 kV Nedre Røssåga-Ajaure.

SE2 > NO4
Reduced due to planned outages on Norwegian and Swedish side, including Grundfors T3 and 220 kV Nedre Røssåga-Ajaure.

DK1 > NO2
Reduced due to planned outages on the interconnector and a bus bar in Kristiansand.

NO2 > DK1
Reduced due to planned outages on the interconnector and a bus bar in Kristiansand.

Fingrid

FI-EE
W14 Elering has reduced the capacity because of a disturbance at the Estlink 2 HVDC converter station.
W17 Elering has reduced the capacity because of an outage in Estonian grid.
W23 Elering has reduced the capacity because of a disturbance at the Estlink 2 HVDC converter station.
W24 Capacity was reduced because of Estlink 1 yearly maintenance.

FI-SE1
W15 Svenska kraftnät has reduced the capacity because of a planned outage in their grid.
W18 Svenska kraftnät has reduced the capacity because of a forced outage in their grid.

FI-SE3
W14 Svenska kraftnät has reduced the capacity because of a planned test in their system.
W19-23 Fingrid has reduced the capacity because of planned outages in their grid.

Energinet:

DK1 –DE
Main portion of the limitation has been caused by expansion work in the northern part of the German grid. However, project work has been undergoing on the Danish side in the same period. Planning of the work has been done in cooperation with TenneT Germany in order limit the market impact.

NO2 – DK1
Main portion of the limitation has been caused by work on the Norwegian side of the interconnector. Please see comments from Statnett regarding this. However minor

pieces of maintenance and project work has been carried out on Danish side in the same period.

DK1 – NO2
Main portion of the limitation has been caused by work on the Norwegian side of the interconnector. Please see comments from Statnett regarding this. However minor pieces of maintenance and project work has been carried out on Danish side in the same period.

DK2 – SE4
Main reason for the limitation has been maintenance work and congestions on the Swedish side of the interconnector. However, HVE_400_SÅN has also been taken out of operation in Q2 due to risk of induction of high voltage in one of the parallel cables undergoing repair.

DK1 – SE3
In the period from April 29th until May 19th the Kontiskan connection was limited to 0 MW transmission because of replacement of the conductor lines.

Reoccurring capacity reductions in Q2 2019

Svenska Kraftnät

The West Coast corridor is a section in the Swedish national grid, close to Gothenburg in SE3, which might be congested in normal operation. This typically occurs during night and weekends with a large northbound transfer of power over the West Coast Corridor. The congestion leads to reduction of SE3 to NO1, DK1 to SE3, DK2 to SE4, DE to SE4, PL to SE4, and LT to SE4. For more information see: https://www.nordpoolgroup.com/message-center-container/newsroom/tso-news/2016/q4/no.-332016---updated-routine-for-congestion-management-for-the-west-coast-corridor-in-sweden/