# 4. General trends of ATCE results from W26, 2023 to W13, 2024

Nordic CCM Stakeholder Meeting

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# Background

- In week 17, the ATCE results from week 26 in 2023 to week 12 in 2024 were recalculated using updated parameters of 10 MW RAM relaxation and 2% PTDF relaxation
  - These parameters were the highest relaxations accepted by all TSOs to ensure operational security while providing as much ID capacity to the market as possible
- The rerun results were created using a TSO made prototype tool, but was rigorously tested and compared to the industrial tool (which will be used after go-live) with miniscule differences in results
- New ATCE results are created each week
- The results of the last 4 weeks (W15-W18) of ATCE results will be presented on the monthly SH meeting on Teams 13 June (link on RCC website)

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# Main takeaways from the analysis

- Day-ahead allocated capacities increase in FB → less capacity in the intraday
- Compared to actually traded ID volumes, the newly caclulated ATCE capacities should be sufficient most of the time
- Larger variation from MTU to MTU compared to NTC values we are used to seeing
- RAM and PTDF relaxation allows for higher capacities than without relaxations
  - The parameters chosen (2% PTDF, 10 MW RAM) find a balance between capacity to the market and maitaining operational security
  - No complete lock-in situations on bidding zone level due to the relaxation, but several hours with very low trading space
    - However, some lock-ins on border-level

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# Day-ahead capacities increase in FB → less capacity in the intraday

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# Flowbased utilizes the grid better than NTC

- The market is provided with more information about the grid in FB than in NTC
  - This provides larger domains compared to NTC, and the grid is utilized better
- Throughout the external parallel run in the day-ahead market, we have seen larger flows North→South and from the Nordics to the Continent
- The TSOs' task is to maximise the capacity in each market, and with larger allocated capacities in day-ahead, there will consequently be less capacity available in the intraday market

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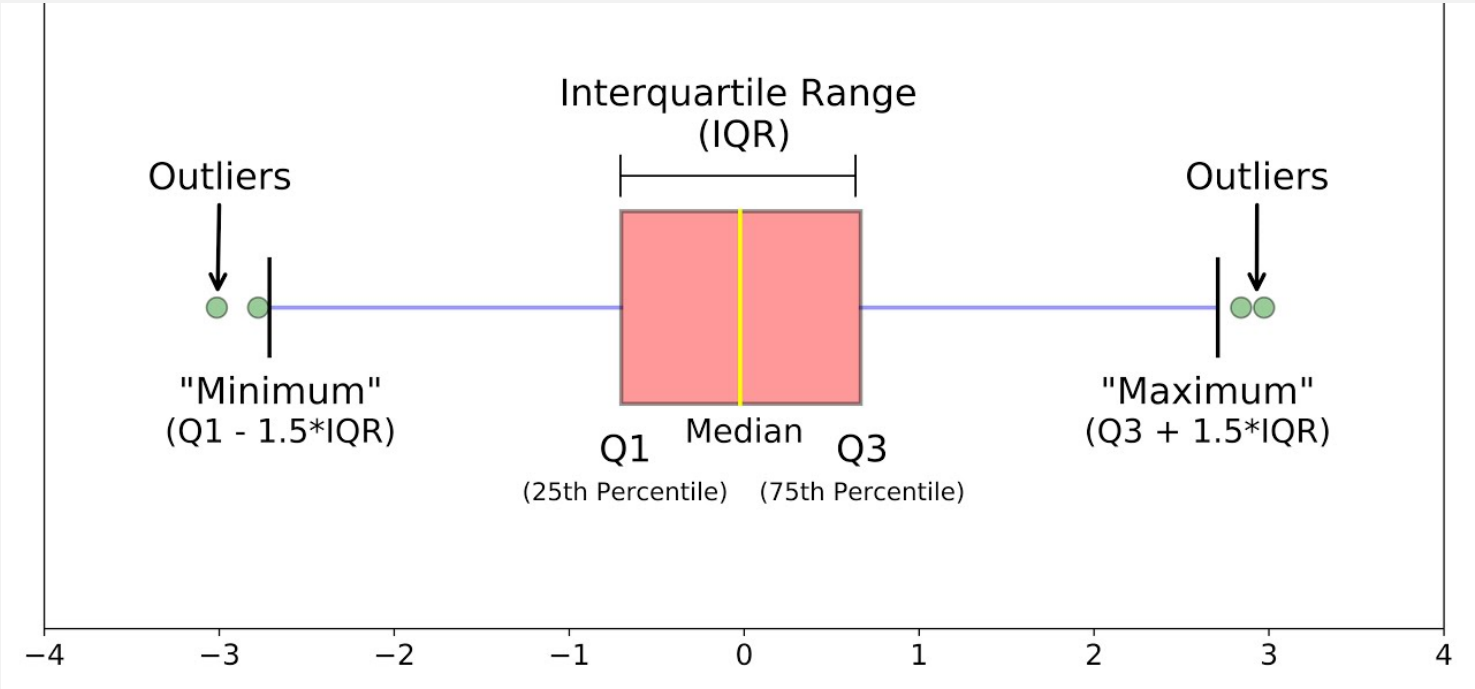
# Explanation of box-plots for the next figures

- The box-plots show statistical results of hourly values. They show the median value (yellow line in the middle of the box), 50% of the values (inner box – interquartile range) and ~99% of all values (vertical lines - "minimum" & "maximum") for each border
  - Outliers that are beyond the "minimum" and "maximum" are marked as circles

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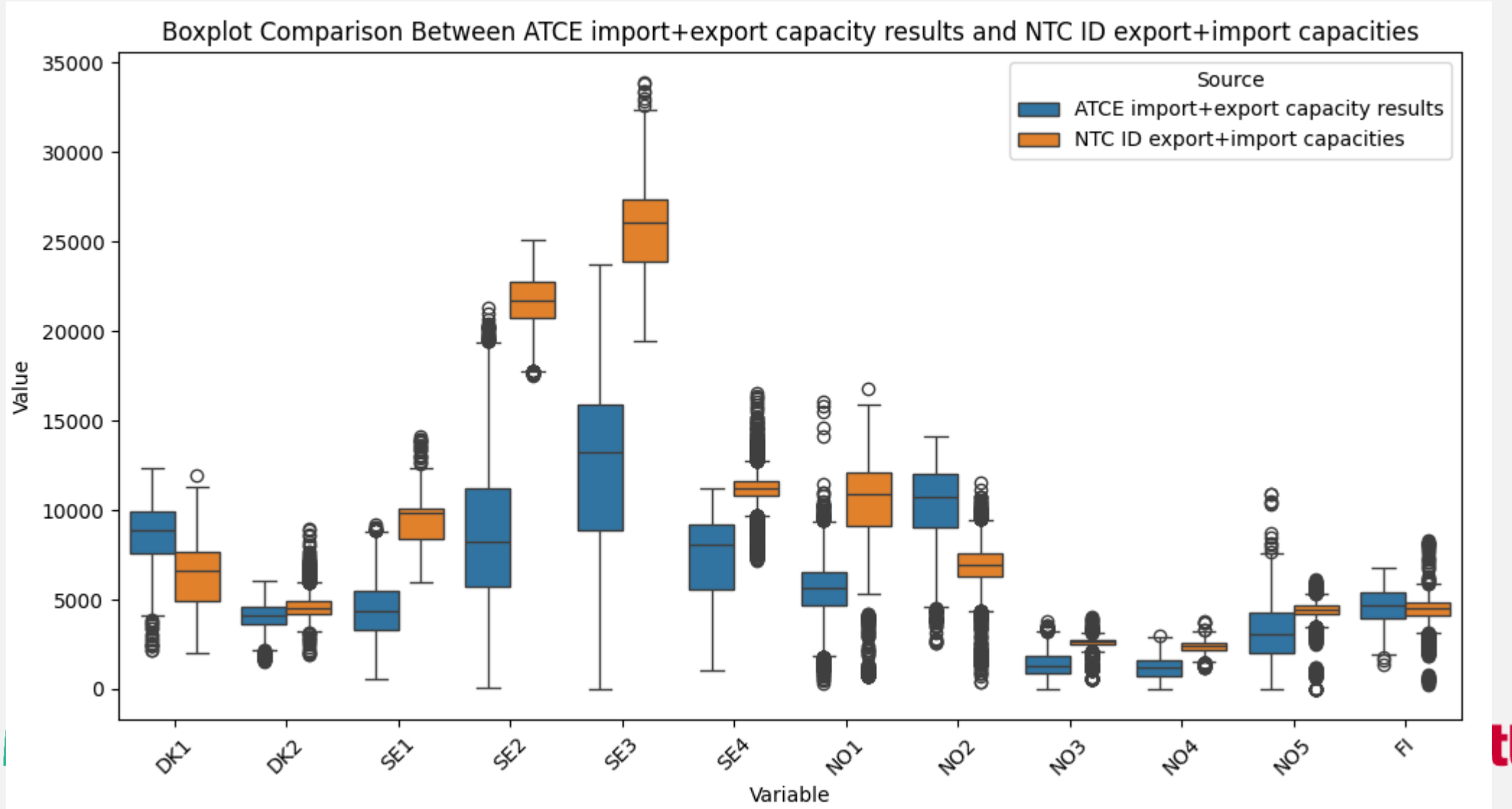
# Comparison of ATCE export+import results (blue) and NTC intraday export+import capacities given to the market (orange)



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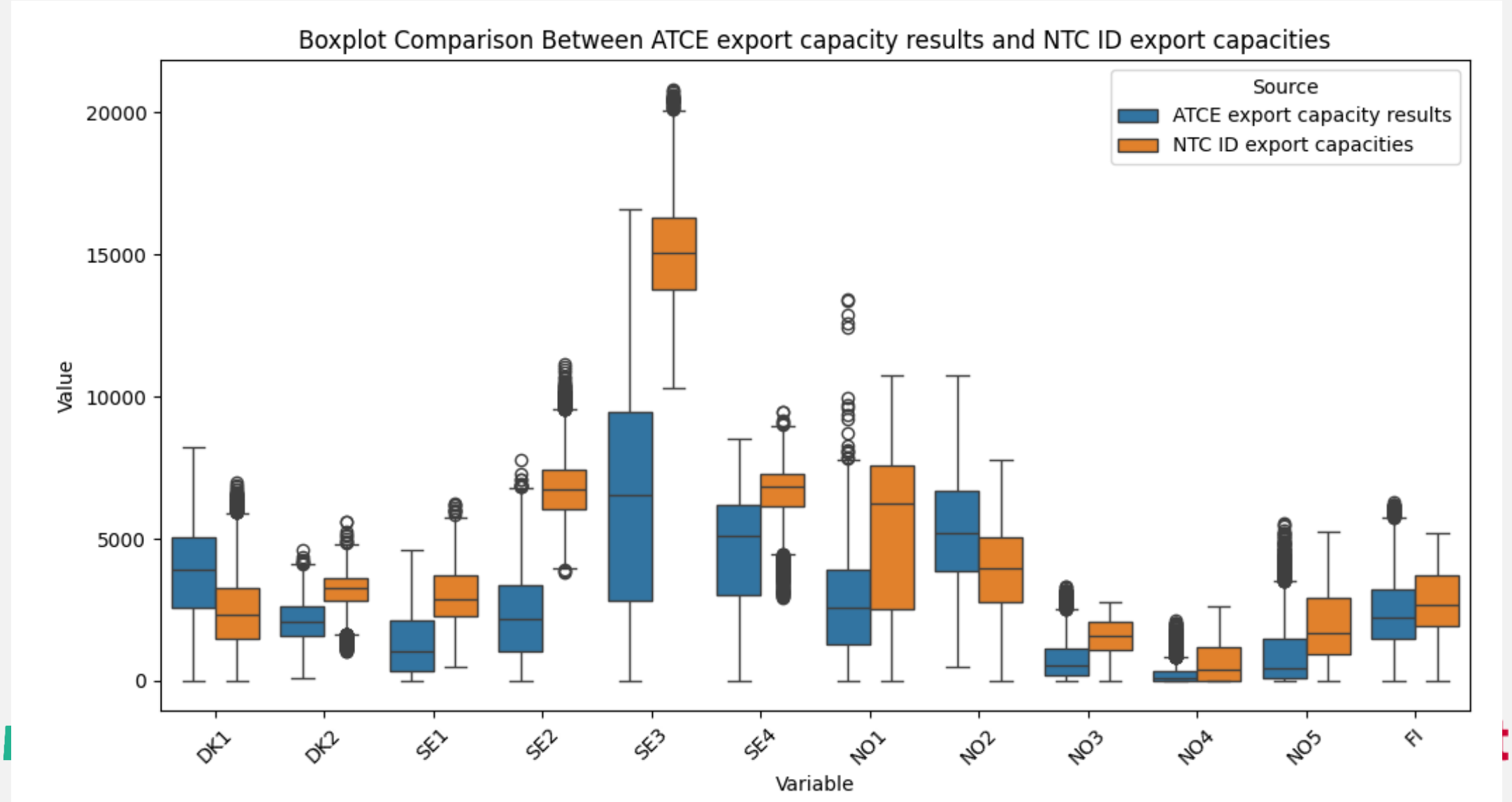
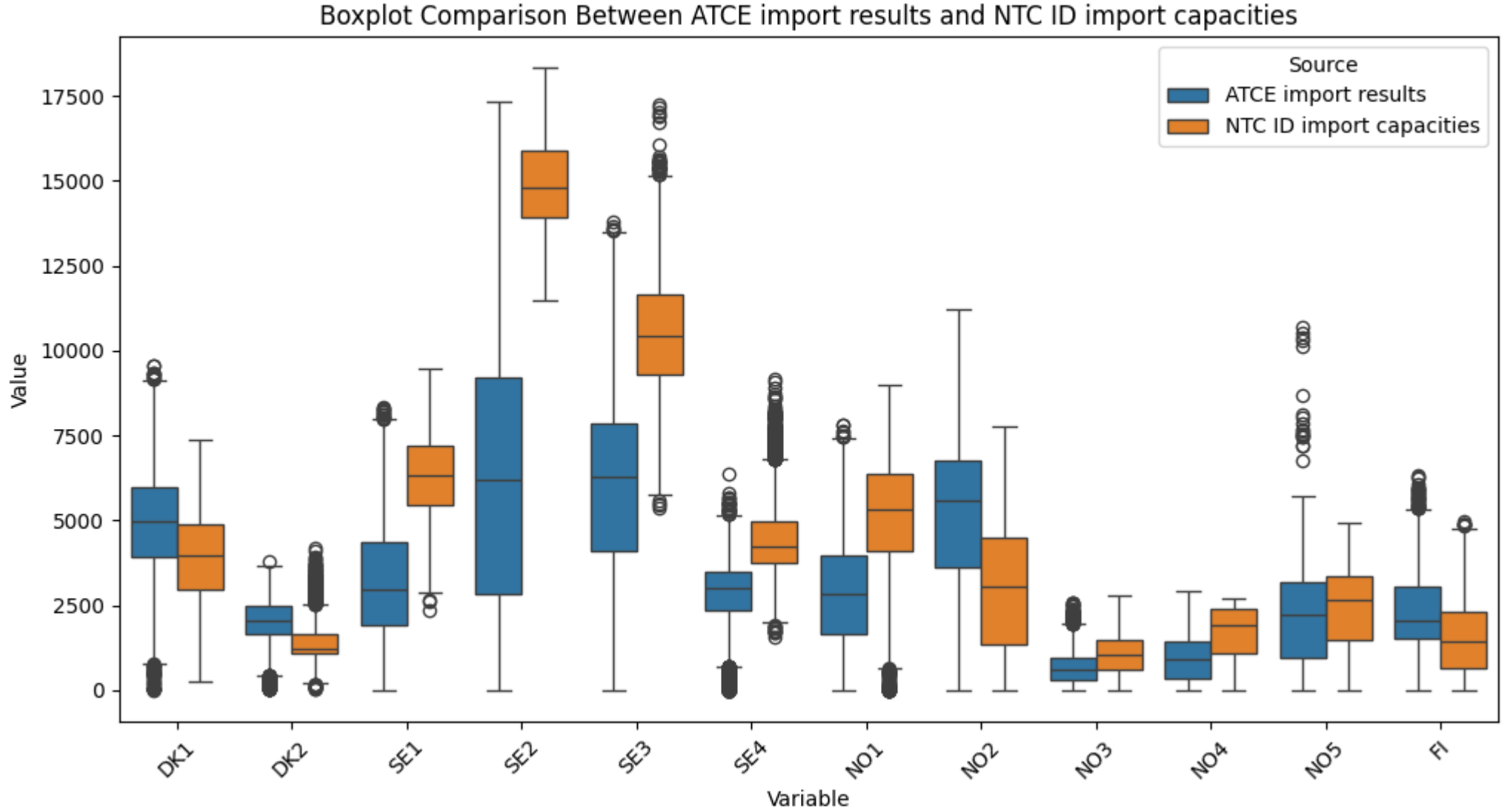


# Comparison of ATCE import results (blue) and NTC intraday import capacities given to the market (orange)



# Capacities are lower in ATCE, but more operationally secure

- Especially the capacities in Sweden are much higher today than the ATCE results
- If the NTC intraday capacity between e.g. SE3-SE2 would be fully utilized, it would entail large overloads that would have to be handled by the TSOs
- ATCE takes into account these potential overloads when providing capacities

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# Compared to actually traded ID volumes, the newly caclulated ATCE capacities should be sufficient most of the time

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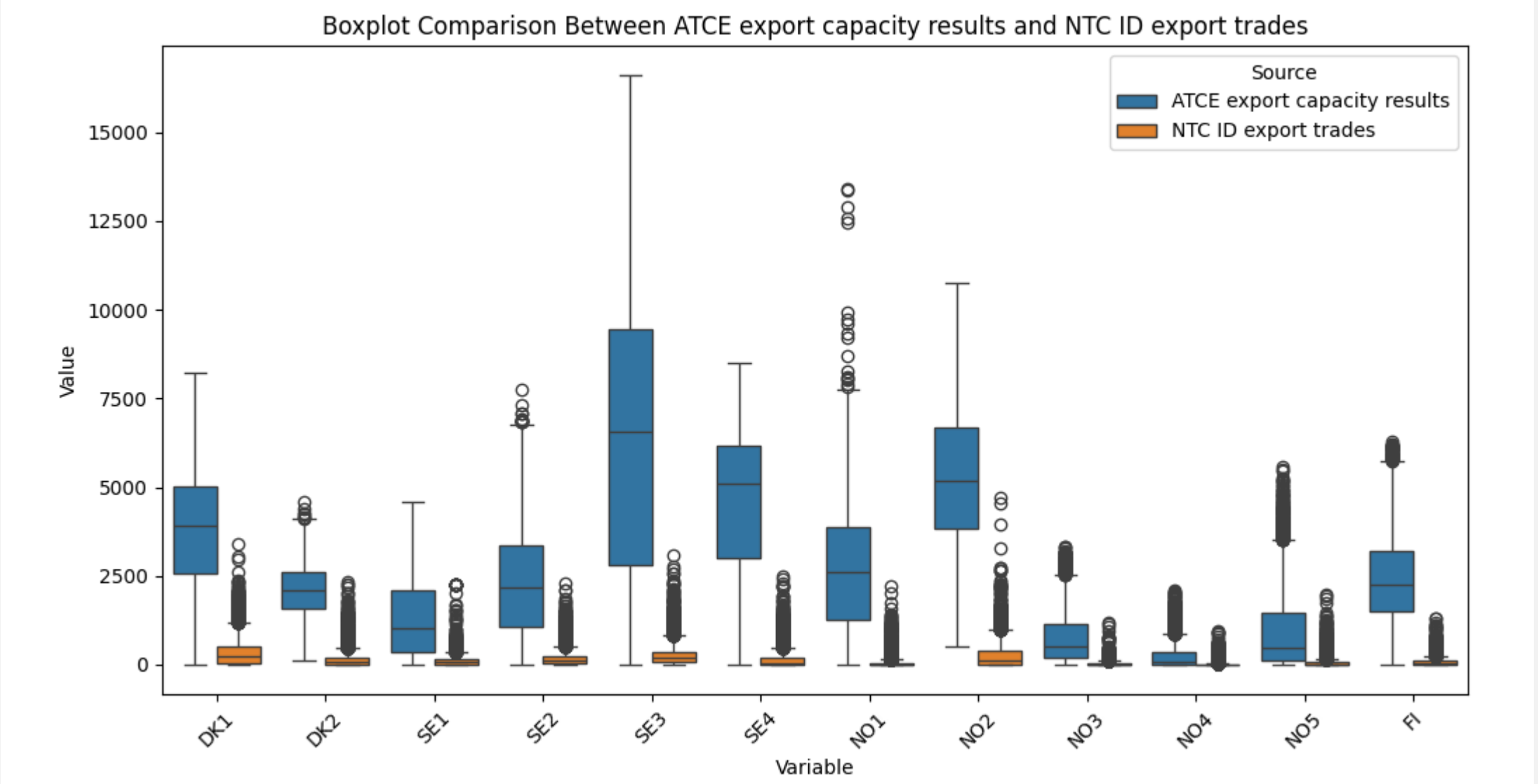
# Comparison of ATCE export results (blue) and actual traded intraday export volumes (orange)



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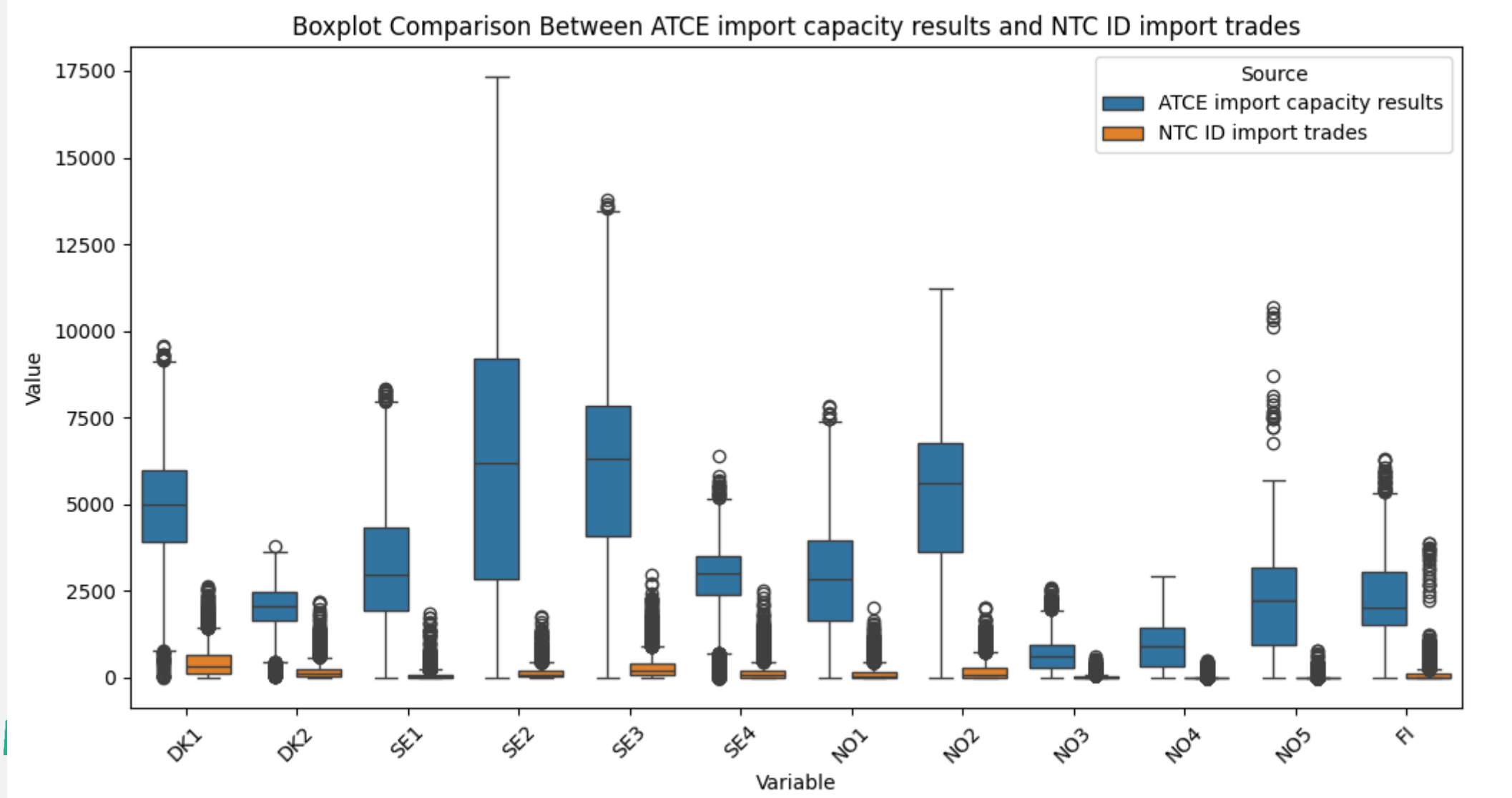

# Percentage of time where ATCE capacities are not able to facilitate ID needs (import + export)

- Only two bidding zones (SE3 and NO4) have larger intraday trades than the given ATCE capacity (export + import) for this period

| Bidding zone | Percentage of time ID trade > ATCE capacity |
|---|---|
| DK1 | 0.015% |
| DK2 | 0.015% |
| SE1 | 0.00% |
| SE2 | 0.22% |
| SE3 | 1.04% |
| SE4 | 0.00% |
| NO1 | 0.00% |
| NO2 | 0.00% |
| NO3 | 0.67% |
| NO4 | 1.00% |
| NO5 | 0.54% |
| FI | 0.00% |

# Percentage of time where ATCE capacities are not able to facilitate ID needs (export)

- For export, several bidding zones that usually export fully have quite a hgih percentage of times where actual intraday trades were higher than the ATCE result

| Bidding zone | Percentage of time ID trade > ATCE capacity |
|---|---|
| DK1 | 2.52% |
| DK2 | 0.43% |
| SE1 | 13.95% |
| SE2 | 7.76% |
| SE3 | 7.74% |
| SE4 | 1.85% |
| NO1 | 1.06% |
| NO2 | 0.059% |
| NO3 | 4.41% |
| NO4 | 28.25% |
| NO5 | 10.90% |
| FI | 1.24% |

# Percentage of time where ATCE capacities are not able to facilitate ID needs (import)

- For import, only three bidding zones have values above 3% (SE2, NO3 and NO4), but generally lower values than for export.

| Bidding zone | Percentage of time ID trade > ATCE capacity |
|---|---|
| DK1 | 0.57% |
| DK2 | 0.37% |
| SE1 | 0.73% |
| SE2 | 3.96% |
| SE3 | 2.054% |
| SE4 | 1.56% |
| NO1 | 2.66% |
| NO2 | 2.98% |
| NO3 | 3.54% |
| NO4 | 4.093% |
| NO5 | 1.44% |
| FI | 1.012% |

# Percentage of time where ATCE capacities are not able to facilitate ID needs

- Although the traded ID volumes were higher than the ATCE capacity for some bidding zones (NO4, NO5 and SE1), most of the ID needs are still met with the new capacities
  - These bidding zones are usually already on max export, so there is limited capacity in the same direction
- In the cases where the intraday trades were higher than the ATCE capacity, there was a chance of overloads somewhere in the Nordic grid

# Larger variation from MTU to MTU compared to NTC values we are used to seeing

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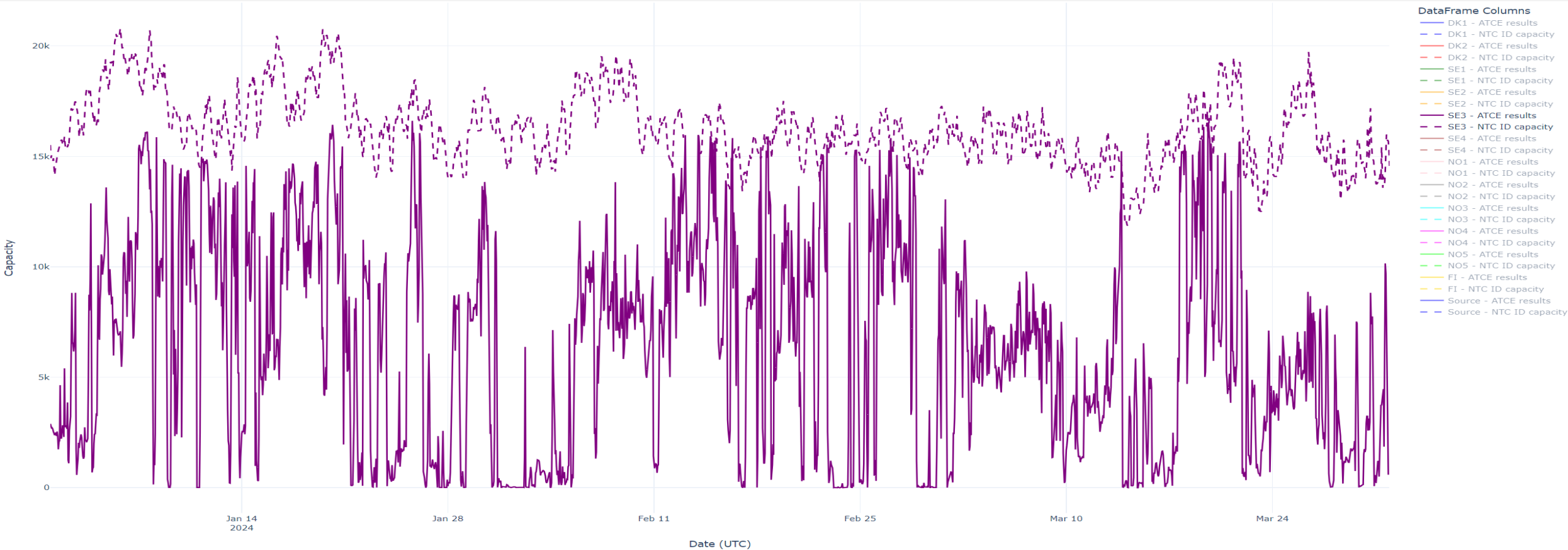
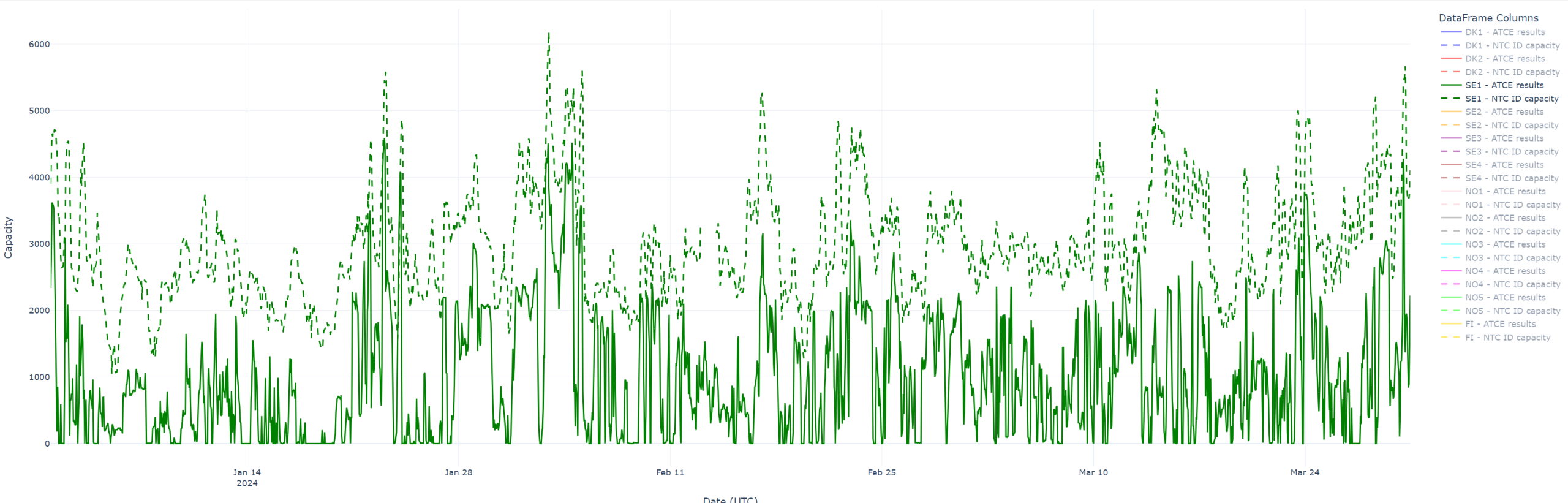
# SE3 export capacities in today's market and ATCE results

- The figure shows export capacities given in today's market (dotted line) and ATCE export results (solid line) for the historical data
- Here, ATCE capacities are more varying, and also lower than in today's market



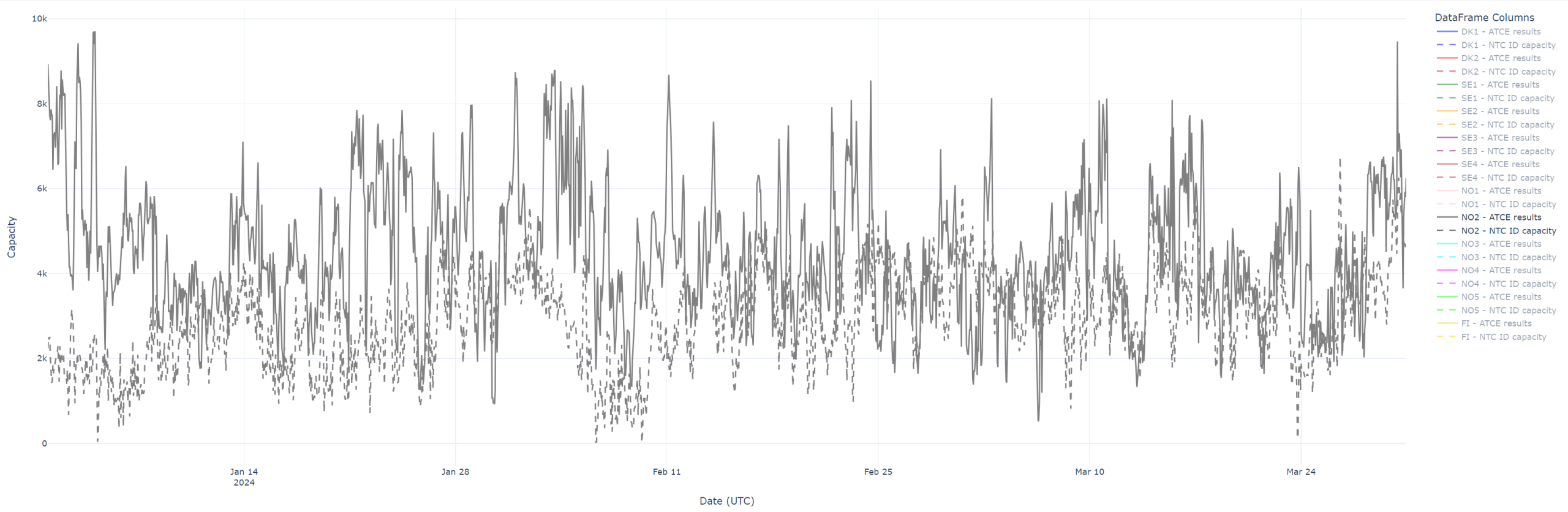
# SE1 import capacities in today's market and ATCE results

- The figure shows SE1 import capacities given in today's market (dotted line) and ATCE import results (solid line) for the historical data
- Here, the ATCE results show significantly lower capacities and more volatility



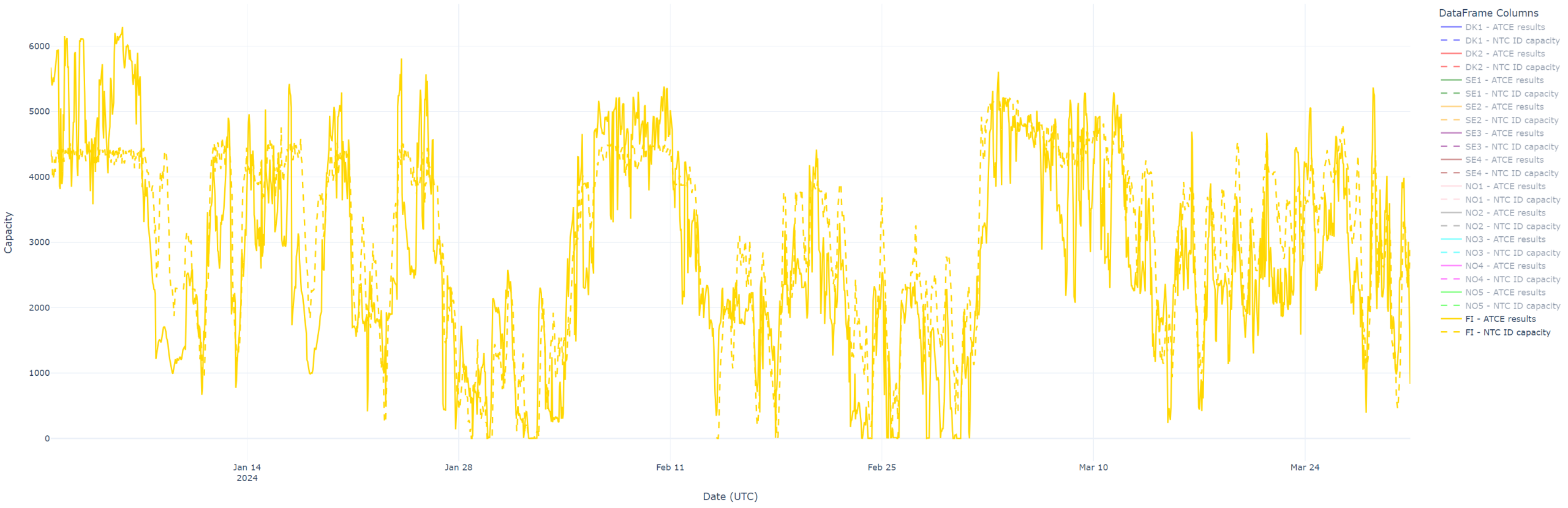
# NO2 export capacities in today's market and ATCE results

- The figure shows NO2 export capacities given in today's market (dotted line) and ATCE export results (solid line) for the historical data
- Here, ATCE capacities are more varying, but overall higher than today's market



# FI import capacities in today's market and ATCE results

- The figure shows FI import capacities given in today's market (dotted line) and ATCE import results (solid line) for the historical data
- Here, the capacities are quite similar for this period



# Conclusion

- The main purpose of the presentation was to show the capacities given with ATCE and compare them with the current NTC
- Overall, the results are different, and not directly comparable
- The current NTC capacities and the ATCE values are based on different models
  - Current NTC capacities are based on operational experience, and without the information on how trades affect the grid
  - ATCE takes into consideration all components in the grid, thus increasing operational security

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