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# Availability of transmission capacity in the Nordics

Q4/2017

# Report description

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This report provides aggregated information about available electricity transmission capacities between Nordic bidding zones and neighboring countries.

The figures show the average share of available capacity on the day ahead market (ATC) to the maximum capacity (max NTC) on each border and direction.

Calculation formula

- $\text{Average}( ATC_H / \max NTC_H )$  for  $H=1, \dots, n$

max NTC = Maximum net transfer capacity:

- The capacity that can be given to the market when there are no outages taking into account system reliability issues, and the power flows are favorable.

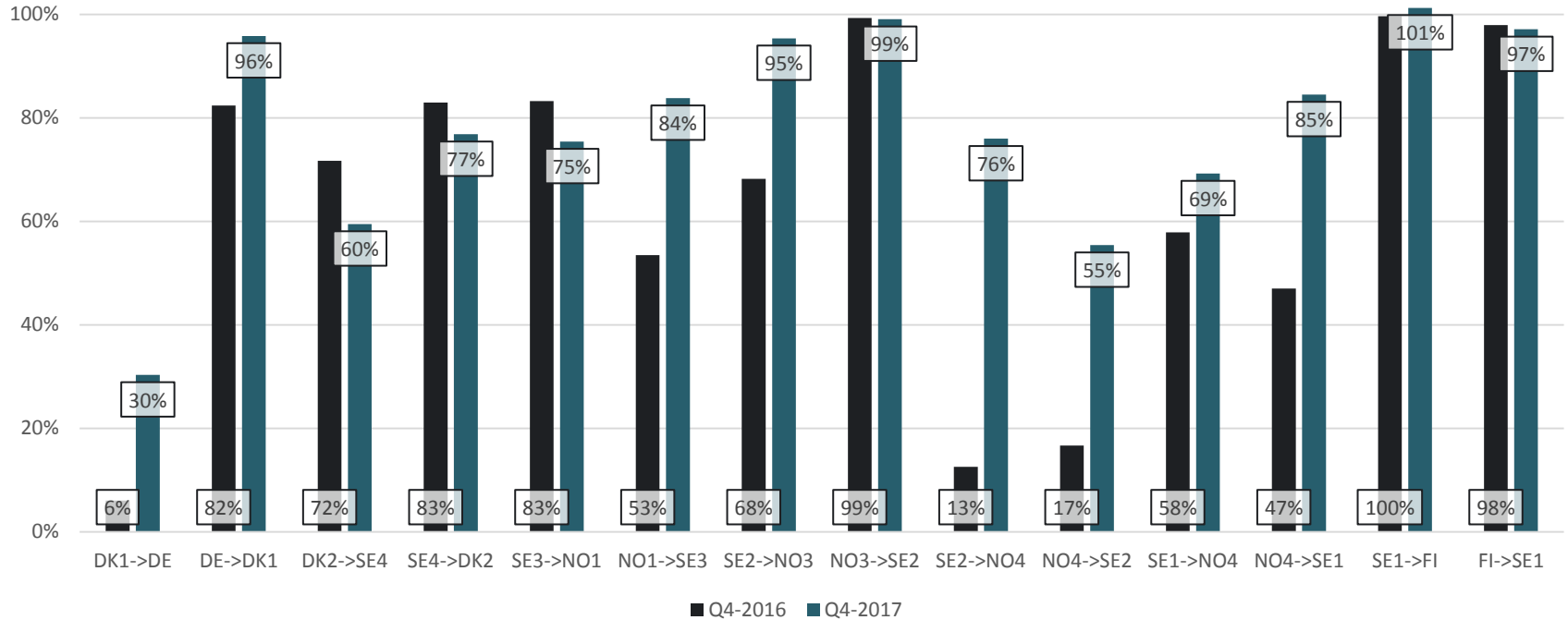
ATC= Available transfer capacity :

- The capacity given to the day-ahead market in the specific hour calculated based on the TSOs grid models and taking possible outages into account.

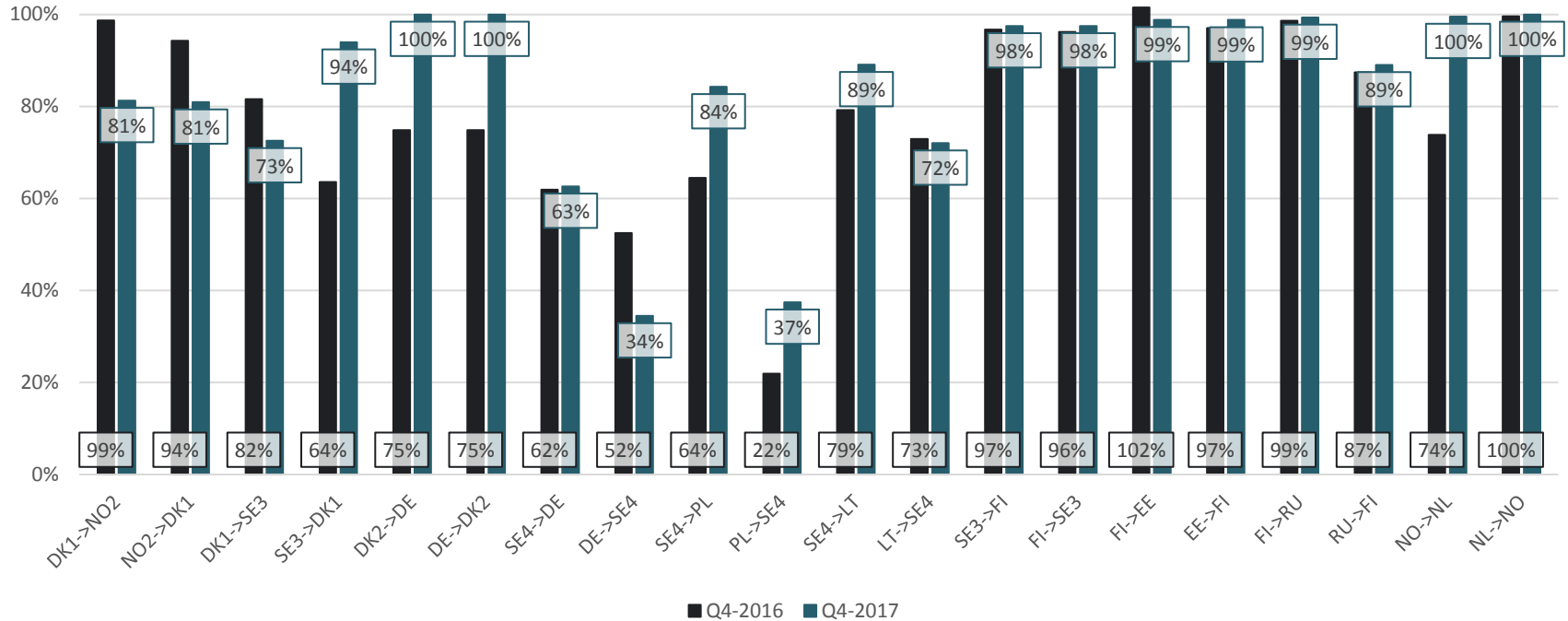
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# Q4/2016 & Q4/2017

# AC-interconnectors - quarterly



# DC-interconnectors - quarterly



# Reasons for reduced\* availabilities

\* Availability below 75 %

Q4/2016

- **NO4-SE1 (North Norway-Sweden)**
  - The main reason for the reduction of capacity between Norway (NO4) to Sweden (SE1) was outages in the Norwegian grid due to voltage upgrades.
- **NO4-SE2 (North Norway-Sweden)**
  - The main reason for the reduction of capacity between Norway (NO4) and Sweden (SE2) was outages in the Norwegian grid due to voltage upgrades.
- **DK2-SE4 (Eastern Denmark-Sweden)**
  - The main reason for reduction of capacity from Denmark (DK2) to Sweden (SE4) was congestion in the West Coast Corridor and maintenance in Sweden.
- **NO1-SE3 (Southern Norway-Sweden)**
  - The main reason for reduction of capacity from Norway (NO1) to Sweden (SE3) was cable fault on 420 kV Sylling-Tegneby.
- **NO3-SE2 (Middle Norway-Sweden)**
  - The main reason for the reduction of capacity from Sweden (SE2) to Norway (NO3) was outages in the Norwegian grid due to voltage upgrades.
- **DK1-SE3 (Western Denmark-Sweden)**
  - The main reason for reduction of capacity from Denmark (DK1) to Sweden (SE3) was congestion in the West Coast Corridor and maintenance in Sweden (SE3). The reason in Denmark for reductions was maintenance of the internal grid in DK1.
- **NO2-NL (Norway – Netherlands)**
  - The main reason for reduction of capacity from Norway (NO2) to the Netherlands was lack of system protection scheme in the Norwegian grid.
- **DK1-DE (Western Denmark- Germany)**
  - The capacity from West Denmark (DK1) to Germany (DE) have been very low in Q1-2016. The reason is the stressed German grid. The German TSO, TenneT is doing a lot of grid enforcements to relieve the stressed grid. This results in the capacity having to be reduced especially in the periods where TenneT is working on the grid.
- **SE4-PL (Sweden-Poland)**
  - The main reason for reduction of capacity from Sweden (SE4) to Poland (PL) and from Poland (PL) to Sweden (SE4) was found in Poland. The main reasons in Sweden for reduction were congestion in the West Coast Corridor and maintenance.
- **SE4-DE (Sweden-Germany)**
  - The main reason for reduction of capacity from Sweden (SE4) to Germany (DE-TenneT) and from Germany (DE-TenneT) to Sweden (SE4) were found in Germany. The main reasons in Sweden for reductions was congestion in the West Coast Corridor and maintenance.
- **SE4-LT (Sweden-Lithuania)**
  - The main reasons for reduction of capacity from Lithuania (LT) to Sweden (SE4) were congestion in the West Coast Corridor, maintenance and failure on the interconnector.

# Reasons for reduced\* availabilities

\* Availability below 75 %

Q4/2017

- **NO4-SE1 (North Norway-Sweden)**
  - The main reasons for the reduction of capacity between Norway (NO4) to Sweden (SE1) was outages in the Norwegian grid due to voltage upgrades.
- **NO4-SE2 (North Norway-Sweden)**
  - The main reasons for the reduction of capacity between Norway (NO4) and Sweden (SE2) was outages in the Norwegian grid due to voltage upgrades.
- **DK1-SE3 (Western Denmark-Sweden)**
  - The main reasons for reduction of capacity from Denmark (DK1) to Sweden (SE3) was congestion in the West Coast Corridor in Sweden and planned outages. The reasons in Denmark for reductions were planned interconnector inspection and failures on the interconnector and a high voltage transformer.
- **DK2-SE4 (Eastern Denmark-Sweden)**
  - The reasons for reduction of capacity from Denmark (DK2) to Sweden (SE4) were found on both sides. The reasons in Sweden for reductions were congestion in the West Coast Corridor in Sweden and planned outages. The reasons in Denmark for reduction were relay maintenance and replacement.
- **FI-SE1 (Finland – North Sweden)**
  - Reason for the ATC exceeding max NTC is the handling of transit flow from Norway via Finland to Sweden.
- **DK1-DE (Western Denmark- Germany)**
  - The main reason for reduction in capacity from Western Denmark (DK1) to Germany was congestions in Germany. In few hours, the reason for reduction were in Denmark and caused by internal grid maintenance which limited the import from Germany to Western Denmark.
  - A Joint Declaration secures that increasing minimum capacities are guaranteed at the border. In Q4 2017 the minimum capacities increased to 320 MW in October and 400 MW in November and December.
- **SE4-PL (Sweden-Poland)**
  - The reasons for reduction in capacity from Poland (PL) to Sweden (SE4) were found on both sides. The main reasons in Sweden for reductions was congestion in the West Coast Corridor, planned outages and disturbance on the interconnector.
- **SE4-DE (Sweden-Germany)**
  - The main reason for reduction of capacity from Sweden (SE4) to Germany (DE-TenneT) was found in Germany. The reasons for reduction in capacity from Germany (DE-TenneT) to Sweden (SE4) were found on both sides. The main reason in Sweden for reductions was congestion in the West Coast Corridor and planned outages.
- **SE4-LT (Sweden-Lithuania)**
  - The main reasons for reduction of capacity from Lithuania (LT) to Sweden (SE4) were congestion in the West Coast Corridor, planned outages in the Swedish grid and cable fault on the interconnector.