

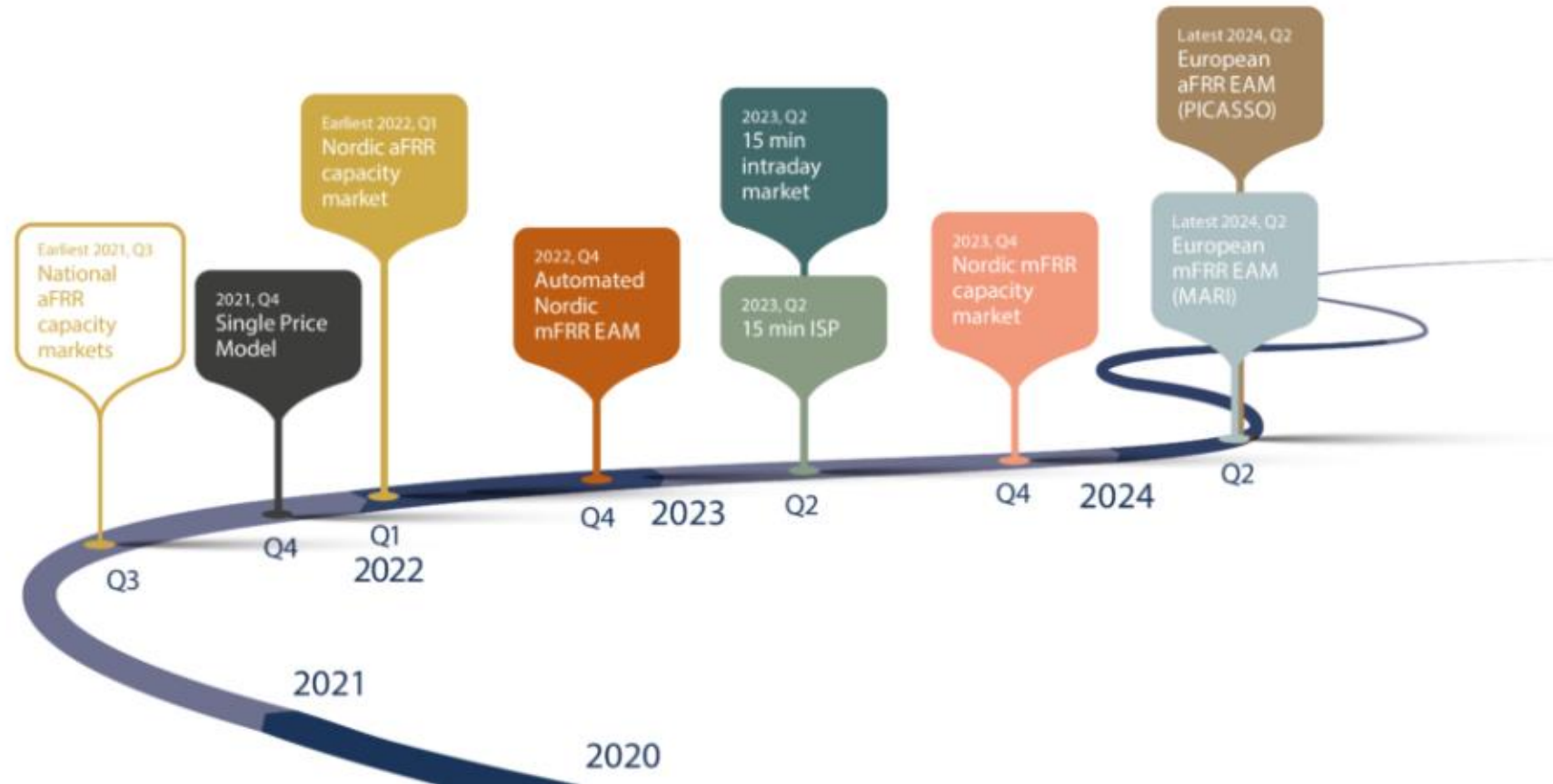
# The Nordic aFRR Capacity Market

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EB SG meeting

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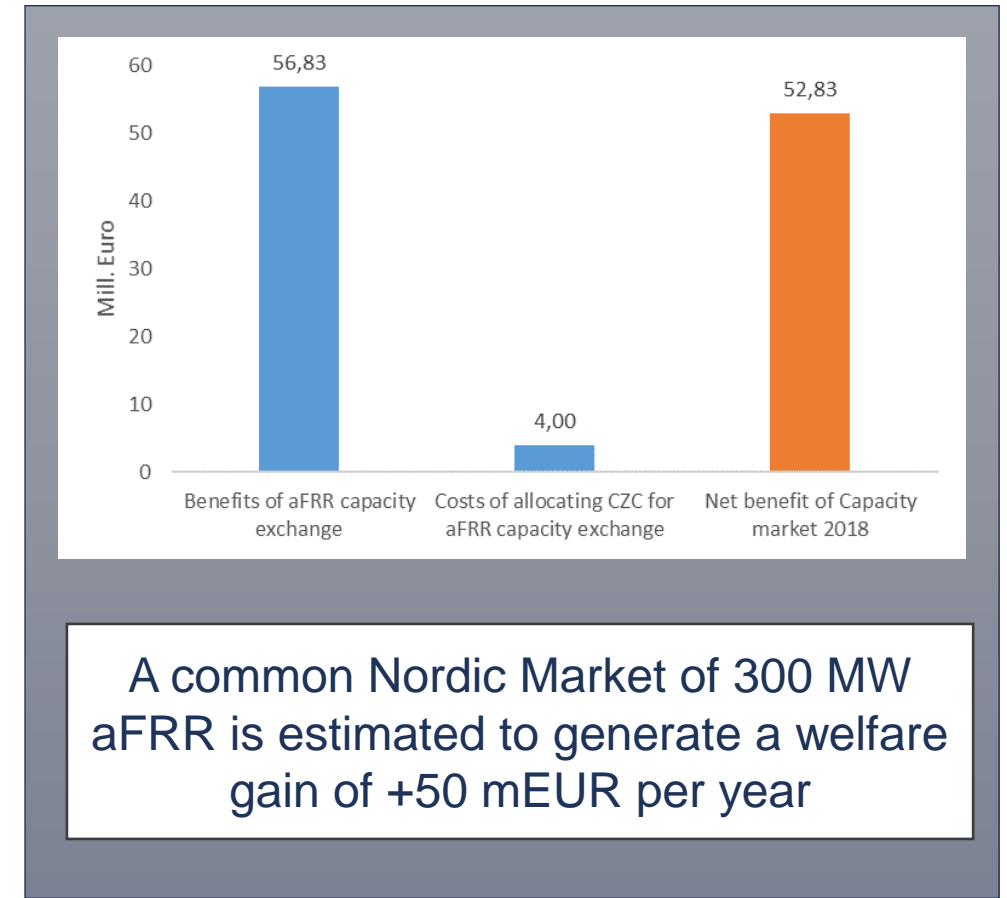
# Nordic Balancing Model





# A common Nordic aFRR Capacity Market of 300 MW in all hours has been planed for a while

- The common Nordic aFRR capacity market using a cross border reservation has been on the drawing board since 2014
- In March 2019, Nordic TSOs applied the Nordic NRAs for approval of the market
- In February 2020, Nordic NRAs disagreed on the proposal and it was referred to ACER
- In August 2020 ACER decided on the Nordic aFRR capacity market design and the methodology was approved
- In October 2020 Nordic NRAs issued an opinion on when the market will be allowed to have a go-live given dependencies towards capacity calculation methodologies developed pursuant to the CACM Regulation



# The Overall Market Design

*Consist of four individual methodologies:*

- Methodology on the common and harmonised rules and processes for the exchange and procurement of aFRR balancing capacity for the Nordic LFC Block (in accordance with Article 33(1) of Commission Regulation (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing)
- Exemption to the obligation to allow transfer of aFRR balancing capacity for the Nordic LFC Block (in accordance with Article 34(1) of Commission Regulation (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing)
- Methodology on the application of the Nordic CCR market-based allocation process of cross-zonal capacity for the exchange of balancing capacity for the Nordic LFC Block (in accordance with Article 38(1) of Commission Regulation (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing)
- Methodology for the market-based allocation process of cross-zonal capacity for the exchange of balancing capacity for the Nordic CCR (in accordance with Article 41(1) of Commission Regulation (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing)

# 1. Methodology on the common and harmonised rules and processes for the exchange and procurement of aFRR balancing capacity for the Nordic LFC Block

- Defines the high-level design of the Nordic aFRR capacity market
  - Separate volumes for upward and downward aFRR capacity
  - Procurement takes place in daily auctions D-1 in hourly resolution
  - Standard aFRR capacity product with a minimum bid size of 1 MW
  - The objective of the algorithm for the capacity procurement optimisation function is to minimise social welfare costs – hence minimizing the sum of bidcost x bidvolume
- Settlement of procured balancing capacity
  - Cross-zonal marginal price

How does the actual market design of the Nordic aFRR capacity market look like?

## 2. Exemption to the obligation to allow transfer of aFRR balancing capacity for the Nordic LFC Block

- Provides the Nordic TSOs with an exemption to allow balancing service providers to transfer their obligation to deliver aFRR capacity across bidding zones.
- Balancing service providers are still allowed to transfer their obligation to deliver aFRR capacity within a bidding zone

What shouldn't be done in the Nordic aFRR capacity market?

### 3. Methodology on the application of the Nordic CCR market-based allocation process of cross-zonal capacity for the exchange of balancing capacity for the Nordic LFC Block

- Defines the timeframe of which the market gate closure time shall be within
  - Timeframe between 07:00 CET (D-1) and 10:00 CET (D-1)
  - In the Nordic aFRR capacity market decided to be at 07:30 CET (D-1)

When in time should the Nordic aFRR capacity market be applied?



### 3. Methodology on the application of the Nordic CCR market-based allocation process of cross-zonal capacity for the exchange of balancing capacity for the Nordic LFC Block

- Defines when the Nordic market-based application methodology can be implemented
  - Rely on the cross-zonal capacity of all bidding zone borders of the Nordic CCR to be calculated in accordance with capacity calculation methodologies developed pursuant to the CACM Regulation
  - The Nordic TSOs await the implementation of flow-based as capacity calculation method in the Nordic CCR
  - Capacity calculation by flow-based must live up to specific quality requirements set by the Nordic NRAs
  - The Nordic aFRR capacity market is right now expected to go live in Q1 2022



## 4. Methodology for the market-based allocation process of cross-zonal capacity for the exchange of balancing capacity for the Nordic CCR

- Defines the maximum volume of allocated cross-zonal capacity
  - By default, the maximum volume of cross-zonal capacity allocated for the exchange of balancing capacity shall be 10% of cross-zonal capacity for each bidding zone border
  - The limit of 10% can be increased in case of scarcity, but only until demand is satisfied and to a maximum of 20%
  - A minimum or maximum procurement volume of a single or a set of bidding zones can be included due to operational security requirements pursuant to SO Regulation

How should allocation of cross-zonal capacity in the Nordics be handled and performed?

## 4. Methodology for the market-based allocation process of cross-zonal capacity for the exchange of balancing capacity for the Nordic CCR

- Determines the forecasted marked value (D-1 day-ahead prices) and defines a mark-up
  - The cross-zonal capacity cost used in the allocation process is equal to the forecasted market spread + the mark-up
- Determines the allocated volume of cross-zonal capacity from an algorithm optimizing TSO demand, balancing capacity bids, available cross-zonal capacity with the objective to maximize economic surplus
- Gives the practical implementation of a 2-step approach in the Nordic aFRR capacity market, where:
  1. Cross-zonal capacity is calculated and bid selection is performed
  2. Congested borders are defined and prices are calculated

## Summing up the Nordic aFRR capacity market design in short

Hourly  
Nordic procurement  
executed daily in  
D-1

Cross-zonal  
marginal pricing  
(pay-as-cleared)

Optimization across  
all 11 Nordic  
bidding  
zones using the  
aFRR capacity  
bids, TSO  
demand and the  
cost of cross-  
zonal capacity as  
input

The cost of cross-  
zonal transmission  
capacity is the  
forecasted price  
difference in the  
day-ahead market  
added with a  
dynamic mark-up

Maximum 10% of  
cross-zonal  
transmission  
capacity between  
two bidding zones  
may be allocated  
to the exchange  
of aFRR capacity

## What's next and what's the status?

1. The common Nordic IT system is being finalized – by now the methodologies has been implemented, up next is the preparation for go-live of flow-based and the preparation of a common Nordic mFRR capacity market
2. Still uncertainty regarding when flow-based project has produced results, that will enable the NRAs to approve a go-live of the common Nordic aFRR CM market. Best guess right Q1 2022
3. From September 2021 the IT system can be used to support a local aFRR market in each Nordic bidding zone, using the ACER approved rules, but without reservation of cross-zonal capacity
4. TSOs can have individual go-live dates, meaning Statnett can start using the Nordic IT system in a local setup in e.g., Statnett in September, Svenska Kraft in October etc.
5. Go-live dates of individual markets are a national decision
6. The transition from local markets using the Nordic IT solution and market rules to a common Nordic market will be very easy and require very limited changes from BSP's

# Questions

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