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Electricity Market Design:
Electricity networks and their operators in a time of change
Oslo, 4 April 2019

Pan-European balancing markets



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08.04.2019

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It is all about the frequency -and timing

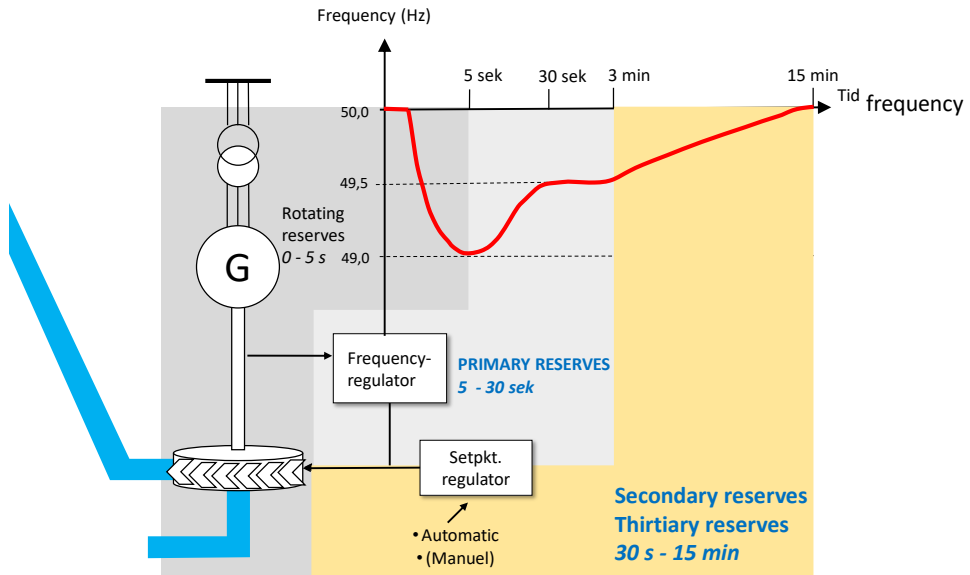


25.12 at 18:00 – 26.12 at 04:00

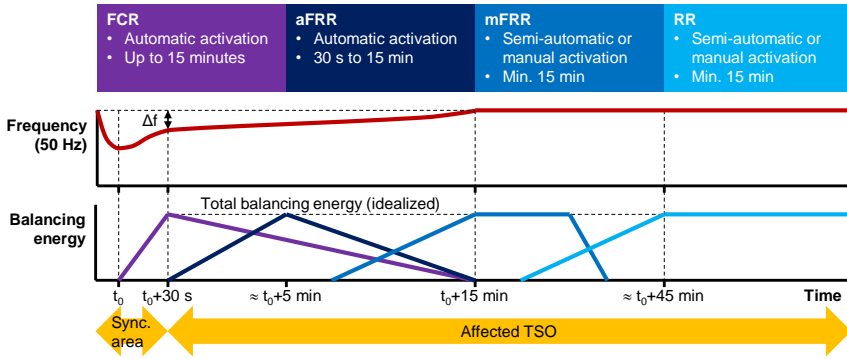


Årdal Church 29.12 at 10:36

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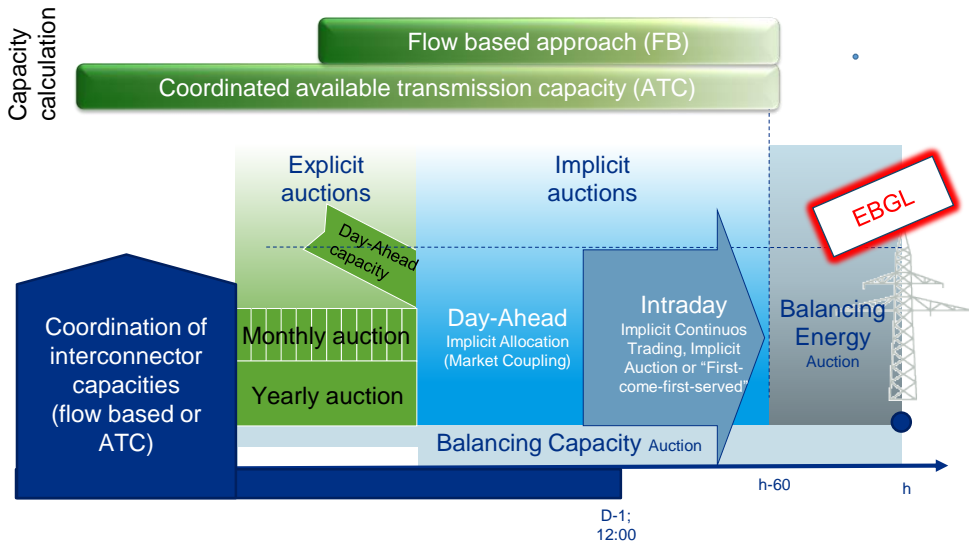
Balancing based on activation time (without imbalance netting)

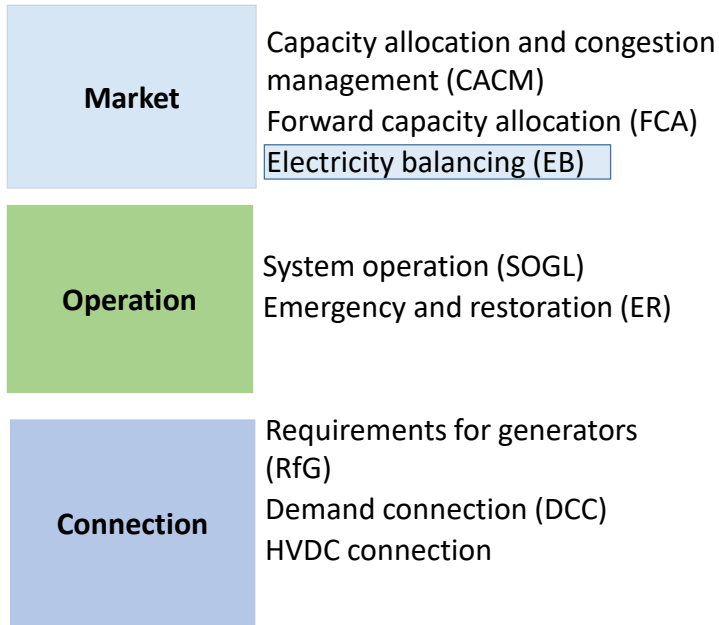


Balancing is organized in up to five steps/platforms (FCR, IN, aFRR, mFRR and optional RR) in Europe
 Platforms coordinate the (complex) processes of each balancing product



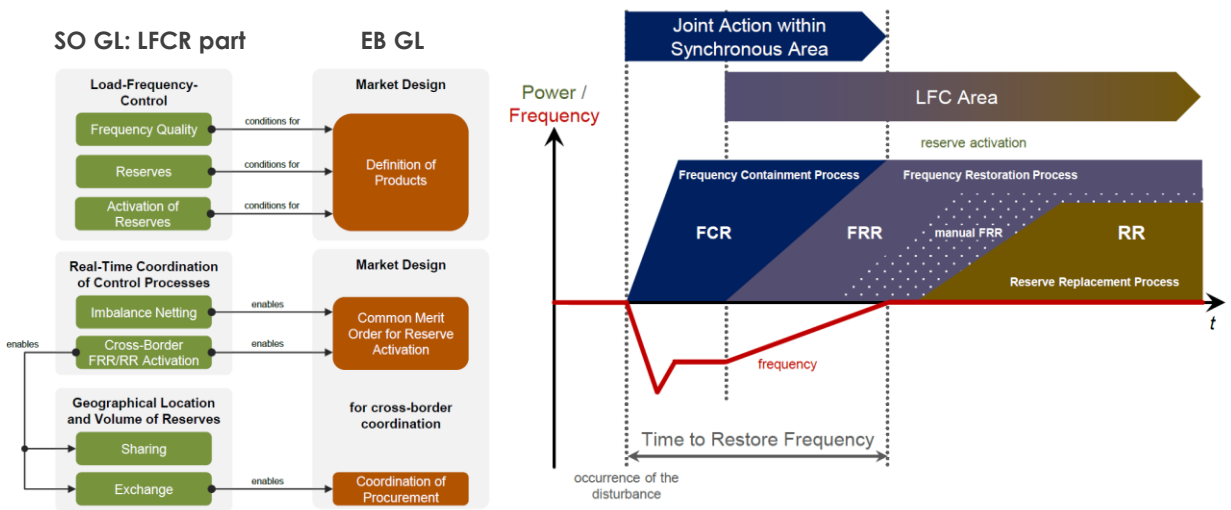
The IEM target model





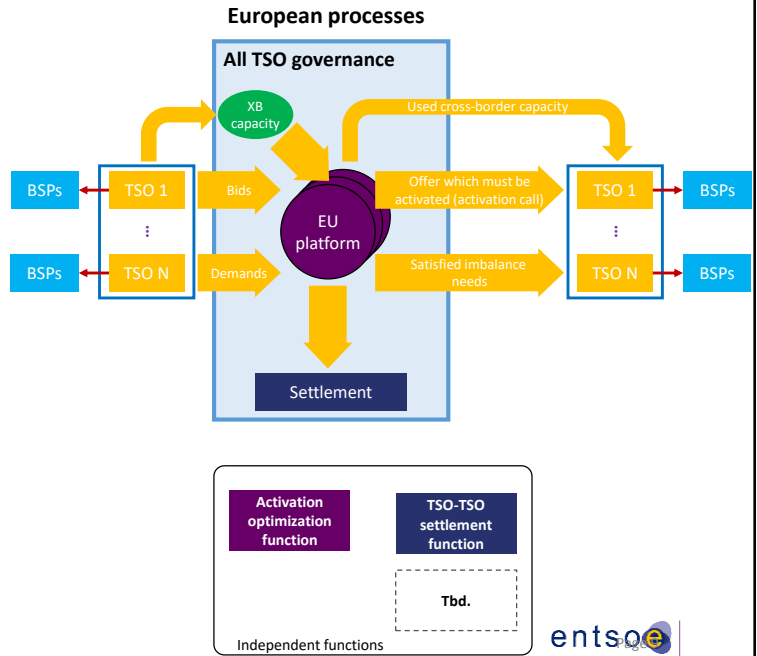
SYSTEM OPERATION GUIDELINE

LOAD-FREQUENCY CONTROL AND RESERVES



European Balancing Platforms "a single buyer market"

- The TSO-TSO model is applied
- Activation requests and communication with national BSPs remains local.
- Closely interacting with different (local) IT systems.



BSP: Balancing Service Provider



MARI

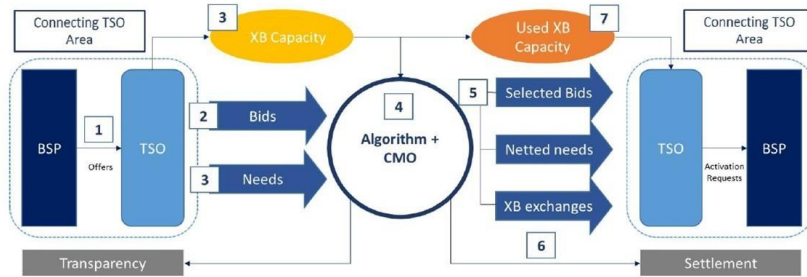
Manually Activated Reserves Initiative



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The mFRR Business process



1. TSOs receive offers from BSPs in local market balance area
2. Forward of coherent mFRR balancing products to mFRR platform
3. TSOs communicate their balancing needs and the available XB transmission capacities (ATC)
4. Optimization of the clearing of balancing needs against BSPs' offers
5. Communication of the accepted offers, satisfied needs and prices
6. Calculation of the commercial flows between market balancing areas and settlement of the expenditure and revenues between TSOs
7. The resulting XB schedules and remaining ATC are sent to the TSOs

Timelines for developing the respective balancing platforms

Obligations	2017				2018				2019				2020				2021				2022				2023			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
RR TERRE					Impl Framework EIF+6m						RR EU Platform EIF+2yrs									TSO Join Derogation +2yrs								
Imb. Netting IGCC					Impl Framework EIF+6m						IN EU Platform EIF+2yrs									TSO Join Derogation +2yrs								
mFRR mFRR project					Entry into Force															FRR EU Platform EIF+4yrs								TSO Join Derogation +2yrs
aFRR aFRR project																				FRR EU Platform EIF+4yrs								TSO Join Derogation +2yrs
Imbalance Settlement											Harmonised Proposal EIF+1yrs								ISP & Proposal Impl EIF+3yrs								ISP Derogation +2yrs-4yrs	
TSO Proposals											Pricing EIF+1yr																CZC Harm EIF+5yrs	
General Compliance											EIF+1yr																Pub Info EIF+2yr	

Key Proposal Deadline Derogation



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Bidding Zone
10Y1001A1001A63L



Bidding Zone	
Market Balance Area	
NO1	10YNO-1-----2
NO2	10YNO-2-----T
NO3	10YNO-3-----J
NO4	10YNO-4-----9
NO5	10Y1001A1001A48H



Control Area	
Scheduling Area	
a	10YDE-ENBW----N
b	10YDE-EON-----1
c	10YDE-RWENET---I
d	10YDE-VE-----2



Member State	
Control Area	
Scheduling Area	
Market Balance Area	
	10YNO-0-----C



Market Balance Area
10Y1001A1001A82H

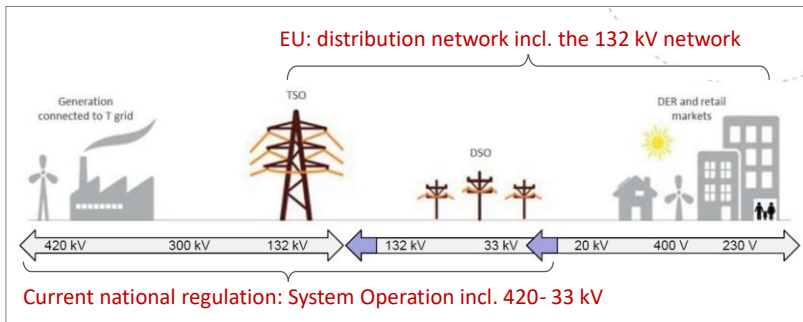
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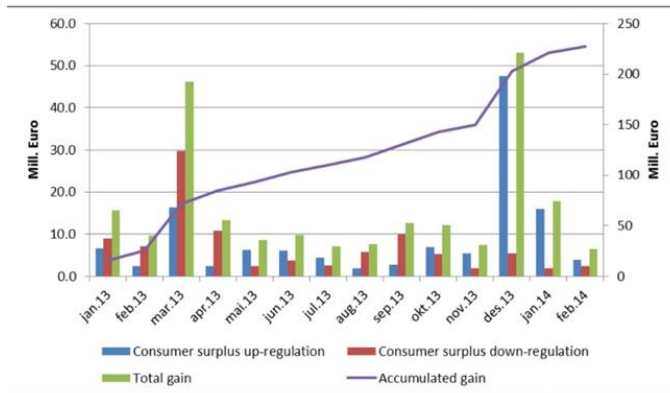
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Statnett is "system responsible" also for the distribution grid



1. Congested grid both in transmission and distribution grid
2. TSO monitors and handles ~300 "cuts" for congestion management in the transmission network, of which ~ 100 in the regional distribution grid
3. > 50% of activations of manual reserves is for congestion management

The benefits of cross-border mFRR activations across 11 bidding zones in the Nordics is in the range of EUR 200 million per year. (Realised savings)
The surplus on EU level is unknown, but it is expected to be higher than the EUR 200 million.



Assumed benefits of integrated balancing markets

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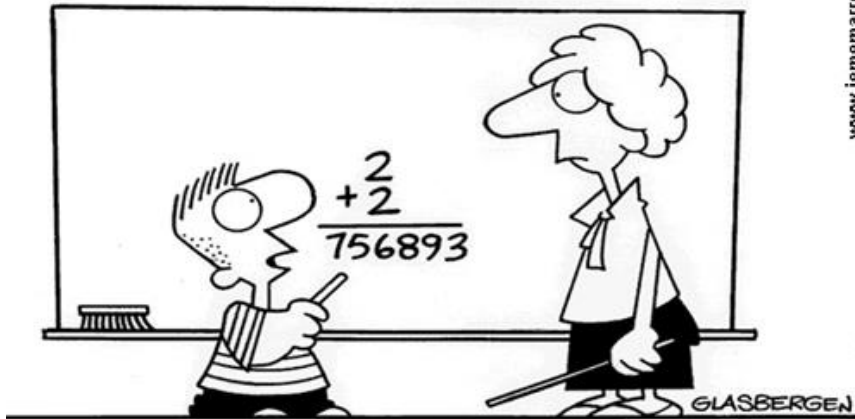
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Pan-European balancing markets provide for opportunities

- EU integration provides for opportunities provided the regulation is effective.
- The Norwegian production- transmission- and market design is different from the European system.
- Timely influence on EU development is important to facilitate development adapted for the Norwegian challenges, opportunities, and system.

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In a more and more complex electricity system, sometimes old questions need new answers ...