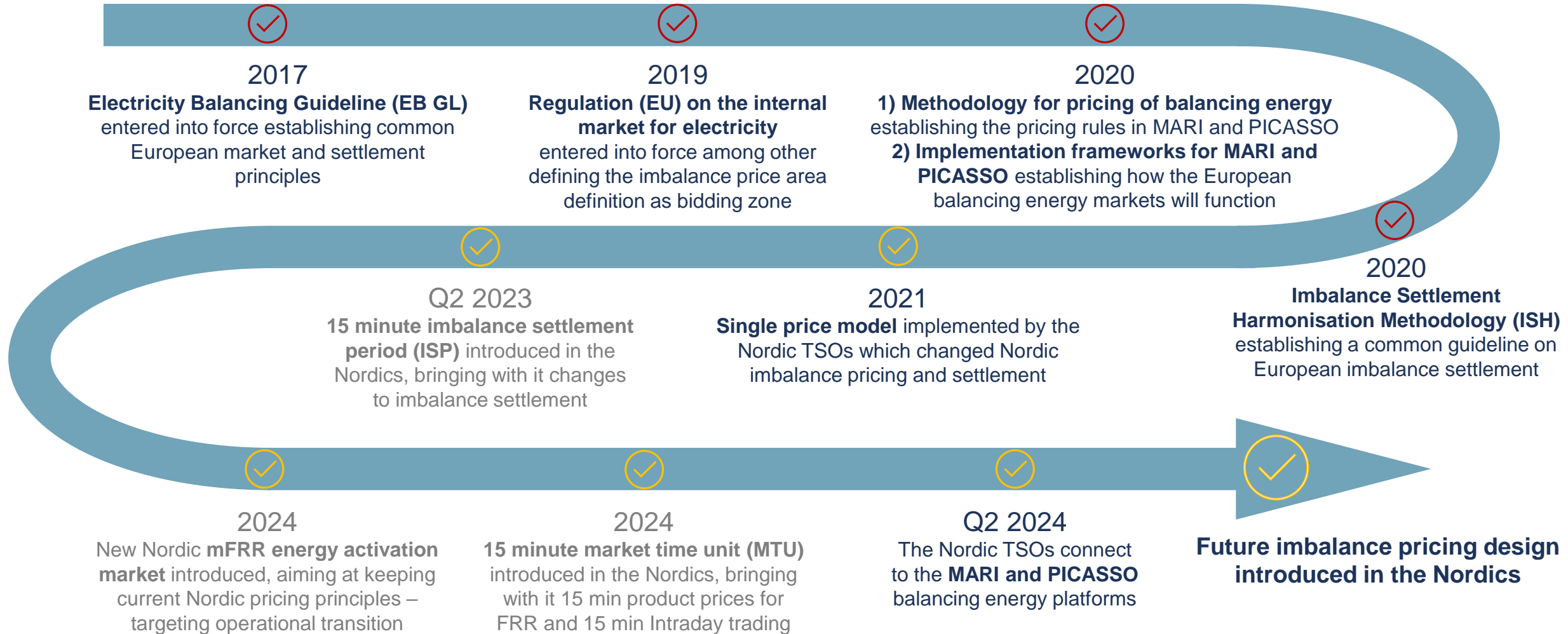


Future imbalance pricing in the Nordics when connected to MARI and PICASSO

11 May 2023, eSett Customer Committee meeting

Presenter: Erica Schandorff Arberg

The road leading to the needed changes



Starting point – Single Price Model and the implementation of ISH "part 1"

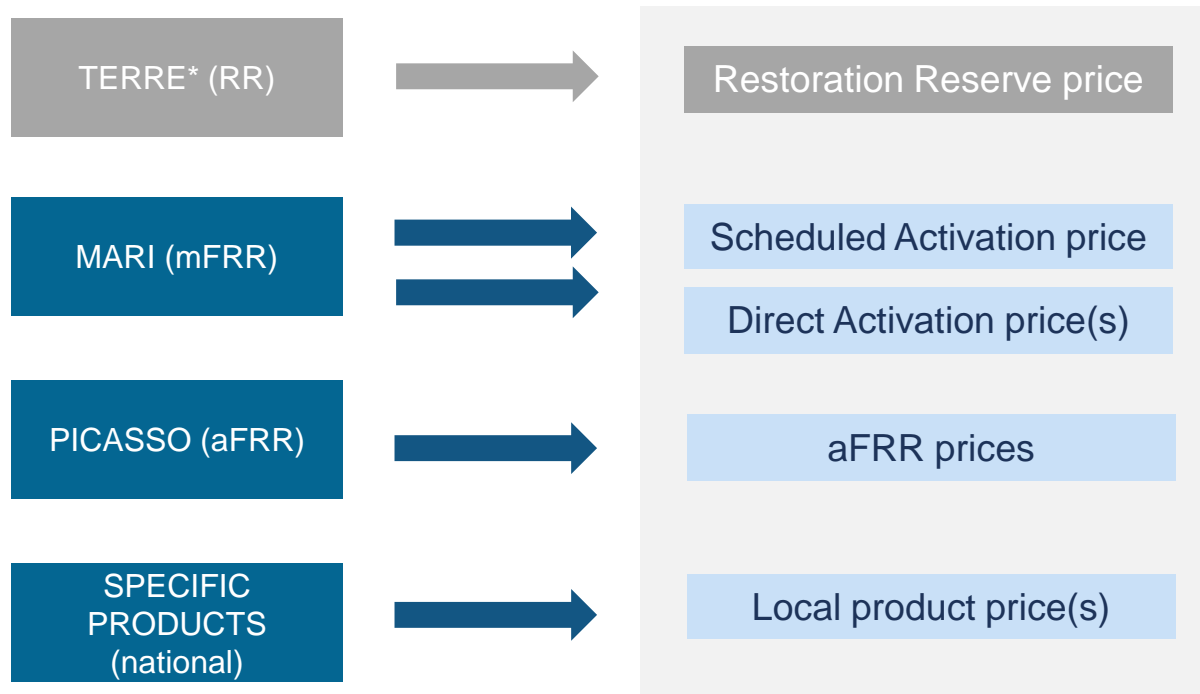
- On 1 November 2021, the Nordic countries implemented the Single Price Model, implementing single imbalance pricing and single balance/position
- The implemented model is compliant with the European methodology for Imbalance Settlement Harmonisation (ISH), and can be seen as the first step of implementing the ISH
- The current Nordic imbalance settlement model is based on the mFRR balancing energy prices and the application of an exception rule to set the direction of imbalances (dominating direction) based on the uncongested area
 - The exception rule is only valid as long as the Nordic synchronous area is frequency based

Ending point – connection to MARI and PICASSO and the implementation of ISH "part 2"

The Nordic TSOs are working on implementing...

- ACE-based balancing in the Nordic synchronous area
- Connection to the European energy balancing platforms, MARI and PICASSO, for respectively mFRR and aFRR
- **Implementing a future imbalance price design, reflecting the new balancing energy pricing rules and ISH “part 2”**

Many balancing energy product prices gives a new frame



Activation type	Price setting and activation direction of standard products
mFRR Scheduled activation (SA)	<ul style="list-style-type: none"> • One price per 15 min MTU = ISP • Activation direction: Up, Down, Up and down (both) or None
mFRR Direct activation (DA)	<ul style="list-style-type: none"> • Up to four prices per 15 min MTU = ISP • Two prices possible per direction as a DA activation will last for two quarter hours • Activation direction: Up or Down
aFRR	<ul style="list-style-type: none"> • 225 prices per 15 min = ISP • One price per MTU = control cycle \approx 4 sec • Activation direction: Up, Down or None

The balancing energy prices are used to settle the BSPs and as an input for the imbalance price for the BRPs. Future price levels in MARI and PICASSO are unknown.

Design choices to be made

- Select the **method for imbalance price calculation**
 - Max/Min approach
 - Combined approach (*two approaches are currently being investigated*)
 - Volume weighted average approach
- **Local or uncongested area pricing:** Whether or not to take into account balancing energy prices for which you have a satisfied demand equal to zero
- How to set the **Value of Avoided Activation (VoAA)**
(*to be used to set the imbalance price when there is no balancing energy demand or activation*)

Design approaches which are being investigated

Design approach 1

- **Volume weighted average (VWA) approach**
- **Local* prices**
(only take into account prices for which you have an explicit demand)
- **VoAA design** could either be based on mFRR SA or first available up and down bids

Design approach 2

- **Combined approach 1**
Max/min price of:
 - VWA of aFRR
 - mFRR SA
 - mFRR DA
- **Local* or uncongested area** prices** from demands to take into account in imbalance price setting
- **VoAA design** could either be based on mFRR SA or first available up and down bids

Design approach 3

- **Combined approach 2**
Max/min price of:
 - VWA of aFRR, mFRR SA and mFRR DA
 - mFRR SA
 - mFRR DA
- **Local* or uncongested area** prices** from demands to take into account in imbalance price setting
- **VoAA design** could either be based on mFRR SA or first available up and down bids

Design approach 4

- **Max/min approach**
Max/min price of mFRR SA, mFRR DA or aFRR
- **Local* or uncongested area** prices** from demands to take into account in imbalance price setting
- **VoAA design** could either be based on mFRR SA or first available up and down bids

For now, the Nordic TSOs does not recommend this approach due to possible aFRR price spikes

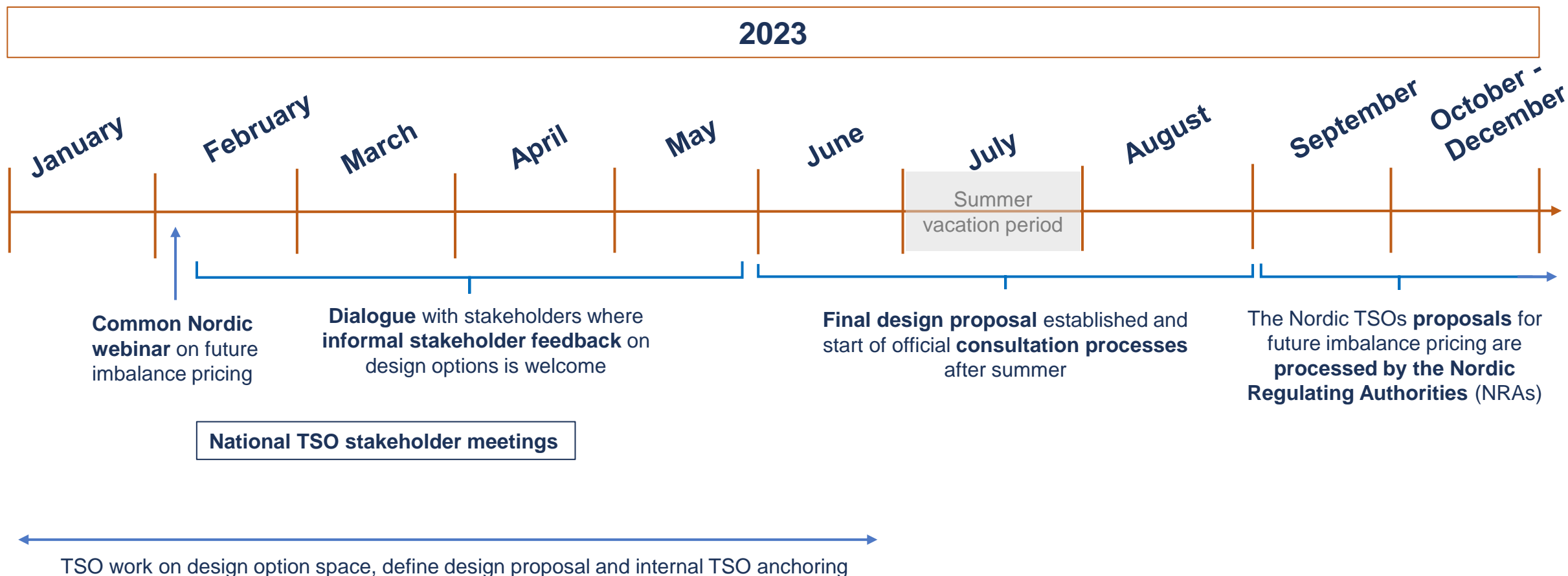
* Local prices: only take prices into account for which the bidding zone has an explicit demand (demand > 0)

** Uncongested area prices: take into account all prices available for the bidding zone (demand ≥ 0)

Recent development

- Nordic webinar on the topic, held on 8 February 2023
- Questions and answers from the Nordic webinar was published
- Common Nordic TSO paper published on 24 April
 - *Informal feedback and input is welcome until 16 May*
 - The document describes the option space for the future Nordic imbalance pricing design
 - A new combined design approach (design approach 3) has been added to the possibilities and is currently also being investigated by the TSOs
 - Along with the document is also published a simple imbalance price calculator

Timeline for TSO work and stakeholder interaction



Room for discussion

What are your thoughts on the following topics, related to the future imbalance pricing design?

1. How to handle several balancing energy prices into an imbalance price (volume-weighted average, combined or marginal approach)
2. Different imbalance prices between bidding zones in the Nordics, also when there is no congestion in the system
3. Misalignment between BSPs and BRPs, with respect to balancing energy prices and the imbalance price in the future

Reminder that all informal feedback and input is welcome!

Send to ear@energinet.dk, deadline Tuesday 16. May