

Commissioning Plan

15 min Imbalance Settlement Period

eSett Oy | 06.09.2023 (version 2.0)



Commissioning Plan for 15 min Imbalance Settlement Period (ISP)

Purpose of this document is to describe on a high-level how the introduction of the 15 min ISP affects

- imbalance settlement
- the market participants' operations and
- eSett's interfaces

This document describes what will change when the 15 min ISP will be taken into use:

- starting points for 15 min ISP go-live
- the visible technical changes in the communication between market participants and eSett
- the changes on Online Service user interface
- the transition period from hourly to 15 min ISP

This document is an initial commissioning plan, and it will be updated based on the updated information on the project and input from the market participants.

Table of Contents

<u>Change Log</u>	4
<u>15 min Commissioning Time Schedule</u>	6
<u>Starting Points for the Go-Live</u>	8
<u>The Effects of 15 Minutes Imbalance Settlement Period on Business and Market Processes</u>	11
<u>Settlement Structures</u>	12
<u>Data Metering and Reporting</u>	13
<u>Imbalance Settlement</u>	19
<u>Reporting of Results</u>	22
<u>Invoicing and Collaterals</u>	24
<u>Market Behaviour Monitoring</u>	25
<u>Online Service</u>	26
<u>Reporting around the Go-Live</u>	27
<u>Reporting to eSett before the GL</u>	28
<u>Reporting to eSett after the GL</u>	29
<u>Data Packages (60 min) from eSett around the GL</u>	30
<u>Data Packages (15 min) from eSett around the GL</u>	31
<u>Responsibilities and Obligations of the Parties</u>	32
<u>Testing</u>	38
<u>Internal Testing</u>	39
<u>External Testing</u>	40
<u>Open Market Tests</u>	41
<u>Risk Management Plans</u>	47

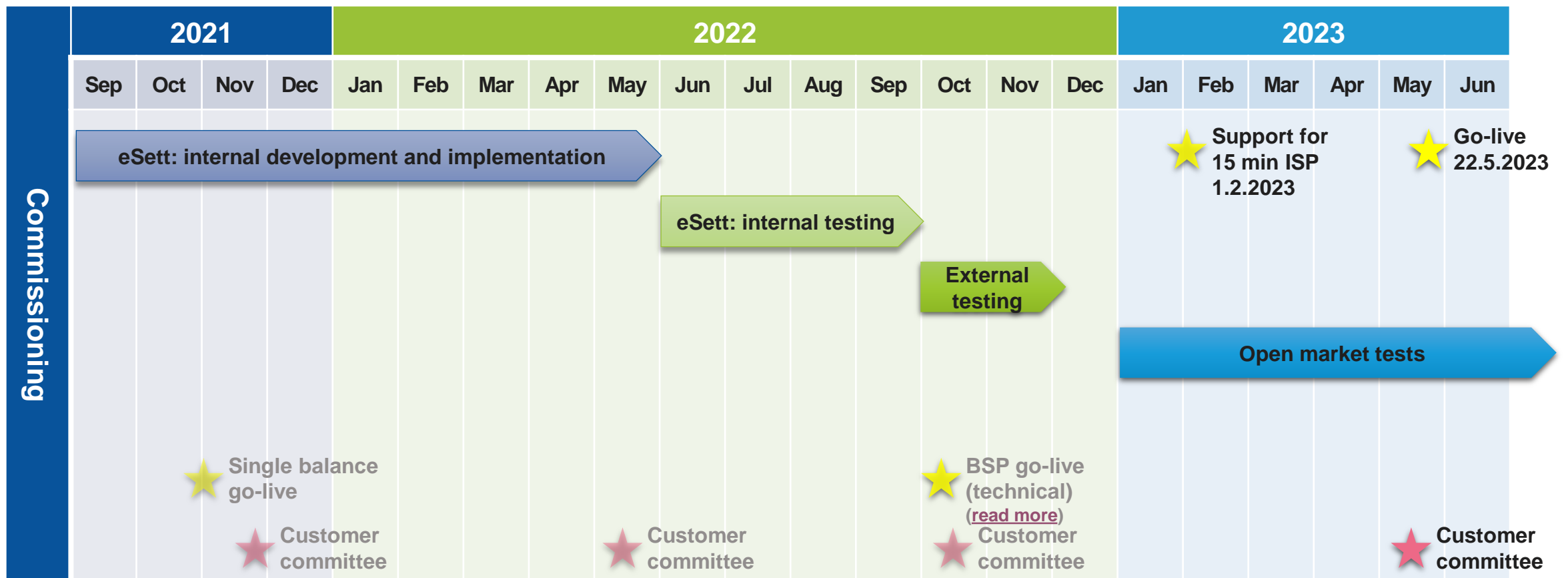
Change Log

Date	Version	Change Log
1.11.2021	1.0	Initial version
29.11.2021	1.1	<p>Clarifications based on feedback from Customer Committee and TSOs:</p> <ol style="list-style-type: none"> 1. eSett handles the aggregation of reported 15 min data into 60 min during February-May 2023. 2. Description of MEC structure resolutions in Settlement Structures. 3. General clarifications for Data Metering and Reporting. 4. New slide to clarify limitations for data reporting around the go-live: Data Reporting – Limitations.
4.1.2022	1.2	<p>Corrected CET (Central European Time) → CEST (Central European Summer Time) in couple of places, where CEST was supposed to be used.</p> <p>Clarified that providing hourly DPs for delivery days after 15 min ISP go-live are still under evaluation.</p>
11.2.2022	1.3	<p>Delay of automated operation of Nordic mFRR EAM - imbalance price will be same in all four quarters of an hour until actual 15-minute prices are available.</p> <p>File split for incoming data flows around the go-live support national time zones: Data Reporting – Limitations.</p> <p>After go-live eSett provides <i>specific data packages</i> in both 15 and 60 min resolutions.</p> <p>Updated test environment details for ECP channel.</p>
24.2.2022	1.4	<p>Updated mitigation measures throughout the document; conversion from 60 min to 15 min after go-live, possibility to use nationally 'Hourly netted imbalance fee' and 'Q-H-Q conversion'.</p> <p>An example of conversion options: Data Reporting – Conversions for Incoming Data.</p>
6.4.2022	1.5	<p>Minor updates to commissioning time schedule.</p> <p>National Milestones.</p> <p>Examples of imbalance costs and fees during the intermediate solution.</p> <p>List of data packages available also in 60 min after 22.5.2023.</p> <p>BRP's obligation to agree on a reporting resolution for bilateral trades with the counter BRP(s).</p>
17.6.2022	1.6	<p>Updates into national plans and timelines. eSett accepts 15 min input data starting from 1.2.2023.</p> <p>Minor updates to testing information, e.g. testing against eSett in eSett's test environment shall be possible also after 22.5.2023.</p> <p>Updated list of data packages available also in 60 min after 22.5.2023 with four (4) new event-based data packages for DSOs.</p> <p>Clarifications to examples of reporting around the go-live.</p>
11.10.2022	1.7	<p>All Nordic TSOs confirmed the use of 'Hourly netted imbalance fee' option until 15 min imbalance prices are in use. Consequently 'Q-H-Q conversion' won't be applied.</p> <p>New Nordic and National timelines added, and national milestone for Denmark (Energinet DataHub) updated.</p> <p>Updated 0 min gate closure for Bilateral Trades in Finland, starting from 22.5.2023.</p>

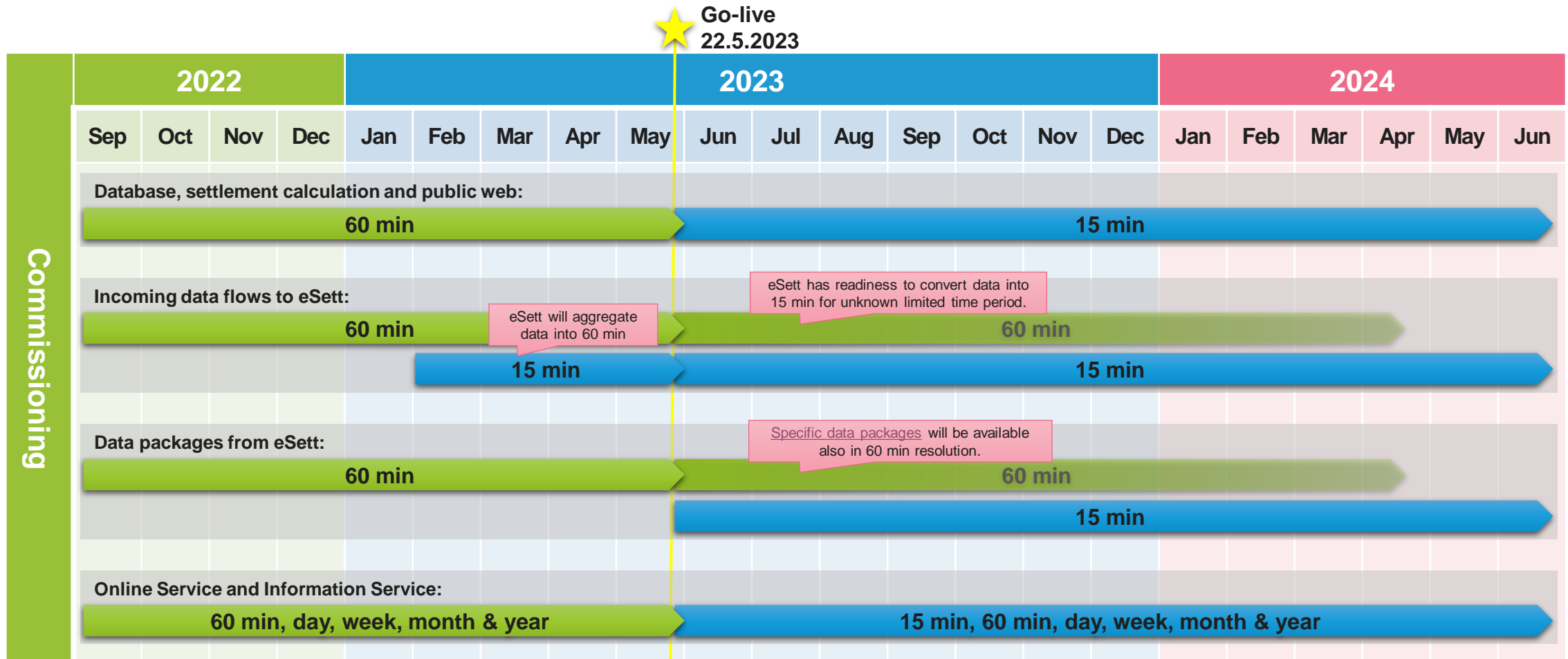
Change Log

Date	Version	Change Log
16.2.2023	1.8	In Sweden, Bilateral Trades should continue with 60-minute trades until the 15 min ISP go-live on 1.11.2023. More details added for the Open Market Tests .
17.5.2023	1.9	Clarified the gate closures for Bilateral Trades. The reporting window will close <ul style="list-style-type: none">• 45 min (NO and SE) before each hour.• 20 min (DK) or 0 min (FI) before each 15-minute ISP.
6.9.2023	2.0	Updated texts after the go-live of 22.5.2023. Updated time schedule for Norway.

15 min Commissioning Time Schedule – eSett

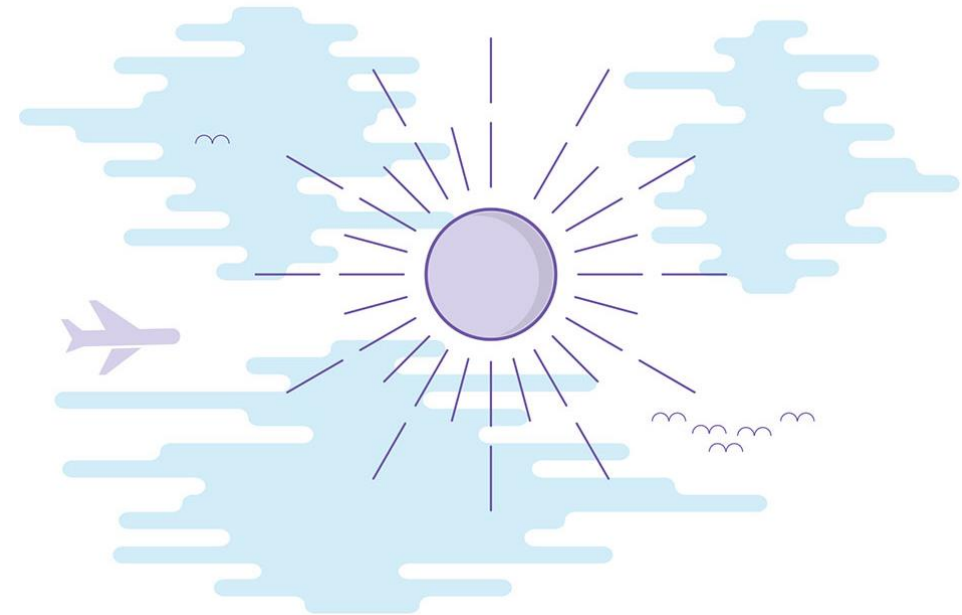


15 min Commissioning Time Schedule – eSett’s resolutions

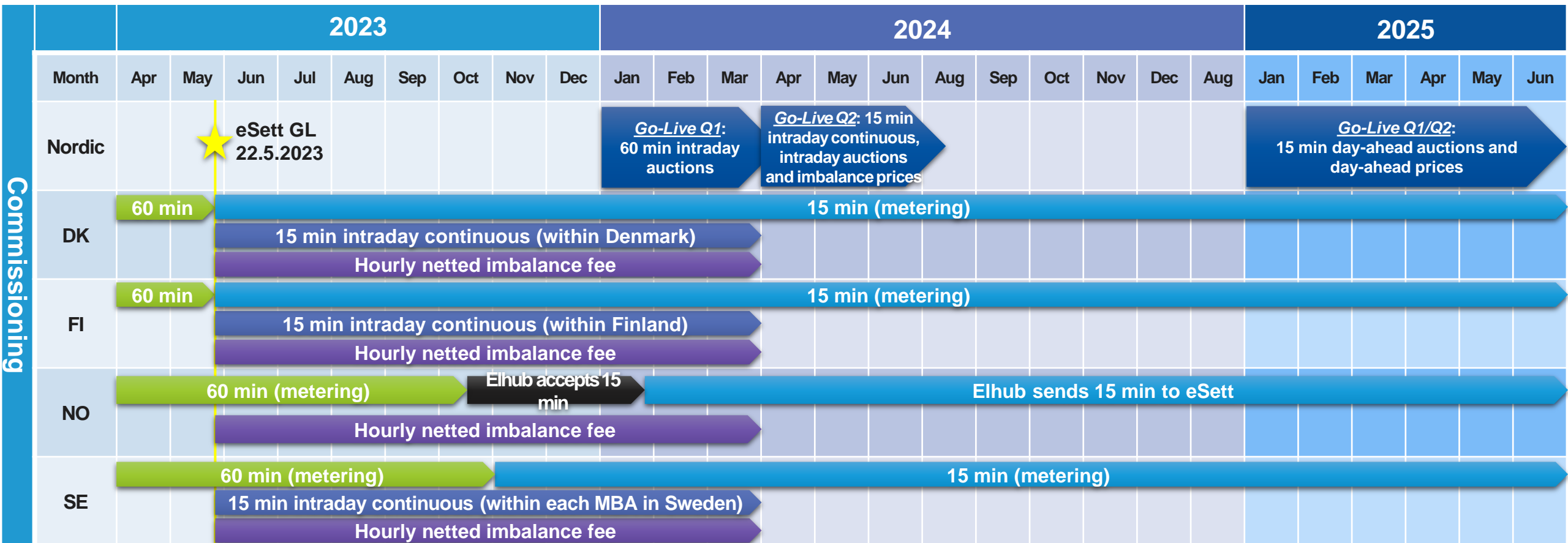


Starting Points for the Go-Live

1. Simultaneous change in all NBS countries on [22.05.2023 at 00:00 CEST](#)
2. Imbalance settlement data and calculations follow
 - a) *hourly* resolution for delivery days before the go-live
 - b) *15 min* resolution for delivery days after the go-live
3. Data flows, both incoming and outgoing, **cannot** cover a time period that exceeds the go-live time
 - e.g. a data flow covering the period 21.-22.5.2023 (in CEST) has to be split into two data flows:
 - 21.5.2021 00-24 CEST – in *hourly* resolution
 - 22.5.2021 00-24 CEST – in *15 min* resolution
4. Capacity Reserves will remain in hourly resolution
5. Imbalance price will be same for each quarter within an hour until 15 min prices are available and used
 - In combination with "**Hourly netted imbalance fee**" the *financial settlement* won't change from hourly ISP.
 - **This is the selected option of all Nordic TSOs, until 15 min imbalance prices are in use.**
 - In combination with "[Q-H-Q conversion](#)" the *energy quantities* won't change from hourly ISP.



15 min Commissioning Time Schedule – Nordic and National Timelines*



Nordic and National Milestones

Nordic milestones:

- *60 min intraday auctions:* Q1/2024
- *15 min for imbalance prices, intraday continuous and intraday auctions:* Q2/2024
- *15 min day-ahead auctions and prices:* estimated in 2025

Denmark:

- *DataHub:* Accepts 15 min data from Q2 2023 and then provides 15 min values to eSett.

Finland:

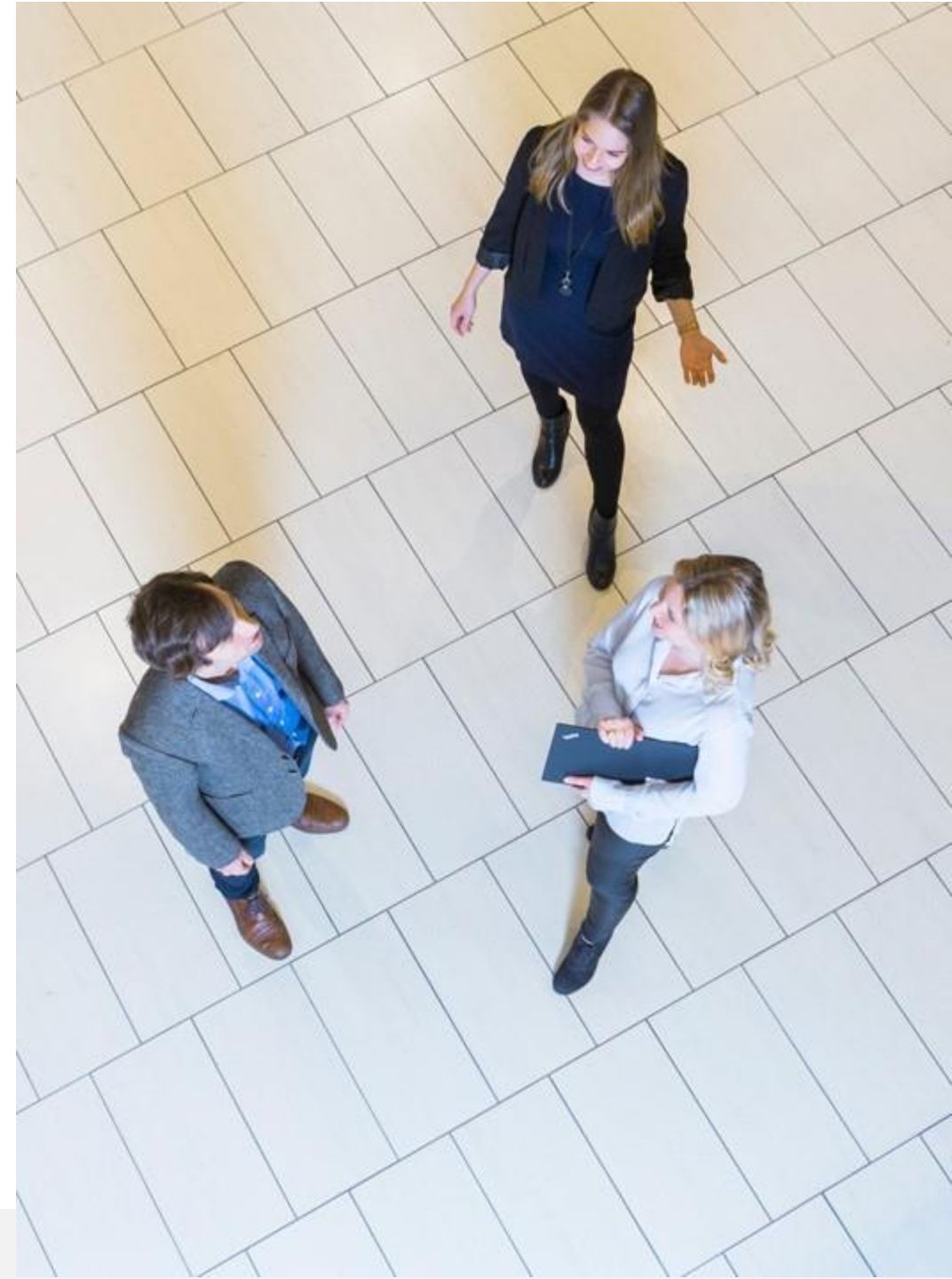
- *Datahub:* Accepts 15 min data from 1.1.2023 and provides 15 min values to eSett from 22.5.2023.
- *Energy metering:* 15 min from 22.5.2023 (VNA 767/2021).

Norway:

- *Elhub:* Will accept 15 min data from 16.10.2023 and will provide 15 min values to eSett from 22.1.2024
 - Values converted into 15 min data by eSett between 22.5.2023 and 22.1.2024.

Sweden:

- *Energy metering and reporting:* 15 min from 1.11.2023 (Förordning 1999:716)



The Effects of 15 Minutes Imbalance Settlement Period on Business and Market Processes

Settlement Structures

Settlement structure information is information about the market participants and their relations to each other (e.g. the relationship between a BRP and an RE), market entities and market entity connections.

- Currently, settlement structures are managed on a daily level in the national time zone: EE(S)T, CE(S)T or SNT.
- 15 min ISP **will not** have any impact on settlement structure management.
- Timeseries structures (MECs):
 - eSett uses same timeseries for hourly and 15 min ISP imbalance settlement (i.e. same MEC IDs).
 - The resolution for MECs in database is 60 min for days before 22.5.2023 00:00 CEST – even after the go-live.
 - The resolution for MECs in database is 15 min for days starting from 22.5.2023 00:00 CEST.

ISP in CEST	Value in database
21.05.2021 22:00-23:00	60
21.05.2021 23:00-24:00	60
22.05.2021 00:00-00:15	15
22.05.2021 00:15-00:30	15
22.05.2021 00:30-00:45	15
22.05.2021 00:45-01:00	15



Data Metering and Reporting

- **Metering** of imbalance settlement data before and after go-live needs to follow **national rules and instructions from TSOs**.
- The reporting resolution towards eSett for delivery days before go-live, is **hourly**.
 - Starting from 1.2.2023 eSett has accepted 15 min data, which shall then be converted into 60 min by eSett.
- The reporting resolution towards eSett for delivery days after go-live, is **15 min**.
 - After go-live eSett has an ability to accept 60 min data, which shall be converted into 15 min values. This conversion shall be applied for a limited unknown time period.
- Bilateral Trade reporting window will close
 - 45 min (NO and SE) before each hour.
 - 20 min (DK) or 0 min (FI) before each 15-minute ISP.
- Bilateral Trade reporting in Sweden should continue in 60-minute resolution until the application of 15 min ISP on 1.11.2023.
- Reporting of negative consumption losses values is possible for delivery days after go-live.



* *Full 15 min ISP* means here introduction of 15 min imbalance prices and 15 min cross-border intraday market

Data Reporting – Conversions for Incoming Data

There shall be three types of possible data conversions in eSett:

1. Aggregation of 15 min data into 60 min before go-live.
2. Conversion of 60 min data into 15 min after go-live.
 - May lead to minor rounding errors – eSett shall apply 6 decimals for MWh and 3 decimals for kWh.

3. Each TSO has an **option** to nationally apply “Q-H-Q conversion” after go-live.
 - “Quarter-hour – Hour – Quarter-hour conversion”.
 - Reported 15 min data is first aggregated into 60 min and converted back into 15 min.
 - Each 15 min ISP shall have same quantity within an hour.
 - **Will not be applied by any of the Nordic TSOs.**

Time	Conversion 1 before GL [MWh]		Conversion 2 after GL [kWh]		“Q-H-Q conversion” [MWh]		
Hours & minutes	Input	Converted	Input	Converted	Input	Calculated	Converted
00:00-00:15	2,3	8,9	11,288	2,822	2,4	9,1	2,275
00:15-00:30	2,2			2,822	2,3		2,275
00:30-00:45	2,2			2,822	2,2		2,275
00:45-01:00	2,2			2,822	2,2		2,275
01:00-01:15	2,2	9,6	12,030	3,008*	2,2	9,3	2,325
01:15-01:30	2,3			3,008*	2,3		2,325
01:30-01:45	2,4			3,008*	2,3		2,325
01:45-02:00	2,7			3,008*	2,5		2,325
02:00-02:15	2,8	11,7	10,699	2,675*	2,7	11,0	2,75
02:15-02:30	3,0			2,675*	2,8		2,75
02:30-02:45	3,0			2,675*	2,8		2,75
02:45-03:00	2,9			2,675*	2,7		2,75

* Rounded value

Data Reporting

- Same data flow formats will be used also for the reporting in 15 min resolution.
 - Nordic Market Expert Group (NMEG) is responsible for the development and maintenance of the Business Requirement Specifications (BRS), user guides and xml schemas for the NBS processes.
 - Documents can be found [here](#).
 - eSett also provides communication guidelines on the [website](#).
- New time series attribute for resolution has been introduced: 'PT15M'.
 - BRS documents are updated to include the new 15 min resolution attribute: 'PT15M'.
- In 15 min resolution, there are 4 times more positions in the time series during the same period.
- The quantity within the 15 min resolution time series is (about) one fourth of the hourly quantity, since the imbalance settlement data is in energy (MWh/kWh).

Hourly data	Split 15 min data	Metered 15 min data
<pos>1</pos> <qty>10.0</qty>	<pos>1</pos> <qty>2.5</qty>	<pos>1</pos> <qty>2.1</qty>
	<pos>2</pos> <qty>2.5</qty>	<pos>2</pos> <qty>2.3</qty>
	<pos>3</pos> <qty>2.5</qty>	<pos>3</pos> <qty>2.6</qty>
	<pos>4</pos> <qty>2.5</qty>	<pos>4</pos> <qty>3.0</qty>



Updated Business Requirement Specification (BRS) documents

BRS/document	Previous resolution	New resolution
NBS BRS		
NEG (ebIX® based) Validated Data for Settlement for Aggregator (E66, E44)	PT1H or PT60M	PT1H, PT60M or PT15M
NEG (ebIX® based) Aggregated Data per MGA (E31, E44) – consumption	PT1H or PT60M	PT1H, PT60M or PT15M
NEG (ebIX® based) Aggregated Data per MGA (E31, E44) – production	PT1H or PT60M	PT1H, PT60M or PT15M
NEG (ebIX® based) Aggregated Data Per Neighboring Grid For Settlement Responsible (E31, E44)	PT1H or PT60M	PT1H, PT60M or PT15M
NEG Confirmation of Aggregated Data Per Neighboring Grid From Settlement Responsible (A07/A08, Z44)	PT1H or PT60M	PT1H, PT60M or PT15M
NEG ESP Energy Account Report Document (EAR)	PT1H or PT60M	PT1H, PT60M or PT15M
ENTSO-E ESS Schedule Document	PT1H or PT60M	PT1H, PT60M or PT15M
ENTSO-E ESS Confirmation Report	PT1H or PT60M	PT1H, PT60M or PT15M
NBS BRS for TSO-MO		
ENTSO-E ESS Schedule document	PT1H or PT60M	PT1H, PT60M or PT15M
ENTSO-E ERRP Planned resource schedule	PT1H or PT60M	PT1H, PT60M or PT15M
Ediel ERRP Reserve Allocation Result Document	PT1H or PT60M	PT1H, PT60M or PT15M
Ediel ECAN Publication Document	PT1H or PT60M	PT1H, PT60M or PT15M

Example of Data Reporting Changes between Hourly and 15 min ISP

```
<Header>
...
</Header>
<ProcessEnergyContext>
...
</ProcessEnergyContext>
<PayloadEnergyTimeSeries>
  <Identification>awiuHbSZb0OmTTg1VQKyrw</Identification>
  <RegistrationDateTime>2021-04-06T03:40:02Z</RegistrationDateTime>
  <ObservationPeriodTimeSeriesPeriod>
    <ResolutionDuration>PT1H</ResolutionDuration>
    <Start>2021-04-04T22:00:00Z</Start>
    <End>2021-04-05T22:00:00Z</End>
  </ObservationPeriodTimeSeriesPeriod>
  <ProductIncludedProductCharacteristic>
    <Identification schemeAgencyIdentifier="9">8716867000030</Identification>
    <UnitType listAgencyIdentifier="330">MWH</UnitType>
  </ProductIncludedProductCharacteristic>
  <MPDeorlMeasurementMeteringPointCharacteristic>
    <MeteringPointType listAgencyIdentifier="260">E18</MeteringPointType>
  </MPDeorlMeasurementMeteringPointCharacteristic>
  <MeteringPointUsedDomainLocation>
    <Identification schemeAgencyIdentifier="9">642061641092395092</Identification>
  </MeteringPointUsedDomainLocation>
  <ObservationIntervalObservationPeriod>
    <Sequence>1</Sequence>
    <ObservationDeorlEnergyObservation>
      <EnergyQuantity>24.448</EnergyQuantity>
    </ObservationDeorlEnergyObservation>
  </ObservationIntervalObservationPeriod>
  ...
  <ObservationIntervalObservationPeriod>
    <Sequence>24</Sequence>
    <ObservationDeorlEnergyObservation>
      <EnergyQuantity>24.448</EnergyQuantity>
    </ObservationDeorlEnergyObservation>
  </ObservationIntervalObservationPeriod>
</PayloadEnergyTimeSeries>
```

Resolution: PT1H → PT15M

Number of positions for one day:
24 → 96
Quantity (MWh/kWh): 1 → ~1/4

```
<Header>
...
</Header>
<ProcessEnergyContext>
...
</ProcessEnergyContext>
<PayloadEnergyTimeSeries>
  <Identification>awiuHbSZb0OmTTg1VQKyrw</Identification>
  <RegistrationDateTime>2021-04-06T03:40:02Z</RegistrationDateTime>
  <ObservationPeriodTimeSeriesPeriod>
    <ResolutionDuration>PT15M</ResolutionDuration>
    <Start>2021-04-04T22:00:00Z</Start>
    <End>2021-04-05T22:00:00Z</End>
  </ObservationPeriodTimeSeriesPeriod>
  <ProductIncludedProductCharacteristic>
    <Identification schemeAgencyIdentifier="9">8716867000030</Identification>
    <UnitType listAgencyIdentifier="330">MWH</UnitType>
  </ProductIncludedProductCharacteristic>
  <MPDeorlMeasurementMeteringPointCharacteristic>
    <MeteringPointType listAgencyIdentifier="260">E18</MeteringPointType>
  </MPDeorlMeasurementMeteringPointCharacteristic>
  <MeteringPointUsedDomainLocation>
    <Identification schemeAgencyIdentifier="9">642061641092395092</Identification>
  </MeteringPointUsedDomainLocation>
  <ObservationIntervalObservationPeriod>
    <Sequence>1</Sequence>
    <ObservationDeorlEnergyObservation>
      <EnergyQuantity>6.112</EnergyQuantity>
    </ObservationDeorlEnergyObservation>
  </ObservationIntervalObservationPeriod>
  ...
  <ObservationIntervalObservationPeriod>
    <Sequence>96</Sequence>
    <ObservationDeorlEnergyObservation>
      <EnergyQuantity>6.112</EnergyQuantity>
    </ObservationDeorlEnergyObservation>
  </ObservationIntervalObservationPeriod>
</PayloadEnergyTimeSeries>
```

Data Reporting – Limitations

- Incoming message file can't contain data that overlaps the go-live time 22.05.2023 00:00 **per national time zone**.
 - For example, reporting for period 21.-22.05.2023 is not possible.
 - This applies also for files reported in 15 min resolution, even though reporting in 15 min is enabled even before go-live.
 - Parties in Finland and Sweden that report data in EEST or SNT can split their reporting in that time zone (00:00 EEST/SNT) i.e. there is no need to split the file 01:00 EEST or 23:00 SNT.
 - Reporting in CEST is also okay in Finland and Sweden.
- Outgoing data packages are split into two files for period before and after 22.05.2023 00:00 **CEST**.
- One message file can only contain timeseries either in 15 min or hourly resolution.

15 min data aggregated into 60 min for the one hour.

60 min data split into 15 min for the one hour.

Time (CEST)		Reporting time zone:			
		CEST	EEST	SNT	
20.5.2023	00:00	60 min (or 15 min) reporting	60 min (or 15 min) reporting	60 min (or 15 min) reporting	– = Accepted file split per reporting time zone.
	...				
	24:00				
21.5.2023	00:00				
	...				
	23:00				
	23-24				
22.5.2023	00-01	15 min (or 60 min) reporting	15 min (or 60 min) reporting	15 min (or 60 min) reporting	
	01:00				
	...				
	24:00				
23.5.2023	00:00				
	...				
	24:00				

Imbalance Settlement

- For the period after the go-live, imbalance settlement is calculated for every 15 min ISP.
- There are no changes in the calculation, used data, settlement schedules etc.
- Note: imbalance price will be same in all four quarters of an hour until actual 15-minute prices are available.
 - In combination with "Hourly netted imbalance fee" the *financial settlement* won't change from hourly ISP.
 - **This is the selected option of all Nordic TSOs, until 15 min imbalance prices are in use.**
 - In combination with "Q-H-Q conversion" the *energy quantities* won't change from hourly ISP.

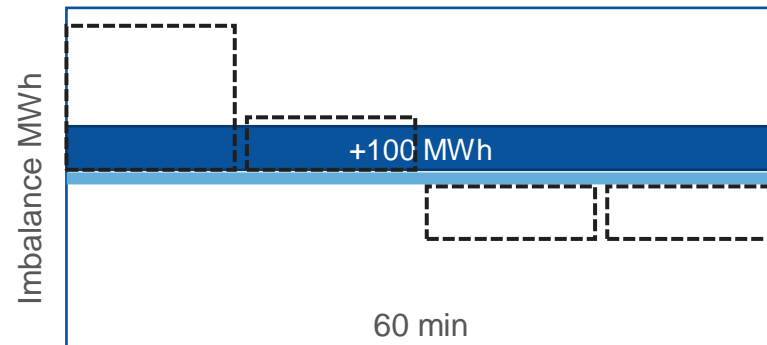


Example: Imbalance costs during the intermediate period

No uncontrollable costs for BRPs due to intermediate solution

Today: Imbalance settlement period 60 min, single price model

Imbalance price 50 €/MWh (example)



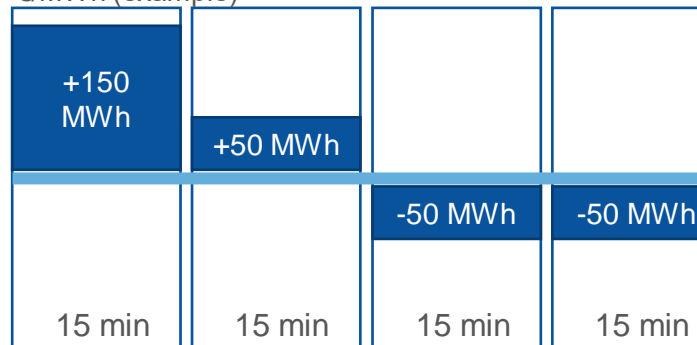
BRP imbalance cost over an hour

$$+100 \text{ MWh} \times 50 \text{ €/MWh} = +5000 \text{ €}$$

5000 €

Applied in all Nordic countries.

Country option: "Hourly netted imbalance fee"
From 22.5.2023 until 15 min imbalance prices & 15 min cross-border intraday market
"Actual quarterly imbalances"
 Same imbalance price for each quarter of an hour 50 €/MWh (example)

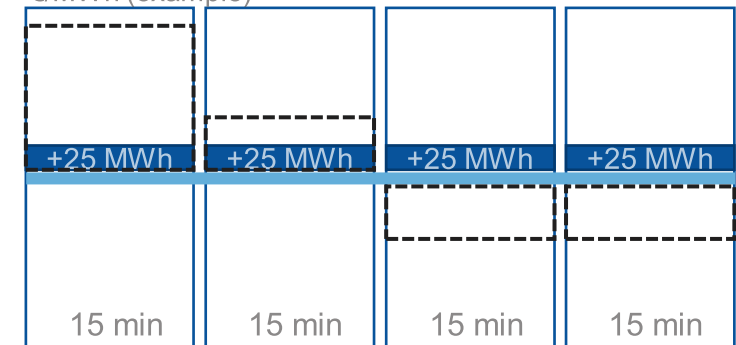


BRP imbalance cost over an hour

$$\begin{aligned}
 &+150 \text{ MWh} \times 50 \text{ €/MWh} &&= +7500 \text{ €} \\
 &+50 \text{ MWh} \times 50 \text{ €/MWh} &&= +2500 \text{ €} \\
 &-50 \text{ MWh} \times 50 \text{ €/MWh} &&= -2500 \text{ €} \\
 &-50 \text{ MWh} \times 50 \text{ €/MWh} &&= -2500 \text{ €} \\
 \hline
 &&&\mathbf{5000 \text{ €}}
 \end{aligned}$$

Not applied.

Country option: "Q-H-Q Conversion"
From 22.5.2023 until 15 min imbalance prices & 15 min cross-border intraday market
"Identical quarterly imbalances"
 Same imbalance price for each quarter of an hour 50 €/MWh (example)

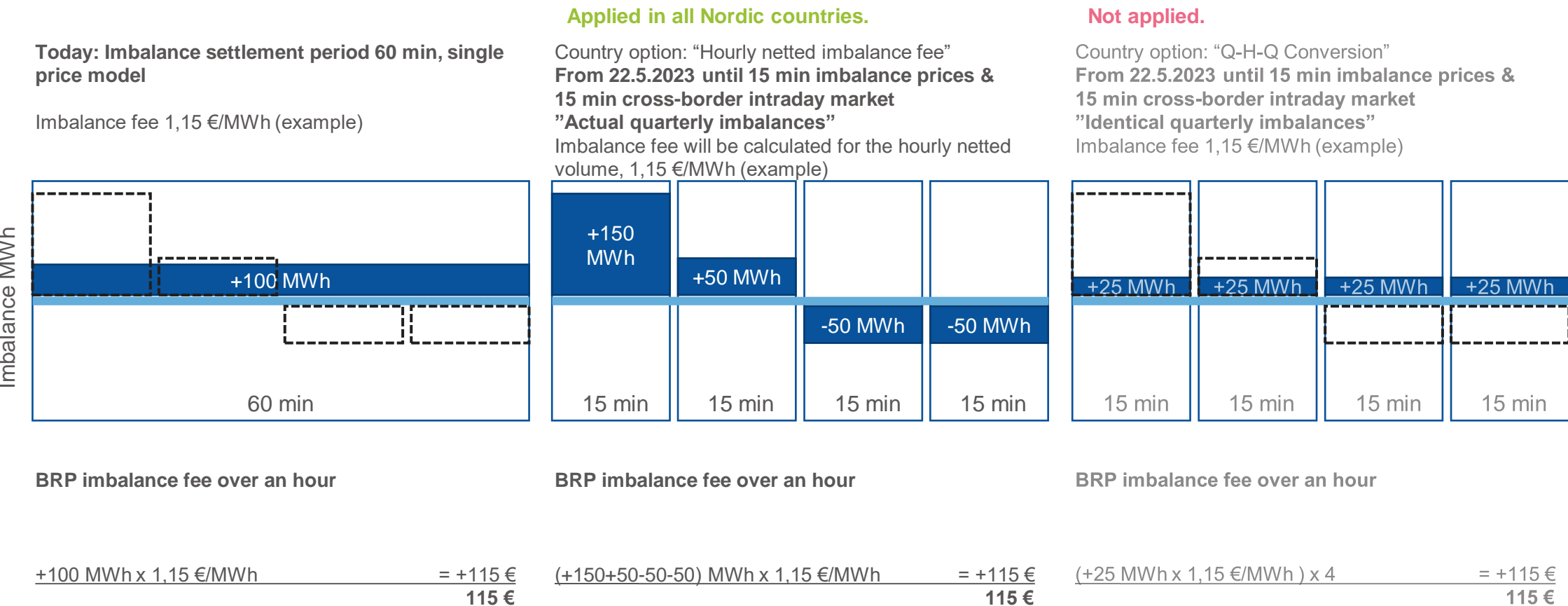


BRP imbalance cost over an hour

$$\begin{aligned}
 &+25 \text{ MWh} \times 50 \text{ €/MWh} &&= +1250 \text{ €} \\
 &+25 \text{ MWh} \times 50 \text{ €/MWh} &&= +1250 \text{ €} \\
 &+25 \text{ MWh} \times 50 \text{ €/MWh} &&= +1250 \text{ €} \\
 &+25 \text{ MWh} \times 50 \text{ €/MWh} &&= +1250 \text{ €} \\
 \hline
 &&&\mathbf{5000 \text{ €}}
 \end{aligned}$$

Example: Imbalance fee during the intermediate period

No uncontrollable costs for BRPs due to intermediate solution



Reporting of Results

- For the delivery days **before** the go-live, none of the data will be available in the 15 min resolution.
- For the delivery days **after** the go-live:
 - Data packages:
 - Support for 15 min data for all data packages
 - Support for 60 min data for *specific time-based data packages*
 - Market parties **need to** change their subscriptions **independently** in Online Service
 - Information Service:
 - Support for all resolutions: 15 min, hour, day, week, month and year
 - The request determines the resolution
 - Online Service
 - New default resolution is 15 min
 - Resolutions hour, day, week, month and year also available
 - Public Data has only 15 min resolution.

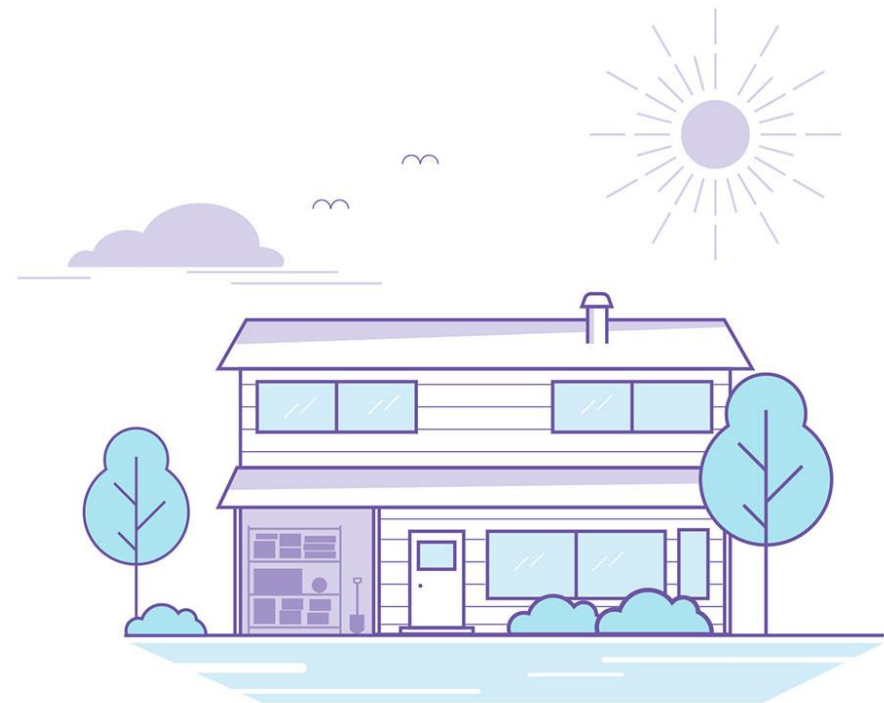


Data packages available also in 60 min resolution after 22.5.2023

Data package	Frequency/Event	Period	Available
Bilateral trades	Daily	D-14 to D-1	BRP
Imbalance per BRP per MBA (Volume and Amount)	Daily	D-14 to D-1	BRP
Imbalance prices per Market Balance Area (MBA)	Daily	D-14 to D-1	BRP
MGA Imbalances	Daily	D-14 to D-1	BRP & DSO
Primary/Secondary/Tertiary Reserves (own DP per type)	Daily	D-14 to D-1	BRP & BSP
Production per production unit (PU)	Daily	D-14 to D-1	BRP & DSO
Production plan per BRP and RO	Daily	D-14 to D-1	BRP
PX Trades (own DP per type)	Daily	D-14 to D-1	BRP
REs' consumption data per type and MGA	Daily	D-14 to D-1	BRP & DSO
REs' Merged Production Data per Type and MGA	Daily	D-14 to D-1	BRP & DSO
Metering Grid Area (MGA) losses per MGA	Daily	D-14 to D-1	DSO
MGA Exchanges	Daily	D-14 to D-1	DSO
MGA Exchange Intermediate Confirmation Report	After MGXI update	Same as MGXI	DSO
MGA Exchange Final Confirmation Report	Final calculation	D-13 to D-13	DSO
MGA Imbalance - Preliminary Results	Preliminary calculation	D-12 to D-1	DSO
MGA Imbalance - Final Results	Final calculation	D-13 to D-13	DSO

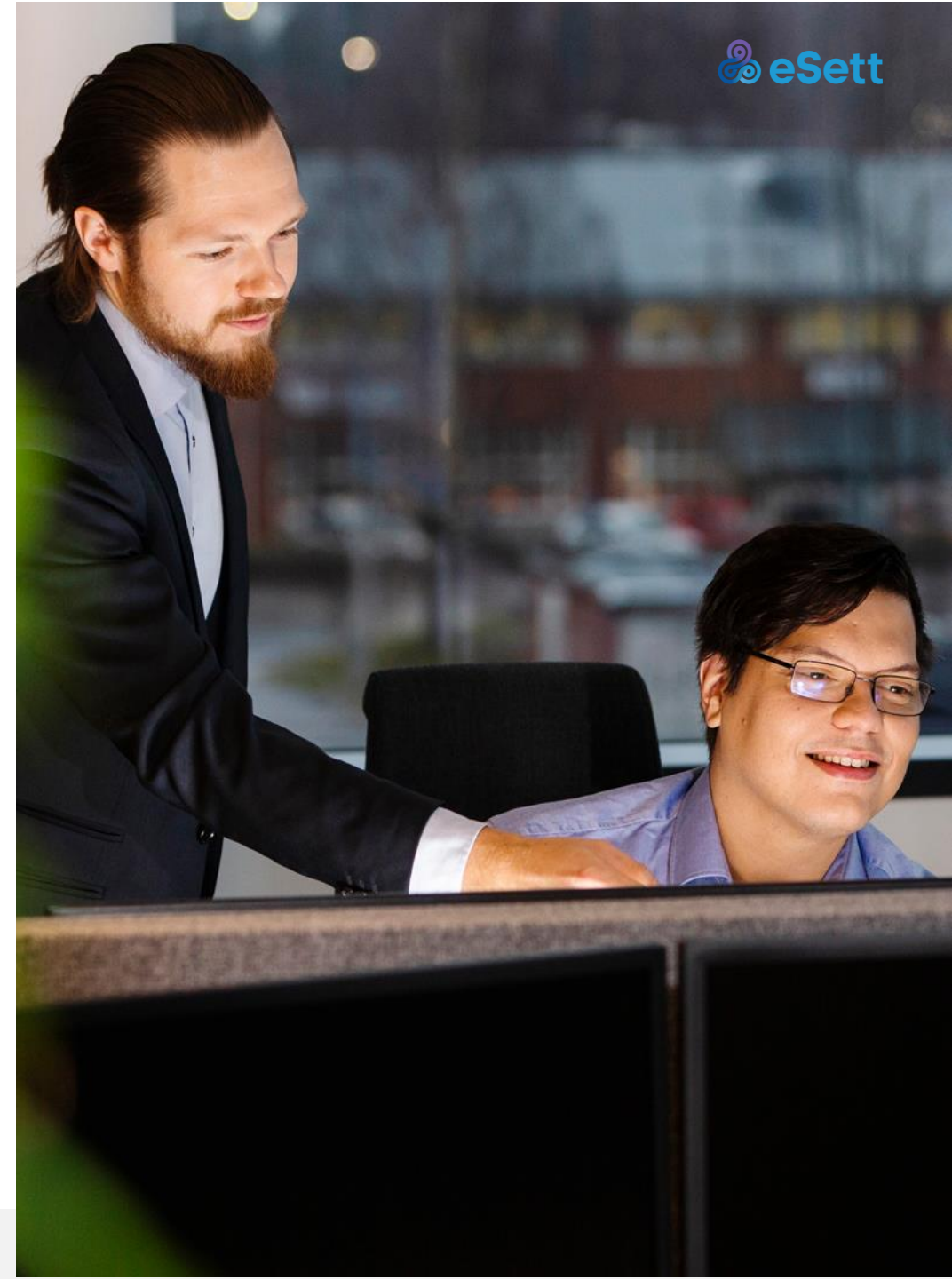
Invoicing and Collaterals

- 15 min Imbalance Settlement Period brings no changes to Invoicing or Collaterals.
- Each Nordic TSO applies “Hourly netted imbalance fee” after the transition to 15 min ISP.
 - Imbalance fee is calculated per hourly netted imbalance quantity i.e. surplus and deficit within an hour cancel each other out to some extent.
 - Applied per country on TSOs’ decision until 15 min imbalance prices shall be in use.



Market Behaviour Monitoring

- There are no changes in Market Behaviour Monitoring due to 15 min Imbalance Settlement Period.



Online Service

- New default time aggregation: 15 min
 - Limited to 7 days of data.
 - Exporting longer periods to Excel is still possible.
 - 15 min aggregation does not display anything before 22.05.2023.

Time Aggregation

15 min Hour Day Week Month Year

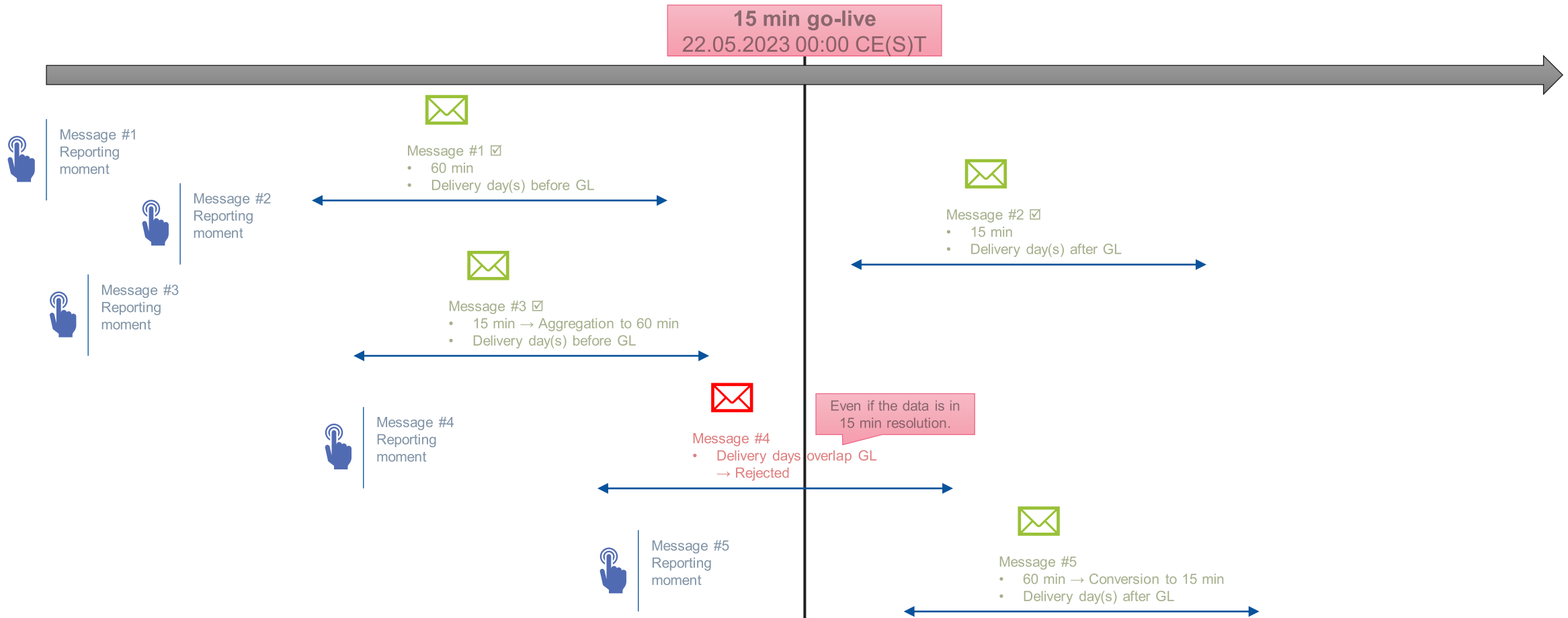
- Input data is in 15 min resolution starting from delivery day 22.05.2023.
- Selecting a time interval that overlaps the go-live date is not possible for some views.
 - For example, the Input Data details can only display either period with hourly resolution or a period with 15 min resolution.

Hourly Status	Date	Interval	Own Quantity [MWh]	Counter Quantity [MWh]	Matched Quantity [MWh]	Matched Quantity Status
Load previous day						
Open	22.05.2023	00:00-00:15	4,150000	← -4,200000	4,150000	Corrected
1 h 53 m to 3rd GC	22.05.2023	00:15-00:30	3,900000	← -3,900000	3,900000	Matched
	22.05.2023	00:30-00:45	3,800000	← -3,800000	3,800000	Matched
	22.05.2023	00:45-01:00	3,700000	← -3,700000	3,700000	Matched
	22.05.2023	01:00-01:15	3,800000	← -3,800000	3,800000	Matched
	22.05.2023	01:15-01:30	4,560000	← -4,500000	4,500000	Corrected
	22.05.2023	01:30-01:45	5,000000	← -5,000000	5,000000	Matched
	22.05.2023	01:45-02:00	5,300000	← -5,300000	5,300000	Matched
	22.05.2023	02:00-02:15	5,300000	← -5,300000	5,300000	Matched
	22.05.2023	02:15-02:30	5,500000	← -5,500000	5,500000	Matched

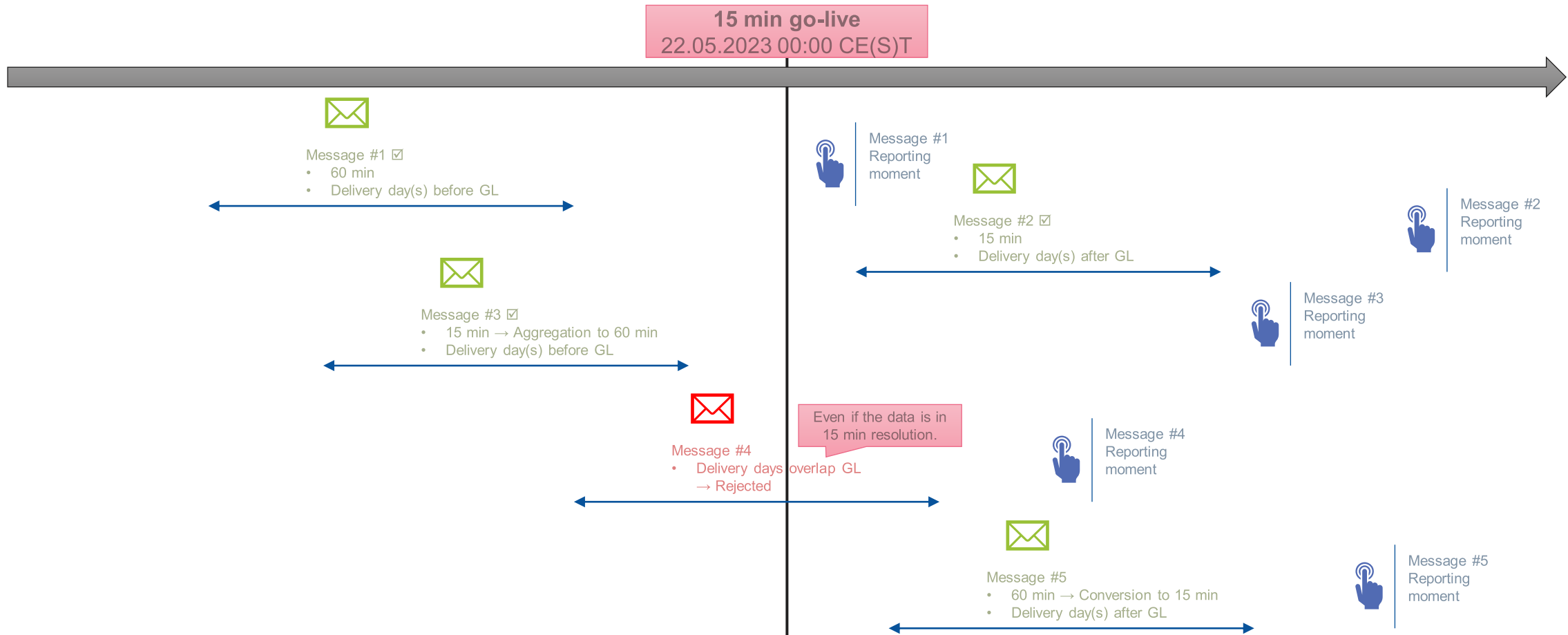
Input Data example in 15 min resolution.

Reporting around the Go-Live

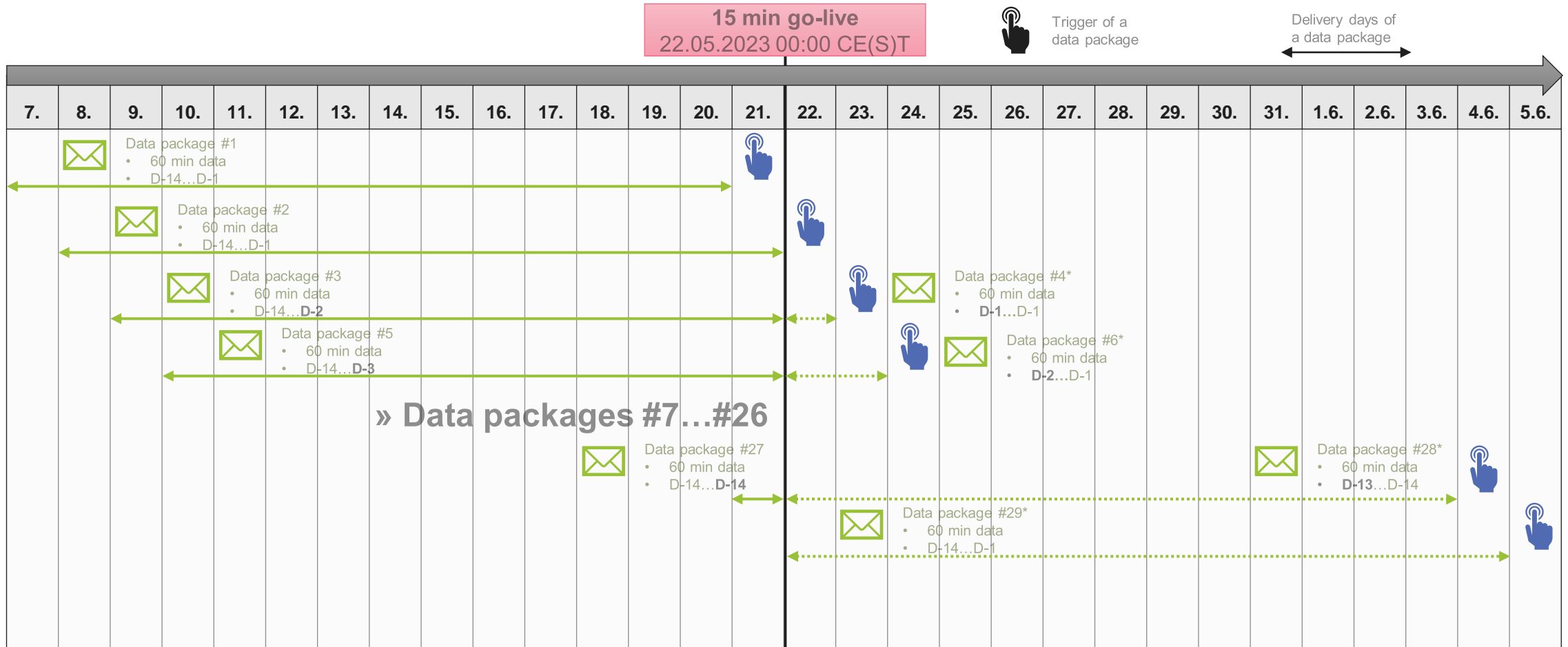
Reporting to eSett before the GL – For example bilateral trades



Reporting to eSett after the GL – For example metered data



Reporting from eSett around the GL – 60 min data packages (D-14 ... D-1 in CEST)



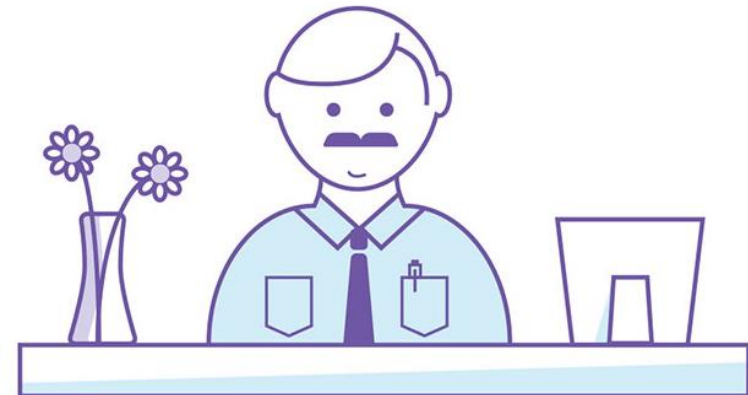
* **Note!** Only limited number of data packages available also in 60 min resolution after 22.5.2023. Separate subscription is required via Online Service.



Responsibilities and Obligations of the Parties against eSett

Responsibilities and Obligations of the Parties – eSett

- Commissioning and operation of the Nordic imbalance settlement system and its interfaces.
- Providing guidance and testing support to stakeholders.



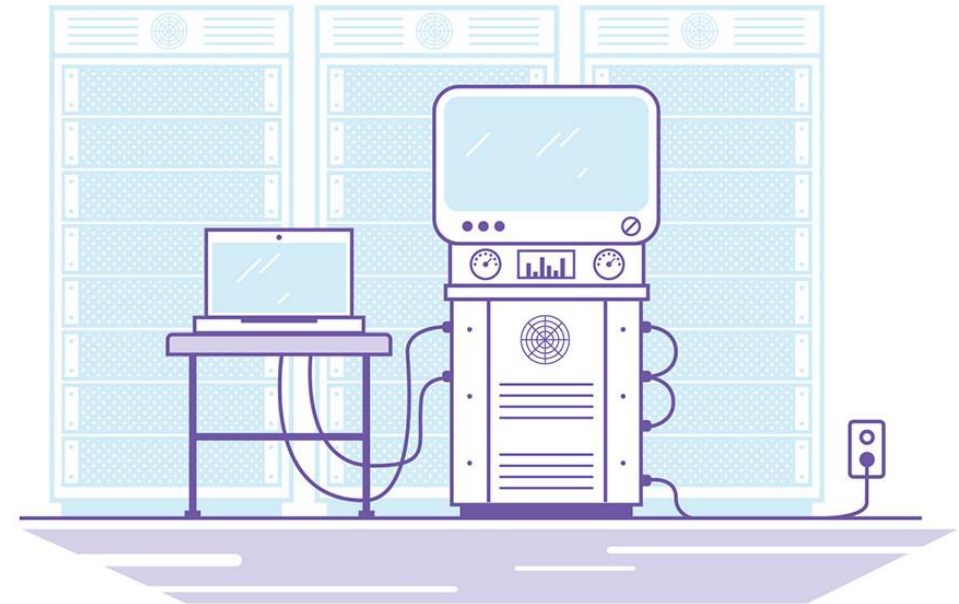
Responsibilities and Obligations of the Parties – TSO

- Updating the TSO systems to support the 15 min ISP for relevant parts and interfaces.
- Calculating reserve volumes and amounts, and determining imbalance prices per imbalance settlement period.
- Submitting necessary information per BRP to eSett for the imbalance settlement of the BRPs; e.g. production plans and reserves per imbalance settlement period.
- Joint decision from Nordic TSOs regarding the use of conversion from 60 min to 15 min:
 - Applicable data flows
 - Duration of the conversion.
- Decision if any of the following mitigation measures is applied nationally and for how long:
 - “Hourly netted imbalance fee”
 - “Q-H-Q conversion”.



Responsibilities and Obligations of the Parties – DSO/Datahub

- Updating the DSO/Datahub systems to support the 15 min ISP for relevant parts and interfaces.
- Metering of production, consumption and exchange with adjacent grids as defined in the national regulations.
- Calculation of load profile shares according to national guidelines.
- Calculation and reporting of production, consumption and exchange data per imbalance settlement period to eSett.
- Successfully receive subscribed imbalance settlement data per ISP.



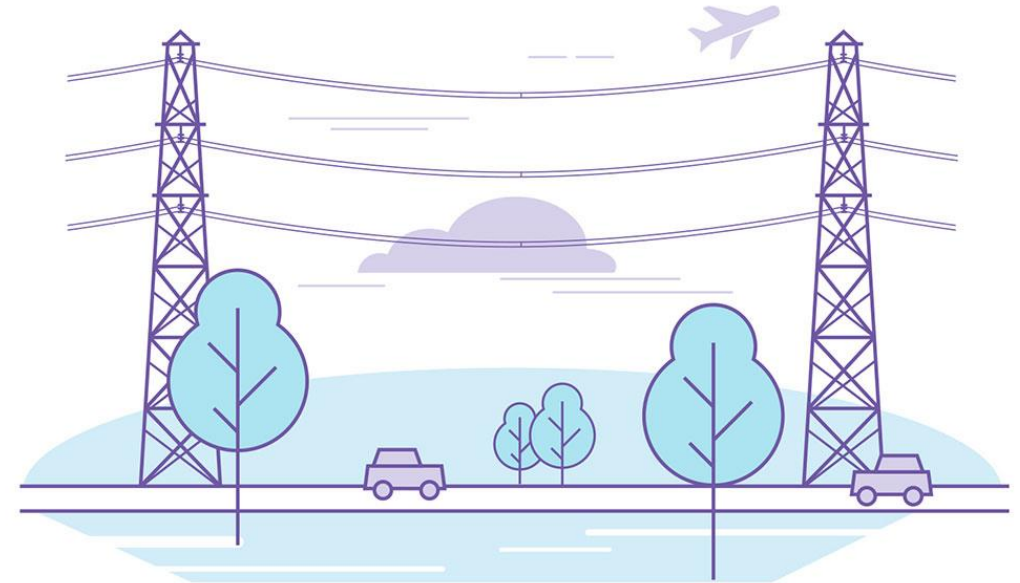
Responsibilities and Obligations of the Parties – BRP

- Updating the BRP systems to support the 15 min ISP for relevant parts and interfaces.
- Submitting bilateral trade data to eSett per ISP.
- Successfully receive subscribed imbalance settlement data per ISP.
- Agree on a reporting resolution(s) for bilateral trade(s) with the counter BRP(s).
 - One BRP reporting in 15 min resolution and another in 60 min resolution might lead to mismatching values after 22.5.2023 as conversion for 60 min values and normal correction rules will be applied.



Responsibilities and Obligations of the Parties – NEMO

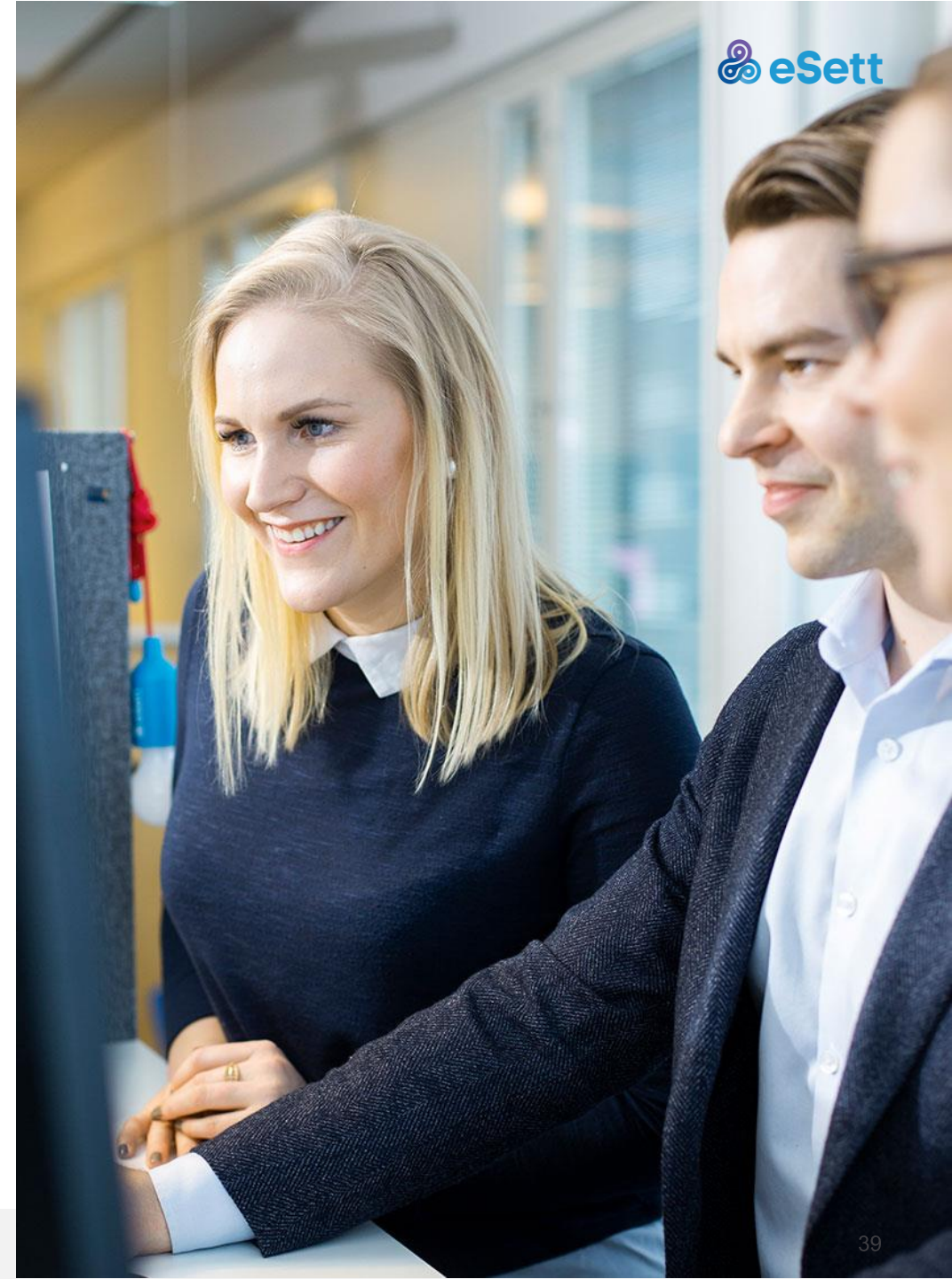
- Updating the NEMO systems to support the 15 min ISP for relevant parts and interfaces.
- Submitting hub nominations (PX Trades), cross-border nominations (PX Flows) and inter-NEMO nominations (Bilateral Trade) data to eSett per ISP.
- Receive subscribed imbalance settlement results per ISP.



Testing

Internal Testing

- During internal testing phase, eSett will verify that the imbalance settlement system is behaving correctly.
- Any remaining issues will be fixed during this phase, so that eSett is able to provide a reliable test environment in later phases.
- **eSett has finished the internal test phase.**



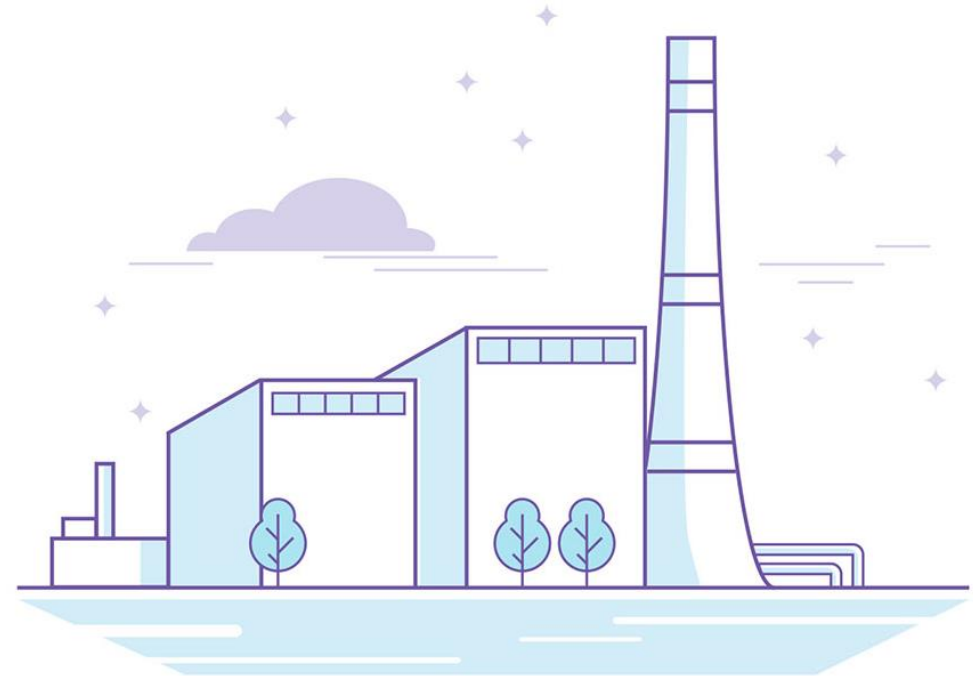
External Testing

- eSett will test together with a limited number of stakeholders.
- Participation requires contacting eSett to ensure access and connectivity with the test environment latest in September.
 - See [External and Open Market Tests](#) for the details.
- Aim of the testing is to
 - ensure correct behaviour of external interfaces.
 - ensure ability to correctly process and calculate an increased amount of data.
 - test transition from 60 min to 15 min with an ongoing data exchange from/to external parties.
 - provide some of the stakeholders such as TSOs and datahubs an ability to test against eSett already during 2022.
 - fix any issues encountered in this phase before the next phase.
- The phase has been scheduled for 2022 from October to end of November.



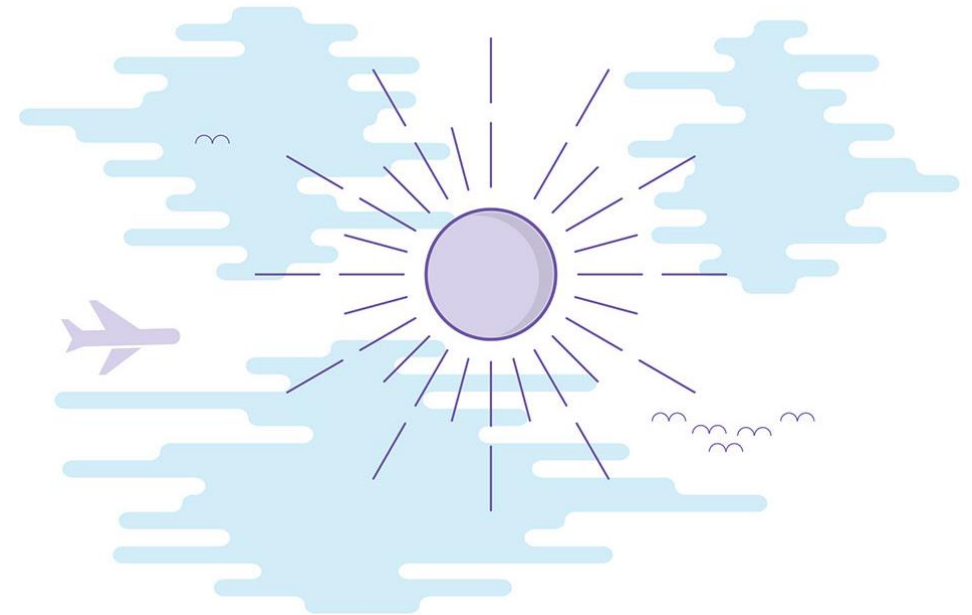
Open Market Tests - Introduction

- Open Market Tests allows any market participant to test 15-min ISP in eSett's test environment
- Schedule:
 - January 2023: Open Market Tests officially starts
 - 6.2.2023: 15-min ISP Go-live date in the test environment
 - Testing lasts until Autumn 2023
- If you are interested in testing, please contact eSett customer service



Open Market Tests – Test Structures and Data

- The test environment contains structures similar to production environment
 - New test structures can be created through Online Service when needed
- In general, there will be limited amount of input data available for imbalance settlement
 - Imbalance settlement results might not be comparable to production environment
- If you require some test structures or data, which you cannot create or supply yourself, contact eSett and we can provide these for you



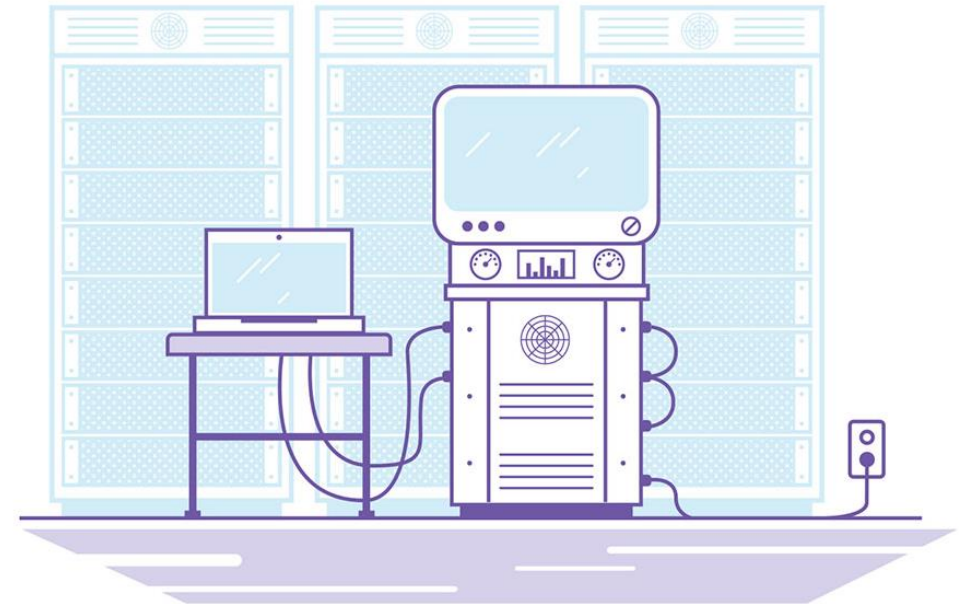
Open Market Tests – Platforms available to test

- Sending data flows to eSett
 - All data flows available for testing in 15-min & 60-min
- Receiving data flows from eSett
 - All data packages provided by eSett available for testing in 15-min & 60-min
- Online Service
 - New 15-min related views for Input Data and Settlement
- Information Service
 - Fetching settlement data in 15-min (and other time resolutions)

Hourly Status	Date	Interval	Own Quantity [MWh]	Counter Quantity [MWh]	Matched Quantity [MWh]	Matched Quantity Status
Load previous day						
Open 1 h 53 m to 3rd GC	22.05.2023	00:00-00:15	4,150000	← -4,200000	4,150000	Corrected
	22.05.2023	00:15-00:30	3,900000	← -3,900000	3,900000	Matched
	22.05.2023	00:30-00:45	3,800000	← -3,800000	3,800000	Matched
	22.05.2023	00:45-01:00	3,700000	← -3,700000	3,700000	Matched
	22.05.2023	01:00-01:15	3,800000	← -3,800000	3,800000	Matched
	22.05.2023	01:15-01:30	4,560000	← -4,500000	4,500000	Corrected
	22.05.2023	01:30-01:45	5,000000	← -5,000000	5,000000	Matched
	22.05.2023	01:45-02:00	5,300000	← -5,300000	5,300000	Matched
	22.05.2023	02:00-02:15	5,300000	← -5,300000	5,300000	Matched
	22.05.2023	02:15-02:30	5,500000	← -5,500000	5,500000	Matched

Open Market Tests - Requirements

- In order to test against the test environment, technical connectivity must be ensured
- Requirements:
 - IP-address where data is sent/received (for firewall opening)
 - Communication channel information (SFTP, SMTP, Web Service, ECP/EDX)
 - Contact information for test environment Online Service admin
- Please provide this information when contacting eSett about testing
 - eSett will give you “Test document for participants”, which will help with test requirements and test procedures



Open Market Tests – Connection to test environment

Messaging Service – ECP/EDX Channel

eSett's endpoint: 44V00000000028C

Messaging Service – Web Service Channel

URL: <https://testservice2.esett.com/MSGS/messagingServiceInputInterface>

WS-Security Credentials: Separately distributed by eSett

Messaging Service – FTP Channel

Host: <sftp://testservice2.esett.com/>

Protocol: SFTP

Port: 22

Username/password: Separately distributed by eSett

Messaging Service – SMTP Channel

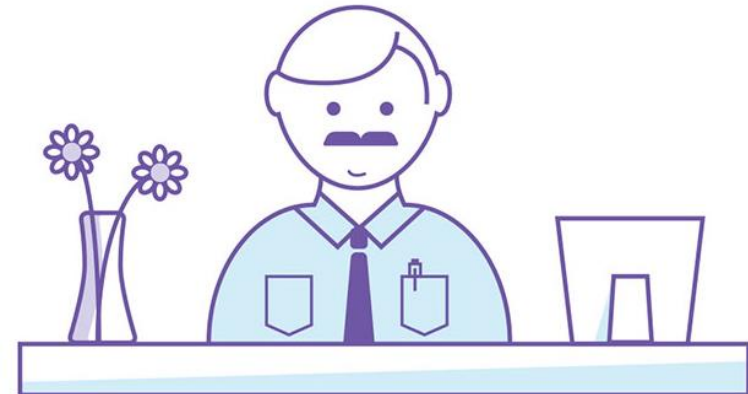
Host: testservice2.esett.com

Protocol: SMTP

Port: 25

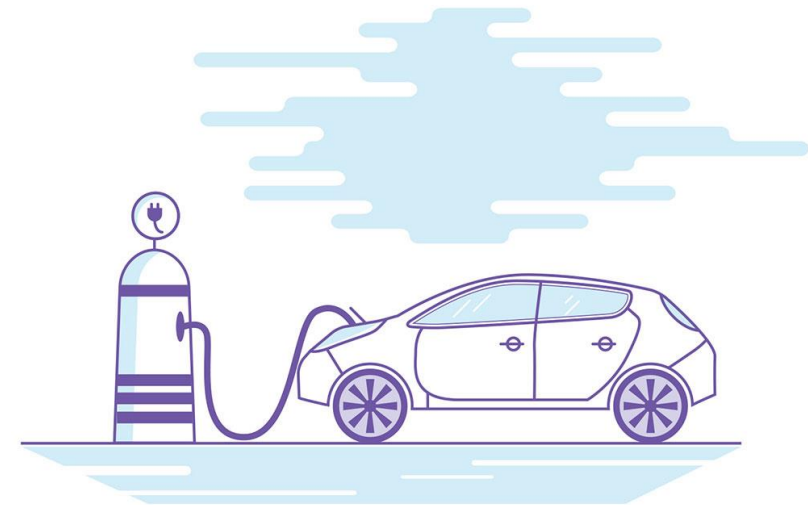
Security: SSL/TLS

E-mail: inbox@testservice2.esett.com



Open Market Tests – Support during testing

- eSett's customer service supports test participants during the testing period
- Please start the subject line of the email/service request with "15-min ISP testing"
- Contact channels:
 - Service request
 - Email
 - Phone



Risk Management Plans

Risk Management Plans (1/2)

#	Risk	Risk management	Party
#1	Market party (MP) is not able to report 15 min values to eSett	<ol style="list-style-type: none"> 1. Providing technical specification early enough 2. Publishing commissioning plan early enough 3. Ensuring the availability of sufficient resources for the planning and implementation of 15 min ISP 4. Enabling testing against eSett for stakeholders 5. Reporting the values manually through ONLS 6. Counterparty reports the values in 15 min (only Bilateral Trades and MGA Exchanges) 7. eSett converts reported hourly data into 15 min values 	<ol style="list-style-type: none"> 1. eSett 2. eSett 3. MP 4. eSett 5. MP 6. MP counterparty 7. eSett
#2	Market party (MP) is not able to receive 15 min values from eSett	<ol style="list-style-type: none"> 1. Providing technical specification early enough 2. Publishing commissioning plan early enough 3. Ensuring the availability of sufficient resources for planning and implementation of 15 min ISP 4. Enabling testing against eSett for stakeholders 5. Viewing the data and results in ONLS 6. Providing hourly time-based specific data packages 	<ol style="list-style-type: none"> 1. eSett 2. eSett 3. MP 4. eSett 5. MP 6. eSett
#3	Market party (MP) would like to report in 15 min before the GL	<ol style="list-style-type: none"> 1. Aggregating 15 min values to hourly and calculate settlement in hourly resolution 	<ol style="list-style-type: none"> 1. eSett
#4	Market party (MP) would like to receive in 15 min values before the GL	<ol style="list-style-type: none"> 1. Market party to convert hourly values to 15 min in their own system 	<ol style="list-style-type: none"> 1. MP
#5	eSett is delayed with 15 min ISP implementation	<ol style="list-style-type: none"> 1. Period for external and open market tests will be shortened to ensure that eSett shall have sufficient time to implement the solution. 	<ol style="list-style-type: none"> 1. eSett

Risk Management Plans (2/2)

#	Risk	Risk management	Party
#6	Country is unable to transition to 15 min ISP in agreed time	<ol style="list-style-type: none"> Ensuring that local regulation and implementation are on track with the agreed timeline Possibility to use “Q-H-Q conversion” per country 	<ol style="list-style-type: none"> TSOs eSett (system) & TSO (decision)
#7	15 minutes balancing energy price is not available due to mFRR delay (Nordic 15 min ID market is ready)	<ol style="list-style-type: none"> Ensuring the availability of sufficient resources for the planning and implementation of mFRR eSett to calculate imbalance settlement using 60 min imbalance price for each quarter Possibility to use following features per country: <ol style="list-style-type: none"> “Hourly netted imbalance fee” “Q-H-Q conversion” 	<ol style="list-style-type: none"> TSOs eSett eSett (system) & TSO (decision)
#8	Nordic 15 min ID market is delayed (15 min mFRR is ready)	<ol style="list-style-type: none"> Ensuring the availability of sufficient resources for the planning and implementation of 15' MTU on Nordic ID market 	<ol style="list-style-type: none"> TSOs & NEMOs
#9	Nordic 15 min ID market and 15 min mFRR are both delayed	<ol style="list-style-type: none"> Ensuring the availability of sufficient resources for the planning and implementation of mFRR Ensuring the availability of sufficient resources for the planning and implementation of 15' MTU on Nordic ID market 	<ol style="list-style-type: none"> TSOs TSOs & NEMOs
#10	15 min ISP is delayed in all NBS countries	<ol style="list-style-type: none"> Set a new go-live date in the imbalance settlement system Roll-back to hourly resolution 	<ol style="list-style-type: none"> eSett MPs & TSOs
#11	Market party (MP) has problems for reporting around the go-live, due to data reporting in national time zone (EEST or SNT), but go-live is in CEST.	<ol style="list-style-type: none"> File split for incoming reporting can be in CEST, EEST or SNT, and the one hour in EEST or SNT is handled by aggregation/split of the reported data for the hour. 	<ol style="list-style-type: none"> eSett

Bold = Risk has realised.

Fallback Plans

eSett has following fallback plans in place around the go-live in case of a minor or major disturbance, such as imbalance settlement can't be carried out correctly or there is a system failure etc. These are carried out on a need-basis.

1. Communication via Online Service, eSett's website and other suitable ways for the circumstances.
2. Taking proper means together with TSO(s) and vendor(s) to recover normal operations as soon as possible.
3. Extending the support hours.
4. Postponing of the invoicing.
 - This could lead to increased collateral demand requirements.





WE SETTLE, TOGETHER!

