

### eSett News Customer Committee Autumn 2024

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| Differe    | nt settlement services in eSett   |              |              |                | _            |
|------------|---|--------------|--------------|----------------|--------------|
| Imbalance  | settlement (BRP)  | $\checkmark$ | $\checkmark$ | $\checkmark$   | $\checkmark$ |
| Reconcilia | ation settlement (BRP)  | -            | -            | -              | $\checkmark$ |
| Complete   | settlement & invoicing in different reserves' balancing se                              | rvices for B | SPs (instea  | ad of the lo   | cal TSO):    |
|            | Activated reserves market<br>Market parties which act also in BRP role                  | $\checkmark$ | $\checkmark$ | <b>√</b>       | $\checkmark$ |
| mFRR       | Activated reserves market<br>Market parties which can act only in (individual) BSP role | $\checkmark$ | Q1 2026?     | 3.12.2024      |              |
|            | Capacity reserves market  |              | $\checkmark$ | 3.12.2024      | $\checkmark$ |
|            | Independent Aggregator  | 2026?        | Q1 2026?     |                |              |
|            | Activated reserves market<br>Market parties which act also in BRP role                  | $\checkmark$ | $\checkmark$ | ✓              | $\checkmark$ |
| aFRR       | Activated reserves market<br>Market parties which can act only in (individual) BSP role | $\checkmark$ |              | Q2-Q3<br>2025? |              |
|            | Capacity reserves market  |              | √            | Q2-Q3<br>2025? | ✓            |
|            | Independent Aggregator  | 3-4/2025     |              |                |              |
|            | Activated reserves market<br>Market parties which act also in BRP role                  | $\checkmark$ | $\checkmark$ | ✓              | $\checkmark$ |
| FCR        | Activated reserves market<br>Market parties which can act only in (individual) BSP role | Q1/2025      |              |                |              |
|            | Capacity reserves market  |              | $\checkmark$ | 2026?          | $\checkmark$ |
|            | Independent Aggregator  |              |              |                |              |
| FFR        | Capacity reserves market  |              | 2025?        |                |              |

## Number of BRPs



No TSO owned BRPs or NEMOs included

## **New Customer Portal**

Launch date: August 29, 2024

### **Key Features:**

- **Streamlined Onboarding:** A simpler and more userfriendly onboarding process.
- Quick Registration: Fast and easy new user signup.
- Automatic User Setup: Easily reset passwords to regain access.
- **Previous Customer Cases:** A comprehensive overview of all past communications.

### **Benefits:**

- Enhanced user experience
- More efficient communication
- Easy access to historical data





## Customer Satisfaction survey results 2024

The survey was open for two weeks between 16.9.2024 – 29.9.2024

• A reminder was sent out 20.9.2024 to those who had not already answered the survey by that time

Language options: English, Finnish, Swedish, Norwegian

The survey was sent out to all active Online Service end users

- 1776 invitations sent
- Response rate 9,80 %
- 176 answers received



## eSett Customer Satisfaction Survey 2024

- The survey consisted of 10 questions, with an additional question for the BSPs and BRPs regarding their interest in a cooperation meeting with eSett.
- Apart from question 4 and 5, all other questions were identical to those in last year's survey.

- 1. Give an overall grade for eSett's customer service
- 2. How professional is eSett's customer service?
- 3. How satisfied have you been with the service request resolution times?
- 4. Which features of the current Online Service do you value the most?
- 5. Is there anything about the Online Service you think could be improved or something you feel should be added?
- 6. What have we done well? (e.g., Customer Service, Communication, Web page, Open data)
- 7. How can we improve our services? (e.g., Customer Service, Communication, Web page, Open data)
- 8. Your market participant role(s)
  - 1. In case BRP or BSP were chosen, an additional question was asked: Would you be interested in a cooperation meeting with eSett?
- 9. In which countries do you operate?
- 10. I can be contacted for further elaboration regarding my answers

## Give an overall grade for eSett's customer service





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## PICASSO

The **P**latform for the **I**nternational **C**oordination of **A**utomated Frequency Restoration and **S**table **S**ystem **O**peration

- PICASSO is a project aimed at establishing a common European energy activation market for automated frequency restoration and stable system operation (aFRR-energy).
- eSett handles the invoicing of aFRR energy activations for the relevant market participants
  - Activations are reported by the TSOs.
- Commissioning:
  - Finland national aFRR energy market GL 06/2024
  - Denmark 10/2024
  - Sweden and Norway undecided
- aFRR energy price is part of the imbalance price formation in Finland and it is planned to affect the price in Denmark later after the go-live



## mFRR EAM

- The Nordic mFRR Energy Activation Market (mFRR EAM) is set to go live on 3 December 2024
  - Automate bid selection and activation on a 15minute basis
  - Replacing the current hour-based regulation power market
- The mFRR EAM is part of the Nordic Balancing Model (NBM), which is essential for balancing electricity production and consumption and upholding the power system.
- 15-minute mFRR EAM is a prerequisite for the 15 min trading in intraday and day-ahead as well as for the 15 min imbalance pricing
- Product page has been launched last week

### New Products (Data pacjages, Online Service and invoicing)

**Bidless Activation** 

Period Shift Activation

Unspecified non-standard bids

FRR-M Disturbance

FRR-M Balancing Power, Scheduled Activation

FRR-M Balancing Power, Direct Activation

FRR-M Balancing Power, Faster Activation

FRR-M Balancing Power, Faster Deactivation

FRR-M Balancing Power, Scheduled Activation

FRR-M Balancing Power, Direct Activation

FRR-M Balancing Power, Faster Activation

FRR-M Balancing Power, Faster Deactivation

FRR-M, Special Regulation, Scheduled Activation

FRR-M, Special Regulation, Direct Activation

FRR-M, Special Regulation, Faster Activation

FRR-M, Special Regulation, Faster Deactivation

FRR-M, Special Regulation, Scheduled Activation

FRR-M, Special Regulation, Direct Activation

FRR-M, Special Regulation, Faster Activation

FRR-M, Special Regulation, Faster Deactivation

## **Reserve Capacity Invoicing in Norway**

- eSett already invoices capacity reserves on behalf of Energinet and Svenska kraftnät.
- eSett will take over the invoicing of mFRR reserve capacity from Statnett.
  - Transition Date: The transition of capacity reserve invoicing and commissioning of mFRR EAM in Norway is scheduled for **3 December 2024**.

Choice of billing for BSPs

- **Option 1 (same currency)**: Include capacity reserves on the current imbalance invoice:
  - No action is required if this is sufficient
- **Option 2 (Different currencies):** Separate capacity reserves on a dedicated BSP invoice:
  - This requires the separation of BRP and BSP roles within the company.
  - If the BSP wants to invoice reserves from a different bank account and in a different currency than imbalances:
  - A new banking agreement with a bank that meets eSett's requirements for the BSP model is needed.

Contact eSett no later than September 2024 if invoice separation is needed!

• More information can be found on the updated project page.



## Renewed market reports in Online Service

- The market reports in Online Service will be renewed
- New reports are embedded directly on the page, allowing the user to interactively view their settlement data



| eSett  | Online Serv               | rice NBSTE               | ST1<br>st PBI (CEST)         | (BRP) <del>-</del>    |
|--|---------------------------|--------------------------|------------------------------|-----------------------|
| INPUT DATA   | SETTLEMENT                | STRUCTURES               | FINANCES RE                  | PORTS MESSAGES        |
| INFORMATION  |                           | ION                      |                              |                       |
| oorts > Market Report                                | ⊧<br>eports               |                          |                              | Q H                   |
| Report Type  |                           |                          |                              |                       |
| RLS Report   |                           |                          |                              | ~                     |
| )  | Advance                   | d Settlement             | Report                       | eSe                   |
|  | N01                       | π                        | 8/9/20                       | 23 0.00               |
| Relative Imbalance                                   | Imbalance Result<br>6.91M | Production Plan<br>7.92K | Normal Production<br>(Blank) | ) Consumption (Blank) |
| Relative Imbalance<br>20%<br>900<br>15%<br>10%<br>5% |                           |                          |                              |                       |
|  |                           |                          |                              |                       |

# eSett API for market parties will replace the Information Service in 2026

| Why?   | How?  | When?  |
|--|---|--|
| • Based on our customer<br>discussions and<br>surveys a REST API for<br>on-demand data<br>retrieval is an<br>outstanding customer<br>wish for data exchange<br>improvement   | <ul> <li>Relying on the<br/>standard OpenAPI<br/>specification and<br/>RESTful APIs, we aim<br/>to give more control to<br/>market parties over the<br/>way they retrieve their<br/>data</li> </ul> | <ul> <li>We are finalizing the requirement analysis, technical design and project planning.</li> <li>Aim is to release the API in line with the upgrade of the back-office software for the</li> </ul>                 |
| <ul> <li>As a result of our<br/>collaboration with<br/>stakeholders and<br/>partners we have<br/>planned the most<br/>feasible and flexible<br/>way to create our<br/>modern API for market<br/>parties</li> </ul> | <ul> <li>While this will not<br/>replace our core<br/>messaging, data flows<br/>and data packages, it is<br/>intended to replace the<br/>existing Information<br/>Service</li> </ul>                | <ul> <li>settlement system,<br/>which is expected to be<br/>in use during H2/2026.<br/>At that time the<br/>Information Service will<br/>be phased out.</li> <li>During 2025 we aim to<br/>have a live test</li> </ul> |
|  |   | environment for market parties to connect and test their integrations.   |



# Production plan KPI development

- Several customers have questioned why the threshold values for the production plan KPI differ from country to country
- A TSO working group has been working to harmonize these values across the Nordics.
- The new threshold values have been decided and will be implemented this Autumn.
  - eSett will communicate the exact date of implementation.

| DI Turce                  | Threehold                       | Country's threshold value   |                             |                            |  |  |  |
|---------------------------|---------------------------------|-----------------------------|-----------------------------|----------------------------|--|--|--|
| РОТуре                    | Threshold                       | Finland                     | Norway                      | Sweden                     |  |  |  |
| Energy Storage            | PP <sub>1</sub> – 1. Threshold  | <u>3 %</u>                  | <u>3 %</u>                  | <u>3 %</u>                 |  |  |  |
| Lindigy otorage           | $\bigcirc PP_2 - 2. Threshold$  | <u>6 %</u>                  | <u>6 %</u>                  | <u>6 %</u>                 |  |  |  |
| Hydro                     | $\mathbf{PP}_1 - 1$ . Threshold | 4- <u>3-</u> %              | <del>2,5</del> <u>3</u> %   | <del>2,5</del> <u>3</u> %  |  |  |  |
| nyulo                     | PP $_2$ – 2. Threshold          | 6 %                         | 6 %                         | 6 %                        |  |  |  |
| Nuclear                   | $\mathbf{PP}_1 - 1$ . Threshold | 1 %                         | -                           | <del>2,5<u>1</u> %</del>   |  |  |  |
| Nuclear                   | PP $_2$ – 2. Threshold          | 2 %                         | -                           | 6- <u>2</u> %              |  |  |  |
| Other                     | $\mathbf{PP}_1 - 1$ . Threshold | 7- <u>3</u> %               | <del>2,5</del> <u>3</u> %   | <del>2,5</del> <u>3</u> %  |  |  |  |
| Uner                      | PP $_2$ – 2. Threshold          | <u>15-6</u> %               | 6 %                         | 6 %                        |  |  |  |
| Solar                     | $\mathbf{PP}_1 - 1$ . Threshold | <del>18</del> - <u>10</u> % | <del>15-<u>10</u>%</del>    | <del>6</del> - <u>10</u> % |  |  |  |
| 50141                     | PP $_2$ – 2. Threshold          | <del>25</del> - <u>20</u> % | <del>25</del> - <u>20</u> % | <del>12,5<u>20</u> %</del> |  |  |  |
| Thormal Power             | $\mathbf{PP}_1 - 1$ . Threshold | 3 %                         | <del>2,5</del> <u>3</u> %   | <del>2,5</del> <u>3</u> %  |  |  |  |
|                           | $\mathbf{PP}_2 - 2$ . Threshold | 6 %                         | 6 %                         | 6 %                        |  |  |  |
| Wind Onebore and Offebore | $\mathbf{PP}_1 - 1$ . Threshold | <del>18</del> - <u>10</u> % | <del>15</del> - <u>10</u> % | <del>6</del> - <u>10</u> % |  |  |  |
|                           | $\mathbf{PP}_2 - 2$ . Threshold | <del>25</del> - <u>20</u> % | <del>25-<u>20</u>%</del>    | <del>12,5<u>20</u> %</del> |  |  |  |

## Collateral workshop follow-up

- We want to thank Customer Committee for the successful and enriching workshop in June!
  - The work on the collateral model is ongoing, and ways to improve it will continue to be explored.
- Finnish Energy Authority issued a decision on the terms and conditions for balance responsible parties, which include the principles for how collateral requirements are determined in Finland
  - Multiplier m will be set to 1/7 for all BRPs
  - All changes in collateral model in Finland must be approved by authority
  - The Energy Authority's decision will be put into effect by **30 November 2024**
- As requested by Finnish Energy Authority, Fingrid commissioned a study on the consideration of production in determining the collaterals. Study was conducted by AFRY Management Consulting by interviewing market participants and by analysing historical data
  - Based on the study, Fingrid did not find it justified to include production as a component that would increase or decrease the required collateral for now
- In Sweden and Norway current collateral model will be used and no changes to the calculation principles for now



WE SETTLE, TOGETHER!



## API: eSett OY

Practical use-cases in Danske Commodities and possible API implementations

#### DATA WE USE

**Balance Report |** The data is manually transcribed and used for **validation of internal data**, every month for some of the customers which have a complex set-up (behind the meter etc.).

| SeSett Online Sei                          | TVICE<br>T STRUCTURES FINANC | ES REPORTS | MESSAGES INFORMATION | ADMINISTRATION  |                      |                             |                      | 1 ,CEST)   Danr              | ıske Commodities A/S (NO) (BRP) + | Example Out      | put Columns       |
|--|------------------------------|------------|----------------------|-----------------|----------------------|-----------------------------|----------------------|------------------------------|-----------------------------------|------------------|-------------------|
| Settlement > Balance Report Balance Report |                              |            |                      |                 |                      |                             |                      | Units: 🖲 MWh /               | ○ kWh Decimal Unit: 6 - ♥ Help    | Retailer         | Date              |
| Period<br>01.08.2024                       | <b>I</b> - 31.08.2024        |            | BA<br>NG2            |                 | RE                   |                             | Type<br>O Consump    | ition O Production Imbalance |                                   | MBA              | Datetime          |
| Overview Timestamp of c                    | calculation                  |            |                      |                 | Filter               |                             |                      |                              |                                   | DSO              | UTC Datetime      |
| MEC Type                                   | DE                           | MGA        | MBA                  | Production Unit | Production Unit Type | Counternarty                | C Refresh Z Export t | o Excel Save Settings Restor | Dre Default View Columns          | Consumption Type | Measurement Type  |
| Imbalance (eSett point of view)            | RE                           | MGA        | NO2                  | Production one  | Production one type  | Counterparty                | 25600r               | 295000                       | MCC ID                            |                  |                   |
| Metered General Consumption                | Danske Commodities A/S (NO)  |            | NO2                  |                 |                      |                             | 270000               | /                            | CNS127861                         | Interval         | Quality           |
| Metered General Consumption                | Danske Commodities A/S (NO)  |            | NO2                  |                 |                      |                             | 069000               | <i>i</i>                     | CNS128460                         | Interval         | Quarty            |
| Metered Losses Consumption                 |                              |            | NO2                  |                 |                      |                             | 0,000000             | 7                            | CNS135532                         |                  |                   |
| Metered Losses Consumption                 |                              |            | NO2                  |                 |                      |                             | 0,000000             | 7                            | CNS135528                         |                  | 1                 |
| MGA Imbalance                              |                              |            | NO2                  |                 |                      |                             | 0,000000             | 0,00000                      | MGI9683                           | Quantity (MWh)   | Last Modification |
| MGA Imbalance                              |                              |            | NO2                  |                 |                      |                             | 0,000000             | 0,00000                      | MGI9688                           |                  |                   |
| Profiled Losses Consumption                |                              |            | NO2                  |                 |                      |                             | 0,000000             |                              | CNS135529                         |                  |                   |
| Profiled Losses Consumption                |                              |            | NO2                  |                 |                      |                             | 0,000000             |                              | CNS135533                         | FTC              |                   |
| PX Market Trade                            | Danske Commodities A/S (NO)  |            | NO2                  |                 |                      | Nord Pool European Market C | ,000000              | 00000                        | PXT6891                           |                  |                   |
| PX Market Trade                            | Danske Commodities A/S (NO)  |            | NO2                  |                 |                      | ECC Luxembourg Sarl         | 0,00000              | 00000                        | PXT4545                           |                  |                   |
| PX Market Trade                            | Danske Commodities A/S (NO)  |            | NO2                  |                 |                      | ECC Luxembourg Sarl         | 300000               | 100000                       | PXT4540                           |                  |                   |
| PX Market Trade                            | Danske Commodities A/S (NO)  |            | NO2                  |                 |                      | Nord Pool European Market U | 0,000000             | 0,000000                     | PXT4217                           |                  |                   |
| PX Market Trade                            | Danske Commodities A/S (NO)  |            | NO2                  |                 |                      | ECC Luxembourg San          | 0,00000              | 0,00000                      | PXT10593                          | Noto The gran    | ularity chould    |
| PX Market Trade<br>Summary                 | Danske Commodities A/S (NO)  |            | NU2                  |                 |                      | Nord Pool European Market C | .395000              | 395000                       | PX14212                           | Note. The gran   | iuluinty should   |
|  |                              |            |                      |                 |                      |                             |                      |                              |                                   | follow           | the ISP           |

### Approach for Setting up API's:

| <ul> <li>Three resources:</li> <li>Consumption</li> <li>Production</li> <li>Imbalance</li> </ul> | <ul> <li>Example URLs:</li> <li>/countries/{country}/imbalancevolumes?start={periodStart}&amp;end={periodEnd}&amp;grid={grid}&amp;re={re}</li> <li>/countries/{country}/productionvolumes?start={periodStart}&amp;end={periodEnd}&amp;grid={grid}&amp;re={re}</li> <li>/countries/{country}/consumptionvolumes?start={periodStart}&amp;end={periodEnd}&amp;grid={grid}&amp;re={re}</li> </ul> |
|--|---|
|--|---|

#### DATA WE USE

**Fees |** Data is used for customer billing, but manual updated, which occasionally lead to settlement issues at change of year.

| Sesett Online Servi     | се                      |                        |                     |               |         |                            | Dansk                    | e Commodities A/S (NO) ( | (BRP) +       |
|-------------------------|-------------------------|------------------------|---------------------|---------------|---------|----------------------------|--------------------------|--------------------------|---------------|
| INPUT DATA SETTLEMENT   | STRUCTURES FINANCES REI | PORTS MESSAGES INFORMA | TION ADMINISTRATION |               |         |                            |                          |                          |               |
| Finances > Fees<br>Fees |                         |                        |                     |               |         |                            |                          |                          | <b>O</b> Help |
|                         |                         |                        |                     |               |         |                            |                          |                          |               |
|                         |                         |                        |                     |               |         | CRefresh A Export to Excel | Save Settings Restore De | fault View Columns       | ×             |
| Country                 | Volume Fee              | Imt                    | alance Fee          | Peak Load Fee | BSP Fee |                            | Weekly Fee               |                          |               |
| Sweden                  | 1,600                   | 0,0                    | 00                  | 0,290         | 0,000   |                            | 30,000                   |                          |               |
| Finland                 | 1,330                   | 0,0                    | 00                  | 0,000         | 0,000   |                            | 30,000                   |                          |               |
| Norway                  | 0,210                   | 0.0                    | 00                  | 0,000         | 0,000   |                            | 30.000                   |                          |               |
| Denmark                 | 0.000                   | 0,0                    | 00                  | 0,000         | 0,000   |                            | 30,000                   |                          |               |
| Rows count: 4 of 4      |                         |                        |                     |               |         |                            |                          |                          |               |

### Two Approaches for collecting fees through API



### **Example Output Columns**





### • Improvements:

- All data behind the summarization of the invoicing report
- Data availble on ISP level for all products

### Improvements of Data Available

| & eSett                 | Online Serv        | vice       |              |            |               |                      |             |                  |       |                   |         |             |                       |           |
|-------------------------|--------------------|------------|--------------|------------|---------------|----------------------|-------------|------------------|-------|-------------------|---------|-------------|-----------------------|-----------|
| INPUT DATA              | SETTLEMENT         | STRUCTURES | FINANCES     | REPORTS    | MESSAGES      | INFORMATION          | ADMINISTRAT | ION              |       |                   |         |             |                       |           |
| Finances > Invoicing Re | Report             |            |              |            |               |                      |             |                  |       |                   |         |             |                       |           |
| Time Aggregation        |                    |            | Period       |            |               |                      |             |                  |       | Country           |         |             |                       |           |
| • Week O Month          |                    |            | 02.09.2024   |            |               | 08.09.2024           |             |                  | =     | Norway            |         |             |                       | ~         |
|                         |                    |            |              |            |               |                      |             |                  |       |                   |         |             |                       |           |
|                         |                    |            |              |            |               |                      |             |                  |       |                   |         |             |                       |           |
|                         |                    |            |              |            |               |                      |             |                  |       |                   |         |             |                       |           |
| Danske Com              | modities A/S       | S (NO) ·   |              |            |               |                      |             |                  |       |                   |         |             |                       |           |
| Total Quantity          |                    | ~ ~ ~      | Total Amount | (EUR)      |               |                      | Total Amou  | nt IDKKI         |       | 0                 | Total A | mount [NOK] | 1                     | 0         |
| , other equation,       |                    |            |              | frond      |               |                      | Exchange F  | ate [DKK]        |       | 7,456027          | Exchar  | ge Rate [NO | K]                    | 11,696729 |
|                         |                    |            |              |            |               |                      |             |                  |       |                   |         |             |                       |           |
| Production Type:        | SES (Service Sale  | e (SES))   |              |            |               |                      |             |                  |       |                   |         |             |                       |           |
| Product                 |                    | Quantity   |              | Amount exc | ol. VAT (EUR) |                      |             | Amount excl. VAT | (DKK) |                   |         | Amount ex   | KCI. VAT (NOK)        |           |
| Weekly Fee              |                    | 1          |              | 30         |               |                      |             | 0                |       |                   |         | 0           |                       |           |
| Imbl Fee                |                    |            |              |            |               |                      |             | 0                |       |                   |         | 0           |                       |           |
| Vol Fee                 |                    |            |              |            |               |                      |             | 0                |       |                   |         | 0           |                       |           |
| Total                   |                    |            |              |            |               |                      |             | 0                |       |                   |         | 0           |                       |           |
|                         |                    |            |              |            |               |                      |             |                  |       |                   |         |             |                       |           |
| Production Type:        | ITS (Item Sale (IT | S))        |              |            |               |                      |             |                  |       |                   |         |             |                       |           |
| Product                 |                    |            |              | Quantity   | Ar            | nount excl. VAT (EUF | R)          |                  | Amour | t excl. VAT (DKK) |         |             | Amount excl. VAT (NOK | )         |
| S Imbl                  |                    |            |              |            |               |                      |             |                  |       |                   |         |             | ^                     |           |
| S Prod Imbl FCR         |                    |            |              |            |               |                      |             |                  | 0     |                   |         |             | 0                     |           |
| S Prod Imbl FRR-A       |                    |            |              |            |               |                      |             |                  | 0     |                   |         |             | 0                     |           |
| S Prod Imbl FRR-N       | 1                  |            |              |            |               |                      |             |                  | 0     |                   |         |             | 0                     |           |
| S Prod Imbl Hour C      | hange Reg          |            |              |            |               |                      |             |                  | 0     |                   |         |             | 0                     |           |
| S Prod Imbl Power       | Trans              |            |              |            |               |                      |             |                  | 0     |                   |         |             | 0                     |           |
| S Prod Imbl Counte      | ertrades           |            |              |            |               |                      |             |                  | 0     |                   |         |             | 0                     |           |
| S Prod DAPPC            |                    |            |              |            |               |                      |             |                  | 0     |                   |         |             | 0                     |           |

### **Example Output Columns**



### Other Relevant Data Examples:

**Activated Reserves** MGA Imbalance & Capacity Use Case Use Case Reserves: MGA Imbalance: These are used when To be able to charge MGA imbalance to the discrepancies between internal data and the operators invoices received from eSett occur Collaterals

#### Use Case

To be able to track our collaterals we are collecting the numbers, by an automized robot, but any minor changes to the service portal, will result in a process breakdown. An API solution will be more reliable

### Other Relevant Data Examples:

| &eSett Onli                 | ine Serv      | rice                  |                         |         | C                              |             |      |
|-----------------------------|---------------|-----------------------|-------------------------|---------|--------------------------------|-------------|------|
| INPUT DATA SETT             | ILEMENT       | STRUCTURES            | FINANCES                | REPORTS | MESSAGES                       | INFORMATION |      |
| Finances > Collaterals      | vervie        | W                     | Invoid                  | ing     | Collatera                      |             | i≣Co |
| Collaterals are processed o | nly in CE(S)T | time zone, all the da | Invoices<br>Invoicing I | Report  | Collaterals<br>Settlement Bank |             |      |
|                             |               |                       | Fees                    |         |                                |             |      |
| Status                      | Sufficient    | Collateral            |                         |         |                                |             |      |
| Deposited Collateral        |               | EUR                   |                         |         |                                |             | 1    |
| Outstanding Debit Amount    |               | EUR                   |                         |         |                                |             |      |
| Collateral Demand           |               | EUR                   |                         |         |                                |             |      |
| Available Collateral        |               | EUR                   |                         |         |                                |             |      |
| Last Update                 | 23.09.202     | 24                    |                         |         |                                |             |      |

### **Example Output Columns**

Last UpdatedOutstanding Debit AmountAvailable CollateralDeposit CollateralCollateral DemandStatus

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#### LEGAL NOTICE

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2.10.2024 Karri Mäkelä

# **Nordic Balancing Model roadmap**

eSett Customer Committee 9.10.2024

## **FINGRID**

## The electricity market is undergoing renewal

- With the green transition, the Nordic electricity system and its balancing principle will be renewed – a model in which individual TSOs takes greater responsibility for balancing consumption and production in their areas
- The Nordic countries have switched to a single price model for balance settlement
- The procurement of reserve capacity have and will be significantly increased
- New reserve marketplaces have been built in the Nordic countries both national and pan-Nordic
- The 15-minute balancing has been taken into use and the 15-minute wholesale electricity market will be realized soon
- The result is a more sustainable, competitive and Europe-wide integrated electricity market that is compatible with EU law.

50 Hz ~0 ~0 ACE = Area Control Error



# Short recap of the reserve products

|  |   | Reserve pro | oduct  | Activation<br>time | Activation<br>capability | Fingrid's obligation<br>2024 | Prices<br>2023 | Minimum b<br>size | id    |
|--|---|-------------|--|--------------------|--------------------------|------------------------------|----------------|-------------------|-------|
|  | ٢ | FFR         | Fast Frequency Reserve   | 1 s                | 5 - 30 s                 | 0 – 60 MW                    | 47 €/MW        | 1 MW              |       |
| 47   |   | FCR-D up    | Frequency Containment Reserve<br>for Disturbances, Up Regulation   | <10 s              | 1 h**                    | 295 MW                       | 12 €/MW        | 1 MW              | _     |
| 112  | 1 | FCR-D down  | Frequency Containment Reserve<br>for Disturbances, Down Regulation | <10 s              | 1 h**                    | 240 MW                       | 14 €/MW        | 1 MW              |       |
|  | L | FCR-N       | Frequency Containment Reserve<br>for Normal Operation              | 3 min              | 1 h                      | 122 MW                       | 36 €/MW        | 0,1 MW            |       |
| ų <b>da</b>  | ٢ | aFRR up     | Automatic Frequency Restoration<br>Reserve, Up Regulation          | 5 min              | 1 h                      | 46 – 62 MW                   | 42 €/MW        | 1 MW              | _     |
|  | l | aFRR down   | Automatic Frequency Restoration<br>Reserve, Down Regulation        | 5 min              | 1 h                      | 46 – 62 MW                   | 30 €/MW        | 1 MW              | _     |
|  | ٢ | mFRR up     | Manual Frequency Restoration<br>Reserve, Up Regulation             | 15 min             | 1 h                      | 880 – 1300 MW                | 24 €/MW        | 1 MV              | Suita |
|  | l | mFRR down   | Manual Frequency Restoration<br>Reserve, Down Regulation           | 15 min             | 1 h                      | 300 – 350 MW                 | 18 €/MW        | 1 MW              |       |
| * Volume weighted average price for the reserves procured from Fin<br>** For Limited Energy Resources (LER) 20 min |   |             |  |                    |                          |                              |                | ured from Fin     | FFR   |



Suitable technologies for the reserve products

# The NBM program impacts directly aFRR and mFRR markets



## **New reserve marketplaces**

- In 2022, new aFRR and mFRR <u>capacity</u> marketplaces were launched
  - Entities with an accepted capacity market bid: must react automatically or commit to participate in the subsequent energy activation market.
- In 2024, new 15-minute aFRR and mFRR energy markets will be opened
  - Upon activation, the resource shall deliver according to the market requirements
- In 2026-2027, the mFRR and aFRR energy markets will move to European platforms



## **15-minute wholesale markets**

- The transition of the wholesale market to 15-minute trading is a prerequisite for market participants' ability to balance within 15 minutes
- The 15-minute trading period will be introduced on electricity exchanges in Q1- 2025:
  - Day-ahead market
  - In intraday continuous trading (Nordic)
  - In an intraday auction
- In the intraday market, trading in 15minute products within some Nordic countries has been possible since 2023.



## **Overall timeline and dependencies**



### **FINGRID**

## The road leading to the changes of the imbalance pricing





# **Thank You!**





## Independent Aggregator

Draft model and project status

eSett Customer Committee | 09.10.2024 Tuomas Pulkkinen

## Commissioning Timeline – eSett



## Independent Aggregator

- Independent Aggregator = Balancing Service Provider (BSP) which activates resources from another supplier or BRP (without explicit agreement)
- Delivering balancing services as independent aggregator causes:
  - Payment for balancing services to/from BSP (independent aggregator)
  - Imbalance adjustment for the BRP
  - Compensation between BSP (independent aggregator) and related BRP
  - Possible Regulation Imbalance for the BSP (independent Aggregator)



## Compensation model – up-regulation example

TSO has activated up-regulation (3 MWh) from the BSP (independent aggregator) Both spot-price and up-regulation price are positive in the example.



## Compensation model – down-regulation example

TSO has activated down-regulation (3 MWh) from the BSP (independent aggregator) Both spot-price and up-regulation price are positive in the example.



# Planned process for imbalance adjustment and compensation with independent aggregator model







#### 02 October 2024



## Example 2: Up regulation with "overdelivery"



## Data Exchange

- New incoming data flow (to eSett): Delivered Reserves (DERI)
  - Sender may be TSO, Datahub and/or BSP
  - Based on the ENTSO-E Activation Market Document
  - CIM format documentation is published in <u>https://ediel.org/nordic-balance-settlement-nbs/</u>
- Multiple new outgoing data flows (from eSett):
  - DP Delivered Reserves (for BRP and BSP)
  - ENTSO-E Activation Market Document
  - DP Reserve Compensations (for BRP and BSP)
  - NEG ESP Energy Account Report Document (EAR)
  - DP Regulation Imbalances (for BRP and BSP)
  - NEG ESP Energy Account Report Document (EAR)



## Data Exchange: DERI & related data packages

| CIM Activation_MarketDocument      | Attribute type        | CI.  | Content                                  | Descriptions and comments  |
|------------------------------------|-----------------------|------|--|--|
| Reserve Activation Result Document |                       | [1]  |  |  |
| Document Identification (mRID)     | ID_String             | [1]  | Document ID                              | Unique identification of the document  |
| Document Version                   | ESMPVersion_String    | [1]  | Version number                           | Running number incrementing by 1 for each update   |
| Document Type                      | MessageKind_String    | [1]  | A83                                      | A83 Activated balancing quantities   |
| Process Type                       | ProcessKind_String    | [1]  | A16                                      | A16 Realised   |
| Sender Identification              | PartyID_String        | [1]  | Party ID                                 | Unique identification of the market party, sending the document  |
| Sender role                        | MarketRoleKind_String | [1]  | A04<br>A09<br>A46                        | A04 System Operator<br>A05 Imbalance Settlement Responsible<br>A06 Metered Data Aggregator<br>A46 Balancing Service Provider (BSP) |
| Receiver Identification            | PartyID_String        | [1]  | 44X-0000000004B                          | Unique identification of the Imbalance Settlement Responsible, receiving the schedu  |
| Receiver role                      | MarketRoleKind_String | [1]  | A05                                      | A05 Imbalance Settlement Responsible<br>A46 Balancing Service Provider (BSP)   |
| Creation Date Time                 | ESMP_DateTime         | [1]  | Creation date/time                       | The date and time that the document was prepared for transmission by the<br>application of the sender.                             |
| Reserve Bid Time Interval          | ESMP_DateTimeInterval | [1]  | Start and end date of the<br>time series | The beginning and ending date and time of the period covered by the document.  |
| Domain                             | ArealD_String         | [1]  | Nordic Market Area ID                    | Identification of the area covered by the document, i.e. 10Y1001A1001A91G (Nordic<br>market area)                                  |
| Subject Party Identification       | PartyID_String        | [01] | Party ID                                 | Unique identification of the subject market party<br>Used when sender is not BSP (A46)   |
| Subject Party Role                 | MarketRoleKind_String | [01] | A46                                      | A46 Balancing Service Provider (BSP)<br>Used when sender is not BSP (A46)  |

| Time Series                            | TimeSeries                 | [0*] |                |  |
|--|----------------------------|------|----------------|--|
| Time Series Identification (mRID)      | ID_String                  | [1]  | Time series ID | Unique identification of the Time Series (unique over time for the sender in question)   |
| Resource Provider Party Identification | PartyID_String             | [1]  | BSP ID         | Unique identification of the party providing the resources (i.e. BSP)  |
| Related Party Identification           | PartyID_String             | [01] | RE/BRP ID      | Unique identification of the party whose resource is activated   |
| Related Party Role                     | MarketRoleKind_String      | [01] | A08<br>A12     | A08 Balance Responsible Party<br>A12 Energy Supplier (retailer)  |
| Business Type                          | BusinessKind_String        | [1]  | Business Type  | A95 Frequency containment reserve<br>A96 Automatic frequency restoration reserve<br>A97 Manual frequency restoration reserve<br>C26 Frequency Containment Reserve-Normal (FCR-N)<br>C27 Frequency Containment Reserve-Disturbance (FCR-D)<br>Z85 Fast frequency reserve                            |
| Acquiring Area                         | ArealD_String              | [1]  | BZ ID          | Unique identification of the Bidding Zone (BZ) where the energy is purchased. This<br>will be the same BZ as the Connecting Area, except for supportive power (incl.<br>transit) where the resource is connected in another BZ.  |
| Connecting Area                        | ArealD_String              | [1]  | BZ or MGA ID   | Unique identification of the Bidding Zone (BZ) or Metering Grid Area (MGA) where the<br>resource is connected.   |
| Measure Unit Quantity                  | MeasurementUnitKind_String | [1]  | Measure Unit   | KWH kWh (kilowatt hour)<br>MWH MWh (megawatt hour)   |
| Direction                              | DirectionKind_String       | [1]  | A01<br>A02     | A01 Up<br>A02 Down   |
| Reserve Object Status                  | Status_String              | [1]  | A07<br>A73     | A07 Activated<br>A73 Delta (used for reporting misdelivered quantity, where correction applies to a<br>BRP instead of the BSP)<br>Note:<br>Reserve Object Status "A73 Delta" uses signed values, i.e. will be negative in case of<br>an 'underdelivery' and positive in case of an 'overdelivery'. |
| Reserve Object                         | ResourceID_String          | [1]  | ROID           | See dependency matrix below<br>Mandatory for NBS   |

| Period (Reserve Activation Time Series Level) | Series_Period         | [1*] |                         |   |
|---|-----------------------|------|-------------------------|---|
| Time Interval                                 | ESMP_DateTimeInterval | [1]  | Start and end date time | The start and end date and time of the time interval of the period in question.   |
| Resolution                                    | Duration              | [1]  | Resolution              | The resolution is expressed in compliance with ISO 8601 in the following format:<br>PnYnMnDTnHnMnS.<br>Where nY expresses a number of years, nM a number of months, nD a number of<br>days.<br>The letter "T" separates the date expression from the time expression and after it nH<br>identifies a number of hours, nM a number of minutes and nS a number of seconds.<br>In NBS hourty or quarterly resolution is used, i.e., <b>PT1H, PT60M or PT15M.</b> |
| Point   | Point                 | [1*] |                         |   |
| Position                                      | Position_Integer      | [1]  | Position                | Position  |
| Quantity                                      | Decimal               | [1]  | Quantity                | Quantity<br>The resolution is maximum in Watt, i.e., max 3 decimals for kWh and max 6<br>decimals for MWh   |
| Reason Code                                   | ReasonCode_String     | [0*] | Reason Code             | Reason code<br>Not used in NBS on this level  |

| Reason (Reserve Activation Time Series Level) |                   | [1*] |             | 1st repetition  |  |  |
|---|-------------------|------|-------------|---|--|--|
|   |                   |      |             | Z29 FCR (Frequency Containment Reserve)   |  |  |
|   |                   |      |             | Z30 aFRR (Frequency Restoration Reserve - Automatic)  |  |  |
|   |                   |      |             | Z31 mFRR, Balancing Power (Frequency Restoration Reserve - Manual activated reserves, Balancing Power)              |  |  |
|   |                   |      |             | Z34 mFRR, Quarter regulation (Frequency Restoration Reserve - Manual activated reserves, Quarter regulation)        |  |  |
|   |                   |      |             | <b>Z35</b> mFRR, Special Regulation (Frequency Restoration Reserve - Manual activated reserves, Special Regulation) |  |  |
|   |                   |      |             | Z36 Hour Change Regulation  |  |  |
| Reason Code                                   | ReasonCode_String | (1)  | Reason Code | Z37 Power Transaction   |  |  |
|   |                   |      |             | Z38 TSO Internal Countertrades  |  |  |
|   |                   |      |             | Z39 Day Ahead Production Adjustment   |  |  |
|   |                   |      |             | Z40 Frequency Containment Reserve, Normal operation (FCR-N).  |  |  |
|   |                   |      |             | Z41 Frequency Containment Reserve, Disturbance (FCR-D).   |  |  |
|   |                   |      |             | Z56 Fast Frequency Reserve (FFR)  |  |  |
|   |                   |      |             | Z63 Period shift activation   |  |  |
|   |                   |      |             | Z77 aFRR AOF activation   |  |  |
|   |                   |      |             | Z78 aFRR non-AOF activation   |  |  |
|   |                   |      |             |   |  |  |
| Reason (Reserve Activation Time Series Level) |                   | [1*] |             | 2nd repetition  |  |  |
|   | ReasonCode_String | [1]  |             | Z84 Activation of own resources as BRP/RE   |  |  |
| Reason Code                                   |                   |      | Reason Code | Z85 Activation of contracted resources (as contractual BSP)   |  |  |
|   |                   |      |             | Z86 Independent aggregation   |  |  |

## Data exchange: dependency matrix

| Document type                             | Process<br>type | Business type   | Direction                        | Reason code (1 <sup>st</sup> repetition)  | DK           | FI | NO | SE |
|---|-----------------|---|----------------------------------|---|--------------|----|----|----|
|   | A9<br>res<br>Z8 | A95 Frequency containment reserve   | A01 Up<br>A02 Down               | <b>Z29</b> FCR (Frequency Containment Reserve)  |              | 1  | ✓  | ✓  |
|   |                 | Z85 Fast frequency reserve  | A01 Up<br>A02 Down               | <b>Z56</b> Fast Frequency Reserve (FFR)   | ✓            |    |    | 1  |
|   |                 | A96 Automatic frequency   | <b>A01</b> Up                    | <b>Z30</b> aFRR (Frequency Restoration Reserve - Automatic)   | 1            | ~  | 1  | ~  |
|   |                 | restoration reserve   | A02 Down                         | Z77 aFRR AOF activation   | 1            | 1  | 1  | 1  |
|   |                 |   |                                  | Z78 aFRR non-AOF activation   | 1            | 1  | 1  | 1  |
| <b>A83</b> Activated balancing quantities |                 |   |                                  | <b>Z31</b> mFRR, Balancing Power (Frequency<br>Restoration Reserve - Manual activated<br>reserves, Balancing Power)       | ~            | ~  | ~  | ~  |
|   | A16<br>Realised | lised<br>A97 Manual frequency<br>restoration reserve<br>A01 Up<br>A02 Down<br>A02 Down<br>Z35 mFRR, C<br>(Frequency R<br>activated rese<br>Z36 Hour Cha<br>Z37 Power Tr | <b>A01</b> Up<br><b>A02</b> Down | <b>Z34</b> mFRR, Quarter regulation<br>(Frequency Restoration Reserve - Manual<br>activated reserves, Quarter regulation) |              |    | ~  |    |
|   |                 |   |                                  | <b>Z35</b> mFRR, Special Regulation<br>(Frequency Restoration Reserve - Manual<br>activated reserves, Special Regulation) | ~            | ~  | ~  |    |
|   |                 |   |                                  | Z36 Hour Change Regulation  |              | 1  | 1  |    |
|   |                 |   | Z37 Power Transaction            |   | $\checkmark$ |    |    |    |
|   |                 |   |                                  | Z38 TSO Internal Countertrades  |              | ~  |    |    |
|   |                 |   |                                  | <b>Z39</b> Day Ahead Production Adjustment  |              | 1  | 1  | 1  |
|   |                 |   |                                  | Z63 Period shift activation   |              |    | 1  |    |
|   |                 | <b>C26</b> Frequency Containment<br>Reserve-Normal (FCR-N)  | <b>A01</b> Up<br><b>A02</b> Down | <b>Z40</b> Frequency Containment Reserve,<br>Normal operation (FCR-N).  | 1            |    |    | ~  |
|   |                 | <b>C27</b> Frequency Containment<br>Reserve-Disturbance (FCR-D)   | A01 Up<br>A02 Down               | <b>Z41</b> Frequency Containment Reserve,<br>Disturbance (FCR-D).   |              |    |    | 1  |



## Online Service views for verifying reserve data

New views for BRPs, BSPs and REs that compile the activated reserve data and provides drill-downs

### **Overview of reserve data – example for BRP**

|                        |                                   |                                     | CRefresh                 | Export to Excel            | Save Settings | Restore Default | View Columns             | - 2  |
|------------------------|-----------------------------------|-------------------------------------|--------------------------|----------------------------|---------------|-----------------|--------------------------|------|
| Period                 | Delivered<br>Reserves Up<br>[MWh] | Delivered<br>Reserves Down<br>[MWh] | Compensation Up<br>[MWh] | Compensation<br>Down [MWh] | Compensation  | n Amount Up     | Compensation Amo<br>Down | unt  |
| 16.05.2024 00:00-01:00 |                                   |                                     |                          |                            |               | 0,00            |                          | 0,00 |
| 16.05.2024 01:00-02:00 |                                   |                                     |                          |                            |               | 0,00            |                          | 0,00 |
| 16.05.2024 02:00-03:00 |                                   |                                     |                          |                            |               | 0,00            |                          | 0,00 |
| 16.05.2024 03:00-04:00 |                                   |                                     |                          |                            |               | 0,00            |                          | 0,00 |
| 16.05.2024 04:00-05:00 |                                   |                                     |                          |                            |               | 0,00            |                          | 0,00 |
| 16.05.2024 05:00-06:00 |                                   |                                     |                          |                            |               | 0,00            |                          | 0,00 |
| 16.05.2024 06:00-07:00 |                                   |                                     |                          |                            |               | 0,00            |                          | 0,00 |
| 16.05.2024 07:00-08:00 |                                   |                                     |                          |                            |               | 0,00            |                          | 0,00 |
| 16.05.2024 08:00-09:00 |                                   |                                     |                          |                            |               | 0,00            |                          | 0,00 |
| 16.05.2024 09:00-10:00 |                                   |                                     |                          |                            |               | 0,00            |                          | 0,00 |
| 16.05.2024 10:00-11:00 |                                   |                                     |                          |                            |               | 0,00            |                          | 0,00 |
| 16.05.2024 11:00-12:00 |                                   |                                     |                          |                            |               | 0,00            |                          | 0,00 |
| 16.05.2024 12:00-13:00 |                                   |                                     |                          |                            |               | 0,00            |                          | 0,00 |
| 16.05.2024 13:00-14:00 |                                   |                                     |                          |                            |               | 0,00            |                          | 0,00 |
| 16.05.2024 14:00-15:00 |                                   |                                     |                          |                            |               | 0,00            |                          | 0,00 |
| 16.05.2024 15:00-16:00 |                                   |                                     |                          |                            |               | 0,00            |                          | 0,00 |
| 16.05.2024 16:00-17:00 |                                   |                                     |                          |                            |               | 0,00            |                          | 0,00 |
| 16.05.2024 17:00-18:00 |                                   |                                     |                          |                            |               | 0,00            |                          | 0,00 |
| 16.05.2024 18:00-19:00 |                                   |                                     |                          |                            |               | 0,00            |                          | 0,00 |
| 16.05.2024 19:00-20:00 |                                   |                                     |                          |                            |               | 0,00            |                          | 0,00 |
| 16.05.2024 20:00-21:00 |                                   |                                     |                          |                            |               | 0,00            |                          | 0,00 |
| 16.05.2024 21:00-22:00 |                                   |                                     |                          |                            |               | 0,00            |                          | 0,00 |
| 16.05.2024 22:00-23:00 |                                   |                                     |                          |                            |               | 0,00            |                          | 0,00 |
| 16.05.2024 23:00-24:00 |                                   |                                     |                          |                            |               | 0,00            |                          | 0,00 |
| Min                    | 0,000                             | 0,000                               | 0,000                    | 0,000                      |               | 0,00            |                          | 0,00 |
| Max                    | 0,000                             | 0,000                               | 0,000                    | 0,000                      |               | 0,00            |                          | 0,00 |
| Total                  | 0,000                             | 0,000                               | 0,000                    | 0,000                      |               | 0,00            |                          | 0,00 |

### Drill-down view of reserve data – example for BRP

|                        |                         |                            |                            |                            | Ø R                        | tefresh 🖉 Export t         | o Excel                   |  |
|------------------------|-------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|---------------------------|--|
|                        | Up Regulation           |                            |                            |                            |                            |                            |                           |  |
|                        | BSP 01 Not authorized * |                            |                            | Not authorized             | Not authorized             | thorized                   |                           |  |
| Period                 | RO A01                  | RO A01 Not authorized      |                            | Not authorized             | Not authorized             | Not authorized             |                           |  |
|                        | -                       | RE 21                      | RE 22                      | RE 44                      | RE 20                      | RE 21                      | RE 38                     |  |
|                        | Contractual<br>Reserves | Independent<br>Aggregation | Independent<br>Aggregation | Independent<br>Aggregation | Independent<br>Aggregation | Independent<br>Aggregation | Independer<br>Aggregation |  |
| 16.05.2024 00:00-01:00 | 0,000                   | 0,000                      | 0,000                      | 0,000                      | 0,000                      | 0,000                      |                           |  |
| 16.05.2024 01:00-02:00 | 0,000                   | 0,000                      | 0,000                      | 0,000                      | 0,000                      | 0,000                      |                           |  |
| 16.05.2024 02:00-03:00 | 0,000                   | 0,000                      | 0,000                      | 0,000                      | 0,000                      | 0,000                      |                           |  |
| 16.05.2024 03:00-04:00 | 0,000                   | 0,000                      | 0,000                      | 0,000                      | 0,000                      | 0,000                      |                           |  |
| 16.05.2024 04:00-05:00 | 0,000                   | 0,000                      | 0,000                      | 0,000                      | 0,000                      | 0,000                      |                           |  |
| 16.05.2024 05:00-06:00 | 0,000                   | 0,000                      | 0,000                      | 0,000                      | 0,000                      | 0,000                      |                           |  |
| 16.05.2024 06:00-07:00 | 0,000                   | 0,000                      | 0,000                      | 0,000                      | 0,000                      | 0,000                      |                           |  |
| 16.05.2024 07:00-08:00 | 0,000                   | 0,000                      | 0,000                      | 0,000                      | 0,000                      | 0,000                      |                           |  |
| 16.05.2024 08:00-09:00 | 0,000                   | 0,000                      | 0,000                      | 0,000                      | 0,000                      | 0,000                      |                           |  |
| 16.05.2024 09:00-10:00 | 0,000                   | 0,000                      | 0,000                      | 0,000                      | 0,000                      | 0,000                      |                           |  |
| 16.05.2024 10:00-11:00 | 0,000                   | 0,000                      | 0,000                      | 0,000                      | 0,000                      | 0,000                      |                           |  |
| 16.05.2024 11:00-12:00 | 0,000                   | 0,000                      | 0,000                      | 0,000                      | 0,000                      | 0,000                      |                           |  |
| 16.05.2024 12:00-13:00 | 0,000                   | 0,000                      | 0,000                      | 0,000                      | 0,000                      | 0,000                      |                           |  |
| 16.05.2024 13:00-14:00 | 0,000                   | 0,000                      | 0,000                      | 0,000                      | 0,000                      | 0,000                      |                           |  |
| 16.05.2024 14:00-15:00 | 0,000                   | 0,000                      | 0,000                      | 0,000                      | 0,000                      | 0,000                      |                           |  |
| 16.05.2024 15:00-16:00 | 0,000                   | 0,000                      | 0,000                      | 0,000                      | 0,000                      | 0,000                      |                           |  |
| 16.05.2024 16:00-17:00 | 0,000                   | 0,000                      | 0,000                      | 0,000                      | 0,000                      | 0,000                      |                           |  |
| 16.05.2024 17:00-18:00 | 0,000                   | 0,000                      | 0,000                      | 0,000                      | 0,000                      | 0,000                      |                           |  |
| 16.05.2024 18:00-19:00 | 0,000                   | 0,000                      | 0,000                      | 0,000                      | 0,000                      | 0,000                      |                           |  |
| 16.05.2024 19:00-20:00 | 0,000                   | 0,000                      | 0,000                      | 0,000                      | 0,000                      | 0,000                      |                           |  |
| 16.05.2024 20:00-21:00 | 0,000                   | 0,000                      | 0,000                      | 0,000                      | 0,000                      | 0,000                      |                           |  |
| 16.05.2024 21:00-22:00 | 0,000                   | 0,000                      | 0,000                      | 0,000                      | 0,000                      | 0,000                      |                           |  |
| 16.05.2024 22:00-23:00 | 0,000                   | 0,000                      | 0,000                      | 0,000                      | 0,000                      | 0,000                      |                           |  |
| 16.05.2024 23:00-24:00 | 0,000                   | 0,000                      | 0,000                      | 0,000                      | 0,000                      | 0,000                      |                           |  |
| l                      |                         |                            |                            |                            |                            |                            |                           |  |
| Min                    | 0,000                   | 0,000                      | 0,000                      | 0,000                      | 0,000                      | 0,000                      |                           |  |
| Мах                    | 0,000                   | 0,000                      | 0,000                      | 0,000                      | 0,000                      | 0,000                      |                           |  |
| Total                  | 0.000                   | 0.000                      | 0.000                      | 0.000                      | 0.000                      | 0.000                      |                           |  |

\*In Finland, BRP/RE is not authorized to see BSP or RO information regarding the independent aggregation

## National differences

|                       | Denmark 📒  | Finland 🛨  | Norway 🗮   | Sweden 📒                      |
|-----------------------|--|--|--|-------------------------------|
| Structures            |  | <ul> <li>BRP/RE not authorized to see<br/>BSP or RO information on<br/>independent aggregations.</li> </ul>        |  |                               |
| Input data            |  | Misdelivered reserves  |  |                               |
| Data exchange         | DERI reported by DataHub   | <ul> <li>DERI reported by BSP or Fingrid<br/>(depending on type)</li> <li>Misdelivered reserves in DERI</li> </ul> | <ul> <li>No decision on DERI sender(s)</li> </ul>  | No decision on DERI sender(s) |
| Calculations          | <ul> <li>Compensation calculation for<br/>mFRR: the price difference<br/>between ramping ISP and "main<br/>ISP" will be invoiced from EN<br/>instead of it being part of BSPs<br/>compensation.</li> </ul> |  | <ul> <li>Possibly compensation for all reserves, not only for independent aggregation</li> </ul> |                               |
| Invoicing             |  | <ul><li>Regulation imbalance</li><li>Regulation imbalance fee</li></ul>  |  |                               |
| Collaterals           |  | <ul> <li>Collateral formula for BSPs with<br/>independent aggregation</li> </ul>                                   |  |                               |
| <b>Online Service</b> |  | • Visibility: see Structures   |  |                               |
| Other                 |  |  | <ul><li>No regulation in place yet</li><li>Model is subject to change</li></ul>                  | Model is subject to change    |



WE SETTLE, TOGETHER!



## eSett: Market overview

Customer committee 5/2024

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## eSett: Market overview

### <u>Contents</u>

- Market Parties & Imbalance volumes
- Prices
- Production & consumption
- Trading volumes

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## BRPs per country in imbalance settlement



# Active market party roles in imbalance settlement

DSO: 41 RE: 171



Number of BRPs with branches in several countries increased from 2020 to 2024
 11->17->22->31->36



## Active market party roles in imbalance settlement

Number of BRPs per country classified based on last three months portfolio.



Consumer 
 Producer 
 Mixed 
 Trader 
 Other

PCR = Ratio of Production / Consumption for the BRP branch.

Classes: 1) Consumer: PCR < 0,5. 2) Producer: PCR > 2,0. 3) Mixed: 0,5 < PCR < 2,0. 4) Trader: If only PX Market or Bilateral Trades. 5) Other: Only reserves / no settlement data for the month.

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## Average imbalance price per day (FI, DE, NO, SE)

Consumption Imbalance Price / Imbalance Price, Average per Day [€] 800 700 600 500 400 300 200 100 0 A CAR AL BOL DO LOND AND A AND -100 -200 — Consumption Imbalance Price — Imbalance Purchase Price – – – 14-Day Mov. Avg.

## Average monthly imbalance price per area

Consumption / imbalance price per Country, avarage per month (€) 500 450 400 350 300 250 200 150 100 50 0 130.22 14:22 Seli'l Marill J.2A Vary 22 30.23 Aar.23 Ast.24 Way 52 23 32 1.2h

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## Production per prod type and consumption (FI, NO & SE)

Production per prod type and consumption (FI, NO & SE)



### Production per prod type and consumption (FI)

Production per prod type and consumption (FI)



### Production per prod type and consumption (NO)



Production per prod type and consumption (NO)



20,000,000

18,000,000

16,000,000

14,000,000

12,000,000

10,000,000

### Production per prod type and consumption (SE)

Production per prod type and consumption (SE)



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### Day-ahead and Bilateral trades in the NBS countries



& eSett



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