Information about Nordic Imbalance Settlement to prospective Settlement Banks

30 November 2016
Purpose of this package

- Introduce the new Nordic Imbalance Settlement operation
- Present the banking services that the Balance Responsible Parties need to obtain
- Clarify what is required in order to become and to operate as a Settlement Bank

Objective:
To ensure that a sufficient number of banks in Norway, Sweden and Finland will be able to provide the necessary settlement bank services that Balance Responsible Parties need to obtain to participate in the Nordic Imbalance Settlement.
Topics

1. About the Nordic Imbalance Settlement and eSett Oy
2. Invoicing, payments and collateral
3. Role of Settlement Banks
4. Agreements
5. Steps to become a Settlement Bank
6. Further information and contacts
About the Nordic Imbalance Settlement

- Imbalance settlement is a natural monopoly and a necessary function in a commercial electricity market.
- The Transmission System Operators (TSO) Fingrid Oyj, Statnett and Svenska Kraftnät have decided to implement a common imbalance settlement service for the electricity markets in Finland, Norway and Sweden.
- The TSOs have founded the joint service company eSett Oy to operate the Nordic Imbalance Settlement.
- eSett Oy is incorporated in Finland and owned by Fingrid Oyj, Statnett and Svenska Kraftnät, each with a 33.3% share.
- eSett will start operating the imbalance settlement for Finland, Norway and Sweden on 1 May 2017.
- The common Nordic Imbalance Settlement solution is supported by the governments and regulators in the Nordic countries and is regarded as an important step towards a fully functional common retail market.
- Each national TSO is still ultimately responsible for the balancing operations in their country but eSett will manage the settlement on their behalf.
Imbalance Settlement is a necessary function in a commercial electricity market

**Before delivery hour:**
- Physical trading
  - Operated by Nord Pool Spot

**ELSPOT**
- Day-ahead

**ELBAS**
- Intraday

**Bilateral trades**

**Plan before delivery hour:**
- Production + Purchases = Consumption + Sales

**Delivery hour:**
- Balancing
  - Operated by TSO

**Balancing market**

**Reality during delivery hour:**
- Production + Purchases ≠ Consumption + Sales

**After delivery hour:**
- Imbalance settlement
  - Operated by eSett

**Imbalance settlement after delivery hour:**
- Production + Purchases ± Imbalance Power = Consumption + Sales
Imbalance Settlement is separate from the settlement of the physical trades

Before delivery hour:
- Physical trading
  - Operated by Nord Pool Spot

Delivery hour:
- Balancing
  - Operated by TSO

After delivery hour:
- Imbalance settlement
  - Operated by eSett

Settlement of physical trades:
- ELSPOT and ELBAS trades settled by Nord Pool Spot
- Bilateral trades settled between the trading parties

Imbalance settlement:
- Imbalance settlement is the settlement of differences between the physical trades and the actual production and consumption (=imbalances).
- Imbalance settlement also includes the invoicing of certain fees as well as the settlement of reserves activated by the TSO in the balancing market.
Differences between planned and actual volumes of consumption and production give rise to imbalances, which need to be compensated by regulation (or other imbalances in opposite direction) to maintain the moment-to-moment balance in the power system.
A very simple illustrative example (2/2)

**Imbalance settlement after the delivery hour**

- **Producer**: Pays for 2 units of imbalance power
- **Settlement responsible**: Gets paid for 1 unit of balancing power
- **Consumer**: Gets paid for 1 unit of imbalance power
- **Provider of balancing power**: (However, sum of monetary amounts ≠ 0, due to differences in pricing of different transactions.)

Sum of settled power units = 0
Participants in the Nordic Imbalance Settlement

- **Participants in financial settlement:**
  - Transmission System Operators
  - Imbalance Settlement Responsible Party
  - Balance Responsible Parties

- **Other market participants:**
  - Power Exchange
    - NordPool Spot
      - Reporting trades and prices to eSett
      - NPS trades settled separately
  - Retailers
    - Buying and selling electricity
    - Has agreement with BRP
  - Distribution System Operators
    - Reporting metering data to eSett

*eSett*

*Participants in the Nordic Imbalance Settlement*
Balance Responsible Parties in the Nordic Imbalance Settlement Model

- A Balance Responsible Party (BRP) is responsible for the settlement of imbalances on its own behalf as a producer, consumer or trader of electricity or on the behalf of other producers, consumers or traders of electricity.

- A single BRP can operate in multiple countries in the Nordic Imbalance Settlement Model with eSett as the single counterparty for imbalance settlement.

- There are currently approximately
  - 149 BRPs in Norway
  - 30 BRPs in Sweden
  - 35 BRPs in Finland

- Listings of BRPs active in each country:
  - Norway: [http://www.ediel.no/Portal/PartyList/PartyList/ViewBalanceResponsible](http://www.ediel.no/Portal/PartyList/PartyList/ViewBalanceResponsible)
  - Sweden: [http://www.ediel.se/Portal/PartyList/PartyList/ViewBalanceResponsible](http://www.ediel.se/Portal/PartyList/PartyList/ViewBalanceResponsible)
Topics

1. About the Nordic Imbalance Settlement and eSett Oy

2. Invoicing, payments and collateral

3. Role of Settlement Banks

4. Agreements

5. Steps to become a Settlement Bank

6. Further information and contacts
Key aspects of the invoicing model

- Weekly invoicing of imbalances, activated reserves and fees
  - Positive invoice amount (BRP pays to eSett) → "Debit Notice"
  - Negative invoice amount (eSett pays to BRP) → "Credit Notice"
- Each Monday, eSett invoices the settlement result and fees from the delivery week that started three weeks ago
- BRP receives one invoice per country where it operates
- BRPs can select to be invoiced either in default currency (EUR) or in local currency (NOK or SEK)
  - Different choice per country possible
- Invoices settled by eSett during the same week:
  - Amount of Debit Notice direct debited by eSett on Wednesday
  - Amount of Credit Notice paid out by eSett on Thursday
- A holiday in the interval Monday - Thursday in any of the NBS countries shifts the activities on and after the holiday one business day forward
The imbalance settlement results are invoiced and settled ~3 weeks after the delivery day.

### Schedule of imbalance settlement and invoicing

<table>
<thead>
<tr>
<th>Calendar days</th>
<th>Week 1</th>
<th>Week 2</th>
<th>Week 3</th>
<th>Week 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mon</td>
<td>Tue</td>
<td>Wed</td>
<td>Thu</td>
</tr>
<tr>
<td>Delivery days</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Mon</td>
<td>Tue</td>
<td>Wed</td>
<td>Thu</td>
</tr>
<tr>
<td>Delivery day</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data reported</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Settlement final</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Settlement invoiced</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incoming payments to eSett debited</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outgoing payments to BRP credited</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Delivery day D0**: Reporting of data D2 - D13
- **Settlement of week 1 final**: Invoicing of week 1
- **Direct debiting of debit invoices**: Payment of credit invoices
Collateral model

- Each BRP must provide collateral to eSett as security against the risk that the BRP is unable to fulfill its obligations towards eSett
- eSett uses a dynamic collateral model where the collateral requirements are recalculated each week to reflect changes in the counterparty exposure
- **Standard schedule:**
  - Collateral requirements are calculated by eSett each Monday and published in the Online Service (extranet for BRPs) by 13 CET on Monday
  - BRPs shall provide sufficient collateral to meet the requirement by **End of Business on Monday**
- **Exceptions:**
  - If Monday is a holiday (in any of the countries), eSett will publish the collateral requirement on the next business day
  - If the risk exposure changes significantly during the week, eSett will publish an updated collateral requirement
  - Collateral updates are published by 13 CET and the BRP shall provide sufficient collateral to meet the updated requirement by **End of Business** on the day when the updated requirement was published
Two alternative forms of collateral

A. Cash collateral
   • Cash on an account in an approved Settlement Bank
   • Account pledged to eSett by signing Pledged Cash Account Agreement defined by eSett
   • eSett shall also have right of disposal and right to receive daily account statements
   • Currency of account can be EUR, NOK or SEK

B. On-demand guarantee
   • Issued by approved Settlement Bank
   • Shall be unconditional, irrevocable and payable on first demand
   • Issued according to On-Demand Guarantee template defined by eSett
   • Currency of guarantee can be EUR, NOK or SEK

Any combination of these two forms of collateral is also possible.
Daily collateral monitoring is performed by eSett.

For this purpose eSett will retrieve daily account balances from each collateral account.

eSett verifies that each BRP has met collateral requirement by End of Business deadline on Monday based on Monday’s end-of-day account statement on Tuesday morning.

Currency treatment:

- Calculation of collateral requirement and monitoring of collateral is carried out in EUR.
- Any collateral deposits in SEK and NOK are converted to EUR with daily ECB rate.
Information and money flows between the parties

- **Invoice**
  - eSett's invoice operator
  - BRP's invoice operator

- **Collateral requirement**
  - Request to release excess collateral

- **Request for Transfer**
  - eSett's bank
  - BRP's settlement bank

- **Payment instruction**
  - Account balances

- **Instruction to increase collateral**
  - Collateral increase
  - Collateral release
  - Other account

- **Debit**
  - eSett's settlement account

- **Credit**
  - BRP's settlement account
Topics

1. About the Nordic Imbalance Settlement and eSett Oy
2. Invoicing, payments and collateral
3. Role of Settlement Banks
4. Agreements
5. Steps to become a Settlement Bank
6. Further information and contacts
Role of Settlement Bank

1. Provision of cash accounts to the BRPs
2. Execution of "Request for Transfer" instructions from eSett
3. Daily reporting of balances and transactions on the cash accounts to eSett
4. Provision of on-demand guarantees as collateral for BRPs
Provision of Cash Accounts to the BRPs

• Forms of cash accounts:
  A. Pledged Cash Account
     – Used for posting of cash collateral and for settlement of the BRP’s invoices
     – Governed by Pledged Cash Account Agreement
  B. Non-Pledged Cash Account
     – Only used for settlement of the BRP’s invoices
     – Governed by Non-Pledged Cash Account Agreement
     – Only for the TSOs

• General conditions of Cash Accounts:
  – Account has to be held in any of the participating countries
  – Currency can be EUR, NOK or SEK
  – Bank and BRP can agree on terms, but these may not be in conflict with terms of Pledged / Non-Pledged Cash Account Agreement between Bank, BRP and eSett
Execution of “Request for Transfer” instructions from eSett

- To collect the BRP’s payable amounts to eSett, eSett instructs the Settlement Bank to debit the BRP’s cash account and transfer the funds to eSett’s account in eSett’s bank
- Instructions issued by eSett are forwarded by eSett's bank to Settlement Bank as MT101 message
- Instructed transfers to be executed by Settlement Bank in accordance with the "Request for Transfer" service defined by SWIFT
- “Request for Transfer” model enabled by following agreements:
  - Settlement Bank Agreement between Settlement Bank and eSett
  - Cash Account Agreement between BRP, Settlement Bank and eSett
  - Bilateral agreement between Settlement Bank and eSett's bank
  - Any necessary agreements between Settlement Bank and BRP
- Outgoing payment executed as Same-Day-Value payment
- The Settlement Bank shall include, unaltered, at least the 35 first characters of any remittance information supplied in field 70 of the incoming MT101 message
- The Settlement Bank shall immediately inform eSett if it, due to any reason, is unable to execute a payment from a Cash Account as instructed by eSett
# Schedule for execution of Request for Transfer

<table>
<thead>
<tr>
<th>#</th>
<th>Message or transaction</th>
<th>Description</th>
<th>Cut-off time</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td><strong>Incoming Request for Transfer from eSett</strong></td>
<td>Deadline for when an incoming Request for Transfer instruction from eSett shall be available to the Settlement Bank in order for deadline (2) to apply</td>
<td>13:00 CET D+0</td>
</tr>
<tr>
<td>(2)</td>
<td><strong>Outgoing payment transfer to eSett</strong></td>
<td>Deadline for when a payment transfer from the BRP's Settlement Account to eSett's account shall be available to eSett's bank, provided that the incoming Request for Transfer instruction was available to the Settlement Bank by deadline (1)</td>
<td>14:45 CET D+0</td>
</tr>
</tbody>
</table>
Daily reporting of Balances and Transactions on the Cash Accounts to eSett

- For collateral monitoring and for ensuring orderly settlement of outstanding invoices, eSett needs to have up to date information about the balances and transactions on the BRPs’ Cash Accounts.
- The Settlement Bank shall make daily end-of-day transaction and balance reports on the BRPs’ Cash Accounts available to eSett in the SWIFT MT940 format defined by SWIFT.
- The MT940 reports will be retrieved from the Settlement Bank on eSett’s behalf by eSett’s bank.
- The MT940 reports shall be available for retrieval by 4:00 am CET each banking day of the Settlement Bank.
- When needed, the Settlement Bank shall also respond to eSett’s enquiries concerning transactions and balances on a Cash Account during the day.
  - This information can be provided in the SWIFT MT941 format or manually.
Release of Excess Funds on a Pledged Cash Account

- If a Pledged Cash Account holds more funds than what is necessary for meeting the Collateral Requirement and settling the next debit invoice, the BRP may request from eSett that the excess balance be released from the Pledged Cash Account.
- If the request is valid, eSett will instruct the Settlement Bank to transfer the Excess Balance to another designated account of the BRP.
- The issuing and executing of instructions to release excess funds will be made in accordance with the Request for Transfer service.
- No need for Settlement Bank to verify the validity of the instruction.
Service fees

- The BRP is responsible for all applicable service fees for the settlement bank services
- eSett is not responsible for any fees or costs incurred by the Settlement Bank
- Any pricing model can be applied to the settlement bank services
Requirements on Settlement Banks

- A bank domiciled in Denmark, Finland, Iceland, Norway or Sweden (including a branch of such a bank, the branch operating in Denmark, Finland, Iceland, Norway or Sweden)
- Member of SWIFT or operating through another SWIFT member
- Ability to execute Request for Transfer instruction / MT101 with Same Day Value according to eSett’s schedule
- Ability to include remittance information from incoming MT101 in outgoing payment
- Ability to report balances in MT940 format according to eSett’s schedule
- Credit rating on at least the following level:
  - Standard & Poor's: long term rating “A”
  - Moody's: long term rating “A2”
  - Fitch: long term rating “A”
- Valid Settlement Bank Agreement with eSett
- Valid bilateral agreement with eSett’s bank (Nordea) for execution of Request for Transfer transactions
Topics

1. About the Nordic Imbalance Settlement and eSett Oy
2. Invoicing, payments and collateral
3. Role of Settlement Banks
4. Agreements
5. Steps to become a Settlement Bank
6. Further information and contacts
Contract structure for governing invoicing, payments and collateral in the Nordic imbalance settlement

- eSett
  - Imbalance Settlement Agreement
  - Pledged / Non-Pledged Cash Account Agreement
  - On-Demand Guarantee
  - Settlement Bank Agreement
  - Bilateral agreement for Request for Transfer
- eSett's Bank (Nordea)
- BRP
  - Banking service agreements
- Settlement Bank
Essential terms of Settlement Bank Agreement

• Governance of Pledged Cash Accounts
  – Opening and terms
  – Pledge in favor of eSett
  – Right of disposal for eSett
  – Procedure for release of excess funds

• Governance of Non-Pledged Cash Accounts
  – Opening and terms
  – Right of disposal for eSett

• Execution of Request for Transfer Transactions

• Reporting of Account Balances and Transactions to eSett

• Issuing of On-Demand Guarantees

• Notices and other communication

• Liability

• Fees

• Appendices:
  – Operating procedures
  – Requirements on Settlement Banks
  – Pledged Cash Account Agreement
  – Non-Pledged Cash Account Agreement
Essential terms of Cash Account Agreements

• Pledged Cash Account Agreement
  – Pledge in favour of eSett
  – Right of Disposal for eSett
  – Information Disclosure
  – Procedure for release of excess funds
  – Appendix: Settlement Bank Agreement

• Non-Pledged Cash Account Agreement
  – Right of Disposal for eSett
  – Information Disclosure
  – Appendix: Settlement Bank Agreement
Essential terms of On-Demand Guarantee

- Currency can be EUR, NOK or SEK
- Payable on first demand
- Payment within 3 banking days of demand
- Continuing guarantee, can be terminated by bank with 3 months’ notice
  - Upon termination the guarantee remains valid for payment obligations incurred until the termination date until such payment obligations have been settled in full
Topics

1. About the Nordic Imbalance Settlement and eSett Oy
2. Invoicing, payments and collateral
3. Role of Settlement Banks
4. Agreements
5. Steps to become a Settlement Bank
6. Further information and contacts
Steps to become a settlement bank

1. Bank informs eSett about intention to act as Settlement Bank
   - Notices to finance@esett.com or named contact persons at eSett
   - Bank to appoint contact person for further communication

2. eSett requests and reviews information about the bank’s capability to operate in accordance with eSett’s operating procedures

3. eSett confirms to the bank whether the bank can be approved as a Settlement Bank in the Nordic Imbalance Settlement

4. Bank and eSett sign Settlement Bank Agreement

5. eSett performs end-to-end testing of Request for Transfer transaction and Balance Reporting together with selected BRP

6. eSett adds bank onto public list of approved Settlement Banks
### Schedule of preparations

<table>
<thead>
<tr>
<th>Event</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commenting on Settlement Bank agreement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>22 Apr – 8 May</td>
</tr>
<tr>
<td>Final Settlement Bank Agreement published</td>
<td></td>
<td></td>
<td>31 May</td>
</tr>
<tr>
<td>Signing of Settlement Bank Agreements</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BRPs to obtain Settlement Bank Services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>eSett operating imbalance settlement for Finland, Norway and Sweden</td>
<td></td>
<td></td>
<td>1 May</td>
</tr>
</tbody>
</table>
Topics

1. About the Nordic Imbalance Settlement and eSett Oy

2. Invoicing, payments and collateral

3. Role of Settlement Banks

4. Agreements

5. Steps to become a Settlement Bank

6. Further information and contacts
Further information

- Web site of eSett: www.esett.com
- Contacts:

  Paula Berg
  Finance Manager, eSett Oy
  +358 40 4773551
  Paula.Berg@esett.com

  Jonni Laine
  Development Manager, eSett Oy
  +358 40 6742004
  Jonni.Laine@esett.com

  Minnakaisa Ahonen
  CEO, eSett Oy
  +358 50 5425427
  Minnakaisa.Ahonen@esett.com
Läkkisepääntie 21
P.O.Box 530
FI-00101 Helsinki, Finland
finance@esett.com