

Commissioning plan for BRPs

Commissioning of Nordic Imbalance Settlement in Denmark

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Foreword

The purpose of this commissioning plan is to provide a plan for Balance Responsible Parties (BRP) active in Denmark for the handover of settlement operations from Energinet to eSett. This is to support and enable a smooth transition from current market model to the new NBS (Nordic Imbalance Settlement) market model used in the Nordics. The commissioning plan includes description of the market practicalities related to the change and a guideline for preparations and parallel settlement and much more.

The commission plan does not cover activities that can be seen as part of the daily business (these will be covered by the NBS Handbook) but focus rather on one-time events or extraordinary situations where specific clarity is needed during the commissioning phase.

The commissioning plan will be updated as often as needed until each go-live. All changes will be summarized in the Change log at the end of this document. eSett encourages the market participants to review the change log. As well eSett encourages the BRPs to subscribe a specific newsletter that aims to provide Denmark specific information during the commissioning phase.

In addition to the commissioning plan the following sources include information, which is to be considered during preparation.

- The NBS handbook provides an overview of the Nordic Imbalance Settlement Model from the market participant's perspective. The handbook collects information of rules, regulation and standards which act as requirements for all market participants operating in different roles in the countries involved in the Nordic Imbalance Settlement. The handbook is available at www.esett.com/handbook
- The Danish market regulations with changes due to implementation of the NBS model in the Danish market. The revised regulation will be on the Energinet homepage when approved by the Danish Regulator.
- BRS (Business Requirement Specification for Data Exchange in Nordic Balance Settlement); a technical specification for the ENTSO-E and ebIX® XML documents used in the Nordic Balancing System, available at <https://ediel.org/common-ediel-documents/>
- The User Guide for XML documents for NBS; a detailed user guide for the ENTSO-E and ebIX® XML documents used in the NBS model, available at <https://ediel.org/common-ediel-documents/>
- XML example schemes have been made available as an easy access to the right format for specific messages, available at <https://ediel.org/common-ediel-documents/>
- The Communication Guideline provides information about practicalities to establish a connection between eSett and market participants. The Communication Guideline is available at www.esett.com/materials/communication-guidelines

eSett reserves the right to update the commissioning plan on a regular basis (need based). Updated versions of the commissioning plan will be communicated via <https://www.esett.com/> and the eSett newsletter. eSett encourages market participants to send their feedback on the commissioning plan to eSett.

Terminology

Terminology		
Term	Abbreviation	Explanation
Balance Responsible Party	BRP	A company that has a valid Imbalance Settlement Agreement with eSett and a valid Balance Agreement with a TSO and manages a Balance Obligation on its own behalf as a producer, consumer or trader of electricity or on the behalf of other producers, consumers or traders of electricity
Distribution System Operator	DSO	An owner of a distribution grid that has the responsibility to distribute electricity from producers to customers. The DSOs have the responsibility to meter production, consumption and exchange and report the metered data to the involved stakeholders. This term refers also to the operators of closed distribution networks. In Denmark, DSOs report settlement data to DataHub and the DataHub controls the DSO reporting towards eSett.
Information Service	INFS	Webservice for market participants. Makes it possible for market participants, to retrieve settlement related data they are entitled to.
Market Balance Area	MBA	An area within the power system that provides (exchange) schedules that represent basis for monitoring of imbalances. The day-ahead price is always the same within a MBA.
Market Entity	ME	A collective term for MBA, MGA, PU and RO.
Market Entity Connection	MEC	Market Entity Connection is a collective term for different kinds of connections either between different MPs (e.g. bilateral trades between parties) or MPs and MEs (e.g. MP's metered consumption in MGA or MP's production plan per RO). The MEC's time series data is the core of the imbalance settlement.
Market Participants	MP	Market Participants are the main stakeholders in the settlement: the TSOs, DSOs, BRPs and REs. These enter into transactions in one or more wholesale energy market.
Metered data	-	Metered (metering) data is used as a general term for all the data that the market participants meter, collect and report to ISR for imbalance settlement purpose.
Metered Data Aggregator	-	A party responsible for the establishment and qualification of metered data from the Distribution System Operator. This data is aggregated according to a defined set of market rules. This role can be represented locally by a national electricity market hub or DSO.
Metering Grid Area	MGA	A Metering Grid Area is a physical area where consumption and / or production and exchange can be metered. An MGA can include both production and consumption but also only one of these. It is delimited by the placement of meters for period measurement for input to, and withdrawal from the area. It can be used to establish the sum of consumption and production with no period measurement and network losses. MGAs are decided on national level. One company is responsible for all metering points within one MGA.

Terminology		
Term	Abbreviation	Explanation
Messaging Service	MSGS	eSett's service, enabling the data interchange between eSett and market participants.
Online Service	ONLS	A web-based communication platform, which is eSett's primary means of communicating information to Balance Responsible Parties and other parties of the Nordic Imbalance Settlement.
Nominated Electricity Market Operator	NEMO	The unique power exchange of trades (PX market trades) for the actual delivery of energy that receives the bids from the Market Participants that have a contract to bid. The Market Operator(s) determine(s) the market energy price for the Market Balance Area after applying technical constraints from the System Operator. It may also establish the price for reconciliation within a Metering Grid Area.
Parallel Reporting	PR	Parallel reporting is defined as a period when market participants will report both to the national TSO and to eSett. National practices are applied.
Production Unit	PU	A Production Unit is a generator or a set of generators within the same power plant in one MGA. PUs will not be used in the Danish implementation of the NBS model before 2022.
Regulation Object	RO	<p>A Regulation Object is a set of one or more generators and stations within a MBA decided by the respective Transmission System Operator (TSO) and the BRP. One RO can only include production of a certain technology (wind, hydro, nuclear, etc.). There can only be one BRP per RO. In Denmark the RO is determined by Energinet and the Danish standard for them is BRPGLN_TYPE. For example:</p> <ul style="list-style-type: none"> • 5790000000000_IPPL – for production plans non-adjustable production • 5790000000000_RPPL – for productions plans adjustable production, and for activated reserves in production • 5790000000000_RFPL – for activated reserves in consumption.
Retailer	RE	A Retailer sells electricity to an end user. It sells and buys electricity directly from a producer, another retailer or via PX Market. A RE has an agreement with a BRP. In Finland a RE may have an agreement with a BRP, or with another RE who has an agreement with a BRP (chain of open supplier).
Service Provider	SP	A Service Provider is a party that provides operational balance management and settlement services for the market participants e.g. BRPs, REs and DSOs. According to what services the SP provides to the market participant, the SP performs the corresponding tasks towards eSett and the imbalance settlement system.
Settlement Bank	SB	To participate in the imbalance settlement, the BRP needs to hold a bank account (also referred to as "settlement account") in an approved settlement bank, i.e. a bank which has been approved by eSett to be used in the imbalance settlement. eSett defines the criteria for approval of banks as settlement banks.
Transmission System Operator	TSO	A Transmission System Operator has the responsibility for both the security of supply and the high-voltage grid. They also carry the ultimate responsibility on the imbalance settlement according to the national laws. In this document TSO refers to following Nordic TSOs: Energinet, Fingrid, Statnett and Svenska kraftnät.

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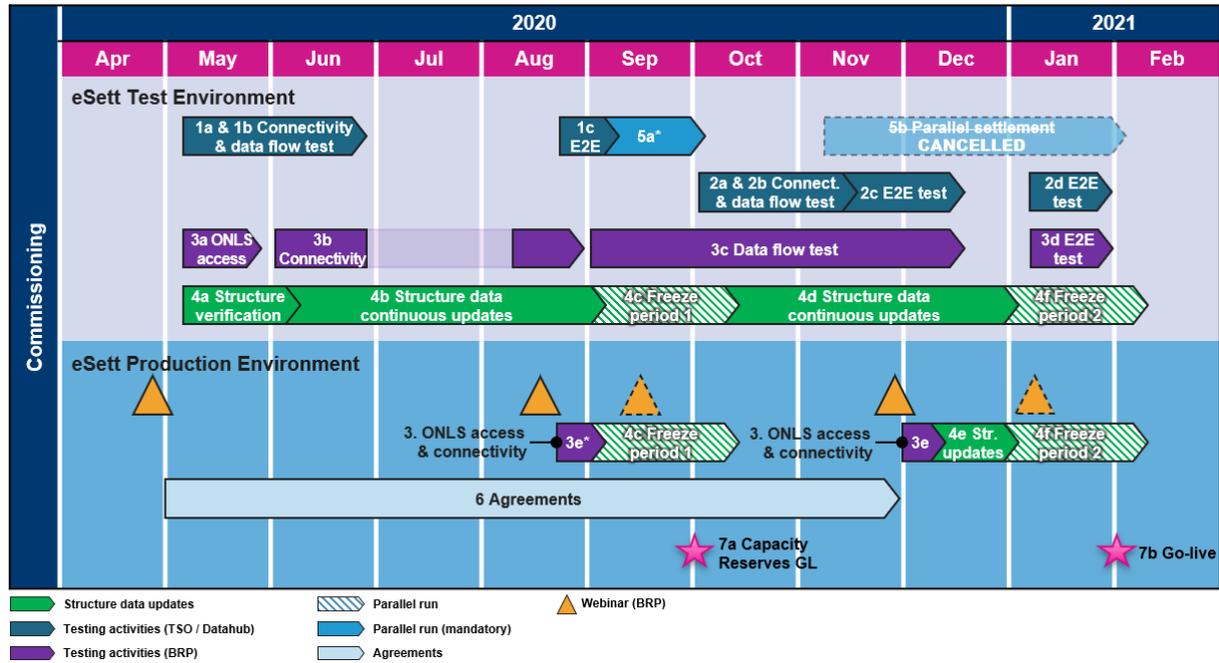
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1. Commissioning

The overall implementation time plan (see Figure 1 below) describes the plan for implementation from the beginning of April 2020 to the end of February 2021. The overall implementation time plan is divided into two parts which are Test Environment and Production Environment depending on in which environment the activities take place.



1 Overall implementation time plan

The commissioning time plan (see Table 1 below) shows the exact dates and involved parties for each activity shown in Figure 1. The *More information* column shows where in this document more information about the activity in question can be found.

Commissioning time plan					
#	Activity	Time	Involved parties	Environment	More information
1a	Reserves Connectivity test	11.05.2020 – 12.05.2020	DPS/eSett	TEST2	-
1b	Reserves Data flow test	11.05.2020 – 26.06.2020	DPS/eSett	TEST2	-
1c	Reserves End-to-End test	26.08.2020 – 04.09.2020	DPS/eSett	TEST2	-
2a	Imbalance Connectivity test	05.10.2020 – 06.10.2020	TSO, DataHub, eSett	TEST2	-
2b	Imbalance flow test	07.10.2020 – 16.11.2020	TSO, DataHub, eSett	TEST2	-
2c	Imbalance End-to-End test	09.11.2020 – 13.12.2020	TSO, DataHub, eSett	TEST2	-
2d	Imbalance End-to-End test	11.01.2021 – 24.01.2021	TSO, DataHub, eSett	TEST2	-
3a	BRP Online Service access	11.05.2020 – 22.05.2020	All BRPs, eSett	TEST2	Chapter 6 Connectivity, Chapter 12 Test practices and support
3b	BRP Connectivity test	01.06.2020 – 26.06.2020 10.08.2020 – 28.08.2020	All BRPs, eSett	TEST2	Chapter 6 Connectivity
3c	BRP Dataflow test	01.09.2020 – 13.12.2020	All BRPs, eSett	TEST2	Chapter 12 Test practices and support

3d	BRP End-to-End test	11.01.2021 – 24.01.2021	All BRPs, eSett	TEST2	Chapter 12 Test practices and support
3e	BRP Online Service access, connectivity test and structure verification	21.08.2020 – 31.08.2020* 01.12.2020 – 07.12.2020	BRPs* BRPs eSett	Production	Chapter 6 Connectivity
4a	Verification of structures	11.05.2020 – 05.06.2020	All market participants	TEST2	Chapter 7.1.2 Verification of Structure Data
4b	Continuous update of real structure data	08.06.2020 – 31.08.2020	All market participants	TEST2	Chapter 7 Structure data Chapter 12 Test practices and support
4c	Freeze period 1 for structure data	01.09.2020 – 11.10.2020	All market participants	Production TEST2	Chapter 9.5 Freeze periods
4d	Continuous update of real structure data	12.10.2020 – 01.01.2021	All market participants	TEST2	Chapter 7 Structure data
4e	Continuous update of real structure data	01.12.2020 – 01.01.2021	All market participants	Production	Chapter 7 Structure data
4f	Freeze period 2 for structure data	02.01.2021 – 14.02.2021	All market participants	Production TEST2	Chapter 9.5 Freeze periods
5a	Parallel run for Capacity Reserves	07.09.2020 – 30.09.2020	TSO BRPs* eSett	TEST2	Chapter 11 Parallel activities
5b	Parallel settlement CANCELLED	09.11.2020 – 31.01.2021	All market participants	TEST2	Chapter 11 Parallel activities
6	Agreements	01.05.2020 – 31.08.2020* 01.05.2020 – 27.11.2020	eSett All BRPs	-	Chapter 8 Invoicing, agreements and accounts
7a	Go-Live for Capacity Reserves	01.10.2020	TSO BRPs* eSett	Production	
7b	Go-Live for Imbalance Settlement	01.02.2021	All market participants	Production	Chapter 10 Second go-live in February 2021
*Only BRPs that are active in Capacity Reserve markets					

1 Overall implementation time plan

As seen from the overall implementation time plan, this commissioning plan consists of two go-lives. The first go-live in October 2020 concerns only those BRPs that are active in the Capacity Reserve markets. The second go-live in February 2021 concerns all BRPs (also those who are active in Capacity Reserve markets). A specific chapter about the second go-live is chapter 10 Second go-live in February 2021.

1.1. Description of the main activities for BRPs

The implementation plan consists of five main activities for BRPs. The activities and their timing, as shown in Figure 1 are:

- Connectivity verification (3a & 3b)
 - Achieving and verifying technical connectivity to Online Service and Messaging Service
 - Inform eSett when connectivity has been achieved
- Structure Verification (4a)

- Updating and verifying that all structures in Online Service are corresponding to real market structures
 - Inform eSett when structures have been verified
- Messaging Verification (3c)
 - Achieving readiness (incl. configuring the counterparty's systems) to send positively acknowledged messages to eSett's Imbalance Settlement system and understanding the messages sent by eSett
 - Production data reporting / settlement
- End-to-end activities including all processes needed in production (3d)
 - Inform eSett when you have reached full production i.e. you are able to report and have verified the correctness of settlement data (except. metered data from DataHub)
- Contract finalizing (6)
 - Returning the signed contracts to eSett
 - Updating invoicing information to Online Service.

It is very important to inform eSett when the objectives of above described phases are achieved as the market readiness is closely followed by eSett and Energinet. After a BRP has achieved one of the phases, please inform eSett via a service request: <https://esett.service-now.com/public/>.

It is in BRP's responsibility to ensure their own readiness and inform eSett about potential issues.

1.2. Description of all activities for BRPs

The implementation plan consists of 22 activities for BRPs. The 6 activities that does not apply to BRPs or have already passed, will not be described in more detail in this document.

- 3c: From September to the middle of December, all BRPs need to perform Dataflow testing meaning that you are able to send bilateral trades to eSett's testing environment if you have any and receive confirmation reports, settlement results and MGA imbalance results from eSett. Preconditions: Access to Online Service and Channel of Electronic Communication is valid. Expected outcome: Successfully sent out bilateral trades and received bilateral trade confirmation reports, settlement results and MGA imbalance results. See chapter 12 for more information.
- 3d: During November, all BRPs need to perform End-to-End testing in the Test environment to ensure the functionality of the whole settlement process. See chapter 12 for more information.
- 3e: At the end of August, those BRPs that are active in the Capacity Reserve markets, needs to check that they are able to log in to Online Service in the Production environment. All the other BRPs need to check the Online Service access in Production environment in the beginning of December. Preconditions: Credentials received from eSett. Expected outcome: Successfully logged in to Online Service in

Production environment. See chapter 6 for more information. As a part of Online Service access, eSett expects BRPs to test connectivity and verify structures against production environment.

- 4d: From October to the end of December all market participants need to update their structural data continuously in the Test environment. Preconditions: Access to Online Service in Test environment. Expected outcome: Structures in the Test environment corresponds to the actual structures. See chapter 7 for more information.
- 4e: From November to the end of December all market participants need to update their structural data continuously in the Production environment. Preconditions: Access to Online Service in Production environment. Expected outcome: Structures in the Production environment corresponds to the actual structures. See chapter 7 for more information.
- 4f: From January to the middle of February there is a second freeze period during which no updates on the structural data can be made. See chapter 9.5 for more information.
- ~~5b: Parallel settlement~~ CANCELLED.
- 6: All BRPs need to get all the agreements in order as soon as possible or face the risk of being denied to operate in Danish market starting from 1.2.2021. The deadline is 27.11.2020. Preconditions: Agreements received from eSett and an approved settlement bank is chosen. Expected outcome: All agreements in order before the deadline. See chapter 6 for more information.
- 7b: The go-live for all market participants.

1.3. Maintenance breaks

To assure quality of the service, regular time windows are reserved for maintenance. eSett will notify market participants in advance if the reserved time window will be used for maintenance. eSett expects that not many maintenance breaks will be needed, e.g. possibly only about once a month.

During maintenance breaks, Online Service is not available, and messages might not be processed. The time windows reserved for maintenance are:

- every Friday during the time interval 01.05.2020 – 31.01.2021

It's possible that the maintenance takes only some hours instead of whole day. If maintenance is needed, it will be announced at latest on Wednesday same week.

2. Customer Service

eSett consists of a lean and specialized organization, which is staffed with necessary competencies to be able integrate Denmark to the NBS model. To secure Denmark specific market knowledge, eSett will operate during an interim period with a combination of own and contracted resources from Energinet. All material concerning NBS model and eSett operations are available in English.

2.1. Customer service channels

eSett has a customer service that will assist the BRPs to reach the readiness before the go-live in February 2020. Feel free to contact us if you have any concerns or issues that requires our help or attention. Table 2 summaries our customer service channels and operating hours.

Customer service – Operating hours		
Day	Time (CET)	Possible contact ways ¹
Monday – Friday	9:00 – 15:00 (CET) ¹	https://esett.service-now.com/public/ +358 10 501 8500
Saturday	Closed	https://esett.service-now.com/public/
Sunday (and holidays)	Closed	https://esett.service-now.com/public/

2 Customer service operating hours

Frequently asked questions will be summarized by the eSett customer service organization and presented on the Online Service news feed or sent to the market participants via newsletters.

2.2. eSett company webpage

The www.esett.com page facilitates part of the customer dialogue and is the portal for finding the latest information updates and written material. Specific information regarding the commissioning and the Denmark go-live can be found on page <https://www.esett.com/denmark-go-live/>.

2.3. Service requests

eSett has a ticketing system available for all market participants. The service requests can be made at <https://esett.service-now.com/public/>. eSett encourages all market participants to use the ticketing system since it enables to processes the service requests more efficiently

¹ The official opening hours of the customer service organization at eSett. Although these are the official opening hours the eSett staff will at a majority of the working days be available between 8:00 – 16:00 CET

and the progress can be monitored, measured and reported. Market participants can approach eSett either by phone or electronically (<https://esett.service-now.com/public/>) and each query will generate a service request that enables eSett to monitor the progress and also to add information related to the open request(s).

2.4. Newsletter

eSett will provide a newsletter with Denmark specific information during the commissioning phase. We recommend that all market participants in Denmark subscribes this newsletter to be able to receive the latest information about the go-live. The newsletter can be subscribed on the Denmark specific web page (<https://www.esett.com/denmark-go-live>) or through the following link: <http://eepurl.com/gTiAVP>.

eSett has also a general newsletter which focuses on serving existing customers. However, we also hope that you will subscribe this newsletter already at this phase because it provides good information about the operation in the market. This general newsletter can be subscribed on our web pages <https://www.esett.com/newsletter/>.

3. Key documents

Information to market participants is of utmost importance since understanding of the new market model is the key to a successful implementation and operation. Information to market participants will be distributed centrally via local NBS information arrangements. In this chapter the documents and guidelines from which additional information can be found are presented.

3.1. NBS Handbook

The purpose of the NBS Handbook is to provide an overview to the Nordic Imbalance Settlement Model from the market participant's perspective. The handbook describes instructions, rules, regulation and standards which act as requirements for all market participants operating in different roles in the countries involved in the Nordic Imbalance Settlement. The handbook also highlights the national differences on areas of the imbalance settlement, which have not been harmonized between the countries.

The handbook will be continuously developed so it always contains the latest available information of the Nordic Imbalance Settlement model and of related areas. The handbook will be updated every half year (and more frequently if needed).

<https://www.esett.com/handbook/>

3.2. Danish Market regulations

The Danish Market regulations have been revised with the necessary changes to implement the NBS model. The changes are expected to be approved by the regulator during the spring 2020. The hearing version of the regulations are available on the Energinet homepage.

<https://energinet.dk/El/Horinger/Afsluttede-horinger/Horing-af-udkast-til-aendring-af-forskrifter-C1---C2---C3---D1---F1---H1---H3-og-l>

3.3. Business Requirement Specification

The Business Requirement Specification (BRS) is detailing the document exchanges needed to perform a Nordic Balance Settlement, seen from the actors in the Nordic downstream energy market. The focus of the document is the technical aspects of the document exchanges and the basis for the documents to be exchanged are the ENTSO-E and eBIX® Implementation Guides and BRSs. In addition, the Harmonized Electricity Market Role Model from ENTSO-E, eBIX® and EFET is used for identifying the relevant roles used in the BRS.

<https://ediel.org/nordic-balance-settlement-nbs/>

3.4. XML User guide

The basis for the document is the BRS for Nordic Balance Settlement. The focus of the document is the technical aspects of the documents to be exchanged, which is based on the ENTSO-E Implementation Guides and eBIX® requirements.

<https://ediel.org/nordic-balance-settlement-nbs/>

3.5. XML example files

XML example files have been provided to facilitate the implementation of the new format.

<https://ediel.org/nordic-balance-settlement-nbs/>

<https://www.esett.com/materials/communication-guidelines/>

3.6. Guidelines

3.6.1. Online Service - User guideline

For Online Service User Guide, see “ Help” on the upper right corner when logged in to the Online Service.

3.6.2. Communication guidelines

Guidelines for communication provides information about practicalities to establish a connection between eSett and market participants. The Communication guideline is available on eSett’s website.

<https://www.esett.com/materials/communication-guidelines/>

3.6.3. Guidelines for new BRPs

General guidelines for new Balance Responsible Parties describe the steps that need to be done in order to proceed with the contractual side. eSett will also send a separate set of instructions for along with the agreement package.

<https://www.esett.com/structures/new-market-participant/>

4. The NBS model

Today eSett is responsible for performing imbalance settlement and invoicing BRPs for imbalances and balancing services in Finland, Sweden and Norway. We are welcoming Denmark with joy to join the Nordic Imbalance Settlement Model!

The NBS model provides harmonized operational preconditions for all Nordic balance responsible parties, regardless of the country or market balance area. Nordic-level business processes for reporting, performing settlement and invoicing are established. Consequently, similar rules and standards for information exchange are created for each market participant.

The main function of the Nordic Imbalance Settlement Model is the common imbalance settlement. eSett performs imbalance settlement and manages invoicing and collaterals (collaterals towards eSett are not required from BRPs active in the Danish market area) towards the Balance Responsible Parties on behalf of the Transmission System Operator in each country. The Imbalance Settlement Model will take all necessary volumes into account when calculating the imbalance and furthermore, eSett is responsible for invoicing of the balancing services as part of imbalance settlement.

The BRPs are responsible for reporting bilateral trades to eSett. Plans per production RO and regulation bids for up and down regulation must be reported to the TSO as usual. PX market trades must no longer be reported by the BRP but will come from the NEMO's. BRPs are also obliged to keep their plans updated, i.e. report the updated values to eSett so that eSett can perform a reliable settlement.

Consumption and production imbalances are calculated for each BRP based on the production plans, PX market trades, bilateral trades and on realised consumption and production. Each BRP is financially liable for the imbalances under its responsibility, balanced by the balancing power procured from the balancing power market operated by the TSOs.

The different procedures and operations of the NBS model are divided into five core functions: settlement structure management, metering and reporting data, settlement, invoicing and reporting. Information about these core functions can be found in this document as well as from the Handbook.

4.1. What will change when moving to the NBS model

This chapter lists down the most important things regarding the settlement process which are going to change when moving to the NBS model.

4.1.1. Calculation of MGA imbalance

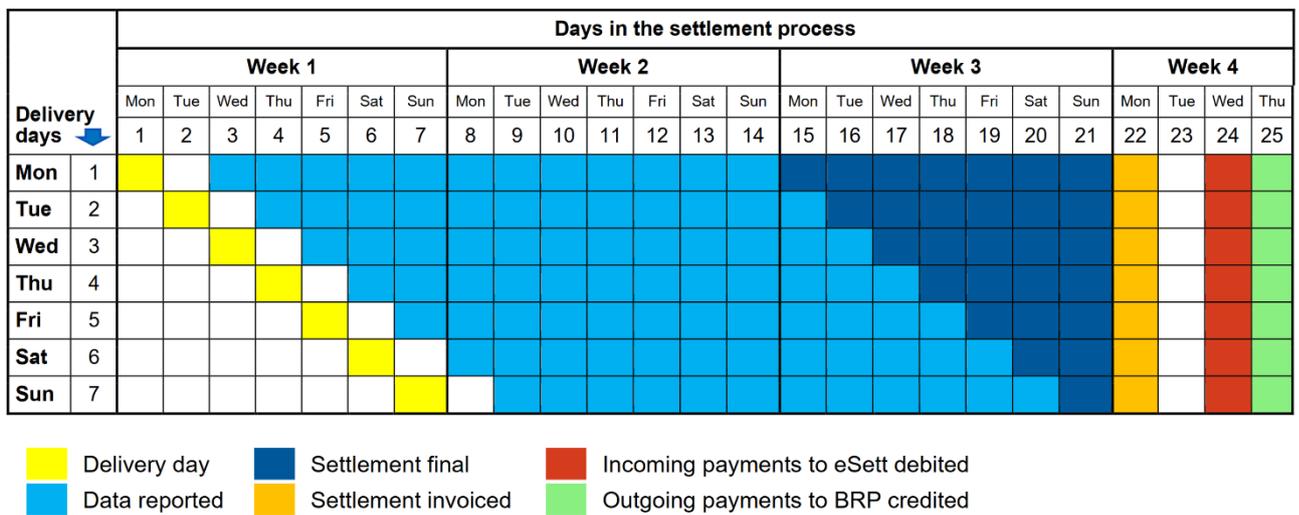
For each Metering Grid Area (MGA), an MGA imbalance is calculated in the NBS model. eSett's imbalance settlement system calculates the MGA imbalance based on reported values from the DataHub. MGA Imbalance will be an input to the consumption imbalance calculation and calculated as follows:

$$\text{MGA Imbalance} = \text{Consumption} + \text{Production} + \text{MGA exchange import per adjacent MGA} + \text{MGA exchange export per adjacent MGA}.$$

In Denmark, DataHub will aggregate and report the settlement data to eSett in a way that MGA imbalance volumes should always be zero for each MGA. If there occurs MGA imbalances, DataHub will either report updated values within gate closures to fix it or handle it in correction settlement.

4.1.2. Settlement and invoicing schedule

In the NBS model the invoicing of the imbalance settlement is carried out on a weekly basis. Invoices are issued each Monday. Each invoice comprises the transactions and fees from the delivery days for which the result of the imbalance settlement has been finalized but not invoiced yet. This means that the invoice on Monday will include the settlement that was finalized during the previous week. This settlement covers the delivery days of the week that started three weeks before the invoicing date. The schedule for settlement and invoicing in relation to the delivery dates is illustrated in Figure 2.



2 Schedule for settlement, invoicing and payment

Since eSett does not perform imbalance settlement on weekends, the settlement of Sundays' and Mondays' transactions is finalized on a Monday. The transactions from Sundays will be invoiced on the same Monday on which their settlement was finalized. The transactions from Mondays will be invoiced one week after the Monday on which their settlement was finalized.

The payable amounts of the debit notices will be debited by eSett from the BRP's settlement account two days after the invoicing day, i.e. on Wednesday. The payable amounts of the credit notices will be paid by eSett to the BRP's settlement account three days after invoicing day i.e. on Thursday.

The BRPs need to have sufficient funds on their settlement accounts for the settlement of their next invoice in case it is a debit notice. These funds also need to be in place during the Monday.

If there are one or more holidays during the invoicing cycle (Monday to Thursday), the invoicing activities on and after the holiday will be moved forward correspondingly so that there is always the same number of business days between the events: one business day between the invoicing day and the day when incoming amounts are debited and two business days between the invoicing day and the day when outgoing amounts are paid. A

holiday in any of the NBS countries will be treated as a holiday for the whole system in this regard.

4.1.3. Gate closures

The settlement data shall be reported to eSett via market messages or via Online Service. The reported data is further aggregated by eSett in order to establish the consumption and production imbalances. Gate closure times differ depending on the data that is being reported. If one or more of the settlement data exceed the gate closure time in a message, then the whole message will be rejected. In the Nordic Imbalance Settlement Model, the hourly data is collected daily, reported within 2 days and updated within the stipulated 13 days.

More information about the reporting times and gate closures can be found in our Handbook from chapter 3.5.8 Reporting Schedule and Gate Closure Times and chapter 5 Settlement Data Reporting.

5. Settlement System and exchange of data

This Chapter summarizes the main service channels that eSett provides to the market participants.

5.1. Online Service

The Online Service is a portal, which is the primary interface towards BRPs and other market participants. It is used for management of all related settlement data by market participants itself. Settlement information from eSett is published to the service for market participants to view and download the information they are entitled to. The Online Service consists of a restricted part that requires login and contains settlement information that only the respective market participants can view. BRPs can also send information to eSett via the Online Service and for example manage their structures and invoice information. In addition, it is possible to extract published data and order data packages from the service.

The main menu of the Online Service is the horizontal menu displayed on the top of the page. Structure of the menu may differ based on user rights or chosen market party context.

In general menu consists of these items:

- Input Data – includes use cases for browsing and management of market entity connections
- Settlement – includes use cases for browsing of settlement results calculated by the system
- Structures – includes use cases for browsing and management of structures used for settlement calculation
- Finances – includes use cases related to invoices
- Reports – includes management of data packages and downloading reports
- Messages – includes functionalities for browsing of messages sent to the system via electronic channels
- Information – includes informational use cases
- Administration – includes functionalities for user management, service outsourcing and management of company or market party

User drop-down menu can be found from the top-right corner of the Online Service page. In this menu, user is able to get on the details of his or her user profile, change language and time zone of the Online Service and change context of market party on which behalf he or she is acting in the system.

5.1.1. User accounts

Users of the Online Service are always related to a legal company meaning that each user have access only on data of market participants, which are registered under their company or only on data of market participants which are served by their company as a service provider.

There are two types of the users in the Online Service:

- Online Service Administrator – user has access to User Management, Service Outsourcing and Company management user cases
- Online Service User – user is a regular user of a company, mainly interested in settlement data browsing and management

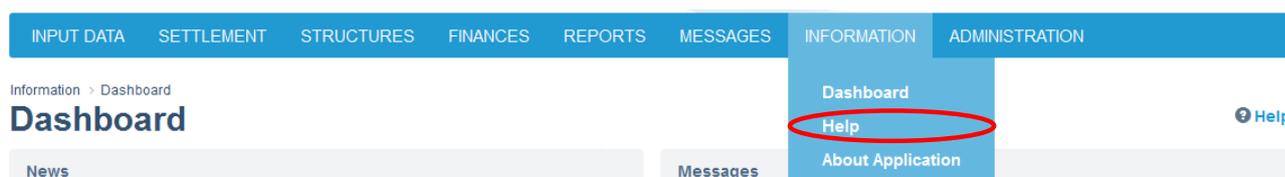
Each Online Service user must have a personal user account with login and password information to access the company specific parts of the service. For an overall picture on how to establish a user account, please view section 10.5.3 Online Service User Account in the NBS Handbook. A two phased authentication (SMS based mobile authentication) will be utilized to log-in to the Online Service and therefore a mobile phone number has to be provided by the market participant for each account.

Each market participant shall make sure that they have access to an administrator account in sufficient time before go-live. The administrator of each market participant is able to create user accounts for all co-workers who require access to the Online Service. The administrator is also responsible for keeping the user up to date continuously by removing users that no longer have rights to use the Online Service

5.1.2. Online Service trainings and guides

An overall description of the Online Service can be found in section 10.5 Online Services in the NBS Handbook. eSett will also organize trainings where the market participants can get familiar with the Online Service and learn to use the portal. The training timetable can be found on the Denmark specific web page: <https://www.esett.com/denmark-go-live/>

Finally, an Online Service user guide is available in Online Service when logged in to the portal (see Figure 3 below).



3 Help section in Online Service

5.2. Messaging Service

Messaging Service enables eSett and Market Parties to exchange messages necessary for the Settlement process. It is used both for inbound messages, such as bilateral trades sent by the BRPs, and outbound messages, such as the settlement result to the BRPs. In order to ensure that imbalance settlement information exchange is based on the same communication technology and formats, a common data communication standard has been developed (please see chapter 10.4 Data Communication Standards in the NBS Handbook).

In order to receive data, the Messaging Service comes with multiple interfaces to enable data delivery. The messages can be sent to eSett and received from eSett by ECP, FTP, SMTP or WebService. The usage of interface is limited per country according their needs or

regional legislation and more information is available in the NBS Handbook. A detailed description of the interfaces can be found in the Communication Guidelines for Balance Settlement System, which is available at <https://www.esett.com/materials/communication-guidelines/>.

In Denmark it is highly recommended that the BRPs use the ECP channel to send and receive messages. One of the reasons is Energinet who is using the ECP in their communication. Another reason is that all market participants will need to start using ECP eventually. If a BRP cannot for some reason start to use ECP immediately, it may also use one of the other interfaces that eSett provides.

5.2.1. Data packages

Data packages are outbound messages from eSett to market participants. The data packages are subscribed in Online Service. Data packages view in Online Service describes the time frame and delivery time of each package. Available data package types for BRP are listed below:

- Activated Reserves per subtype
- Bilateral trades
- Capacity Reserves per subtype
- Consumption
- Consumption imbalance (volume and amount)
- Imbalance adjustments
- Imbalance prices
- MGA exchange trades
- MGA Imbalances
- Production
- Production imbalance (volume and amount)
- Production plan
- PX market flows
- PX market trades

Under each type, there are available different data packages for the BRPs. More information about these data packages can be found at <https://www.esett.com/materials/>.

5.3. Information Service

eSett gives market participants the possibility to retrieve settlement data (time series data) from an Information Service. The Information Service is established as a system-to-system connection between market participant and eSett. The service is established as a web service, which provides the possibility for data requesting and transfer but also capabilities

for information security; secure connection between two system and tools for market participant's authentication and authorisation. If the market participant wants to use the Information Service, it needs to set up the connection with eSett.

The market participants must first be authorised to use the Information Service. After authorisation a market participant can fetch time series data through the Information Service. Market participant can only fetch data that the party is entitled to view.

The market participant's IT system can send a request for MEC data to the Information Service in order to receive it. A market participant can for example order following MEC data: detailed production plans, detailed reserves data, settlement data, settlement results or imbalance prices. The Information Service provides the requested data to market participant's system if the requested data is available.

Below is a list of all data which BRP's can fetch from the Information Service:

- Activated Reserves
- Bilateral Trades
- Capacity Reserves
- Consumption
- Consumption Imbalance
- Imbalance Adjustment
- MGA Exchange Trades
- MGA Imbalance
- MGA-MBA Relations
- Prices
- Production
- Production Imbalance
- Production Plan
- PX Market Flows
- PX Market Trades

Detailed information regarding the Information Service interface and the supported data flows can be found in the Communication Guidelines, published on eSett's web page (<http://www.esett.com/materials/>).

5.4. Information security

Due to information security reasons, all of eSett's services are behind firewalls. This means that all market participants who want to access the eSett services need to submit their IP addresses and ranges to eSett to enable the connection. This concerns the Test environment, Messaging Service and Information Service. To Online Service of production environment, no firewall openings are needed if connecting to the service inside EU.

However, if someone from outside the EU needs access to Online Service, eSett needs to grant the access.

6. Connectivity

Establishing connectivity means securing the function of the technical interconnections between market participants' and eSett's IT systems. This will focus on securing that the role-specific market messages (i.e. "settlement data") can be transferred between participants via utilized communication channels and Online Service can be accessed.

BRPs with production or with resources for balancing power (both consumption and production) must test towards Energinet's system operations planning system. New Danish BRPs that are responsible for consumption or production must also test towards DataHub.

The goal of the establishing connectivity sequence is to have market participants successfully connecting to Messaging Service and to be able to send and receive a message, including associated acknowledgements.

Connectivity has been "established" when the market participant is able to communicate with the Balance Settlement Solution in both ways (send and receive a market message via preferred communication channel) and user is able to log in to Online Service with provided credentials. When you have established the connection for the first time, please notify us about the success by sending us a service request at <https://esett.service-now.com/public/>.

The following chapters describes how to establish the connectivity with Online Service and Messaging Service.

6.1. Online Service connectivity

Steps for each participant to verify Online Service connectivity:

1. Log in to Online Service with provided credentials i.e. username and password
2. Write the authentication code which you have received to your mobile phone
 - Online Service address in Production environment:
<https://online.esett.com/ONLS.Private>
 - Online Service address in Test environment:
<https://testonline2.esett.com/ONLS.Private>

Addresses to other services, as well as the IP address from which eSett is connecting to market participants' service, have been distributed to market participants separately. These addresses are also found in News section in Online Service front page.

6.2. Messaging Service connectivity

Steps for each participant to verify Messaging Service connectivity:

1. Verify that the Channel of Electronic Communication is valid (see chapter 7.1.2 Verification of Structure Data for more details)
2. Sending one inbound data flow (sent by market participant) and receive one related acknowledgement
3. Receiving one outbound dataflow (sent by eSett's settlement system) and sending successfully an acknowledgement to eSett

4. Log in to the Online Service and check message monitor for the data flow

BRPs need to provide necessary information to eSett (i.e. preferred channel, source IP addresses), so that eSett can perform necessary firewall openings for FTP, WebService and SMTP channels.

If you are acting as a Service Provider or are using a Service Provider, please be in touch with eSett's customer service.

After the deadlines eSett and Energinet will review the connectivity status of each market participant.

More information and support on connectivity can be found from the following documents:

- NBS Handbook, chapter 10 (www.eSett.com/handbook)
- Communication Guidelines (<http://www.esett.com/materials/communication-guidelines/>)
- Connectivity troubleshooting guide (<https://www.esett.com/wp-content/uploads/2020/03/connectivity-troubleshooting-denmark-2020.pdf>)

6.2.1. eSett's test environment addresses

eSett calls market participant's services from following addresses and access rights must be granted for those IPs:

- 194.157.169.5
- 193.66.248.234
- 193.66.248.235

Messaging Service – ECP/EDX Channel

- Endpoint: 44V000000000028C
- Message Type: NBS-ESETT

In order for market party to send messages towards eSett, firewall opening from Market Party's ECP Endpoint/EDX Toolbox is required to Fingrid's Broker:

- Host: ecp-test.fingrid.fi
- Ports: 8443, 5671
- Fingrid's ECP support: ecp.support@fingrid.fi

Messaging Service – Web Service Channel

- URL: <https://testservice2.esett.com/MSGs/messagingServiceInputInterface>
- WS-Security Credentials: Separately distributed by eSett

Messaging Service – FTP Channel

- Host: <sftp://testservice2.esett.com/>
- Protocol: SFTP
- Port: 22
- Username/password: Separately distributed by eSett

Messaging Service – SMTP Channel

- Host: testservice2.esett.com
- Protocol: SMTP
- Port: 25
- Security: SSL/TLS
- E-mail: inbox@testservice2.esett.com

Information Service – Web Service Channel

- URL: <https://testservice2.esett.com/INFS/InformationService.svc>
- WS-Security Credentials: Separately distributed by eSett

6.2.2. eSett's production environment addresses

eSett calls market participant's services from following addresses and access rights must be granted for those IPs:

- 194.157.169.5
- 193.66.248.234
- 193.66.248.235

Messaging Service – ECP/EDX Channel

- Endpoint: 44V000000000029A
- Message Type: NBS-ESETT

In order for market party to send messages towards eSett, firewall opening from Market Party's ECP Endpoint/EDX Toolbox is required to Fingrid's Broker:

- Host: ecp.fingrid.fi
- Ports: 8443, 5671
- Fingrid's ECP support: ecp.support@fingrid.fi

Messaging Service – Web Service Channel

- URL: <https://service.esett.com/MSGs/messagingServiceInputInterface>
- WS-Security Credentials: Separately distributed by eSett

Messaging Service – FTP Channel

- Host: <sftp://service.esett.com>
- Protocol: SFTP
- Port: 22
- Username/password: Separately distributed by eSett

Messaging Service – SMTP Channel

- Host: service.esett.com
- Protocol: SMTP

- Port: 25
- Security: SSL/TLS
- E-mail: inbox@service.esett.com

Information Service – Web Service Channel

- URL: <https://service.esett.com/INFS/InformationService.svc>
- WS-Security Credentials: Separately distributed by eSett

7. Structure data

This chapter describes how to submit the structural data to eSett and who is responsible of submitting and updating which structural information.

7.1. Submitting structural data

The settlement structure is one of the key elements in the NBS Model. Each market participant will in the NBS model be responsible for updating its structural information in Online Service. Structural information is information about market participants and their relations to each other, e.g. the relationship between a BRP and a RE, and to the Market Entities (ME) and Market Entity Connections (MEC) (e.g. the relationship between a BRP and an MGA). Every market participant must register for acceptance to operate in the market. The participants themselves are responsible for registering and keeping their own structure information up to date.

eSett will control and approve the structural information, based on the information provided by BRPs, DataHub (on behalf of DSOs), REs and SPs. For an overview of structure data reporting responsibilities please see the NBS Handbook.

7.1.1. Initial submittance of structural data

eSett has received the initial structural data from Energinet and DataHub. The initial data is available in eSett's test environment. The initial data consists only of the main structures for imbalance settlement, and therefore the submitted data may lack some information.

eSett and Energinet will take responsibility for updating the basic information regarding each market participant (such as company name, profile etc.) as well as the basic settlement structure (MBA, MGA, RO, etc.). Market participants are responsible for verifying their structure information. Inconsistencies in provided structure data could potentially cause issues with the structure import, it is therefore of high importance that submitted structure data has been validated by each market participant.

To ensure successful testing with all involved parties, the structure data must be kept updated and it is the responsibility of each market participant to ensure a correct set of structure data. Market participants will be able to review and update the structure data on a continuous basis (with the exception for maintenance breaks and freeze periods).

7.1.2. Verification of Structure Data

Balance Responsible Parties have to verify that the structures provided by Energinet are visible in Online Service and correct. Once the structures have been verified by the Balance Responsible Party, eSett needs to be informed about it. Below is a list of all verifications that need to be done. The market structures should be in place, but the company, user and M2M information has not been submitted.

- Bilateral Trades – all active trades are listed, and they are valid
 - Check in Input Data » Bilateral Trades

- Please note that in List view of Bilateral Trades you can find out Agreement ID, which is necessary to state in external messages with Bilateral Trades reporting
- Corrections: New trade/Validity change in ONLS (Notice! Counterparty BRP must approve the change in View Requests before the change takes place)
- Retailer Balance Responsibilities – correct retailers are under BRPs responsibility for production and consumption and the relations are active in correct MGAs
 - Check in Structures » Retailer Balance Responsibility
 - Corrections: New Responsibility in ONLS (Notice! eSett must approve the change before the change becomes valid)
 - Please note that the Terminate Responsibilities functionality has been removed for now – if you have incorrect/obsolete retailers under your responsibility, contact the retailer or eSett to determine for which BRP they belong to
- Regulations Objects – all ROs of BRP are listed, and they are valid
 - Check in Structures » Regulation Objects
 - Corrections: create a service request to eSett
- Consumption – all active consumption MECs are listed, and they are valid
 - Check in Input data » Consumption
 - Corrections: check that there is a valid RBR and contact DataHub to create the consumption MEC
- Production – all active production MECs are listed, and they are valid
 - Check in Input data » Production
 - Corrections: check that there is a valid RBR and contact DataHub to create the production MEC
- PX Market Trades – all active day-ahead and intraday trades are listed, and they are valid
 - Check in Input data » PX Market Trades
 - Corrections: create a service request to eSett
- Users – all necessary users have been created, they have correctly assigned rights and they are in state Active
 - Check in Administration » Users
 - Corrections: New User/Edit User in ONLS
- Accounts – both settlement and release accounts are listed, and the account information is correct
 - Check in Administration » Market Party Detail » Accounts
 - Corrections: Create a service request to eSett if account is missing or incorrect
- Company and Market Party Detail – information is filled and it's correct

- Check in Administration » Company Detail / Market Party Detail
- Corrections: Update in ONLS or create a service request to eSett if not modifiable by market party
- Service Providers – correct service provider(s) has been assigned (if applicable) and the access rights are correct
 - Check in Administration » Service Outsourcing
 - Corrections: New Service Outsourcing / Set Termination Date in ONLS
- Channel of Electronic Communication (M2M information) – preferred channel and its details are correct
 - Check in Administration » Market Party Detail
 - Corrections: Update in ONLS or create a service request to eSett (Notice! The Incoming and Outgoing are from eSett’s perspective)

It is important that market parties maintain correct structural data in eSett’s test environment. Correct structures are a prerequisite for successful testing towards eSett as any data flows towards invalid structures will be rejected by the imbalance settlement system. Also, the structures will later be imported into production environment, so any remaining errors are very likely to enter also into the production environment and go-live phase.

7.1.3. Structure data responsibilities

Below is listed the structure data responsibilities of each market participant.

Structure data responsibilities – eSett	
Category	Subcategory
Settlement accounts	<ul style="list-style-type: none"> ● Signed pledged account agreements ● Settlement account numbers
Balance settlement agreements	<ul style="list-style-type: none"> ● Signed agreements
Settlement banks	<ul style="list-style-type: none"> ● Selected settlement bank

3 *eSett structure data responsibilities*

Structure data responsibilities – TSO	
Category	Subcategory
TSO master data related to the market participants	<ul style="list-style-type: none"> • Name • Business ID • Communication ID (code) • Role etc.
Market Balance Area (MBA)	<ul style="list-style-type: none"> • MBA master data • MBA-MGA relations • External borders
Regulation objects (RO)	<ul style="list-style-type: none"> • RO master data • RO-BRP relations • Reserves • Imbalance adjustment MECs • Production plan MECs
Reserves	<ul style="list-style-type: none"> • Types • Sub-types
Metering Grid Area (MGA)	<ul style="list-style-type: none"> • MGAs • MGA exchange trade MECs • MGA-MGA connections • MGA-DSO relations

4 TSO structure data responsibilities

Structure data responsibilities – DataHub	
Category	Subcategory
Master data	<ul style="list-style-type: none"> • Main contacts; Online Service, contracts and settlement issues • Business ID, name • Online Service administrator users, phone nr. • Communication information
Production MECs	<ul style="list-style-type: none"> • Retailer - Production relations per MGA
Consumption MECs	<ul style="list-style-type: none"> • Retailer - Consumption relations per MGA
MGA imbalance MECs	<ul style="list-style-type: none"> • Retailer responsible for imbalances in the MGA

5 DataHub structure data responsibilities

Structure data responsibilities – BRP	
Category	Subcategory
Master data	<ul style="list-style-type: none"> • Main contacts; Online Service, contracts and settlement issues • Business ID, name • Online Service administrator users, phone nr. • Communication information
Settlement Account	<ul style="list-style-type: none"> • Signed Pledged account agreement • Settlement account number
BRP-RE relations	<ul style="list-style-type: none"> • Balance Responsible Party – Retailer relations
Bilateral trade MECs	<ul style="list-style-type: none"> • Balance Responsible Party / Retailer bilateral trade relation

6 BRP structure data responsibilities

Structure data responsibilities – RE	
Category	Subcategory
Basic company details	<ul style="list-style-type: none">• Business ID, name• Online Service administrator users, phone nr.

7 *RE structure data responsibilities*

More information on structure data responsibilities can be found in Handbook chapter 3.5 Reporting Responsibilities and Schedules (<https://www.esett.com/handbook/>)

8. Invoicing, agreements and accounts

To participate in the imbalance settlement, a BRP will need to hold a bank account (settlement account) in a bank which has been approved by eSett to be used in the imbalance settlement (settlement bank). The payable amounts arising in the imbalance settlement are invoiced electronically by eSett and settled on the settlement accounts in accordance with instructions that eSett sends to the settlement banks through its main bank. The activities for establishing the necessary setup for invoicing and payments are described in this chapter.

In the beginning of May an “agreement package” including all necessary agreements between eSett Oy and a BRP will be sent. The agreement package needs to be signed and returned to eSett according to instructions before the start of the parallel settlement period.

8.1. Establishment of contractual framework

The matters related to the invoicing and payment of the imbalance settlement results to eSett are governed by the following contractual documents:

- Balance Agreement between TSO and each BRP
- Imbalance Settlement Agreements between eSett and each BRP
- Settlement Bank Agreements between eSett and each designated Settlement Bank
- Pledged Cash Account Agreements signed by each BRP, eSett and the BRP's Settlement Bank
- Agreement between BRP and DataHub
- Only BRPs with Consumption/Production
- Only for new BRPs

The final versions of the Imbalance Settlement Agreement, Settlement Bank Agreement, the Pledged Cash Account Agreement and the On-Demand Guarantee are available for download on www.eSett.com/materials.

8.2. Settlement bank network

The role of the settlement banks in the Nordic Imbalance Settlement includes the following:

- Providing of settlement accounts to the BRPs
- Carrying out the settlement of funds transfers between eSett and the BRP over the settlement account, as instructed by eSett
- Providing balance statements for the BRPs' settlement accounts
- Providing release accounts to the BRP's

eSett has on its web page <https://www.esett.com/> published a list of banks that are ready to provide settlement bank services. If a new bank wants to start to provide settlement bank

services to BRPs, certain procedures need to be followed. The required activities to maintain the network of eligible settlement banks include the following:

1. The eligibility of the prospective banks to act as settlement banks has to be assessed
 - Check that the bank has sufficient technical capabilities
 - Check that the bank has a sufficient credit rating
2. Settlement Bank agreements to be signed with the approved banks

If a new bank wants to start providing settlement bank services, the steps above are carried out with the bank in question.

8.3. Required preparation by BRPs

The required activities by each BRP to establish the necessary setup for invoicing are as follows:

1. Inform eSett what bank the BRP would like to use as settlement bank.
2. Establish readiness to receive invoices (to be completed at the latest 2 months prior to go live)
 - Establish an agreement with an e-invoice operator to receive e-invoices
 - Agree with the e-invoice operator on the format in which eSett's e-invoices will be provided by the operator
 - Inform eSett of the selected e-invoice operator and the BRP's e-invoicing address
 - Implement interface for reading e-invoice into accounting system if e-invoicing is chosen
 - Inform eSett of an email address to which the invoices should be sent as PDF files in case the BRP does not want to receive e-invoices or as an alternative method of invoicing
3. Establish settlement account (to be completed at the latest 2 months prior to go live)
 - Open a settlement account in an approved settlement bank
 - Sign the Pledged Cash Account Agreement
 - Sign MT101- and MT940-documents at the settlement bank and send copies of them to eSett together with the Pledged Cash Account Agreement. MT101 and MT940 are bank specific forms and are available at each bank
4. Establish a release account (to be completed at the latest 2 months prior to go live)
 - Open a release account in an approved settlement bank
 - Send Standard settlement instructions (SSI) to eSett of which account to use for the release of excess funds

8.4. Required testing of invoicing, funds transfers and balance reporting

To ensure that all procedures related to invoicing and payments as designed between all counterparties, the following tests will be carried out:

- Testing with each BRP (as soon as the connection is established but at the latest 1 month prior to go live)
- Testing objectives:
 - Ensure that valid invoice messages are generated and transferred correctly through the invoice operators to the BRP
 - Ensure that valid funds transfer messages are generated and that the transactions are processed correctly by eSett's bank and BRP's settlement bank
 - Ensure that balance reports can be obtained correctly from BRP's settlement bank through eSett's bank and read into eSett's systems
- Testing participants: eSett, BRPs, eSett's bank and BRPs' settlement banks
- Testing activities:
 - eSett asks the new settlement bank/s to validate the xml created for debit and credit payments
 - eSett will send test invoices to the BRP's to make sure that they receive the invoice
 - eSett will make sure that it receives account balances for all new settlement accounts.

9. Other relevant information

9.1. Calendar and Time Zones

The Nordic Imbalance Settlement Model will be operated in Central European Time (CET)/Central European Summer Time (CEST). A 24-hour clock (10 o'clock in the evening will be written as 22:00) will be applied in operation (for example in invoicing, imbalance settlement) and support is required from all market participants interacting with eSett. The NBS Model will also use daylight saving time (change between standard and summer time). The last Sunday in March will have 23 hours and last Sunday in October will have 25 hours.

9.2. Regulatory changes

In Denmark the harmonization, as an effect of the implementation of NBS, has led to a need to change the regulations in the country. Before go-live, these changes must have been approved according to the set procedure in Denmark. Regulatory and authority dialogues are ongoing in Denmark to secure the necessary regulatory changes.

For the latest information on the regulatory changes please contact eSett, Energinet or the regulator in Denmark.

9.3. Handling of settlement corrections

Settlement corrections, in the NBS model, will not be handled by eSett but by the market participants themselves bilaterally. A common procedure for how to handle corrections is not within the scope of eSett's responsibilities.

Corrections to metered energy after the last imbalance settlement is settled through the DataHub between the retailer of the metering point and the retailer of grid loss. Energinet will change the starting point for settlement corrections to the latest set of metered data included in the NBS imbalance settlement.

9.4. Authorization for service providers

A written authorization, power of attorney, is required for service providers to be able to act on behalf of their clients.

BRPs that uses service providers can add the service provider in Online Service and give the correct roles for them. If the correct service provider cannot be found from the list in Online Service, please be in touch with eSetts customer service.

9.5. Freeze periods

During the commission phase, there will be two freeze periods during which allowed structural changes are limited. Please notice that there are more restrictions during the second freeze period. The unallowed changes include

- new market participant registrations

- changes in existing market participants (e.g. mergers)
- MGA and MBA definition changes.
- changes in Retailer Balance Responsibility contracts (only during second freeze period)

Changes to following structures are allowed, but they should be avoided during second freeze period (2.1.2021 – 14.2.2021) if possible:

- production MECs
- consumption MECs
- MGA imbalance retailers
- bilateral trades
- PX market trades.

All the necessary changes must be completed before the start of a freeze period. It is important that market parties ensure that the changes are implemented into test environment as well as production environment. The freeze periods begin one month before each go-live and lasts two weeks after the go-live. The exact dates are listed below.

- Freeze period 1: 1.9.2020 – 11.10.2020
- Freeze period 2: 2.1.2021 – 14.2.2021.

10. Second go-live in February 2021

In this chapter are presented instructions to all the BRPs that are joining the NBS model in February 2021.

10.1. Checklist

Below are two checklists about all tasks that needs to be completed before the go-live. The first checklist is about overall tasks and the second one is a checklist for agreements. The numbers before each task refers to the activity in the Commissioning time plan (Chart 1).

Overall checklist			
Task	Environment	Deadline/time interval	Mark here when completed
3a: Able to access Online Service	Test	22.05.2020	
4a: All structures are verified	Test	05.06.2020	
3b: Connectivity established with eSett	Test	28.08.2020	
4b: Update real structure data continuously	Test	08.06.2020 – 31.08.2020	
6: Have all agreements in order and achieve readiness for invoicing	-	27.11.2020	
3c: Able to send and receive messages (dataflow check)	Test	13.12.2020	
3e: Able to access Online Service, establish connectivity and verify structures	Production	07.12.2020	
3d: End-to-End testing completed, and results are verified	Test	24.01.2020	
4d: Update real structure data continuously	Test	12.10.2020 – 01.01.2021	
4e: Update real structure data continuously	Production	09.11.2020 – 01.01.2021	
7: Go-live for Imbalance Settlement	Production	01.02.2021	

8 *Checklist for tasks*

Checklist for agreements			
Agreement	Information	Deadline	Mark here when completed
Balance Agreement between TSO and BRP	Two copies of the agreement; one for the TSO and one for the BRP	30.09.2020	
Imbalance Settlement Agreement between eSett and BRP	Two copies of the agreement; one for the BRP and one for eSett	30.09.2020	
Settlement Bank Agreements between eSett and each designated Settlement Bank	Two copies of the agreement; one for the Settlement Bank and one for eSett	30.09.2020	
Pledged Cash Account Agreements signed by each BRP, eSett and the BRP's Settlement Bank	Three copies of the agreement; one for the BRP, one for eSett and one for the BRP's Settlement Bank	30.09.2020	
MT101-document	Bank specific form, available at each bank	30.09.2020	
MT940-document	Bank specific form, available at each bank	30.09.2020	
Standard settlement instructions (SSI)	Send eSett the SSI to be able to open a release account for the excess funds	30.09.2020	

9 Checklist for agreements

10.1.1. Online Service connectivity

Check that you are able to log in to the Online Service in both Test and Production environment.

Steps for each participant to verify Online Service connectivity:

1. Log in to Online Service with provided credentials i.e. username and password
2. Write the authentication code which you have received to your mobile phone
 - Online Service address for Production: <https://online.esett.com/ONLS.Private>
 - Online Service address for Test: <https://testonline2.esett.com/ONLS.Private>

10.1.2. Invoicing, agreements and accounts

10.1.2.1. Establishment of contractual framework

The matters related to the invoicing and payment of the imbalance settlement results are governed by the following contractual documents:

1. Balance Agreement between TSO and each BRP
2. Imbalance Settlement Agreements between eSett and each BRP
3. Settlement Bank Agreements between eSett and each designated Settlement Bank
4. Pledged Cash Account Agreements signed by each BRP, eSett and the BRP's Settlement Bank

The final versions of the Imbalance Settlement Agreement, Settlement Bank Agreement, the Pledged Cash Account Agreement and the On-Demand Guarantee are available for download on www.eSett.com/materials.

10.1.2.2. Required preparation by BRPs

The required activities by each BRP to establish the necessary setup for invoicing are as follows:

1. Inform eSett what bank the BRP would like to use as settlement bank.
2. Establish readiness to receive invoices (to be completed at the latest 2 months prior to go live)
 - Establish an agreement with an e-invoice operator to receive e-invoices
 - Agree with the e-invoice operator on the format in which eSett's e-invoices will be provided by the operator
 - Inform eSett of the selected e-invoice operator and the BRP's e-invoicing address
 - Implement interface for reading e-invoice into accounting system if e-invoicing is chosen
 - Inform eSett of an email address to which the invoices should be sent as PDF files in case the BRP does not want to receive e-invoices or as an alternative method of invoicing
3. Establish settlement account (to be completed at the latest 2 months prior to go live)
 - Open a settlement account in an approved settlement bank
 - Sign the Pledged Cash Account Agreement
 - Sign MT101- and MT940-documents at the settlement bank and send copies of them to eSett together with the Pledged Cash Account Agreement. MT101 and MT940 are bank specific forms and are available at each bank.
4. Establish a release account (to be completed at the latest 2 months prior to go live)
 - Open a release account in an approved settlement bank
 - Send Standard settlement instructions (SSI) to eSett of which account to use for the release of excess funds

10.1.2.3. Required testing of invoicing, funds transfers and balance reporting

To ensure that all procedures related to invoicing and payments as designed between all counterparties, the following tests will be carried out:

- Testing with each BRP (as soon as the connection is established but at the latest 1 month prior to go live)
- Testing objectives:
 - Ensure that valid invoice messages are generated and transferred correctly through the invoice operators to the BRP

- Ensure that valid funds transfer messages are generated and that the transactions are processed correctly by eSett's bank and BRP's settlement bank
- Ensure that balance reports can be obtained correctly from BRP's settlement bank through eSett's bank and read into eSett's systems
- Testing participants: eSett, BRPs, eSett's bank and BRPs' settlement banks
- Testing activities:
 - eSett asks the new settlement bank/s to validate the xml created for debit and credit payments
 - eSett will send test invoices to the BRP's to make sure that they receive the invoice
 - eSett will make sure that it receives account balances for all new settlement accounts.

10.1.3. Structures

Market participant acting in Balance Responsible Party role needs to verify from Online Service that the following pieces of information are correct. If information is not correct, BRP needs to fix it or contact eSett if it's not manageable by BRP. **Numbers** refer to chapters in Online Service user guide.

- Users – add → **13.1.2** New User, Correct → **13.1.3**
- Company and market party details – details can be updated in Online Service → **13.4 – 13.5**, for other inquiries → **create a service request to eSett**
- Accounts – View accounts → **9.2.1**, in case of missing account or invalid information → **create a service request to eSett**
- Regulation Object(s) → create a service request to eSett
- Retailer Balance Responsibilities (RBRs) – correct in Online Service → **8.1.2 – 8.1.3** **or create a service request to eSett**
 - Please note that the Terminate Responsibilities functionality has been removed for now – if you have incorrect/obsolete retailers under your responsibility, contact the retailer or eSett to determine for which BRP they belong to
- Bilateral Trade market entity connection(s) – correct in Online Service → **3.1.4 – 3.1.6**
- Consumption market entity connection(s) → check that there is a valid RBR and contact DataHub to create it
- Production market entity connection(s) → check that there is a valid RBR and contact DataHub to create it
- PX Market Trade market entity connection(s) → **create a service request to eSett**
- Service Providers & their access rights – correct in Online Service → **13.2 & 13.3.2**

10.1.4. Messaging

To be able to receive messages from eSett, the connectivity must be established. Below are instructions how to establish connectivity to Online Service and to Messaging service.

Online Service connectivity

Steps for each participant to verify Online Service connectivity:

1. Log in to Online Service with provided credentials i.e. username and password
2. Write the authentication code which you have received to your mobile phone
 - Online Service address in Production environment:
<https://online.esett.com/ONLS.Private>
 - Online Service address in Test environment:
<https://testonline2.esett.com/ONLS.Private>

Messaging Service connectivity

Steps for each participant to verify Messaging Service connectivity:

1. Verify that the Channel of Electronic Communication is valid (see chapter 7.1.2 Verification of Structure Data for more details)
2. Sending one inbound data flow (sent by market participant) and receive one related acknowledgement
3. Receiving one outbound dataflow (sent by eSett's settlement system) and sending successfully an acknowledgement to eSett
4. Log in to the Online Service and check message monitor for the data flow

10.2. Commissioning webinars with BRP's

To help BRP's with the commissioning, eSett will organize webinars to the BRPs. In the webinars, we will go through the checklist in previous chapter and make sure that each BRP is ready before the go-live. There will be three webinars in total with the BRPs and the subjects for each webinar is presented below. The dates for the webinars will be published on eSett's web pages.

- Webinar 1: Agreements, accounts and bank, Online Service and structures (management and updating)
 - 30.4.2020, 9:00-11:30 CEST
- Webinar 2: Data interchange, parallel run, test status
 - November 2020
- Webinar 3: Go-live readiness check and a summary from the two previous calls
 - Beginning of January 2021
 - Possibly held as a Teams call with the BRPs

11. Parallel activities

In this chapter activities to facilitate and secure a smooth transition to the new settlement are described.

11.1. ~~Parallel settlement~~ – CANCELLED

Parallel settlement period has been cancelled as it was discovered that reporting a full set of production data to eSett is not possible.

Instead there will be a second End-to-End test period with Energinet and DataHub where market parties may verify the reported settlement data, except for the metered data.

11.2. Parallel reporting

Energinet will not continue parallel reporting after the go-live. After the go-live, all reporting will be carried out by eSett.

11.3. Transition from test environment to production environment

Settlement data from delivery date 01.02.2021 onwards needs to be reported into eSett's production environment. To ensure a successful go-live, market participants should pay close attention to completion of this transition from one environment to another.

12. Test practices and support

This chapter describes the test practices and the support available for the BRPs during the test phase. A separate document with all the test cases considered essentials for market participants acting in a role of BRP can be found from Denmark go-live page: <https://www.esett.com/denmark-go-live/>. The document can also be found in the Appendix at the end of this document. It is important that all BRPs performs the tests listed in the Test document to ensure go-live readiness.

12.1. Test practices

eSett recommends that market parties will perform thorough testing towards the settlement system, especially if they don't have any previous experience with eSett such as operations in other Nordic countries. Issues, including possible bugs, encountered during testing are reported via eSett ticketing system.

It is recommended that the test cases described in chapter 3 in the Test document, would be executed during the following steps in the timeline.

BRP Online Service access (3a)

After a successful Online Service access, it's recommended that market parties will execute test cases related to Online Service (chapter 3.2. in the Test document):

- 3.2.6. Data package subscription
- 3.2.7. Message monitoring
- 3.2.8. Input and update settlement data via Online Service (upload file)
- 3.2.9. Input and update settlement data via Online Service (manual entry)
- 3.2.10. Monitor input data
- 3.2.11. Export input data
- 3.2.12. Manage company attributes
- 3.2.13. Create new user
- 3.2.14. Edit user
- 3.2.15. Monitor imbalance settlement results – Balance Report
- 3.2.16. Monitor preliminary imbalance settlement results – BRP consumption and production imbalance
- 3.2.17. Export imbalance settlement results
- 3.2.18. Review imbalance settlement, imbalance adjustment and capacity reserve invoice information.

Verification of structures (4a) and Continuous update of real structure data (4b & 4d)

Test cases that cover changes to the structure data should be executed as a part of maintaining the correct structure data in eSett's test environment. It is possible that not all test cases can be performed as a part of normal structure maintenance.

Plan is to import the structure data from eSett's test environment to the production environment before both go-live dates. Thus, it's extremely important to maintain correct structures also in TEST environment. Following test cases are related to structure data updates:

- 3.3.19 Update Retailer Balance Responsibilities
- 3.3.20 Create bilateral trade structure
- 3.3.21 Change validity of bilateral trade structure.

BRP Dataflow test (3c)

It's highly recommended that the dataflow test phase would cover the messaging service test cases (chapter 3.1. in the Test document):

- 3.1.1 Submit bilateral trade (BITI)
- 3.1.2 Receive bilateral trade confirmation report (BICO)
- 3.1.3 Receive preliminary imbalance settlement results (SERO)
- 3.1.4 Receive final imbalance settlement results (SERO)
- 3.1.5 Receive final MGA imbalance results (MGIO).

BRP End-to-End test (3d)

As a part of end-to-end testing and parallel settlement period, it is more important to verify successful end-to-end processes and settlement results instead of purely functional tests. Market parties should execute the test cases related to the verification of settlement results:

- 3.1.3 Receive preliminary imbalance settlement results (SERO)
- 3.1.4 Receive final imbalance settlement results (SERO)
- 3.1.5 Receive final MGA imbalance results (MGIO)
- 3.2.15 Monitor imbalance settlement results – Balance Report
- 3.2.16 Monitor preliminary imbalance settlement results – BRP consumption and production imbalance
- 3.2.17 Export imbalance settlement results
- 3.2.18 Review imbalance settlement, imbalance adjustment and capacity reserve invoice information.

12.1.1. End-to-End test in practice

The end-to-end test period lasts for 2 weeks (11.01.2021 – 24.01.2021) before go-live. It is strongly recommended to participate. End-to-End test will be done in eSett's test environment.

Each market participant shall report and/or receive settlement data to eSett according to the role they represent. Settlement data shall be reported to the valid structures established in settlement and Basse. Production like gate closures shall be followed for reported settlement data in Basse. Market participants shall verify reported settlement data (considering the limitations in the data).

Examples of settlement data reported to eSett:

DataHub (only limited set of data available)

- Consumption data
- Production data
- MGA exchanges

Balance Responsible party (BRP)

- Bilateral trades

Transmission System Operator (TSO)

- Production plans
- Activated reserves
- Prices

Nominated Electricity Market Operator (NEMO, BRP role in NBS model)

- PX market trades (day ahead and intraday)
- PX market flows between MBAs

Settlement calculations in Imbalance Settlement system:

eSett shall calculate imbalance settlement calculations (e.g. consumption, production and MGA imbalances), business and time aggregations according to the valid structures and based on settlement data market participants have reported to eSett before gate closures.

Calculations shall be proceeded automatically on an hourly basis and for open settlement period (D-1 to D-14). Calculation and aggregation results are published in Online Service (e.g. Settlement views). Imbalance settlement calculation results shall be reported to market participants according their role via messaging service.

Notice! There will be incorrect settlement calculation results due to missing metering data.

Examples of settlement results reported to market participants by eSett:

DataHub

- MGA imbalance volumes

BRP

- Consumption imbalance volumes and amounts
- Production imbalance volumes and amounts
- MGA imbalance volumes

Market participants shall verify the reported data (considering limitations) via Online Service (e.g. Settlement views). They shall verify the data using drill down functionalities in respective view (e.g. Consumption Imbalance, select View Columns (e.g. Consumption) and drill down from the header (e.g. Consumption) to the lower level and at the lowest level are presented reported settlement data used in calculation. Before the go-live date the official invoicing is carried out by Energinet. After the go-live date, the invoicing will be done by eSett.

eSett shall report settlement data to market participants via data packages and based on valid structures and roles market participants represent. Market participants are able to subscribe data packages from Online Service (Reports > Data Package Management) and they shall receive those data packages based on predefined time period and frequency configured by eSett.

The objective is that each market participant will be able to report the role specific information as well as to have confirmation that the reported data is correct.

12.2. Additional information

Useful information regarding collaterals, communication and data flows, agreements etc. are found from the following sources:

- Communication Guidelines and Data Packages: <https://www.esett.com/materials/communication-guidelines/>
- NBS Business Requirement Specifications (BRS) and related User Guides: <https://ediel.org/nordic-balance-settlement-nbs/>
- Agreements: <https://www.esett.com/materials/imbalance-settlement-agreement/>
- General Guidelines for new BRPs: <https://www.esett.com/wp-content/uploads/2019/04/eSett-guidelines-for-new-BRPs.pdf>
- NBS Handbook: <https://www.esett.com/handbook/>
- Online Service User Guide: See “ Help” on the upper right corner when logged in to ONLS.
- Collaterals: <https://www.esett.com/materials/collaterals/>
- Not relevant for BRPs that only operates in Denmark

eSett's customer service is also able to help and guide to the correct documentation.

12.3. Contact eSett

If you encounter any issues or have questions, you may contact eSett by filling in a service request at <https://esett.service-now.com/public/> or via settlement@esett.com.

Note: Please start the subject line of the email/service request with “Denmark tests”.

When submitting service request, it is important to include information for example about:

- Message ID
- Time of submission (CET or EET)
- Sender ID
- Original message
- Possible error message / error codes
- What test case and/or service issue is related to
- Detailed description what happened before issue
- What is the issue
- Client information (e.g. web browser, FTP server)
- Screenshot
- What information was edited

13. Contingency plan

The plan for contingency stated below is valid during the transition period, i.e. until all processes have been stabilized after go-live approximately 3 months post go-live.

13.1. eSett

13.1.1. Minor disturbances

If eSett for any reasons is unable to perform the daily routines regarding imbalance settlement eSett will, based on the situation, take any proper means (in co-operation with involved TSOs) to as soon as possible retrieve normal operations according to the NBS model. Any actions taken will be communicated via the company homepage (www.esett.com) and in any suitable way (given the circumstances). If the disturbance is judged as minor invoicing will be postponed until a steady state has been achieved.

13.1.2. Major disturbances

In case of a major disturbance (system failure, etc.) eSett will communicate necessary actions to market in the most appropriate way.

13.2. DataHub

The main task for the DataHub in relation to the NBS model is to submit structural changes to eSett and report metering data. If DataHub for some reason is not able to report data electronically it is the liability of DataHub to submit structural data or metered data manually via Online Service or other with eSett agreed solution. This shall be done in accordance with stipulated gate closures and quality of data.

If the reporting can't be performed due to disturbance in eSett's IT solution, the messages will be received in the same order as they have been sent to eSett, when the disturbance is over.

13.3. BRP

BRPs are obliged to report production plans², bilateral trades and regulation bids for up and down regulation. Only bilateral trades are reported to eSett. If a BRP for any reason is not able to report the settlement data electronically, due to a disturbance in the BRP IT-solution, the settlement data (i.e. bilateral trades) shall be reported via the Online Service.

If the reporting can't be performed due to a disturbance in eSett's IT solution, the messages will be received in the same order as they have been sent to eSett, when the disturbance is over.

² Production plans shall be sent to the responsible TSO

14. Communication plan

This chapter contains the following guidelines for communication to and from eSett to the market participants.

- Objectives and guiding principles for communication
- Definition of communication scope
- Definition of communication methods and channels

14.1. Communication Objectives and Guiding Principles

There are some key objectives for communication during the commissioning time, which are the following:

- Making the transition from present market model to the NBS model as smooth as possible without any delays for market participants.
- Making information available to all market participants during the transition period through easy access via newsletters and on homepages, but also via eSett customer service (through email and telephone).
- Delivery of important commissioning messages to all market participants (incl. TSO).

14.2. Communication Scope

The following defines the areas where eSett communications extend to:

- All eSett employees
- Energinet and DataHub employees impacted by the project
- External stakeholders participating or impacted by the project activities or impacted by the outcomes of the activities

14.3. Communication Channels

Method	Channel	Audience	Frequency
Public Status Communication	eSett homepage TSO homepages	Public	On need basis
eSett's general newsletter	Publication to whom has subscribed the newsletter (from eSett's website)	All internal stakeholders in eSett and TSOs and external stakeholders	On need basis
eSett's Denmark newsletter	Publication to whom has subscribed the newsletter (from eSett's website)	All internal project stakeholders in eSett and TSOs and external project stakeholders	Monthly / Bi-monthly
Telephone (via customer service)	Telephone	All market participants	On need basis
Public communication	LinkedIn	All market participants	On need basis

10 *Communication methods and channels during the transition period*

15. Change log

Version	Date	Changes
V 0.1	10.03.2020	Initial version
V 0.2	25.03.2020	General updates and clarifications based on feedback from Energinet.
V 0.3	16.04.2020	Changes made to the dates for TSOs and DataHubs tests and for BRP connectivity tests. Few specifications added to the definition of an RO. The date for Webinar 1 added. The lists of data BRPs can fetch from messaging service and information service are changed to alphabetic order.
V 0.4	07.05.2020	eSett's connectivity details and Messaging Service addresses added to chapter 6.2 Messaging Service connectivity.
V 0.5	29.06.2020	Dates adjusted for the test activities concerning DataHub.
V 0.6	16.10.2020	Timing adjusted for the Webinars.
V 0.7	20.10.2020	Sentence "Only bilateral trades are reported to eSett" added to chapter 13.3
V 1.1	30.10.2020	<p>Commissioning plan "cleaned" of past and invalid activities and chapters.</p> <p>Parallel settlement period (5b) has been cancelled due to technical limitations, and it has been replaced by an End-to-End test activities in January (2d & 3d).</p> <p>All updated main activities and timelines:</p> <ul style="list-style-type: none"> - 2b & 2c Updated timing for TSO & DataHub tests - 2d New activity with TSO & DataHub - 3c Extended duration for BRP tests - 3d Updated timing to January for BRP End-to-End test - 3e & 4e Postponed access to Production - 5b Parallel settlement is cancelled - 6 Extended duration for finalizing agreements <p>Updates to several chapters regarding the new timings, cancelled parallel run and the End-to-End test in January.</p>

16. Appendix

Appendix 1 – Data Flows Validation Reason Texts

Appendix 2 – Test document for BRPs