FINGRID
Datahub

Description of the technical Datahub Go-Live plan 1.3

23 July 2021

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Change history

Date	Version	Changes
23 March 2020	0.9	First version, published for the industry for comments.
3 June 2020	1.0	First official version
12 October 2020	1.1	The version contains the changes listed below: • The Finnish term used for premigration of metering data, “mittaustietojen esilataus”, was changed to “mittaustietojen esikonversio”. This does not affect the English translation, however. The premigration of metering data is described in Chapter 9. • Added Chapter 14 Rollback and Point-of-no-Return • Added Chapter 15 Go-Live verification reports • Added Chapter 16 Testing and rehearsing plan • Updated Chapter 17 Matters to be investigated further • Other clarifications (see the change-tracked version in the Datahub portal)
15 January 2021	1.2	The version contains the changes listed below: • Added chapter 17 Processing profile sites • Added chapter 18 Dress rehearsal plan • Other clarifications (see this change-tracked version in the Datahub portal)
23 July 2021	1.3	The version contains the changes listed below: • Added Chapters 4.1 and 6.1 of GSRN code processing • The instructions of Unloading of buffers clarified (Chapter 8, especially 8.1 and 8.2.3) • Added references to document “Käyttöönoton poikkeamat markkinaprosesseissa” (in English: “Go-Live Deviations in Market Processes”. Document only available in Finnish) in Datahub Services portal in several different chapters • Added clarification to Chapter 13 on the use of a peek message during a datahub data load • Deleted Chapter 19 Matters to be investigated further • Added Chapter 19 Creating Users and Delegations • Added Chapter 20 on using ProjectTOP tool • Other clarifications and updates (see the change-tracked version in the Datahub portal)

Definitions

Concept	Definition
Dataset	A dataset extracted from the source system by the market parties and migrated to Datahub via the Titta system. The term is used primarily with a premodifier, such as a premigration dataset or data migration dataset.
D-Day	See Moment of change
Datahub Go-Live/commissioning	Datahub Go-Live/commissioning means all actions and tasks in the industry concerning the preparation, Go-Live, and enhanced usage monitoring of services of the centralised information exchange in the electricity retail market.
Datahub system deployment	Deployment of the Datahub information system, which is the responsibility of Fingrid Datahub Oy.
Datahub message buffer	A message buffer from which market transactions are reported to Datahub as Datahub messages using GSRN accounting point IDs. The Datahub message buffer is used during the periods when Datahub cannot be connected for some reason or another (during the freezing period and in production use). (See message buffer)
Freezing period	A period of time related to Datahub Go-Live during which the start-up of one or more retail market processes (e.g. switching of supplier) under present information exchange or messaging based on EDIEL specification is not possible. Cf. core-freezing period.
Downtime	The market participants' systems are used throughout the Go-Live except for the possible downtime during which information systems can be updated or which ensures that the data in the system will not change.
Downtime memo	A memo into which the transactions are logged during the period the market party's source system is unavailable. A downtime memo could be an Excel sheet into which the entries are made.
Downtime transaction	A transaction that is recorded in the downtime memo because the transaction could not be entered in the source system (CIS/MDM).
Main phase of Go-Live	The main phases of Go-Live are: Preparatory phase, Go-Live, Enhanced monitoring. See Definitions of each of these phases.
The preparatory phase of Go-Live	The preparatory phase of Go-Live means all preparatory tasks before the actual Go-Live that enable the successful Go-Live of Datahub.

Go-Live	Go-Live means Datahub's Go-Live stage, in which the present information exchange between market parties is gradually phased out for the introduction of an operating model based on Datahub. This lasts as long as the freezing period.
Go-Live Plan	Go-Live Plan means the Go-Live plan intended for the entire industry ('Go-Live plan for centralised information exchange services (Datahub) for electricity trade'). All market parties and Fingrid Datahub will also prepare their own Datahub Go-Live Plans. (available at https://palvelut.datahub.fi/fi/datahub/dokumentaatio-ja-materiaalit)
TP	Check point ("TarkistusPiste" in Finnish)
(Data) migration	The process in which a market party migrates data from its systems to Datahub via the Titta system. Synonyms: data migration, migration.
Market transaction	A transaction that generates information in the source system which must be reported to other market parties.
Market transaction buffer	See Message buffer
Premigration of metering data	A work phase in which the metering history data [D-6 years → D-2 months] is extracted from the source systems and delivered to Titta
Main migration of metering data	A work phase in which the metering history data [D-2 months → D-15 days] is extracted from the source systems, delivered to Titta and from there on to Datahub.
Final migration of metering data	A work phase in which the recent metering history data [D-15 days → D-1] is reported to Datahub. Datahub will transmit the metering data in accordance with the DH-211 process.
Moment of change ("D")	The moment in time at the end of the freezing period when the transfer of retail market processes from the information exchange model based on the EDIEL specifications to Datahub takes place. The moment of change is set to 21 February 2022 (Monday) by a decree of the Ministry of Economic Affairs and Employment.
Point of no return	'Point of no return' means a moment in time after which a return to the old Ediel data exchange model is no longer possible.

Unloading of buffers	An action/work phase during which the market transactions buffered during the freezing period are processed to Datahub. During the unloading, Datahub's B2B processes apply less strict validation rules. Data migration to Datahub has taken place before the unloading of buffers.
Buffer	see Message buffer
Basic data	Basic data means all non-time-series market data, such as accounting point data, customer data, agreement data, party data, metering grid area data and authorisation data.
PRODAT message buffer	A message buffer (see Message buffer) from which market transactions are reported to the other market party (supplier or DSO) as EDIEL messages using the current accounting point IDs. The PRODAT message buffer is needed in case the Go-Live has to be interrupted and a recovery is needed (see Recovery plan).
Rollback	Rollback refers to all of the actions by which the current EDIEL message traffic can be resumed after the message traffic has been phased out.
Phasing out of message traffic	The phase during which the old PRODAT message traffic and its data exchange processes will be brought to an end, and any incomplete backlogs and tasks are unloaded. During the phasing out, the parties start to buffer transaction data to their own systems in order to report it to Datahub.
Message buffer	A buffer in the source system that performs B2B communications. Messages (or market transactions) are temporarily stored in the buffer before the message is sent to the other party. There can be a separate message buffer for Datahub messages and PRODAT messages or a common message buffer for both. An example of this is the internal message queue of a CIS/MDM source system. (See Datahub message buffer and PRODAT message buffer)
Checkpoint	A check performed during Go-Live. Based on the results of the check, Fingrid makes a decision on whether Go-Live can continue.
Enhanced monitoring	Enhanced supervision means the phase that immediately follows Go-Live, during which the Datahub operator and market parties carry out enhanced monitoring of the market processes and information exchange and take care of other tasks following Go-Live.

Data migration downtime	Freezing of CIS systems (downtime) for the duration of the Titta data migration.
Data Migration Plan	In order to support data migration work, a Data Migration Plan is prepared, which contains a description of the stages of the data migration project, the tasks and responsibilities of the parties, and the data migration process itself.
Transaction buffer	See Message buffer.
Preparation	The period during which all preparatory actions are taken before the PRODAT message traffic is phased out.
Core-freezing period (“Y”)	The core-freezing period is a period of time during Go-Live in which information on the business processes of retail markets is no longer exchanged by means of Ediel-compliant PRODAT messages. The core-freezing period ends at the moment of change, at which time information exchange on the electricity market is in production and operates via the Datahub processes.

1 Introduction

The Datahub project has established a working group to develop a technical Datahub Go-Live plan, a so-called Runbook. The purpose of a Runbook is to clarify the existing Go-Live plan (Go-Live Plan for centralised information exchange services for electricity market 1.5) and to describe the measures in detail from the perspective of each of the parties involved in Go-Live (Fingrid Datahub Oy, electricity suppliers, DSOs and third parties/service providers). The Runbook documentation ensures that each party participating in Go-Live can perform the correct actions at the correct time to ensure a smooth and successful Go-Live of Datahub. The Runbook plan also covers the functional specifications of the message buffers that will be used during Go-Live. Generally speaking, Datahub Go-Live is not just a technical measure, but also involves a significant amount of other preparatory work, such as resourcing and taking the Go-Live event into action in the business itself.

Fingrid Datahub has directly contacted the organisations requested to participate in the working group. The following representatives have contributed to the preparation of the Runbook:

- Esa Pietarinen, Fingrid Datahub Oy
- Jari Arve, Smart Energiapalvelut Oy
- Arttu Lahtinen, Fortum Markets Oy (v1.0 / until 3 June 2020)
- Jarmo Karjala, Fortum Corporation (v1.1 / since 3 June 2020)
- Pia Aaltonen, Fortum Asiakaspalvelu Oy (v1.1 /since 3 June 2020)
- Mikko Horsmanheimo, Caruna Oy (v1.0 / until 3 June 2020)
- Anne Mankki, Caruna Oy (v1.1 / 3 June 2020 – 10 December 2020)
- Anni Vainionkulma, Caruna Oy (10 December 2020 – 1 July 2021)
- Maarit Laiho, Caruna Oy (since 1 July 2021)
- Teemu Kokki, Hansen Technologies Finland Oy
- Anne Suomela, Enerim Oy (v1.0 / until 3 June 2020)
- Antti Järvinen, Enerim Oy (v1.1 / since 3 June 2020)
- Jani Pasanen, TietoEVRY Oyj
- Karri Kulmala, Solteq Oyj
- Heikki Sivonen, CGI Suomi Oy (until 1 April 2021)

- Jaana Frodelius, CGI Suomi Oy (since 1 April 2021)
- Juhani Ikonen, Net Group Nordic (since 13 March 2021)
- Juha Leinonen, AFRY Management Consulting Oy (v1.1 / since 3 June 2020)
- Mikko Nieminen, KPMG Oy Ab (v1.0 / until 3 June 2020)
- Pasi Vänttinen, KPMG Oy Ab (v1.0 / until 3 June 2020)

In addition to the people mentioned above, several other support persons have been involved, and we have also collaborated with the Go-Live Planning Group and the Process Working Group. The working group will continue its work on technical issues related to Go-Live and potential clarifications of Runbook.

1.1 Runbook documentation

The Runbook documentation consists of two documents: the high-level description (this document) and the actual Runbook (an Excel file). This document is a high-level description of the tasks needed for Datahub Go-Live. The purpose of this top-level description is to facilitate a comprehensive understanding of the Go-Live itself, its planning and further development. In addition, this document contains a wide range of guidelines related to different work phases which the market parties should take into account in their own preparation in order to perform the tasks correctly and make Go-Live a success. Detailed actions taken by each party can be found in the actual Runbook, which is a separate Excel sheet that is an appendix to this document (Datahub Runbook v1.3.xlsx).

Please note that this industry-wide Runbook describes only those tasks that need to be performed in a coordinated manner between all parties involved. Each party must note that in addition to this plan, each party involved in the Go-Live must draw up its own plans and actions that enable the Party to act in accordance with this common plan for the entire industry. Therefore, the market parties must carefully review this plan with their own system vendor.

After this version of documentation is completed, the Runbook will be refined only if needed. There is no new version scheduled at the moment.

2 Technical objectives of Go-Live

The main objectives of Go-Live are described in the Datahub Go-Live plan (link). These objectives are:

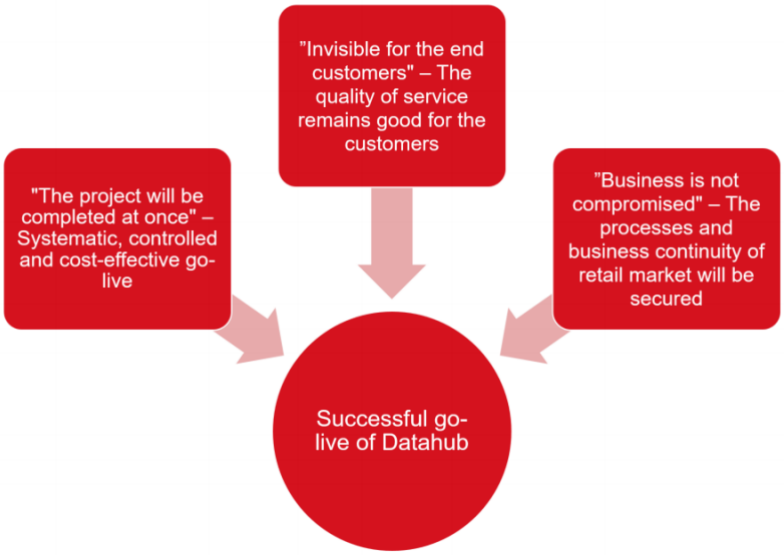

FIGURE 1 MAIN GO-LIVE OBJECTIVES[1]

In order to achieve these main objectives, the following **technical** objectives of Go-Live need to be met as specified in the Runbook:

- At the moment of change, all market parties and Datahub have the same consistent data and all market transactions buffered during the freezing period have been successfully processed.
    - The data on customers, accounting points, agreements and metering data must be comprehensive, consistent and of high quality so that the market and market processes work as planned.
    - The data must be good enough to allow Datahub to successfully perform the imbalance settlement calculations for the period following the moment of change (i.e. that the calculations produce the correct results). This also ensures that the data has been imported correctly to Datahub.

[1] Go-Live Plan for centralised information exchange services (Datahub) for electricity market

- In practice, it is impossible to reach a consistency of 100.0%. It is therefore very important that any shortcomings and errors are identified and corrected as soon as possible after the moment of change.
- The data must be up-to-date, any balance deviations corrected, and equalising calculated even for historical data, so that Datahub can correct balance deviations.

- All market participants have successfully integrated with Datahub and the market processes work flawlessly.
- Responsibility for imbalance settlement and correction of balance deviations has been successfully transferred from DSOs to Datahub

3 The phasing of Go-Live

The Go-Live plan specifies the main phases of Datahub as preparation for Go-Live, Go-Live and enhanced monitoring. The Go-Live plan also specifies the preparation, freezing period, core-freezing period, phasing out of message traffic and Datahub production. In Runbook, these are called 'periods'. To complement the periods, the Runbook specifies work phases that bring together work tasks that are associated with the same entity. Some work phases have separate sub-phases. The table below names and describes on a general level the work phases of Datahub Go-Live in chronological order.

TABLE 1 WORK PHASES OF GO-LIVE

#	Phase name	Description	Party responsible
1	Initialisation of the Datahub system to production readiness	The work phase in which the Datahub is initialized to production readiness.	Fingrid
1.1	Setting up the Datahub system	The Datahub system is installed as Fingrid's production environment in production readiness with an "empty database". The interfaces remain closed in this stage.	Fingrid
1.2	Opening the Datahub interface	Fingrid opens the Datahub interface for connection tests and later production use.	Fingrid
1.3	Initialisation of permissions to Datahub	Fingrid sets up users for the Datahub user interface and machine users for the B2B interface	Fingrid
2	Datahub production connections are opened and verified	The Datahub interface is opened to market parties, who verify that the connections work. Datahub's market processes will not yet be available at this stage.	Fingrid, Market parties
3	Premigration of metering data	The phase in which the majority of the metering data is migrated to Titta before the message traffic phase-out begins. The phase also includes the migration of basic data to Titta so that metering data can be validated.	Fingrid, Market parties
3.1	Premigration of basic data	DSOs and suppliers extract and submit the basic data set to Titta. The step is needed to check the metering data submitted for premigration based on the validity of the grid agreement. The suppliers too submit structured data to Titta for data checks. At this stage, the suppliers' data sets will be used for checking the quality of data. The results of the Titta data checks are available for market parties via Titta.	Fingrid, Market parties
3.2	Premigration of metering data to Titta	DSOs extract and submit historical metering data to Titta. The metering data is imported for the period [D-6 years -> D-2 months] calculated from the moment of change.	Fingrid, Market parties
3.3	Data corrections for the main migration.	The market parties will inspect the error reports generated by Titta and correct all category 1 and 2 errors detected in the basic data before the actual migration of data at the start of the core-freezing period (section 7).	Market parties

4	A stepwise phasing out of PRODAT processes and the deployment of buffers	The phase during which PRODAT message traffic processes are phased down in steps and the message buffers are deployed in accordance with the Go-Live plan.	Market parties
4.1	Preparing for the core-freezing period	Checks performed on the last day of the phasing out of message traffic and the decision to transfer to the core-freezing period. The party must ensure, no later than the day before the start of the core-freezing period, that they are ready to perform the extraction for data migration.	Fingrid, Market parties
5	Migration of basic data to Titta	The data migration of basic data to Titta performed by market parties at the start of the core-freezing period when the message traffic has been frozen.	Fingrid, Market parties
5.1	Data checks in Titta	Fingrid performs data checks in Titta for basic data and delivers reports on the quality of the data to the market parties. The parties review the report delivered by Fingrid. Any critical deviations will be handled in co-operation with the Datahub operator, if necessary.	Fingrid, Market parties
6	Main migration of metering data to Titta	The data migration of metering data to Titta performed by the DSOs at the start of the core-freezing period. The metering data is imported for the period [-2 months -> -15 days] calculated from the moment of change. In the main migration, metering data that has changed in relation to the premigrated data or that had errors in the previous import may also be imported.	Fingrid, Market parties
7	Migration of basic and metering data to Datahub	The data submitted to Titta and verified by Titta will be migrated to Datahub by Fingrid.	Fingrid
7.1	Checks of data migrated to Datahub	Data quality checks to be performed after the migration of data to Datahub. The market parties will verify the success of the data migration to Datahub by checking the reports generated by Titta. An integral part of the checks is Fingrid's imbalance settlement calculations for historical data. The main responsibility for data checks lies with Titta (section 5.1). At this stage, migration errors in basic data are only expected in exceptional circumstances. However, more errors may be detected in metering data that are not validated by Titta.	Fingrid, Market parties
8	Unloading of buffers	The phase during which the market transactions buffered during the freezing period (such as supplier switches) and data changes (such as updates to customer data) are reported to Datahub. The buffers are unloaded by using Datahub's market processes. Some market processes will use different validation rules during buffer unloading (described in Chapter 8.2).	Market parties
9	Final migration of metering data	The phase during which metering data that is new or changed in relation to the data in the premigration and main migration phase (including data that has caused an error in the past) is delivered to Datahub using the process DH-211. Datahub transmits metering data submitted by means of the DH-211 process also to suppliers as per the normal process.	Market parties

10	Actions at the moment of change	Actions to be taken after the unloading of buffers and final migration of metering data in order to put Datahub officially into production use (using the market rules for production use).	Fingrid
11	Post-hoc actions	Post-hoc checks to data quality and the functioning of market processes, corrections to the detected data and process errors, transfer of imbalance settlement and balance deviation responsibility to Datahub, and other actions to verify the success of the Go-Live.	Fingrid, Market parties

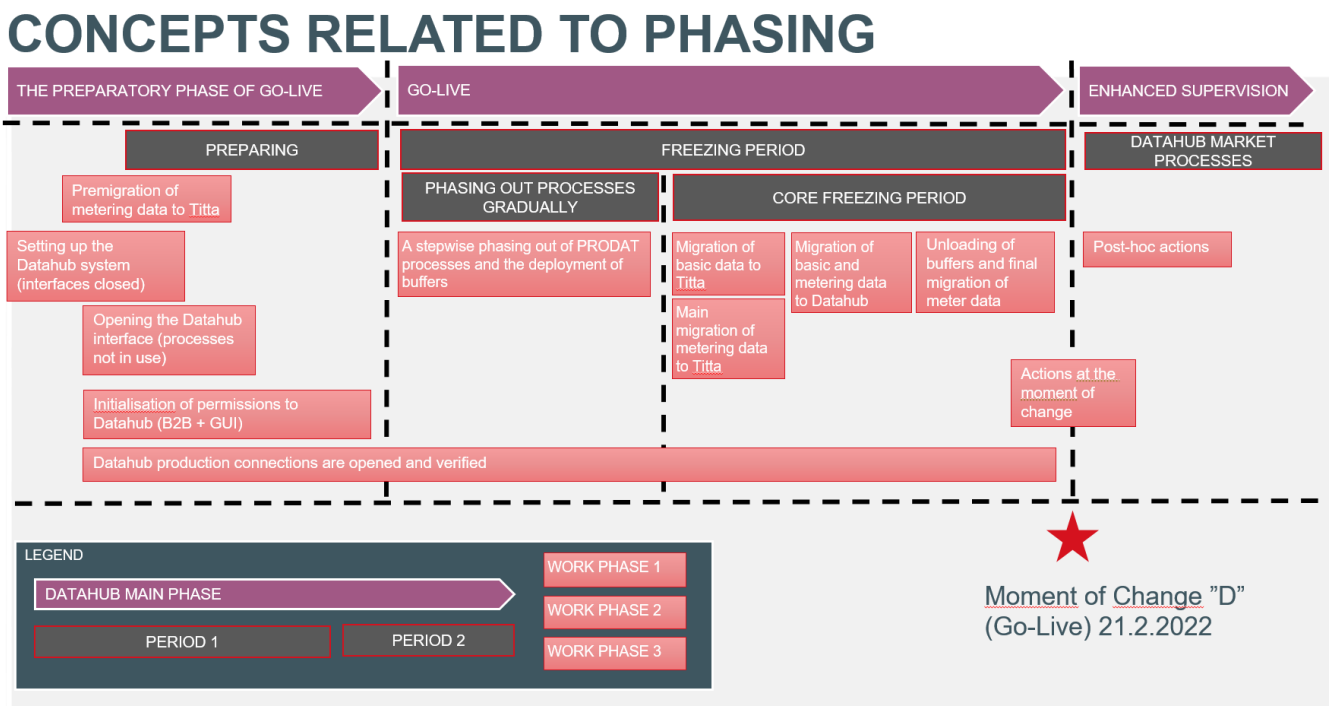

FIGURE 2 PHASES OF GO-LIVE

3.1 Schedule of the core-freezing period

The diagram below illustrates the target schedule of the work phases of the core-freezing period. The purpose of the chart is to provide an indicative idea of the length of time allocated to each work task. The total length of the core-freezing period is 11 days. In practice, however, Datahub will already be partially in production at the start of the unloading of buffers phase. In any case, the market parties must prepare for the postponement of the Go-Live by a few days as part of their own risk management.

A more detailed description of the dependencies and durations of the different phases is given below.

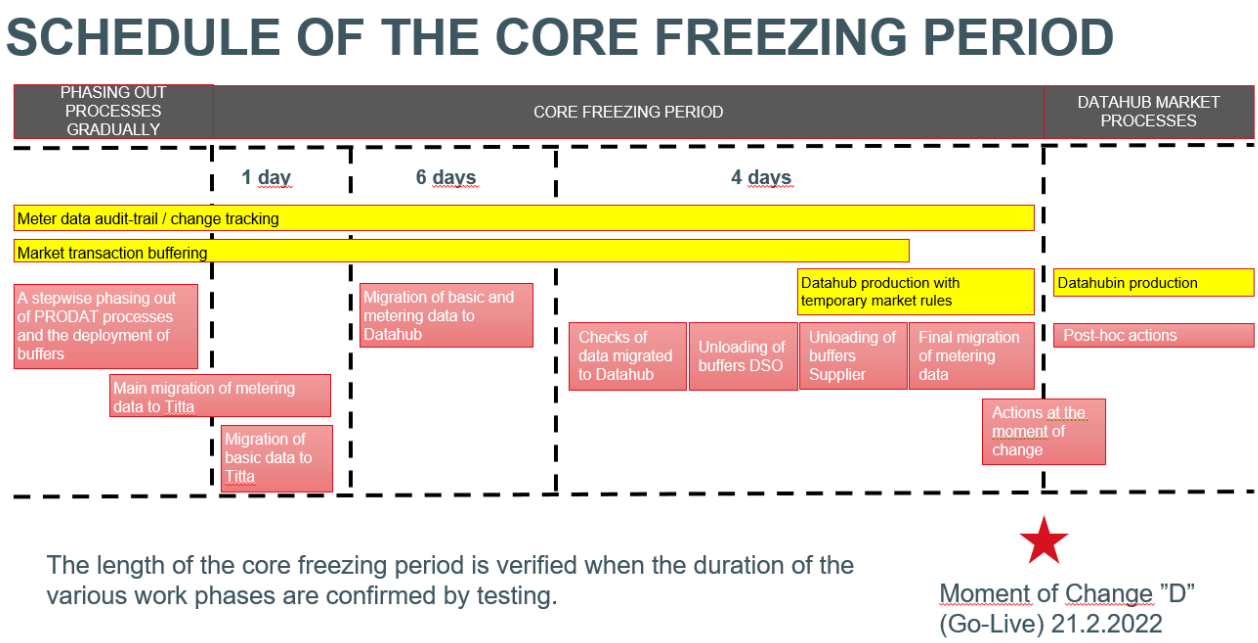

FIGURE 3 SCHEDULE OF THE CORE-FREEZING PERIOD

On the first day of the core-freezing period, metering data (the share of the main migration) and basic data are delivered from the market parties' systems to Titta. When the migration of data to Titta has been verified as successful and Titta's checks show that the Go-Live can proceed, the data will be migrated to Datahub without delay. Migration of data to Datahub takes approximately 6 days. Four days have been reserved for post-migration data checks, buffer unloading, final download of metering data and other measures at the moment of change.

Note that Datahub's market processes will no longer be closed once they have been opened (stepwise) to network operators and suppliers. In other words, the market parties can continue submitting new notifications to Datahub as soon as the buffered transactions have been unloaded. However, the parties should note that prior to the moment of change, Datahub has temporary deadlines/market rules in place. These are described in more detail in Chapter 8.

4 Transition of market processes

An essential part of Datahub Go-Live is the transition from PRODAT messages to Datahub market processes. This transition is illustrated by the example of a supplier switch in the diagram below.

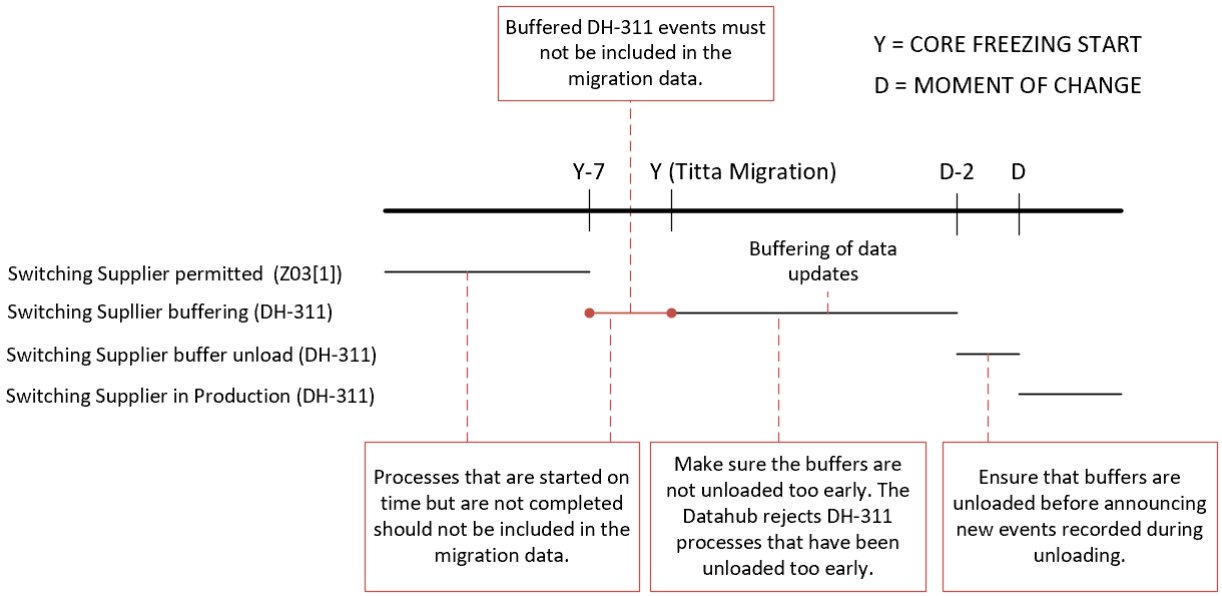

FIGURE 4 TRANSITION FROM PRODAT PROCESSES TO DATAHUB PROCESSES (SUPPLIER SWITCH AS AN EXAMPLE)

For switching of suppliers, the transition begins when the suppliers are no longer permitted to send network operators notifications on supplier switch (Z03[1]). This becomes effective on day Y-7 (Y-5 business days). When this rule becomes effective, the supplied must buffer new switches of suppliers agreed with the customer in their own system/separate memos. These tasks are part of the message traffic phase-out described in Chapter 5.

On the first day of the core-freezing period (Y), the market parties shall submit the data sets to Titta, where they will be first checked and then delivered to Datahub. The data migration is described in Chapter 6.

Once the data has been migrated to Datahub and the necessary checks have been made, Datahub will open the Datahub market processes (DH transactions). Transactions buffered by the parties will then be reported to Datahub, which will forward the data to other parties in accordance with the processes. This is called buffer unloading and is described in Chapter 8. As previously stated, at the time buffers are unloaded, Datahub is in a certain sense already in production use. The difference is, however, that during buffer unloading, some processes operate under different market rules than in actual production. Starting from the moment of change, Datahub will use production-time market rules.

4.1 Maintenance of GSRN codes for new agreements

The supplier can retrieve GSRN codes of accounting points from Titta. The figure below shows the times when distribution system operators must deliver accounting point information (including GSRNs) to Titta. However, distribution system operators may report accounting point information/ GSRN codes to Titta at anytime outside these times (yet pre- and main migrations must not be disrupted). The figure also shows the point in time when distribution system operators unload buffers and start creating new accounting points to datahub (with GSRNs).

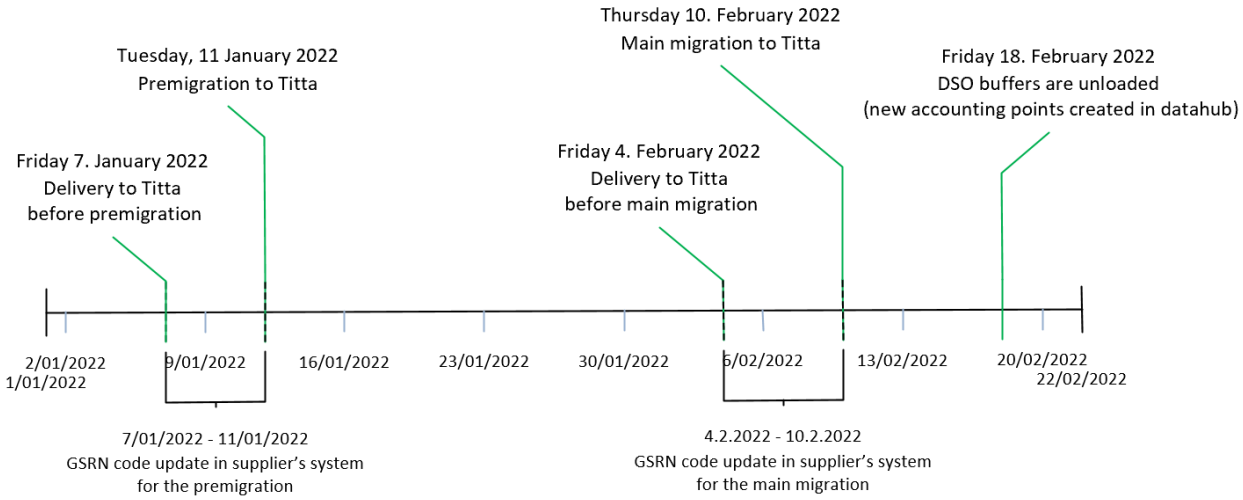

FIGURE 5 GSRN CODE DELIVERY IN DIFFERENT TIMES

Between the dates marked in green above, distribution system operators may create new accounting points for which GSRNs are not directly available to the supplier.

- 7 January 2022: Distribution system operators deliver accounting point information to Titta (including GSRNs)
    - The last time the GSRNs were delivered to Titta (at least) was in connection with the dress rehearsal 11 November 2021.
- 7–12 January 2022: Suppliers update GSRN codes for their own premigration on the basis of the data delivered by the DSOs on 7 January.
- 11 January 2022: Distribution system operators and suppliers extract and deliver premigration information to Titta (including accounting point information/GSRNs)
- 12 January – 4 February 2022: Suppliers make agreement to the new accounting points, which GSRN codes are not yet available in Titta.

- 3 February 2022: Buffering of supplier switches begins. If a supplier needs a missing GSRN to buffer the transaction and cannot wait for the next Titta delivery, the supplier must request the GSRN from the DSO by email.
- 4 February 2022: Distribution system operators deliver accounting point information to Titta (including GSRNs)
- 4–10 February 2022: Suppliers update GSRNs for their own main migration on the basis of the data delivered by the DSOs on February 4.
- 8 February 2022: Moving in buffering begins. If a supplier needs a missing GSRN to buffer the transaction and cannot wait for the next Titta delivery, the supplier must request the GSRN from the DSO by email.
- 10 February 2022: Distribution system operators and suppliers extract and deliver main migration information to Titta (including accounting point information/GSRNs)
- 10–18 February 2022: Suppliers also buffer agreements for accounting points for which GSRNs cannot be found on Titta. The supplier must request the GSRN from the DSO by email.
- 14 February 2022: Suppliers can use the datahub's DH-131 Accounting point identification request process to get GSRNs for the accounting points that distribution system operator had delivered to Titta and were downloaded to datahub.
- 18 February 2022: Suppliers use the datahub's DH-131 Accounting point identification request process to get GSRNs for also new accounting points as soon as distribution system operator has unloaded its buffers.

As a general rule, for the new accounting points that the supplier cannot find in Titta, the supplier should request the GSRN from the distribution system operator by email.

Suppliers should ensure that GSRNs are added to datahub messages by the buffering phase at the latest if the system allows transactions to be buffered without a GSRN.

5 A stepwise phasing out of PRODAT processes and the deployment of buffers

Depending on the process, PRODAT data exchange processes may last one to five business days, starting from the message that triggers the process and ending with the APERAK acknowledgment of the last message. The purpose of the phased shutdown of PRODAT processes is to ensure that, at the start of the core-freezing period, all PRODAT data exchange

processes have been successfully completed and that electricity suppliers and DSOs have consistent data. This also ensures that the suppliers' and DSOs' data, especially data on the supplier of an accounting point, is consistent in the data migration datasets. This is absolutely critical for successful data migration and Datahub Go-Live. The process-specific phasing-out plan ("Phasing-out plan for the current PRODAT message traffic", MS Excel) prepared by the Go-Live Planning Group is available on the Datahub Services portal (link).

A message buffer is a buffer **located in a market party's CIS** that temporarily stores market transactions that cannot be reported to the other party due to the freezing of message traffic. Deploying buffers at the time the message traffic is phased out and unloading the buffers to Datahub is an integral part of the entire Go-Live. Market transactions are recorded in the buffer until Datahub is ready to receive buffered transactions.

Note that the freezing period and the deployment of buffers are **process-specific**. For example, for switching of suppliers (Z03[1]), the core-freezing period and the associated buffering of transactions starts on day Y-7 (Y = the first day of the core-freezing period). For Move-in notification (Z03[14]), the day is Y-2.

In the phasing out of message traffic, essential factors for the parties are:

- To ensure that messages related to PRODAT processes are sent from the systems **before** the planned deadline.
    - The deadlines close at midnight. Nevertheless, for the success of the phase-out, it is strongly recommended that PRODAT messages, especially those of the last day, are sent, and that the start-up of new processes is complete **well in advance of midnight**.
- The party initiating the information exchange process (such as the supplier in the case of a supplier switch) must ensure that, after the deadline for the start of a specific message process (market transaction),
    - the market transaction is added to the party's message buffer, and
    - the party does **not** take the relevant market transaction into account in the data migration dataset.
- The parties must note that the transactions must be buffered in the format required by Datahub transactions.
    - This means, for example, that buffered transactions must use a GSRN ID, and that, e.g. buffered supplier switch transactions must contain all the information required by the DH-311 transaction.
    - For instance, changes to accounting point data must be buffered in accordance with a DH-122 message. Please note that in PRODAT processes, these changes to

accounting point data can be performed with several different messages, but Datahub has only a single process for changing accounting point data.

- The parties must take into account the possibility that Go-Live may be cancelled and a rollback to the PRODAT message traffic takes place (rollback, see Chapter 14).
    - The parties must ensure that all transactions buffered after a specific process has been phased out can also be reported, if necessary, to other parties with PRODAT messages that comply with the PRODAT process rules (using the current format for an accounting point ID).
- If messages cannot be sent by the deadline in spite of back-ups (i.e. the process remains unfinished), a party must take the measures described in Chapter 5.1.

The market parties can also use so-called downtime memos for 'buffering' transactions in the various phases of Go-Live. An downtime memo is accounting that takes place outside the CIS, such as a separate Excel file. What is essential is that all market transactions are unloaded at the end of the core-freezing period to Datahub using Datahub's market processes.

A supplier may have a buffer for PRODAT message traffic that collects messages on agreement starts and terminations that will become valid further than 90 days into the future. If such market transactions are still in the buffer during Go-Live, the supplier must take the transactions into account in the corresponding Datahub message buffer. Such beginning agreements must also be left out from the delivery of basic data to Titta. Furthermore, if the termination of an agreement has been buffered to take place after more than 90 days, such an agreement must be delivered to Titta without an expiration date (the termination shall be announced later as a Datahub transaction).

5.1 Unfinished PRODAT processes

If a market process initiated **in time** remains unfinished, the situation will be interpreted in accordance with the Go-Live Plan, i.e. as if the process had not been initiated. A market process will be interpreted as unfinished if any of the PRODAT messages that belong to the process are not sent by the deadline. Nevertheless, if the deadline is about to be missed, it is the responsibility of the late party to agree without delay with other parties involved in the process on the completion or cancellation of the processes. In order to avoid further manual investigations, it is strongly recommended that processes started on time be completed before the start of the core-freezing period.

If a market process cannot be completed in spite of efforts to do so, the initiating party must either cancel the transaction permanently in their own system or record the transaction in the message buffer. It is also important that **none** of the parties involved in the process (such as the DSO, current supplier and new supplier in the supplier switch process) includes an unfinished transaction in their own data migration dataset. It is the responsibility of the party that has not met the deadline to send the message to agree with the parties involved with the process on how to handle the

process. This can be done by phone or email, for example. This ensures that Titta's consistency checks will pass and no manual adjustments are needed later.

The Parties must monitor that an APERAK acknowledgement is received for all messages sent by the deadline. If APERAK acknowledgements are not received or are negative, the actions to take must follow the instructions of the Go-Live plan:

In a situation in which an acknowledgement is not received from the recipient of the message, ensure that the original message has been sent appropriately and that the acknowledgement request has been on. If it can be assumed that the message was sent correctly, the recipient is sent, by email, either the messages themselves or information about the sent messages, including information about the message types, accounting points, and the time and date of sending. After this, the message can be assumed to have reached the recipient even if the recipient still fails to respond to the message.

However, missing APERAK acknowledgements should not be taken into account when checking whether a data migration extraction process is incomplete. In other words, a process shall be interpreted as completed despite the fact that the last APERAK message of the process has not been received.

The rules described above can be illustrated by an example of a supplier switch process. In the supplier switch process, the Z04[1] message must be sent no later than Y-1 (Y = start date of the core-freezing period) by 23:59. If this message cannot be sent on time, the network operator must agree (well in advance of the deadline) on the completion of the process with the other parties involved in the process. When a transaction is cancelled, all parties involved in the transaction will reject the event and will not include the change in the data migration dataset. The supplier who started the supplier switch process adds the transaction to the message buffer. For Z04[1] messages sent in time, the network operator must ensure afterwards that a positive APERAK acknowledgment is received for the messages. In practice, however, there will not be enough time to process errors on the first day of the core-freezing period, which means that the errors must be processed at a later stage.

With regard to unfinished supplier switches, it is important to note that the first possible start date for buffered supplier switches is D+15 days. If a supplier switch remains unfinished in the phase-out and the supply agreement of that switch is agreed with the customer to start earlier than D+15 days, the supplier must either cancel the agreement made with the customer or agree on a later starting date. If the supplier switch is cancelled, the actions described in chapter 5.2 can be taken. If a new start date is agreed with the customer, the new start date must be taken into account in the buffered supplier switch.

For contract processes, it is also important to note that notifications on meter readings (or possible change to the metering method) that belong to the process should not be waited for to complete the process. This is particularly true to the extent that the start or expiration of an agreement falls on the freezing period of the Z10/Z11 messages.

Note that the Go-Live process contains no provisions for spending time in investigating unfinished processes. For this reason, it is of utmost importance that PRODAT processes be completed **as soon as possible** and **any problems that arise are addressed without delay**. Since the Go-Live is monitored, the parties are also required to report the progress and success of the phase-out using the ProjectTOP tool described in Chapter 20. Corrections that cannot be performed in time during phase-out must be performed at a later stage and if necessary, agreed with the Datahub operator.

For cancellations of moves reported by email, the suppliers and network operators associated with the accounting point must also agree on how transactions are processed before the start of the core-freezing period so that the data of suppliers and the network operator is consistent in data migration. Move-in cancellations that take place on the day before the core-freezing period and changes to the moving date are handled by phone and confirmed by email.

5.2 Cancellations in buffering

It is possible that a buffered market transaction could be cancelled. For example, a buffered supplier switch may be cancelled during the core-freezing period. In situations like these, there are two alternative options:

- The electricity supplier deletes the market transaction from the buffer and the event is not reported to Datahub at all.
    - This may avert the need to carry out extra investigations in connection with buffer unloading if the unloaded transactions generate errors for some reason (for example, if several contract transactions from different suppliers occur at the same accounting point).
- A separate cancellation transaction is created the buffer. For example, in the case of a supplier switch, two separate transactions are reported to Datahub: the supplier switch (DH-311) and its cancellation notification (DH-341).

5.3 Consistency checks in data migration

For successful Go-Live, it is important that the DSO and the supplier have the same understanding of the supplier of the accounting point. This is checked in the consistency check of data migration (Titta). The compliance checks to be performed, as well as a more detailed description of the data migration (including the Data Migration Plan), are available in the Datahub Services portal.

An important objective of the message traffic phase-out is that the DSOs and suppliers have the same information with respect to the following (note that the supplier's **agreement ID** not included in the check):

- [Supplier ID, accounting point, start date of supply agreement, end date of supply agreement]

- If there is a valid supply agreement at the accounting point, the grid agreement must also be valid, subject to the six-week rule.

The phasing out may cause differences in the supplier's and DSO's data migration datasets for unfinished agreement processes or agreement processes in which other errors are discovered during their processing. The detected differences in consistency trigger a need for manual investigation, so it is very important to prevent these situations from occurring. In the event that the network operator and the supplier have different supplier information for an accounting point, the supplier's agreement information will be uploaded to Datahub.

The data above is affected by the following market processes that will be phased out:

- Supplier switching – Z03[1]
- Cancellation of supplier switching – Z03[C]
- Move / New supplier for the DSO of the move-in site – Z03[14]
- DSO's notification to the current supplier on the move-out of a customer – Z05[14]
- Move / New supplier for the DSO of the move-out site – Z08[14]
- Termination of the agreement – Z08[1]

It should be noted that the consistency check is not performed for all data. For example, data migration validations do not check the consistency of accounting points, customers or detailed agreement information, such as metering method or connection status, between the supplier and DSO. In general, the data that is migrated to Datahub is data held by the party that is responsible for that data (such as accounting point data possessed by the DSO).

In practice, no errors will take place in the data migration checks if the phase-out is not fully successful in the processes listed below:

- Disconnecting and connecting the supply of electricity (at the request of the supplier and network operator's notifications) – Z08/Z11[9/2]
- Reporting of metering data – Z11[5/6]
- Grid operator's notice of a change in the accounting point and invoicing information – Z06[10/11/13]
- Current supplier's notification of a change in invoicing method – Z09[1]
- Grid operator's notification of a change in the meter or metering method – Z10[7]

A successful phase-out of these processes is, of course, also important in order to minimise the amount of retrospective manual corrections and the inconvenience experienced by customers.

5.4 Buffering for cancelling the Go-Live

When planning the phasing-out of message traffic, the parties must also take into account the possibility that Go-Live may be cancelled and a rollback to the PRODAT message traffic takes place. The rollback process is described in Chapter 14. The parties must ensure that all transactions buffered after a specific process has been phased out can also be reported to other parties with PRODAT messages that comply with the provisions of the procedural and message traffic rules for the electricity retail market.

Datahub doesn't process meter readings, so they do not need to be buffered for Datahub. According to the phase-out plan, the switching of supplier is fully processed before the Z10/Z11 messages.

5.5 Implementation and monitoring of the phase-out

To ensure a smooth and successful Go-Live, each market party must monitor the daily progress of the message traffic phase-out. The appendix at the end of this document (Liite B) contains process-specific conditions which must be met to consider the process completed. The parties can use the table in the appendix for their own monitoring. Furthermore, a market party also immediately address potential problems if it is found that the execution of the processes is disrupted for some reason (for example, the message traffic does not work at all). It should be stressed that each market process that is performed in breach of the plan or remains unfinished during the phase-out will increase the amount of manual investigations that must be performed later.

The market parties must report on the progress/success of the phase-out to Fingrid with ProjectTOP tool (see Chapter 20). This information will be used to support decision-making on transition to the core-freezing period (Runbook TP4.1).

6 Migration of basic data to Titta

The data migration performed along with Datahub Go-Live is essentially the same as conversions performed for data quality checks in the previous steps. However, there are particular points to be taken into account in Go-Live:

- The data migration should only take into account those transactions (especially agreement transactions) for which the message traffic phase-out has been successfully completed.
    - The data migration datasets may not contain any changes to the data entered in the CIS after a **process-specific** phase-out (buffered events)
    - The data migration datasets may not contain transactions that are buffered regardless of process phase-out (such as agreements that start or end after more than 90 days that could not be reported by PRODAT processes).
    - The data migration datasets may not contain changes in data that are associated with market transactions that were left incomplete in the **process-specific** phase-out. The market parties involved in the process shall jointly agree on how to handle unfinished transactions in accordance with Chapter 5.1.
    - Furthermore, the dataset may not include any other changes to the source system data that have taken place after the core-freezing period has started (such as during the extraction).
- Extractions for migration and data deliveries must be completed by the deadlines.
    - The data migration for Go-Live does not have time reserved for making corrections to data.
- The market parties must ensure that all changes to market data during data migration extraction or afterwards (i.e. during the core-freezing period) will be added to the message buffer of Datahub.
    - For example, suppliers initiate the buffering of customer data by means of DH-111 messages and network operators initiate the creation of accounting points (DH-121) and the buffering of changes to accounting point data by means of a DH-122 message.
- A party must ensure that, in the event of an error in the dataset, the party can submit a corrected dataset that reflects the original moment of extraction until Fingrid has acknowledged the readiness to start migrating data to Datahub.
    - The party must ensure that system integrations, sales channels, manual entries made to CIS and other such sources will not cause changes in the source data.

- Alternatively, the market party can ensure that they can perform the extraction again with the same source data (starting point of the core-freezing period).

- The party must ensure that they can revert to PRODAT message traffic if the Datahub operator says that the data migration has failed.

Basic data can only be uploaded to Datahub after the data in Titta has been verified and approved **for all market participants**. The Datahub operator will notify each party separately when the party's data is ok. The Datahub operator will notify the entire industry separately when data migration to Datahub can be started. After this, the parties no longer have to be prepared to redeliver the data to Titta.

The Runbook Team recommends the parties to use downtime of the CIS ("data migration downtime") that starts from the time the data extraction starts and ends when Fingrid acknowledges that the migration is successful for all parties (Runbook TP5). This will prevent data from being changed before the data migration is deemed successful, and may also make returning to PRODAT message traffic easier. The downtime does not necessarily mean shutting down the system if changes to the data can otherwise be prevented. However, each party is responsible for deciding for themselves whether to have the downtime or not.

A party may make different back-ups at various times of the data migration datasets or other data for the purposes of data migration, if they consider it necessary. The backups could be used for creating data migration datasets or rolling back to PRODAT message traffic. However, the party should note that the data quality must be at the level required by Go-Live and data migration rules if the backups will be used to build datasets to be submitted to Titta.

6.1 GSRN code updating

Suppliers need accounting point GSRNs for the accounting points for which the suppliers have agreements. Without a GSRN code, the agreement information of the accounting point cannot be uploaded to datahub. Accounting points without GSRN codes cause in Titta's file check and data migration consistency checks.

Before Go-Live, the supplier receives GSRN codes via Titta. GSRNs are available to the supplier in Titta as soon as the distribution system operator has delivered the accounting point information to Titta. However, the challenge in the data migration phases is that suppliers and distribution system operators deliver master data to Titta at the same time. Thus, the supplier may not have GSRNs for the accounting points that have been created and have gotten a sales agreement after the previous data migration phase.

In order to solve the above-mentioned problem, additionally to the actual main migration delivery, the distribution system operators need to extract and deliver the accounting point information to Titta on Friday 4 February 2022 before the actual main migration extractions (see Chapter 4.1). Consequently, a supplier has a few days to retrieve the missing GSRNs into their own systems before starting their own main migration extraction.

6.2 Error handling

Data quality cannot be expected to be 100.0% in the data migration checks. However, this does not prevent proceeding with Go-Live and migrating data to Datahub. Titta will prepare reports that will allow the parties to start taking corrective action immediately. The parties have the opportunity to correct and resubmit datasets up until the deadline.

After the deadline, the remaining exceptions may be processed by adding them to the Datahub buffer, or, where applicable, correcting the data in Datahub after the moment of change. This also applies to those improbable errors that are not detected until the data has been migrated to Datahub. Adding data rejected by Titta to buffer or correcting it in Datahub may not be straightforward. Guidelines on how to carry out various corrections in practice is maintained in Datahub Services portal in document “Käyttöönoton poikkeamat markkinaprosesseissa” (in English: “Go-Live Deviations in Market Processes”. Document only available in Finnish).

It is also possible that bigger problems are detected in the data migration. An example of such a situation is that a significant player completely fails to submit information to Titta. Even in this case, the Go-Live could nevertheless proceed, albeit subject to certain conditions. The most important thing is that the integrity of data is sufficient, especially the consistency of data between networks and suppliers. Note that data from individual market parties or metering grid areas cannot be migrated separately to Datahub: everything is always migrated at one go. This does not mean, however, that a party whose data submitted to Titta has already been checked and approved should re-deliver the data to Titta.

If the data migration checks indicate that the data is not sufficient for Datahub Go-Live, the Go-Live may nevertheless proceed, depending on the situation. In this case, however, it is very likely that all subsequent Go-Live tasks will be postponed accordingly, which will have to be co-ordinated very carefully with the entire industry. It is not possible to list all possible situations in advance, so each situation should be assessed on a case-by-case basis.

6.3 Migration of data to Datahub

Once Titta’s checks have determined that the data meets the quality levels specified in the Data Migration Plan, Fingrid informs the industry of this and starts the data migration to the Datahub system itself. After the informing, market parties can again, if they wish, deliver new information to Titta. For this data migration, the market parties do not have any tasks, as this step is carried out in full by the Datahub project. However, quality reports and other inspections will be run during the data migration, such as imbalance settlement calculations. The quality reports and any errors in the data will be communicated to the parties (see Chapter 15).

However, it is expected that no significant errors in the basic data are found in the Datahub data migration. Titta’s validation rules ensure that data which would be rejected by the Datahub validation rules will not be submitted to Datahub. In practice, Datahub will reject any data that it cannot store in its data model in accordance to the rules. It is essential to test this phase with sufficiently high-quality before Go-Live.

7 Actions during Datahub data migration

During the time data is being migrated to Datahub, the market parties do not have any tasks directly related to Go-Live in this industry-wide Runbook plan. However, during this period the main task of the market parties is to prepare/maintain readiness for the next phase of Go-Live.

7.1 Data corrections

While data is being migrated to Datahub, it is also very important to check whether any data errors or other processing errors were detected in previous steps (message traffic phase-out and/or data migration). The parties must be prepared to correct these errors during the buffer unloading and/or Datahub production phase. In some cases, error resolution probably requires communication with other parties. In case of doubt, the market party can ask the Datahub operator how certain errors can/should be corrected. The most common expected errors will be identified and guidelines for their handling will be developed as part of the further planning and testing of Go-Live.

7.2 Information exchange by email

Note that **in accordance with the Go-Live plan**, the following notifications shall be made by email (or other method agreed with the customers) during the core-freezing period:

- All information in the current procedural and messaging instructions for the electricity retail market associated with customer moving
- Necessary requests to connect and disconnect electricity supply and their confirmations
- If the beginning of supply starting during the core-freezing period is cancelled during the core-freezing period, the supplier cancelling it must report the cancellation by email to the DSO, which will forward it to the returning supplier.
- Data concerning change of invoicing address for final invoice.

For these changes, the parties should buffer the changed data also for Datahub where necessary (in accordance with the Datahub transactions). Chapter 8.2.4 describes the buffering of move notifications for Datahub.

The Go-Live Planning Group will create more detailed guidelines for communication between parties during the core-freezing period. The guidelines will cover the creation of email templates and procedures in cases where the recipient does not respond to email. Email templates are communicated to the industry separately.

7.3 Forwarding the changes to market data

To make Go-Live easier, it is also highly recommended to make as few changes as possible to market data and create as few new market transactions as possible. For example, the network operator can plan the deployments of new accounting points as well as meter and fuse changes to take place well in advance of the phase-out of message traffic or after the moment of change.

The network operators should also take into account that Datahub will not approve the confirmation of a grid agreement (DH-312 process) if the network product reported on the agreement is not found in Datahub. It is therefore desirable that no new network products be introduced during the core-freezing period.

Network operators should not record the move-outs reported by customers in their own buffer during the core-freezing period. The network operator must notify these to the supplier who will then migrate the move-out notification to Datahub by means of buffer unloading.

7.4 Necessary system changes

The parties shall also carefully plan in advance any system changes that may be necessary to perform during this period. It is strongly recommended that the only system changes made during the core-freezing period are those that are absolutely essential for deploying Datahub processes. An example of such changes are system parameter changes. However, deployments of entirely new systems or significant system updates with migrations are not recommended during this period.

7.5 Maintaining buffering

A party must ensure that the buffering of market transactions works, starting from the time the process is phased out. Depending on its own needs and capabilities, the market party may record transactions to be buffered also outside the CIS. It is essential that all changes/buffered market transactions must be reported to Datahub no later than during buffer unloading. The market parties who will use Datahub's browser-based user interface in production will unload their buffers via the user interface. For these parties, keeping separate memos on market transactions may be sensible.

The market parties must report their readiness for the buffer unloading phase with ProjectTOP tool before the phase can actually start.

7.6 DH-332 Notification of a customer move-out made by the supplier of the move-in location

Parties should not buffer DH-332 notifications, i.e. a new supplier's notification to the network operator to terminate the agreements of the customer's old accounting point. Instead, suppliers must, if necessary, inform the DSO about this by phone, email or other means agreed between the

parties. This will avoid potential errors in the handling of those notifications during the buffer unloading phase.

8 Unloading of buffers to Datahub

The unloading of **market transaction buffers** may be started when the data migration to Datahub has been successfully completed and all preparatory checks and actions (including the decision to proceed with the Go-Live) have been performed. Datahub will notify the point in time when the unloading can be started.

This chapter focuses on the buffers for market transactions that affect basic data. The so-called final migration of metering data is described separately in Chapter 9.4.

Note that when a specific Datahub process is opened for buffer unloading, the Datahub process is already in production use. The parties must themselves ensure that the buffered transactions and any new transactions that have taken place during buffer unloading are reported in the correct order to Datahub. The parties should ensure that any data updates performed during the unloading are reported to Datahub only after the buffer has been unloaded, so that the latest data is not overwritten by older data from the buffer. After a specific Datahub process has been opened for buffer unloading, the process will no longer be closed.

During buffer unloading, the validation rules in some processes differ from the rules used during production (see Chapter 8.2.1). For these processes, the validation rules will be changed to the production rules at the moment of change.

8.1 Phasing

Before the Datahub processes are opened to all parties, a ‘smoke test’, i.e. verification of the operation of Datahub, will be performed with agreed parties. This ensures that the Datahub interface works correctly and is ready for production throughout the industry. In the verification, the agreed parties send market transactions to the production system in a manner agreed upon in advance. The Datahub operator and the agreed parties ensure that processes work correctly, after which the processes are opened to all parties according to the phasing.

An important factor in the unloading of buffers is that the different types of market transactions are dependent on each other. For example, new accounting points buffered during the core-freezing period must be created in/unloaded to Datahub first before any supply agreements or metering data can be reported to these accounting points. There are many different ways to phase in the Go-Live Datahub processes. Nevertheless, the approach considered most cost-effective is the one in which the network operators first unload their buffers **in the chronological order the transactions are recorded,** and then the suppliers unload theirs.

Before the actual buffer unloading phase, some retrieval events of the message interface are opened, as well as some functions in the datahub user interface. This applies to the following processes/events:

- The maintenance of the party authorizations (authorizations between parties for invoice row data and product data) is opened in the datahub user interface when the organisation information has been uploaded to the datahub.
- Datahub opens Accounting point identification request (DH-131) process and other accounting point information retrieval processes (DH-13x processes).
    - These processes are opened after the master data has been uploaded before the metering data has been uploaded to the datahub.
- The copious use of above-mentioned search processes during Go-Live can significantly impair the actual unloading of buffers. On the other hand, using these processes can help in troubleshooting. Later after testing, restrictions may be imposed on the use of these processes during buffer unloading.

The actions to take in the buffer unloading phase are:

- Network operators unload their own buffers **in the chronological order the transaction is recorded** (the oldest updates before the newer ones, regardless of the process). At the same time, the suppliers must start retrieving the corresponding forwarding messages generated by Datahub.
- The market transactions unloaded by the network operator are:
    - DH-112 Request to update customer data (network operator's request to the supplier)
    - DH-121 Creation of accounting point data
        - Exchange points and production units must be created, if necessary, via the Datahub user interface (note: see chapter 11.2)
    - DH-122 Update of accounting point data
        - It is worth noting that moves that have taken place at this point during the core-freezing period have not yet been processed. Therefore, the update goes to the previous supplier in this respect.
    - DH-123 Deletion of an accounting point (this process is used only in error conditions)
    - DH-333 Notice of termination of a grid agreement
        - This notice applies to grid agreements terminated at the initiative of the network operator.

        - During the core-freezing period, the network operator must route move-outs to the supplier for logging, so that the termination of the grid agreement is notified as a response to the supplier's move-out notification.

    - DH-342 Cancellation of a grid agreement
        - Only applies to cancellations made at the initiative of the network operator (not a response to a cancellation reported by the supplier).
        - Please note! Datahub does not allow the cancellation of the start an agreement that has already expired nor the cancellation of an agreement migrated in the data migration.
    - DH-352 Cancellation of the termination of grid agreement
        - Please note! Datahub does not allow the cancellation of the expiration an agreement that has already expired nor the cancellation of an agreement migrated in the data migration.
    - DH-322 Updating the data of a grid agreement
    - DH-412 and DH-422 Connection and disconnection notifications
    - DH-71x Product data creation and update transactions
        - Distribution system operators must report product calendar time series for 2021 and 2022 as part of the buffer unloading.
        - Price time series can also be reported as part of buffer uploading
        - Please note! Datahub does not allow retroactive product data creations or updates. Furthermore, the DH-312 grid agreement cannot be confirmed if the product is not found in Datahub (the network product is a mandatory piece of information).
    - DH-813 Notification of customer authorization from party – DSO

- Please note! During the unloading of suppliers' buffers, the distribution system operator's events that begin are:
    - DH-312 The confirmation of a grid agreement is reported only as a response to the DH-311-2 New agreement information forward to DSO message forwarded by datahub in connection with the unloading of the suppliers' buffers.
    - DH-344 Notification of grid agreement end in the case of cancellation

        - DH-413 and DH-423 notifications of connection or disconnection delay

- The suppliers unload their own buffers **in the chronological order in which the transaction has taken place** (the oldest updates before the newer ones, regardless of the process).
- At the same time, the network operators must start retrieving the corresponding forwarding messages generated by Datahub.
- The market transactions unloaded by the supplier are:
    - DH-111 Update to customer data
    - DH-124 Request to update accounting point data (supplier's request to the network operator)
    - DH-311 Notifications of new agreements
        - The network operator must respond to the DH-311-2 messages forwarded by Datahub with a Notification of the confirmation of a grid agreement (DH-312)
        - The supplier should note that DH-312 messages will be retrieved immediately from the buffer unloading phase.
        - See deviating time limits in chapter 8.2.3
    - DH-321 Updating the data of a supply agreement
    - DH-331 Notice of termination of a supply agreement
    - DH-341 Notice of the cancellation of a supply agreement and DH-343 Notification of refusal of sales agreement restore by former supplier
        - Please note! Datahub does not allow the cancellation of the beginning of an agreement that has already expired.
    - DH-351 Cancellation of the termination of a supply agreement
        - Please note! Datahub does not allow the cancellation of the termination of an agreement that has already expired.
    - DH-41x and DH-42x Supplier's connection and disconnection requests and their cancellations

        - The supplier should note that the datahub also has a 7-day time limit for disconnection requests during buffer unloading and requests cannot be made retrospectively.
    - DH-71x Product data creation and update transactions
        - Price time series can also be reported as part of buffer unloading
        - Please note! Datahub does not allow retroactive product data creations or updates.
    - DH-811 Notification of customer authorisation - supplier
- Finally, network operators bring the metering data up to date (‘final migration of metering data’, Chapter 9.4) using the process DH-211 Notification of metering data
    - The metering data notification will only be opened when the suppliers have unloaded the agreement data buffers. This way, the metering data is forwarded to the correct suppliers.
    - The suppliers must be prepared for a higher than normal volume of metering data to be retrieved at one go in the final migration.

8.1.1 Other market processes

As a rule, at the moment of change, also those Datahub market processes will be opened that are not listed in the buffer unloading phases described above. These market processes are:

- DH-22x Metering data searches
- DH-212 Reminders of metering data report
- DH-332-1 Notification of a customer move-out made by the supplier of the move-in location
    - This process is used only for notifying the network operator on behalf of the customer (the process does not update agreement information in Datahub).
- DH-523 Search for consumption and productions recorded in losses
    - Balance responsibility will be transferred to Datahub only after the moment of change.
- DH-73x Invoice row notifications and DH-74x invoice row searches
- Third party data searches (authorised by the Customer) and DH-113 Customer data update request

- Data searches via the data interface
- The Datahub customer portal for electricity consumers and small-scale producers (including DH-82x notifications)

However, if necessary, the introduction of these market processes may be delayed by some days in order to ensure a successful Go-Live. The purpose of introducing a delay is to ensure a successful Go-Live of the key market processes, such as contract processes. A delay might also be necessary if there are uncertainties regarding the quality of the data migrated to Datahub or if any ambiguity is discovered during the buffer unloading phase.

8.2 Specific issues to consider when unloading buffers

This subsection describes matters that must be taken into account in buffer unloading.

8.2.1 Notification of market transactions before the allowed deadline

If a party tries to initiate a market process in Datahub before the process is opened, Datahub will reject the message and will give the reason 401 “Ei käyttöoikeutta / User Not Authorised”. The parties and system supplier should take this into account in their own planning. To ensure successful buffer unloading, it is nevertheless necessary to ensure that processes are not started before Fingrid has issued a notification.

8.2.2 Contract processes for the same accounting point

The downside of the planned course of action is that **an individual accounting point** may receive agreement notices (agreement creations, terminations and cancellations) from different suppliers and the network operator of the accounting point in the wrong sequence of transactions, such as a termination of an agreement before its creation. This will happen when a customer (knowingly or unknowingly) makes a supply agreement with several suppliers and several suppliers report the supplier switch to the accounting point. A similar situation may arise with customer moves, when the in-moving customer and the out-moving customer report different move days for different parties. These situations should be taken into account, as it cannot be assumed that they will not arise during the freezing period.

On the other hand, current investigations indicate that there are relatively few of these situations. Considering the complexity of the automatic processing of these cases and the ‘extra’ system development effort that would be needed solely for the purposes of Go-Live, the most cost-effective way is to take care of these situations manually. Possible problem situations will be addressed, if necessary, through service requests to the datahub operator.

8.2.3 Special observations on the deadlines of market processes

TABLE 2 OBSERVATIONS TO DIFFERENT MARKET RULES DURING BUFFER UNLOADING

Process	Different rule
DH-111 Update to customer data	During production, retroactive entry into force of updates to customer data is not allowed. Retroactive entry into force is allowed during the unloading of buffers.
DH-311 Retroactive notification of a new agreement	During production, Datahub will not directly accept a new agreement that starts retroactively. In such a case, the previous supplier is requested to confirm the new agreement in the Datahub user interface. This rule cannot be used during the unloading of buffers, since a significant number of move-ins will take place during the core-freezing period. Therefore, the retroactive starts of agreements during buffer unloading may be made without the supplier confirmation referred to above.
DH-311 Switching suppliers	In Go-Live, the first allowed start date of the agreement is D+15, that is 8 March 2022. This also applies if, in the worst case, the unloading of the buffers can only be started after the moment of change. In that case, Fingrid will take this into account by changing the time limits for the notification.
DH-311 Switching agreements	Reason for the new sales agreement “Switching agreements” (a new sales agreement in which the supplier remains the same) is introduced with datahub. At the moment, the switching agreements cannot be announced separately with PRODAT and is processed in the same process as the change of supplier. Thus, in Go-Live, the first allowed start date of the agreement is D+15, that is the same as for switching suppliers. In a normal production situation, the switching agreements can be announced for the current day.
DH-32x Updates to agreement data	Suppliers should note that Datahub does not allow data updates to expired agreements when the notification is made more than six weeks after the expiration of the agreement. This also applies when the notification is made for the time when the agreement was still in force. This should be taken into account especially for agreements imported during data migration.
DH-331 Notice of termination of a supply agreement DH-333-1 - Notice of termination of a grid agreement reason: moving out & dissolving	Datahub does not allow retroactive move-out notifications (DH-33x with the reason code ‘move out’) during production. This rule cannot be used during the unloading of buffers, since move-outs will take place during the core-freezing period. Therefore, retroactive move-out notifications may be made during buffer unloading.
DH-331 Notification of sales agreement end DH-333-1 Notification of grid agreement end reason: termination	In a production situation, termination can be announced at the earliest 14 days in advance. However, a notification of termination buffered at commissioning may be notified to take effect on D+3 (24 February 2022). In this case, the customer's 14-day notice period is handled correctly during Go-Live.

8.2.4 Processing of move notifications

The move-in and move-out transactions made during the core-freezing period require special attention. Depending on the party's own needs, these transactions may have been processed in source systems on the basis of information exchanged vie emails, even before the unloading of message buffers. In this case, the parties (the new supplier, current/old supplier and DSO) should note that the move will be re-processed by the DH-311 process during the unloading of buffers.

During a customer move, the network operator can confirm only the connection status of the accounting point and forgo entering the move in its own CIS, and wait for the DH-311-2 notification from Datahub to run the process. However, it is recommended that even in this case the network operator record the changes in its own imbalance settlement system. This way, the imbalance settlement calculations will produce correct results throughout the core-freezing period and extra balance deviations can be avoided. However, in doing so, the network operator shall ensure that the integration between the CIS system and the imbalance settlement system does not generate any errors when buffered moves are processed (retroactively) in the CIS system. However, if this cannot be done, the network operator shall ensure that the imbalance settlement calculations are carried out with the correct supplier information for the core-freezing period before the imbalance settlement window closes after buffer unloading.

In practice, the parties must be able to send the messages related to processes DH-311 and DH-312 to Datahub even if the transaction has already been processed in the source system. The processing of moves during the core-freezing period is illustrated in the figure below.

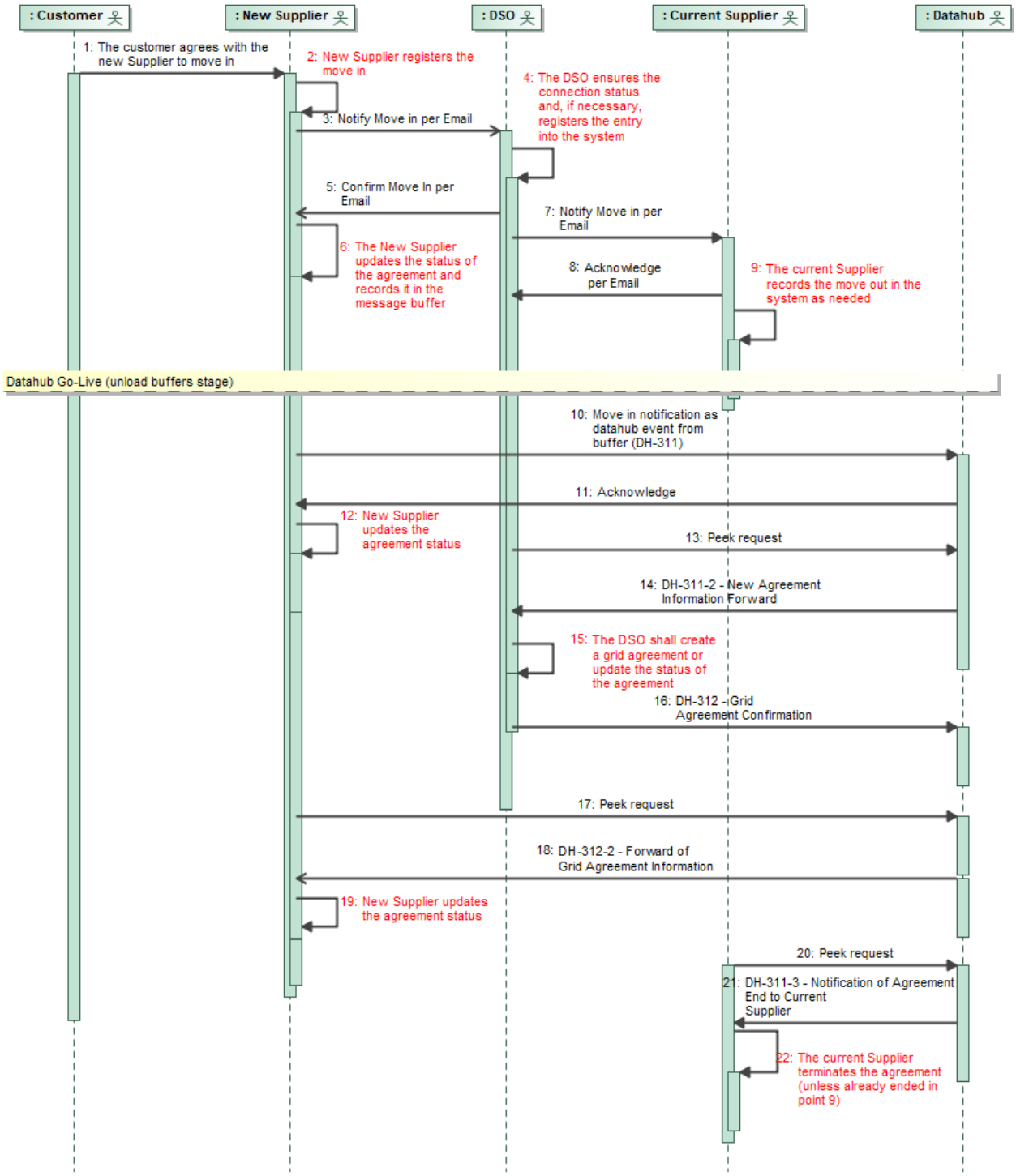

FIGURE 6 UNLOADING A MOVE PROCESS

8.2.5 Cancellation of supply agreements

Agreements imported in the Datahub data migration cannot be cancelled by normal cancellation transactions. The data migration imports into Datahub the agreement situation at a specific point in time in the parties' systems, but not the accounting point's agreement history. As a result, Datahub cannot review the status of previous agreements and reinstate old agreement if necessary, unlike the cancellation of agreements imported via the Datahub processes. If an agreement imported in the data migration needs to be cancelled, the party must submit a service request to the Datahub operator who can perform the cancellation on behalf of the party.

8.2.6 DH-323 Notification of accounting points without a supplier

When Datahub is live, it will use the DH-323 process to notify a distribution system operator of any accounting points without a supplier. This way, the distribution system operator can terminate its own grid agreement and/or disconnect the supply of electricity to such accounting points.

However, it should be noted that during Go-Live, Datahub will not send notifications about accounting points which are imported in the data migration as connected but without a supplier.

9 Migration of metering data

The processing of metering data during Go-Live covers the following work phases:

- premigration of metering data (see Chapter 9.1), Titta data migration for time [D-6 yrs, D-2 mo[2]]
- main migration of metering data, Titta data migration for the time [D-2 months, D-15]
- Pre- and main migration of metering data to Datahub
- Termination of MSCONS transmissions to electricity suppliers and third parties
    - The suppliers and network operators may also agree on the continuation of MSCONS transmissions (see Chapter 9.5).
    - It should be noted that MSCONS transmissions will be generally continued in the sector for those parts in which the metering data is not submitted via Datahub (such as submission of weather data or if the recipient does not operate in Datahub).
- final migration of metering data, DH-211 process for the time [D-15, D-1].

The goal of the migration of the metering data is to achieve a complete history of metering data up to the moment of change. Since the metering data is migrated to Datahub in three different phases, the network operator must plan how the changed metering data is reported in each phase with relation to the preceding data migrations. For example, metering data that has changed in relation to the premigrated data can be reported either during the main migration or in the final migration. The same applies to the import of metering data that was imported earlier and still remains in an error state for some reason or another.

However, from the point of view of Go-Live, it is recommended that metering data that has changed in relation to the premigrated data be reported already at the time of the main migration. This reduces the load that the final migration causes to Datahub at the end of Go-Live. It is also important no unchanged metering data that has already been migrated to Datahub is not submitted during the final migration. This ensures that the final migration of metering data is completed by the deadline.

It is also generally recommended that in premigration and main migration, as much as possible of the metering data for which corrections or modifications are no longer expected be migrated (including data within the open balance window). This way, there is less data to be submitted during the latter, time-critical phases. In addition, the metering data in Datahub will not contain

[2] In data migrations in practice, the metering data is extracted in relation to the time of extraction. The intention is to present, at a general level, which periods will be submitted in which migration.

significant amounts of “obsolete” metering data that has been amended with changes in a latter migration (as a rule, Datahub retains all change history).

Network operators should also note that the rules for extracting metering data are based on basic data. The details to be taken into account for the extraction of metering data are described in the Appendix at the end of this document (Liite C).

9.1 Migration process for metering data

The figure below shows the steps for migrating metering data to Datahub. The process applies to both the premigration and the main migration.

- Initially, DSOs submit metering data extracted according to the migration phase rules to Titta, in the so-called “In” folder.
- When all necessary metering data has been delivered to Titta, the network operator must launch the verification report for the metering data at its own initiative. Please note that at this stage, Titta does not modify or delete any metering data submitted.
- Next, the network operator must correct the metering data in the In folder by deleting incorrect data and submitting corrected metering data. The network operator may also to delete the entire contents of the In folder and resubmit the entire dataset. The network operator must continue to correct the data until the quality of the metering data is in line with the quality target. Metering data may be corrected until the deadline of the migration phase (see Runbook).
- The process continues with the network operator’s notification to Fingrid (by the deadline) that the metering data has been submitted in full.
- Finally, Fingrid verifies the accuracy of the metering data and moves the network operator’s metering data into a so-called ‘Out’ folder to wait for migration into Datahub. After this move, the In folder is empty
    - After premigration, the In folder remains empty for later main migration.

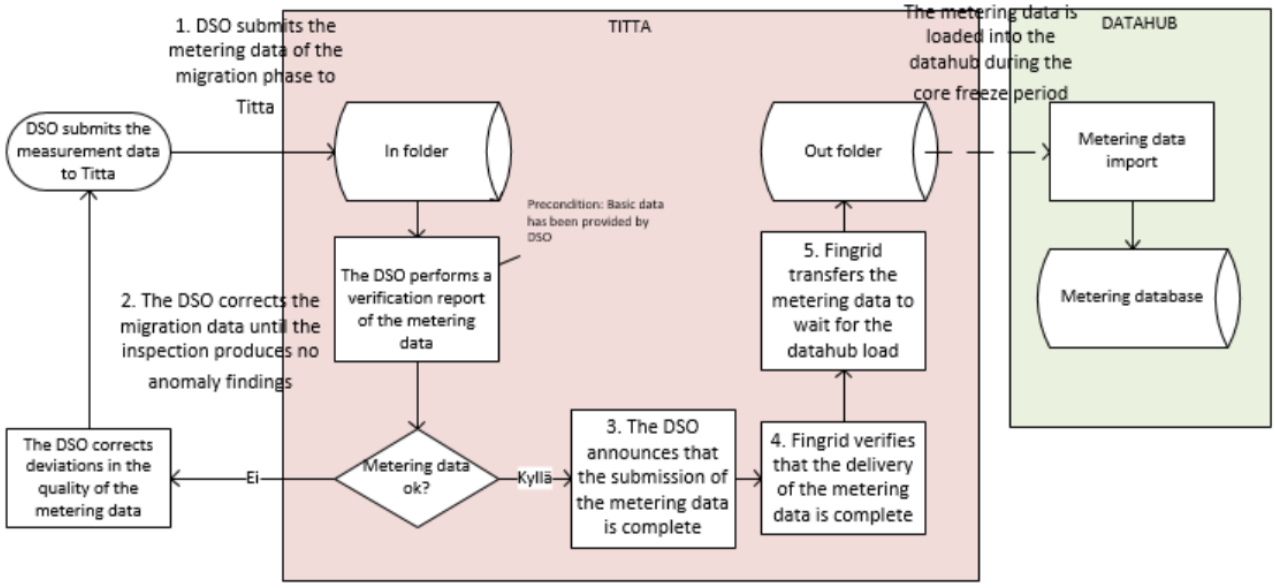

FIGURE 7 MIGRATION PROCESS OF METERING DATA

The metering data delivered in both the premigration and the main migration will be uploaded to Datahub during the core-freezing period after the basic data and the metering data of main migration have been successfully submitted to Titta. The metering data submitted in the premigration will be migrated to Datahub first, followed by the metering data submitted in the main migration. This ensures that the newer data submitted in the main migration always overwrite the older data.

9.1.1 Checking of metering data

The network operator must provide the metering data for the entire period of validity of the (latest valid) grid agreement submitted to Titta. Titta will check the submissions of the metering data and generate a report showing any time intervals for which the metering data have been submitted in violation of the rules. It should be kept in mind that Titta does not know the point in time when the metering at an accounting point transferred from reading measurement to hourly metering or when the accounting point has been disconnected. Therefore, Titta's report may contain false findings, if the metering method of an accounting point has changed during the period of validity of the grid agreement or the accounting point has been disconnected and therefore no metering data has been submitted to Titta. Network operators must check the correctness of their findings from their own systems. As stated above, Titta does not make any changes to the data based on the findings.

Titta checks the metering data of an accounting point submitted by the DSO against the data of the grid agreement submitted by the DSO. This applies both to premigration for the period [D-6 yrs, D-2 months] and the main migration for the period [D-2 months, D-15]. Therefore, Titta will not re-check the period of the metering data delivered in the premigration, even if corrected and changed data were reported for the period. Metering values and statuses will not be checked.

In both migrations, the network operator must ensure that the accounting points in the extraction of metering data are consistent with those in the extraction of basic data of those migrations (all accounting points in the metering data are also present in basic data).

9.2 Premigration of metering data

The premigration of the metering data brings most of the metering history of the accounting points to Titta. The metering data will be imported for a period of slightly less than six years. The aim of the premigration of metering data is to reduce the risks of the actual Go-Live process by preparing the bulk of the metering data for Datahub migration well in advance of the initiation of the message traffic phase-out. The premigration involves the submission of metering data to Titta, but not the migration of data from Titta to Datahub. The metering data imported into Titta in the premigration will be migrated to Datahub later during the core-freezing period with the basic data.

The premigration of metering data will be performed roughly a month before the moment of change, i.e. before the start of the phase-out of message traffic. The premigration will mainly be done using the same rules for metering data extraction as in other data migrations. Appendix (Liite C) at the end of the document describes the extraction rules that will be used in the various migration stages.

In premigration**, basic information is submitted by both the network operator and the supplier**. This is done in order to ensure the quality of the data once more before the actual Go-Live (phasing out of the message traffic) starts. In order to ensure the correctness of the data, it is necessary that both network operators and suppliers provide the materials in their entirety, so that consistency checks can be performed in Titta. The objective is that the market parties will inspect

the error reports generated by Titta and correct all category 1 and 2 errors detected in the migration of basic data before the actual migration of data at the start of the core-freezing period.

In practice, the consistency checks performed by Titta will indicate differences if the market participants do not extract data from exactly the same point of time. However, no downtime or other measures are planned for premigration to ensure full consistency. Nevertheless, the market parties must extract the data as precisely as possible from a specific predefined point in time. This exact time and exact dates from which the metering data should be extracted will be communicated via ProjectTOP tool.

Also in the pre-migration phase, distribution system operators must extract and deliver accounting point information (in addition to the actual pre-migration phase extraction and delivery) a few days before the actual pre-migration delivery (Friday 7 January 2022). This submission ensures that suppliers also have access to GSRNs for accounting points created after previous data migration phase (see Chapter 4.1).

The metering data must be extracted for premigration starting from the date [D - 6 years] (taking into account the validity of the grid agreement) up to **at least** the end of 2021.

Network operators must ensure that they are capable of reporting in the main and/or final migration of metering data all data that is changed in relation to the premigrated data. During main migration, changes can be submitted via Titta (as SAF files) and in the final migration as DH-211 messages. The same applies to the redelivery of metering data that was flagged as invalid during premigration. The goal is that at the moment of change, Datahub will have up-to-date metering data throughout the entire history of the measurement data.

9.3 Data migration of metering data (main migration)

The metering data must be extracted in accordance with the extraction rules of the rules of the Data Migration Plan (link), taking into account the further specifications described in Appendix (Liite C). According to the data migration requirements, it may take five days (120h) to extract the metering data from the source system when the entire six-year measurement data history is extracted. However, in the current plan, only about two months of metering data is extracted in the main migration. There is no corresponding deadline for the duration of the two-month data extraction. However, in order to keep the core-freezing period as short as possible, the metering data must be submitted to Titta on the first day of the core-freezing period, i.e. on the same day as the basic data. Therefore, the DSO should start the extractions already before the start of the core-freezing period. Since the extraction of metering data depends on the basic data, network operators should take into account the possible delay in synchronizing the accounting point and agreement data between CIS and MDS systems.

The extraction for data migration must be performed in a way that it contains the metering data that is new in relation to the premigrated data up until **at least** day D-15. Thus, the extraction will also contain data from the balance window that was open during the extraction. However, as in the premigration phase, network operators are advised to extract metering data up to as close as

possible to the moment of change so that the final migration can be expected to change a maximum of 1% of the metering data extracted during the open balance. For example, if the extraction of measurement data can be performed after the core-freezing period has started after midnight (D-11 days after midnight), it may be possible to extract metering data until the end of day D-13 if 99% of the metering data for D-13 has been reliably read. In this case, there will be less metering data to be submitted in the final migration. Network operators must also, where possible, migrate in the main migration any metering data that has changed in relation to the premigrated data as well as those metering data that remained in an error state in premigration. This too minimises the amount of metering data to be reported in the final migration.

It is recommended that the CIS system is prevented from changing the data while the extraction for data migration is in progress. This ensures that the metering data that has changed in relation to the data to be extracted can be identified. The market parties must collaborate with their system vendors to determine how the data extractions for data migration and the subsequent monitoring of changes will be implemented in practice.

9.4 Final migration of metering data

In the final migration, all new, changed and hitherto undelivered metering data in relation to the older data migrations must be reported. The DH-211 process is used for final migration to Datahub, and the migration can be started after the suppliers' transaction buffers have been unloaded. The DH-211 process forwards the submitted metering data to the suppliers and third parties. The plans of the DSOs must take into account how new metering data is collected at the same time the metering data is unloaded.

During the final migration, quite a large volume of metering data will be imported compared to a normal production situation (more than 10 days' worth of metering data). It is essential that DSOs do not deliver in the final migration any metering data that has already been successfully submitted to Datahub in previous data migrations. The DSOs must ensure that they only supply the necessary data. This ensures that Datahub is able to process the metering data by the deadline. The DSO must also ensure that in no event is obsolete data reported to Datahub, since it would overwrite later metering data that was reported earlier.

The network operator must be able to report the metering data within a day or quicker (the deadline is the moment of change). This is also the requirement for Datahub for the final migration of metering data. Also the supplier should ensure that the final migration will transfer a lot of metering data at once, which will take a long time to import into the system.

The chart below shows how the final migration relates to the main migration of metering data.

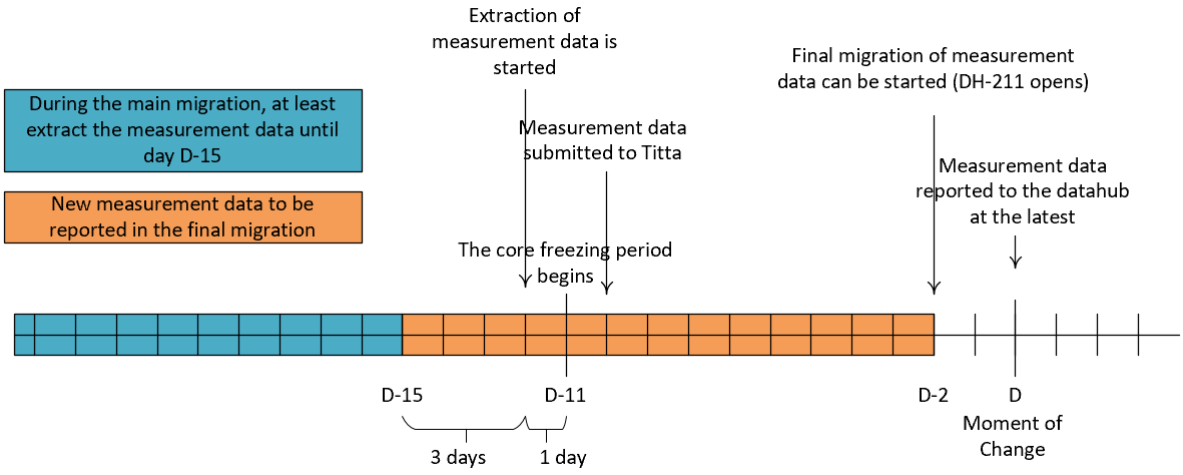

FIGURE 8 DEADLINES FOR THE MIGRATION OF METERING DATA IN GO-LIVE

9.5 Termination of MSCONS transmissions

Suppliers and DSOs should note that the final migration reports metering data for the same period for which MSCONS transmissions already exist. According to the Go-Live Plan, the earliest point in time for stopping the transmission of MSCONS messages is 7 days before the moment of change. However, there is no deadline for the termination of MSCONS transmissions. The network operators should inform the suppliers/agree with the suppliers on how the MSCONS transmissions will be continued on the core-freezing period. If a network operator decides to continue reporting MSCONS messages, the network operators must act impartially and in a non-discriminatory manner against all suppliers.

The DSOs must take into account parallel MSCONS transmissions so that the DH-211 process will not be used for reporting obsolete data to the suppliers. The DSOs must also ensure that the suppliers get all metering data for the period preceding the moment of change, either via MSCONS transmissions or via the Datahub DH-211 process. This must be taken into account especially if the core-freezing period is shortened (in this case, the five-day deadline should generally be checked).

It should be noted that even after Datahub Go-Live, MSCONS transmissions in the sector will generally continue for metering data that cannot be reported to Datahub (e.g. weather-related time series data or regional grid metering).

9.6 Validation rules

The DSO must submit to Datahub an imbalance settled metering data history so that Datahub can correctly verify changes in metering data when the responsibility for calculating balance deviations is transferred to Datahub. In order to migrate the entire history of metering data (locked in

imbalance settlement) to Datahub correctly, the values of the metering data will not be validated in Datahub for the period preceding the moment of change. This is because a DSO may use different validation rules for metering data than other DSOs or Datahub. For example, the validation of a fuse rating may use a different coefficient in relation to the nominal rating of the fuse. On the other hand, the change history of fuse ratings will not be migrated to Datahub in order to prevent Datahub from rejecting data unnecessarily.

Therefore, the starting point is that Datahub will contain a rule according to which no validation of values will be performed for the time preceding the moment of change. This rule will be in place in all phases of Go-Live and also in production. However, status validation will be performed for all metering data migrated/reported to Datahub. Therefore, a weaker status cannot be reported on top of a stronger status at any time.

10 Actions at the moment of change and post-hoc actions

From the market parties' perspective, Datahub is in production use already when the buffer unloading is opened. Datahub cannot tell whether a reported transaction is unloaded from a buffer or whether it is a new transaction logged during the buffer unloading. At the moment of change, the rules of market processes will be changed to production rules. After the moment of change, the interfaces and processes that are not yet in use during the buffer unloading will be opened gradually.

After the moment of change, the most significant task is to ensure that Datahub is functioning correctly, the market data in datahub is at a sufficiently good level and that Datahub's imbalance settlement calculations produce correct results. After the moment of change, any data errors detected must be corrected as soon as possible. Instructions for correcting data errors in different cases are available at Datahub Services portal in document "Käyttöönoton poikkeamat markkinaprosesseissa" (in English: "Go-Live Deviations in Market Processes". Document only available in Finnish) and reports for identifying errors are described in chapter 15.

A significant factor for network operators is that the responsibility for imbalance settlement should be completed for the period preceding the moment of change. Later, after the moment of change, Datahub will assume responsibility for the recording of balance deviations. The processing of balance deviations and the imbalance settlement process is described in the following chapters.

11 Imbalance settlement processes

As Datahub goes live, the responsibility for the imbalance settlement of DSOs is transferred from the DSOs to Datahub. This chapter describes how the imbalance settlement structures are managed and how time series data is delivered to eSett during Go-Live.

11.1 Synchronisation of structures

An imbalance settlement structure means, for example, information on which suppliers sell electricity in a given metering grid area. With the introduction of Datahub, the maintenance of imbalance settlement structures in the eSett system will be transferred from DSOs to Datahub. In the context of this transfer of responsibility, it is important to ensure that the imbalance settlement structures in the eSett system remain correct. This responsibility lies entirely with the Datahub project, but DSOs must participate in the checks in order to ensure the success of the transfer.

Datahub will not create new structures on top of existing ones, excluding virtual production units (more about these below). Starting from the moment of change, Datahub will report to eSett only **changes** to existing imbalance settlement structures in the eSett system.

During Go-Live, Datahub requires from eSett balance responsibilities by metering grid area (RBR, Retailer Balance Responsibility). The RBR structures represent information about who the supplier's balance-responsible party is (especially as to whether the supplier has any balance-responsible party at all). This information is needed for Datahub's agreement processes.

After the datahub data download, the datahub operator checks the imbalance settlement structures created by the datahub against the eSett data. Fingrid and eSett fix together the observed errors to eSett's system to avoid errors in the Datahub time series deliveries.

It is recognised that Datahub will maintain the structures at a more detailed level than the DSOs do at present. For example, Datahub maintains virtual production units per production type, unlike the current practice of many network operators.

11.2 Freezing of structures

In practice, the imbalance settlement structures will be frozen during the core-freezing period. The imbalance settlement structures in Datahub shall be built on the basis of the data migration datasets. eSett will submit the RBR structures for the same period for which the parties submit the data migration material (at the start of the core-freezing period).

In order to avoid extra work and minimise risks, the supplier and DSOs must refrain from updating the imbalance settlement structures during the core-freezing period. The following data must be frozen during the core-freezing period:

- Relationships between suppliers and balance responsible parties (RBR)

- A network operator may not deploy new exchange points to a parallel network in which it does not yet have any exchange points (MGA Exchange structure)
- New production units may not be deployed.
- Suppliers cannot start selling in a metering grid area in which they have not had sales according to the data migration datasets (taking the metering method into account):
    - Metering method: profile site (‘metering by reading’) or hourly metering
    - The loss supplier of the metering grid area, the supplier of the production units’ own consumption, and the supplier of an imbalance must not be changed.

These rules may be deviated for compelling reasons, but only by special permission granted by eSett and Datahub, when the reason has been reported at least a week before the start of the core-freezing period.

It is possible (but presumably rare) that during the core-freezing period, moves will be performed for which there is no existing imbalance settlement structure. These moves may generate investigation needs if Datahub approves the move but cannot update the structure to eSett due to deadline validation. In these cases, eSett and Datahub will implement the structure in a coordinated manner.

In addition to the factors above, the parties must take into account any major structural changes near the Go-Live date. Major changes in this context refer especially to the merger, split-ups or other such changes in metering grid areas/DSOs/suppliers. The instructions for the matter are given in Go-Live Plan for centralised information exchange services for electricity market version 1.5.

11.3 Virtual production units

Datahub will create new virtual production units that replace the current production units maintained by the network operators. During Go-Live, DSOs should terminate their ‘old’ production units to end at the moment of change. Generally speaking, network owners should note that Datahub maintains virtual production units by production type. For example, Datahub will report this time series data to parties specifically by production type. Datahub will also generate GSRN IDs for the virtual production units based on Fingrid Datahub Oy’s gs1 company ID.

11.4 Deliveries of time series data

During Go-Live, imbalance settlement responsibilities within the balance window will be divided between Datahub and the DSOs as shown in the chart below. Therefore, the DSO is responsible for the correctness of the data for the time before the moment of change. Datahub, on the other hand, will be responsible for the data after the moment of change. In practice, this will result in a 10-day period during which both Datahub and network operators report time series data to eSett.

The eSett will be configured to validation checks that will prevent network operators from submitting data for the period following the moment of change. In practice, this means that eSett will reject all messages that contain time series information for the period after the moment of change.

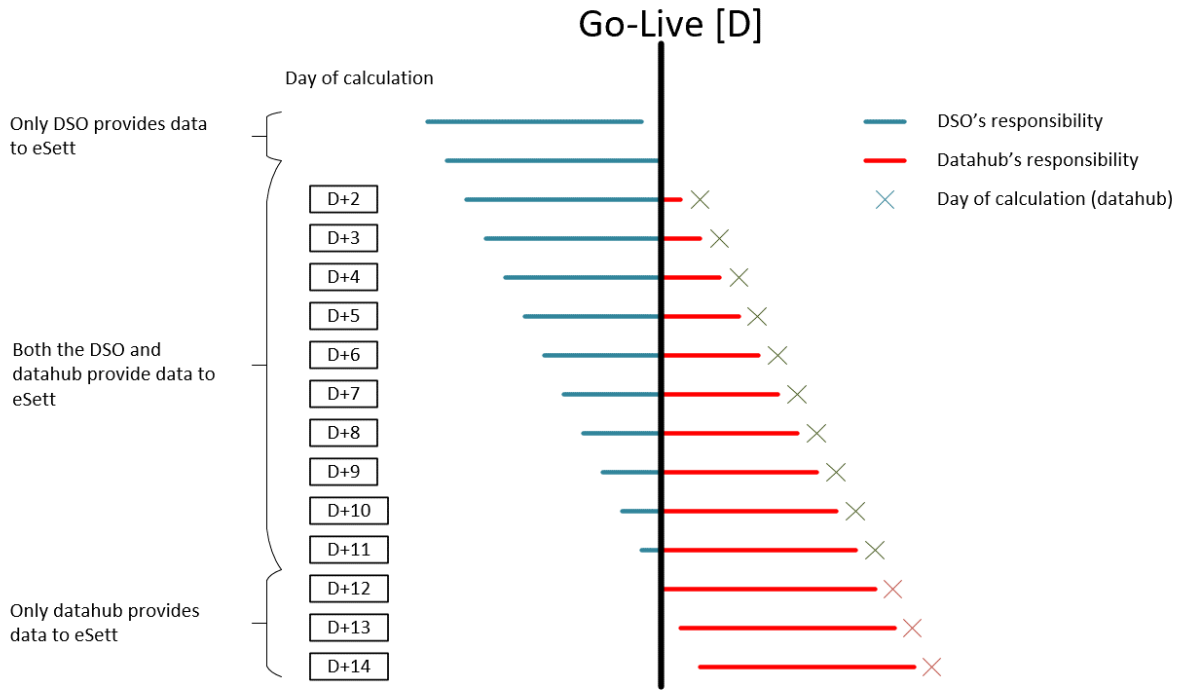

FIGURE 9 TRANSFER OF THE RESPONSIBILITY FOR IMBALANCE SETTLEMENT

If the DSO faces challenges in providing time series information to eSett with ebIX messages during Go-Live, the DSO may use other data delivery methods provided by eSett (such as uploading XML files as files). Instructions for this are provided in the documentation maintained by eSett.

As mentioned earlier, Datahub maintains the structures somewhat differently than the DSOs. This also has an effect on time series data, since Datahub aggregates metering data in accordance with the structures maintained by Datahub. Thus, at the moment of change, the profiles of individual time series in eSett are likely to change even significantly. For example, small-scale productions that are calculated by deducting them from the supplier's consumption will be calculated in Datahub as the production of a (virtual) production unit.

During Go-Live, Fingrid will verify that the calculation results do not change in the upper-level aggregations when the calculations are transferred to Datahub. The DSOs should also monitor the results calculated by Datahub for some days after the moment of change.

During Go-Live, eSett will also provide time series information to the parties on a normal schedule also for the period during which Datahub is responsible for balance.

12 Handling of balance deviations

As a result of Datahub Go-Live, the responsibility for processing balance deviations transfers from DSOs to Datahub. It is of paramount importance that no separate data be imported into Datahub so that Datahub would be able to distinguish the pieces of data in which balance deviations were previously corrected by the DSO.

Datahub will interpret the changes to history data reported by the parties as balance deviations starting from 4 March 2022 **on the basis of the moment of reporting.** This is the same day as the closing day of the last imbalance settlement under the responsibility of the network operators. For example, if a correction of metering data is reported for the closed balance window on 4 March, Datahub will record a balance deviation for this. On the other hand, correction of metering data reported on 3 March will not result in Datahub triggering a balance deviation, even if the correction was made to an already closed balance window.

In practice, this means that the DSOs must extract the datasets for balance deviations, calculate the corrections and perform the equalising calculation for profiled sites after Datahub Go-Live. The DSOs must also ensure that all changes taken into account in this last correction calculation will also be exported to Datahub by the end of 3 March 2022. On the other hand, no changes that would cause balance deviations and recorded after the network operator's last data extraction/correction calculation may be reported to Datahub before 4 March 2022. It is also worth noting that Datahub does not perform equalising calculations in its current form. Instead, corrections to the consumption data of profiled accounting points will be processed as balance deviations (like the metering corrections of hourly-metered sites).

13 Ensuring that connections work

Datahub will open the production environment for connection tests well in advance. This can be done after the Datahub production environment is complete and the Datahub software has been installed. The essential tasks for opening connections are:

- Fingrid 'whitelists' IP addresses, i.e. makes openings in the firewall for IP addresses reported by market participants
- The market party allows its systems to access Datahub
- The party must obtain and install an information system certificate for all systems that will contact Datahub
- Fingrid will create the organisation and its (machine) user accounts in Datahub
- The parties test the connections.

The connections can be verified by using Datahub's peek message. This message is used in Datahub during production to retrieve messages from Datahub. The peek message can also be used for testing the XML signature (WS Signing/Security). The intention is to keep the Datahub interface open for these checks as far as possible until the actual Go-Live. However, during datahub data download, peek messages may be reported to the datahub less frequently than normal. Separate instructions for the reduced use of the peek message are provided during the commissioning process.

14 Rollback and Point-of-no-Return

The rollback process refers to all of the actions by which the current EDIEL message traffic can be resumed after the message traffic phase-out has been initiated. The rollback process will only be launched in extremely compelling circumstances in which the Go-Live of Datahub has to be interrupted for some reason.

The Point-of-no-return (PONR) has been agreed with the industry and it is the moment after a successful 'smoke test' when Fingrid gives all market parties the permission to start uploading buffers into Datahub (see Chapter 8). Until PONR, the market parties are obligated to maintain the ability to revert to the EDIEL message traffic.

The Go-Live may be interrupted at any time (before PONR) if necessary for compelling reasons. However, it is most likely that if an interruption takes place, it will be performed at a predefined checkpoint. The checkpoints[3] are:

- A verification at the end of the phasing-out of message traffic to confirm that the phasing-out was successful and that the data migration extractions may be started
- Verification of the success of the data migration into Titta by means of reports generated by Titta
- Verification of the success of Datahub migration after the data has been migrated from Titta to Datahub and imbalance settlement/verification calculations have been performed
- Verification that the 'smoke test' of buffer unloading performed with the agreed parties was successful and that all parties can be granted a permission to unload their buffers (Point-of-no-Return).

It is generally assumed that rollback will become progressively more difficult the further the Go-Live proceeds. Among the reasons for this is that, as time progresses, the number of buffered transactions increases, and the parties make more and more of the system changes required by Datahub. It can be assumed that for the market parties, the most difficult point in time for rollback is just before PONR.

The EDIEL message traffic cannot be started immediately after a rollback decision, because rollback requires actions that are not considered cost-effective to automatise. This is especially because the rollback should only be performed for extremely compelling reasons. Therefore, several days have been reserved for the preparatory actions of restarting EDIEL message traffic.

[3] see the previous chapters for a more detailed description.

The Runbook working group has identified that the general preparatory activities for rollback in the source systems involve the following tasks, among others (depending on the party's information system solutions):

- Generating PRODAT messages and/or processes (both buffered and any new transactions)
- Changes to system configuration, if any
- Possible downtime in a CIS
- Other systems or integrations: if changes for Datahub Go-Live were made at the moment of Go-Live, these changes must be cancelled and the system reverted back to the state it was in before the changes.
- A market party must ensure that the services of customers and third parties and their data gets updated correctly during rollback.
- A market party must be prepared for a delay in the billing batch runs after rollback.
- A market participant shall ensure that the message operator used by the party is prepared to resume the message traffic
- Potential reconfiguration of process deadlines
    - This is needed, for example, if buffered supplier switches start sooner than 15 days from buffer unloading.

In order to carry out the rollback process as planned, each market party has to prepare for the rollback process well in advance, already in 2021.

14.1 The rollback process

At the top level, the rollback process consists of the following main phases:

1. Decision to initiate the rollback process
2. Preparations for restarting the EDIEL message traffic in the market parties' systems
    a. A party must be prepared to use differing deadlines during buffer unloading (see Chapters 14.2 and 14.3).
3. Opening EDIEL message traffic and unloading buffers by means of EDIEL messages
    a. **Buffer unloading may not be started sooner than after two full business days from the rollback decision.** In this case, the sender may assume that the recipient

(or their message operator) is capable of receiving PRODAT and MSCONS messages.

i. A market party can either prevent the transmission by themselves or ensure that the operator will not forward messages before the buffer unloading starts.

ii. If the rollback process is started before the start of the core-freezing period (Runbook TP4.1), the unloading of buffers may be started after one full business day has passed from the decision.

b. The EDIEL buffers must be unloaded and processed by the recipient after 4 full business days have passed from the rollback decision.

i. In order to allow the recipient to process all messages by the deadline, the sender must send the buffered messages by 2 pm of the 4th business day.

ii. Processing means that all APERAK messages sent as a response to the messages unloaded from the buffer must have been sent by the deadline.

iii. If the rollback process is started before the start of the core-freezing period (Runbook TP4.1), the buffer unloading must be complete after two full business days have passed from the decision.

c. All parties are allowed to start message traffic simultaneously (i.e. there is no predetermined staggering, for example according to market role).

d. All PRODAT and MSCONS processes will be opened at once (i.e. there is no process-specific staggering).

e. The processes will be handled normally (except the deadlines are unusual). For example, of the DSO has buffered a Z05[14] message on the basis of a move notification submitted by email, the DSO may not send this message before the supplier has initiated the move process (Z03[14] message).

f. A market party must unload buffers before reporting new transactions.

i. In other words, A market party may report new transactions recorded during and after the unloading of buffers as soon as the buffers have been unloaded.

4. Changing PRODAT processes to normal production mode

a. The processing of process deadlines will be reverted back to normal. See Chapters 14.2 and 14.3 for more detailed process-specific rules.

As described above, four full business days are reserved for the rollback process: Two business days for preparations and two business days for buffer unloading. If the rollback decision is made before the start of the core-freezing period, the time reserved is one business day for preparations and one business day for buffer unloading. Therefore, the number of whole calendar days varies between two and six days in practice, depending on the date the rollback decision is made on. For example, if the rollback decision is made on a Sunday, there will be less than five days to prepare for the return of the message traffic. The schedule of the rollback process and its dependency on the day the process is started on is shown on a separate tab in Runbook (Excel file).

If the rollback decision is made on Sunday, 20 February 2022, the normal production of EDIEL message traffic will start on Friday, 25 February 2022 at 00:00 (midnight). A rollback decision made later than this would significantly increase the risks in terms of invoicing to be performed at the beginning of March. This will be taken into account as an important issue if, in exceptional circumstances, there is a need to make the decision to postpone the start of the unloading of buffers for a time after 20 February.

As already referred to in the beginning of this chapter, the four-step process described above can take place in very different ways in different source systems. The necessary preparatory actions depend, for example, on whether the source system buffers transactions directly as PRODAT and Datahub messages, or whether it buffers the transactions as transactions that are then converted to the message format required by the situation. The source system may also buffer the transactions solely as Datahub messages, in which case the Datahub messages must be converted to PRODAT messages.

14.2 Process-specific considerations

14.2.1 Supplier switchers and supply agreement termination notices

Deadline for starting a supplier switch

Another challenge in a rollback situation is that the suppliers' buffers have a large number of supplier switches with a starting date of D+15. If the rollback succeed in starting the PRODAT message traffic before the scheduled moment of change, these supplier switches will create an error in the deadline validation performed by the DSO. For this reason, the market parties must be prepared to change or temporarily disable this 14-day rule in their own systems. This also applies to supplier's notifications of end of supply (Z08[1]).

In practice, the deadline for validation will have to be changed if the rollback decision is made after Monday, 14 February 2022 (D-7). In this case, normal production will not resume until D+1 (22 February), at which time a supplier switch that would start on 8 March and that was reported from the buffer will be rejected, unless the deadline is updated.

Deadlines for processing supplier switch messages

In addition to the 14-day rule, supplier switches must take into account the processing times of the various messages in the process. For example, a network operator must normally send the current supplier of the accounting point a Z05[1] message within two business days of receiving the Z03[1] message. The systems usually process this on the basis of the creation time stated in the Z03[1] message.

In a rollback situation, this information on the message creation time cannot be utilised to determine the two-day deadline, since the creation time of the Z03[1] message may be (depending on the system) the time when the agreement was recorded in the system. In Go-Live in practice, this can be any day after the Z03[1] message was frozen. Therefore the network operator must ensure that during buffer unloading, the Z03[1] messages are processed within two days of the **reception time** of the message and that the system will not automatically send a Z04[1] message (due to the expiration of the deadline) before the current supplier's positive (or negative) acknowledgement has been received as a response to the network operator's Z05[1] message.

The deadlines of the processing of supplier switch messages must be restored back to normal within two full business days after the other deadlines for PRODAT-processes have been restores (section 4 in Chapter 14.1). In this case, it can be assumed that all supplier switch processes initiated in buffer unloading have been completed.

Notifications to the same accounting point

The DSOs must be prepared to deal with a situation in which the rollback processes generate a surge of more than one supplier reporting a supplier switch to an accounting point during the unloading of PRODAT buffers. Of course, the longer the freezing period for supplier switches (i.e. the later the rollback decision is made), the more of these cases may occur when the buffers are unloaded. In these situations, the current guidelines apply. The guidelines state that the suppliers shall, upon DSO's request, determine among each other/ask the customer what the customer actually wanted.

14.2.2 Moves

During the core-freezing period, moves will be handled by email (or other means agreed upon between the parties). However, in the event of a rollback, the supplier must re-notify these moves again with PRODAT messages. Similarly, both DSOs and suppliers must be able to process these PRODAT messages in accordance with the Z03[14] process, even if the process has been completed on the basis of information exchanged by email. This procedure ensures that moves are handled consistently both in the supplier's and network operator's systems.

In order for moves to be processed successfully by PRODAT messages, the market parties must allow retroactive moves in PRODAT processes in the event of a rollback. The network operator should verify that retroactive moves are synchronised correctly in the imbalance settlement system.

During the core-freezing period, the network operator must route move-outs to the supplier for logging, so that the termination of the grid agreement is notified as a response to the supplier's

move-out notification. As a result, the Z05[14] processes initiated by the network operator do not need to be processed in buffer unloading either.

14.2.3 Cancellations of agreement

The Go-Live has the following description:

'If the beginning of supply occurring after Datahub Go-Live is cancelled during the core-freezing period, the supplier cancelling the sales contract will enter the notification in its system and report the cancellation to Datahub after the moment of change. If the beginning of supply starting during the core-freezing period is cancelled during the core-freezing period, the supplier cancelling it must report the cancellation by email to the DSO, which will forward it to the returning supplier. The DSO must ensure with the current supplier that the customer is not left without a supplier by accident.'

In a rollback situation, the cancellation messages (Z03[C]) must be reported even if the cancellation was already notified by email. Therefore, the buffers may output **retroactive** cancellations of supplier switches that were reported before the start of the core-freezing period (the supply agreement was already in force) in addition to agreements that are scheduled to begin in the future. The market participants must also be prepared to process cancellation messages reported retroactively.

During the freezing period, cancellations of moves are processed also by email as stated in the Go-Live plan. No PRODAT message is used to cancel moves, so they are not relevant for the buffer unloading.

14.2.4 DSO's notifications to suppliers

In a rollback situation, the DSO operator may report accounting point data to wrong suppliers in situations where the network unloads its own messages before the processing of supplier switches and moves is complete. This applies both to PRODAT messages and MSCONS messages. Since there is no suitable solution that would guarantee that data is processed in the correct order, the suppliers must request any missing data from the DSO.

14.2.5 Using the accounting point ID

The parties shall ensure that national accounting point IDs are in the PRODAT message traffic.

In order for the rollback process to be successful for new accounting points created during Go-Live, the DSOs must maintain not only GSRNs, but also national access point IDs up to the Point-of-no-Return. If necessary, the supplier email the network operator to obtain the GSRN and national accounting point ID of a accounting point created during the freezing period.

14.2.6 Transactions to be reported by email

Some messages buffered for Datahub contain information that is currently reported by email instead of PRODAT messages. Examples of such transactions are updates to customer information. The parties shall ensure that in a rollback situation, these notifications are reported to the other party by email.

14.2.7 Deleting Datahub messages

If Datahub Go-Live is cancelled, there is no need to store the buffered Datahub messages for the next datahub Go-Live project. The parties may delete or archive these messages after they no longer need them in the rollback process.

14.2.8 Notification of change in invoicing method

In a normal PRODAT process, a change in the invoicing method must be notified at least 10 days before the change. During the buffer unloading in a rollback situation, the network operator must allow changes without a deadline and also retroactively (for the period of the core-freezing period).

14.2.9 Connections and disconnects and their requests

According to the Go-Live plan, requests for disconnection and connection[4] will be made by email during the freezing period. Likewise, a network operator must confirm a connection made during the core-freezing period by sending an email to the supplier. The email must also contain the corresponding metering data. These requests and notifications may not be re-reported as PRODAT messages in the event of a rollback. In other words, these events must not be buffered for the rollback process. However, it should be noted that the network operator must buffer connection and disconnection notifications as Datahub messages for successful Go-Live. The supplier may create new connection and disconnection requests as soon as the PRODAT buffer unloading phase starts (already even before the actual transfer to normal production).

14.2.10 Updates of accounting point data

During delivery, the network operator can notify the suppliers of changes in accounting points by means of Z06 and Z10 messages. During buffer unloading, it should be kept in mind that these notifications may come later than 21 days after the moment of change (the normal deadline is 21 days).

[4] Please note! Disconnections of consumer-customers because of collection of the invoice are not permitted during the core-freezing period at all.

14.2.11 Hour series notification (MSCONS)

As specified in the Go-Live plan, the DSOs' obligation to report MSCONS messages to suppliers ends 5 business days before the planned moment of change (Monday, 15 Feb at 00:00). The DSO must ensure that in a rollback situation, both new and changed metering data that has not yet been reported to the suppliers is reported to the suppliers retroactively as MSCONS messages.

After the rollback, the parties will no longer revert to using the Z11[5] and Z11[6] messages for sending initial and final readings. Instead, the suppliers will be sent MSCONS messages on profile sites as well.

14.2.12 Generating and reporting the metering readings

The initial and final readings reported in the current PRODAT messages will not be reported to Datahub. The DSO must ensure that in a rollback situation these pieces of data are generated in accordance with the (current) message traffic instructions.

14.3 Message-specific deadlines in normal circumstances

The table below summarises the PRODAT process specific deadlines **in normal circumstances** that cannot be applied in a rollback situation during buffer unloading. In a rollback situation, the parties must allow these processes without a deadline and retroactively if necessary for **transactions unloaded from buffers**.

During buffer unloading, no reports may be made that could have been and should have been reported before the process was frozen during the phasing out of messaging traffic. For example, during buffer unloading, a move may not be reported as having taken place on a date prior to the freezing of the Z03[14] process. As another example, the termination of an agreement may not be reported as having taken place on a date less than 14 days from freezing of the Z08[1] message. Where possible, the recipient can specify time deadline validations in buffer unloading in order to prevent changes like these.

TABLE 3 DEADLINES OF PRODAT PROCESSES IN A NORMAL CIRCUMSTANCES

Market process (initiating message)	Notification deadline in normal circumstances
Supplier switching (Z03[1])	14 days before the start of supply.
Cancellation of the start of supply (Z03[C])	No later than the day before the start of supply.
Move / New supplier for the DSO of the move-in site (Z03[14])	During the current day (not allowed retroactively in normal circumstances).
Move / new supplier for the DSO of the move-out site (Z08[14])	During the current day (not allowed retroactively in normal circumstances).
Termination of the agreement (Z08[1])	14 days before the termination of supply.

Current supplier's notification of a change in invoicing method – Z09[1]	10 days before the change in billing method.
Grid operator's notice of a change in the accounting point and invoicing information – Z06[10/11/13]	21 days after the change.
Grid operator's notification of a change in the meter or metering method – Z10[7]	21 days after the change.
Metering readings (or a change in estimated annual consumption – Z11[5/6]	Within 21 days of the time of reading.

14.4 Post-hoc check

When the buffers have been unloaded with PRODAT messages, the consistency of data will be checked by performing a data migration to the Titta system. The consistency check carried out by Titta enables us determine the accounting points whose transactions have been processed incorrectly during the rollback (or discrepancies remain for other reasons). The post-hoc check will only be performed for basic data. The reports generated by Titta enable the market parties to identify any differences in the agreement information of the accounting points and agree on how the deviations should be corrected between the two parties (or between several parties if necessary). The post-hoc check is scheduled to take place on the 3rd business day from the day the normal PRODAT deadlines were reinstated (Section 4 in Chapter 14.1).

14.5 Communication

During the rollback process, the Go-Live communication and tracking tools shall be used right up to the end of the rollback process. The communication tasks during rollback are as follows:

- Fingrid notifies all market parties and message operators that the rollback process has started and also reports the day-by-day schedule of the rollback process (including the time when the post-hoc check will be performed).
- Every market party shall notify Fingrid when it is ready to receive messages.
    - Fingrid will notify the market parties if readiness has not been achieved by the deadline.
- Each market participant shall report to Fingrid when they have received an APERAK acknowledgement to all buffered PRODAT messages sent to the other party.
    - Fingrid will notify the market parties if the buffer unloading stage needs to be continued. In this situation, the reinstation of normal deadlines will also be postponed accordingly.
- Fingrid confirms the schedule for post-hoc check
    - Market participants shall notify without delay if they are not ready to carry out a post-hoc check by the deadline.
    - If necessary, Fingrid will state a new time and date for performing the check.

14.6 Imbalance settlement

If Go-Live is cancelled, the DSOs must continue to perform imbalance settlement calculations and information exchange with eSett. The cancellation of Go-Live will not require any special actions from DSOs. The DSOs must do their share in ensuring that the calculations and information exchange with eSett continue. Fingrid will ensure that the DSOs' imbalance settlement structures stay in force irrespective of the moment the rollback is initiated. This also applies to virtual production units, even if new virtual production units were already created for Datahub (see Chapter 11.3). Fingrid will also ensure that network operators have the permissions to report data for the period following the planned moment of change (Datahub Go-Live) (see Chapter 11.4).

14.7 Handling of balance deviations

The parties should be prepared to handle a situation in which, after a rollback, more balance deviations than normal will be reported for the period of the (failed) Go-Live process if the freezing period extends further than the balance window. This will happen especially in situations in which a network operator does not record moves in its imbalance settlement system during the freezing period.

If the Go-Live is cancelled, the DSOs must be capable of performing balance deviation calculations at a later time agreed separately.

15 Go-Live verification reports

Both Titta and Datahub will generate certification/status reports at different phases of the Go-Live. The reports will be used for verifying the success of data migration and Datahub uploads. During Go-Live, all reports generated for the market parties will be available via Titta. The reports generated by Titta will all be in Excel format.

The so-called control reports produced by Datahub will be processed through Titta during Go-Live. The control reports contain the party-specific data in the Datahub database (such as accounting point or customer data) and are primarily intended for production-time checks. However, control reports are nevertheless very useful also in the Go-Live process. During production, the control reports enable the parties to verify that the data in their own information systems is consistent with the data in Datahub after data migrations. The control reports can be run in Datahub after the data migrations are complete. Fingrid will then move the data to Titta. Titta will compare the data submitted by a market party to Titta to the data in the control reports generated by Datahub. Next, Titta will generate reports that highlight the differences in the data, enabling the market parties to see and process them.

The party responsible for correcting the detected error in the data depends on the error. Depending on the case, the correction of data errors may require mutual investigations by more than one party (including Fingrid). As a rule, errors will be corrected either directly by the operator or by the market participant using Datahub's market processes. A list of identified possible exceptions is maintained on the Datahub Services portal in the document "Käyttöönoton poikkeamatilanteet markkinaprosesseissa" (in English: "Go-Live Deviations in Market Processes". Document only available in Finnish).

In addition to the control reports, Datahub will produce data migration reports that show the pieces of data that generated an error during Datahub upload. However, these reports will not be directly provided to market parties via Titta. The reason for this is that as a rule, Datahub should not reject any data submitted by Titta. Therefore the number quantity of migration errors in this phase is very small or zero. Furthermore, any errors detected during data migration are likely to be the result of a processing error in Datahub and not an error in the market party's market data. Therefore, Fingrid is responsible for correcting the migration errors. However, if some errors detected during the migration need to be reviewed with a market party, the Datahub operator will contact the market party to agree on the processing of the error bilaterally.

15.1 Descriptions of reports

The table below lists the data quality reports provided to the parties via Titta during Go-Live.

TABLE 4 DATA QUALITY REPORTS DURING GO-LIVE

Report	Becomes available (in Titta)	Data to check / Errors reported

Data migration file check report	After data migration checks	Titta checks that the file and the submitted data conform to the formats specified in the Migration file instruction and Data standard.
Master data integrity check report	After data migration checks	The party-specific integrity check verifies that the referential integrity between files imported by the party is ok. The user launches the integrity check in Titta after a sufficient amount of data has been migrated to Titta. Only data that has passed the file check are included in the integrity check (rows in error category 1 are excluded from the check). Check of supplier – balance responsible party relationships (i.e. whether a supplier has a balance responsible party in the metering grid area).
Metering data integrity check report	After data migration checks	Submission of metering data of the entire period of the grid agreement as specified in the rules of the data migration plan.
Consistency report of basic data	After data migration checks	Consistency check between the DSO's and supplier's data on the supplier of the accounting point (see Chapter 5.3). The equivalence of imbalance settlement structures generated on the basis of migration datasets to the data in eSett.
Titta's aggregated report	After data migration checks	Contains an aggregation of the contents of the basic data verification reports described above.
Datahub Staging area check report	Not available	Initially, datahub checks that the migration files submitted by Titta have been successfully uploaded to Datahub's Staging area. Next, Datahub checks that information specified as mandatory for all elements is present and that the integrity of the relations between the data is intact for the purpose of data migration. If an entity is rejected in the check, all other mandatory elements associated with this entity will also be rejected (on the basis of mandatory relations). During the check, a manual check is also performed to verify that the volume of data processed to the Datahub staging area matches the quantity of data imported from Titta. However, the data volumes are not specified on the report separately for each party.
Check report on the migration of basic data to Datahub	Not available	The migration of basic data into the Datahub database will begin after the Staging area checks are complete. This migration is based on performing the market processes configured in Datahub on the data migration datasets. The migration generates a log called a Business Transaction Dossier (BTD) for each piece of information. The log indicates whether the processing was successful or whether an error occurred. The BTDs of data approved in the migration are available in the Datahub user interface (and can be accessed via individual records→no aggregated list available).

		The Datahub operator has access to a report which shows all errors logged during migration per record. A statistical report on the migrated data is available for the Datahub operator during the migration of basic data. The report shows the total volumes of migrated data by each entity group, including status information (such as approved/rejected).
Check report on the migration of metering data to Datahub	Not available	Datahub prepares a report on accounting points whose metering data has been uploaded to Datahub only partially or not at all. The metering data migrated during the check are compared to the validity of the grid agreement fo the accounting point. Datahub also reports a list of metering data in which processing errors have taken place in the migration.
Control reports on the imbalance settlement calculations in Datahub	Before the buffer unloading step	Datahub performs imbalance settlement calculations for historical data after both basic and metering data have been migrated. Datahub generates separate control reports from the calculation results and exports them to Titta. Titta compares the calculation results to the imbalance settlement data received from eSett, generates a report on the results and makes it available for the parties. The results of the comparison cannot be used directly to detect or correct individual data errors, and thus the deviations shown on the report do not require action from the parties. However, the results of the comparison can be used when making a decision on whether to proceed with the Go-Live.
Control reports on the basic data in Datahub	Before the moment of change	The control reports generated by Datahub are exported to Titta. Titta generates a comparison report between the data provided by the party and the Datahub control reports. The report contains a summary of the quantities and a listing of individual errors/deviations. The reports contain the following information: • Accounting point data • Customer information • Agreement information. The reports and the data above are available both for suppliers and DSOs.
Control reports on the metering data in Datahub	After the moment of change	Only used if problems occur in investigating the differences between the metering database of the network operator and the database in Datahub.

The figure below shows an overview of the data quality reporting in different phases of Go-Live.

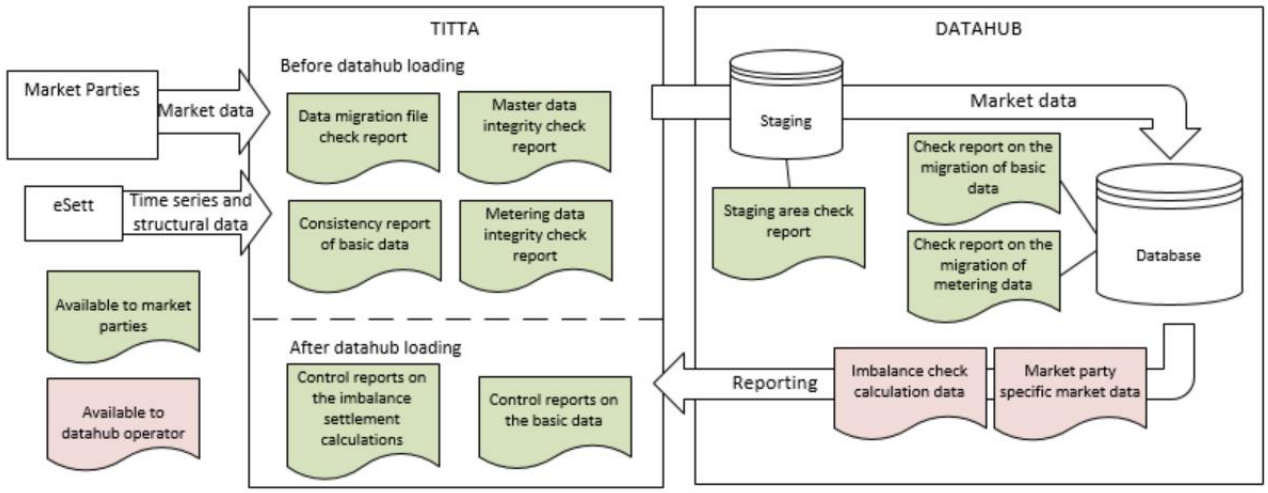

FIGURE 10 AN OVERVIEW OF THE DATA QUALITY REPORTS DURING GO-LIVE

For more detailed descriptions of the reports generated by Titta, see the document 'Inspection of source material in the Titta service' https://palvelut.datahub.fi/api/documents/file/0-228906-1-289321.

16 Testing and rehearsing plan

To ensure a successful deployment, Go-Live must be both tested and practiced comprehensively and in several different ways. Testing means the verification of the viability of the planned actions. An important matter to take into account in Go-Live is the temporal aspect the tasks, i.e. their durations and deadlines. Rehearsing Go-Live primarily means the training and self-education of people participating in Go-Live.

Go-Live consists of several phases and responsibilities for the implementation of these phases vary. Some phases are the sole responsibility of Fingrid, some phases are the sole responsibility of market parties (and system suppliers), and some phases require action by both Fingrid and market parties. Therefore, the isolated testing of work phases follows the same division (see Table 1). In other words, each party tests and rehearses its own tasks. Naturally, the actual Go-Live will require a seamless co-operation of all phases and parties, which is why Go-Live will be tested and rehearsed as a whole in a dress rehearsal that involves the entire industry.

Testing Go-Live can be viewed as having two approaches: testing the Go-Live process (Runbook) itself as a whole and testing the readiness of a party (including Fingrid) for Go-Live. Testing the Go-Live process means verifying that following the Runbook plan that is common to the entire industry will lead to a successful Go-Live. Testing a party's own capacity means verifying that it is capable of performing the tasks that it is responsible for by the Runbook plan. Fingrid is responsible for the viability of the Go-Live process as a whole.

Testing and rehearsing must also cover various error situations. Each party must do its share in ensuring that it has the capability and expertise to operate also in various exceptional situations. Fingrid will co-operate with the industry working groups to create a list of various risks and exceptional situations that everyone should take into account in their own preparation.

Seamless collaboration between message traffic phase-out, deployment of message buffers, data extraction for migration, data migration to Datahub and buffer unloading is essential to the success of the Go-Live (see Figure 1). On the other hand, testing all of the above poses challenge, especially if the testing is to imitate a production situation. This can be rehearsed in its entirety with all market parties in the Go-Live dress rehearsal in late 2021. However, some parts of Go-Live can be rehearsed and tested even before the dress rehearsal.

16.1 Testing and rehearsing before the dress rehearsal

The market parties are primarily responsible for their own rehearsals and testing their own readiness. Where applicable, the rehearsing of individual tasks and phases of Go-Live may be carried out independently in the test environments provided by Fingrid for market parties and system suppliers. If there is a need to run a large number of processes in one go during testing, this must be agreed in advance with Fingrid. Please note that the test environments are not rated for the processing of large loads and carrying out various performance tests. Observations made

during the testing of Go-Live can be reported via the datahub support service. Go-Live tasks associated with data migration can be practiced freely in Titta (outside the official milestones).

The trial production runs offer an excellent opportunity to rehearse the Go-Live before the actual dress rehearsal.

16.1.1 Testing of Go-Live as a part of a Trial Production Run

In a nutshell, the phases of a Trial Production Run are:

- The market parties extract data from their production systems and submit the data to Titta.
- The market parties copy the production data into their test systems.
- Fingrid uploads data from Titta to Datahub
- The market parties report real production events via the test system to Datahub.

Trial production runs also enable market parties to rehearse the buffering of events and unloading of buffers in a test system. There is time reserved for rehearsing the unloading of buffers before the actual trial production run is started. Testing of buffering and buffer unloading at the latest in the Trial production run 2 is highly recommended. Thus, the functionality of the buffers can be ensured already before the dress rehearsal. Network operators can rehearse the final migration of metering data at this point, and really ought to do so as well. However, when creating your own plan, please keep in mind that real production transactions should be used Trial Production Runs.

16.2 Dress rehearsal

The goal of the dress rehearsal is to perform the entire Go-Live in accordance with Runbook. More detailed descriptions and instructions on the dress rehearsal can be found in chapter 18.

16.3 Official milestones

The table below lists the Datahub project's official milestones in which the Go-Live can be tested and rehearsed. The table shows the schedule of milestone and the Go-Live phases that can be tested and rehearsed in each milestone.

TABLE 5 REHEARSING AND TESTING GO-LIVE IN THE PROJECT MILESTONES

Milestone	Work phases to be tested (step #)	Time
Data migration phase IV-I	Premigration of metering data (3) Data migrations and upload of data to Datahub (5 - 7)	January 2021
Data migration phase IV-II	Same as Data migration phase IV-I	March 2021
1. Trial Production Run	Datahub system is initialised to production readiness (1) Datahub production connections are opened and verified (2) (Main) data migrations and upload of data to Datahub (5 – 7) Actions at the moment of change (10) Post-hoc actions (11) Voluntary by capability: A stepwise phasing out of PRODAT processes and the deployment of buffers (4) Unloading of buffers (8) Final migration of metering data (9)	June 2021
2. Trial Production Run	See 1. Trial production run	September 2021
Dress rehearsal	All phases of Go-Live	March-December 2021

17 Processing profile sites

Datahub will not process cumulative/period-specific consumption readings read from an electricity meter. For accounting points for which hourly metering data is not available, network operators shall profile consumption at an hourly level based on either the balance energy forecast, electricity meter readings or other electricity consumption estimates. These accounting points are called load curve sites or profile sites.

The Go-Live plan states the following concerning these load curve items (profile items):

“The last reading of non-hourly metered load curve sites is the reading at the moment of change (=end of the freezing period). The metering instruments are read within +/- 5 working days from the moment of change. The equalising calculation of load curve items shall be made for the moment of change.

For load curve items, only calculated hour series can be submitted to Datahub.”

Market participants should take the following into account in their own Go-Live planning:

- Network operators must verify their ability to profile metering data well in advance of Go-Live
- Network operators should note that Datahub cannot perform an equalising calculation/balance deviation correction for profile items for the period prior to the moment of change, since Datahub does not have the necessary metering history data in these respects.
- Market parties should prepare to convert their invoicing to an hourly profile for profile items.
    - Suppliers should note that the processing changes in the middle of the billing period (on 21 February 2021) and that no hourly data for February will be imported into Datahub for the period prior to the moment of change.
- Market participants must take the change into account in their own customer service, such as a customer extranet.

18 Dress rehearsal plan

The purpose of the dress rehearsal of Go-Live is to ensure that the entire industry and Datahub are ready for Go-Live. As a rule, all Runbook work phases and their detailed tasks will be carried out in the dress rehearsal. The Go-Live dress rehearsal is a unique opportunity for market parties to ensure the continuity of their business operations in the actual Datahub Go-Live. This chapter describes the Go-Live arrangements and each phase of the Go-Live from the perspective of the dress rehearsal. The descriptions include those exceptions for which the dress rehearsal does not fully correspond to the actual Go-Live.

During the dress rehearsal, the market parties perform Go-Live tasks in their own CIS test systems. Datahub will use the production environment. Below is a diagram of the dress rehearsal schedule.

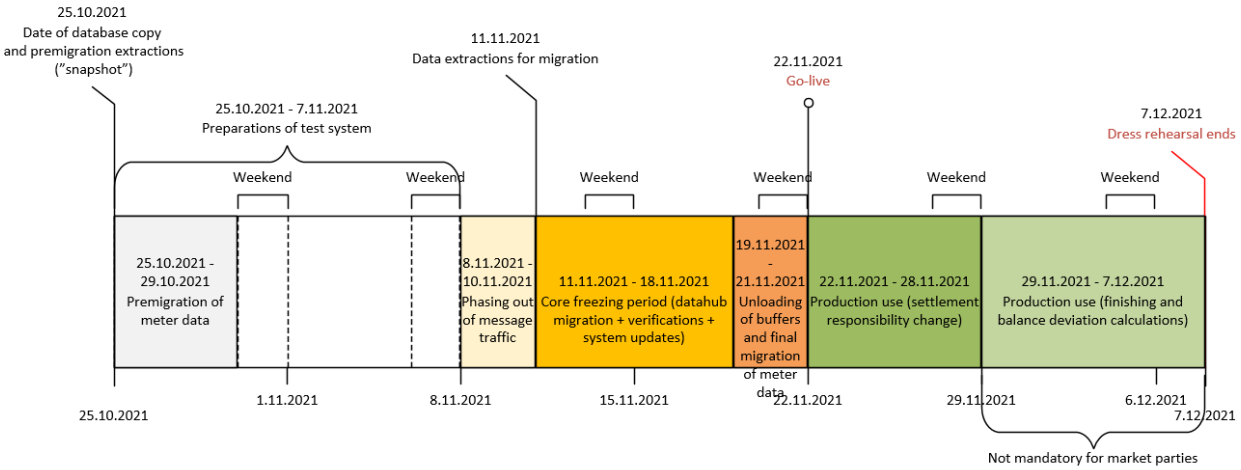

FIGURE 11 DRESS REHEARSAL SCHEDULE

The parties should take into account that the test environment must be available for the dress rehearsal starting from the preparatory phase (25 October to 7 November). During the dress rehearsal, no other testing may be carried out in the environment used in the dress rehearsal that could jeopardise the success of the dress rehearsal. This must be taken into account especially when a party has only one test environment available.

The purpose of the dress rehearsal is not to practice the performance of the rollback process separately. However, the parties may perform and practice rollback tasks in accordance with their own needs and risk management practices.

18.1 System arrangements

Preparations for the dress rehearsal begin with the copying of databases from the parties' production environments into the parties' test systems. These copies should be made to reflect the same point in time as accurately as possible to ensure that the market processes that will be carried out during the exercise will progress as smoothly as possible. Two weeks have been reserved for exporting the copies to the test systems.

During the dress rehearsal, the parties perform actual production transactions via the test environment into Datahub. It is recommended that during the dress rehearsal, the parties strive to copy as many production transactions as possible into the test system in order to ensure that the dress rehearsal resembles Go-Live as closely as possible. However, the dress rehearsal does not obligate the parties to copy all transactions events that arise during the exercise from the production environment to the test system.

The diagram below illustrates how production transactions are copied to the test system during the preparation phase and phasing out of message traffic. It should be noted that as soon as a copy of the production database is made, differences in market data and transactions will start to arise between the production and test systems for the production transactions that are not copied to the test system. These differences are significant, for example, for billing-related use cases in which the final outcomes of the exercise are compared with production data. Therefore, the market party must plan the use cases to be practiced very thoroughly and in such a way that the outcome of the dress rehearsal corresponds as closely as possible to the situation of the production system. Use cases are described in more detail in the following chapter.

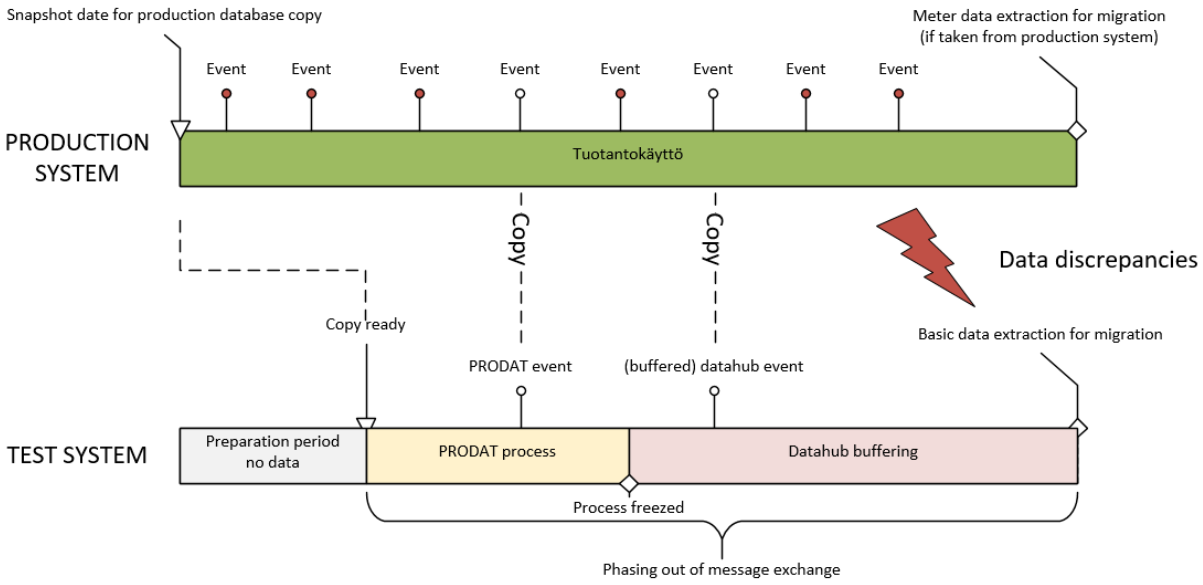

FIGURE 12 DATA DIFFERENCES BETWEEN PRODUCTION AND TEST SYSTEMS IN THE DRESS REHEARSAL

18.1.1 Metering data systems in the dress rehearsal

At a minimum, the test system is used for basic data/CIS systems. Depending on the network operator's system solutions, the operator might need to use a production system for metering data during the exercise. In this case, the network operator must take into account that in the test system, the basic data (e.g. accounting points) will not fully match the production data and this might have an impact on the processes to be carried out during the dress rehearsal. Differences between the production and test systems (and therefore also Datahub) will emerge in the following cases, for example:

- new accounting points, exchange points and production units created in the production environment that are not exported via the test environment to Datahub
    - Datahub will not accept a notification of metering data for these accounting points
- accounting points, exchange points and production units that are marked as decommissioned in the production environment but are still active in the test environment
    - Datahub will send reminders of missing metering data on these accounting points
- new and completed grid agreements that are not updated in the test environment.
    - these also affect the reminders of missing metering data.

Similarly, there will be differences in the main migration if the metering data is extracted from the production system to Titta.

For their part, the suppliers should take into account that the production environment of metering data systems cannot be used in the dress rehearsal, because the dress rehearsal uses exactly the same accounting points as the production.

18.1.2 Imbalance settlement systems

A significant part of Datahub Go-Live is the transfer of responsibility for imbalance settlements and balance deviations from DSOs to Datahub. This takes place as described in Chapters 11 and 12. However, it has been recognised that not all network operators have an available test system for imbalance settlement that could be used in the dress rehearsal. At present, distribution system operators are not connected to eSett's test system either. The dress rehearsal does not therefore require the use of a test system. However, it is highly desirable that network operators verify their own tasks in relation to Go-Live during the dress rehearsal as far as possible. Chapter 18.8 describes how to perform the imbalance settlement and balance deviation processes in the dress rehearsal.

18.1.3 Data connections

The dress rehearsal will be conducted in the same Datahub production environment as the trial production runs. To the extent that the parties use the same data connections in the dress rehearsal as in the trial production run, there is no need to re-establish the connections for the dress rehearsal.

In the context of preparations for a trial production run, it is strongly recommended that each party record all the measures necessary to establish data connections. This will ensure that the process runs smoothly in the trial production run, even if these actions will not be carried out during the dress rehearsal.

18.1.4 Service providers

Datahub offers market parties the opportunity to use service providers in the exchange of data with Datahub. In this case, the service provider performs Datahub's B2B market processes on behalf of the market party. The service providers that the market party will use when Datahub is in production must also participate in the dress rehearsal. An example of such a provider is a service provider that collects and delivers metering data to Datahub on behalf of a network operator. The party must notify Fingrid of the service providers it is using through the service portal. More detailed instructions and deadlines for the notification will be announced separately.

18.2 Objective and method of the exercise

The dress rehearsal focuses on the successful completion of the Runbook plan, and thus the completion of the market processes themselves against Datahub will not have the same weight as in the trial production runs. **The most important thing for a market party is to ensure that the Go-Live related tasks are performed in a way that allows the parties to switch from using PRODAT processes to Datahub market processes without problems.** A separate Runbook has been drawn up for the dress rehearsal, specifying the deadlines that will apply during the dress rehearsal. The dress rehearsal Runbook also states the tasks that will not be performed or whose performance differs from the tasks of the of the actual Go-Live.

With regard to the functioning of market processes, the dress rehearsal focuses on taking into account the special features of the Go-Live process. These include, for example, processing moves reported by email during the core-freezing period in Datahub during the buffer unloading phase.

Like in trial production runs, **production transactions** will be carried out during the dress rehearsal via a **test system**. Carrying out tests with synthetic material in the dress rehearsal is not allowed. This arrangement creates potential constraints on the performance of market processes, since production transactions must be transferred to the test system. The dress rehearsal does not require a party to be able to transfer large quantities of production transactions to the test system. The exercise seeks to place greater emphasis on quality rather than quantity in terms of the performance of market processes.

18.2.1 Use cases

Due to differences between market parties, it is not possible to specify a precise number of market transactions/use cases that each party should perform during the exercise. It is each party's responsibility to determine which number is sufficient to ensure the continuity of their own business operations.

Below is a list of use cases that are recommended to be performed as part of the dress rehearsal. Other use cases may be carried out freely, but the main focus must be on practicing use cases associated with Go-Live (other processes can be practiced comprehensively already in the trial production runs). To support the parties' own planning, Fingrid will prepare more detailed use case descriptions of the use cases listed below.

- For network operators, buffering of new accounting points
- For suppliers, buffering of updates to customer data
- For network operators, buffering updates to accounting point data
    - Buffering of changes to the annual consumption estimate (note: as a rule, the annual consumption estimate should only be updated when a new agreement is reported for the accounting point)

- Buffering of connection and disconnection notifications (note that during actual Go-Live, collection breaks for consumer customers are not allowed during the core-freezing period and should therefore not be practiced during the dress rehearsal either).

- Buffering of data changes to agreement data (DH-320 processes).
- Connection of accounting points that are under construction and have a supply agreement and were imported in data migration
    - "If a new supply agreement is made for an accounting point while its status is still "under construction", but the supply cannot be started on the start date stated in the agreement, the starting date of the supply agreement and the actual connection date will differ. In these situations, the connection notification sent by the DSO will automatically trigger Datahub to change the effective dates of the supply and network agreement in force on the connection date to correspond to the connection date. The supplier will receive a notification of an update to the accounting point data and a connection, and based on this notification, the supplier must update the effective date to the connection date in their own system."[5]
- The DSO is able to deliver metering data within the time limits
    - The supplier is able to retrieve the forwarded metering data from Datahub
    - The DSO can check the incomplete metering data in the reminder messages sent by Datahub and can monitor the results of the imbalance settlement calculations output by Datahub during the exercise.
- Invoicing process (for a single accounting point)
    - An invoicing run for an hourly metered site that will not be subject to agreement changes during the exercise (a confirmation that the "Datahub time series" works correctly in invoicing).
    - An invoicing run for a profile site that will not be subject to agreement changes during the exercise (a confirmation that the "Datahub time series" works correctly in invoicing).
    - Final invoicing to the move-out site
        - Data concerning change of invoicing address for final invoice.
    - Transmission of invoice rows (in particular for electricity/total supply agreements)

[5] "Electricity retail market business processes in Datahub", Chapter "DH-120 Maintaining accounting point data"

- Retroactive move-ins and move-outs from the buffer
    - Processing of moves registered by email during the core-freezing period in Datahub
- Buffering and reporting supplier switches with a start date of no earlier than D+15
    - When selecting production transactions, please note that in the dress rehearsal, the earliest start date of the agreement in supplier switches is 7 December 2021.
- Cancellation of buffered agreement transactions from the buffer
- For agreements imported in data migration, cancellations made through a service request by a party of the Datahub operator
    - If the start of supply that would start during the core-freezing period is cancelled during the core-freezing period, the supplier cancelling it must report the cancellation by email to the DSO, which will forward it to the returning supplier.
- Other data corrections and actions performed by the Datahub operator
- Handling of balance deviations (see Chapter 18.8.1).

18.2.2 Coordination of use cases

In order to ensure the quality of the market process use cases to be tested, the exercise will primarily be carried out between market parties agreed in advance. A natural pair in the exercise is the network operator and the supplier with a supply obligation operating in the network operator's metering area. However, there are no restrictions on forming exercise pairs. The DSO and the supplier with a supply obligation in the metering area shall ensure that they act as independent market parties, even where the activity is based on the use of the same systems.

As a rule of thumb, each DSO should coordinate the performance of the exercise with **at least** two different suppliers. Likewise, each supplier must (if possible) perform use cases in the metering area of **at least** two different network operators and coordinate the execution of use cases with the DSOs. However, the intention is not to form groups of four parties. Instead, the pairs formed by the exercise participants can also cross. It is also perfectly permissible to carry out use cases for any accounting point in the exercise, regardless of whether the performance of the transaction is coordinated with the supplier/network operator of the accounting point.

Fingrid coordinates the dress rehearsal at the top level, ensuring that each supplier and network have at least two counterparties. However, the counterparties must primarily be selected by the supplier and network operator who must also take the initiative in agreeing with the counterparties on how to carry out the dress rehearsal. Each market participant shall inform Fingrid of the counterparties with whom it will coordinate the exercise (more instructions on this will be provided separately).

The following reports must also be submitted to Fingrid:

a) the party's estimate of the number of production transactions in the actual Datahub Go-Live

b) the party's estimate of the volume of market transactions they will perform during the dress rehearsal.

The reports must state separately the estimated numbers of transactions buffered during the freezing period. After processing the notifications, Fingrid will disclose the expected transaction volumes to all parties (at a general level, no party-specific information will be disclosed). This way, each party will get an idea of how many transactions to expect during the exercise. It should be kept in mind during the exercise that the performance of the parties' test systems is generally not as high as their production systems.

The estimated total number of production events (in production) during the dress rehearsal can be classified as a party-specific trade secret and will not be made public. However, this information is necessary for Fingrid to evaluate Datahub's performance in the dress rehearsal compared to the expected load in actual Go-Live.

Some examples of the things the parties should coordinate:

- strive to ensure that the use cases described in Chapter 18.2.1 can be carried out as smoothly as possible
- agree on rehearsing the phasing out of message traffic (the possible processing of PRODAT messages)
- agree on the processing of moves and other events by email during the simulated core-freezing period
- if necessary, jointly carry out troubleshooting if the use cases fail unexpectedly for whatever reason.

18.2.3 Success indicators

The success of market parties and Datahub in the dress rehearsal is measured by several indicators. The dress rehearsal uses the following metrics:

- Data quality indicators (data migration)
- Metrics related to deployment tasks
    - successful completion of tasks by the deadline
- Indicators associated with market processes
    - Success of buffer unloading

- Success of market processes after Go-Live

Data quality is monitored on the basis of reports generated by Titta (see Chapter 15).

Go-Live tasks refer to the tasks listed in Runbook that are the responsibility of the parties and Fingrid. The dress rehearsal uses the same ProjectTOP tool (see Chapter 20) as the actual Go-Live for measuring how well the parties can complete the tasks by the deadline. The dress rehearsal covers all Go-Live tasks as appropriate. The tasks and deadlines of the dress rehearsal are described in the document “Datahub Runbook Dress rehearsal”.

The performance indicators of the market process monitor the number of transactions per party and their success rates. The monitoring applies both to messages reported to Datahub and messages to be retrieved that arrive to a party’s message queue. The monitoring is done separately for the buffer unloading phase and the production phase of Datahub. These indicators are based on reports on Datahub usage generated by Datahub. Fingrid will create for each party separate party-specific aggregates of these reports. The performance assessment will leverage the estimates reported by the party on the number of market events (see Chapter 18.2.2).

18.3 Premigration of metering data

For premigration of metering data, data is extracted to correspond as accurately as possible to the same point in time as when copies are taken from the databases for the test systems. Premigration extractions are made from the production systems. Therefore, the execution of the premigration phase will not interfere with the setting up of the test systems. The premigration of metering data is carried out in combination with the initialisation of the test environments, which leaves more time for the completion of the other steps in the dress rehearsal.

During the premigration phase of the dress rehearsal, the metering data will be extracted from 1 December 2016 to 30 September 2021.

18.4 Phasing out of message traffic and buffering

The phasing out of message traffic will be started when the database copies have been uploaded into the test systems and other preparatory actions have been completed. In the dress rehearsal, the most important thing about this phase is to verify that the buffering of market transactions works correctly. Only 3 days have been reserved for this phase in the dress rehearsal, and the necessary test use cases must be carried out at that time. The earlier the parties are able to set up the test systems, the more time the parties will have to conduct the phasing-out exercises.

It will not be possible to engage in high-volume PRODAT message traffic between the parties during the dress rehearsal. This means that the transactions copied from the production system for the period prior to the freezing of the process remain incomplete in the test system (see Figure). The copy of the production database might contain a large number of incomplete

market/agreement transactions (see Appendix B). It is possible to buffer incomplete transactions for Datahub or the parties can agree on the mutual processing needed to complete these transactions by PRODAT messages or other means. According to the Runbook plan, incomplete transactions in the test systems may not be extracted for data migration during the dress rehearsal.

The parties may copy received PRODAT messages from production to the test system during the dress rehearsal. These copies make it possible to verify, for example, that a message sent after the deadline of a process will not be processed at the recipient's end.

The short period of time allocated for this stage means that some market transactions have been frozen directly starting from the official start date of the phase. For example, supplier switches have been frozen directly from the beginning of the simulated phasing-out phase (8 November). Since practically no PRODAT messaging is carried out during the exercise, the party may simulate the phase-out of message traffic in its own system with freezing times different from the plan. For example, a supplier can practice freezing of supplier switch notifications starting from 9 November at midnight. However, it is advisable to use deadlines (i.e. system parameters) in the dress rehearsal that match those of the actual Go-Live. A party can also monitor in their production system that all supplier switches are processed by the deadline and can practice processing incomplete transactions with the counterparty as applicable.

When extracting production transactions for the exercise, it should also be noted that during the dress rehearsal, a supplier switch can be agreed with customers normally without the D+15 time limit that will apply in the actual Go-Live. However, Datahub will reject any supplier switch initiated too soon also during the dress rehearsal.

The table below describes in more detail how to rehearse different cases associated with the phase.

TABLE 6 REHEARSING THE PHASING OUT OF MESSAGE TRAFFIC DURING THE DRESS REHEARSAL

Case	How to rehearse
Verify that messages associated with PRODAT processes are sent from the systems **before** the planned deadline.	The test system can schedule message "transmissions"[6] to correspond to process deadlines and ensure that PRODAT messages are not sent at all during the core-freezing period. If necessary, the process-specific start of the freezing period may be changed on a party-by-party basis for testing purposes.
Verification that a PRODAT process submitted late will not be processed	Received PRODAT messages can be extracted from production and exported to the test system for a date when the message process has already been frozen.

[6] Please note that in practice, PRODAT messages cannot be sent from the test system to the other party. Also note the short time allocated for the phase (3 days).

Verification that incomplete processes are processed correctly (an incomplete process not included in the data extraction for data migration and the transaction that starts the process is buffered if desired).	Here, a party can also take advantage of unfinished transactions that came with the database. If these transactions are not finalised with the counterparty, they can be buffered as Datahub transactions[7]. In any case, no incomplete transactions should be extracted for data migration.
Verification that after a particular message process has been frozen, any new market transactions in that process are added to the party's message buffer	Extracting transactions from production when a process is frozen and copying them to the test system.
Verification that after a particular message process has been frozen, no new market transactions in that process are extracted for data migration	Extracting transactions from production when a process is frozen and copying them to the test system.
Verification that the processes are completed by the deadline.	A party can verify from production that during the message phase-out in the dress rehearsal, the production processes transactions by the deadline.

No lower limits have been set for the number of market transactions to buffer. It is nevertheless recommended to buffer as much production transactions as the party's capabilities allow. This way, the dress rehearsal corresponds better to the actual Go-Live production. The parties must also assess by themselves what number of transactions is sufficient to ensure the continuity of their business.

Although the Rollback process will not be rehearsed in the dress rehearsal, a party should nevertheless be able to verify that it has the capability to report the transaction as a PRODAT message if a Rollback situation occurs.

18.5 Data migrations

Conversions of basic and metering data will be performed on the first day of the simulated core-freezing period in accordance with the Runbook plan. The difference from production Go-Live is the use of test systems/environments. Network operators that extract metering data from production systems must take into account the issues described in chapter 18.1.1.

In the Runbook plan, the actions to take during the core-freezing period include correcting errors detected in data migration (see Section 7.1). Based on the data quality reports, the correction of individual pieces of data can and should be done during the dress rehearsal to the extent the resources allow. Any errors in production data should also be corrected in production data and not just in test data. This way, the quality of the data will also improve with regard to the actual Go-

[7] If the buffering of incomplete transactions requires manual actions, it is a good idea to practice the buffering of at least a few transactions. Please also note that for supplier switches, for example, the allowed start date is D+15.

Live. In any case, the parties should carefully verify the discrepancies indicated by the data quality reports in the dress rehearsal.

18.6 Core-freezing period and migration of data to Datahub

The migration of data to Datahub during the dress rehearsal is not any different than during the actual Go-Live. However, it can be assumed that the results of the imbalance settlement calculation that will be performed after the data migrations are not fully comparable to the official data in eSett. The reason for this is that the basic data in the test systems is no longer up-to-date with the production data at the time of calculation/reporting.

In the dress rehearsal, the parties must practice performing system updates during the core-freezing period. During the core-freezing period, the parties must also practice exchanging information by e-mail and maintaining buffers (buffering new market transactions) in accordance with the Runbook plan.

The dress rehearsal does not constitute a reason to restrict the creation of production transactions as instructed in Chapter 7.3.

18.7 Buffer unloading and final migration of metering data

Buffer unloading and the final migration of metering data are carried out during the dress rehearsal as specified in the Runbook plan. During the buffer unloading phase of the dress rehearsal, the parties might not be able to buffer as many market transactions as in the actual Go-Live. In this regard, the dress rehearsal cannot verify Datahub's performance in processing buffered transactions to the fullest extent. However, Datahub's performance is verified in Fingrid's own system testing. The actual number of transactions performed during the dress rehearsal can also be compared with the parties' estimated number of transactions in the production Go-Live. The parties should also note that the performance of the parties' test systems used during the dress rehearsals is usually not the same as that of the production systems.

With regard to the final migration of metering data, distribution system operators must follow the Runbook plan as closely and precisely as possible. Therefore, the final migration must aim to provide all new and changed metering data that have not been provided in the pre-migration or main migration to Titta.

During buffer unloading, network operators must add exchange points and production units that were created in the production system after the production database has been copied. This way, Datahub's imbalance settlements calculations can produce results that match the production data better.

18.8 Simulation of production use

The simulation of production use in the dress rehearsal focuses on the processing of market transactions that are essential for the Go-Live process, as well as on the reporting and

transmission of metering data. For Datahub, the simulation of production use also includes the execution of imbalance settlement calculations.

The dress rehearsal divides production use into two phases. The first week is intended for performing a maximum scope of verification use cases for Go-Live as possible (see Chapter 18.2.1) and participation in the dress rehearsal is mandatory for all parties. In the second week, the parties still have the opportunity to continue carrying out the exercise to the extent they see necessary. Also in the second week, the responsibility imbalance settlement will be fully transferred to Datahub and Datahub assumes responsibility for calculating balance deviations.

For profile targets, network operators might face challenges in producing profiled metering data. However, network operators must (to the extent possible) profile metering data during the dress rehearsal for at least some of these accounting points.

18.8.1 Transfer of responsibility for imbalance settlement and balance deviation to Datahub

During the dress rehearsal, the transfer of responsibility for imbalance settlement calculations to Datahub is limited by the fact that the DSOs do not have connections from the test systems to eSett's test system. Furthermore, DSOs are not required to use test systems for imbalance settlement calculations during the dress rehearsal. It is nevertheless strongly recommended that distribution system operators verify, as far as possible, that the deliveries of time series data can be carried out in accordance with chapter 11.4.

Due to the use of a test system, it cannot be assumed that the imbalance settlements carried out by Datahub produce exactly the same results as the network operator's production system. The differences arise as follows:

- If the metering points in the test systems are not up to date, there will be deviations not only in the supplier-specific totals but also in the losses of the metering area
- If the agreement information in the test systems is not up to date, this appears as differences in the supplier-specific totals.
    - However, if consumption and production metering points are up to date, the losses in the metering area might nevertheless match production data.

However, there is a large number of supplier-DSO pairs between which very few changes occur in the baseline data of the imbalance settlement (in particular changes in supply agreements or new accounting points in the metering area). It can therefore be assumed that there will also be a large amount of calculated supplier-level totals for which the calculation results match the data calculated by the DSO. This assumption will be used in the assessment of the accuracy of Datahub's calculations.

In the dress rehearsal, the simulated responsibility of the network operator to submit data to eSett ends on 2 December 2021. This will also be the day from which Datahub starts to register balance

deviations in the exercise. The goal is to create some balance deviations that are the responsibility of Datahub. It is therefore desirable that the market parties be able to extract for the dress rehearsal those production transactions generated after 2 December 2021 that cause a balance deviation. At the end of the exercise, Datahub will perform a balance deviation calculation whose results will be transmitted to the parties in accordance with the Datahub process.

During the dress rehearsal, the network operators must, to the extent possible, also practice/simulate performing the last balance deviation calculation and equalising calculation that are both their responsibility. In production Go-Live, the DSOs must read meters of profile sites as accurately as possible at the moment of change. However, this is not required for the dress rehearsal.

18.9 Decision-making

The dress rehearsal will also practice the mechanisms and communications for decision-making on whether to proceed with Go-Live or not. In the dress rehearsal, however, the threshold for aborting the exercise is even higher than in the actual Go-Live. For example, a failure of several market participants in the exercise does not prevent the exercise from continuing for the other parties involved. The dress rehearsal will be aborted, for example, if critical faults occur in Datahub during the exercise or if data protection/information security is found to have been significantly compromised.

19 Creating Users and Delegations

This chapter lists other issues related to Go-Live, for which a separate instruction / schedule is provided, if necessary, always before the next exercise and before Go-Live.

TABLE 7 SEPARATELY INSTRUCTED MATTERS

Subject
Creating datahub's user interface users and B2B users
Reporting the service providers acting via delegations

General instructions related to the matters are available at Datahub Services portal:

- **Käyttöliittymäkäyttäjän luonti** (in English: Creating user interface users. Document available only in Finnish.)
- **B2B-käyttäjän luonti** (in English: Creating B2B users. Document available only in Finnish.)
- **Datahub B2B-varmenteen hakuohje** (in English: Instruction on how to retrieve the datahub's B2B certification. Document available only in Finnish.)
- **B2B-sanomarajapinta yhteyden muodostaminen** (in English: Instruction on how to establish B2B message interface connection. Document available only in Finnish.)
- **Toimeksianto-ohje** (in English: Instructions on delegations. Document available only in Finnish.)

20 Commissioning monitoring, information and communication

It is important that the datahub operator and market participants have as accurate and up-to-date information as possible on the progress of commissioning at each point in the Go-Live process. From Trial production run 1 onwards, the ProjectTOP tool is used for this purpose. The tool is used by both Fingrid and market participants. Instructions for using the tool can be found in the "Preparations for Go-Live" sections of the Datahub Services portal.

Liite A Requirements for information systems

This chapter summarises the general requirements for suppliers and DSOs and for the parties' information systems (CIS and MDS systems) for each phase. It is the responsibility of the market party to ensure that the party meets the requirements of this Appendix. A market party shall make a plan that describes the extent of information system development effort needed to meet the requirements.

A.1 Migration of metering data

- The system must be able to extract the metering data for premigration and main migration using the further specifications described in Appendix (Liite C)
- Metering data extraction rules contain criteria related to basic data. The metering data should be extracted in a way that keeps the basic data used in the extraction of metering data up-to-date with the basic data delivered to Titta
    - Network operators should take into account the potential delay in the synchronisation of data with CIS and MDS systems.
- The system must be able to monitor changes in metering data during the period for which the metering data was submitted to Datahub in the data migration
    - Applies to both premigration and main migration of metering data
    - The party must also ensure that any metering data that was flagged as erroneous in data migration can be re-extracted later and delivered at a later phase of Go-Live.
- The DSOs shall ensure that the final migration does not deliver to Datahub any unchanged metering data that was already submitted in the previous data migration.
- The network operator must be able to report the metering data within a day or quicker (the deadline is the moment of change).
- The market parties must (when necessary) ensure that the transmission and reception of MSCONS messages will continue for metering data that will not be forwarded via Datahub in the future.

A.2 Phasing out of message traffic

- Each market party must ensure on their part that no market process will be started (or an associated individual message be sent) in violation of the phase-out plan.

- The party who receives the message must reject or leave unprocessed any PRODAT processes that are started after the deadline (the PRODAT message that starts the process has been sent after the deadline)
    - The party that initiated the PRODAT process after the deadline must take into account that the recipient will not process the transaction (even if the recipient acknowledges by sending a positive APERAK) → the sender must either buffer the transaction as a Datahub transaction or cancel it completely. Please note! The suppliers must take into account the deadline (D+15) for the starting date of the supplier switch in buffered DH-311 notifications.
    - With regard to further messages of processes started on time (such as the Z04[1] message in the supplier switch process), each party must ensure that the messages are sent within the deadline.
        - However, if the deadline is exceeded, it is the responsibility of the late party to agree with other parties involved in the process **without delay** on how to complete the processes.
- If the sender of the message does not receive an APERAK acknowledgement for the last message of the process, the party who sent the PRODAT message must verify whether the transaction was processed correctly or not.
    - Instructions for the Go-Live Plan: In a situation in which an acknowledgement is not received from the recipient of the message, ensure that the original message has been sent appropriately and that the acknowledgement request has been on. If it can be assumed that the message was sent correctly, the recipient is sent, by email, either the messages themselves or information about the sent messages, including information about the message types, accounting points, and the time and date of sending. After this, the message can be assumed to have reached the recipient even if the recipient still fails to respond to the message.
    - Please note that no time has been set aside on the first day of the core-freezing period for investigating missing APERAK acknowledgments → the parties must try to send the PRODAT messages well in advance of the deadlines!

A.3 Buffering market transactions and data changes

- When the phase-out plan prohibits the initiation of a PRODAT process, the CIS system must buffer market transactions.
    - The buffers must be deployed separately for each process, following the process-specific deadlines.
    - The parties must note that the transactions must be buffered in the format required by Datahub transactions (DH-XXX). This means, for example, that buffered

transactions must use a GSRN ID, and that, e.g. buffered supplier switch transactions must contain all the information required by the DH-311 transaction.

- If Go-Live is cancelled, the system must be able to start buffered events as PRODAT processes.
- For move processes handled by email in the freezing period, the following factors must be taken into account:
  - The new supplier must add a move notification to the message buffer as a DH-311 transaction, despite the fact that the exchange of information during the core-freezing period takes place by email.
  - In the buffer unloading phase, the DSO must send a DH-312 Confirmation of a grid agreement notification to Datahub as a response to the move-in notification of a new supplier (DH-311) forwarded by Datahub
  - In the buffer unloading phase, the current supplier will get a notification from Datahub on the termination of the supply agreement.

- The market parties must ensure that all changes to market data during data migration extraction or afterwards will be added to the message buffer of Datahub.
  - For example, suppliers initiate the buffering of customer data by means of DH-111 messages and network operators initiate the creation of accounting points (DH-121) and the buffering of changes to accounting point data by means of a DH-122 message.
- The systems must ensure that the buffer unloading will not start until Fingrid has given permission to start it.
  - If transactions are unloaded from the buffer too early, Datahub will reject the process. In this case, the party's source system must be able to restart the process at a later time.
- The systems must unload market transactions **in the chronological order in which the transaction is recorded** (the oldest updates before the newer ones, regardless of the process)
- The parties should ensure that any data updates performed or new market transactions recorded during the unloading are reported to Datahub only after the buffer has been unloaded, so that the latest data is not overwritten by older data from the buffer.

A.4 Extraction of basic data for data migration

- The systems must ensure that buffered market transactions are not included in the data migration datasets.
    - Please note! This also applies to moves processed by email before the extraction of data for migration.
- The systems must ensure that PRODAT processes that have been started late will not be included in the data migration datasets.
- The parties must ensure that PRODAT processes that were started on time but remain unfinished are not included in the data migration datasets
    - However, the parties must first and foremost ensure that PRODAT processes are completed in due time and agree separately on how to process unfinished processes between the parties involved. The late party is responsible for completing the process.
- Each market party should note that for agreement processes, the parties should not wait for the Z11[1] and Z10[2] messages of the DSO's metering readings in order to complete the agreement process.
    - More specifically, suppliers should include all those agreements in the data migration datasets for which the supplier has received the Z04[1] message.
- A party must ensure that, in the event of an error in the dataset, the party can submit a corrected dataset that reflects the original moment of extraction.
    - The party must ensure that system integrations, sales channels, manual entries made to CIS and other such sources will not cause changes in the source data.
    - Alternatively, the market party can ensure that they can perform the extraction again with the same source data (starting point of the core-freezing period).
- Extractions for migration and data deliveries must be completed by the deadlines.
    - It is not possible to correct market data in the data migration datasets during the data migration for Go-Live.
- The party must ensure that they can revert to PRODAT message traffic if the Datahub operator says that the data migration has failed.

A.5 Imbalance settlement

- The DSO must ensure that it will not send time series data to eSett after the moment of change.
    - From day D+1 to day D+10, DSOs must shorten the time interval sent to eSett by one day until the end of day D+10, the DSO's responsibility and right to report data to eSett expires.
    - If the DSO faces challenges in providing time series information to eSett with ebIX messages during Go-Live, the DSO may use other data delivery methods provided by eSett (such as uploading XML files as files). Instructions for this are provided in the documentation maintained by eSett.

A.6 Correcting balance deviations

- DSOs must calculate balance deviation corrections and perform equalising calculation for profiled sites after Datahub Go-Live, when the DSO's responsibility for imbalance settlement has fully expired on 4 March 2022.
- The DSOs must ensure that all changes taken into account in the last correction calculation are exported to Datahub by 4 March 2022.
- No changes that would cause balance deviations and are recorded after the network operator's last data extraction/correction calculation may be reported to Datahub before 4 March 2022

Liite B Unfinished PRODAT processes

This appendix describes the conditions under which message processes are considered as completed. The completion deadline is the time the last message is sent. The party responsible for sending each message shall ensure well in advance of the deadline that the messages will be sent on time. In exceptional circumstances, the late party must agree with the other parties on how to complete the processes.

In practice, however, there may be situations where an APERAK message that concludes the process has not been received even at the beginning of the process freeze or the core-freezing period. For data extractions for data migration, a process is considered to have succeeded already at the point when PRODAT messages are sent by the deadline (APERAK is not waited for). Chapter 5.1 contains detailed instructions on what to do if APERAK acknowledgments have not been received before the process is frozen.

TABLE 8 CONDITIONS FOR THE COMPLETION OF PRODAT PROCESSES

Market process (initiating message)	Completion condition Supplier	Completion condition Network	Freezing moment of the initiating message	Completion deadline
Supplier switching (Z03[1])	Z04[1/N] message has been received and a positive APERAK has been sent	Z04[1/N] message has been sent and a positive APERAK has been received.	Y-7 at midnight	Y at midnight
Move / New supplier for the DSO of the move-in site (Z03[14])	A Z04[1] message has been received and a positive APERAK has been sent	A Z04[1] message has been sent and a positive APERAK has been received.	Y-2 at midnight	Y-1 at midnight
Move / new supplier for the DSO of the move-out site (Z08[14])	positive APERAK has been sent	A Z05[14] message has been sent to the current supplier and a positive APERAK has been received.	Y-2 at midnight	Y-1 at midnight
Cancellation of the start of supply (Z03[C])	positive APERAK has been sent	A Z05[C] message has been sent to the current supplier and a positive APERAK has been received.	Y-1 at midnight	Y at midnight
Termination of the agreement (Z08[1])	positive APERAK has been sent	positive APERAK has been received.	Y-15 at midnight	-
Disconnection request (Z08[9])	A Z11[9] message has been received and a positive APERAK has been sent	A Z11[9] message has been sent and a positive APERAK has been received.	Y-7 at midnight	Y at midnight
Connection request (Z08[2])	A Z11[2] message has been received and a positive APERAK has been sent.	A Z11[2] message has been sent and a positive APERAK has been received.	Y-1 at 1:00 pm	Y at midnight
Disconnection confirmation + metering data (Z11[9])	positive APERAK has been sent	positive APERAK received	Y at midnight	-
Reconnection confirmation + metering data (Z11[2])	positive APERAK has been sent	positive APERAK received	Y at midnight	-
Invoicing readings and change in estimated annual consumption Z11[5]	positive APERAK has been sent	positive APERAK received	Y at midnight	-
Intermediate readings Z11[6]	positive APERAK has been sent	positive APERAK received	Y at midnight	-
Grid operator's notice of a change in the accounting point and invoicing information – Z06[10/11/13]	positive APERAK has been sent	positive APERAK received	Y at midnight	-
Current supplier's notification of a change in invoicing method – Z09[1]	positive APERAK has been sent	positive APERAK received	Y-10 at midnight	-

Grid operator's notification of a change in the meter or metering method – Z10[7]	positive APERAK has been sent	positive APERAK received	Y at midnight	-

Liite C Extraction rules for and change management of metering data

It should be noted that the rules for extracting metering data are based on basic data (such as grid agreements and the metering method of the accounting point). Correspondingly, the buffering of metering data must take changes in the basic data into account.

The extraction rules for data migration are based on the following basic data:

- validity of the accounting point
- validity of the grid agreement
- the metering method at the accounting point.

According to the data migration plan, network owners must submit metering data to those accounting points whose grid agreement is valid or has expired less than six weeks ago (or the accounting point has been correspondingly decommissioned). In practice, the parties' extraction tools have specified six weeks with respect to the extraction time. This means that the agreements and their metering data imported into Datahub are those that have expired 7.5 weeks (6 weeks + the core-freezing period) or less before the moment of change.

In addition to changes in basic data, changes may also occur to the metering data for the period that has already been migrated to Datahub during the previous migration. After each migration phase, the DSOs must monitor changes so that the metering data will be up to date throughout the history by the moment of change.

For premigration, main migration and final migration, the matters described above must comply with the following rules:

- premigration and main migration extract metering data for accounting points in which the grid agreement or accounting point has expired no earlier than six weeks before the **moment of extraction** (the exact point in time is specified in Runbook).
    - For risk management reasons, the same extraction logic is used for premigration and main migration, although this leads to migration of "extra" metering data during preloading to some extent.
- all new measurement data generated after the premigration must be imported in the main migration, and, **as far as possible**, all metering data that has changed in relation to the pre-migrated data
- the final migration must import all new data and data that has changed in relation to data delivered in the main migration. The final migration is also the **final deadline** for importing

all changes made to the metering data delivered in the premigration (in other words, after the final migration, the metering data history must be up to date in Datahub).

The DSOs should note that changes to basic data may have occurred after the data migration extraction, and these changes must be taken into account in the reporting/migration of metering data. These changes could include:

- Accounting points set up after the start of the extraction for data migration must be created via buffers in Datahub and metering data must be reported for them.
- Anu corrections to metering data that affect the metering data delivered in earlier migrations must be reported in the final migration at the very latest.
- If necessary, the metering method of an accounting point must be updated in Datahub via buffers from a reading measurement (or unmetered) to hourly metering and the hourly metering data must be submitted to Datahub.
- Accounting points that have been terminated after extraction must be terminated via buffers and no metering data for these accounting points may be submitted after the moment of expiration.
- It is unlikely, but possible, that a grid agreement has been retroactively terminated after extraction, which means that from the perspective of the moment of change, no data should have been submitted to Datahub in data migration in the first place. In this case, Datahub may be left with information that should not have been delivered there at all, but this will not cause any technical problems.
- It is also possible, at least in theory, that a grid agreement is made retroactively to an accounting point without an agreement at the time of the data extraction. In this case, grid agreements that were started retroactively will be created in Datahub with the DH-311 process from the transaction buffered by the supplier. The DSO must provide metering data for these during the ramp-up of Datahub processes.

The matters referred to above are illustrated in the figure below.

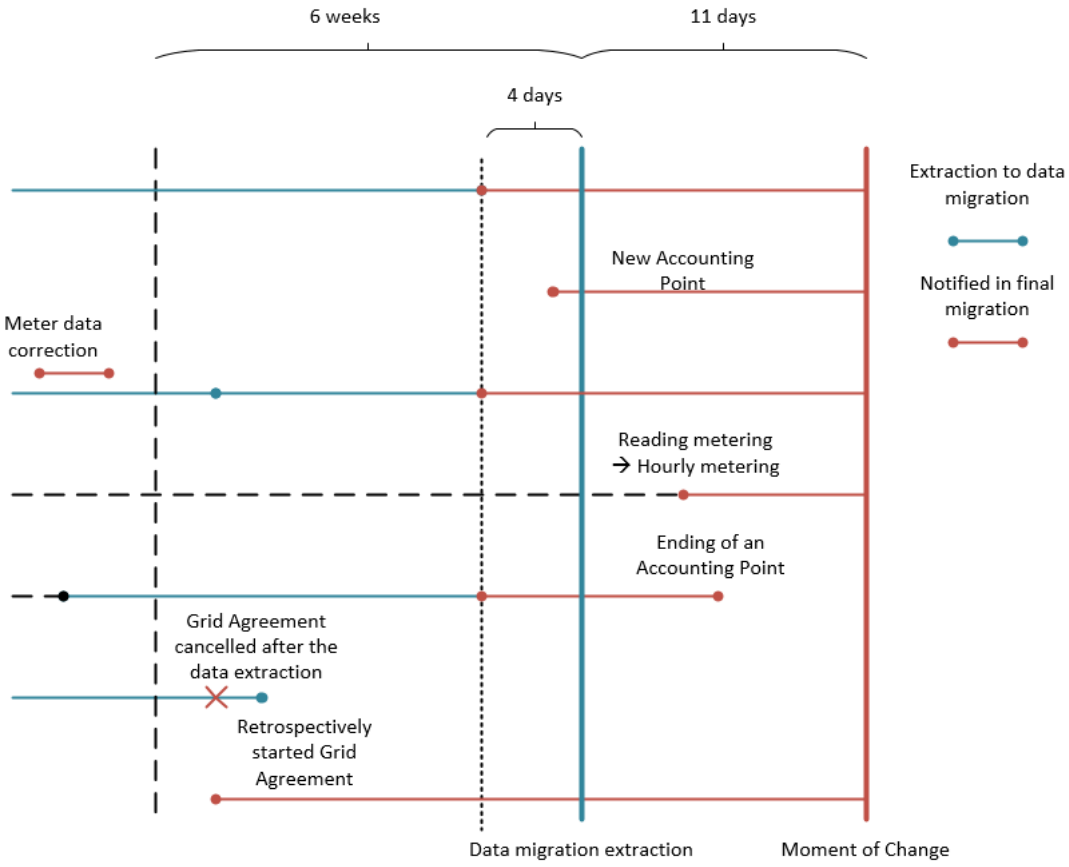

FIGURE 13 TAKING BASIC DATA INTO ACCOUNT IN THE EXTRACTION OF METERING DATA