Regulation F1:

EDI communication with the DataHub in the electricity market

March 2016

Version 4.7

Effective as of 1 April 2016

'The regulations are available in Danish and English. In the event of discrepancies between the Danish and English version, the Danish version of the regulation is legally binding.'

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Revision view

Chapter no.	Text	Version	Date
	Thoroughly revised in connection with the introduction of the wholesale model. Definitions have, for example, been revised, appendices have been incorporated into the regulation and EDIFACT descriptions have been removed.	4.0	November 2013
	Revised in accordance with consultation memo of 25 February 2014. The changes are shown in the regulation with track changes.	4.1	February 2014
	Editorial changes + footnote inserted in chapter 7.5.	4.2	May 2014
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12	Lists of sanctions added.	4.4	September 2014
6	Specification of 'regular checks of new messages in the DataHub'.	4.5	May 2015
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	Document number and date updated after approval of the methods by the Danish Energy Regulatory Authority.	4.7	March 2016

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Reading instructions

This regulation contains general and specific requirements regarding EDI communication in the electricity market.

The regulation is structured in such a way that **chapter 1** contains terminology and definitions used in the subsequent chapters.

Chapter 2 contains the regulatory provisions of the regulation.

Chapters 3 to 10 contain descriptions of the Danish rules and principles for the DataHub as well as rules and requirements for messages and IT systems, including system and market participant test requirements.

Chapter 11 contains overviews of the relevant obligations and sanctions for the market participants.

The regulation is published by Energinet.dk and is available from:

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The regulation can be downloaded from **www.energinet.dk** in the main menu 'Electricity' under 'Regulations', 'Market regulations'.

1. Terminology and definitions

1.1 Market participant

General term for parties, with the exception of customers and third parties, operating in the electricity market, ie grid companies, balance suppliers, balance responsible parties (BRPs), transmission companies and transmission system operators (TSOs).

1.2 Register of market participant master data

Register of market participants meeting the requirements set out in Energinet.dk's 'Standard agreement for DataHub access'. The register is available on the DataHub market portal with various information about each market participant.

1.3 Working days

Working days as defined in Regulation D1: 'Settlement metering', appendix 3: Definition of working days.

1.4 DataHub

An IT platform owned and operated by Energinet.dk. The DataHub handles metered data, master data, required transactions and communication with all market participants in the Danish electricity market.

1.5 Electronic data interchange (EDI)

Structured electronic transfer of data between companies.

1.6 Electricity supply grid

General term for public grids and direct electricity supply grids as defined in the Danish Electricity Supply Act (Elforsyningsloven).

1.7 Balance supplier

A company which:
1) Energinet.dk has included as balance supplier in the DataHub
2) and
  - *sells electricity to customers and holds balance responsibility for the metering point, or*
  - *buys electricity from producers and holds balance responsibility for the metering point.*

1.8 Move-in/move-out

Change of customer for a metering point, which takes place either in the form of a move-in or a move-out.

1.9 GLN no.

Global Location Number. Unique 13-digit identification number for a grid operator, balance supplier or balance responsible party (BRP).

1.10 GSRN no.

Global Service Relation Number. Unique 18-digit identification number for a metering point. Also known as a metering point ID.

1.11 Customer

The person(s) or entity(ies) that use a metering point and therefore are entitled to conclude legally binding agreements for this metering point, ie entitled to change supplier, report a move-out for the metering point etc. A customer can either be a legal or natural person.

1.12 Customer portal

The customer portal is an application developed by Energinet.dk, which is to be made available to the customer via the balance suppliers' websites. Customers can use the customer portal for showing consumption and for enquiries etc. concerning their metering points. Customers also have the option of contacting their balance supplier (for each metering point) in connection with change of supplier etc.

1.13 Change of supplier

Change of balance supplier for a metering point.

1.14 Market portal

A web-based access point to the DataHub for market participants. From the portal, it is possible to perform and monitor business processes in the Danish electricity market.

1.15 Meter data responsible

Third parties in the market which perform tasks delegated to them by a grid operator, eg collecting, storing and verifying metered data for a grid area. The grid operator's responsibility under the regulations cannot be delegated. Meter data responsibles can be registered in the register of market participant master data despite the fact that Meter data responsibles are not market participants.

1.16 Metering point

A physical or defined (virtual) point in the electricity supply grid where electrical energy is metered, calculated as a function of several readings or estimated. Classified as consumption, production or exchange metering point. A metering point is the smallest unit in the electricity market when calculating electrical energy for customers and market participants. A metering point is identified by a metering point ID.

1.17 Grid area

A specific delimited area for which a licence has been granted to conduct grid activities under the Danish Electricity Supply Act and which is delimited against the adjacent electricity supply grids with 15/60 meters that are included in the DataHub's computations in the electricity market.

1.18 Grid operator

Company licensed to operate distribution grids.

1.19 Mandatory limit

Limit for when a grid operator performs mandatory hourly settlement of metering points as stated in the explanatory notes for Section 72 (Danish Act no. 494 of 9 June 2004) concerning adjustment of the default supply price and as described in further detail in Regulation H2: 'Profile settlement etc.'.

1.20 Effective date

Date and time for the day on which a change, eg a change of supplier, move-in/move-out or change of a price element, is to come into force. The time is always at the beginning of the day, at 00.00, on the relevant date as described in this Regulation F1: 'EDI communication with the Data-Hub in the electricity market'.

1.21 Time limits

Time limits define the latest or earliest time for receipt of, for example, messages in the DataHub as described in this Regulation F1: 'EDI communication with the DataHub in the electricity market'. Time limits are always full days unless otherwise specified. The time limit is calculated from midnight on the effective date.

Up to/no later than three working days before the effective date:
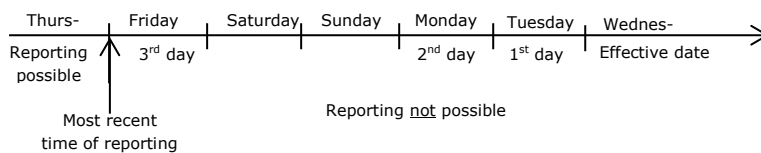
No earlier than three working days before the effective date:
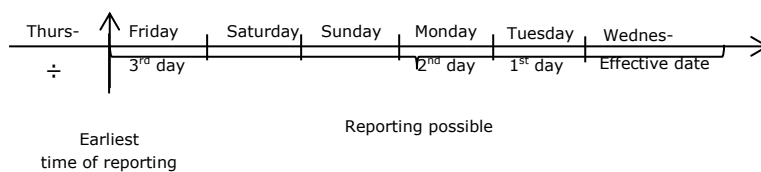
No later than one working day after the effective date:
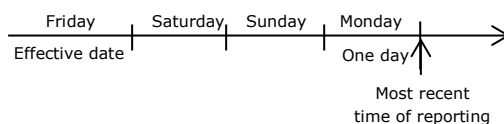
1.22 Third party

Natural and legal persons operating in the electricity market on behalf of market participants or customers, but which are not market participants or customers themselves. Meter data responsibles, brokers and energy consultants, for example, are third parties.

1.23 Test system

General term for system and market participant tests made available by Energinet.dk. Test systems are used for testing and approval of the market participants' own IT systems towards the DataHub. The test systems are described in further detail in this regulation.

1.24 15/60 metering

Metered data remote-read on a 15- or 60-minute basis used in connection with balance settlement. In Western Denmark, production/exchange is metered on a 15-minute basis, whereas consumption

is metered on a 60-minute basis. In Eastern Denmark, metering is performed on a 60-minute basis only, except for the electricity production of new offshore wind farms (starting with Rødsand 2).

1.25 15/60 value
A metered value obtained from 15/60 metering.

2. Objective, scope and regulatory provisions

2.1 Objective and scope of the regulation

Under Section 7(1) and Section 8(1) of the Executive Order on transmission system operation and the use of the electricity transmission grid etc. (Executive Order on transmission system operation *(Systemansvarsbekendtgørelsen)*)[1], this regulation has been prepared following discussions with grid companies and electricity traders. It has also been subject to public consultation before being registered with the Danish Energy Regulatory Authority.

This regulation sets out detailed requirements for the relevant market participants in the Danish electricity market as regards EDI communication with the DataHub and set-up of IT systems.

The regulation primarily applies to grid companies and balance suppliers.

This regulation is effective within the framework of the Danish Electricity Supply Act[2].

2.2 Statutory authority

The regulation is issued under the authority of Section 28(2), items 7, 12 and 13, and Section 31(2) of the Danish Electricity Supply Act and Section 7(1), items 3 and 4, and Section 8(1), items 1-3, of the Executive Order on transmission system operation.

2.3 Sanctions

The regulation sets out a number of obligations which the market participants comprised by the market regulation must meet; see chapter 2.1 above.

If the market participants grossly or repeatedly violate their obligations, Energinet.dk may issue injunctions in accordance with Section 31(3) of the Danish Electricity Supply Act. In the event of failure to comply with an injunction, Energinet.dk may decide to fully or partially exclude market participants from using Energinet.dk's services until the market participants comply with the injunction. If Energinet.dk becomes aware that obligations in relation to the grid operator's licensed activities have been violated, Energinet.dk will inform the Danish Minister for Energy, Utilities and Climate thereof.

If the market participant's obligations concern information about electricity metering as stated in Section 22(3) of the Danish Electricity Supply Act and these obligations are not met, this may result in an injunction being issued as stated in Section 85 c(1) of the Danish Electricity Supply Act and possibly in daily or weekly default fines being imposed by the Danish Energy Regulatory Authority under Section 86(1) of the Danish Electricity Supply Act.

Chapter 11 contains a detailed description of the procedure for sanctions as well as overviews of the relevant obligations and sanctions for the market participants.

The overviews specify only the sanctions that follow from the Danish Electricity Supply Act as a result of non-fulfilment of the market participant's obligations as stated in this regulation. If non-fulfilment also results in violation of other legislation, this may result in other sanctions permitted under such rules.

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[1] Executive Order no. 891 of 17 August 2011 on transmission system operation and the use of the electricity transmission grid etc.

[2] Consolidated Act no. 1329 of 25 November 2013 on the Danish Electricity Supply Act as amended

2.4   Complaints

Under Section 7(3) and Section 8(3) of the Executive Order on transmission system operation, complaints about the regulation can be lodged with the Danish Energy Regulatory Authority, Carl Jacobsens Vej 35, 2500 Valby, Denmark.

Complaints about how Energinet.dk has enforced the provisions of the regulation can also be lodged with the Danish Energy Regulatory Authority.

If decisions made by Energinet.dk result in the deregistration of a market participant as a user of the DataHub, the market participant which the decision concerns can also demand that such decision be brought before the courts; see Section 31(5) of the Danish Electricity Supply Act.

2.5   Effective date

This regulation comes into force on 1 April 2016 and replaces Regulation F1: 'EDI communication with the DataHub in the electricity market', March 2013.

Questions and requests for additional information can be directed to Energinet.dk's contact for this regulation as stated on Energinet.dk's website www.energinet.dk.

The regulation is registered with the Danish Energy Regulatory Authority pursuant to Section 73 a of the Danish Electricity Supply Act, Section 1 of the Executive Order on grid companies', regional transmission companies' and Energinet.dk's methods for determining tariffs etc.[3] (*Bekendtgørelse om netvirksomheders, regionale transmissionsvirksomheders og Energinet.dk's metoder for fastsættelse af tariffer m.v.*) and Section 7(2) and Section 8(2) of the Executive Order on transmission system operation.

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[3]   Executive Order no. 1085 of 20 September 2010 on grid companies', regional transmission companies' and Energinet.dk's methods for determining tariffs etc.

3. Rule hierarchy

The Danish rules are generally based on international provisions. The provisions are operationalised through various document levels addressing different areas of the business. If an issue is not covered by these regulations, reference is made to the detailed documents.

Markedsforskrift *Markedsregler*	→	**Forretnings-processer for det danske elmarked** *BRS – Business Requirement Specification*	→	**EDI-Transaktioner** *RSM – Requirement Specification Mapping*
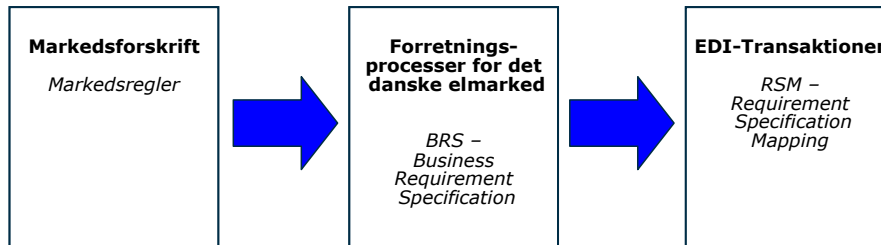
In addition to general legislation, the market participants must observe all rules described in the market regulations. For use for the communication with the DataHub, the market regulations have been specified and illustrated in the document 'Business processes for the Danish electricity market' (BRS guide) which, in turn, has been operationalised in the document 'Appendix report 1: EDI transactions for the Danish electricity market' (RSM guide). In the event of any inconsistencies between the documents, the market regulations will always prevail.

3.1 Market regulations

Based on the Danish Electricity Supply Act and related orders, Energinet.dk has drawn up a range of market regulations. The regulations regulate the rights and obligations of market participants in the Danish electricity market. The regulations are a necessary framework for ensuring a functioning electricity market.

3.2 Business processes (Business Requirement Specifications – BRS)

The document 'Business processes for the Danish electricity market' uses process descriptions to describe how the electricity market works as a business. The target group mainly comprises market participants in the Danish electricity market. The description includes sequence diagrams that illustrate at an overall level how data are interchanged between the various market participants. Moreover, for each process, the document specifies the overall data to be interchanged. The business processes should be read in the context of the market regulations, and they therefore cannot stand alone.

The technical content of the data interchanges is not specified in detail. Reference is made to 'EDI transactions for the Danish electricity market', see chapter 3.3. This means that the need for new and revised business processes is easier to formulate and implement and that market participants will therefore be less bound by technical specifications.

3.3 Business transactions (Requirements Specification Mappings – RSM)

The document 'EDI transactions for the Danish electricity market' describes the collection of business transactions included in the document 'Business processes for the Danish electricity market'. The document further describes the interaction with the underlying applications by means of event and activity diagrams. The messages included in the transaction are indicated explicitly and are documented with class diagrams.

4. DataHub principles

This chapter describes the overall principles for communicating with the DataHub.

4.1 Role of the DataHub in the electricity market

All market participants in the electricity market must interchange data directly with the DataHub, and no market participant is allowed to interchange data directly with other market participants in terms of messages included in the market regulations for the Danish electricity market (unless otherwise specified). The purpose is to make the DataHub the central hub between market participants. This is to ensure the quality of communication as well as ensuring a central place for storing data for further use on equal terms for all market participants. The DataHub thus plays a central role in the communication as it processes and, if necessary, passes on communication in the electricity market.

4.2 General response time for the DataHub

The general response time for the DataHub is one hour from the receipt of an EDI message from a market participant, unless otherwise specified in the regulations.

4.3 Opening hours for the DataHub

4.3.1 Normal operating hours

The DataHub can normally be used from 00.00 to 24.00 every day of the year (24/7/365).

The same operating hours apply to the test systems.

Energinet.dk will publish statistics for system availability for each calendar month.

4.3.2 Critical business hours and support

Critical business hours are defined as the period on working days from:

- 08.00 to 16.00 on Monday to Thursday and
- 08.00 to 15.30 on Friday.

Energinet.dk's support department (telephone, IT and business support, fault handling etc.) is only manned during critical business hours.

4.4 Expected uptimes

The following uptime requirements apply to the DataHub:

Period	Uptime (as compared to normal operating hours)
Within critical business hours	99.5%
Outside critical business hours	98.5%

$$\text{Uptime in per cent is } \frac{\text{Available operating hours}}{\text{Normal operating hours}} * 100$$

Available operating hours mean that:

- Business processes (BRSs) can be completed via EDI and from the DataHub market portal.
- The balance suppliers can connect to the customer portal provided by Energinet.dk regarding customer access to own data.
- The DataHub can make the necessary calculations and aggregations so that results can be delivered to grid companies, balance suppliers and BRPs.
- The DataHub meets the specified response time requirements.

Service windows as described in chapter 4.6 are not included in the calculation of uptime.

The same uptime goals apply to the test systems.

4.5 Announcement of outage time

If the DataHub or the test systems are completely or partially out of operation, this will be announced on the DataHub market portal as soon as possible. Scheduled service and maintenance of the DataHub or the test systems will be announced at a suitable notice on the market portal and according to a continuously updated service plan. It will also be announced when the DataHub or the test systems are operational again.

4.6 Service windows

A service window is the time during which the DataHub or the test systems will be out of operation due to maintenance or updates being implemented.

Service windows for the DataHub and the test systems are placed outside the critical business hours.

IT environment	Service window	Temporal placement
DataHub	Six hours per month	According to the plan shown on the market portal
Test systems	Eight hours per month	According to the plan shown on the market portal

4.7 Guaranteed response time requirements for EDI messages and acknowledgements

EDI messages initiating a specific business process often require a response or new messages (typically within one hour) from the DataHub in the form of an EDI message or a functional acknowledgement as described in Regulation H1: 'Change of balance supplier, move-in/move-out etc.', Regulation D1: 'Settlement metering', Regulation I: 'Master data' or Regulation F1: 'EDI communication with the DataHub in the electricity market'.

The following applies to the DataHub and the market participants communicating with the DataHub via EDI:

The temporal requirement for the functional acknowledgement or sending of a new message only applies within the critical business hours. The clock which the temporal requirement is measured

against stands still, so to speak, outside critical business hours as shown in the following examples where a response is required within one hour:

- If an EDI message is received at 15.45 on a working day, a response must be given by 08.45 the next working day.

- If an EDI message is received at 17.15 on a random day, a response must be given by 09.00 the next working day.

4.8 Electronic data interchange and web-based access

All master data, metered data and market-relevant information must be interchanged electronically with the DataHub by using EDI messages or the DataHub market portal (web-based).

In order to be able to communicate with the DataHub via EDI, market participants wanting to communicate with EDI must have an IT system which has completed a market participant test process set up by Energinet.dk and has subsequently been approved by Energinet.dk; see chapter 10.

If the market participant wants to start business processes, retrieve metered data etc. in the Data-Hub without the use of EDI, the market participant may do so by using the market portal. If it proves impossible to send interchanges electronically (EDI messages), the process can also be conducted by using the market portal.

The requirements relating to the market participant's handling of business processes in the Data-Hub, among other things regarding time limits, are the same regardless of the communication method used by the market participant.

4.9 Interchange format

The DataHub is tasked with processing the contents of the EDI messages interchanged. Data inter-change takes place in XML format via web services. The interchange format is used in a structured way to move data from a market participant to the DataHub and vice versa.

4.10 Market participant identification

According to the rule on market participant identification, one market participant has one market participant ID in the form of a GLN number (Global Location Number) or an ENTSO-E EIC number (Energy Identification Code). This identification must be used regardless of the number of roles assumed by a market participant. The rules on market participant identification are illustrated in the figure below.
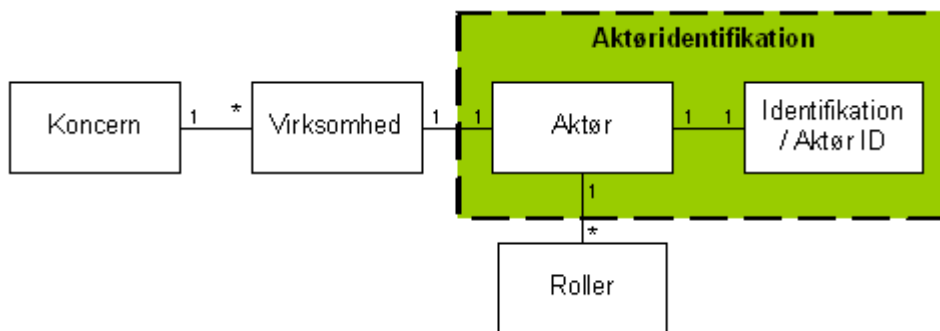
The figure uses central terms, which are defined below.
- **Group** – A general term used if a business undertaking comprises two or more companies.
- **Company** – A company has a range of legal obligations and a
separate CVR no. By virtue of its commercial status, the company is legally responsible for the market participant's roles.
- **Market participant** – A market participant is responsible for the interchange of EDI messages related to the role.
- **Role** – The roles a market participant can assume, eg balance supplier, grid operator, BRP, Meter data responsible etc.
- **Market participant ID** – The technical identification of a market participant in the form of a GLN number (Global Location Number) or an ENTSO-E EIC number (Energy Identification Code); see chapter 5.6.

5. EDI standard

Communication using EDI must apply the rules on syntax and structure described in this chapter. If the market participant fails to comply with these rules, the market participant will not be approved for communication with the DataHub.

5.1 XML syntax and structure

XML is the interchange format used for transmitting data between a market participant in the electricity market and the DataHub.

This chapter describes current XML syntax and structure provisions for the interchange of XML messages in the electricity market. The chapter focuses on selected syntax and structure rules particularly important to ensuring optimum data interchange with the DataHub. The chapter supplements the rules and provisions for the XML format specified by the W3C[4] organisation.

Messages and data model for the retail market are based on the industry standard from ebIX – in addition to which the UN/CEFACT methodology for naming and designing XML messages is used.

However, the Danish data model contains a number of extensions in relation to the ebIX data model.

The Danish data model is documented through the use of class diagrams applying UN/CEFACT entities, including ABIE[5], BBIE[6] and ASBIE[7]. The Danish data model is used to realise the DataHub's XML schemas.

The relationship between the UN/CEFACT data model, the ebIX data model and the Danish data model is illustrated in the figure below.
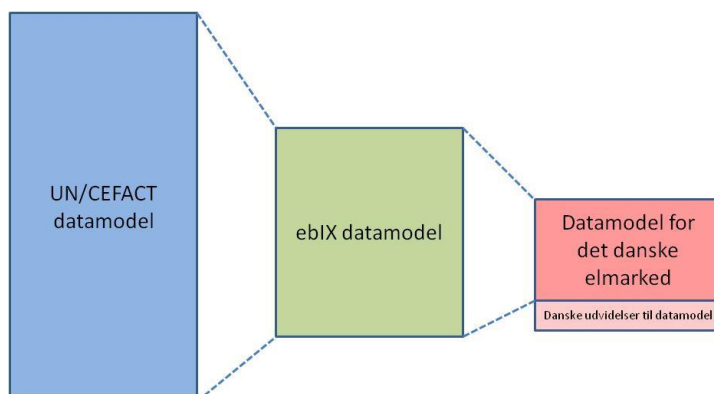

Figure: Relationship between data models

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[4] http://www.w3.org/standards/xml/

[5] Aggregate Business Information Entities

[6] Basic Business Information Entities

[7] Association Business Information Entities

UN/CEFACT is an international e-business standard comprising a number of technical specifications, including:

- Modelling Methodology (UMM)
- Core Component Technical Specification (CCTS)
- XML Naming and Design Rules (NDR)
- UML Profile for Core Components (UPCC).

Core Component Technical Specification comprises Core Components (CC) and Business Information Entities (BIE). Core Components are used as a reference model for data modelling messages for interchange of data between two or more parties.

5.1.1 General syntax rules
All messages in the electricity market are described by means of XML schemas (XSDs). An XML schema describes how XML messages are structured.

The naming and structuring of XML messages must comply with the naming and design rules described in the basic documentation.

In practice, a message is composed of several XML schemas that together define the message structure. The individual schemas are considered as independent blocks that are combined into a complete message.

5.1.2 Use of encoding and characters
All messages in the electricity market must be formatted into the UTF-8 character set (backwards compatible with ASCII encoding). UTF-8 is a 2-bytes-per-character encoding, which is a compressed version of Unicode. Encoding is specified at the beginning of the XML document as follows:

```
<?xml version="1.0" encoding="UTF-8"?>
```

W3C describes how reserved characters are to be used and specifies that the XML notation is case sensitive (does not apply to the actual contents of the element).

Leading or trailing 'space characters' (or other invisible 'white space' characters before the first or after the last visible character in a data set) are deleted before sending.

References

The following documentation forms the basis for the EDI communication with the DataHub.

The documents and information sources referred to may have been moved or changed. Consequently, the organisation responsible and version number have been included to facilitate any alternative searches if the reference has become obsolete.

Organisa-tion	Document/comments	Reference	Version
ENTSO-E	Central knowledge portal for the European transmission system operators (TSOs). Describes the upstream electricity market.	http://entsoe.eu/	
ENTSO-E	ENTSO-E Scheduling System ESS. **Used** for submitting notifications and schedules.	http://entsoe.eu	Version 3 R1
ebIX	CuS & EMD projects.	http://www.ebix.org/content.aspx?ContentId=990&SelectedMenu=3	2011.A
UN/CEFACT	UN/CEFACT naming and design rules for XML.	http://www.unece.org/cefact/xml/UNCEFACT+XML+NDR+V3p0.pdf	Version 3.0
W3C (World Wide Web Consortium)	Description of the XML standard.	http://www.w3.org/standards/xml/	

6. EDI communication

Web services must be used to interchange EDI messages.

Communication between a market participant and the DataHub is always initiated by the market participant; regardless of transaction type.

The DataHub serves as a 'queuing system' that saves messages for the market participant.

The market participant – identified via the market participant's GLN number or EIC number – is responsible for checking whether there are new messages in the DataHub which are to be processed by the market participant to ensure the market participant's ability to observe the current time limits and meet the applicable obligations imposed on the market participant. The market participant is responsible for emptying the queue.

Communication between market participants and the DataHub takes place by means of electronically specified protocols, depending on the EDI message. The protocols describe how an interchange is to be transmitted from sender to receiver and ensure that the interchanges are intact when they reach the intended receiver. In case of transmission errors, the communication protocols specify how the sender is to be notified (sender's system).

The following chapter describes the protocols applied.

6.1 Web services

Energinet.dk's web services are designed to provide the framework for the interchange of messages over the Internet in a secure and reliable manner.

The relevant web services are aimed at the market participants in the electricity market who must interchange data with the DataHub.

The following terms are used in relation to web services:

- Web service: Open standard for data interchange from application to application over the Internet. The service is typically designed to function with a specific interchange type.
- SOAP: A protocol for interchanging structured data against a web service. SOAP ensures the data interchange over the HTTP protocol.
- WSDL: A structured description of the web service comprising data types, details, interface, location and protocols, including information about how to call the web service in question.

6.2 Communication pattern

Communication between market participants and the DataHub can take place *synchronously* or *asynchronously*. Asynchronous communication is applied in connection with the performance of business processes (described in the BRSs), while synchronous communication is applied when market participants make ad hoc requests to the DataHub (requests for old messages or the like).

6.2.2 Asynchronous communication

Asynchronous communication involves a loose connection between the market participant and the DataHub. The market participant communicates with the DataHub via a queue system that contains messages for the market participant.
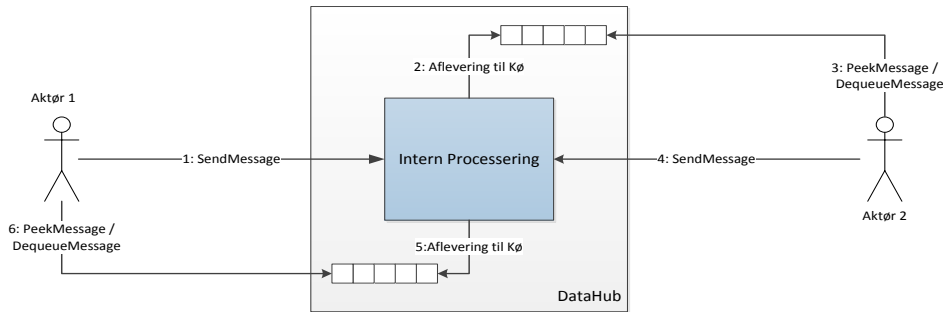

Figure 1 Asynchronous communication pattern in the DataHub

Figure 5 describes the calling process in an imagined business process in which data is interchanged between two market participants.

The process is initiated when Market Participant 1 sends a message to the DataHub (1: SendMessage). The DataHub concludes that Market Participant 2 must be notified, after which a message is generated and placed in the outgoing queue reserved for Market Participant 2 (2: Handover to queue). Market Participant 2 retrieves the message from the queue (3: PeekMessage/DequeueMessage) and processes it in accordance with the business process specified. Any response from Market Participant 2 is returned to the DataHub and processed in a similar manner (4: SendMessage, 5: Handover to queue, 6: PeekMessage/DequeueMessage).

All market participants have their own message queue and are responsible for retrieving and removing any messages from the queue. The DataHub guarantees that messages in the queue are in the correct order (PeekMessage always returns the oldest message, until this is 'removed' by calling DequeueMessage).

6.3 Service definitions

The following *asynchronous* methods are available via the web service:

Method	Description
MessageId SendMessage (XmlDocument message)	Used for sending business messages as defined in BRS. *Message*: The message to be sent. *Return value*: Message ID.
XmlDocument PeekMessage ()	*Return value*: The next message in the queue. If the queue is empty, Null is returned.
Void DequeueMessage(MessageID id)	Removes the oldest message in the queue with the given ID.

The following synchronous methods are available via the web service:

Method	Description
XmlDocument GetMessage(MessageId id)	Retrieves the message with the given message ID. *id*: ID of the wanted message. *Return value*: The wanted message. If no message exists with the given ID, Null is returned.
MessageId[] GetMessageIds (dateTime utcFrom, dateTime utcTo)	Retrieves IDs for a given time interval. *utcFrom, utcTo*: Definition of time interval. *Return value*: List of IDs of messages sent to the market participant during the given time interval.
XmlDocument QueryData(XmlDocument params)	Generic data requesting method. Reserved for future use.

The web interface supports Web Service Description Language (WSDL).

6.4 Data types

The web interface applies the following data types:

Data type	Description
MessageId	UUID as a 32-character string. The string may consist of the following 16 characters: "0123456789abcdef" Example: **550e8400e29b41d4a716446655440000**
BusinessProcess	String
MessageType	String, Enumeration {"XML"}
dateTime	Indication of the time. Example: 2002-12-10T17:00:00Z (at 17.00 on 10 December 2002)

6.5 Message structure

All messages communicated via the DataHub web interface are XML messages consisting of:

1. A MessageHeader containing metainformation used for controlling the underlying business process. The metainformation includes:
   - Identification of the individual message and its contents
   - Identification of the business process that is to process the message.
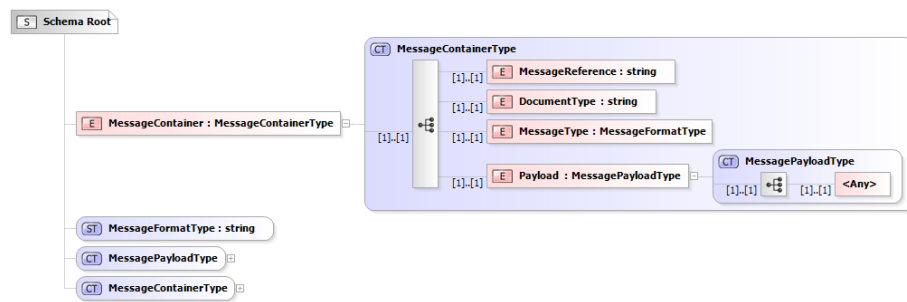2. One business message which is in XML format.

Figure 2 XML message structure

The actual business document is inserted instead of the <Any> element in figure 2.

6.6 Handling of market participants and queues

Each market participant has its own queue, identified by GLN no., for messages from the DataHub. Communication with the DataHub can be divided into incoming and outgoing communication.

Before a market participant can begin interchanging EDI messages, the market participant must specify via its master data information whether parts of the communication to and from the market participant are to be delegated to another market participant or Meter data responsible.

6.6.1 Delegation of communication for the DataHub

Generally, market participants cannot delegate the sending of communication to the DataHub, ie allow another market participant to send data to the DataHub on behalf of the market participant in question.

An exception applies to the sending of metered data. A grid operator can delegate the task of communicating metered data to the DataHub on behalf of the grid operator to Meter data responsibles.

The Meter data responsible can be entered in the register of market participant master data subject to the same conditions as market participants, regardless of the fact that Meter data responsibles are not actual market participants, but do play a role in the market. One GLN number is allocated to a Meter data responsible, and the Meter data responsible is therefore also assigned one queue in the DataHub. Meter data responsibles can only communicate with the DataHub if the right to send metered data has been delegated to them.

If a Meter data responsible sends metered data on behalf of several grid companies, all messages for the Meter data responsible will be placed in one single queue. If a market participant has several different systems for sending messages, it is the market participant's own responsibility to distribute these messages internally.

The grid operator must indicate if it wants to use a Meter data responsible when sending messages. If so, the market participant must provide the name and GLN number of the Meter data responsible(s) to be used per grid area. A grid operator may have several Meter data responsibles linked to a grid area. The delegation takes place per grid area, which means that a Meter data responsible may send readings for all metering points in the grid area in question.

After having sent a message, the sender (Meter data responsible) will receive a direct response from Web Service (confirmed/rejected). In addition to this response, the only message a Meter data responsible can receive is a rejection message for the RSM or a negative acknowledgement (RSM-009).

6.6.2 Communication from the DataHub

Market participants can partially delegate the receipt of communication from the DataHub, ie allow another market participant or Meter data responsible to receive data from the DataHub on behalf of the market participant in question. The delegation takes place at RSM level, but it is only possible to choose one recipient for selected RSM messages.

Delegation takes place by updating the market participant's information in the master data register with the name and GLN number of the recipient of the RSMs which the market participant does not want to receive. There can be only one recipient per RSM.

A description of the RSMs which can be delegated can be found in '*EDI transactions for the Danish electricity market (EDI guide – RSMs)*'.

6.7 Handling of business process

The MessageHeader includes a field (known as 'DocumentType') to identify all messages inter-changed via the DataHub in one business process.
This field identifies the logical business process related to the individual transactions as described in '*EDI transactions for the Danish electricity market (EDI guide – RSMs)*'.

6.8 Validation of messages

When a market participant sends a message to the DataHub by means of the SendMessage() method, the 'letterhead' structure, the MessageHeader, will be validated first.

Subsequently, the XML message structure is validated by means of the schema associated with the logical business process. When this validation is completed, a MessageID is returned to the system that sent the message.

Any semantic errors will be reported back to the market participant via a rejection message or the RSM-009 error acknowledgement.

6.9 Safety

The B2B Web Service is accessed via an encrypted connection (HTTPS) based on certificates. Connections without a valid certificate will be rejected on the transport layer.

6.10 Message sizes

Business documents can be sent together as long as they are of the same DocumentType (ie business process). The overall size of messages in XML format must not exceed 50 MiB[8].

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[8] Mebibyte corresponds to 1,048,576 bytes.

7. General rules on messages

7.1 Time, date and period formats

Terms and their use:

- UTC: Universal Time Coordinated. In practice identical to GMT (Greenwich Mean Time).
- Local time: Time at the location.

UTC + 0 (local time not used) is used for interchanging EDI messages (XML) in Denmark. The market participants' own IT systems must be able to handle the receipt of different offsets to UTC.

7.1.1 Standard time/daylight saving time

The same UTC offset is used in the EDI messages all year round.

UTC+0	Standard time in Denmark	Electricity	The day runs from 23.00 to 23.00 on the following day.
	Daylight saving time in Denmark	Electricity	The day runs from 22.00 to 22.00 on the following day.

Denmark switches to daylight saving time on the last Sunday of March and returns to standard time on the last Sunday of October. The day we switch to daylight saving time has 23 hours. The day we return to standard time has 25 hours.

7.1.2 Notation and periods

All date/time formats are written as follows:

Format	Syntax	Note	Example
XML	YYYY-MM-DDTHH:MMZ	Format explanation: '-', ':' and 'T' are separators, and 'Z' specifies no offset to UTC time (UTC-0).	2007-02-24T23:00Z

7.1.3 Time synchronisation

It is a requirement that IT systems generating and processing messages are within one minute +/- of local time.

7.2 Opening hours for market participants' EDI systems

Downtime in the market participants' systems does not have a delaying effect on current time limits. If downtime at the market participant results in time limits being exceeded, DataHub Support must be contacted immediately.

7.3 Time limits and time indications

The purpose of this chapter is to describe how to understand a time limit and how to meet it.

A time limit is defined in the market regulation in which the time limit is mentioned.
Time limits form part of a number of business processes and are either calculated as the number of working days relative to the expiry of the time limit or as an exact time (absolute time limit).

The following conditions are important for correctly calculating a given time limit:

- A process can be started on any day, but the time is counted within the five working days of the week as described in Regulation D1: 'Settlement metering', appendix 3.

- A time limit based on a number of days means that a given message must reach the recipient a number of working days (full days) before the time limit is reached in order to meet the requirement (relative time limit).
- A time limit based on an exact time, eg Thursday at 9.00, means that a given message must reach the recipient by Thursday at 8.59 in order to meet the requirement (absolute time limit).

Examples of the use of time limits

Ex. 1	**Determination of time limit based on an absolute time limit**

Data must be sent within a given time limit. In this example, the time limit is Thursday 11 March at 10.00 at the latest. Data must be received on Thursday 11 March at 9.59 to be on time.
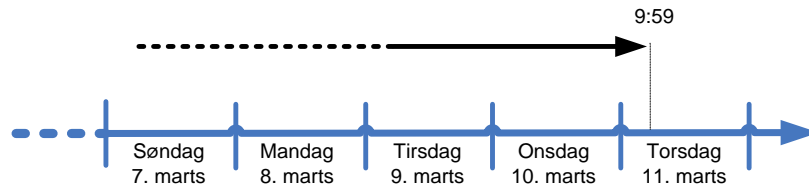
Figure 3: Determination of time limit based on an absolute time limit

Ex. 2	**Determination of time limit based on date indication**

A message must be sent no later than four working days before the effective date. In this example, the effective date is Friday 12 March. The message must be received by Sunday 7 March at 23.59 to meet the time limit.
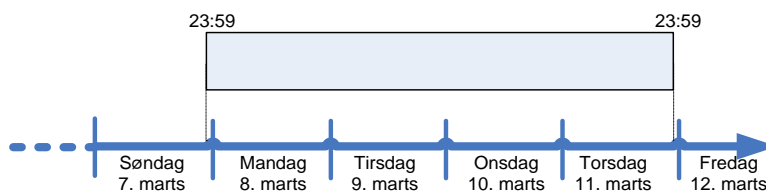
Figure 4: Determination of time limit based on date indication

Ex. 3	**Determination of time limit based on date indication (over a weekend)**

A message must be sent no later than four working days before the effective date. In this example, the effective date is Wednesday 10 March. The message must be received by Wednesday 3 March at 23.59 to meet the time limit since the weekend does not count as working days.
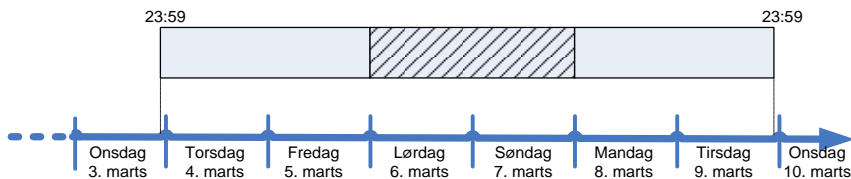
Figure 5: Determination of time limit based on date indication (over a weekend)

Ex. 4	**Determination of effective date back in time**

A move-in/move-out is reported five days back in time. Today's date is Friday 12 March, 10.15. The effective date for the move-in/move-out is Friday 5 March at 00.00.
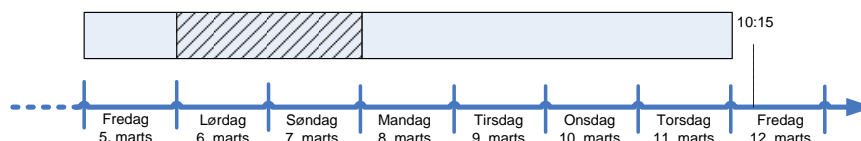
Figure 6: Determination of effective date back in time

7.4 Identification

This chapter describes the identification systems used in the electricity market to identify market participants, areas, metering points etc.

7.4.1 Global Location Number (GLN)

The GLN number is used to uniquely identify a market participant. The numbers are administered globally by GS1. In Denmark, GLN numbers are allocated by GS1 Denmark and are composed of 13 digits:

- Positions 1-3: The first three digits are 579 in Denmark's case.
- Positions 3-12: The following positions are allocated consecutively according to the Modulus 10 rules and are administered by GS1.
- Position 13: The last digit (K) is a check digit calculated on the basis of the preceding characters by means of an algorithm (Modulus 10). The check digit for the GLN number is an integral part of the location number.

Example: 5790000705245

The sender must make it clear to the recipient that a GLN number is used. This is done by sending code '9' as responsible code organisation in XML messages.

7.4.2 European Identification Code (EIC)

The European Identification Code, just like the GLN number, is used to uniquely identify market participants. EIC numbers are administered by a unit under the ENTSO-E organisation. Moreover, ENTSO-E members benefit from local administrative units that are authorised to issue EIC numbers.

Different structures have been established, depending on what the EIC number identifies. Basically, the number is made up of 16 characters, and the market participant identification code is structured as follows:
- Positions 1-2: The first two characters refer to the issuing entity allocated by ENTSO-E.
- Position 3: The third character is the letter 'X', which indicates that it is a market participant identification number.
- Positions 4-15: 12 characters in upper-case letters allocated by the issuing entity.
- Position 16: Check digit.

Example: 11XRWENET123452

The sender must make it clear to the recipient that the code used is an EIC code. This is done by sending code '305' as responsible code organisation in XML messages.

7.4.3 Identification of metering points

GSRN (Global Service Relation Number) is a uniquely defined number series allocated by GS1. The number is used as identification in EDI messages. All metering points must be identified by means of the GSRN number, which must be stable over time. It must not be changed after the establishment of the metering point.

The number is for identification purposes only and contains no classification. This means that no information can be derived from the number.

Each grid operator must acquire a number series uniquely identifying metering points in the grid operator's grid area(s) as described in Regulation D1: 'Settlement metering'.

7.4.3.1   Structure of the 18-digit GSRN no. for all metering points except for certain production metering points

Position	Example	Explanation
Pos 1-2:	57	GS1 Denmark.
Pos 3-7:	13131 (elec-tricity)	Five digits fixed for the entire Danish electricity market for identification of metering points.
Pos 8-10:	676	Number.
Pos 11-17:	XXXXXXX	Seven digits for consecutive numbering of the individual metering points allocated by the grid operator.
Pos 18:	X	Check digit.

Production metering points can be identified by the GSRN no. assigned to the production facility (plant or wind turbine) linked to the production metering point in the master data register for production facilities or by a GSRN no. from the grid operator's number series (must be provided to the master data register).
Where new production metering points are concerned, the grid operator must insert a GSRN no. from its own number series upon creation in the master data register.

7.4.3.2   Structure of the 18-digit GSRN no. for production metering points according to the master data register

Position	Example	Explanation
Pos 1-2:	57	GS1 Denmark.
Pos 3-7:	07150 07147	Five digits that are predetermined for all Danish production facilities – either 07150 or 07147. Assigned upon creation in the master data register.
Pos 8-17:	XXXXXXXXXX	Number uniquely identifying the individual production facility. Assigned upon creation in the master data register.
Pos 18:	X	Check digit.

7.4.4   Identification of grid areas
All grid areas have an ID composed of three digits (DE no.) to allow the identification of the area in relevant EDI messages.

7.4.5   Identification of price areas in the electricity market
Denmark is divided into two price areas to which reference can be made in EDI messages; see the table below.

Scope	Reference (EIC)
Western Denmark (Jutland/Funen)	10YDK-1--------W
Eastern Denmark (Zealand and Bornholm)	10YDK-2--------M

7.5 Use of signs

The following sign convention must be used for communicating metered values:

Description	Basic (sign convention rules)	Sums (sign convention rules)
Production	+	+
Consumption	+	+[9]
Interchanges	+	+/-

The use of signs is described in further detail in Regulation D1: 'Settlement metering'.

7.6 Rounding rules, digits and decimals

Rounding rules

The usual rounding rules are used. Values below 5 are rounded down, while values of 5 and above are rounded up. Any residual value resulting from rounding is ignored.

7.6.1 Separators and digits

- Full stop (.) is used as a decimal separator. If a decimal separator is included in a value, the separator must be both preceded and followed by at least one digit. For instance, it is not allowed to send (.5) – instead it should be (0.5).
- Decimal separators may only be used as specified in the relevant regulations.
- Thousands separator may not be used.
- A numeric value may not contain special characters.

7.6.2 Characters

- If a value has leading zeros (0), these will not be sent.
- Leading and trailing blanks will not be sent. If, for example, a field has 20 characters available, but only five characters are used, only the five characters will be transmitted.

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[9] Negative values may occur for total grid area consumption and residual consumption in the preliminary aggregations on the first-fourth weekdays as well as for grid loss transmitted in connection with correction settlement.

8. Error handling and acknowledgements

Data interchange uses acknowledgements between the DataHub and the market participant to obtain knowledge of whether a message has reached its destination correctly and to ensure that the content can be used for further processing. The sender will thus always know whether a message has reached its destination and the result of the subsequent processing.

The following figure describes the connection between terms used in the principles of acknowledgement.
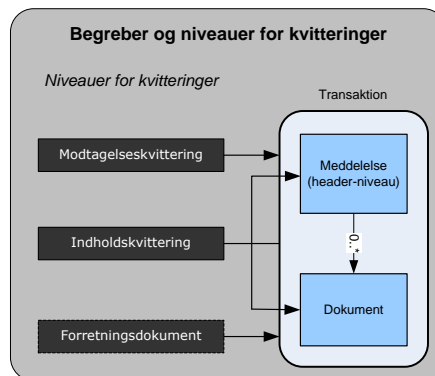

Figure 2: Terms and acknowledgement levels

The figure uses three terms to describe the various transaction abstraction layers:

1) The term 'transaction' covers an interchange protocol containing the message and any number of documents.
2) The 'message' describes general information (header information) applying to all underlying documents, eg sender and receiver.
3) The document is the repeated message information, eg one time series out of all the message time series.

The acknowledgement levels mentioned in figure 2 are specified below.

Technical acknowledgement:

Description	Message type
The web service received always performs a syntax and structure validation upon receipt. This is described in appendix report 4 to Regulation F1: 'EDI communication with the DataHub in the electricity market'. Immediately after receipt of the message, the web service returns a positive or negative response during the same web service session. The technical acknowledgement is not a document but a response. Alternatively, the web service call is interrupted with an exception, and no error value is therefore returned.	Response in the receipt situation

Functional acknowledgement:

Description	Message type
The functional acknowledgement is used to acknowledge the contents at document level, eg validation of a metering point ID. The functional acknowledgement is only sent if a message fails in the contents validation. Only negative functional acknowledgements are sent. As a rule, a functional acknowledgement must be sent within one hour of receipt of any message.	Acknowledgement

Business document:

Description	Message type
A business document is a response to a query message and has a business document layout. A business document may, for example, be an 'Approve start of supply' or a 'Reject start of supply' message. Message replies will not be addressed any further in this regulation.	This is specified in 'EDI transactions for the Danish electricity market'.

8.1   Generic acknowledgement flow

This chapter describes the message flow and the corresponding acknowledgement flow to and from the DataHub.

8.1.1   Message sent to the DataHub

Figure 3 below describes the flow for acknowledgement exchange in connection with the inter-change of XML messages between a market participant and the DataHub.

The flow ends when the DataHub can process the message without generating errors or when the market participant processes the error message received.

The message received may be one of several messages included in an overall business process (BRS). The acknowledgement process applies to each individual message.
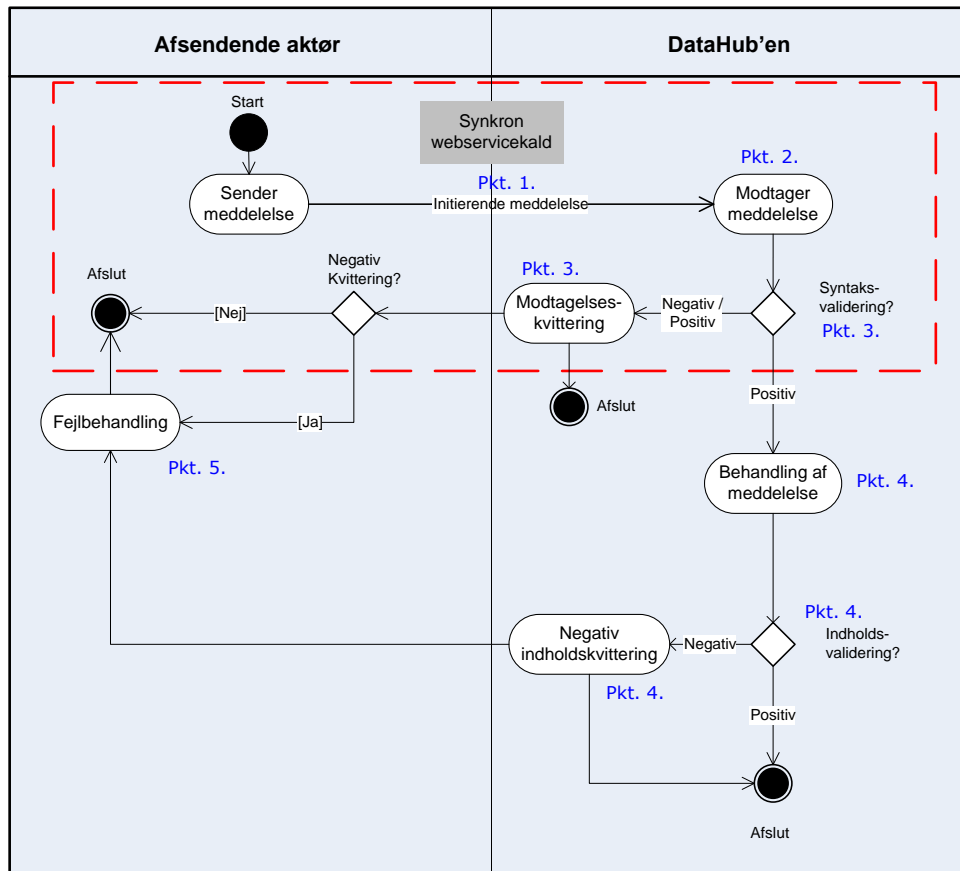
Figure 3: Generic acknowledgement flow – the market participant sends a message to the DataHub

#	Name	Description
1	Initiating message	All acknowledgement processes begin with an initiating message sent by a market participant. The market participant opens a DataHub web service session which is not closed until the DataHub has sent a technical acknowledgement (positive or negative). The extent of the web service session is indicated by a red, broken-line box.
2	Is the sender known?	The DataHub must be able to identify the sender (market participant) and validate the sender against approved senders registered in the DataHub. The sender validation process has the following two possible outcomes: - <u>Unknown sender</u>: The sender (market participant) is invalid or unknown. In such cases, the web service ends with a negative technical acknowledgement (see step 3 – failed validation). - <u>Known sender</u>: The sender (market participant) is valid. In such cases, message processing continues.
3	Schema check	The DataHub validates the message received for syntax and structure errors. The syntax validation process has the following two possible outcomes:

#	Name	Description
		- Validation failed. The DataHub sends a positive technical acknowl-edgement which makes a unique reference to the initiating message, ensuring that the market participant can easily identify the negatively validated message. - Validation OK. The DataHub sends a positive technical acknowl-edgement which makes a unique reference to the initiating message, ensuring that the market participant can easily identify the positively validated message. Regardless of the outcome of the validation, the DataHub always sends one technical acknowledgement in the same web service session as opened by the sender. When the syntax validation has been sent, the web service session is closed, and the remaining acknowledgement flow is asynchronous.
4	Message pro-cessing/functional acknowledgement	Once the initiating message has been validated OK, the DataHub pro-cesses the contents of the message and performs contents validation against the message received. The contents validation procedure has the following two possible outcomes: - Validation failed. The DataHub sends a negative acknowledgement to the market participant containing a reference to the initiating message and the specific document generating errors. The func-tional acknowledgement specifies the error and its location in the message/documents. - Validation OK. The DataHub registers the message received, and the acknowledgement flow ends. If the message content is validated OK, the acknowledgement process ends, and the message contents are processed further; see 'Business processes for the Danish elec-tricity market'. The DataHub only sends negative functional acknowledgements, and only one functional acknowledgement is sent for each message.
5	Error processing	The market participants involved in a data interchange process with the DataHub are always under an obligation to respond to negative tech-nical and functional acknowledgements. After receipt of a negative acknowledgement, the market participants must be able to identify the message generating the error and initiate error correction – possibly in cooperation with DataHub Support.

Table 1: Description of the acknowledgement flow from the DataHub

8.1.3 Message sent from the DataHub

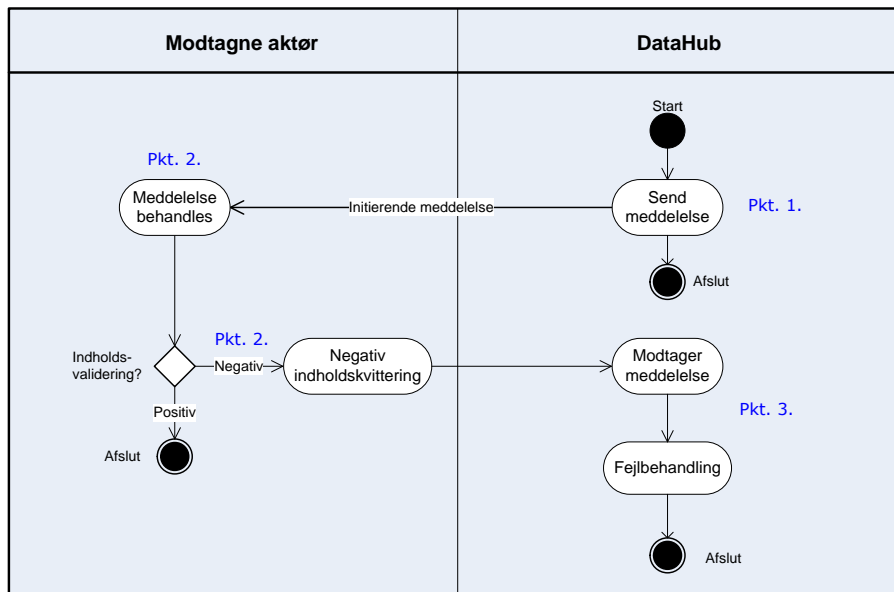Below, the message and acknowledgement flow from the DataHub is shown in figure 4.

Figure 4: Generic acknowledgement flow – the DataHub sends a message to the market participant

#	Name	Description
1	Initiating message	The DataHub sends a message to the market participant (in practice the DataHub sends the message to the market participant's message queue on the DataHub, which the market participant is responsible for emptying at regular intervals). In the event that the receipt of messages from the DataHub fails in terms of syntax, DataHub Support must be contacted. It is not possible for the market participant to respond with a technical acknowledgement.
2	Message processing?	Once the initiating message has been received, the market participant processes the contents of the message and performs contents validation against the message received. The contents validation procedure has the following two possible outcomes: - <u>Validation failed</u>. The market participant receives the message and contacts DataHub Support. The market participant may send a negative functional acknowledgement to the DataHub containing a reference to the initiating message and the specific document generating errors. The functional acknowledgement specifies the error and its location in the message/documents. The DataHub cannot be expected to act systematically on the basis of these messages. - <u>Validation OK</u>. The market participant registers the message received as positively validated, and the acknowledgement flow ends.
3	Error processing	The DataHub places (negative) functional acknowledgements in an error queue, but takes no action in relation to the queue. The market participant must contact DataHub Support with a view to having the case processed.

Table 2: Description of the acknowledgement flow to the DataHub

9. Requirements for market participants' IT systems

Energinet.dk has set up requirements for the market participants' own IT systems. These requirements appear from the following chapter as requirements for functionality and requirements for tests to be passed, respectively.

9.1 Functionality requirements

IT systems (communication, applications etc.) directly or indirectly involved in data interchange with the DataHub must meet the following requirements:

- Systems designed to communicate with market participants not covered by this regulation must be able to handle formats and codes (including time zones etc.) other than those described in chapter 7.1.
- The systems must provide logging of outgoing and incoming messages to facilitate documentation of all the interchanges that have taken place. The logging must be of such a quality that it is able to contribute to troubleshooting and error correction.
- Earlier messages must be retrievable in readable form (ie non-encrypted) as and when needed through an easily accessible user interface.
- The systems must store the individual messages or copies of messages in a safe manner in the format in which the messages were originally sent for three years.
- The systems must be able to pass a system and market participant test; see chapter 10.
- Market participants must be able to test their systems without this affecting production data.

10. Market participant test

Energinet.dk establishes test systems to ensure that data can be interchanged with the DataHub concerning business processes and to prepare future market participants for handling business processes and data interchange with the DataHub.

The market participant's IT systems must be approved in a system test and a subsequent market participant test in order to be authorised to interchange data with the DataHub. If the market participant only wants to use a subset of the EDI communication for data interchange with the Data-Hub, the market participant undertakes to use only the functionalities which have been tested and approved in the completed market participant test. If significant changes are made to a market participant's IT system forming the basis of the data interchange with the DataHub or the handling of business processes, the market participant must obtain a new authorisation in the market participant test.

The test system tests the market participant's data interchange based on a number of test cases specifically aimed at the market participant's role in the retail market. Tests are also performed against selected business processes to ensure that the processes are handled correctly.

The system test (see figure 7) is used to test IT systems developed individually by market participants or by IT suppliers delivering systems to several of the market participants in the electricity market. The system test primarily tests the data interchange.

The market participant test is aimed at the market participants and is more extensive, as the test, in addition to testing the message format, also tests the business processes which the market participant is to use in the market. In addition to the correct processes, the test systems also run through a number of intentionally faulty test cases to ensure that the IT system responds correctly to errors in the data communication and/or in the EDI messages.

Instructions on how to use the system test and market participant test can be found on Energinet.dk's website.
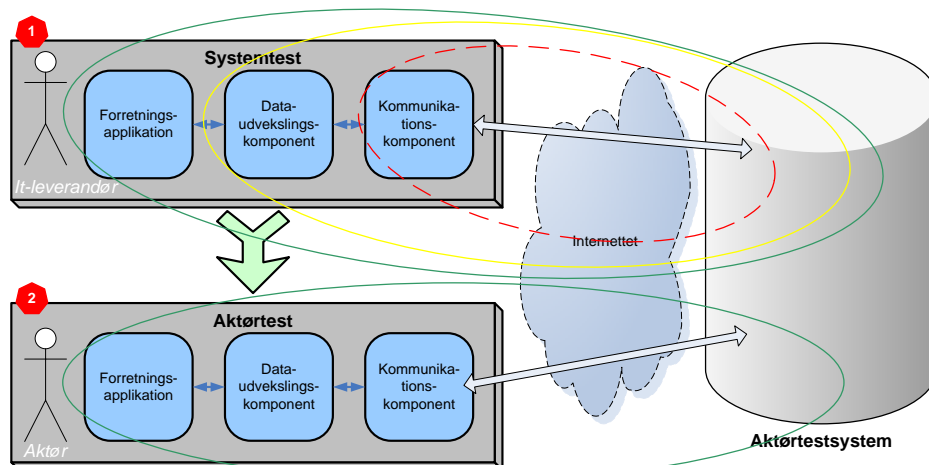

Figure 7: Test types – the figure illustrates the two test types which the market participants' test system must be able to handle.

11. Overview of obligations and sanctions

The regulation sets out a number of obligations which the market participants comprised by this market regulation must meet; see chapter 2.1.

Two tables have been inserted below, which specify the provisions that are subject to sanctions and to which market participant the rule applies.

Overview 1: Sanctions relating to market participant obligations which follow from Section 31(2) or Section 22(3) of the Danish Electricity Supply Act

Sanctions relating to obligations which follow from Section 31(2) of the Danish Electricity Supply Act – applicable to market participants with the exception of grid companies

If market participants grossly or repeatedly violate their obligations that follow from Section 31(2) of the Danish Electricity Supply Act, Energinet.dk may issue injunctions in accordance with Section 31(3) of the Danish Electricity Supply Act. In the event of failure to comply with an injunction, Energinet.dk may decide to fully or partially exclude market participants from using Energinet.dk's services until the market participants comply with the injunction. The sanctions imposed by Energinet.dk as a result of the market participants' violation of their obligations under the regulation are thus based on Energinet.dk's statutory obligation to ensure the functioning of the market, including the use of Energinet.dk's services.

The assessment of whether a company grossly or repeatedly violates its obligations must in practice be based on a procedural approach:

- If the TSO discovers that obligations have been violated, the TSO sends a message to the relevant company concerning the non-fulfilment of the obligation(s). The company will also be requested to rectify the situation within a time limit of eight working days.

- If the time limit of eight working days is not met, a new reminder is sent by registered mail specifying an ultimate time limit of eight working days for remedying the violation(s). The reminder will also state that failure to meet the time limit will lead to a gross violation of the company's obligations and to the company being excluded from using Energinet.dk's services.

Decisions made under Section 31(3) of the Danish Electricity Supply Act will thus be based on the above reminder procedures and an objective observation of non-compliance with the time limits set.

Sanctions relating to obligations which follow from Section 31(2) of the Danish Electricity Supply Act – applicable to grid companies

If obligations which follow from Section 31(2) of the Danish Electricity Supply Act are violated and if these obligations concern the company's licensed activities, Energinet.dk must inform the Danish Minister for Energy, Utilities and Climate thereof in accordance with Section 31(3), second and third sentence, of the Danish Electricity Supply Act.

Sanctions relating to obligations which follow from Section 22(3) of the Danish Electricity Supply Act – applicable to grid companies

If obligations under Section 22(3) of the Danish Electricity Supply Act concerning electricity metering are violated, this may result in an injunction being issued as stated in Section 85 c(1) of the Danish Electricity Supply Act and possibly in daily or weekly default fines being imposed by the Danish Energy Regulatory Authority in accordance with Section 86(1) of the Danish Electricity Sup-

ply Act. If Energinet.dk becomes aware/is made aware that obligations under Section 22(3) of the Danish Electricity Supply Act have been violated, the violation will be dealt with according to the following formal procedure:

- If the TSO discovers that obligations have been violated, the TSO sends a message to the relevant company concerning the non-fulfilment of the obligation(s). Moreover, the violation will be reported to the Danish Energy Regulatory Authority for further investigation.

OVERVIEW 2: Sanctions relating to other market participant obligations with respect to use of the market regulations

If Energinet.dk becomes aware/is made aware of other violations of market participant obligations with respect to use of the market regulations, such violations will be reported to the Danish Energy Regulatory Authority or the Danish Energy Agency, depending on where the competence lies.
In these cases, the violations do not impact Energinet.dk's duty to ensure the functioning of the market, including the use of Energinet.dk's services. It follows that Energinet.dk is not entitled to sanction the violations, and Energinet.dk will therefore register and report the violations to the Danish Energy Agency/Danish Energy Regulatory Authority. It will thus be up to the Danish Energy Agency/Danish Energy Regulatory Authority to determine if and what further action is required.

Grid operator is abbreviated GC, balance responsible party BRP and balance supplier ES.

OVERVIEW 1: Sanctions relating to market participant obligations which follow from Section 31(2) or Section 22(3) of the Danish Electricity Supply Act

Chapter	Sanctioned rules	At whom is the rule aimed?	Sanctioning provision
4.1	All market participants in the electricity market must interchange data directly with the DataHub, and no market participant is allowed to interchange data directly with other market participants in terms of messages included in the market regulations for the Danish electricity market (unless otherwise specified).	ES GC	Section 31(3), see Section 31(2), of the Danish Electricity Supply Act
6	The market participant – identified via the market participant's GLN number or EIC number – is responsible for checking whether there are new messages in the DataHub which are to be processed by the market participant to ensure the market participant's ability to observe the current time limits and meet the applicable obligations imposed on the market participant. The market participant is responsible for emptying the queue.	ES GC BRP	Section 31(3), see Section 31(2), of the Danish Electricity Supply Act
7.1	The market participants' own IT systems must be able to handle the receipt of different offsets to UTC.	ES GC BRP	Section 31(3), see Section 31(2), of the Danish Electricity Supply Act
7.1.3	It is a requirement that IT systems generating and processing messages are within one minute +/- of local time.	ES GC BRP	Section 31(3), see Section 31(2), of the Danish Electricity Supply Act
7.2	Downtime in the market participants' systems does not have a delaying effect on current time limits. If downtime at the market participant results in time limits being exceeded, DataHub Support must be contacted immediately.	ES GC BRP	Section 31(3), see Section 31(2), of the Danish Electricity Supply Act
10.1	**Functionality requirements** IT systems (communication, applications etc.) directly or indirectly involved in data interchange with the DataHub must meet the following requirements: - Systems designed to communicate with market participants not covered by this regulation must	ES GC BRP	Section 31(3), see Section 31(2), of the Danish Electricity Supply Act

	be able to handle formats and codes (including time zones etc.) other than those described in chapter 7.1. - The systems must provide logging of outgoing and incoming messages to facilitate documentation of all the interchanges that have taken place. The logging must be of such a quality that it is able to contribute to troubleshooting and error correction. - Earlier messages must be retrievable in readable form (ie non-encrypted) as and when needed through an easily accessible user interface. - The systems must store the individual messages or copies of messages in a safe manner in the format in which the messages were originally sent for three years. - The systems must be able to pass a system and market participant test; see chapter 10. - Market participants must be able to test their systems without this affecting production data.		
11	The market participant's IT systems must be approved in a system test and a subsequent market participant test in order to be authorised to interchange data with the DataHub. If the market participant only wants to use a subset of the EDI communication for data interchange with the Data-Hub, the market participant undertakes to use only the functionalities which have been tested and approved in the completed market participant test. If significant changes are made to a market participant's IT system forming the basis of the data interchange with the DataHub or the handling of business processes, the market participant must obtain a new authorisation in the market participant test.	ES GC BRP	Section 31(3), see Section 31(2), of the Danish Electricity Supply Act

OVERVIEW 2: Sanctions relating to other market participant obligations with respect to use of the market regulation
No obligations on overview 2.