Regulation F: EDI communication

BT document:

Business transactions for submitting notifications and schedules

Appendix for joint business processes between balance responsible parties and Energinet.dk

November 2011

Rev. 3

In case of any discrepancy between the Danish text and the English translation, the Danish text shall prevail

notat

Table of contents

1 Introduction

This document describes the set of business transactions included in the document named "Handling of notifications and schedules in the Danish electricity market".

The document specifies the handling of the business transactions for the following business processes:

- Notification (BS-101)
- Operational schedule (BS-102)
- Regulating power bid and order (BS-103)
- 4-week forecast (BS-104)
- Daily forecast (BS-105)

1.1 Purpose and target group

The purpose of the document is to clarify and describe business transactions as well as the content of data for the processes listed above. The target group includes balance responsible parties (BRPs) required to submit notifications and schedules to Energinet.dk and their system suppliers.

1.2 Business transactions

In this document, a business transaction complies with the rules specified in *Regulation F, EDI communication*, and relevant appendices. A business transaction is independent of other business transactions and can be included, together with other transactions, in one or more business processes.

A business transaction describes the process of exchanging messages between the IT systems of two players. It also specifies part of the internal handling processes within a player's IT system; an activity diagram is used for this purpose.

The process of exchanging messages between IT systems is illustrated in an activity diagram where the name of the message as well as the players included are stated. (the Danish role model is used).

The receiver must validate the message according to a validation table included in the business transaction and subsequently send a reply.

Each individual message contains a list of attributes shown in the form of a class diagram, and a dependency matrix is used in some cases. A dependency matrix is used if it is possible to send a message with different attributes depending on the purpose in question.

1.3 XML Schema Definitions (XSD)

All XML Schema Definitions relevant for messages affected by business transactions described in this document can be found at the following address: http://edi.energinet.dk/schemas

Links will be set up at Energinet.dk's website on the pages for BRPs. Links will also be set up from the self-service portal.

1.3.1 Versioning for XML schema

XML schemas developed for communication between Energinet.dk and its external partners use a target namespace which is designed in the following way:

"**http://www.energinet.dk/schemas/***<subnamespace>/<document>***/v***<version>*

The example below shows how the namespace can appear for the XML schema concerning BRPs' exchange of notifications:

http://www.energinet.dk/schemas/BalRespXML/MarketScheduleDocument/v2

The XML schemas are versioned using the file name. It is a construction of the name of the XML schema's root element combined with the version number. The combination of the two parts is separated by a - (hyphen) as shown below:

*<rodelementnavn>***-***<version>***.xsd**"

The example below shows the naming of the first version of an XML schema where the root element is named "MarketScheduleDocument":

MarketScheduleDocument-1.xsd

In addition to the version number, the "version" attribute in the schema element must also reflect the release number separated by a full stop. The following example applies to version 2, release 4:

version="2.4"

A version number change is due to structural changes to the schema. Structural changes may include the addition or removal of elements, name changes of elements or attributes, or changes to the structure of the elements. A change of the release number will be due to minor changes. Minor changes may include the addition of optional elements, changes to rules of attribute content (provided that these changes do not have a limiting effect) and the like. In other words, no elements are removed from the structure.

It must thus be possible to use several different releases of an XML schema version without them conflicting with each other (ie they must be reverse compatible). However, a previous version of an XML schema will conflict with a more recent version. Energinet.dk ensures continuous processing of the most recent released version as well as its predecessor. There will thus always be two different versions available with several releases of each version.

1.3.2 Access to web services

Energinet.dk's web services are accessed at the address http://edi.energinet.dk/BRService.asmx via the Internet or a special IP address via the MPLS network. Players solely submitting notifications can freely choose whether to access the web service via MPLS or the Internet.

The web service is accessed via a secure connection (https) and requires authenticity in the form of the player's login to the self-service portal.

All web service methods use the login to determine which player sends/receives messages.

The following methods are accessible via the web service:

XmlDocument GetAcknowledgementByDocumentIdentification(
string senderIdentification, string documentIdentification,
int documentVersion)
Retrieves acknowledgement (AcknowledgementDocument) for a previously submitted message. The arguments are as follows:
- senderIdentification - GLN for the sender of the message for which an acknowledgement is retrieved.
- documentIdentification - DocumentIdentification for the message for which an acknowledgement is retrieved.
- documentVersion - DocumentVersion for the message for which an acknowledgement is retrieved.

If there is no acknowledgement, zero is returned.

int[] GetMessageList(datetime utcFrom, datetime utcTo)
Retrieves list of message IDs sent to the player within the given interval.

int[] GetMessageListByType(datetime utcFrom, datetime utcTo, string messageType)
Retrieves list of message IDs of the given type sent to the player within the given interval. The messageType attribute indicates the root node name of the message type required, eg "Bid".

int[] GetNewMessages()
Retrieves list of all message IDs as yet unretrieved.

int[] GetNewMessagesByType(string messageType)
Retrieves all as yet unretrieved messages of the given type.

XmlDocument GetMessage(int id)
Retrieves the message with the specific ID.

int SendMessage(XmlDocument message)
Submits message, operational schedule, notification, bid, daily forecast and 4-week forecast.
Returns code 0 if the message has been received.

int SendMessageCompressed(string message)
Submits message, operational schedule, notification, bid, daily forecast and 4-week forecast compressed via GZip (http://www.gzip.org).
Returns code 0 if the message has been received.

1.4 References

The document refers to the following documents:

- *BS document 'Handling of notifications and schedules in the Danish electricity market'*
- *Regulation C3 'Handling of notifications and schedules – daily procedures'*
- *Regulation F 'EDI communication'*
- *ETSO GENERAL Code List For Data Interchange*
- *XML schema definitions*

2 BT-101: Submission of energy notifications

The BT-101 transaction is used by the BRPs to submit an XML message which contains all energy notifications for the roles they assume in relation to a transmission system operator (TSO). The collective set of energy notifications from a BRP is called a notification.

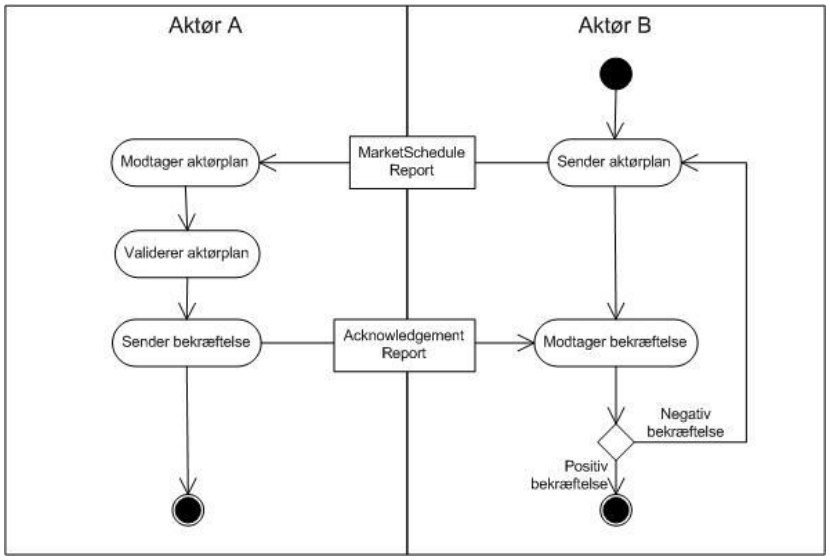

Figure 1 - Activity diagram for BT-101. Submission of energy notifications

Translation of figure text:
Aktør A = Player A
Modtager aktørplan = Receives notification
Validerer aktørplan = Validates notification
Sender bekræftelse = Sends acknowledgement

Aktør B = Player B
Sender aktørplan = Submits notification
Modtager bekræftelse = Receives acknowledgement
Negativ bekræftelse = Negative acknowledgement
Positiv bekræftelse = Positive acknowledgement

The roles that a player can assume are trade, consumption or production. Only one message per player must be submitted, comprising the full responsibility for a price area.

This means that a player must submit separate notifications/schedules for both DK1 and DK2 price areas if the player is active in both areas.

In addition, this message is also used for confirmation reports from the TSO to BRPs.

2.1 Transaction initiation

The transaction is initiated by an XML message (MarketScheduleDocument) with the ProcessType "DK-TIS-SCH" (Market scheduling), which contains notifications/schedules for trade, consumption and production.

The message is used both for submitting notifications/schedules on the day before the day of operation (day ahead notifications) and notifications during the day of operation (intraday notifications) as well as confirmation reports.

2.1.1 First data flow

The player will submit its energy notifications in accordance with the class diagram (see Figure 2) and the dependency matrix, or the TSO will forward confirmation reports.

On receipt, the message is validated according to the rules specified in Regulation F. The full message is subsequently validated in accordance with the rules outlined below.

2.1.2 Valid data for submission of energy notifications

MessageHeader

- *DocumentIdentification* must together with *DocumentVersion* be unique
- *SenderIdentification* must contain the existing GLN/EIC code
- *ReceiverIdentification* must contain the existing GLN/EIC code
- *DocumentDateTime* must be in the correct format (YYYY-MM-DDThh:mm:ssZ)
- *ScheduleTimeInterval* must be 24 hours
- *Domain* must contain one of the below-mentioned area types for Denmark

MarketSchedueleTimeSeries

- *TimeSeriesIdentification* must be unique in the message
- *BusinessType* must be a valid code
- Party and Area must filled in according to the dependency matrix
- If filled in: *InArea* must contain the EIC code
- If filled in: *OutArea* must contain the EIC code
- *InParty* must contain the existing GLN/EIC code
- If filled in, *OutParty* must contain the existing GLN/EIC code
- *TimeInterval* must be 24 hours
- *Resolution* must be 1 hour (PT1H)
- *Position* must contain 24 values (however, 23 and 25 when changing to standard/daylight saving time, respectively)
- *Quantity* must be a value to max. one decimal place
- If filled in: MeteringPointIdentification must contain GSRN for unit.

The following area type identifications are used:

- 10YDK-1--------W (Western Denmark)
- 10YDK-2--------M (Eastern Denmark)
- 10YDE-EON------1 (Germany, TenneT TSO control area)
- 10YDE-VE-------2 (Germany, 50 HzT control area)

2.1.3 Second data flow: Acknowledgement document

If the message can be validated in relation to schemas, and the content meets all validations in the above validation list, the overall notification is approved by means of an acknowledgement with the code A01.

In case of verification errors in relation to the schema or the content, the message must be rejected. The acknowledgement will in such case contain an error code and an explanatory text.

The acknowledgement will always contain a reference to the original message and must be processed in accordance with the rules specified in Regulation F.

2.2 Class diagram

In addition to the *MessageHeader*, a notification includes the *MarketScheduleTimeSeries* class, which is a time series covering a given period of time.

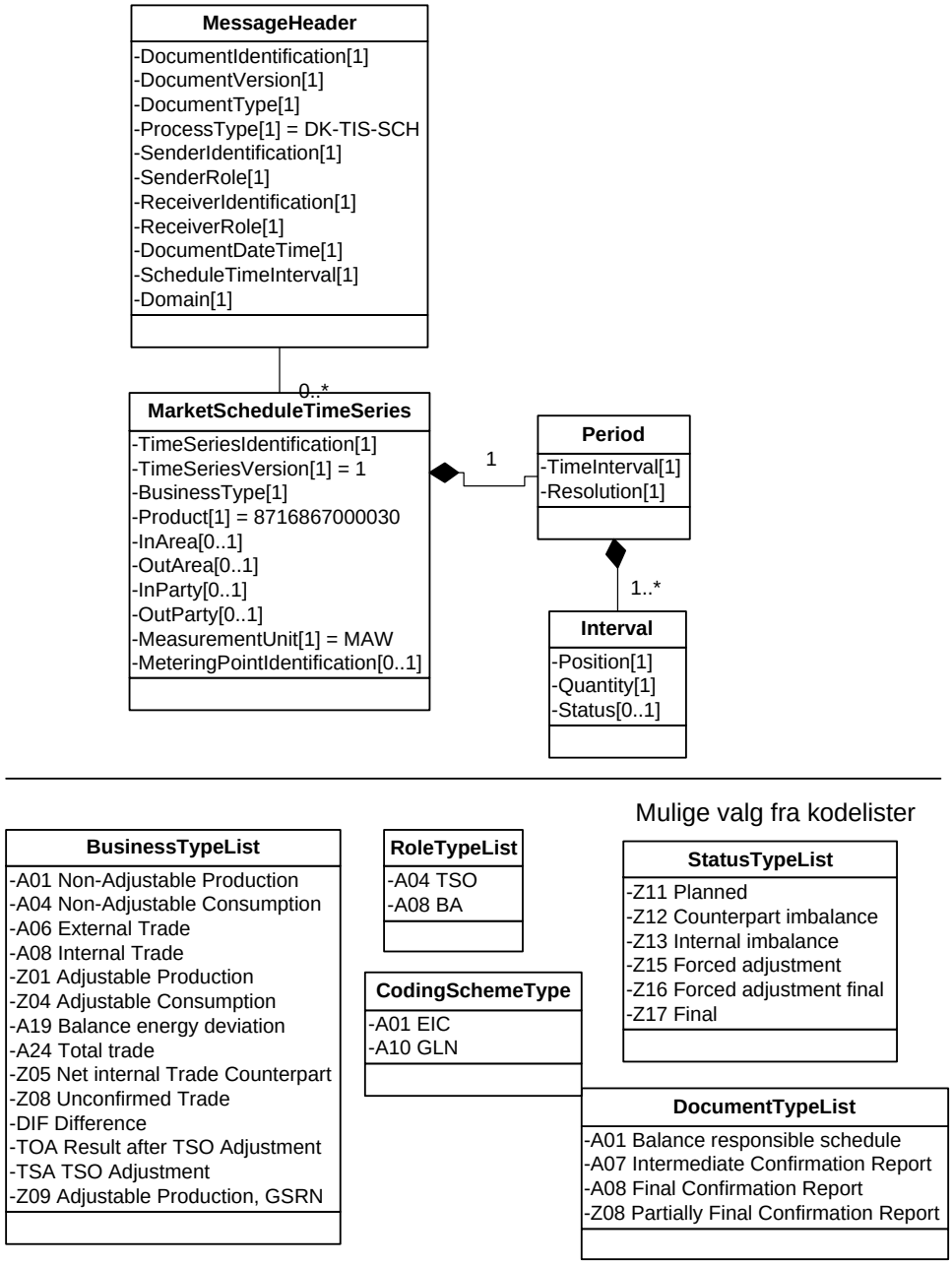

Figure 2 - Class diagram for MarketScheduleDocument (notification)

2.3 Dependency matrix

The following dependency matrix defines the elements that are mandatory, optional or not used in relation to the different business types. If the cells are merged, and only one value is shown, only this value applies to all business types.

Dependency matrix for BT-101		Time series											
		Adj. production	Non-adj. production	Adj. consumption	Non-adj. consumption	Internal trade	External trade	Total trade	TSO adjustment	Balance deviation	Internal trade, counterparty	Difference	Adj. notification/schedule
Use	Notification	O	O	O	O	O	O	B	B	B	B	B	B
	Preliminary confirmation report	O	O	O	O	O	O	M	M	M	O	O	O
	Partially final confirmation report	O	O	O	O	O	O	M	M	M	O	O	O
	Final confirmation report	O	O	O	O	O	O	M	M	M	B	B	B
Element names	**MarketScheduleTimeSeries**												
	TimeSeriesIdentification	M	M	M	M	M	M	M	M	M	M	M	M
	TimeSeriesVersion	M	M	M	M	M	M	M	M	M	M	M	M
	BusinessType	Z01	A01	Z04	A04	A08	A06	A24	TSA	A19	Z05	DIF	TOA
	Product	8716867000030											
	InArea	M	M	B	B	M	M	M	M	M	M	M	M
	OutArea	B	B	M	M	M	M	B	B	B	M	M	M
	InParty	M	M	B	B	M	M	M	M	M	M	M	M
	OutParty	B	B	M	M	M	M	B	B	B	M	M	M
	MeteringPointIdentification	O	B	B	B	B	B	B	B	B	B	B	B
	MeasurementUnit	M	M	M	M	M	M	M	M	M	M	M	M
	Period												
	TimeInterval	M	M	M	M	M	M	M	M	M	M	M	M
	Resolution	PT1H											
	Interval												
	Position	M	M	M	M	M	M	M	M	M	M	M	M
	Quantity	M	M	M	M	M	M	M	M	M	M	M	M
	Status	B	B	B	B	B	B	M	M	M	M	M	M

M – mandatory O – optional B – not used

2.4 Unique identification

BT ID	**DK-BT-101**
BT name	Submission of energy notifications
BT version	1
BT combined ID	DK-BT-101-001
BPI	DK-TIS-SCH
Edi Documents:	
Document ID	XML
Document name	MarketScheduleDocument-13.xsd
Document IG version	13.9
Document ID	XML
Document name	AcknowledgementDocument-13.xsd
Document IG version	13.7

2.5 Data definitions for MarketScheduleTimeSeries

TimeSeriesIdentification	
Description: Unique identification of the sender of the time series referred to	
Code	
Classification	Mandatory
Size	an..35
Type	ecc:IdentificationType
Example	<SendersTimeSeriesIdentification v="987654321"/>
Comment	

TimeSeriesVersion	
Description: The version of the time series being submitted	
Code	
Classification	Mandatory
Size	n..3
Type	ecc:VersionType
Example	<TimeSeriesVersion v="1"/>
Comment	Is always set to 1

BusinessType	
Description: The type of time series included. This could be a time series for consumption or non-adjustable production	
Code	See Business type code list
Classification	Mandatory
Size	an..3
Type	head:BusinessType
Example	<BusinessType v="A08" />
Comment	

Product	
Description: Identification of the product included. The product could be energy or power	
Code	See Product code list
Classification	Mandatory
Size	an..13
Type	ecc:EnergyProductType
Example	<Product v="8716867000030"/>
Comment	

InArea	
Description: Identification of the area where the generation is or in connection with trades in the area there the player is.	
Code	
Classification	Optional
Size	an..18
Type	ecc:AreaType
Example	<InArea v="10YDK-1--------W" codingScheme="A01"/>
Comment	codingScheme is used

OutArea	
Description: Identification of the area in which the consumption is or by trades in the area where the player's counterparty is	
Code	
Classification	Optional
Size	an..18
Type	ecc:AreaType
Example	<OutArea v="10YDK-1--------W" codingScheme="A01"/>
Comment	codingScheme is used

InParty	
Description: Identification of the player who is responsible for the production or who is responsible for the trade.	
Code	
Classification	Mandatory
Size	an..35
Type	ecc:PartyType
Example	<InParty v="7381010021043" codingScheme="A10"/>
Comment	codingScheme is used

OutParty	
Description: Identification of the player who is responsible for the consumption or who is a counterparty to a trade.	
Code	
Classification	Optional
Size	an..35
Type	ecc:PartyType
Example	<OutParty v="5790001661144" codingScheme="A10"/>
Comment	codingScheme is used

MeteringPointIdentification	
Description: Metering point for adjustable production where the GSRN no. is used as identification.	
Code	
Classification	Optional
Size	an..35
Type	ecc: MeteringPointType
Example	<MeteringPointIdentification v= "570715000000070884" codingScheme="A10"/>
Comment	codingScheme is used

MeasurementUnit	
Description: The unit used to measure the individual values. The unit could be MWh or kW	
Code	See the MeasurementUnit code list
Classification	Mandatory
Size	an..3
Type	ecc:UnitOfMeasureType
Example	<MeasurementUnit v="MWH"/>
Comment	

2.5.1 Period

TimeInterval	
Description: Start and end of time interval for the period processed	
Code	
Classification	Mandatory
Size	an..35
Type	ecc:TimeIntervalType
Example	<TimeInterval v="2006-07-09T23:00Z/2006-07-10T23:00Z"/>
Comment	The format is YYYY-MM-DDThh:mmZ/ YYYY-MM-DDThh:mmZ., and the time is stated in UCT.

Resolution	
Description: The resolution determines the degree of detail provided in terms of time interval	
Code	
Classification	Mandatory
Size	an..14
Type	ecc:ResolutionType
Example	<Resolution v="PT1H"/>
Comment	The resolution is expressed by ISO 8601 in the following format: *PnYnMnDTnHnMnS*. If the period is indicated in hours, minutes and seconds, "T" must be included. For example, PT1H indicates a resolution of 1 hour, while PT5M indicates a resolution of 5 minutes.

2.5.2 Interval

Position	
Description: The relative position for a period in an interval	
Code	
Classification	Mandatory
Size	n..6
Type	ecc:PositionType
Example	<Position v="1"/>
Comment	The position is specified by a numerical integer starting with 1

Quantity	
Description: Quantity specification for a position in a given interval.	
Code	
Classification	Mandatory
Size	n..18
Type	ecc:QuantityType
Example	<Quantity v="51.4"/>
Comment	The quantity is specified in the unit stated in the MeasurementUnit element

Status	
Description: Code for quantity status	
Code	See StatusTypeList code list
Classification	Optional
Size	an..3
Type	head:StatusType
Example	<Status v="Z11" />
Comment	Used in connection with confirmation reports

2.6 Examples

2.6.1 Notification

```
<?xml version="1.0" encoding="UTF-8"?>
<MarketScheduleDocument
   xmlns="http://www.energinet.dk/schemas/BalRespXML/MarketScheduleDocument/
v13"
   xmlns:ecl="etso-code-lists.xsd"
   xmlns:ecc="etso-core-cmpts.xsd"
   xmlns:head="http://www.energinet.dk/schemas/BalRespXML/MessageHeader/v13"
   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
   xsi:schemaLocation="http://www.energinet.dk/schemas/BalRespXML/MarketSchedu
leDocument/v13  ../MarketScheduleDocument-13.xsd">
   <head:MessageHeader>
      <head:DocumentIdentification v="17727631"/>
      <head:DocumentVersion v="1"/>
      <head:DocumentType v="A01"/>
      <head:ProcessType v="DK-TIS-SCH"/>
      <head:SenderIdentification v="5790001253509" codingScheme="A10"/>
      <head:SenderRole v="A08"/>
      <head:ReceiverIdentification v="5790000832057" codingScheme="A10"/>
      <head:ReceiverRole v="A04"/>
      <head:DocumentDateTime v="2006-07-09T13:40:00Z"/>
      <head:ScheduleTimeInterval v="2006-07-09T22:00Z/2006-07-10T22:00Z"/>
      <head:Domain v="10YDK-1--------W" codingScheme="A01"/>
   </head:MessageHeader>

   <!-- Handel indenfor prisområde -->
   <MarketScheduleTimeSeries>
      <TimeSeriesIdentification v="987654321"/>
      <TimeSeriesVersion v="1"/>
      <BusinessType v="A08"/>
      <Product v="8716867000030"/>
      <InArea v="10YDK-1--------W" codingScheme="A01"/>
      <OutArea v="10YDK-1--------W" codingScheme="A01"/>
      <InParty v="5790001253509" codingScheme="A10"/>
      <OutParty v="5790000705672" codingScheme="A10"/>
      <MeasurementUnit v="MWH"/>
      <Period>
         <TimeInterval v="2006-07-09T22:00Z/2006-07-10T22:00Z"/>
         <Resolution v="PT1H"/>
         <Interval><Position v="1"/><Quantity v="51.4"/></Interval>
         <!-- Interval element 1-22 udeladt -->
         <Interval><Position v="23"/><Quantity v="55.8"/></Interval>
         <Interval><Position v="24"/><Quantity v="52.7"/></Interval>
      </Period>
   </MarketScheduleTimeSeries>

   <!-- Regulerbar produktion -->
   <MarketScheduleTimeSeries>
      <TimeSeriesIdentification v="987654323"/>
      <TimeSeriesVersion v="1"/>
      <BusinessType v="Z01"/>
      <Product v="8716867000030"/>
      <InArea v="10YDK-1--------W" codingScheme="A01"/>
      <InParty v="5790001253509" codingScheme="A10"/>
      <MeasurementUnit v="MWH"/>
      <Period>
```

```
      <TimeInterval v="2006-07-09T22:00Z/2006-07-10T22:00Z"/>
      <Resolution v="PT1H"/>
      <Interval><Position v="1"/><Quantity v="51.4"/></Interval>
      <Interval><Position v="2"/><Quantity v="51.4"/></Interval>
      <!-- Interval element 3-23 udeladt -->
      <Interval><Position v="24"/><Quantity v="51.4"/></Interval>
   </Period>
</MarketScheduleTimeSeries>

<!-- Regulerbar produktion med angivelse af produktionsenhed -->
<MarketScheduleTimeSeries>
   <TimeSeriesIdentification v="987654323"/>
   <TimeSeriesVersion v="1"/>
   <BusinessType v="Z01"/>
   <Product v="8716867000030"/>
   <InArea v="10YDK-1--------W" codingScheme="A01"/>
   <InParty v="5790001253509" codingScheme="A10"/>
   <MeteringPointIdentifcation v="570715000000070884" codingScheme="A10"/>
   <MeasurementUnit v="MWH"/>
   <Period>
      <TimeInterval v="2006-07-09T22:00Z/2006-07-10T22:00Z"/>
      <Resolution v="PT1H"/>
      <Interval><Position v="1"/><Quantity v="51.4"/></Interval>
      <Interval><Position v="2"/><Quantity v="51.4"/></Interval>
      <!-- Interval element 3-23 udeladt -->
      <Interval><Position v="24"/><Quantity v="51.4"/></Interval>
   </Period>
</MarketScheduleTimeSeries>

<!-- Handel med Tyskland -->
<MarketScheduleTimeSeries>
   <TimeSeriesIdentification v="987654321"/>
   <TimeSeriesVersion v="1"/>
   <BusinessType v="A06"/>
   <Product v="8716867000030"/>
   <InArea v="10YDK-1--------W" codingScheme="A01"/>
   <OutArea v="10YDE-EON------1" codingScheme="A01"/>
   <InParty v="5050551000016" codingScheme="A10"/>
   <OutParty v="5050551000047" codingScheme="A10"/>
   <MeasurementUnit v="MWH"/>
   <Period>
      <TimeInterval v="2006-07-09T22:00Z/2006-07-10T22:00Z"/>
      <Resolution v="PT1H"/>
      <Interval><Position v="1"/><Quantity v="51.4"/></Interval>
      <Interval><Position v="2"/><Quantity v="52.4"/></Interval>
      <!-- Interval element 3-23 udeladt -->
      <Interval><Position v="24"/><Quantity v="52.7"/></Interval>
   </Period>
</MarketScheduleTimeSeries>

<!-- Ikke-regulerbar Forbrug -->
<MarketScheduleTimeSeries>
   <TimeSeriesIdentification v="987654323"/>
   <TimeSeriesVersion v="1"/>
   <BusinessType v="A04"/>
   <Product v="8716867000030"/>
   <OutArea v="10YDK-1--------W" codingScheme="A01"/>
   <OutParty v="5790000701414" codingScheme="A10"/>
   <MeasurementUnit v="MWH"/>
   <Period>
```

```
            <TimeInterval v="2006-07-09T22:00Z/2006-07-10T22:00Z"/>
            <Resolution v="PT1H"/>
            <Interval><Position v="1"/><Quantity v="51.4"/></Interval>
            <Interval><Position v="2"/><Quantity v="51.4"/></Interval>
            <!-- Interval element 3-22 udeladt -->
            <Interval><Position v="23"/><Quantity v="51.4"/></Interval>
            <Interval><Position v="24"/><Quantity v="51.4"/></Interval>
         </Period>
      </MarketScheduleTimeSeries>

</MarketScheduleDocument>
```

2.6.2 Preliminary confirmation report

The example does not comprise all the time series submitted.

```
<?xml version="1.0" encoding="UTF-8"?>
<MarketScheduleDocument
   xmlns="http://www.energinet.dk/schemas/BalRespXML/MarketScheduleDocument/
v13"
   xmlns:ecl="etso-code-lists.xsd"
   xmlns:ecc="etso-core-cmpts.xsd"
   xmlns:head="http://www.energinet.dk/schemas/BalRespXML/MessageHeader/v13"
   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
   xsi:schemaLocation="http://www.energinet.dk/schemas/BalRespXML/MarketSchedu
leDocument/v13  ../MarketScheduleDocument-13.xsd">
   <head:MessageHeader>
      <head:DocumentIdentification v="7234522"/>
      <head:DocumentVersion v="1"/>
      <head:DocumentType v="A07"/>
      <head:ProcessType v="DK-TIS-SCH"/>
      <head:SenderIdentification v="5790000832057" codingScheme="A10"/>
      <head:SenderRole v="A04"/>
      <head:ReceiverIdentification v="5790001253509" codingScheme="A10"/>
      <head:ReceiverRole v="A08"/>
      <head:DocumentDateTime v="2006-07-09T14:50:00Z"/>
      <head:ScheduleTimeInterval v="2006-07-09T22:00Z/2006-07-10T22:00Z"/>
      <head:Domain v="10YDK-1--------W" codingScheme="A01"/>
   </head:MessageHeader>

   <!-- Regulerbar Produktion -->
   <MarketScheduleTimeSeries>
      <TimeSeriesIdentification v="123453"/>
      <TimeSeriesVersion v="1"/>
      <BusinessType v="Z01"/>
      <Product v="8716867000030"/>
      <InArea v="10YDK-1--------W" codingScheme="A01"/>
      <InParty v="5790001253509" codingScheme="A10"/>
      <MeasurementUnit v="MWH"/>
      <Period>
         <TimeInterval v="2006-07-09T22:00Z/2006-07-10T22:00Z"/>
         <Resolution v="PT1H"/>
         <Interval>
            <Position v="1"/><Quantity v="120.0"/><Status v="Z11"/>
         </Interval>
         <Interval>
            <Position v="2"/><Quantity v="100.0"/><Status v="Z11"/>
         </Interval>
         <!-- Interval element 3-23 udeladt -->
         <Interval>
```

```
        <Position v="24"/><Quantity v="100.0"/><Status v="Z11"/>
      </Interval>
   </Period>
</MarketScheduleTimeSeries>

<!-- Sum af handler -->
< MarketScheduleTimeSeries >
   <TimeSeriesIdentification v="123453"/>
   <TimeSeriesVersion v="1"/>
   <BbusinessType v="A24" />
   <Product v="8716867000030"/>
   <InArea v="10YDK-1--------W" codingScheme="A01"/>
   <InParty v="5790001253509" codingScheme="A10"/>
   <MeasurementUnit v="MWH"/>
   <Period>
      <TimeInterval v="2006-07-09T22:00Z/2006-07-10T22:00Z"/>
      <Resolution v="PT1H"/>
      <Interval>
         <Position v="1"/><Quantity v="-110.0"/><Status v="Z11"/>
      </Interval>
      <Interval>
         <Position v="2"/><Quantity v="-110.0"/><Status v="Z11"/>
      </Interval>
      <!-- Interval element 3-23 udeladt -->
      <Interval>
         <Position v="24"/><Quantity v="-110.0"/><Status v="Z11"/>
      </Interval>
   </Period>
</ MarketScheduleTimeSeries >

<!-- Justering TSO (altid 0 ved foreløbig balancekontrol) -->
< MarketScheduleTimeSeries >
   <TimeSeriesIdentification v="123453"/>
   <TimeSeriesVersion v="1"/>
   <BusinessType v="TSA"/>
   <Product v="8716867000030"/>
   <InArea v="10YDK-1--------W" codingScheme="A01"/>
   <InParty v="5790001253509" codingScheme="A10"/>
   <MeasurementUnit v="MWH"/>
   <Period>
      <TimeInterval v="2006-07-09T22:00Z/2006-07-10T22:00Z"/>
      <Resolution v="PT1H"/>
      <Interval>
         <Position v="1"/><Quantity v="0.0"/><Status v="Z11"/>
      </Interval>
      <!-- Interval element 2-23 udeladt -->
      <Interval>
         <Position v="24"/><Quantity v="0.0"/><Status v="Z11"/>
      </Interval>
   </Period>
</ MarketScheduleTimeSeries >

<!-- Ubalance -->
< MarketScheduleTimeSeries >
   <TimeSeriesIdentification v="123453"/>
   <TimeSeriesVersion v="1"/>
   <BusinessType v="A19"/>
   <Product v="8716867000030"/>
   <InArea v="10YDK-1--------W" codingScheme="A01"/>
   <InParty v="5790001253509" codingScheme="A10"/>
```

```
      <MeasurementUnit v="MWH"/>
      <Period>
         <TimeInterval v="2006-07-09T22:00Z/2006-07-10T22:00Z"/>
         <Resolution v="PT1H"/>
         <Interval>
            <Position v="1"/><Quantity v="25.0"/><Status v="Z13"/>
         </Interval>
        <!-- Interval element 2-23 udeladt -->
        <Interval>
            <Position v="24"/><Quantity v="0.0"/><Status v="Z11"/>
         </Interval>
      </Period>
   </ MarketScheduleTimeSeries >

   <!-- handel -->
   < MarketScheduleTimeSeries >
      <TimeSeriesIdentification v="123453"/>
      <TimeSeriesVersion v="1"/>
      <BusinessType v="A08"/>
      <Product v="8716867000030"/>
      <InArea v="10YDK-1--------W" codingScheme="A01"/>
      <OutArea v="10YDK-1--------W" codingScheme="A01"/>
      <InParty v="5790001253509" codingScheme="A10"/>
      <OutParty v="7080000739189" codingScheme="A10"/>
      <MeasurementUnit v="MWH"/>
      <Period>
         <TimeInterval v="2006-07-09T22:00Z/2006-07-10T22:00Z"/>
         <Resolution v="PT1H"/>
         <Interval>
            <Position v="1"/><Quantity v="-50.0"/><Status v="Z11"/>
                </Interval>
        <!-- Interval element 2-23 udeladt -->
         <Interval>
            <Position v="24"/><Quantity v="-50.0"/><Status v="Z11"/>
         </Interval>
      </Period>
   </ MarketScheduleTimeSeries >
</MarketScheduleDocument>
```

2.6.3 Final confirmation report

The example does not comprise all the time series submitted.

```
<?xml version="1.0" encoding="UTF-8"?>
<MarketScheduleDocument
xmlns="http://www.energinet.dk/schemas/BalRespXML/MarketScheduleDocument/v1
3"
xmlns:ecl="etso-code-lists.xsd"
xmlns:ecc="etso-core-cmpts.xsd"
xmlns:head="http://www.energinet.dk/schemas/BalRespXML/MessageHeader/v13"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.energinet.dk/schemas/BalRespXML/MarketSchedule
Document/v13 ../MarketScheduleDocument-13.xsd">
   <head:MessageHeader>
      <head:DocumentIdentification v="7234523"/>
      <head:DocumentVersion v="1"/>
      <head:DocumentType v="A08"/>
      <head:ProcessType v="DK-TIS-SCH"/>
      <head:SenderIdentification v="5790000832057" codingScheme="A10"/>
      <head:SenderRole v="A04"/>
```

```
   <head:ReceiverIdentification v="5790001253509" codingScheme="A10"/>
   <head:ReceiverRole v="A08"/>
   <head:DocumentDateTime v="2006-07-09T14:50:00Z"/>
   <head:ScheduleTimeInterval v="2006-07-09T22:00Z/2006-07-10T22:00Z"/>
   <head:Domain v="10YDK-1--------W" codingScheme="A01"/>
</head:MessageHeader>

<!-- Regulerbar Produktion -->
<MarketScheduleTimeSeries>
   <TimeSeriesIdentification v="123453"/>
   <TimeSeriesVersion v="1"/>
   <BusinessType v="Z01"/>
   <Product v="8716867000030"/>
   <InArea v="10YDK-1--------W" codingScheme="A01"/>
   <InParty v="5790001253509" codingScheme="A10"/>
   <MeasurementUnit v="MWH"/>
   <Period>
      <TimeInterval v="2006-07-09T22:00Z/2006-07-10T22:00Z"/>
      <Resolution v="PT1H"/>
      <Interval>
         <Position v="1"/><Quantity v="120.0"/><Status v="Z11"/>
      </Interval>
      <Interval>
         <Position v="2"/><Quantity v="100.0"/><Status v="Z11"/>
      </Interval>
      <!-- Interval element 3-23 udeladt -->
      <Interval>
         <Position v="24"/><Quantity v="100.0"/><Status v="Z11"/>
      </Interval>
   </Period>
</MarketScheduleTimeSeries>

<!-- Sum af handler -->
<MarketScheduleTimeSeries>
   <TimeSeriesIdentification v="123453"/>
   <TimeSeriesVersion v="1"/>
   <BusinessType v="A24"/>
   <Product v="8716867000030"/>
   <InArea v="10YDK-1--------W" codingScheme="A01"/>
   <InParty v="5790001253509" codingScheme="A10"/>
   <MeasurementUnit v="MWH"/>
   <Period>
      <TimeInterval v="2006-07-09T22:00Z/2006-07-10T22:00Z"/>
      <Resolution v="PT1H"/>
      <Interval>
         <Position v="1"/><Quantity v="-110.0"/><Status v="Z11"/>
      </Interval>
      <Interval>
         <Position v="2"/><Quantity v="-110.0"/><Status v="Z11"/>
      </Interval>
      <!-- Interval element 3-23 udeladt -->
      <Interval>
         <Position v="24"/><Quantity v="-110.0"/><Status v="Z11"/>
      </Interval>
   </Period>
</MarketScheduleTimeSeries>

<!-- Justering TSO -->
<MarketScheduleTimeSeries>
   <TimeSeriesIdentification v="123453"/>
```

```
   <TimeSeriesVersion v="1"/>
   <BusinessType v="TSA"/>
   <Product v="8716867000030"/>
   <InArea v="10YDK-1--------W" codingScheme="A01"/>
   <InParty v="5790001253509" codingScheme="A10"/>
   <MeasurementUnit v="MWH"/>
   <Period>
      <TimeInterval v="2006-07-09T22:00Z/2006-07-10T22:00Z"/>
      <Resolution v="PT1H"/>
      <Interval>
         <Position v="1"/><Quantity v="0.0"/><Status v="Z11"/>
      </Interval>
      <!-- Interval element 2-23 udeladt -->
      <Interval>
         <Position v="24"/><Quantity v="0.0"/><Status v="Z11"/>
      </Interval>
   </Period>
</MarketScheduleTimeSeries>

<!-- Ubalance -->
<MarketScheduleTimeSeries>
   <TimeSeriesIdentification v="123453"/>
   <TimeSeriesVersion v="1"/>
   <BusinessType v="A19"/>
   <Product v="8716867000030"/>
   <InArea v="10YDK-1--------W" codingScheme="A01"/>
   <InParty v="5790001253509" codingScheme="A10"/>
   <MeasurementUnit v="MWH"/>
   <Period>
      <TimeInterval v="2006-07-09T22:00Z/2006-07-10T22:00Z"/>
      <Resolution v="PT1H"/>
      <Interval>
         <Position v="1"/><Quantity v="25.0"/><Status v="Z13"/>
      </Interval>
      <!-- Interval element 2-23 udeladt -->
      <Interval>
         <Position v="24"/><Quantity v="0.0"/><Status v="Z11"/>
      </Interval>
   </Period>
</MarketScheduleTimeSeries>

<!-- NordPool handel -->
<MarketScheduleTimeSeries>
   <TimeSeriesIdentification v="123453"/>
   <TimeSeriesVersion v="1"/>
   <BusinessType v="A08"/>
   <Product v="8716867000030"/>
   <InArea v="10YDK-1--------W" codingScheme="A01"/>
   <OutArea v="10YDK-1--------W" codingScheme="A01"/>
   <InParty v="5790001253509" codingScheme="A10"/>
   <OutParty v="7080000739189" codingScheme="A10"/>
   <MeasurementUnit v="MWH"/>
   <Period>
      <TimeInterval v="2006-07-09T22:00Z/2006-07-10T22:00Z"/>
      <Resolution v="PT1H"/>
      <Interval>
         <Position v="1"/><Quantity v="-50.0"/><Status v="Z11"/>
      </Interval>
      <Interval>
         <Position v="2"/><Quantity v="-50.0"/><Status v="Z12"/>
```

```
        </Interval>
        <!-- Interval element 3-23 udeladt -->
        <Interval>
          <Position v="24"/><Quantity v="-50.0"/><Status v="Z11"/>
        </Interval>
      </Period>
    </MarketScheduleTimeSeries>

    <!-- Elbas handel -->
    <MarketScheduleTimeSeries>
      <TimeSeriesIdentification v="123453"/>
      <TimeSeriesVersion v="1"/>
      <BusinessType v="A08"/>
      <Product v="8716867000030"/>
      <InArea v="10YDK-1--------W" codingScheme="A01"/>
      <OutArea v="10YDK-1--------W" codingScheme="A01"/>
      <InParty v="5790001253509" codingScheme="A10"/>
      <OutParty v="6430015960015" codingScheme="A10"/>
      <MeasurementUnit v="MWH"/>
      <Period>
        <TimeInterval v="2006-07-09T22:00Z/2006-07-10T22:00Z"/>
        <Resolution v="PT1H"/>
        <Interval>
          <Position v="1"/><Quantity v="0.0"/><Status v="Z11"/>
        </Interval>
        <!-- Interval element 2-23 udeladt -->
        <Interval>
          <Position v="24"/><Quantity v="0.0"/><Status v="Z11"/>
        </Interval>
      </Period>
    </MarketScheduleTimeSeries>
</MarketScheduleDocument>
```

3 BT-102: Submission of operational schedules and daily forecasts

Business transaction BT-102 is used by the BRPs to submit an XML message containing time series for the BRP's scheduled production and/or consumption. The message is also used for submitting information about different reserves and the maximum and minimum capacities of different facilities for the period.

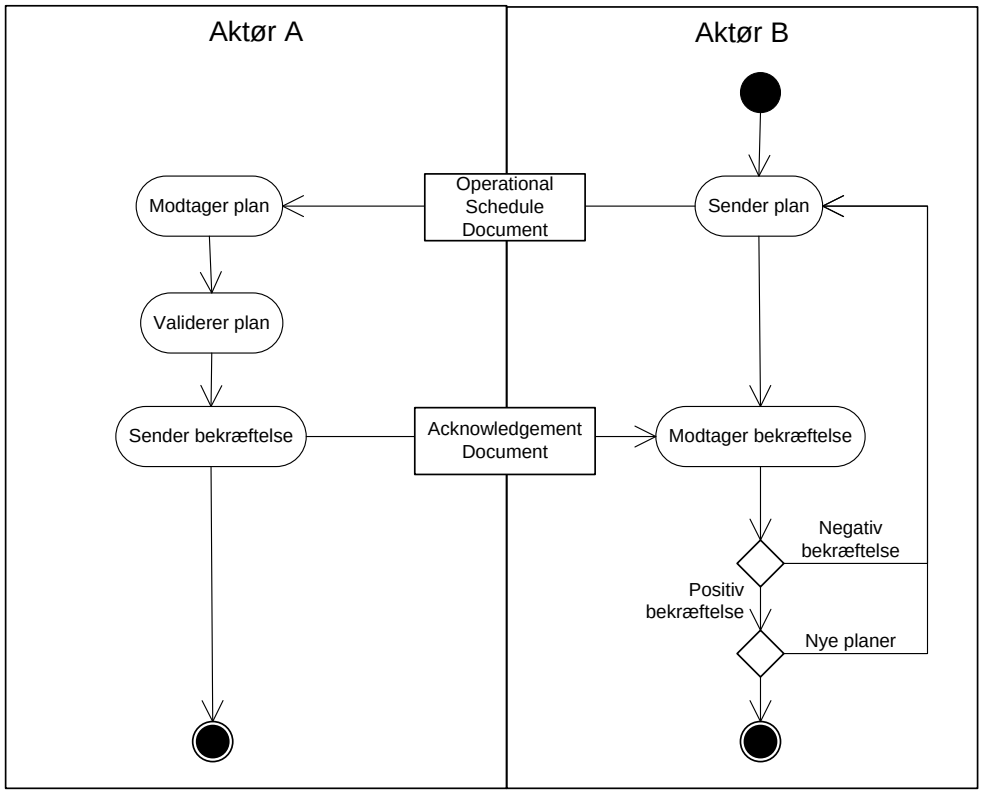

Figure 3 - Activity diagram for BT-102 Submission of operational schedules and daily forecasts

Translation of figure text:
Aktør A = Player A
Modtager plan = Receives schedule
Validerer plan = Validates schedule
Sender bekræftelse = Sends acknowledgement

Aktør B = Player B
Sender plan = Submits schedule
Modtager bekræftelse = Receives acknowledgement
Positiv bekræftelse = Positive acknowledgement
Negativ bekræftelse = Negative acknowledgement
Nye planer = New schedules

3.1 Initiation

The transaction is initiated with an XML message called OperationalSchedule-Document. The message contains several time series which may have the same or different BusinessTypes.

3.1.1 First data flow: Operational schedule

The player submits its schedules in accordance with the relevant class diagram.

On receipt, data submitted are validated according to the rules specified in Regulation F. The full notification is subsequently validated in accordance with the rules outlined below.

3.1.2 Valid data for operational schedules and daily forecasts

MessageHeader

- *DocumentIdentification* must together with *DocumentVersion* be unique
- *SenderIdentification* must contain the existing GLN/EIC code
- *ReceiverIdentification* must contain the existing GLN/EIC code
- *DocumentDateTime* must be in the correct format (YYYY-MM-DDThh:mm:ssZ)
- *ScheduleTimeInterval* must be 24 hours
- *Domain* must contain one of the below-mentioned area types.

OperationalScheduleTimeSeries

- *TimeSerieIdentification* must be unique in the message
- *BusinessType* must be a valid code
- *UnitIdentification* or *UnitTypeIdentification* must be filled in
- *TimeInterval* must be 24 hours
- *Resolution* depends on where the message is used. Either 1 hour (PT1H) or 5 minutes (PT5M) is indicated
- *Position* depends on resolution, from 1 to either 24 or 289
- *Quantity* must be a value to max. one decimal place.

The following area type identifications are used:

- 10YDK-1--------W (Western Denmark)
- 10YDK-2--------M (Eastern Denmark)

3.1.3 Second data flow: Acknowledgement document

If the message can be validated in relation to schemas, and the content meets all validations in the above validation list, the overall operational schedule is approved by an acknowledgement with the code A01.

In case of verification errors in relation to the schema or the content, the notification must be rejected. The acknowledgement will then contain an error code and an explanatory text.

The acknowledgement will always contain a reference to the original message and must be processed in accordance with the rules specified in Regulation F.

3.2 Class diagram

In addition to the *MessageHeader*, an operational schedule includes the *OperationalScheduleTimeSeries* class, which is a time series covering a given period of time.

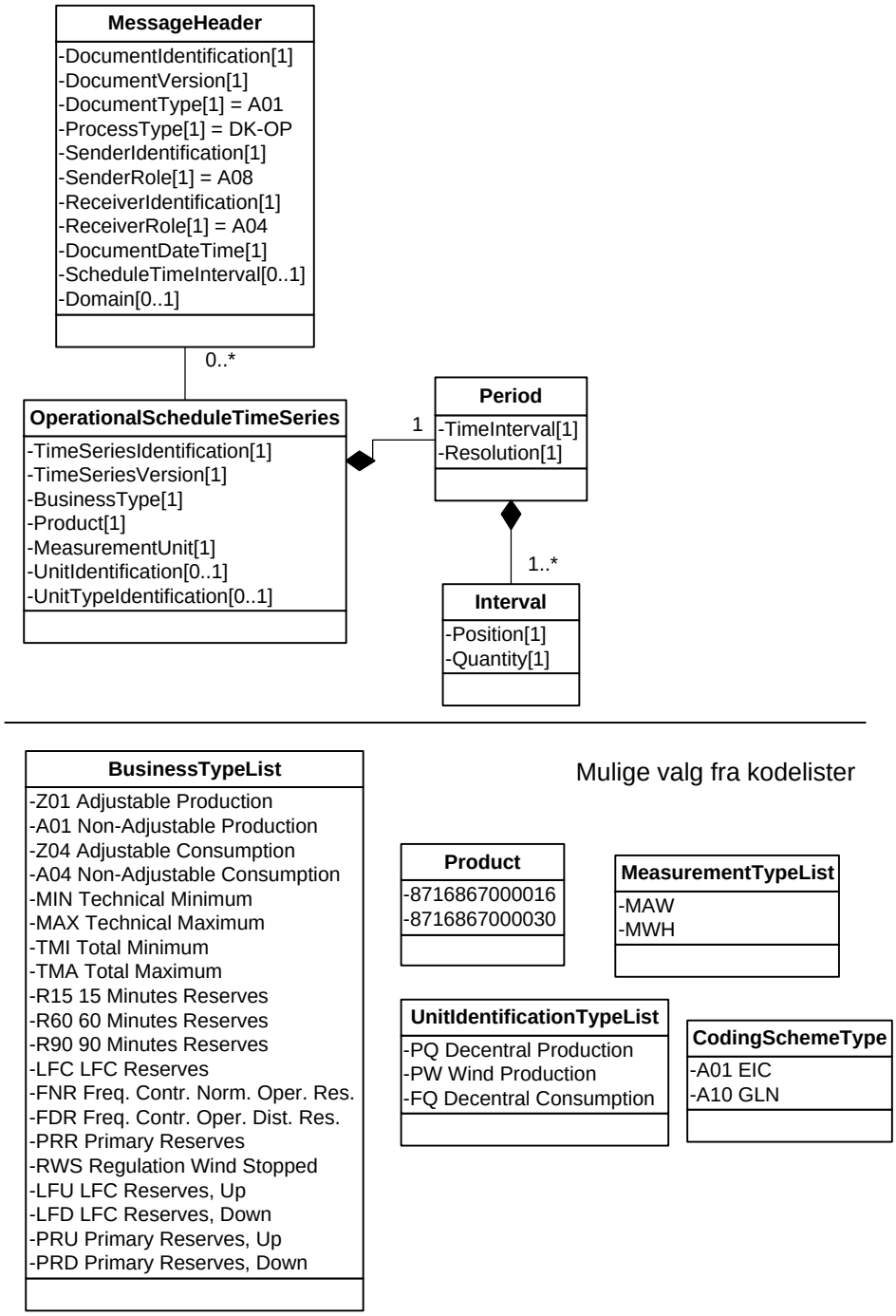

Figure 4 - Class diagram for OperationalScheduleDocument

Translation of figure text:
Mulige valg fra kodelister = Possible options from code lists

3.3 Unique identification

BT ID	**DK-BT-102**
BT name	Submission of operational schedules and daily forecasts
BT version	1
BT-combined ID	DK-BT-102-001
BPI	DK-OP
Edi Documents:	
Document ID	XML
Document name	OperationalScheduleDocument-13.xsd
Document IG version	13.8
Document ID	XML
Document name	AcknowledgementDocument-13.xsd
Document IG version	13.7

3.4 Data definitions for OperationalScheduleTimeSeries

TimeSeriesVersion	
Description: The version of the time series being submitted	
Code	
Classification	Mandatory
Size	n..3
Type	ecc:VersionType
Example	<TimeSeriesVersion v="1"/>
Comment	Is always set to 1

BusinessType	
Description: The type of time series included. This could be a time series for consumption or non-adjustable production	
Code	See the Business type code list
Classification	Mandatory
Size	an..3
Type	head:BusinessType
Example	<BusinessType v="Z01" />
Comment	

Product	
Description: Identification of the product included. The product could be energy or power	
Code	See Product code list
Classification	Mandatory
Size	an..13
Type	ecc:EnergyProductType
Example	<Product v="8716867000016"/>
Comment	

MeasurementUnit	
Description: The unit used to measure the individual values. The unit could be MWh or MW	
Code	See Measurement code list
Classification	Mandatory
Size	an..3
Type	ecc:UnitOfMeasureType
Example	<MeasurementUnit v="MWH"/>
Comment	

UnitIdentification	
Description: States the type of unit supplying/buying production.	
Code	
Classification	Optional
Size	an..35
Type	ecc:QuantityType
Example	<UnitIdentification v="123456789" />
Comment	

UnitTypeIdentification	
Description: States the type of unit supplying//buying production. UnitIdentification could, for example, be decentralised production or wind production	
Code	See Unit Type Identification code list
Classification	Optional
Size	an..35
Type	ecc:QuantityType
Example	<UnitTypeIdentification v="PQ" />
Comment	

3.4.1 Period

TimeInterval	
Description: Start and end of time interval for the period processed	
Code	
Classification	Mandatory
Size	an..35
Type	ecc:TimeIntervalType
Example	<TimeInterval v="2006-07-09T23:00Z/2006-07-10T23:00Z"/>
Comment	The format is YYYY-MM-DDThh:mmZ/ YYYY-MM-DDThh:mmZ, and the time is stated in UCT

Resolution	
Description: The resolution determines the degree of detail provided in terms of time interval	
Code	
Classification	Mandatory
Size	an..14
Type	ecc:ResolutionType
Example	<Resolution v="PT1H"/>
Comment	The resolution is expressed by ISO 8601 in the following format: *PnYnMnDTnHnMnS*. If the period is indicated in hours, minutes and seconds, "T" must be included. For example, PT1H indicates a resolution of 1 hour, while PT5M indicates a resolution of 5 minutes.

3.4.2 Interval

Position	
Description: The relative position for a period in an interval	
Code	
Classification	Mandatory
Size	n..6
Type	ecc:PositionType
Example	<Position v="1"/>
Comment	The position is specified by a numerical integer starting with 1

Quantity	
Description: Quantity specification for a position in a given interval.	
Code	
Classification	Mandatory
Size	n..18
Type	ecc:QuantityType
Example	<Quantity v="51.4"/>
Comment	The quantity is specified in the unit stated in the MeasurementUnit element

3.5 Sample operational schedule

The example does not include all time series that an operational schedule can contain.

```
<?xml version="1.0" encoding="UTF-8"?>
<OperationalScheduleDocument
   xmlns="http://www.energinet.dk/schemas/BalRespXML/OperationalScheduleDocument/v13"
   xmlns:ecl="etso-code-lists.xsd"
   xmlns:ecc="etso-core-cmpts.xsd"
   xmlns:head="http://www.energinet.dk/schemas/BalRespXML/MessageHeader/v13"
   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
   xsi:schemaLocation="http://www.energinet.dk/schemas/BalRespXML/OperationalScheduleDocument/v13 ../OperationalScheduleDocument-13.xsd">
```

```
    <head:MessageHeader>
        <head:DocumentIdentification v="17727631"/>
        <head:DocumentVersion v="2"/>
        <head:DocumentType v="Z01"/>
        <head:ProcessType v="DK-OP"/>
        <head:SenderIdentification v="5790001265472" codingScheme="A10"/>
        <head:SenderRole v="A08"/>
        <head:ReceiverIdentification v="5790000832057" codingScheme="A10"/>
        <head:ReceiverRole v="A04"/>
        <head:DocumentDateTime v="2007-02-24T16:52:00Z"/>
        <head:ScheduleTimeInterval v="2007-02-24T23:00Z/2007-02-25T23:00Z"/>
        <head:Domain v="10YDK-1--------W" codingScheme="A01"/>
</head:MessageHeader>

    <!-- Scheduled Production, Sum Decentral -->
    <OperationalScheduleTimeSeries>
        <TimeSeriesIdentification v="987654323"/>
        <TimeSeriesVersion v="1"/>
        <BusinessType v="Z01"/>
        <Product v="8716867000016"/>
        <MeasurementUnit v="MAW"/>
        <UnitTypeIdentification v="PQ"/>
        <Period>
            <TimeInterval v="2007-02-24T23:00Z/2007-02-25T23:00Z"/>
            <Resolution v="PT05M"/>
            <Interval><Position v="1"/><Quantity v="51.0"/></Interval>
            <!-- Interval element 2-288 udeladt -->
            <Interval><Position v="289"/><Quantity v="57.9"/></Interval>
        </Period>
    </OperationalScheduleTimeSeries>

    <!-- Scheduled Production -->
    <OperationalScheduleTimeSeries>
        <TimeSeriesIdentification v="987654321"/>
        <TimeSeriesVersion v="1"/>
        <BusinessType v="Z01" />
        <Product v="8716867000016"/>
        <MeasurementUnit v="MAW"/>
        <UnitIdentification v="123456789" />
        <Period>
            <TimeInterval v="2007-02-24T23:00Z/2007-02-25T23:00Z"/>
            <Resolution v="PT05M"/>
            <Interval><Position v="1"/><Quantity v="51.0"/></Interval>
            <!-- Interval element 2-288 udeladt -->
            <Interval><Position v="289"/><Quantity v="57.9"/></Interval>
        </Period>
    </OperationalScheduleTimeSeries>

    <!-- Minimum Capacity -->
    <OperationalScheduleTimeSeries>
        <TimeSeriesIdentification v="987654325"/>
        <TimeSeriesVersion v="1"/>
        <BusinessType v="MIN" />
        <Product v="8716867000016"/>
        <MeasurementUnit v="MAW"/>
        <UnitIdentification v="123456"/>
        <Period>
            <TimeInterval v="2007-02-24T23:00Z/2007-02-25T23:00Z"/>
            <Resolution v="PT05M"/>
            <Interval><Position v="1"/><Quantity v="51.0"/></Interval>
```

```
      <!-- Interval element 2-288 udeladt -->
      <Interval><Position v="289"/><Quantity v="57.9"/></Interval>
   </Period>
</OperationalScheduleTimeSeries>

<!-- Maximum Capacity -->
<OperationalScheduleTimeSeries>
   <TimeSeriesIdentification v="987654326"/>
   <TimeSeriesVersion v="1"/>
   <BusinessType v="MAX" />
   <Product v="8716867000016"/>
   <MeasurementUnit v="MAW"/>
   <UnitIdentification v="123456"/>
   <Period>
      <TimeInterval v="2007-02-24T23:00Z/2007-02-25T23:00Z"/>
      <Resolution v="PT05M"/>
      <Interval><Position v="1"/><Quantity v="51.0"/></Interval>
      <!-- Interval element 2-288 udeladt -->
      <Interval><Position v="289"/><Quantity v="57.9"/></Interval>
   </Period>
</OperationalScheduleTimeSeries>

<!-- Total Minimum Capacity (with overload) -->
<OperationalScheduleTimeSeries>
   <TimeSeriesIdentification v="987654327"/>
   <TimeSeriesVersion v="1"/>
   <BusinessType v="TMI" />
   <Product v="8716867000016"/>
   <MeasurementUnit v="MAW"/>
   <UnitIdentification v="123456"/>
   <Period>
      <TimeInterval v="2007-02-24T23:00Z/2007-02-25T23:00Z"/>
      <Resolution v="PT05M"/>
      <Interval><Position v="1"/><Quantity v="51.0"/></Interval>
      <!-- Interval element 2-288 udeladt -->
      <Interval><Position v="289"/><Quantity v="57.9"/></Interval>
   </Period>
</OperationalScheduleTimeSeries>

<!-- LFC Reserve -->
<OperationalScheduleTimeSeries>
   <TimeSeriesIdentification v="987654329"/>
   <TimeSeriesVersion v="1"/>
   <BusinessType v="LFC" />
   <Product v="8716867000016"/>
   <MeasurementUnit v="MAW"/>
   <UnitIdentification v="1234567890"/>
   <Period>
      <TimeInterval v="2007-02-24T23:00Z/2007-02-25T23:00Z"/>
      <Resolution v="PT01H"/>
      <Interval><Position v="1"/><Quantity v="51.0"/></Interval>
      <!-- Interval element 2-23 udeladt -->
      <Interval><Position v="24"/><Quantity v="58.6"/></Interval>
   </Period>
</OperationalScheduleTimeSeries>

<!-- Primary Reserve -->
<OperationalScheduleTimeSeries>
   <TimeSeriesIdentification v="987654330"/>
   <TimeSeriesVersion v="1"/>
```

```
      <BusinessType v="PRR" />
      <Product v="8716867000016"/>
      <MeasurementUnit v="MAW"/>
      <UnitIdentification v="123456789012"/>
      <Period>
         <TimeInterval v="2007-02-24T23:00Z/2007-02-25T23:00Z"/>
         <Resolution v="PT01H"/>
         <Interval><Position v="1"/><Quantity v="51.0"/></Interval>
         <Interval><Position v="2"/><Quantity v="52.0"/></Interval>
         <!-- Interval element 3-23 udeladt -->
         <Interval><Position v="24"/><Quantity v="58.6"/></Interval>
      </Period>
   </OperationalScheduleTimeSeries>


   <!-- Up Regulation -->
   <OperationalScheduleTimeSeries>
      <TimeSeriesIdentification v="987654340"/>
      <TimeSeriesVersion v="1"/>
      <BusinessType v="UPR" />
      <Product v="8716867000016"/>
      <MeasurementUnit v="MAW"/>
      <UnitIdentification v="1234567888"/>
      <Period>
         <TimeInterval v="2007-02-24T23:00Z/2007-02-25T23:00Z"/>
         <Resolution v="PT01H"/>
         <Interval><Position v="1"/><Quantity v="51.0"/></Interval>
         <!-- Interval element 2-23 udeladt -->
         <Interval><Position v="24"/><Quantity v="58.6"/></Interval>
      </Period>
   </OperationalScheduleTimeSeries>

</OperationalScheduleDocument>
```

3.6 Sample daily forecast

```
<?xml version="1.0" encoding="UTF-8"?>
<OperationalScheduleDocument
  xmlns="http://www.energinet.dk/schemas/BalRespXML/OperationalScheduleDocum
ent/v13"
  xmlns:ecl="etso-code-lists.xsd"
  xmlns:ecc="etso-core-cmpts.xsd"
  xmlns:head="http://www.energinet.dk/schemas/BalRespXML/MessageHeader/v13"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.energinet.dk/schemas/BalRespXML/OperationalSc
heduleDocument/v13 ../OperationalScheduleDocument-13.xsd">

   <head:MessageHeader>
      <head:DocumentIdentification v="4327631"/>
      <head:DocumentVersion v="2"/>
      <head:DocumentType v="Z02"/>
      <head:ProcessType v="DK-OP"/>
      <head:SenderIdentification v="5790000429196" codingScheme="A10"/>
      <head:SenderRole v="A08"/>
      <head:ReceiverIdentification v="5790000832057" codingScheme="A10"/>
      <head:ReceiverRole v="A04"/>
      <head:DocumentDateTime v="2006-02-24T13:40:00Z"/>
      <head:ScheduleTimeInterval v="2007-02-24T23:00Z/2007-02-25T23:00Z"/>
      <head:Domain v="10YDK-2--------M" codingScheme="A01"/>
   </head:MessageHeader>
```

```
    <!-- Enhed > 25 MW -->

    <!-- Minimum Capacity -->
    <OperationalScheduleTimeSeries>
       <TimeSeriesIdentification v="237654325"/>
       <TimeSeriesVersion v="1"/>
       <BusinessType v="MIN"/>
       <Product v="8716867000016"/>
       <MeasurementUnit v="MAW"/>
       <UnitIdentification v="571313689061140260"/>
       <Period>
          <TimeInterval v="2007-02-24T23:00Z/2007-02-25T23:00Z"/>
          <Resolution v="PT01H"/>
          <Interval><Position v="1"/><Quantity v="51.0"/></Interval>
          <!-- Interval element 2-23 udeladt -->
          <Interval><Position v="24"/><Quantity v="58.6"/></Interval>
       </Period>
    </OperationalScheduleTimeSeries>

    <!-- Maximum Capacity -->
    <OperationalScheduleTimeSeries>
       <TimeSeriesIdentification v="237654326"/>
       <TimeSeriesVersion v="1"/>
       <BusinessType v="MAX"/>
       <Product v="8716867000016"/>
       <MeasurementUnit v="MAW"/>
       <UnitIdentification v="571313689061140260"/>
       <Period>
          <TimeInterval v="2007-02-24T23:00Z/2007-02-25T23:00Z"/>
          <Resolution v="PT01H"/>
          <Interval><Position v="1"/><Quantity v="51.0"/></Interval>
          <!-- Interval element 2-23 udeladt -->
          <Interval><Position v="24"/><Quantity v="58.6"/></Interval>
       </Period>
    </OperationalScheduleTimeSeries>
</OperationalScheduleDocument>
```

4 BT-103: Submission of regulating power bids

Business transaction BT-103 is used by the BRPs to submit regulating power bids.

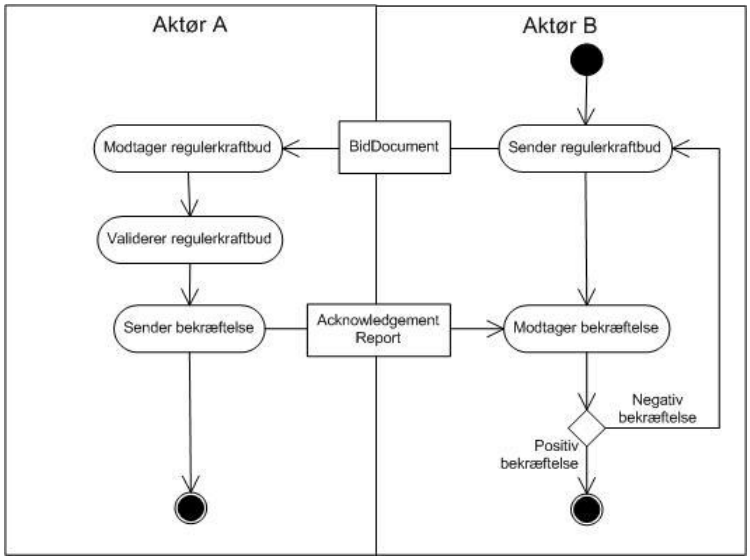

Figure 5 - Activity diagram for BT-103 Submission of regulating power bid

[Aktør A = Player A
Modtager regulerkraftbud = Receives regulating power bid
Validerer regulerkraftbud = Validates regulating power bid
Sender bekræftelse = Sends acknowledgement

Aktør B = Player B
Sender regulerkraftbud = Submits regulating power bid
Modtager bekræftelse = Receives acknowledgement
Negativ bekræftelse = Negative acknowledgement]

4.1 Initiation

The transaction is initiated by an XML message (BidDocument) with the ProcessType "DK-OP" (Operational scheduling) and DocumentType A24 (Bid document), which contains a regulating power bid for one or more hours.

4.2 Data flows

4.2.1 First data flow: Regulating power bid

The player will submit its regulating power bid in accordance with the class diagram (see Figure 6).

The player will submit its notifications/schedules in accordance with the class diagram and the dependency matrix.

On receipt, data submitted are validated according to the rules specified in Regulation F. The full notification is subsequently validated in accordance with the rules outlined below.

4.2.2 Valid data for submission of regulating power bid

MessageHeader

- *DocumentIdentification* must together with *DocumentVersion* be unique
- *SenderIdentification* must contain the existing GLN/EIC code
- *ReceiverIdentification* must contain the existing GLN/EIC code
- *DocumentDateTime* must be in the correct format (YYYY-MM-DDThh:mm:ssZ)
- *ScheduleTimeInterval* must be 24 hours
- *Domain* must contain one of the below-mentioned area types.

BidMessage

- *BidIdentification* must be unique in the message
- *ContractIdentification* must contain an existing contract ID
- *TimeInterval* must be minimum 1 hour and maximum 24 hours
- *StartGradient* and *StopGradient* must be stated in MW per minute
- *Resolution* must be 1 hour
- *Quantity* must be a value without decimal places
- *Price* to two decimal places.

The following area type identifications are used:

- 10YDK-1--------W (Western Denmark)
- 10YDK-2--------M (Eastern Denmark)

4.2.3 Second data flow: Acknowledgement document

If the message can be validated in relation to schemas, and the content meets all validations in the validation list, the bid message is approved by means of an acknowledgement with the code A01.

In case of verification errors in relation to the schema or the content, the message must be rejected. The acknowledgement will then contain an error code and an explanatory text.

The acknowledgement will always contain a reference to the original message and must be processed in accordance with the rules specified in Regulation F.

4.3 Class diagram

In addition to the *MessageHeader*, a regulating power bid (bid document) includes the *BidMessage* class.

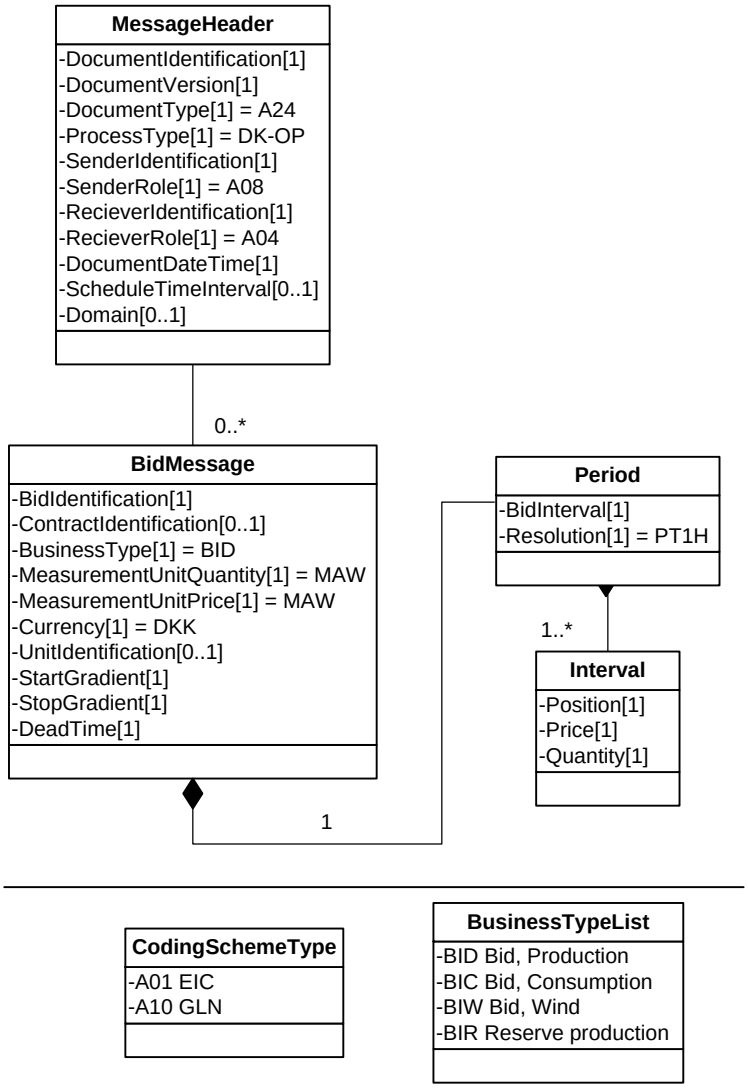

Figure 6 - Class diagram for BidDocument (regulating power bid)

4.4 Unique identification

BT ID	**DK-BT-103**
BT name	Submission of regulating power bids
BT version	1
BT-combined ID	DK-BT-103-001
BPI	DK-OP
Edi Documents:	
Document ID	XML
Document name	BidDocument-13.xsd
Document IG version	13.7
Document ID	XML
Document name	AcknowledgementDocument-13.xsd
Document IG version	13.7

4.5 Data definitions for BidMessage

BidIdentification	
Description: Unique identification of the sender of the bid referred to	
Code	
Classification	Mandatory
Size	an..35
Type	ecc:IdentificationType
Example	<BidIdentification v="54796453"/>
Comment	

ContractIdentification	
Description: Identification of the contract for the bid referred to	
Code	
Classification	Mandatory
Size	an..35
Type	ecc:IdentificationType
Example	<ContractIdentification v="DONP-W-B-2007-1"/>
Comment	

BusinessType	
Description: The type of time series included. This could be time series for bids	
Code	See Business type code list
Classification	Mandatory
Size	an..3
Type	head:BusinessType
Example	<BusinessType v="BID" />
Comment	

MeasurementUnitQuantity	
Description: The measuring unit for the bid quantity	
Code	See MeasurementUnit code list
Classification	Mandatory
Size	an..3
Type	ecc:UnitOfMeasureType
Example	<MeasurementUnitQuantity v="MAW"/>
Comment	

MeasurementUnitPrice	
Description: Measuring unit for the bid price	
Code	See Measurement code list
Classification	Mandatory
Size	An..3
Type	ecc:UnitOfMeasureType
Example	<MeasurementUnitPrice v="MWH"/>
Comment	

Currency	
Description: The currency in which the bid is calculated	
Code	See Currency code list
Classification	Mandatory
Size	a..3
Type	ecc:CurrencyType
Example	<Currency v="DKK"/>
Comment	The currency used is DKK or EUR

UnitIdentification	
Description: States the type of unit supplying/buying production	
Code	
Classification	Optional
Size	an..35
Type	ecc:QuantityType
Example	<UnitIdentification v="123456789" />
Comment	

StartGradient	
Description: The current gradient with which to start the bid. The gradient is specified in the unit stated in the MeasurementUnitQuantity element.	
Code	
Classification	Mandatory
Size	n..14
Type	endk:GradientType
Example	<StartGradient v="15"/>
Comment	Gradients must be stated in MW per minute

StopGradient	
Description: The current gradient with which to stop the bid. The quantity is specified in the unit stated in the MeasurementUnitQuantity element.	
Code	
Classification	Mandatory
Size	n..14
Type	endk:GradientType
Example	<StopGradient v="-15"/>
Comment	Gradients must be stated in MW per minute

DeadTime	
Description: The time expected for preparation before the bid can be activated.	
Code	
Classification	Mandatory
Size	n..14
Type	ecc:ResolutionType
Example	<DeadTime v=" PT5M "/>
Comment	Dead time ('delay') for the regulation states the time from the order being placed to regulation being started. The default time is 1 minute for directly activated regulating power and 5 minutes for regulating power ordered via schedules.

4.5.1 Period

TimeInterval	
Description: Start and end of time interval for the period processed	
Code	
Classification	Mandatory
Size	an..35
Type	ecc:TimeIntervalType
Example	<TimeInterval v="2006-07-09T23:00Z/2006-07-10T23:00Z"/>
Comment	The format is YYYY-MM-DDThh:mmZ/ YYYY-MM-DDThh:mmZ., and the time is stated in UCT

Resolution	
Description: The resolution determines the degree of detail provided in terms of time interval	
Code	
Classification	Mandatory
Size	an..14
Type	ecc:ResolutionType
Example	<Resolution v="PT1H"/>
Comment	The resolution is expressed by ISO 8601 in the following format: *PnYnMnDTnHnMnS.* If the period is indicated in hours, minutes and seconds, "T" must be included. For example, PT1H indicates a resolution of 1 hour, while PT5M indicates a resolution of 5 minutes.

4.5.2 Interval

Position	
Description: The relative position for a period in an interval	
Code	
Classification	Mandatory
Size	n..6

Type	ecc:PositionType
Example	<Position v="1"/>
Comment	The position is specified by a numerical integer starting with 1

Price	
Description: The price of a unit of the quantity offered	
Code	
Classification	Mandatory
Size	n..18
Type	ecc:QuantityType
Example	<Price v="2000.00"/>
Comment	The price is stated in the currency indicated in Currency and is specified for the quantity indicated in the MeasurementUnitPrice element

Quantity	
Description: Quantity specification for a position in a given interval.	
Code	
Classification	Mandatory
Size	n..18
Type	ecc:QuantityType
Example	<Quantity v="51"/>
Comment	The quantity is specified in the unit stated in the MeasurementUnitQuantity element

4.6 Example

```
<?xml version="1.0" encoding="UTF-8"?>
<BidDocument
   xmlns="http://www.energinet.dk/schemas/BalRespXML/BidDocument/v13"
   xmlns:ecl="etso-code-lists.xsd"
   xmlns:ecc="etso-core-cmpts.xsd"
   xmlns:head="http://www.energinet.dk/schemas/BalRespXML/MessageHeader/v13"
   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
   xsi:schemaLocation="http://www.energinet.dk/schemas/BalRespXML/BidDocument
/v13 ../BidDocument-13.xsd">
   <head:MessageHeader>
      <head:DocumentIdentification v="54256"/>
      <head:DocumentVersion v="1"/>
      <head:DocumentType v="A24"/>
      <head:ProcessType v="DK-OP"/>
      <head:SenderIdentification v="5790001265472" codingScheme="A10"/>
      <head:SenderRole v="A08"/>
      <head:ReceiverIdentification v="5790000832057" codingScheme="A10"/>
      <head:ReceiverRole v="A04"/>
      <head:DocumentDateTime v="2006-02-24T16:40:00Z"/>
      <head:ScheduleTimeInterval v="2007-02-24T23:00Z/2007-02-25T23:00Z"/>
      <head:Domain v="10YDK-1--------W" codingScheme="A01"/>
   </head:MessageHeader>

   <!-- Bud er ikke specifikt på ét værk -->
```

```
    <BidMessage>
      <BidIdentification v="4796453"/>
      <ContractIdentification v="3500269-05"/>
      <BusinessType v="BID"/>
      <MeasurementUnitQuantity v="MAW"/>
      <MeasurementUnitPrice v="MWH"/>
      <Currency v="DKK"/>
      <StartGradient v="15.0"/>
      <StopGradient v="15.0"/>
      <DeadTime v="PT5M"/>
      <Period>
        <BidInterval v="2007-02-25T22:00Z/2007-02-25T23:00Z"/>
        <Resolution v="PT1H"/>
        <Interval>
          <Position v="1"/><Price v="15000.00"/><Quantity v="20"/>

        </Interval>
      </Period>
    </BidMessage>

    <!-- Bud gælder et enkelt værk for 2 timer -->
    <BidMessage>
      <BidIdentification v="54796453"/>
      <ContractIdentification v="3500268-01"/>
      <BusinessType v="BID"/>
      <MeasurementUnitQuantity v="MAW"/>
      <MeasurementUnitPrice v="MWH"/>
      <Currency v="DKK"/>
      <UnitIdentification v="61190260"/>
      <StartGradient v="15.0"/>
      <StopGradient v="15.0"/>
      <DeadTime v="PT5M"/>
      <Period>
        <BidInterval v="2007-02-25T20:00Z/2007-02-25T22:00Z"/>
        <Resolution v="PT1H"/>
        <Interval>
          <Position v="1"/><Price v="1500.00"/><Quantity v="20"/>
        </Interval>
        <Interval>
          <Position v="2"/><Price v="1600.00"/><Quantity v="20"/>

        </Interval>
      </Period>
    </BidMessage>
</BidDocument>
```

5 BT104: Submission of regulating power orders

Business transaction BT-104 is used by a transmission system operator to activate one or several bids from a player with the different upward/downward regulations requested.

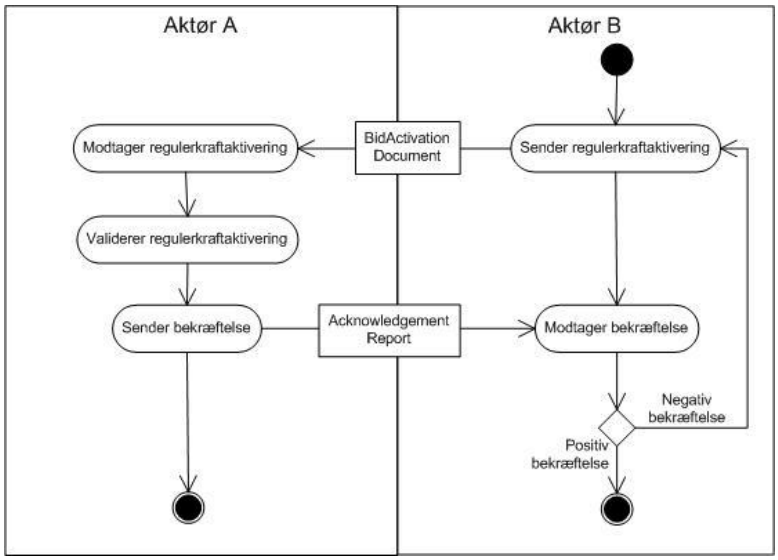

Figure 7 - Activity diagram for BT-104. Submission of regulating power orders

Translation of figure text:
[Aktør A = Player A
Modtager regulerkraftaktivering = Receives regulating power order
Validerer regulerkraftaktivering = Valides regulating power order
Sender bekræftelse = Sends acknowledgement

Aktør B = Player B
Sender regulerkraftaktivering = Submit regulating power order
Modtager bekræftelse = Receives acknowledgement
Negativ bekræftelse = Negative acknowledgement
Positiv bekræftelse = Positive acknowledgement]

5.1 Initiation

The transaction is initiated by an XML message (BidActivationDocument) with the ProcessType "DK-OP" (Operational scheduling). Regulating power is ordered via schedules in both Western and Eastern Denmark.

5.2 Data flows

5.2.1 First data flow: Regulating power order

The TSO submits its activation in accordance with the relevant class diagram.

On receipt, data submitted are validated according to the rules specified in Regulation F. The full notification is subsequently validated in accordance with the rules outlined below.

5.2.2 Valid data for submission of regulating power order

MessageHeader

- *DocumentIdentification* must together with *DocumentVersion* be unique
- *SenderIdentification* must contain the existing GLN/EIC code
- *ReceiverIdentification* must contain the existing GLN/EIC code
- *DocumentDateTime* must be in the correct format (YYYY-MM-DDThh:mm:ssZ)
- *ScheduleTimeInterval* must be 24 hours
- *Domain* must contain one of the below-mentioned area types.

BidActivationdocument

- *TimeSerieIdentification* must be unique in the message
- The document may contain a reference to the bid; *DocumentIdentification, DocumentVersion and BidIdentification*
- *Business Type* must be a valid code
- *Unitidentification* must be the one (if any) specified in the bid message
- *TimeInterval* must be 1 hour
- *Resolution* must be 5 minutes
- *Quantity* must be in whole MW.

The following area type identifications are used:

- 10YDK-1--------W (Western Denmark)
  10YDK-2--------M (Eastern Denmark)

5.2.3 Second data flow: Acknowledgement document

If the message can be validated in relation to schemas, and the content meets all validations in the validation list, the regulating power order is approved by means of an acknowledgement with the code A01.

In case of verification errors in relation to the schema or the content, the message must be rejected. The acknowledgement will in such case contain an error code and an explanatory text.

The acknowledgement will always contain a reference to the original message and must be processed in accordance with the rules specified in Regulation F.

5.3 Class diagram

In addition to the *MessageHeader*, a regulating power bid (bid activation document) includes the *BidActivation* class.

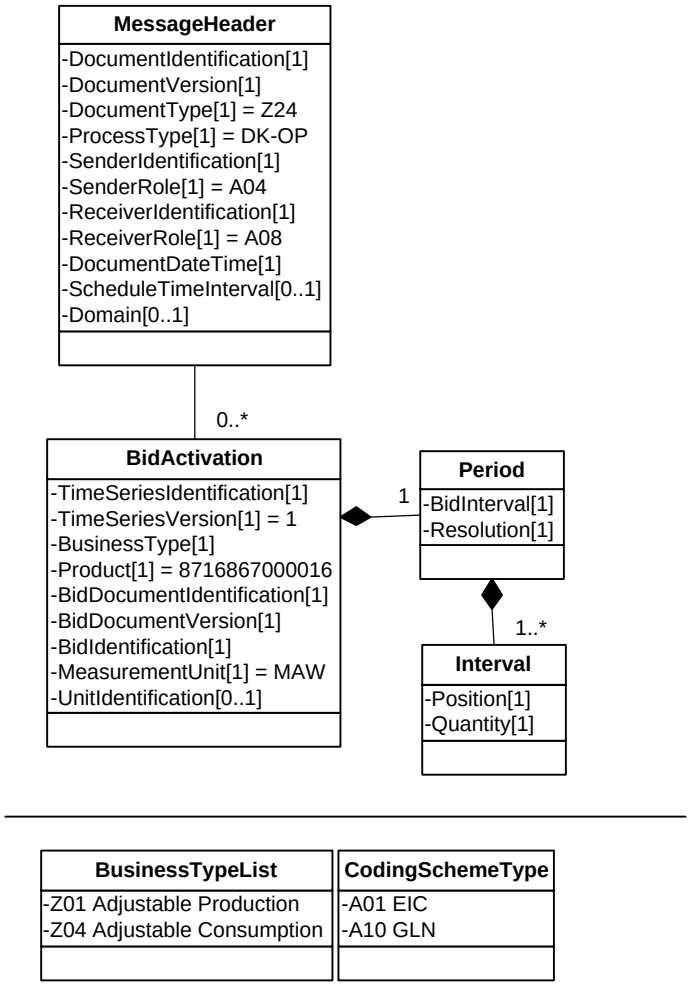

Figure 8 - Class diagram for BidActivationDocument (regulating power activation)

5.4 Unique identification

BT ID	**DK-BT-104**
BT name	Submission of regulating power bids
BT version	1
BT-combined ID	DK-BT-104-001
BPI	DK-OP
Edi Documents:	
Document ID	XML
Document name	BidActivationDocument-13.xsd
Document IG version	13.8
Document ID	XML
Document name	AcknowledgementDocument-13.xsd
Document IG version	13.7

5.5 Data definitions for BidActivation

TimeSeriesIdentification	
Description: Unique identification of the sender of the time series referred to	
Code	
Classification	Mandatory
Size	an..35
Type	ecc:IdentificationType
Example	<SendersTimeSeriesIdentification v="987654321"/>
Comment	

TimeSeriesVersion	
Description: The version of the time series being submitted	
Code	
Classification	Mandatory
Size	n..3
Type	ecc:VersionType
Example	<TimeSeriesVersion v="1"/>
Comment	Is always set to 1

BusinessType	
Description: The type of time series included. This could be a time series for adjustable consumption or adjustable production	
Code	See Business type code list
Classification	Mandatory
Size	an..3
Type	head:BusinessType
Example	<BusinessType v="Z01" />
Comment	

Product	
Description: Identification of the product included. The product could be energy or power	
Code	See Product code list
Classification	Mandatory
Size	an..13
Type	ecc:EnergyProductType
Example	<Product v="8716867000016"/>
Comment	

BidDocumentIdentification	
Description: Reference to the bid document comprised by the regulation	
Code	
Classification	Mandatory
Size	an..35
Type	ecc:IdentificationType
Example	<DocumentIdentification v="17727631"/>
Comment	

BidDocumentVersion	
Description: Reference to the document version comprised by the regulation	
Code	
Classification	Mandatory
Size	n..3
Type	ecc:VersionType
Example	<DocumentVersion v="1"/>
Comment	

BidIdentification	
Description: Reference to the identification of bids comprised by the regulation	
Code	
Classification	Mandatory
Size	an..35
Type	ecc:IdentificationType
Example	<BidIdentification v="54796453"/>
Comment	

MeasurementUnit	
Description: The unit used to measure the individual values. The unit could be MWh or MW	
Code	See MeasurementUnit code list
Classification	Mandatory
Size	an..3
Type	ecc:UnitOfMeasureType
Example	<MeasurementUnit v="MAW"/>
Comment	

UnitIdentification	
Description: States the type of unit supplying/buying production	
Code	
Classification	Optional
Size	an..35
Type	ecc:QuantityType
Example	<UnitIdentification v="123456789" />
Comment	

5.5.1 Period

BidInterval	
Description: Start and end of time interval for the period processed	
Code	
Classification	Mandatory
Size	an..35
Type	ecc:TimeIntervalType
Example	<TimeInterval v="2006-07-09T23:00Z/2006-07-10T23:00Z"/>
Comment	The format is YYYY-MM-DDThh:mmZ/ YYYY-MM-DDThh:mmZ., and the time is stated in UCT.

Resolution	
Description: The resolution determines the degree of detail provided in terms of time interval	
Code	
Classification	Mandatory
Size	an..14
Type	ecc:ResolutionType
Example	<Resolution v="PT1H"/>
Comment	The resolution is expressed by ISO 8601 in the following format: *PnYnMnDTnHnMnS*. If the period is indicated in hours, minutes and seconds, "T" must be indluced. For example, PT1H indicates a resolution 1 hour, while PT5M indicates a resolution of 5 minutes.

5.5.2 Interval

Position	
Description: The relative position for a period in an interval	
Code	
Classification	Mandatory
Size	n..6
Type	ecc:PositionType
Example	<Position v="1"/>
Comment	The position is specified by a numerical integer starting with 1

Quantity	
Description: Quantity specification for a position in a given interval	
Code	
Classification	Mandatory
Size	n..18
Type	ecc:QuantityType
Example	<Quantity v="51.4"/>
Comment	The quantity is specified in the unit stated in the MeasurementUnit element

5.6 Example of ordering of regulating power via schedules

```
<?xml version="1.0" encoding="UTF-8"?>
<BidActivationDocument
  xmlns="http://www.energinet.dk/schemas/BalRespXML/BidActivationDocument/v13"
  xmlns:ecl="etso-code-lists.xsd"
  xmlns:ecc="etso-core-cmpts.xsd"
  xmlns:head="http://www.energinet.dk/schemas/BalRespXML/MessageHeader/v13"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.energinet.dk/schemas/BalRespXML/BidActivationD
ocument/v13 ../BidActivationDocument-13.xsd">
    <head:MessageHeader>
       <head:DocumentIdentification v="345432"/>
       <head:DocumentVersion v="1"/>
       <head:DocumentType v="Z24"/>
       <head:ProcessType v="DK-OP"/>
       <head:SenderIdentification v="5790000832057" codingScheme="A10"/>
       <head:SenderRole v="A04"/>
       <head:ReceiverIdentification v="5790001265472" codingScheme="A10"/>
       <head:ReceiverRole v="A08"/>
       <head:DocumentDateTime v="2006-02-24T16:50:00Z"/>
       <head:ScheduleTimeInterval v="2007-02-24T23:00Z/2007-02-25T23:00Z"/>
       <head:Domain v="10YDK-1--------W" codingScheme="A01"/>
    </head:MessageHeader>

    <!--Ingen enhed-->
    <BidActivation>
       <TimeSeriesIdentification v="542853"/>
       <TimeSeriesVersion v="1"/>
       <BusinessType v="Z01"/>
       <Product v="8716867000016"/>
       <BidDocumentIdentification v="54256"/>
       <BidDocumentVersion v="1"/>
       <BidIdentification v="4796453"/>
       <MeasurementUnit v="MAW"/>
       <Period>
          <BidInterval v="2007-02-25T22:00Z/2007-02-25T23:00Z"/>
          <Resolution v="PT05M"/>
          <Interval><Position v="1"/><Quantity v="0"/></Interval>
          <Interval><Position v="2"/><Quantity v="18"/></Interval>
          <!-- Interval element 3-11 udeladt -->
          <Interval><Position v="12"/><Quantity v="18"/></Interval>
          <Interval><Position v="13"/><Quantity v="0"/></Interval>
       </Period>
    </BidActivation>

</BidActivationDocument>
```

6 BT-105: Submission of 4-week forecasts

Business transaction BT-105 is used by the BRPs to submit forecasts concerning the facilities for which the player is responsible.

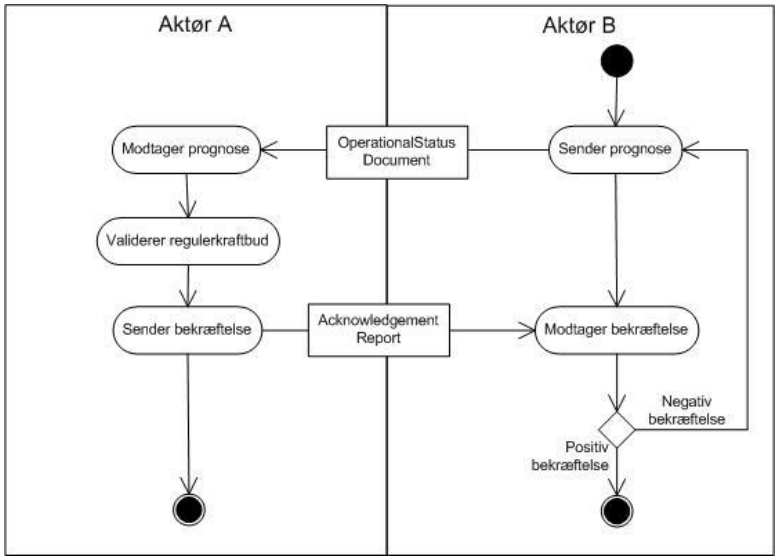

Figure 9 - Activity diagram for BT-105 Submission of 4-week forecasts

Translation of figure text:
[Aktør A = Player A
Modtager prognose = Receives forecast
Validerer regulerkraftbud = Validates regulating power bid
Sender bekræftelse = Sends acknowledgement

Aktør B = Player B
Sender prognose = Submits forecast
Modtager bekræftelse = Receives acknowledgement
Negativ bekræftelse = Negative acknowledgement
Positiv bekræftelse = Positive acknowledgement]

6.1 Initiation

The transaction is initiated by an XML message (OperationalStatusDocument) with the ProcessType "DK-OP" (Operational scheduling) and DocumentType A14 (Resource Provider Resource document) in which the player has assigned status to the facilities for which the player is responsible.

6.2 Data flows

6.2.1 First data flow: Forecast

The player submits its forecast in accordance with the relevant class diagram and dependency matrix.

On receipt, data submitted are validated according to the rules specified in Regulation F. The forecast is subsequently validated in accordance with the rules outlined below.

6.2.2 Valid data for submission of 4-week forecasts

MessageHeader

- *DocumentIdentification* must together with *DocumentVersion* be unique

- *SenderIdentification* must contain the existing GLN/EIC code
- *ReceiverIdentification* must contain GLN/EIC code for TSO
- *DocumentDateTime* must be in the correct format (YYYY-MM-DDThh:mm:ssZ)
- *ScheduleTimeInterval* must cover a 4-week period
- *Domain* must contain one of the below-mentioned area types.

OperationalStatusDocument

- *TimeSerieIdentification* must be unique in the message
- For units > 25 MW, *UnitIdentification* must contain an existing ID
- *TimeInterval* must cover 4 weeks
- *Resolution* must be one week (P7D)
- *Quantity* must be a value stated to max. one decimal place.

The following area type identifications are used:

- 10YDK-1--------W (Western Denmark)
- 10YDK-2--------M (Eastern Denmark)

6.2.3 Second data flow: Acknowledgement

If the message can be validated in relation to schemas, and the content meets all validations in the above validation list, the overall forecast is approved by means of an acknowledgement with the code A01.

In case of verification errors in relation to the schema or the content, the message must be rejected. The acknowledgement will in such case contain an error code and an explanatory text.

The acknowledgement will always contain a reference to the original message and must be processed in accordance with the rules specified in Regulation F.

6.3 Class diagram

In addition to *MessageHeader*, a 4-week forecast includes the class *OperationalStatus*.

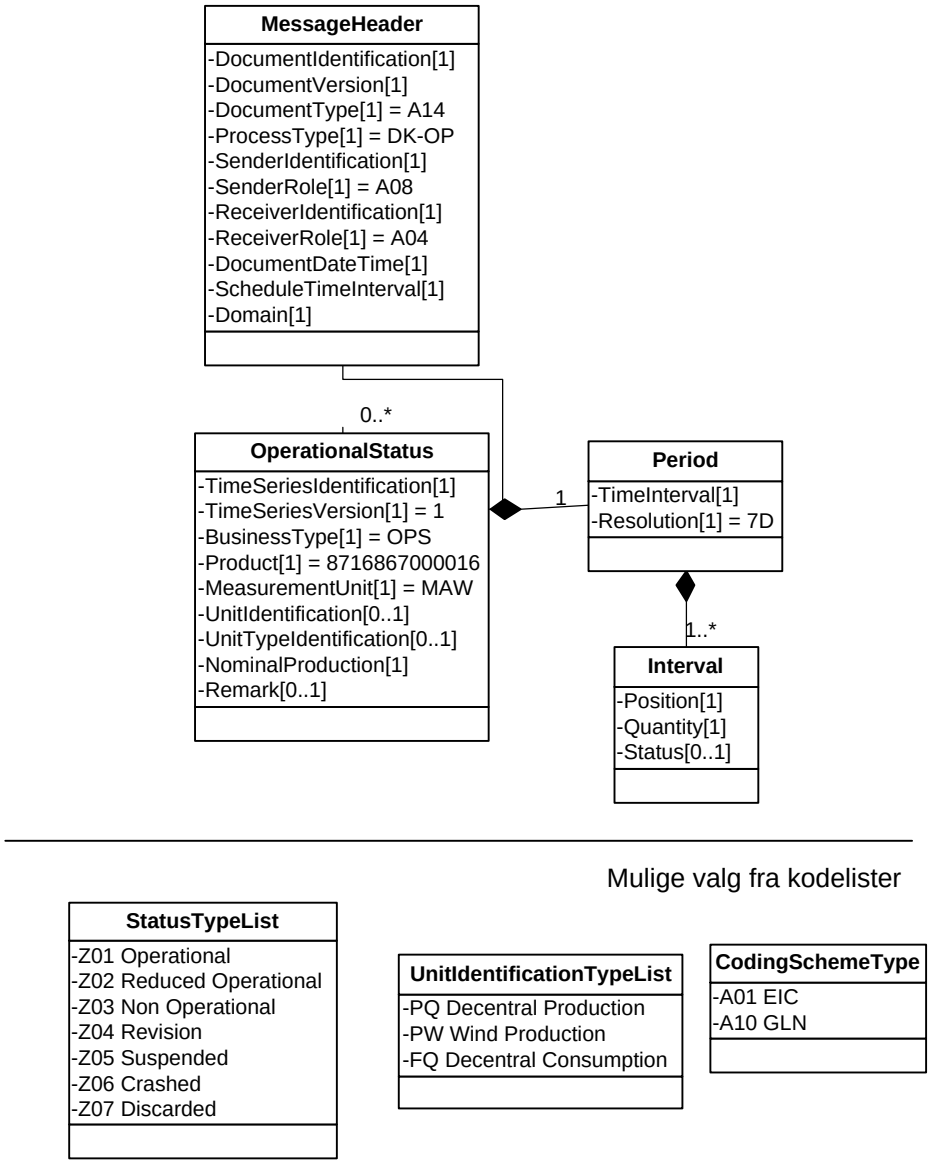

Figure 10 - Class diagram for OperationalStatusDocument (4-week forecast)

Translation of figure text: Mulige valg fra kodelister = Possible options from code lists

6.4 Dependency matrix

Dependency matrix for BT-105 *Element Name*	Unit < 25 MW	Unit > 25 MW
MarketScheduleTimeSeries		
TimeSeriesIdentification	M	M
TimeSeriesVersion	1	1
BusinessType	OPS	OPS
Product	8716867000016	
MeasurementUnit	M	M
UnitTypeIdentification	M	B
UnitIdentification	B	M
NominalProduction	M	M
Remark	O	O
Period		
TimeInterval	M	M
Resolution	7D	7D
Interval		
Position	M	M
Quantity	M	M
Status	B	M

M – mandatory O – optional B – not used

6.5 Unique identification

BT ID	**DK-BT-105**
BT name	Submission of 4-week forecasts
BT version	1
BT-combined ID	DK-BT-105-001
BPI	DK-OP
Edi Documents:	
Document ID	XML
Document name	OperationalStatusDocument-13.xsd
Document IG version	13.8
Document ID	XML
Document name	AcknowledgementDocument-13.xsd
Document IG version	13.7

6.6 Data definitions for OperationalStatusDocument

TimeSeriesIdentification	
Description: Unique identification of the sender of the time series referred to	
Code	
Classification	Mandatory
Size	an..35
Type	ecc:IdentificationType
Example	<SendersTimeSeriesIdentification v="987654321"/>
Comment	

TimeSeriesVersion	
Description: The version of the time series being submitted	
Code	
Classification	Mandatory
Size	n..3
Type	ecc:VersionType
Example	<TimeSeriesVersion v="1"/>
Comment	Is always set to 1

BusinessType	
Description: The type of time series included.	
Code	See Business type code list
Classification	Mandatory
Size	an..3
Type	head:BusinessType
Example	<BusinessType v="OPS" />
Comment	

Product	
Description: Identification of the product included. The product could be energy or power	
Code	See Product code list
Classification	Mandatory
Size	an..13
Type	ecc:EnergyProductType
Example	<Product v="8716867000016"/>
Comment	

MeasurementUnit	
Description: The unit used to measure the individual values. The unit could be MWh or MW	
Code	See MeasurementUnit code list
Classification	Mandatory
Size	an..3
Type	ecc:UnitOfMeasureType
Example	<MeasurementUnit v="MAW"/>
Comment	

UnitIdentification	
Description: States the type of unit supplying/buying production	
Code	
Classification	Optional
Size	an..35
Type	ecc:QuantityType
Example	<UnitIdentification v="123456789" />
Comment	

UnitTypeIdentification	
Description: States the type of unit supplying//buying production. UnitIdentification could, for example, be local production	
Code	See Unit Type code list
Classification	Optional
Size	an..35
Type	ecc:QuantityType
Example	<UnitTypeIdentification v="PQ" />
Comment	

NominalProduction	
Description: The sum of all production units	
Code	
Classification	Mandatory
Size	an..18
Type	ecc:QuantityType
Example	<NominalProduction v="67.000"/>
Comment	

Remark	
Description: Comment	
Code	
Classification	Mandatory
Size	An..70
Type	ecc:ReasonTextType
Example	<Remark v="Der pågår vedligehold af blok 4"/>
Comment	

6.6.1 Period

TimeInterval	
Description: Start and end of time interval for the period processed	
Code	
Classification	Mandatory
Size	an..35
Type	ecc:TimeIntervalType
Example	<TimeInterval v="2006-07-09T23:00Z/2006-07-10T23:00Z"/>
Comment	The format is YYYY-MM-DDThh:mmZ/ YYYY-MM-DDThh:mmZ., and the time is stated in UCT

Resolution	
Description: The resolution determines the degree of detail provided in terms of time interval	
Code	
Classification	Mandatory
Size	an..14
Type	ecc:ResolutionType
Example	<Resolution v="P7D"/>
Comment	The resolution is expressed by ISO 8601 in the following format: *PnYnMnDTnHnMnS*. If the period is indicated in hours, minutes and seconds, "T" must be included. For example, PT1H indicates a resolution of 1 hour, while PT5M indicates a resolution of 5 minutes.

6.6.2 Interval

Position	
Description: The relative position for a period in an interval	
Code	
Classification	Mandatory
Size	n..6
Type	ecc:PositionType
Example	<Position v="1"/>
Comment	The position is specified by a numerical integer starting with 1

Quantity	
Description: Quantity specification for a position in a given interval	
Code	
Classification	Mandatory
Size	n..18
Type	ecc:QuantityType
Example	<Quantity v="51.4"/>
Comment	The quantity is specified in the unit stated in the MeasurementUnit element

Status	
Description: Comment	
Code	See the StatusTypeList code list
Classification	Optional
Size	An..3
Type	head:StatusType
Example	<Status v="Z01"/>
Comment	

6.7 Example

```
<?xml version="1.0" encoding="UTF-8"?>
<OperationalStatusDocument
   xmlns="http://www.energinet.dk/schemas/BalRespXML/OperationalStatusDocumen
t/v13"
   xmlns:ecl="etso-code-lists.xsd"
   xmlns:ecc="etso-core-cmpts.xsd"
   xmlns:head="http://www.energinet.dk/schemas/BalRespXML/MessageHeader/v13"
   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
   xsi:schemaLocation="http://www.energinet.dk/schemas/BalRespXML/OperationalSt
atusDocument/v13 ../OperationalStatusDocument-13.xsd">
   <head:MessageHeader>
      <head:DocumentIdentification v="89721"/>
      <head:DocumentVersion v="1"/>
      <head:DocumentType v="A14"/>
      <head:ProcessType v="DK-OP"/>
      <head:SenderIdentification v="5790001265472" codingScheme="A10"/>
      <head:SenderRole v="A08"/>
      <head:ReceiverIdentification v="5790000832057" codingScheme="A10"/>
      <head:ReceiverRole v="A04"/>
      <head:DocumentDateTime v="2006-01-28T15:40:00Z"/>
      <head:ScheduleTimeInterval v="2007-01-28T23:00Z/2007-02-25T23:00Z"/>
      <head:Domain v="10YDK-1--------W" codingScheme="A01"/>
   </head:MessageHeader>

   <!-- Sum enheder < 25 MW -->
   <OperationalStatus>
      <TimeSeriesIdentification v="64345"/>
      <TimeSeriesVersion v="1"/>
      <BusinessType v="OPS"/>
      <Product v="8716867000016"/>
      <MeasurementUnit v="MAW"/>
      <UnitTypeIdentification v="PQ"/>
      <NominalProduction v="25.000"/>
      <Period>
         <TimeInterval v="2007-01-28T23:00Z/2007-02-25T23:00Z"/>
         <Resolution v="P7D"/>
         <Interval><Position v="1"/><Quantity v="51.0"/></Interval>
         <Interval><Position v="2"/><Quantity v="52.0"/></Interval>
         <Interval><Position v="3"/><Quantity v="53.0"/></Interval>
         <Interval><Position v="4"/><Quantity v="54.0"/></Interval>
      </Period>
   </OperationalStatus>

   <!-- Enhed > 25MW -->
   <OperationalStatus>
```

```
      <TimeSeriesIdentification v="64346"/>
      <TimeSeriesVersion v="1"/>
      <BusinessType v="OPS"/>
      <Product v="8716867000016"/>
      <MeasurementUnit v="MAW"/>
      <UnitIdentification v="123456789012345678"/>
      <NominalProduction v="45.000"/>
      <Remark v="Der pågår vedligehold af blok 4"/>
      <Period>
         <TimeInterval v="2007-01-28T23:00Z/2007-02-25T23:00Z"/>
         <Resolution v="P28D"/>
         <Interval>
            <Position v="1"/><Quantity v="51.0"/><Status v="Z01"/>
         </Interval>
         <Interval>
            <Position v="2"/><Quantity v="52.0"/><Status v="Z01"/>
         </Interval>
         <Interval>
            <Position v="3"/><Quantity v="53.0"/><Status v="Z01"/>
         </Interval>
         <Interval>
            <Position v="4"/><Quantity v="54.0"/><Status v="Z01"/>
         </Interval>
      </Period>
   </OperationalStatus>
</OperationalStatusDocument>
```

7 BT-106: Submission of regulating power statements

The business transaction BT-106 is used when Energinet.dk forwards regulating power statements to the players.
It is possible to receive this information without support from the RegulationReportData XML document as the regulating power statement can be forwarded in PDF format.

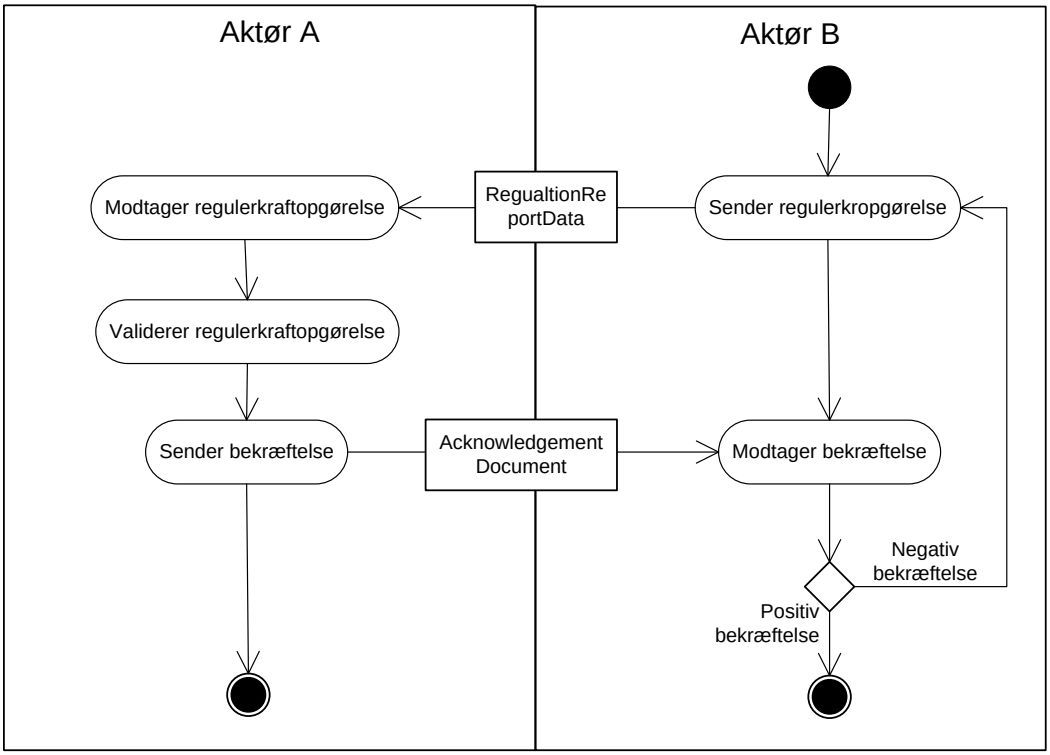

Figure 11 - Activity diagram for BT-106 Submission of regulating power statement

[Aktør A - Player A
Modtager regulerkraftopgørelse - Receives regulating power statement
Validerer regulerkraftopgørelse - Validates regulating power statement
Sender bekræftelse - Sends confirmation
Aktør B - Player B
Sender regulerkraftopgørelse - Sends regulation power statement
Modtager bekræftelse - Receives confirmation
Negativ bekræftelse - Negative confirmation
Positiv bekræfte - Positive confirmation]

7.1 Initiation

Transaction is initiated by an XML message (RegulationDataReport) med ProcessType "DK-OP" (Operational scheduling). A regulating power statement states the energy in the bid activations in accordance with the process for ordering regulating power via schedules. One statement for production and one statement for consumption will be sent. Wind power bids are included in the production statement.

7.2 Data flows

7.2.1 First dataflow: Regulating power statement

The TSO submits its activation in accordance with the class diagram.

On receipt, the message is validated in accordance with the rules specified in Regulation F. Subsequently, the full regulating power statement is validated in accordance with the rules outlined below.

7.2.2 Valid data for the forwarding of regulating power statement

MessageHeader

- *DocumentIdentification* must together with *DocumentVersion* be unique
- *DocumentVersion*
- *SenderIdentification* must contain the existing GLN/EIC code
- *ReceiverIdentification* must contain the existing GLN/EIC code
- *DocumentDateTime* must be in the correct format (YYYY-MM-DDThh:mm:ssZ)
- *ScheduleTimeInterval* must be 24 hours
- *Domain* must contain one of the below-mentioned area types for Denmark.

RegulationDataTimeSeries

- *RegulationDataIdentification* must be unique in the message
- Document contains a reference to the bid; *BidIdentification*
- *BusinessType* must be a valid code
- *RegulationDataReportInterval* must be 24 hours
- *Currency* must be DKK
- *Resolution* must be 1 hour
- *Quantity* must be stated in whole MWh.

The used identifications for area types are:

- 10YDK-1--------W (Western Denmark)
  10YDK-2--------M (Eastern Denmark)

7.2.3 Second dataflow: Acknowledgement document

If the message can be validated in relation to schemas, and the content meets all validations in the above validation list, the regulating power order is approved by means of an acknowledgement with the code A01.

In case of verification errors in relation to the schema or the content, the message must be rejected. The acknowledgement will in such case contain an error code and an explanatory text.

The acknowledgement will always contain a reference to the original message and must be processed in accordance with the rules specified in Regulation F.

7.3 Class diagram

In addition to the *MessageHeader,* a regulating power statement (RegulationData) includes the *RegulationDataTimeSeries* class.

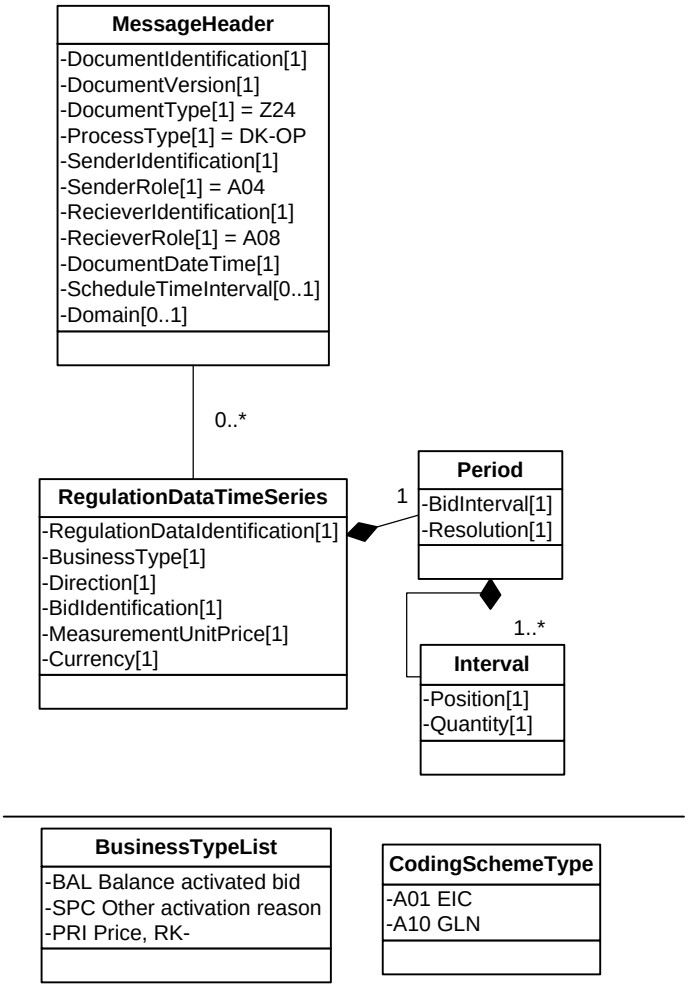

Figure 12 - Class diagram for RegulationReportData (regulating power statement)

7.4 Unique identification

BT ID	**DK-BT-106**
BT navn	Submission of regulating power statements
BT version	1
BT combined ID	DK-BT-106-001
BPI	DK-OP
Edi Documents:	
Document ID	XML
Document name	RegulationDataReport-13.xsd
Document IG version	13.0
Document ID	XML
Document name	AcknowledgementDocument-13.xsd
Document IG version	13.7

7.5 Data definitions for RegulationDataTimeSeries

RegulationDataIdentification	
Description: Unique identification of sender for the time series referred to.	
Code	
Classification	Mandatory
Size	an..35
Type	ecc:IdentificationType
Example	<SendersTimeSeriesIdentification v="987654321"/>
Comment	

BusinessType	
Description: The type of time series included. This could be a time series for consumption or non-adjustable production	
Code	See Business Type code list
Classification	Mandatory
Size	an..3
Type	head:BusinessType
Example	<BusinessType v="BAL" />
Comment	

BidIdentification	
Description: Reference to the bid identification comprised by the regulation	
Code	
Classification	Mandatory
Size	an..35
Type	ecc:IdentificationType
Example	<BidIdentification v="54796453"/>
Comment	

MeasurementUnitPrice	
Description: Unit used to measure the individual values. The unit could be MWh or MW	
Code	See MeasurementUnit code list
Classification	Mandatory
Size	an..3
Type	ecc:UnitOfMeasureType
Example	<MeasurementUnitPrice v="MWH"/>
Comment	

Currency	
Description: The currency used in statements	
Code	See MeasurementUnit code list
Classification	Mandatory
Size	an..3
Type	ecc:CurrencyType
Example	<Currency v="DKK"/>
Comment	

Direction	
Description: Indicates the direction of the bid in connection with settlement.	
Code	See Direction code list
Classification	Mandatory
Size	an..3
Type	ecc:DirectionType
Example	<Direction v="A01"/>
Comment	

7.5.1 Period

RegulationDataReportInterval	
Description: Start and end of time interval for the period processed	
Code	
Classification	Mandatory
Size	an..35
Type	ecc:TimeIntervalType
Example	<TimeInterval v="2006-07-09T23:00Z/2006-07-10T23:00Z"/>
Comment	The format is YYYY-MM-DDThh:mmZ/ YYYY-MM-DDThh:mmZ, and the time is stated in UCT.

Resolution	
Description: The resolution determines the degree of detail provided in terms of time interval	
Code	
Classification	Mandatory
Size	an..14
Type	ecc:ResolutionType
Example	<Resolution v="PT1H"/>
Comment	The resolution is expressed by ISO 8601 in the following format: *PnYnMnDTnHnMnS*. If the period is stated in hours, minutes and seconds, "T" must also be included. For example, PT1H indicates a resolution of 1 hour, while PT5M indicates a resolution of 5 minutes.

7.5.2 Interval

Position	
Description: The relative position for a period in an interval	
Code	
Classification	Mandatory
Size	n..6
Type	ecc:PositionType
Example	<Position v="1"/>
Comment	The position is specified by a numerical integer starting with 1

Quantity	
Description: Quantity specification for a position in a given interval.	
Code	
Classification	Mandatory
Size	n..18
Type	ecc:QuantityType
Example	<Quantity v="51.4"/>
Comment	The quantity is specified in the unit stated in the MeasurementUnitQuantity element.

7.6 Example of regulating power statement

```
<?xml version="1.0" encoding="utf-8"?>
<RegulationDataReport
   xmlns="http://www.energinet.dk/schemas/BalRespXML/RegulationDataReport/v13"
   xmlns:head="http://www.energinet.dk/schemas/BalRespXML/MessageHeader/v13"
>
   <head:MessageHeader>
      <head:DocumentIdentification v="acd4d4da3d7d484badb7b127110fa8c9" />
      <head:DocumentVersion v="1" />
      <!-- DocumentType: Regulation Data Report produktion A10, forbrug Z10 -->
      <head:DocumentType v="A10" />
      <head:ProcessType v="DK-OP" />
      <head:SenderIdentification codingScheme="A10" v="5790000432752" />
      <head:SenderRole v="A04" />
      <head:ReceiverIdentification codingScheme="A10" v="5790001265472" />
      <head:ReceiverRole v="A08" />
      <head:DocumentDateTime v="2011-11-09T08:17:18Z" />
      <head:ScheduleTimeInterval v="2011-11-01T23:00Z/2011-11-02T23:00Z" />
      <head:Domain codingScheme="A01" v="10YDK-1--------W" />
   </head:MessageHeader>

   <!-- Afstemning af balance aktiveret bud-->
   <RegulationDataTimeSeries>
      <RegulationDataIdentification v="146fd512caa14608b008d89eaf2cc070" />
      <BusinessType v="BAL" />
      <Direction v="A01" />
      <BidIdentification v="4796453" />
```

```
        <MeasurementUnitPrice v="MWH" />
          <Period>
                <RegulationDataReportInterval v="2011-11-01T23:00Z/2011-11-
02T23:00Z" />
          <Resolution v="PT1H" />
          <Interval>
                <Position v="1" />
                <Quantity v="0.00" />
          </Interval>
          <!-- Interval element 2-23 udeladt -->
          <Interval>
                <Position v="24" />
                <Quantity v="0.00" />
          </Interval>
       </Period>
   </RegulationDataTimeSeries>

   <!-- Afstemning af special aktiveret bud-->
   <RegulationDataTimeSeries>
        <RegulationDataIdentification v="eb6cde43ceb24a51870f2eaba1216cd6" />
        <BusinessType v="SPC" />
        <Direction v="A03" />
        <BidIdentification v="4796455" />
        <MeasurementUnitPrice v="MWH" />
        <Period>
            <RegulationDataReportInterval v="2011-11-01T23:00Z/2011-11-
02T23:00Z" />
            <Resolution v="PT1H" />
            <Interval>
                <Position v="1" />
                <Price v="800.00" />
                <Quantity v="9.90" />
            </Interval>
            <!-- Interval element 2-23 udeladt -->
            <Interval>
                <Position v="24" />
                <Price v="800.00" />
                <Quantity v="0.00" />
            </Interval>
       </Period>
   </RegulationDataTimeSeries>

   <!-- Ned RK-pris -->
   <RegulationDataTimeSeries>
        <RegulationDataIdentification v="e3f6a9790e604c3f96e0f4004d822547" />
        <BusinessType v="PRI" />
        <Direction v="A02" />
        <MeasurementUnitPrice v="MWH" />
        <Currency v="DKK" />
        <Period>
```

```
            <RegulationDataReportInterval v="2011-11-01T23:00Z/2011-11-
02T23:00Z" />
                <Resolution v="PT1H" />
                <Interval>
                    <Position v="1" />
                    <Price v="215.09" />
                </Interval>
                <!-- Interval element 2-23 udeladt -->
                <Interval>
                    <Position v="24" />
                    <Price v="295.55" />
                </Interval>
        </Period>
    </RegulationDataTimeSeries>

    <!-- Op RK-pris -->
    <RegulationDataTimeSeries>
        <RegulationDataIdentification v="27aa556eb86f4350b83953d3ad01e471" />
        <BusinessType v="PRI" />
        <Direction v="A01" />
        <MeasurementUnitPrice v="MWH" />
        <Currency v="DKK" />
        <Period>
            <RegulationDataReportInterval v="2011-11-01T23:00Z/2011-11-
02T23:00Z" />
            <Resolution v="PT1H" />
            <Interval>
                <Position v="1" />
                <Price v="289.51" />
            </Interval>
            <!-- Interval element 2-23 udeladt -->
            <Interval>
                <Position v="24" />
                <Price v="295.55" />
            </Interval>
         </Period>
    </RegulationDataTimeSeries>
</RegulationDataReport>
```

8 Confirmation (acknowledgement)

Messages of the type Acknowledgement Document are generally used to confirm a message received.

When a message is received, its content is verified for general errors (for example to see if codes used are correct and whether the necessay message elements are present). This prevents errors from occurring when the content is processed.

The sender of the original XML document will, after verification, be able to obtain a confirmation (AcknowledgementDocument), which states whether the message was received without errors. If the message was received with errors, an error code and text indicate which error has occurred.

In connection with BT102 "Submission of operational schedules and daily forecasts" the acknowledgement in DocumentDatetime will include the time which Energinet.dk intends to use when merging operational schedules submitted by the player.

8.1 Class diagram

Below a class diagram for an *acknowledgement document* is shown.

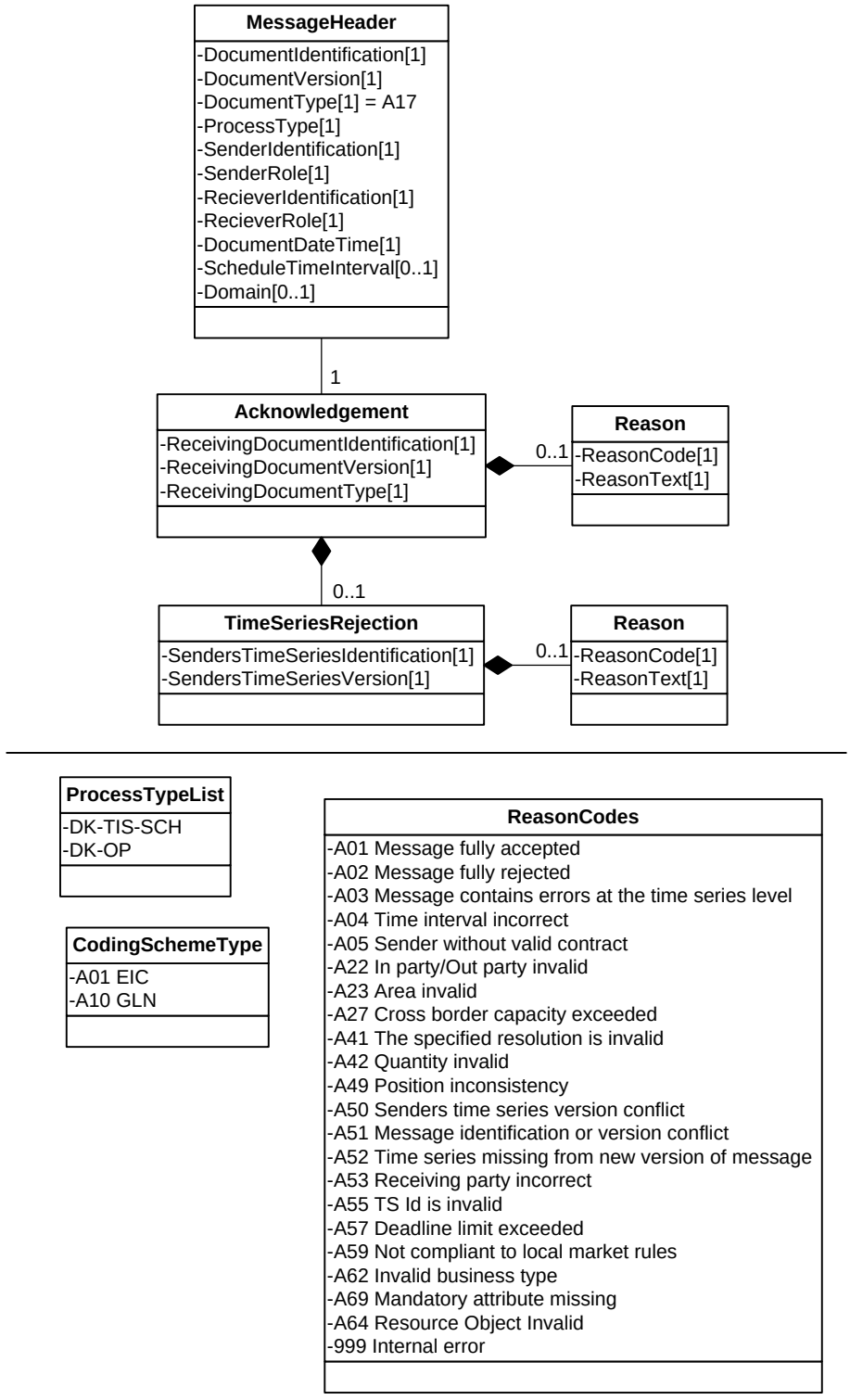

Figure 13 - Class diagram for acknowledgement document

8.2 Unique identification

Edi Documents:	
Document ID	XML
Document name	AcknowledgementDocument-13.xsd
Document IG version	13.7

8.3 Data definitions for acknowledgement document

8.3.1 Acknowledgement

ReceivingDocumentIdentification	
Description: Reference to the document submitted on the basis of which the acknowledgement has been generated	
Code	-
Classification	Mandatory
Size	an..35
Type	ecc:IdentificationType
Example	<DocumentIdentification v="17727631"/>
Comment	

DocumentVersion	
Description: Reference to the document submitted on the basis of which the acknowledgement has been generated	
Code	-
Classification	Mandatory
Size	n..3
Type	ecc:VersionType
Example	<DocumentVersion v="1"/>
Comment	

DocumentType	
Description: Document type for the document submitted on the basis of which the acknowledgement has been generated	
Code	See Document Type code list
Classification	Mandatory
Size	an..3
Type	endk: DocumentType
Example	<DocumentType v="A01"/>
Comment	

8.3.2 TimeSeriesRejection

TimeSeriesIdentification	
Description: Unique identification of the sender of the time series referred to	
Code	
Classification	Optional

Size	an..35
Type	ecc:IdentificationType
Example	<SendersTimeSeriesIdentification v="987654321"/>
Comment	

TimeSeriesVersion	
Description: The version of the time series submitted	
Code	
Classification	Optional
Size	n..3
Type	ecc:VersionType
Example	<TimeSeriesVersion v="1"/>
Comment	Is always set to 1

8.3.3 Reason

ReasonCode	
Description: Comment	
Code	
Classification	Mandatory
Size	an..3
Type	ecc:ReasonCodeType
Example	< Reasoncode v="A01">
Comment	

ReasonText	
Description: Text description of the code	
Code	
Classification	Mandatory
Size	an..512
Type	ecc:ReasonTextType
Example	<ReasonText v="Dette er en fejl"/>
Comment	

8.4 Example of overall acknowledgement

```
<?xml version="1.0" encoding="UTF-8"?>
<AcknowledgementDocument
   xmlns="http://www.energinet.dk/schemas/BalRespXML/AcknowledgementDocument/v13"
   xmlns:ecl="etso-code-lists.xsd"
   xmlns:ecc="etso-core-cmpts.xsd"
   xmlns:head="http://www.energinet.dk/schemas/BalRespXML/MessageHeader/v13"
   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
   xsi:schemaLocation="http://www.energinet.dk/schemas/BalRespXML/AcknowledgementDocument/v13 ../AcknowledgementDocument-13.xsd">
   <head:MessageHeader>
      <head:DocumentIdentification v="89721"/>
      <head:DocumentVersion v="1"/>
      <head:DocumentType v="A17"/>
```

```
      <head:ProcessType v="DK -TIS-SCH "/>
      <head:SenderIdentification v="5790000832057" codingScheme="A10"/>
      <head:SenderRole v="A04"/>
      <head:ReceiverIdentification v="5790001265472" codingScheme="A10"/>
      <head:ReceiverRole v="A08"/>
      <head:DocumentDateTime v="2006-07-09T13:40:00Z"/>
   </head:MessageHeader>
   <!-- Én acknowledgement er tilladt i dokumentet -->
   <Acknowledgement>
      <ReceivingDocumentIdentification v="89720"/>
      <ReceivingDocumentVersion v="1"/>
      <ReceivingDocumentType v="Z01"/>
      <!-- Der sendes altid én reason på acknowledgement niveau -->
      <Reason>
         <ReasonCode v="A02"/>
         <ReasonText v="Error in document"/>
      </Reason>
    </Acknowledgement>
</AcknowledgementDocument>
```

8.5 Example of acknowledgement at time series level

```
<?xml version="1.0" encoding="UTF-8"?>
<AcknowledgementDocument
   xmlns="http://www.energinet.dk/schemas/BalRespXML/AcknowledgementDocumen
t/v13"
   xmlns:ecl="etso-code-lists.xsd"
   xmlns:ecc="etso-core-cmpts.xsd"
   xmlns:head="http://www.energinet.dk/schemas/BalRespXML/MessageHeader/v13"
   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
   xsi:schemaLocation="http://www.energinet.dk/schemas/BalRespXML/Acknowledge
mentDocument/v13 ../AcknowledgementDocument-13.xsd">
   <head:MessageHeader>
      <head:DocumentIdentification v="89721"/>
      <head:DocumentVersion v="1"/>
      <head:DocumentType v="A17"/>
      <head:ProcessType v="DK-OP"/>
      <head:SenderIdentification v="5790000832057" codingScheme="A10"/>
      <head:SenderRole v="A04"/>
      <head:ReceiverIdentification v="5790001265472" codingScheme="A10"/>
      <head:ReceiverRole v="A08"/>
      <head:DocumentDateTime v="2006-07-09T13:40:00Z"/>
   </head:MessageHeader>
   <Acknowledgement>
      <ReceivingDocumentIdentification v="89720"/>
      <ReceivingDocumentVersion v="1"/>
      <ReceivingDocumentType v="Z01"/>
      <Reason>
         <ReasonCode v="A02"/>
         <ReasonText v="Message fully rejected due to errors at the time series
level"/>
      </Reason>

      <!-- Afvisning på tidsserieniveau, maksimalt én, hvis der er fejl, ellers ingen -->
      <TimeSeriesRejection>
         <SendersTimeSeriesIdentification v="6543889"/>
         <SendersTimeSeriesVersion v="1"/>
```

```
        <Reason>
            <ReasonCode v="A20"/>
            <ReasonText v="Error"/>
        </Reason>
    </TimeSeriesRejection>
</Acknowledgement>
</AcknowledgementDocument>
```

9 Data definitions for header information

This appendix contains a table for each header element in the messages used in the various transactions.

9.1.1 MessageHeader

DocumentIdentification	
Description: Sender's unique identification of a message	
Code	-
Classification	Mandatory
Size	an..35
Type	ecc:IdentificationType
Example	<DocumentIdentification v="17727631"/>
Comment	Must together with DocumentVersion be a unique identification of the message sent

DocumentVersion	
Description: The version of the document being sent. A document can be sent several times and on each occasion the DocumentVersion must be increased by 1	
Code	-
Classification	Mandatory
Size	n..3
Type	ecc:VersionType
Example	<DocumentVersion v="1"/>
Comment	Do not use leading zeros

DocumentType	
Description: Code for the message type being sent.	
Code	See Document Type code list
Classification	Mandatory
Size	an..3
Type	endk: DocumentType
Example	<DocumentType v="A01"
Comment	The message type could, for example, be a day-ahead notification

ProcessType	
Description: The process which the message is part of.	
Code	See Process Type code list
Classification	Mandatory
Size	an..10
Type	endk: ProcessType
Example	<ProcessType v="DK-TIS-SCH" />
Comment	Here, the Danish BPI codes are used. See Regulation F

SenderIdentification	
Description: Identification of the player which is responsible for the content and is the sender of the message	
Code	
Classification	Mandatory
Size	an..35, codingScheme an..3
Type	ecc:PartyType
Example	<SenderIdentification v="7381010021043" codingScheme="A10"/>
Comment	Sender is identified by a unique identification. The ID identifies the player which owns the information being sent and which at the same time is responsible for the content. The ID used is specified by means of a codingScheme

SenderRole	
Description: Specification of the role of the sender	
Code	See Role code list
Classification	Mandatory
Size	an..3
Type	ecc:RoleType
Example	<SenderRole v="A01"/>
Comment	

ReceiverIdentification	
Description: Identification of the receiver of the message	
Code	
Classification	Mandatory
Size	an..35, codingScheme an..3
Type	ecc:PartyType
Example	<ReceiverIdentification v="5790000832057" codingScheme="A10"/>
Comment	Receiver is identified by a unique identification. The ID used is specified by means of a codingScheme

ReceiverRole	
Description: Specification of the role assumed by the receiver	
Code	See Role code list
Classification	Mandatory
Size	an..3
Type	ecc:RoleType
Example	<ReceiverRole v="A04"/>
Comment	

DocumentDateTime	
Description: Time stamp for the submission of the message	
Code	
Classification	Mandatory
Size	an..20
Type	ecc:MessageDateTimeType
Example	<DocumentDateTime v="2006-07-09T13:40:00Z"/>
Comment	The format is YYYY-MM-DDThh:mm:ssZ., and the time is stated in UCT+0

ScheduleTimeInterval	
Description: Start and end date and time for the period covered by the message	
Code	
Classification	Mandatory
Size	an..35
Type	ecc:TimeIntervalType
Example	<ScheduleTimeInterval v="2006-07-09T23:00Z/2006-07-10T23:00Z"/>
Comment	The format is YYYY-MM-DDThh:mmZ/ YYYY-MM-DDThh:mmZ., and the time is stated in UCT.

Domain	
Description: The area which the message concerns. Domain could, for example, be price area DK-1 or DK-2	
Code	
Classification	Mandatory
Size	an..18
Type	ecc:AreaType
Example	<Domain v="10YDK-1--------W" codingScheme="A01"/>
Comment	CodingScheme is used

10 Appendix – Codes used for submitting notifications and schedules

This appendix contains the codes used in the individual transactions. Reference is also made to ETSO's Coding List.

10.1 Document type list

Code	Document type name (ETSO)	Description
A01	Balance responsible schedule	Notification prepared by a BRP
A07	Intermediate confirmation report	An intermediate confirmation report that may be produced between final cutoffs
A14	Resource Provider Resource Schedule	A document providing the schedules for resource objects submitted by a provider
A08	Final confirmation report	A final confirmation report that is produced after final cutoff
A17	Acknowledgement Document	Acknowledgement
Z01	Operational Schedule	A document providing information about an operational schedule
Z02	Preliminary Schedule	A document providing information about a preliminary schedule
Z08	Partially Final Confirmation Report	A confirmation report that is produced intraday
Z24	Bid Activation	A document providing information about a bid activation
A10	Regulation data report (production)	A document providing information about settlement of production bid activations (regulating power statement, production)
Z10	Regulation data report (consumption)	A document providing information about settlement of consumption bid activations (regulating power statement), consumption)

10.2 Process type

Code	Process type name (ETSO)	Description
DK-TIS-SCH	Market Scheduling	The information provided concerns market scheduling
DK-OP	Operational Scheduling	The information provided concerns operational scheduling

10.3 Role

Code	Role name (ETSO)	Description
A01	Trade responsible party	BRP for trade
A02	Consumption responsible party	BRP for consumption
A04	System operator	Energinet.dk
A06	Production responsible party	BRP for production
A08	Balance responsible party	Balance responsible party

10.4 Business type

Code	Business type name (ETSO)	Description
A01	Production	Production
A04	Consumption	Consumption
A06	External non-explicit trade	Trading in a price area
A08	Net internal trade	Trading between price areas
A19	Balance energy deviation	A time series defining the imbalance
A24	Total trade	A time series concerning the total of trades
Z01	Adjustable production	Adjustable production
Z04	Adjustable consumption	Adjustable consumption
Z05	Net Internal Trade Counterpart	As Net Internal Trade (ETSO-A08) but as reported by counterparty
Z08	Unconfirmed Trade	Discrepancy in notification
MIN	Technical Minimum	Plan for technical minimum
MAX	Technical Maximum	Plan for technical maximum
TMI	Total Minimum	Plan for total minimum
TMA	Total Maximum	Plan for total maximum
R15	Reserve 15 minutes	Plan for 15-minute reserve
R60	Reserve 60 minutes	Plan for 60-minute reserve
R90	Reserve 90 minutes	Plan for 90-minute reserve
LFC	LFC Reserves	
FNR	Frequency Controlled Normal Operational Reserves	
FDR	Frequency Controlled Operational Disturbance Reserves	
PRR	Primary Reserve	Plan for primary reserve
SER	Secondary Reserve	Plan for secondary reserve
UPR	Up Regulation	Plan for upward regulation
DOR	Down Regulation	Plan for downward regulation
BID	Bid	Plan for bid
BIC	Bid, Consumption	Plan for bid consumption
TSA	Transmission System Operator Adjustment	
TOA	Result after automatic Transmission System Operator Adjustment	
OPS	Operational Status Information	Typically a 4-week forecast
DIF	Difference	
LFU	LFC reserve, UP	
LFD	LFC reserve, DOWN	
PRU	Primary Reserve, UP (underfrequency)	
PRD	Primary Reserve, DOWN (overfrequency)	
FLU	Operational Schedule for the Flensburg-EON connection	
BIR	Bid, reserve	

Z09	Adjustable Production, GSRN	Adjustable production for a specific generation unit
BIW	Bid, Wind	Bid for wind
RWS	Regulated Wind Stopped	Disconnected installed capacity
BAL	Balance activated bid	Bid activated for balance
SPC	Special activated bid	Bid activated for purposes other than balance
PRI	Regulation settlement price	RK price for direction

10.5 Measuring unit

Code	Measurement unit name	Description
MWH	Mega watt hour	
MAW	Mega watt	

10.6 Product

Code	Product name	Description
8716867000016	Active power	Power
8716867000030	Active energy	Energy

10.7 Currency

Kode	Currency	Description
DKK	Danish Kroner	
EUR	Euro	
NOK	Norwegian Kroner	
SEK	Swedish Kroner	

10.8 Coding scheme

Code	Coding scheme name	Description
A01	ETSO	Used if data are an ETSO code
A10	GLN/GSRN	Used if data are a GLN or GSRN code

10.9 UnitIdentificationTypeList

Code	Sum times series type name	Description
PQ	Decentral production	Local production
PW	Production wind	Non-adjustable production (wind)
FQ	Decentral consumption	Local consumption

10.10 Reason codes

Code	Reason code name	Description
A01	Message fully accepted	Message is fully accepted
A02	Message fully rejected	Message is rejected
A03	Message contains errors at the time series level	Message contains errors at the time series level
A04	Time interval incorrect	Time interval incorrect
A05	Sender without valid contract	Sender has no valid contract
A22	In party/Out party invalid	Party not specified correctly
A23	Area invalid	Price area is invalid
A27	Cross border capacity exceeded	Explicit capacity nomination is exceeded

A41	The specified resolution is invalid	The specified time resolution is invalid
A42	Quantity invalid	The quantity is invalid
A49	Position inconsistency	Position is indicated incorrectly in one or more Interval elements
A50	Senders time series version conflict	The time series is already available in the version specified
A51	Message identification or version conflict	Message id or version conflicts with a message already sent
A52	Time series missing from new version of message	Time series is missing
A53	Receiving party incorrect	Receiving party incorrect
A55	TS Id is invalid	Time series id is invalid
A57	Deadline limit exceeded	Deadline exceeded
A59	Not compliant to local market rules	One or more values are invalid in the price area.
A62	Invalid business type	Business type is invalid
A64	Resource Object Invalid	Resource is invalid
A69	Mandatory attribute missing	Required attribute is missing
999	Internal error	Internal error

10.11 Status Type List

Code	Reason code name	Description
Z01	Operational	The status of the given unit is operational
Z02	Reduced Operational	The status of the given unit is reduced operational, a comment should be made
Z03	Non Operational	The status of the given unit is non-operational, a comment should be made
Z04	Revision	The given unit is under revision, a comment should be made
Z05	Suspended	The given unit is suspended (mothballed), a comment should be made
Z06	Crashed	The given unit has crashed, a comment should be made
Z07	Discarded	The given unit is discarded, a comment should be made
Z11	Planned	The status of the information provided is planned
Z12	Counterpart Imbalance	The status of the information provided is imbalance with a counterparty
Z13	Internal Imbalance	The status of the information provided is internal imbalance
Z15	Forced Adjustment	The information provided has status of a forced adjustment
Z16	Forced Adjustment Final	The information provided has status of a forced adjustment and is final.
Z17	Final	The information provided is final

10.12 Direction

Code	Reason code name	Description
A01	Up	Up signifies that the power available is used to increase energy
A02	Down	Down signifies that the power available is used to decrease energy
A03	Up and Down	Contains both directions