Metering data exchanges for CDS Operator

Version : 2.3

Publication : June 2017

Table of contents

ABBREVIATIONS 3

1 INTRODUCTION 4

1.1 DESCRIPTION 4

1.2 CDS AND ELIA GRID CONNECTION CONFIGURATION 5

1.3 REFERENCES 5

1.4 METERING DATA 5

2 PROCESSES AND DATA EXCHANGES FOR THE SETTLEMENT OF IMBALANCE 6

2.1 DATA EXCHANGE BY THE CDSO (STANDARD) 6

2.2 DATA EXCHANGE SERVICE OFFERED BY ELIA FOR CDSO 8

3 PROCESSES AND DATA EXCHANGE FOR OTHER PURPOSES 12

3.1 FLEXIBILITY SERVICES PROVISION WITHIN THE CDS 12

4 START OF OPERATIONS PROCEDURE 14

4.1 INTERFACE AND CONTACT DEFINITION 14

4.2 DATA EXCHANGE EVALUATION 15

4.3 DATA QUALITY EVALUATION 15

4.4 GO/NOGO FOR OPERATIONS 15

5 DESCRIPTION OF METERING MESSAGES RECEIVED BY ELIA 16

5.1 XEAL015 16

5.2 UMIG 6.0 – METER READ CONTINUOUS 20

5.3 EXPORT92 CSV FORMAT 23

6 COMMUNICATION PROTOCOL 26

6.1 FTP (SFTP) 26

6.2 ECP 26

Abbreviations

The abbreviations used in this document are explained hereby under.

Abbreviation	Description
AP	Access Point
ARP	Access Responsible Party
BSP	Balancing Service Provider (generic role)
CD	Calendar Day
CDS	Closed Distribution System
CDSO	Closed Distribution System Operator
CDS GU	Closed Distribution System Grid User
CSV	Comma Separated Values
DGO	Distribution Grid Operator
EAN	European Article Number
ECP	Energy Communication Platform
EIC	ETSO Identification Code
ETSO	European Transmission System Operators
FTP	File Transfer Protocol
PBO	In french “Pertes de Bouclage”: Loop losses or allocation control
R3 non-CIPU	Tertiary Control Power by non-CIPU Units
R3E	Tertiary Control Non-Reserved Power
SDR	Strategic Demand Reserve
SP	Service Point
SUP	Supplier
TIC	Metering System used by ELIA
TSO	Transmission System Operator (Elia in this document)
WD	Working Day
UMIG	Utility Market Implementation Guide
XLSX	Microsoft ® Excel format and file qualifier
XML	eXtensible Markup Language

1 Introduction

1.1 Description

The objective of this document is to describe the information exchanges to be setup by the Closed Distribution System Operator when at least one of the following situations occurs:

- An Access Point (AP) is declared as an interface between the Elia grid and a Closed Distribution System (CDS) as mentioned in annex 14 of the Access contract. Therefore the CDS Operator performs the monthly allocation of all energy taken off and/or injected by its CDS.
- The CDS Operator outsources part of its responsibilities relative to data exchanges to Elia.
- A CDS Grid User within the CDS offers Elia a flexibility service like:
  - Strategic Demand Reserve (SDR) : Load reduction at a defined Delivery Point aiming to decrease the overall consumption in the Elia control area and reduce the risk of a structural deficit.
  - Tertiary Control Power by non-CIPU Units (R3 non-CIPU)
  - Tertiary Control Non-Reserved Power (R3E)
  - Any other allowed flexibility product.

The document describes the information exchange that needs to be setup between the Transmission System Operator (TSO) and the CDSO to allow each party to fulfil their obligations. A sufficient delay to implement and realise integration tests between the TSO and the CDSO before the CDS may become active (see paragraph 4 “Start of operations procedure”) has to be foreseen.

The exchange of these additional data between the TSO and the CDSO can be done following the UMIG standards over different communication protocol (ECP or FTP) to ensure reliability and security of communication. This system is based on the system the TSO already uses for exchanging schedules with the different market parties, such as distribution grid operators (DGO).

The present document doesn’t describe other information exchanges to be setup between a CDSO and other stakeholders such as Access Responsible Parties (ARP) and Suppliers (SUP), but focuses instead on the data exchanges between the CDSO and the TSO.

Section 2 & 3 describes the different processes and data exchanges for different contractual cases, where the CDSO can outsource to the TSO part of its responsibilities in term of data exchange or where a client connected to the CDS grid can offer to Elia a flexibility service.

Section 4 provides information about the test procedure to be followed before the beginning of operational data exchange.

Section 5 provides information about the messages formats that are accepted by Elia for receiving this additional data.

Section 6 provides information about the different communication protocols accepted by Elia for receiving this additional data.

1.2 CDS and Elia grid connection configuration

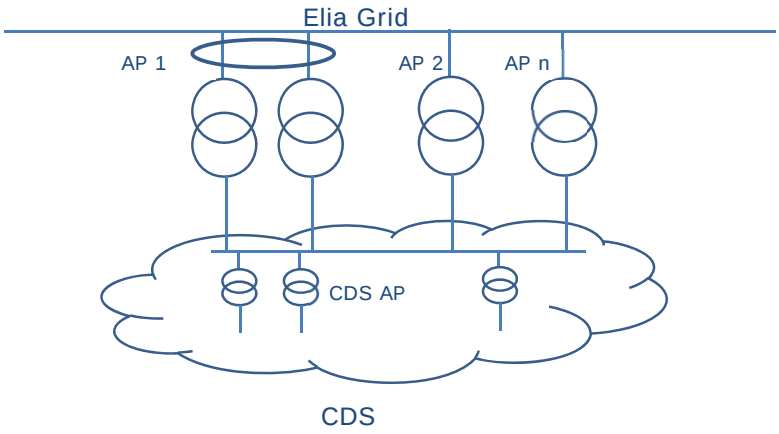

Figure 1 CDS connected directly to the Elia grid

This document is applicable to the situation where the Closed Distribution System is connected directly and exclusively to the Elia Grid, as shown on the figure here above.

The CDS is connected to the Elia grid via one or several access points (AP) as mentioned in annex 14 of the Access contract. The CDS has its own access points (CDS AP) allowing its customers to connect to its CDS grid.

1.3 References

Atrias - UMIG 6.0. sd. http://www.atrias.be/UK/Publications_UMIG60/Forms/AllItems.aspx?RootFolder=%2fUK%2fPublications%.

ENTSO-E. „Harmonised Role Model." sd. http://www.ebix.org/dropbox/harmonised_role_model_2014_01_approved.pdf.

Metering Manual. „Description and Use of Metering Messages transmitted by Elia, Version 1.2." 2012. <http://www.elia.be/en/grid-data/extranet-for-customers/metering>.

UMIX. „UMIG PARTIE E: Phase de settlement: Plans par étapes & aperçu des messages." 2008.

Product sheet "The closed distribution system connected to the Elia grid: specific operational processes associated with access": http://www.elia.be/en/products-and-services/product-sheets

1.4 Metering Data

The metering concepts used in this document are described in the Metering Manual available on the Metering extranet: http://www.elia.be/en/grid-data/extranet-for-customers/metering/technical-information.

2 Processes and data exchanges for the settlement of imbalance

For the imbalance settlement process, and as mentioned in the annex 14 of the Access contract, the CDS Operator has to perform the monthly allocation of all energy taken off and/or injected by his CDS and to communicate those to the market parties concerned, i.e. suppliers, ARPs and Elia.

Regarding data exchange there are mainly two cases:

- The CDS Operator manages himself both allocation and communication to the market parties (see §2.1 Data exchange by the CDSO (standard))
- The CDS Operator outsources part of its responsibilities about data exchanges to Elia (more particularly the communication to ARPs and suppliers) (see §2.2 Data exchange service offered by Elia for CDSO).

In the first case, the CDS Operator sends to Elia the allocations per ARP of the injected/taken energy from the Elia Grid by the CDS. The CDSO ensures the communication with other market parties such as ARP, Supplier,...

In the second case, the CDS Operator allocates the energy by virtual or real CDS Access Point, transmits these volumes to Elia and Elia communicates these volumes to ARP, SUP and GU (in case of real CDS Access Point).

2.1 Data exchange by the CDSO (standard)

2.1.1 Description

The CDS Operator performs the monthly allocation of all energy taken off and/or injected by his CDS based on the topology of his network, the metering data of the CDS Grid Users (CDS GU) and their contracts with a supplier. In practice, the CDSO splits, on a quarter-hourly basis, all energy taken off and/or injected by the CDS including grid losses, between all the ARPs active within the CDS. Each CDS GU is included in the perimeter of the ARP designated by this CDS user (ARP 'active' in the CDS).

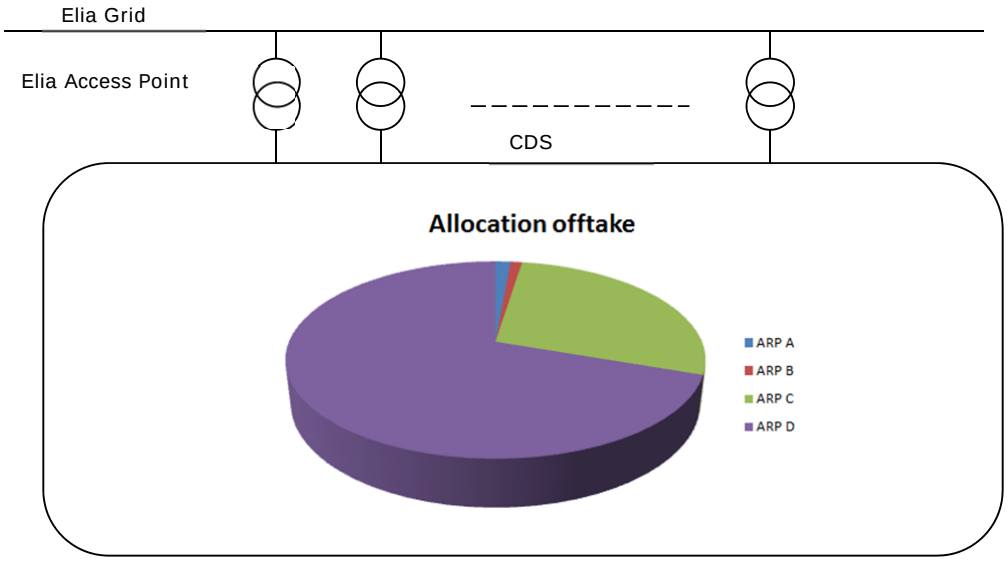

Figure 2 Example of standard CDS situation

Once the energy has been allocated, the CDS operator sends these results on a monthly basis to the market parties concerned, i.e. suppliers, ARPs and Elia.

2.1.2 Process and Data exchange

1. On D+1 before 08:00, Elia communicates to the CDSO the non-validated injected/taken energy by the CDS into/from the Elia Grid for the beginning of the current month, per access point.

   Note this is not a new message due to the transition to CDS, this message is already sent to all direct clients. This message is the "Access Point message" described in the metering manual[1].

2. On D+2 before 4:00, the CDSO can communicate to Elia a provisional non-validated allocation. This "pre-allocation" provides the split of the energy injected/taken from the Elia Grid by the CDS per ARP. Note that in the future (2018) it will be mandatory to submit this D+2 pre-allocation.

   The xEAL015 message (described in the point 5.1 of this document) will be used for this purpose.

3. On M+1 CD10 before 08:00, Elia communicates to the CDSO the validated injected/taken energy by the CDS into/from the Elia Grid of the month M, per access point.

   Note this is not a new message due to the transition to CDS, this message is already sent to all direct clients. This message is the "Access Point message" described in the metering manual[1].

4. On M+1 WD15 before 4:00, the CDSO communicates to Elia the validated allocation per ARP of the energy injected/taken by the CDS into/from the Elia Grid.

   The xEAL015 message (described in the point 5.1 of this document) will be used for this purpose.

5. Elia controls the allocation data and checks that volumes allocated on a quarter-hourly basis actually correspond to offtakes/injections on the Elia grid.

   The result of this allocation control is called "CDS Loop Losses (PBO)" and is actually a kind of "clearing differences". This result is published to the CDS Operator through the "CDS Loop Losses (PBO)" message described in the metering manual[1].

   In case of discrepancy, the CDS Operator identifies the source of the problem as quickly as possible and determines its magnitude. He communicates this information on to Elia. The problem will either be corrected in a new allocation process or attributed to the ARP in charge of monitoring non-allocated energy. The UMIG re-run criteria[2] can be used to decide on the submission of new allocations. If there is a new allocation, the CDS manager must make the new allocation data available to Elia and the market parties.

   No systematic PBO different of null will be allowed.

[1] Metering Manual. „Description and Use of Metering Messages transmitted by Elia, Version 2.0." 2016. http://www.elia.be/en/grid-data/extranet-for-customers/metering/technical-information.

[2] UMIG II Partie E 4.1: Phase de Settlement: Plan par étapes & aperçu des messages. 01 Settlement Electricité. Paragraph 3.2.3.3.1

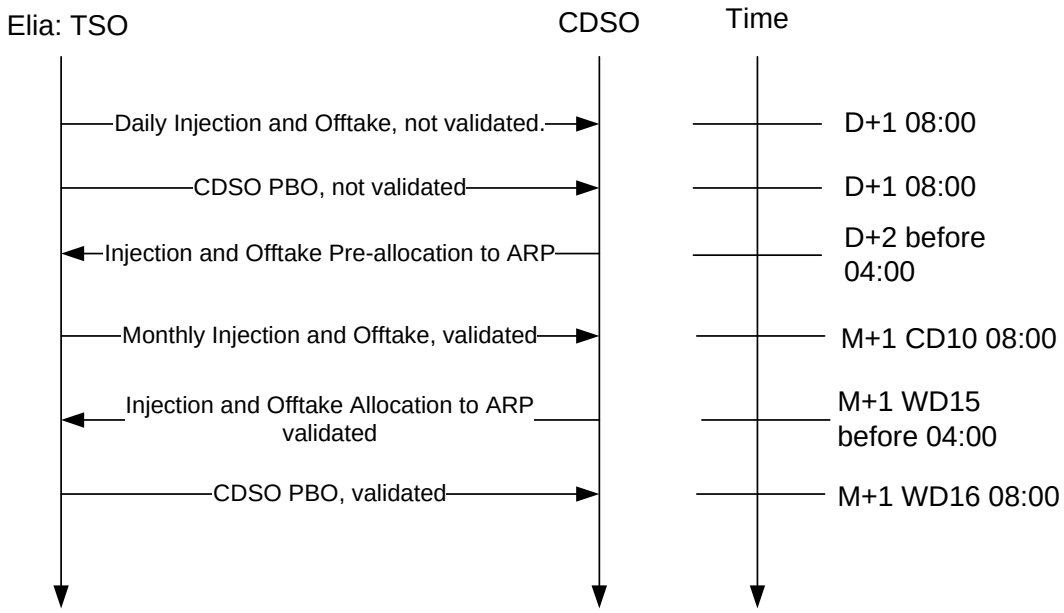

Figure 3 Metering data exchange for standard CDS

2.2 Data exchange service offered by Elia for CDSO

2.2.1 Description

In this situation, the CDS Operator is still responsible for the monthly allocation of all energy taken off and/or injected by his CDS based on the topology of his network, the metering data of the CDS Grid Users (CDS GU) and their contract with their supplier.

However, the CDSO can transmit to Elia the injected/taken energy volumes per virtual or real CDS Access Points as defined in the Annex 2 of the subcontracting agreement between the CDSO and Elia for the exchange of the allocation data from the CDSO to the market parties.

In practice, the CDSO splits, on a quarter-hourly basis, all energy taken off and/or injected by the CDS including grid losses, between the different virtual/real CDS Access Points. Each CDS GU is associated to at least one of these virtual/real CDS Access Points.

Once the energy has been allocated to the virtual/real CDS Access Points, the CDS Operator sends these results on to Elia.

For this to be possible, virtual/real CDS Access points within the CDS have to be defined by the CDSO and an EAN has to be attributed to each of those CDS Access Points. The EAN will be used as key between the CDSO and Elia and between Elia and the ARP/Supplier to identify the data to be sent.

Elia will then take the injected/taken energy of these virtual/real access points into account in the perimeter of the specified ARP and transmit these on a daily & monthly basis to the ARP and supplier.

The last publication from Elia to the suppliers & ARPs for the month M-1 will be done on the month M + 10WD.

2.2.2 Management of real or virtual CDS Access

The CDSO is responsible for maintaining a list of virtual/real access points. The identification key in the data exchange is the EAN attributed by the CDSO to the virtual/real CDS Access Points.

The CDSO is responsible for notifying Elia in case of changes in the list of virtual points. At the beginning, an initial table will be defined with the list of known points. An example is shown in Figure 4.

Note that this table is defined in Annex 2 of the subcontracting agreement between the CDSO and Elia for the exchange of the allocation data from the CDSO to the market parties.

CDS AP EAN	CDS AP Name	Supplier GLN	ARP GLN	Start Date	End Date	CDS GU (optional)

Figure 4 Virtual/real access point table

In case of a real CDS Access Point (which is part of the access register of the CDS), the CDS Grid User has to be specified. In this case, the mentioned EAN must be the EAN of the access register of the CDS.

In the table, a start date and end date for the validity of the CDS Access Point must be specified.

The table must be updated according to the evolution of contractual data within the CDS:

- In case a new virtual/real CDS Access Point is applicable, a new line must be added to the table.
- In case a virtual/real CDS Access Point is suppressed before the end date previously specified in the table, the table must be updated with the new end date.

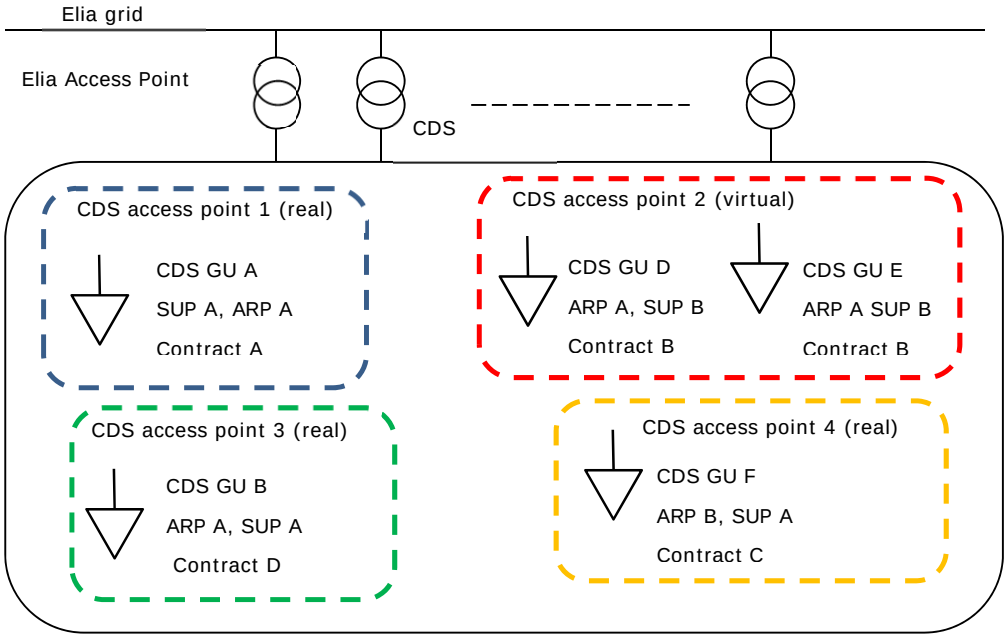

Figure 5 Example of contractual situation

The previous figure shows an example situation: topologically speaking, there are 5 CDS Access points but in the context of this data exchange, the data are aggregated for one of them. Thus, the physical CDS AP of CDS GU D and CDS GU E can be merged into a single virtual CDS Access point (for example because they share the same ARP, SUP and contract or any other reason defined by the CDS Operator).

2.2.3 Process and Data exchange

Elia will take the injected/taken energy of the virtual/real access points into account in the perimeter of the specified ARP. Elia will also transmit the received virtual/real access point to the ARP and supplier.

1) On D+1 before 04:00 the CDSO should communicate to Elia non-validated injected/taken energy by virtual/real access point.

   The MeterReadContinuous (UMIG 6.0) and EXPORT92 (UMIG 4.0)[3] messages (respectively described in the point 5.2 and 5.3 of this document) will be used for this purpose.

2) On D+1 before 08:00, Elia communicates:

   - To the CDSO the non-validated injected/taken energy by the CDS into/from the Elia Grid for the beginning of the current month, per Access Point.

     Note: this is not a new message due to the transition to CDS, this message is already sent to all direct clients. This message is the "Access Point message" described in the metering manual[4].

     Note: Should the CDSO not be able to submit the data on D+1 before 04:00, as stated in step 1, but between D+1 04:00 and D+2 04:00, then Elia will only transmit the data to the ARP and SUP on D+2 08:00

   - To the ARP, Supplier and the CDSO himself the received non-validated injected/taken energy by virtual/real CDS Access Point into the CDS.

     Note that these are new messages due to the transition to CDS subcontracted. This message is the "CDS Access Point message" described in the metering manual[3].

3) On M+1 CD10 before 08:00, Elia communicates to the CDSO the validated injected/taken energy by the CDS into/from the Elia Grid of the month M, per access point.

   Note that this is not a new message due to the transition to CDS, this message is already sent to all direct clients. This message is the "Access Point message" described in the metering manual[3].

4) On M+1 WD10 before 04:00, the CDSO should communicate to Elia, the validated injected/taken energy by virtual/real access point.

   The MeterReadContinuous (UMIG 6.0) and EXPORT92 (UMIG 4.0) messages (respectively described in the point 5.2 and 5.3 of this document) will be used for this purpose.

5) On M+1 WD10 at 08:00, Elia communicates to the ARP, SUP and the CDSO himself the received validated injected/taken energy by virtual/real access point into the CDS.

   Note these are new messages due to the transition to CDS subcontracted. This message is the "CDS Access Point message" described in the metering manual[3].

6) Elia verifies that the difference between the total of the the received validated injected/taken energy by virtual/real access point provided by the CDSO and the total

[3] Note that the current trend in the market is to move towards eblX based messages. This is the choice that has been made by Atrias for the exchange between the different market actors involved in the distribution infeed and allocation processes.

[4] Metering Manual. „Description and Use of Metering Messages transmitted by Elia, Version 2.0." 2016. http://www.elia.be/en/grid-data/extranet-for-customers/metering/technical-information.

energy injected/taken into/from the Elia Grid is null. The result of this calculation is the PBO

7) Elia controls the received data and checks that volumes allocated to the different virtual/real CDS Access Point on a quarter-hourly basis actually correspond to offtakes/injections on the Elia grid.

   The result of this allocation control is called "CDS Loop Losses (PBO)" and is actually a kind of "clearing differences". This result is published to the CDS Operator through the "CDS Loop Losses (PBO)" message described in the metering manual[5].

   In case of discrepancy, the CDS Operator identifies the source of the problem as quickly as possible and determines its magnitude. He passes this information on to Elia. The problem will either be corrected in a new allocation process or attributed to the ARP in charge of monitoring non-allocated energy. The UMIG re-run criteria[6] can be used to decide on the submission of new allocations. If there is a new allocation, the CDS manager must make the new allocation data available to Elia and the market parties.

   No systematic PBO different of null will be allowed.

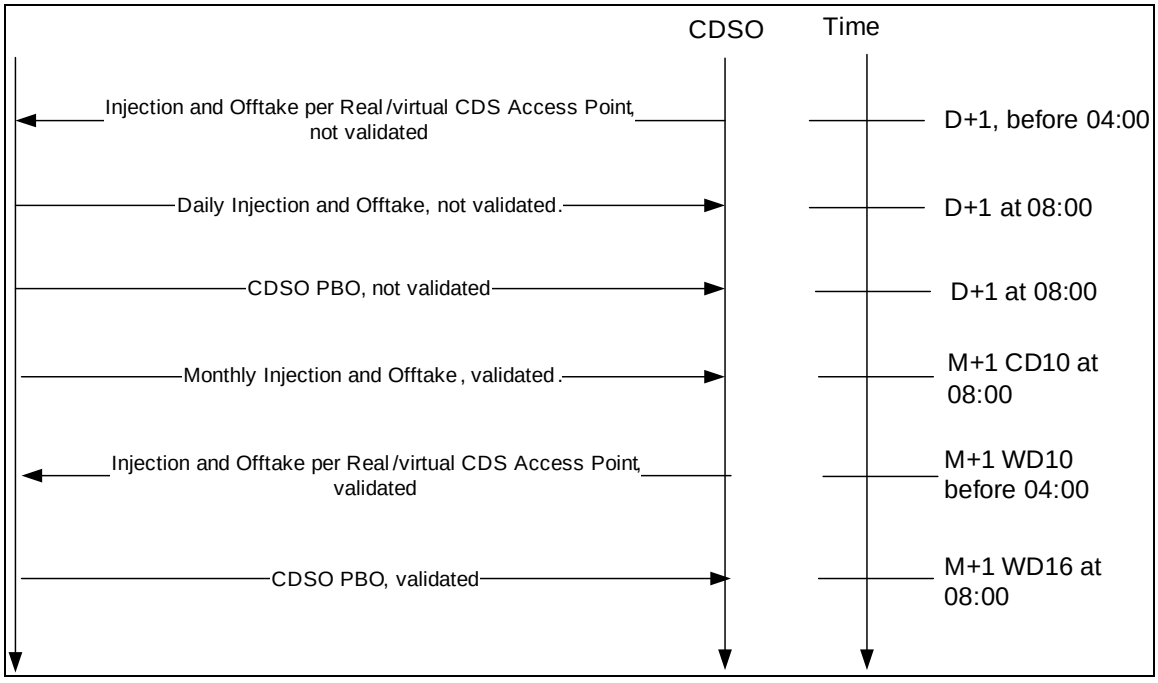

Figure 6 Metering data exchange for CDS having outsourced to Elia the data exchange to ARP & Supplier

[5] Metering Manual. „Description and Use of Metering Messages transmitted by Elia, Version 2.0." 2016. http://www.elia.be/en/grid-data/extranet-for-customers/metering/technical-information.

[6] UMIG II Partie E 4.1: Phase de Settlement: Plan par étapes & aperçu des messages. 01 Settlement Electricité. Paragraph 3.2.3.3.1

3 Processes and data exchange for other purposes

3.1 Flexibility services provision within the CDS

3.1.1 Summary

Would a grid user within the CDS provide a flexibility service (currently SDR, R3E or R3 non-CIPU) to Elia, the following data exchange (if not already covered by situation described in 2.2) has to be implemented. For each CDS Grid User providing a flexibility service to Elia, two points must be defined:

1. the Service Point (SP)[7]
2. the (real) CDS Access Point (CDS AP)

by means of an identifier (EAN), defined by the CDSO, and the related metering equation if any.

The Service Point (SP) is the point (or group of points) in the CDS where a flexibility service (SDR, R3E or R3 non-CIPU) is provided.

The CDS AP is the real access point (which is part of the access register of the CDS) where the CDS Grid User is providing the service (SDR, R3E or R3 non-CIPU). The EAN of the CDS AP must be the EAN of the access register of the CDS.

The following figure provides an example situation: in this case the CDS AP is made up of an aggregation of three different meters and the SP corresponds to two of them.

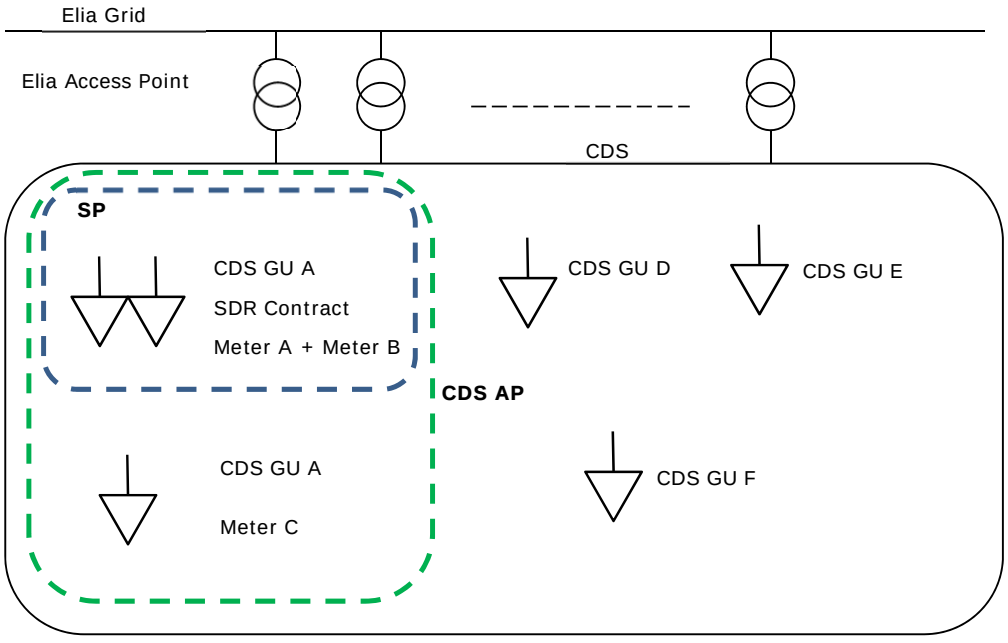

Figure 7 Example situation of SP and CDS AP

[7] The Service Point (SP) refers to a point
- within the electrical facilities of a grid user downstream of an Access Point connected to the Elia Grid
- or within a CDS connected to the Elia Grid,

from which a flexibility service can be delivered to Elia. Every Service Point is associated with one or more meter(s).

3.1.2 Process and Data exchange

The data submitted by the CDS Operator (CDSO) must contain the following information:

- file creation date;
- concerned period (only monthly period /file are accepted);
- EAN identifier of the Service Point and the CDS Access Point for which (aggregated) metering data are being sent;
- quarter-hour time series of active power, with a validity status for each quarter-hour.

The process is as follows:

1. Not mandatory:

   On D+1 before 04:00, the CDSO submits to Elia the injection and offtake energy at the CDS AP and the SP.

   The MeterReadContinuous (UMIG 6.0) and EXPORT92 (UMIG 4.0)[8] messages (respectively described in the point 5.2 and 5.3 of this document) will be used for this purpose.

2. Mandatory:

   On M+1 WD10 before 04:00, the CDSO submits to Elia the validated injection and offtake energy at the CDS AP and the SP.

   The MeterReadContinuous (UMIG 6.0) and EXPORT92 (UMIG 4.0) messages (respectively described in the point 5.2 and 5.3 of this document) will be used for this purpose.

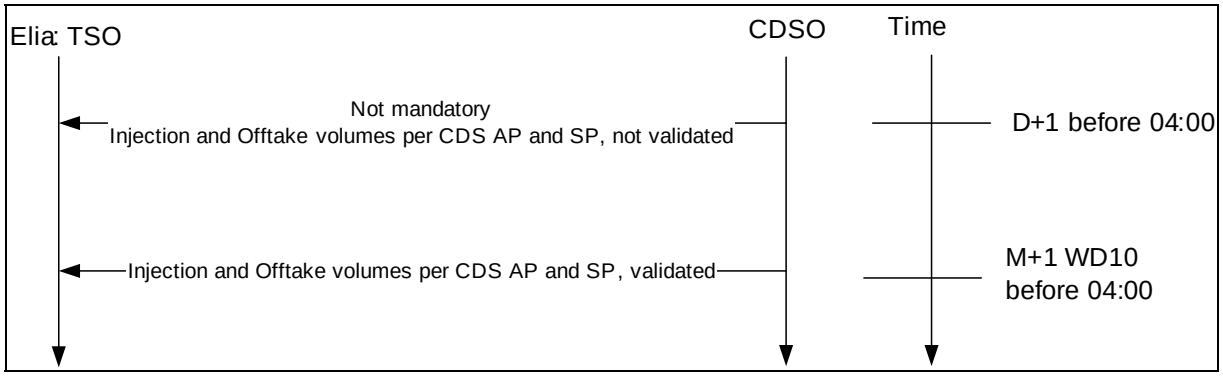

Figure 8 Metering exchange for CDS having clients offering flexibility services to Elia

[8] Note that the current trend in the market is to move towards ebIX based messages. This is the choice that has been made by Atrias for the exchange between the different market actors involved in the distribution infeed and allocation processes.

4 Start of operations procedure

When an Elia Grid User expresses interest for becoming an active CDS or that a CDS Grid User offers a flexibility service to Elia, there are a number of steps that need to be fulfilled. The following figure provides an overview of these steps. The three first steps can start in parallel. The next subsection provides more detail on each of these.

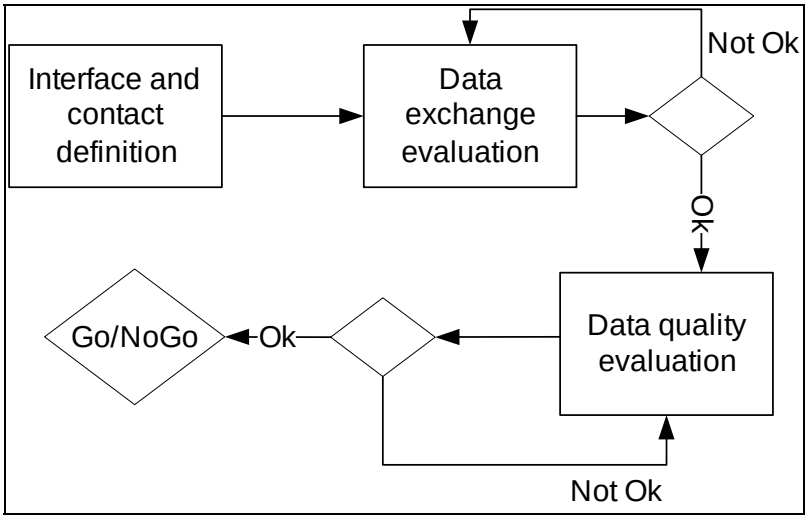

Figure 9 Start of operations procedure

4.1 Interface and contact definition

Contact person at CDS side, responsible for data exchanges, is defined in Annex 14 of the Access contract.

In complement, Elia and the CDSO must agree on the protocols for metering data exchanges (ECP or FTP). If necessary, specific parameters needed (FTP server, EIC, message recipient contact...) for exchanging this data will also be defined during this phase.

For initiating this step, the CDSO needs to contact his Key Account Manager and provide the following contact information:

- Company Name
- Contact person name responsible for data exchange
- Address, e-mail, telephone number of contact person
- Not mandatory: Fax number of contact person

The CDSO must also request an EIC if it does not have already one.

You will then be provided with an user id and a password for connecting to the Elia metering exchange applications by the metering service (metering.services@elia.be).

All information related communication protocols are available in the metering extranet: http://www.elia.be/en/grid-data/extranet-for-customers/metering

4.2 Data exchange evaluation

Following, or during, the contractual process, some technical tests between the CDS and Elia must take place to ensure that the necessary technical mechanisms are in place for the information exchange.

During this phase, Elia will verify that the CDSO can send the necessary information to Elia (as described above). During this phase, the CDSO also needs to make sure that the incoming messages from Elia are correctly received by their system.

This phase should take no more than one working week.

4.3 Data quality evaluation

When the data exchange evaluation is finished, the CDSO and Elia can concentrate on the correctness of the data being exchanged. During this phase, Elia will, for example, verify that the simulated Loop Losses (PBO) are null or that the CDS AP and/or SP metering is complete and plausible. This phase could last a complete month or require the CDSO to produce data for a month in the past, prior to the CDS operations.

- Elia will evaluate whether the data is complete: Data has been sent for every quarter-hour in a month, without missing quarter-hours in the time-series.
- Validation status usage: Elia will check that the validity status of the data is present and that the CDSO is able to send valid data for a complete month.
- Plausible: The metering data submitted by the CDSO are coherent with Elia meters
    - In the case of allocated energy, Elia will simulate a Loop Losses (PBO) calculation. The PBO should be null.
    - In the case of flexibility provision: Elia will compare the CDS AP and the SP metering. The SP offtake must not exceed the CDS AP offtake.

4.4 Go / No Go for operations

Based on the status of the contractual process and on the data quality evaluation, Elia will officially notify the CDSO whether the CDSO is ready for starting operations with Elia.

5 Description of Metering Messages received by Elia

The following sections are extracts from the UMIX description of the EIN and EAL messages referenced in this document. The complete description can be found in (UMIX). For the messages sent by Elia non-related to the transition from grid user to CDS, please refer to (Metering Manual).

5.1 xEAL015

5.1.1 Purpose in Elia-CDS information exchange

The xEAL015 message will be used by the CDS to communicate the allocation result to Elia.

Note that the following fields are mandatory:

- Subject
- MS: GLN-ID of the CDSO
- Created on: Creation date
- Body: Raw message data
- GLN-ID ARP: ID of the ARP for which the data is being provided
- +S99

Elia does not use other fields in the message, such as the load profile factor.

5.1.2 UMIG description

General File specifications

The report file is of the type CSV with ";" as a separator. At the end of each line the separator is repeated and a CRLF (carriage return line feed) is added.

• This CSV file consists of a header, body and footer sections which are described below. The body section is enclosed by the tags [Body Start] and [Body End].

• Every line in the body covers exactly one check ID

• All dates and times are indicated in local time converted to CET

• All fields should always be present

Filename

The filename consists of following data (separated by a dot).

- EAN-GLN of the message sender (CDS or CDS Data Aggregator).

- EAN-GLN of party for which the data is reported (CDS).

- Sequence number of the message, unique for the receiver and this export type.

- The export type: 'UTILTSE31'.

- The MIG version to which this export is compliant: 'MIGv4.0x' in this case.

- The file extension is 'csv'.

Example:

5499757493404.5499780282907.000103. UTILTSE31.MIGv4.0x.csv

xEAL015: allocation, with residue and KCF by BRP via CSV – used by mixt sector			
HEADER			
Column Fr/To	**Attributes**	**Value**	**Remark**
1	[Subject]	[Subject]	Ex.: [Subject];UTILTSE31;MIGV4.0x;9-1.0;3.0;
2	Type of export: UTILTS E31	UTILTSE31	
3	UMIG version supported by this file	MIGV4.0x	
4	File function, coded & version number separated by a hyphen	9	Function : - 9 = Original - 35 = Copy Version number format: version nbr.revision nbr with both version and revision = integers.
5	Version of the CSV	4.0	
1	[Time zone]	[Time zone]	Ex.: [Time zone];+0100;
2	Time zone indication: offset with regard to UTC time zone. Applicable for the whole file	+0100	
1	[Created on]	[Created on]	Ex.: [Created on];08092003;16:44;
2	File creation date	ddmmyyyy	
3	Time of creation	hh:mm	
1	[Market]	[Market]	Ex.: [Market];23;
2	Market	23 (Electricity)	
1	[To]	[To]	Should be "Elia". Ex.: [TO];5414489000607;
2	Unique GLN-ID of the receiving party	EAN-GLN receiver	
1	[FROM]	[FROM]	Ex.: [FROM];5499757493404;
2	Unique GLN-ID of the sending party	EAN-GLN sender	
1	[MS]	[MS]	Only one DGO per file. Ex.: [MS];5499757493456;
2	Unique GLN-ID of the DGO for which data is provided.	EAN-GLN DGO	

Figure 10 xEAL015 Header

BODY			
Column Fr/To	**Attributes**	**Value**	**Remark**
[Body Start]			The file covers a complete month. De body structure reports on a day by day basis (Start date - End date). Each line will report the data by day by DGO by BRP and SLP
1	Start date (as per time zone reported in header) of the values provided, as well as the start time of the sequence.	ddmmyyyy hh:mm;	hh:mm is always 00:00 in the winter period (for the period 00:00 to 00:15) hh:mm is always 23:00 in the summer period (for the period from 23:00 to 23:15) Ex.: 01012003 00:00;
2	End date (as per time zone reported in header) of the values provided, as well as the start time of the sequence.	ddmmyyyy hh:mm;	hh:mm is always 00:00 in the winter period (for the period 00:00 to 00:15) hh:mm is always 23:00 in the summer period (for the period from 23:00 to 23:15) - exclusive Ex.: 02012003 00:00;
3	SUM followed by and between brackets, the aggregation being provided. Structure of this aggregation formulation : (GLN_ID of the Supplier/Balance Responsible Party (BRP), type of load profile, factor (Residue/KCF)) The constituents of the formula are separated by the comma "," . The factor is omitted when not applicable.	SUM(GLN_ID BRP, load profile, factor)	GLN_ID: de party which by which the data is aggregated. Here BRP. Load profiles: S10 = real load profile electricity. S11 = industrial < 56 kVA electricity S12 = industrial >= 56 kVA electricity S21 = residential night/day < 1,3 S22 = residential night/day >= 1,3 S79 = Climate Correction Factor Electricity S89 = residue factor electricity S99 = sum of all RLP + SLP electricity Ex.: SUM(5414488000708,S21) or SUM(5414488000708,S21,S79);
4	Energy direction	Energy direction;	Direction: E12-E17 = Consumption E12-E18 = production Ex.: E12-E17;
5	Unit of Measure	KWT;	For Electricity: KWT = kW Ex.: KWT;
6 – 105 (incl)	Value of the aggregation for the 15' being reported	Aggregated value;	The value is provided with 2 decimals. The comma (,) is used as decimal separator. KCF and residue are provided with 10 decimals. 100 columns are being provided: - For a normal day: the first 96 values are populated. The last 4 (columns 102,103,104 and 105) have a value "0" as well as quality code "V" (validated) - For a short day: when switching from winter to summertime: the first 92 values are populated. and the following 8 columns (Columns 98,99,100,101,102,103,104 and 105) have a value "0" and quality code "V" (validated)

106 - 205	Quality code of the associated value.	H;	-For a long day: when switching form summertime to wintertime: 100 values are provided in sequence of the timeserie Ex.: ;110,12;123,45;134,56;145,20; ...; The quality code is always "H". It is the value as read by the meter (corresponds with UMIG: STS 81)
206	Number of time slices per hour	4 (Electricity);	Ex.: ...;H;H;H;H;... Always 4 for electricity; needed when converting from KW to KWh.
207	PCD = percentage complete. Number of AP aggregated / total number of AP's.	100;	Ex.: 4; Always 100% at M+12wd
[Body End]			

Figure 11 xEAL015 Body

FOOTER			
Column Fr/To	**Attributes**	**Value**	**Remark**
1	[Number of lines in Body]	[Number of lines in Body]	Ex.: [Number of lines in Body];1;
2	Number of lines between [Body Start] and [Body End]	integer	

Figure 12 xEAL015 Footer

Example:

[Subject];UTILTSE31;MIGV4.0x;9-1.0;4.0;

[Time zone];+0100;

[Created on];15062012;13:55;

[Market];23;

[To];5414531999996;

[From];54XYZWXYZWXYZ;

[MS]; 54XYZWXYZWXYZ;

[Body Start]

31062012 23:00;01072012 23:00;SUM(541XYZWXYZW9,S10);E12-E17;KWT;8648,89;8151,34;8228,27;8002,11;8259,36;8316,10;8183,58;78

XEAL015_exemple.txt XEAL015_exemple.txt

5.2 UMIG 6.0 – Meter Read Continuous

5.2.1 Purpose in the Elia-CDS information Exchange

The UMIG 6.0 Meter Read Continuous allows for simultaneous submission of data through an XML file. The XSD (XML Schema Definition) is available on Atrias Website[9] and joined in annex.

For the submission of metering data of the different points, such as the SP and CDS AP in the case of flexibility services or the virtual/real CDS access point in the case of outsourcing to Elia of part of the CDS activities, the message is simplified and some of the information required by the standard XSD is not mandatory.

An alternative to this message is the Export92 described in 5.3, the CDSO can chose which of the two formats they want to use.

5.2.2 UMIG Standard

The CDS operator will be identified as the sender of the message, highlighted in the top level structure of the XSD represented here below.

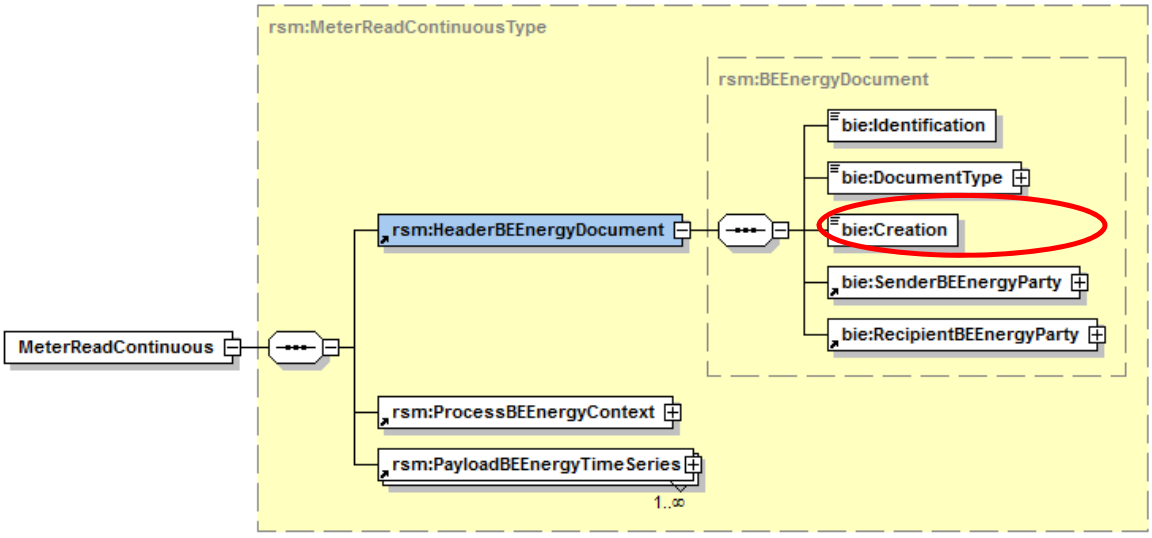

Figure 13 - Meter Read Continuous top structure

The metering data is in the payload part of the message. In this part, different point's identifiers (EAN) can be provided as the Head Point Identification highlighted in the figure here below.

The same message can contain one or more payloads. It is possible, but not mandatory, to send in a single message the data for the "Service Point" and the "CDS Access Point". In order to send the two simultaneously, the message has to have a Payload Energy Time Series for the SP and for the CDS AP.

A validity status (QuantityQuality in XML) is mandatory for each sample (qh) sent. The UMIG standard proposes several values for this validity status, with different semantics. But in this context we only need to statuses: non-validated and validated. By convention

[9] http://www.atrias.be/UK/Publications_UMIG60/Forms/AllItems.aspx?RootFolder=%2fUK%2fPublications%

we chose the values “81 (validated) and 86 (validated – corrected)” for validated values and the “56” for non-validated values.

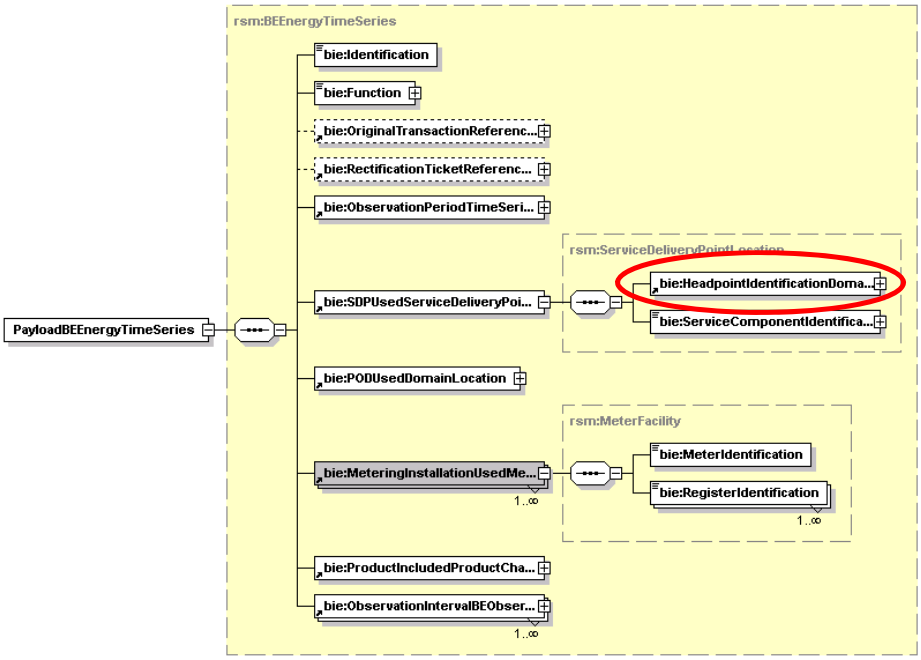

Figure 14 – PayloadBEEnergyTimeSeries

5.2.2.1 Message example

The following figure shows an example of such a message header.

The CDS GLN and Elia GLN have to be included as sender and recipient parties respectively, and the different (virtual) points (SP and CDS AP) have to be included in the Head Point Identification.

```
<rsm:MeterReadContinuous xmlns:bcl260_000019_01A="un:unece:260:data:EEM" xmlns:rsm="un:unece:260:data:EEM-MeterReadContinuous" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" >
  <rsm:HeaderBEEnergyDocument>
    <rsm:Identification>d83c111c-e655-4481-8022-fb2e0e88dd4a</rsm:Identification>
    <rsm:DocumentType listAgencyIdentifier="260">E13</rsm:DocumentType>  <!-- E13 Metering Data -->
    <rsm:Creation>2014-05-31T12:00:00+01:00</rsm:Creation>
    <rsm:SenderBEEnergyParty>
      <rsm:Identification schemeAgencyIdentifier="9">54_CDS_GLNXXXX</rsm:Identification>
    </rsm:SenderBEEnergyParty>
    <rsm:RecipientBEEnergyParty>
      <rsm:Identification schemeAgencyIdentifier="9">54_ELIA_GLNXXX</rsm:Identification>
    </rsm:RecipientBEEnergyParty>
  </rsm:HeaderBEEnergyDocument>
  <rsm:ProcessBEEnergyContext>
    <rsm:EnergyBusinessProcess listAgencyIdentifier="260" listIdentifier="BEL">E23</rsm:EnergyBusinessProcess> <!-- E23 - Periodic Metering -->
    <rsm:EnergyIndustryClassification listAgencyIdentifier="6">23</rsm:EnergyIndustryClassification>  <!-- 23 - Energy Supply Industry -->
  </rsm:ProcessBEEnergyContext>
  <rsm:PayloadBEEnergyTimeSeries>
    <rsm:Identification>1b0a0382-afd0-482d-90ab-977834b9b6ed</rsm:Identification>
    <rsm:Function listAgencyIdentifier="6">9</rsm:Function>
    <rsm:ObservationPeriodTimeSeriesPeriod>
      <rsm:ResolutionDuration>P15M</rsm:ResolutionDuration>
      <rsm:Start>2014-04-30T23:00:00+01:00</rsm:Start> <!-- Data sent for a whole Day -->
      <rsm:End>2014-05-01T23:00:00+01:00</rsm:End>
    </rsm:ObservationPeriodTimeSeriesPeriod>
    <rsm:SDPUsedServiceDeliveryPointLocation>
      <rsm:HeadpointIdentificationDomainLocation>
        <rsm:Identification schemeAgencyIdentifier="9">DELIV_POINT_EAN</rsm:Identification>
      </rsm:HeadpointIdentificationDomainLocation>
      <rsm:ServiceComponentIdentification schemeAgencyIdentifier="86">SC_OFFTAKE</rsm:ServiceComponentIdentification>
    </rsm:SDPUsedServiceDeliveryPointLocation>
    <rsm:PODUsedDomainLocation>
```

Figure 15 - Sample message, header and part of payload

```
  <rsm:PayloadBEEnergyTimeSeries>
    <rsm:Identification>1b0a0382-afd0-482d-90ab-977834b9b6ed</rsm:Identification>
    <rsm:Function listAgencyIdentifier="6">9</rsm:Function>
    <rsm:ObservationPeriodTimeSeriesPeriod>
      <rsm:ResolutionDuration>P15M</rsm:ResolutionDuration>
      <rsm:Start>2014-04-30T23:00:00+01:00</rsm:Start> <!-- Data sent for a whole Day -->
      <rsm:End>2014-05-01T23:00:00+01:00</rsm:End>
    </rsm:ObservationPeriodTimeSeriesPeriod>
    <rsm:SDPUsedServiceDeliveryPointLocation>
      <rsm:HeadpointIdentificationDomainLocation>
        <rsm:Identification schemeAgencyIdentifier="9">DELIV_POINT_EAN</rsm:Identification>
      </rsm:HeadpointIdentificationDomainLocation>
      <rsm:ServiceComponentIdentification schemeAgencyIdentifier="86">SC_OFFTAKE</rsm:ServiceComponentIdentification>
    </rsm:SDPUsedServiceDeliveryPointLocation>
    <rsm:PODUsedDomainLocation>
      <rsm:Identification schemeAgencyIdentifier="9"/>
    </rsm:PODUsedDomainLocation>
    <rsm:MeteringInstallationUsedMeterFacility>
      <rsm:MeterIdentification/>
      <rsm:RegisterIdentification/>
    </rsm:MeteringInstallationUsedMeterFacility>
    <rsm:ProductIncludedProductCharacteristic>
      <rsm:Identification schemeAgencyIdentifier="9">8716867000030</rsm:Identification> <!-- Energy Active, can be changed to power active -->
      <rsm:UnitType listAgencyIdentifier="6">KWH</rsm:UnitType>  <!-- Unit can be specified to indicate if KW, MW, KWH or MWH are being sent -->
    </rsm:ProductIncludedProductCharacteristic>

  <rsm:ObservationIntervalBEObservationPeriod>
    <rsm:Sequence>1</rsm:Sequence>
    <rsm:ObservationDetailBEEnergyObservation>
      <rsm:EnergyQuantity>425.09</rsm:EnergyQuantity>
      <rsm:QuantityQuality listAgencyIdentifier="6">81</rsm:QuantityQuality>  <!-- 81 - Definitive -->
      <rsm:MeterReadingOriginType listAgencyIdentifier="260">BV2</rsm:MeterReadingOriginType> <!-- BV2 - From Metering read -->
    </rsm:ObservationDetailBEEnergyObservation>
  </rsm:ObservationIntervalBEObservationPeriod>
  <rsm:ObservationIntervalBEObservationPeriod>
    <rsm:Sequence>2</rsm:Sequence>
    <rsm:ObservationDetailBEEnergyObservation>
      <rsm:EnergyQuantity>430.08</rsm:EnergyQuantity>
      <rsm:QuantityQuality listAgencyIdentifier="6">56</rsm:QuantityQuality> <!-- 56 - Not definitive, estimated -->
      <rsm:MeterReadingOriginType listAgencyIdentifier="379">BV2</rsm:MeterReadingOriginType>
    </rsm:ObservationDetailBEEnergyObservation>
  </rsm:ObservationIntervalBEObservationPeriod>
```

Figure 16 - Payload detail, with data for two consecutive quarter hours

5.3 EXPORT92 CSV format

5.3.1 Purpose in the Elia-CDS information Exchange

The EXPORT92 format is an alternative to the MeteringReadContinuous message (described in 5.2) for the submission of metering data of the different points, such as the SP and CDS AP in the case of flexibility service supply or the real/virtual CDS access point in the case of outsourcing to Elia of part of the CDS activities

The message has a header with the basic description of the message, a body with the payload data and ends with a footer for integrity and error check.

This format also requires a validity status to be sent for each quarter hour. The UMIG standard proposes several statuses with different semantics, but in this context only two statuses are necessary, non-validated and validated. By convention, we choose status "?" for invalid values and status "H" for valid value. In case of correction the status "M" can be used.

5.3.2 UMIG Standard

Note that some small adjustments can still be made to the message description.

5.3.2.1 Header

Column 1	Column 2	Column 3	Column 4	Column 5
[Subject]	The export type: 'EXPORT92'	MIG version of the file: 'MIGv4.1'	'9'=original UTILTS file '5'=update UTILTS file	Export catalog version : '1.0'
[Time zone]	Offset from UTC: '+0100'			
[Created On]	Date of file creation: DDMMYYYY	Timestamp of file creation: HH24:MI		
[Market]	23			
[To]	Elia GLN			
From]	CDSO GLN			
[MS]	Third party sender GLN (if any)			
[File ID]	Unique identifier of the file (this number is different from the sequence number in the file name)			

5.3.2.2 Message body

CSV column	Content	Remarks
1	Start timestamp of the time series (according to the time zone which is specified in the header)	Format DDMMYYYY HH:MI Local time
2	End timestamp of the time series (according to the time zone which is specified in the header)	Format DDMMYYYY HH:MI Local Time
3	In case of calculated time series: EAN-GSRN of the virtual access point	GSRN (18 digits) e.g. 541449500001452165
4	Serial number of the metering device	Not required

5	In case of calculated time series: Calculated meter counter ID In case of a physical time series (submetering): Physical counter ID	Not required
6	Energy type **Only A- active type is expected, other types ara available for future data exchanges**	- A+= active power, direction netuser. - I+= reactive inductive power, direction netuser. - C-= reactive capacitive power, direction netuser. - A-= active power, direction net. - I-= reactive inductive power, direction net. - C+= reactive capacitive power, direction net.
7	Measured direction **Only consmption is expected**	- E12-E17= consumption - E12-E18= production (injection)
8	Measurement unit **Only kW or kWh are expected, other types are available for future data exchanges**	- KWT= kW - KVR= kVAr -KWH=kWh
9	Reason of measurement	Always 'E23' for periodical meter reading
10-109	Value for each interval. Electricity: Each 15 minutes has a value.	The value is always with max 3 digits after the comma. There are 200 columns per day of data (100 for values and 100 for quality codes): - For a normal day: only the first 96 columns are used and the last four are filled with 0, and 'Z03' as quality code. - For a short day: only the first 92 columns are used and the last eight are filled with 0, and 'Z03' as quality code. - For a long day: the 100 columns are used. The values are always in chronological ordering by the time zone specified in the header.
110-209	Quality code for each interval and the corresponding reason Each 15 minutes has a quality code.	Possible quality codes in combination with the reason: Original AMR metering data: - 'H'= original unvalidated value (MIG STS 81). - '?'= missing value (MIG STS 46). -'M' = manually corrected (MIG STS 125) - ' - '

5.3.2.3 Message footer

Column 1	Column 2
[Number of lines in Body]	The number of lines between [Body Start] and [Body End]

5.3.2.4 Message example

The following figure shows a sample message, it is also embedded in the file below.

```
[Subject];EXPORT92;MIGv4.1;9;1.0;
[Time zone];+0100;
[Created on];01012015;13:35;
[Market];23;
[To];ELIA_GLN;
[From];CDS_GLN;
[MS];;
[Body Start]
01122014 00:00;31122014 00:00;VIRT_SDR_POINTEAN;;B31;A-;E12-E18;KWT;E23;2700,00;2704,00;2704,00;2704,00;
01122014 00:00;31122014 00:00;VIRT_SDR_CONTREAN;;B31;A-;E12-E18;KWT;E23;3320,00;3320,00;3324,00;3320,00;
[Body End]
[Number of lines in Body];2;
```

Figure 17 - Example of CSV- Message for receiving SDR required metering

6 Communication protocol

Elia offers two different protocols for automatic data exchanges: FTP and ECP.

There is no specific naming convention for the files, but special characters, such as * | & ; , or ? cannot be part of the file name.

More information about these protocols is available in the metering manual[10].

6.1 FTP (SFTP)

The SFTP protocol can be used for exchanging information in the two directions (CDSO to TSO and TSO to CDSO).

6.2 ECP

The ECP protocol is currently only available in the outgoing direction, but in the near future we plan to enable reception of messages by the TSO via ECP.

[10] Metering Manual. „Description and Use of Metering Messages transmitted by Elia, Version 2.0." 2016. http://www.elia.be/en/grid-data/extranet-for-customers/metering/technical-information.