MGA Exchange and Bilateral Trade reporting

Definition and logic of data flows
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Contents

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1. Terms and definitions

Term	Definition
MGA Exchange	Energy exchange between two Metering Grid Area reported by Distribution System Operators.
Bilateral Trade	Bilaterally agreed trade between two Balance Responsible Parties.
Confirmation Report	Carries Matched values and Delta values as response to reported hourly values. There are intermediate reports and final reports.
MGCO	Abbreviation for MGA Exchange Confirmation Report.
BITI	Abbreviation for Bilateral Trade Incoming (from customer to eSett)
BICO	Abbreviation for Bilateral Trade Confirmation Report.

2. MGA Exchange

When reporting a MGA Exchange, the flow of energy is indicated in the message by mandatory attributes InArea & OutArea. These are defined as follows:

- OutArea: Describes the area from which Energy flows out, hence, export occurs at this area.
- InArea: Describes the area to which Energy flows in, hence, import occurs at this area.

This sets the direction of exchange. For example: When the reporter (DSO or Datahub) fills in OutArea as MGA1 and InArea MGA2, and sets values of MGA Exchange as 1 MWh, NBS solution interprets this information as export from MGA1 to MGA2. Therefore, energy with a total of 1 MWh was transferred to MGA2.

The message delivered to eSett will declare this exchange in the same way for both DSOs. The message in the example above would look like this:

- OutArea: MGA1
- InArea: MGA2
- Quantity: 1

The result of a report delivered from both parties will have Matched Quantity 1. Thus, both Parties have accepted export from MGA1 to MGA2.

It is also possible to use negative signs to report the direction of the exchange. The direction of the MGA Exchange can be indicated with the use of OutArea and InArea values, or if preferred, the direction can be changed by using a negative value. Thus, if reporting MGA1 as OutArea, but using negative values, system interprets such exchange as Import to OutArea. This is described in more detail in the NBS Handbook Chapter 5.4.2.2

2.1. View in Online Service

In Online Service, the MGA Exchange view is always adjusted according to the domestic area of the DSO that views the data.

The DSO sees whether energy was imported to the selected MGA or exported out from the MGA. When import occurs, positive values are shown under “Own Quantity”, and when export occurs, negative values are shown in “Own Quantity”. If the counterparty DSO reports its data in accordance, values shown in “Counter Quantity” will be the same, but with an inverted sign.

Date	Hour	Own Quantity [MWh]	Own Quality	Counter Quantity [MWh]	Counter Quality	Matched Quantity	Matched Value Status
Load previous day							
21.03.2017	00:00-01:00	1,000000	Metered	-1,00000	Metered	1,000000	Final

Figure 1. DSO’s view on MGA, where Import was done. Counterparty’s values are shown as negative, because Counterparty’s MGA has exported energy.

2.2. MGA Exchange Confirmation Report (MGCO)

There are two reports related to MGA Exchange:

- **Intermediate report**: Generated instantly after MGA Exchange is received by eSett’s system. Contains Matched values and Delta values at the time of report generation. Report is recalculated and resent after every submission of MGA Exchange by a DSO or Datahub. The returned data in the report depends on the MGA Exchange received by eSett.
- **Final report**: Generated 13 days after delivery day of MGA Exchange. Contains values concerning all MGA Exchanges of the receiver that were done during the delivery day.

The data represented in a Confirmation Report is based on how the DSO or Datahub decides to report data to eSett. By default, the direction of energy flow for MGA Exchange is represented by the attributes InArea and OutArea. In this default Area order, values are reported positive and the OutArea attribute determines the energy exporter.

Delta values show the absolute difference between values reported by DSO1 and DSO2 during the same delivery period. If a DSO does not report any value, a zero will be used instead. The Delta value in the report will then be the absolute value reported by the counterparty.

Following example shows a situation where DSO1 and DSO2 report their data in a similar way. Both DSOs are using the default Area order to represent the direction of energy flow:

DSO1	DSO2
MGA Exchange	
OutArea: MGA1 InArea: MGA2 Quantity: 1	OutArea: MGA1 InArea: MGA2 Quantity: 1
MGA Exchange Confirmation Report (MGCO)	
OutArea: MGA1 InArea: MGA2 Matched Quantity: 1 Delta: 0	OutArea: MGA1 InArea: MGA2 Matched Quantity: 1 Delta: 0

This next example demonstrates the same situation as above but reported with negative values. Therefore, the MGAs for attributes OutArea and InArea need to be changed accordingly:

DSO1	DSO2
MGA Exchange	
OutArea: MGA2 InArea: MGA1 Quantity: -1	OutArea: MGA2 InArea: MGA1 Quantity: -1
MGA Exchange Confirmation Report (MGCO)	
OutArea: MGA2 InArea: MGA1 Matched Quantity: -1 Delta: 0	OutArea: MGA2 InArea: MGA1 Matched Quantity: -1 Delta: 0

The following example shows how the MGCO report looks when DSO1 and DSO2 send the same data as in the previous example, but one decides to use the default Area order and the second negative values:

DSO1	DSO2
MGA Exchange	
OutArea: MGA1 InArea: MGA2 Quantity: 1	OutArea: MGA2 InArea: MGA1 Quantity: -1
MGA Exchange Confirmation Report (MGCO)	
OutArea: MGA1 InArea: MGA2 Matched Quantity: 1 Delta: 0	OutArea: MGA2 InArea: MGA1 Matched Quantity: -1 Delta: 0

Please note that Matched Quantity shows export from MGA1 to MGA2 in both cases, but because each party decided to have a different way to state the energy export, each party receives an unique Confirmation Report that has Matched Quantity shown according to the sign of the originally reported value.

In such case where a DSO does not report MGA Exchange before receiving the report (for example: report triggered by data sent by the counterparty), the default Area order and positive values are always used in the MGCO reports.

The example below shows a case where DSO1 reports for Day 1 with a negative sign, but for Day 2 does not report anything at all. In this case, the MGCO report for DSO1 will be divided into two time series with different Area orders. For Day 1, the OutArea will be the area of import according to the negative sign reported originally. For Day 2, since there was no value reported originally, the OutArea is changed from MGA2 to MGA1 according to the default Area order.

DSO1	DSO2
MGA Exchange	
Day 1 OutArea: MGA2 InArea: MGA1 Quantity: -1	*Day 1* OutArea: MGA1 InArea: MGA2 Quantity: 1
Day 2 OutArea: MGA1 InArea: MGA2 Quantity: not reported	*Day 2* OutArea: MGA1 InArea: MGA2 Quantity: 1
MGA Exchange Confirmation Report (MGCO)	
Day 1 OutArea: MGA2 InArea: MGA1 Matched Quantity: -1 Delta: 0	*Day 1* OutArea: MGA1 InArea: MGA2 Matched Quantity: 1 Delta: 0
Day 2 OutArea: MGA1 InArea: MGA2 Matched Quantity: 1 Delta: 1	*Day 2* OutArea: MGA1 InArea: MGA2 Matched Quantity: 1 Delta: 1

3. Bilateral Trade

When reporting Bilateral Trade, trading flows of energy are described in the message submitted. In the message, OutParty and InParty must be determined. By default, these are defined as follows:

- OutParty: Seller who sells the energy to the other party.
- InParty: Buyer who buys the energy from the other party.

Please note that the trade takes place in only one MBA. Therefore, the MBA is always the same for InArea and OutArea elements in the message.

For example: When a reporter fills in OutParty as BRP1 and InParty BRP2, and sets values of a trade as 1 MWh, NBS solution interprets this information as sale from BRP1 to BRP2. Energy with a total of 1 MWh was transferred and will be bought by BRP2.

Message delivered to NBS will declare this exchange in same way for both BRPs, and it will look like this:

- OutParty: BRP1
- InParty: BRP2
- Quantity: 1

Results from such report delivered from both parties will have Matched Quantity of 1. Both parties have accepted the sale from BRP1 to BRP2.

It is also possible to use a negative sign to indicate the direction of a trade. In short, direction of Bilateral Trade can be described with the use of InParty and OutParty values, or if preferred, direction can be

changed by using a negative value. Thus, if reporting BRP1 as OutParty, but using negative values, system interprets such trade as sale to OutParty (i.e. BRP1).

3.1. View in Online Service

Data presented in Online Service Bilateral Trade Detail view is always adjusted according to the BRP that views the data.

The BRP sees whether energy was bought or sold by themselves. When buying occurs, positive values are shown under “Own Quantity”, and when sale occurs, negative values are shown in “Own Quantity”. If the counterparty reports its data in accordance, values shown in “Counter Quantity” will be the same, but with an inverted sign.

Date	Hour	Own Quantity [MWh]	Counter Quantity [MWh]	Matched Quantity	Matched Quantity Status
Load previous day					
04.04.2017	00:00-01:00	760,000000	-760,000000	760,000000	Final

Figure 2. BRP’s view for Bilateral Trade, when buying was completed. Counterparty’s values are shown as negative, because the counterparty sold energy.

3.2. Bilateral Trade Confirmation Report (BICO)

There are two reports related to Bilateral Trade:

- **Intermediate report**: Generated instantly after Bilateral Trade is received by eSett’s system. Contains Matched values and Delta values at the time of report generation. Report is recalculated and resent after every submission of Bilateral Trade by a BRP. The returned data in the report depends on the Bilateral Trade received by eSett.
- **Final report**: Generated after gate closure takes place on delivery day. Report contains the whole delivery day (or more if it includes non-business days).

Data represented in a Confirmation Report is based on how the BRP decides to report the data. By default, the direction of a trade is represented by the order of InParty and OutParty in the message. Therefore, values reported are always positive and OutParty is the energy seller.

The following example shows how it looks when BRP1 and BRP2 report their data in the same way. Both decide to use the default Party order to indicate the direction of the trade:

BRP1	BRP2
Bilateral Trade	
OutParty: BRP1 InParty: BRP2 Quantity: 1	OutParty: BRP1 InParty: BRP2 Quantity: 1
Bilateral Trade Confirmation Report (BICO)	
A08 Matched	
OutParty: BRP1 InParty: BRP2 Quantity: 1	OutParty: BRP1 InParty: BRP2 Quantity: 1
Z64 Delta	
OutParty: BRP1 InParty: BRP2 Quantity: 0	OutParty: BRP1 InParty: BRP2 Quantity: 0

The next example shows when same data is reported by both parties, but parties decide to use a different approach of stating the direction:

BRP1	BRP2
Bilateral Trade	
OutParty: BRP1 InParty: BRP2 Quantity: 1	OutParty: BRP2 InParty: BRP1 Quantity: -1
Bilateral Trade Confirmation Report (BICO)	
A08 Matched	
OutParty: BRP1 InParty: BRP2 Quantity: 1	OutParty: BRP2 InParty: BRP1 Quantity: -1
Z64 Delta	
OutParty: BRP1 InParty: BRP2 Quantity: 0	OutParty: BRP2 InParty: BRP1 Quantity: 0

The example below shows a situation where for Day 1 both parties report the same data but use a different Party order. For Day 2, only BRP2 sends trade data, which means that for BRP1 the default Party order is used for quantity and the direction of sold energy:

BRP1	BRP2
Bilateral Trade	
Day 1 OutParty: BRP1 InParty: BRP2 Quantity: 1	*Day 1* OutParty: BRP2 InParty: BRP1 Quantity: -1
Day 2 OutParty: BRP1 InParty: BRP2 Quantity: not reported	*Day 2* OutParty: BRP2 InParty: BRP1 Quantity: -1
Bilateral Trade Confirmation Report (BICO)	
A08 Matched	
Day 1 OutParty: BRP1 InParty: BRP2 Quantity: 1	*Day 1* OutParty: BRP2 InParty: BRP1 Quantity: -1
Z64 Delta	
Day 1 OutParty: BRP1 InParty: BRP2 Quantity: 0	*Day 1* OutParty: BRP2 InParty: BRP1 Quantity: 0
A08 Matched	
Day 2 OutParty: BRP1 InParty: BRP2 Quantity: 1	*Day 2* OutParty: BRP2 InParty: BRP1 Quantity: -1
Z64 Delta	
Day 2 OutParty: BRP1 InParty: BRP2 Quantity: 1	*Day 2* OutParty: BRP2 InParty: BRP1 Quantity: 0

3.3. Bilateral Trade Confirmation Report reason code logic

The following examples present scenarios where an intermediate Confirmation Report is sent, and the logic behind the different reason codes are described with business types and quantities in those scenarios.

Final confirmation report has a fixed reason code “A07” (Schedule partially accepted), and its timeseries has a fixed value “A30” (Imposed Time series from nominated party's time series).

The following table presents the different example scenarios:

	BITI Message Data		Settlement System Data			
	Sender	Reported Quantity	BRP1 Quantity	BRP2 Quantity	Matched Quantity	Delta Quantity
Case #1	*BRP1*	*1*	*1*	*1*	***1***	***0***
Case #2	*BRP1*	*0*	*0*	*1*	***0***	***1***
Case #3	*BRP1*	*1*	*1*	*0*	***0***	***1***
Case #4	*BRP1*	*1*	*1*	*null*	***1***	***1***

Scenario example #1: Received quantity is matching.

BICO	BRP1 (sender)	BRP2 (counterparty)
Reason Code	*A06* Schedule accepted	*A07* Schedule partially accepted
	Time Series Confirmation	**Imposed Time Series**
Business Type	*A08* Net internal trade	*A08* Net internal trade
Reason Code	*A85* Confirmation without adjustment	*A30* Imposed Time series from nominated party's time series
Qty	*1*	*1*
	Time Series Confirmation	**Imposed Time Series**
Business Type	*Z64* Internal trade difference	*Z64* Internal trade difference
Reason Code	*A85* Confirmation without adjustment	*A30* Imposed Time series from nominated party's time series
Qty	*0*	*0*

Scenario example #2: Mismatch in the reported values, and only values from the reporting party (BRP1) are used after correction.

BICO	BRP1 (sender)	BRP2 (counterparty)
Reason Code	*A06* Schedule accepted	*A07* Schedule partially accepted
	Time Series Confirmation	**Imposed Time Series**
Business Type	*A08* Net internal trade	*A08* Net internal trade
Reason Code	*A85* Confirmation without adjustment	*A30* Imposed Time series from nominated party's time series
Qty	*0*	*0*
	Time Series Confirmation	**Imposed Time Series**
Business Type	*Z64* Internal trade difference	*Z64* Internal trade difference
Reason Code	*A85* Confirmation without adjustment	*A30* Imposed Time series from nominated party's time series
Qty	*1*	*1*

Scenario example #3: Mismatch in the reported values, and only values from the counterparty (BRP2) are used after correction.

BICO	BRP1 (sender)	BRP2 (counterparty)
Reason Code	*A07* Schedule partially accepted	*A07* Schedule partially accepted
	Time Series Confirmation	**Imposed Time Series**
Business Type	*A08* Net internal trade	*A08* Net internal trade
Reason Code	*A86* Confirmation without adjustment	*A30* Imposed Time series from nominated party's time series
Qty	*0*	*0*
	Time Series Confirmation	**Imposed Time Series**
Business Type	*Z64* Internal trade difference	*Z64* Internal trade difference
Reason Code	*A85* Confirmation with adjustment	*A30* Imposed Time series from nominated party's time series
Qty	*1*	*1*

Scenario example #4: Only one party has reported data (BRP1), which is used after correction.

BICO	BRP1 (sender)	BRP2 (counterparty)
Reason Code	*A06* Schedule accepted	*A07* Schedule partially accepted
	Time Series Confirmation	**Imposed Time Series**
Business Type	*A08* Net internal trade	*A08* Net internal trade
Reason Code	*A86* Confirmation without adjustment	*A30* Imposed Time series from nominated party's time series
Qty	*1*	*1*
	Time Series Confirmation	**Imposed Time Series**
Business Type	*Z64* Internal trade difference	*Z64* Internal trade difference
Reason Code	*A85* Confirmation without adjustment	*A30* Imposed Time series from nominated party's time series
Qty	*1*	*1*