

Financial Reconciliation in the Belgian Energy market

Introduction - purpose of this paper

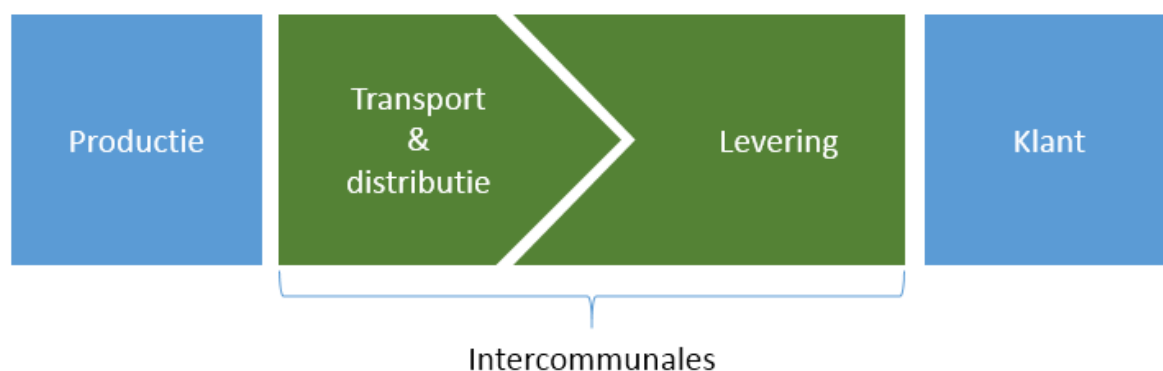
This paper aims to set the context of settlement processes in the Belgian deregulated energy market. The second part elaborates on the role that FeReSO plays in this, as well as practical problems and solutions.

Despite the fact that the gas and electricity markets have their own specific characteristics, the main principles in this paper are analogous for both markets.

1. Situation before market opening

In the captive market, intermunicipals supplied energy to customers located on their territory. The intermunicipal had a long-term contract with the generators (at that time Electrabel or SPE) and transmitted electricity up to the injection point in the distribution network. The intermunicipal billed its customers independently of the producer based on meter readings. The producer billed the intermunicipal on the basis of readings at the injection point. There was no interaction between the two billing flows. For natural gas, Distrigas assumed the role of transporter and purchaser prior to the market opening. There was no need to set up a complicated system that exchanged data between the different parties, taking into account different suppliers.

Figure 1: The data flow in the regulated electricity market



2. Opening of the energy market – Parties

Europe has stipulated that there should be free movement of goods and services on its territory, including energy. For all energy customers in the deregulated market, the supply of electricity and natural gas is divided into two services: distribution and supply. Subsequently, the market for the supply of electricity and natural gas is deregulated, but not for distribution.

For Belgium, the dates of energy market deregulation have been filled in differently by the regions. In Flanders, since 1st July 2003, customers can buy energy from a supplier of their choice. That supplier will only sell energy and related services. For Brussels and Wallonia, the energy market has been fully deregulated since 1st January 2007.

In the deregulated market, the intermunicipal companies are responsible for distribution, under the title of **distribution system operator (DSO)**. Consequently, the DSO is responsible for specific grid management tasks, such as grid construction, maintenance, transport, connections, meter reinforcements, fixing power cuts and gas breaks, etc., as well as meter readings.

The DSO keeps the access register, which shows which access point (the point at which energy enters the customer's premises) is supplied by which supplier. This access register is used, among other things, to pass on meter readings to the relevant supplier so that it can charge the customer the correct consumption. The same information serves as the basis for passing on to producers/shippers for gas what their suppliers have purchased, so that they can bill the supplier for the correct amount of energy.

Energy suppliers sell electricity and/or natural gas that they purchase from producers or produce themselves. They also provide the service of selling energy to the customer. Due to the presence of several suppliers in the market, the Transport system operator (TSO) no longer automatically has all the information to ensure balance on the transport system.

Another role (new to the deregulated energy market), therefore, is that of **balance responsible party (BRP - Balance Responsible Party)**. The Balancing Responsible Party's task is to balance the consumption and production of energy - in other words, the supply and demand of its customer portfolio. Each supplier can freely choose to ensure the balance itself or appoint a third party.

Each balancing supplier must forecast consumption for the next day and then communicate to the Transport system operator (TSO) how much energy should be transported (and on a quarterly basis for electricity, hourly for natural gas). The transport system operator transports energy up to the distribution networks of the distribution system operators (via large-capacity national pipelines). The Transport system operator for electricity is Elia.

For gas, Fluxys is the Transport system operator. The **shipper** (the Balance Responsible Party for gas) has similar roles to the balance responsible party for electricity. More information on the roles and responsibilities of the shipper can be found on the Fluxys website (www.fluxys.be).

The BRP gathers all elements to compile the next day's forecasts: on the one hand demand (i.e. the amount of energy customers will take) and on the other hand supply (i.e. the amount of energy bought on the exchange or from a producer/trader or that is imported). The BRP communicates these forecasts or '**nominations**' to the transport system operator who now knows the expected load on the grid.

If the forecasts do not match reality, the transport system operator adjusts the generation programme on a quarterly basis. Elia has its own reserves from generators for this purpose.

The costs of restoring the balance are charged by the transport system operator to those balance responsible parties who did not 'nominate' correctly. For electricity, Elia charges the BRPs for any imbalances. For natural gas, it is Fluxys that settles the BRPs for any imbalances.

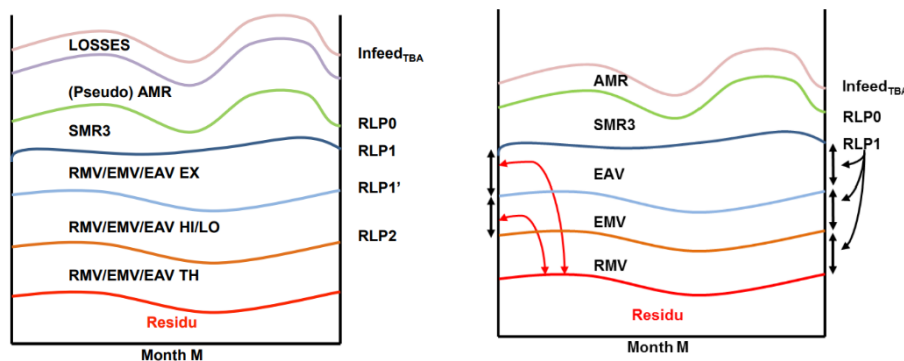
In order to best estimate what consumption will be, suppliers must receive regular feedback from the distribution system operators to see whether or not they predicted correctly. Suppliers know this from the allocation and reconciliation data they receive from the Distribution System Operator (DSO) on a regular (monthly) basis.

3. Settlement processes

3.1. Allocation

Allocation is a process whereby per quarter-hour¹ the grid infeed at the DSO level is distributed to the Balancing Responsible Parties based, on the one hand, on measured consumption for connections with (quarter-)hourly metering and, on the other hand, on estimates for the connections for which **Real Load Profiles (RLPs)** are applied.

Figure 2: The allocation process for respectively electricity and natural gas (source: Atrias)²



The **Infeed** volume to be allocated per DSO is calculated on the basis of the total Infeed coming from the TSO and exchanges with other DSOs, but also takes into account the local productions of, for example, customers with solar panels. Once the above data are available, the allocation calculation per access point can be started. Note: for natural gas, the allocation process is similar to that for electricity, but it does not include grid losses and to a lesser extent local production (biogas).

¹ On an hourly base for gas

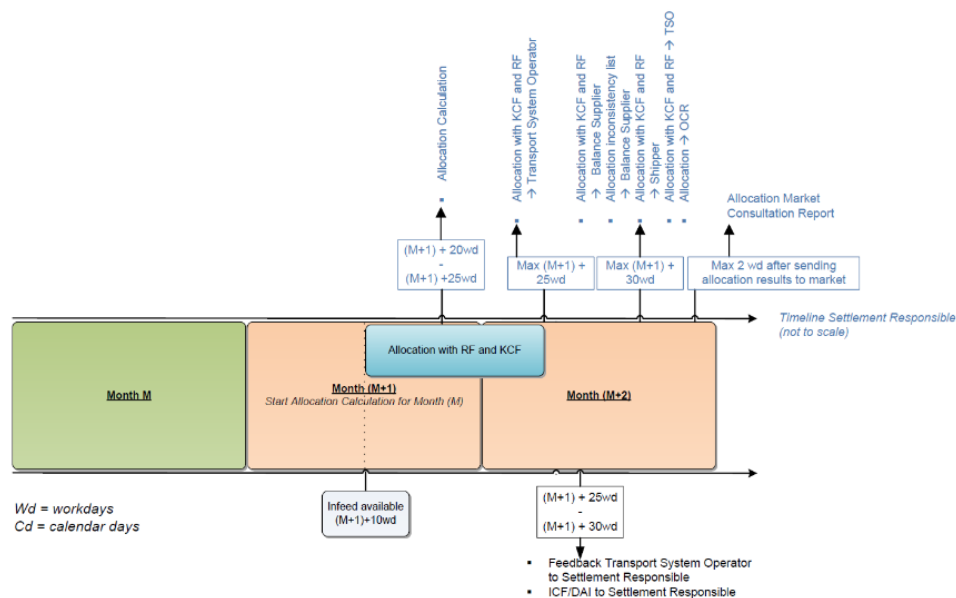
² EMV: 'Estimated Monthly Volume' or standard monthly consumption, being the estimate of a volume for one month for access points that are not measured per calendar month. RMV: 'Real Monthly Volume', measured per calendar month without retrospective volume correction. EAV: 'Estimated Annual Volume' or standard annual consumption, being estimated volume for a year divided into a volume per month based on consumption profiles. AMR: 'Automatic Meter Reads' which are read per interval (15-60'). SMR3: 'Smart Metering Method 3' with readings per interval (15-60'). Real Load Profile curve (RLP0): the Infeed minus the AMR volumes per quarter-hour or per hour. Real Load Profile 1 (RLP1) is determined by subtracting the smart meters with metering regime 3 from the RLP0 curve. TH: total hours; EX: excluding night; HI/LO: peak/off-peak.

To estimate the consumption behaviour of the annual and monthly metered customers, RLPs (Real Load Profiles) have been developed that give an estimated consumption profile (per quarter-hour or per hour for natural gas). To these RLPs estimates, **standard annual consumption or standard monthly consumption** are associated. These are determined by the DSOs based on historical consumption. These estimates vary by customer, as each customer's historical consumption is different.

The **residue** represents the energy that is not billed per quarter (hour) through the RLPs, but which is recorded through the teleread meters or losses on a distribution network. It mainly includes the inaccuracies of the RLPs (which cannot take into account the exceptional behaviour of grid users to whom RLPs are assigned) and the inaccuracy of the determination of grid losses. The residue is then allocated among the estimated RLPs to achieve infeed closure.

The allocation is calculated for each month M in **M+2**. At that time, the RLP data have been validated, the monthly recordings have been performed and part of the annual recordings are also available in that period. Nevertheless, the available measured values for profiled customers will not be directly considered in the allocation process. Only estimated values (with the help of standard monthly consumption and standard annual consumption) are used in the allocation process due to the residue mechanism.

Figure 3: timeline for the allocation (source: Atrias³)



The figure above illustrates that market participants receive the final monthly allocation data of month M no later than (M+1)+30 working days. In principle, the allocation is unique and will not be corrected. However, a re-run may be performed at the request of market participants whereby the allocation data are recalculated (e.g. In case of inconsistencies in the values). From the first working day of the 6th month after the allocated month (M), the allocation results of month M will be considered final (i.e. in M+6). This applies to both electricity and natural gas.

Figure 4: Illustration of allocation timeline for natural gas and electricity for allocation month January 2023

PERIOD	Allocation	
	Initial (market party)	Final (market party)
202301	202303	202307
202302	202304	202308
202303	202305	202309
202304	202306	202310
202305	202307	202311
202306	202308	202312
202307	202309	202401
202308	202310	202402
202309	202311	202403
202310	202312	202404
202311	202401	202405
202312	202402	202406

Thus, for the January 2023 consumption period, the allocation is final as of 1st July 2023.

The allocation is used for “**imbalance settlement**”, i.e. the charging of the respective imbalances (the difference between the nomination and the allocation) by the Transport system operator to the Balance Responsible Parties.

The Balance Responsible Parties will allocate their costs to (and possibly pass on to) their suppliers. Hence, the allocation process is also performed for the suppliers.

3.2. Reconciliation

Reconciliation is a process that follows the allocation process. Its purpose is to compare the consumption charged to the supplier through allocation with the actual consumption. This is done on the basis of the determination of the **meter readings** at the final customer (generally once a year). This difference will be reconciled to definitively and correctly allocate the number of kWh to the suppliers.

Reconciliation is (exclusively) a **volume correction** per supplier calculated over the period of one month.

Through the reconciliation process, suppliers are finally allocated those quantities recorded on the meters at their final customers. These quantities, together with the calculated grid losses (for electricity), should (in case there is no fraud, missing data, etc.) equal the net infeed. If there is still a difference, this difference is referred to as the **restterm**.

At reconciliation, the settlement, on the one hand, concentrates on settling and correcting the quantities first allocated according to the estimated real load profiles and actual measurements to the Balance Responsible Parties by the Distribution System Operators (and therefore also known to the suppliers) and, on the other hand, the actually measured quantities delivered to the network users of the various suppliers.

The **restterm** corresponds to the difference (on a monthly basis) between the injected energy and the actual measured energy in the reconciliation. This restterm mainly contains the same terms as the residue, but was adjusted by the correct volumes and the distribution of the volume between the market players involved. Since the restterm volume is allocated to the Distribution System Operators, they are also involved parties in the reconciliation.

The timing of the reconciliation process differs significantly from allocation. Whereas allocation is calculated once (in the month following the month of consumption), the (final) reconciliation process runs only after 36 months. Only then will all indices be available. However, provisional reconciliation volumes will be calculated in the meantime.

4. Reconciliation volumes: from regional projects to a federal process

The market players have agreed among themselves to implement the same model for reconciliation volume calculations across the three regions. Atrias, a joint initiative of the Belgian Distribution System Operators, supports the development of the free Belgian energy market at distribution level and acts as the central hub of information.

The modalities of the new volume process are defined in a MIG document⁴, approved by market participants and the relevant regulator(s).

Figure 5: timeline for the reconciliation (source: Atrias)

May-13 Month to reconcile	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16								
M	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10	+11	+12	+13	+14	+15	+16	+17	+18	+19	+20	+21	+22	+23	+24	+25	+26	+27	+28	+29	+30	+31	+32	+33	+34	+35	+36	+37								
Run #							1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16																		18					
Run name							Serie of runs X between R and X+R															X+R																				Z+R			
Aggregated Runs							Aggregated															Aggregated																						Aggr.	Aggr.
Runs per SDP																SDP							SDP																		SDP	SDP			
Financial runs																							"Intermediate run" for May-13																		"Final run" for May-13				

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<https://api.atrias.be/roots/download/Actual%2FUMIG%2F20231216%20Market%20Model%20UMIG%206.6.2.0%2F01%20Market%20Processes%2F02%20Business%20Requirements%2FUMIG%20-%200BR%20-%200SE%20-%20002%20-%20Reconciliation%20Process%20v6.6.2.0.pdf?subscription-key=086361ae1bbf4e2e8a4fa9804cae087a>

The example table above illustratively shows, for the month of May 2013, the aggregated runs, the runs per access point and the two runs that are followed by a financial settlement and the moment at which they take place. As shown in the table, the interim financial reconciliation run (X-run) takes place in M+22 and the final reconciliation run (Z-run) in M+37. Thus, market participants receive the reconciliation data several times before it is described as final and dealt with financially. Thus, each consumption month is reconciled 16 times for interim (X), once for quasi-final (Y) and once final (Z).

Figure 6: illustration of natural gas and electricity reconciliation timeline for period 2023

Period	Reconciliation	
	Interim (X1)	Final (Z)
202301	202410	202602
202302	202411	202603
202303	202412	202604
202304	202501	202605
202305	202502	202606
202306	202503	202607
202307	202504	202608
202308	202505	202609
202309	202506	202610
202310	202507	202611
202311	202508	202612
202312	202509	202701

Thus, for the 2023 consumption period, the volume reconciliation is final by January 2027.

5. Financial reconciliation

5.1 Contractual framework

In a joint initiative, the market parties have worked out a contractual framework for the financial reconciliation (ratified by the regional regulators in the technical regulations). These aspects are stipulated in the: *‘Financial Reconciliation Contract for Gas and Electricity* (since extended up to and including the volume year 2026), (hereafter Agreement). As of today, more than 100 market participants (both distribution system operators and (social) suppliers have entered to this Agreement.

This Agreement provides for the establishment of a Gestion Committee (in which all signatories to the Agreement may participate) for the successful implementation and management of the financial reconciliation process. This Management Committee shall always decide by a majority of the votes present or validly represented and shall be chaired by a representative of FeReSO. The roles and responsibilities of the Gestion Committee are explicitly described in the Agreement. The decisions of the Management Committee are prepared by the underlying working groups (WG).

- ‘WG Process’: developing and optimising the clearing and settlement process, including messaging and risk-pooling principles;

- 'WG Price': developing the tariff structures of the monthly reconciliation prices for gas and electricity;
- 'WG Legal': executing the multilateral contract between the market parties that sets out the financial settlement modalities in contractual obligations.

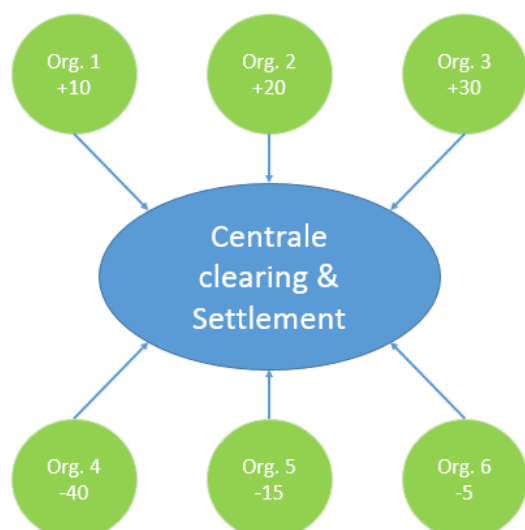
5.2 Multilateral process

Reconciliation is a multilateral process, which takes place jointly between all parties and cannot be reduced to bilateral relationships. The following (fictitious) example demonstrates the multilateral nature of reconciliation:

Organisatie	Positie		Organisatie	Positie
1	10	→	4	-40
2	20	→	5	-15
3	30	→	6	-5
Totaal	60		Totaal	-60

As the above depiction shows, the total flow of incoming and outgoing payments is zero at market level, but it is impossible to reduce the individual debit and credit positions to bilateral relationships. By using a central party, it is possible to perform clearing and settlement at both total and individual levels. This is illustrated in Figure 7.

Figure 7: Multilateral nature of the reconciliation



The market has thus opted for a financial reconciliation model performed by central facilitators (see infra). For this, it is important to have an orderly and relatively simple settlement process, where the

market risk is borne centrally and in solidarity by all participants in the reconciliation process and this according to a pre-agreed allocation key.

6. Roles and responsibilities of the central facilitators in implementing financial reconciliation

The reconciliation process envisages that a number of facilitators, as described below, will provide services to the market for the purpose of closing financial positions. The roles and responsibilities are set out in the Agreement. The liability of the facilitators is limited; they do not constitute a legal counterparty in the settlement process. They ensure the confidentiality of the information exchanged and the proper execution of the settlement process.

6.1. RCO: Aggregation and calculation agent

Synergrid, as the 'Reconciliation Consolidation Organisation' (RCO), fulfils the role of facilitator for aggregation and communication for the distribution system operators (volumes). It has subsequently outsourced this task (operationally) to Fluvius. The RCO also acts as a single point of contact for FeReSO in its role as Administrative organ with regards to the delivery of monthly reconciliation volumes.

6.2 AO: Centrale settlement facilitator

FeReSO, 'FEBEG Reconciliation and Settlement Organisation', has been appointed as the Administrative Organ (AO) for the practical settlement of the Financial Reconciliations. FeReSO carries out its authorities within the framework of the rules and modalities of application as stipulated in the Agreement.

As the central settlement facilitator, FeReSO thus takes care of the operational part of the financial settlement, as provided for in the Agreement. FeReSO is responsible for calculating the so-called 'Reconciliation Transactions'. Furthermore, it invoices debtors, checks payments and informs creditors. Finally, the facilitator makes payments to the creditors in the process.

The process provides for financial reconciliation on a quarterly basis and monthly calculation and publication of reconciliation prices.

All financial costs and charges of any kind are to be budgeted by the AO according to the 'cost recovery' principle. These are submitted annually in advance to the Gestion Committee for approval (which then allocates these costs pro rata to the market parties concerned based on the number of transactions the respective parties are affected by).
