Market Process Model
Market Model Wholesale Gas

Author	ICWG
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- For approval ALV NEDU.

Version 8.1
- Randomising moment at which GTS-order is placed, between hh:21 and hh:22.
- Correction of the unit for annual amount GMN in OVEXIT-message.

Version 8.0
- Final.

Version 7.9
- For approval ALV NEDU.

Version 7.3
- Changes to allocation proces to accomodate multiple suppliers and shippers within closed distribuition networks connected to network areas, operated by LDC.
  Comments from ICWG.

Version 6.95
- Adjust net losses in OV-Exit; for approval ALV NEDU.

Version 6.9
- For approval ALV NEDU.

Version 6.3
- Change as a result of the reviewing process ICWG/IC-K.

Version 6.2
- Change as a result of the reviewing process.

Version 6.1
- Changes as a result of the processing new implementation date LDC net loss (january 1st 2019).

Version 5.9

- Changes as a result of the transition from AS2 to AS4; deleting the technical information and definition from this MPM (paragraph 4.10).

Version 5.0

- Changes as a result of the processing of LDC net loss, which will be effectively implemented as of 1 January 2015. See paragraph 4.8.

Version 4.1

- Page 36: extra phrase included to stress that in case of a WDBA call in the orange zone, future – not yet delivered - volume already obtained from the Within Day Market (from previous orders) will not be taken into account.

- Page 36: end of day products will have a start of delivery at x+3 (x being the hour of call).

Version 4.0 contains the synchronisation with the change proposals of the Network Code that currently is under development at ENTSOG on a European level and the change proposals resulted from the evaluation of the current Market Model Wholesale Gas in 2012 under the auspices of the ACM (Authorithy of Consumers and markets). These changes in a nutshell are:
- Removal of the call correction factor
- Removal of the incentive component
- Removal of assistance gas

- Removal of Bèta
- Replace the GTS Bid Price Ladder with the Within Day Market
- Introduction of End-of-Day settlement through the implementation of a Linepack Flexibility Service.

Version 3.0 contains the synchronisation with the change proposals of the Network Code that was submitted to the Office of Energy Regulation (Energiekamer) of the NMa (Netherlands Competition Authority) on 30 September 2009. In addition, in this version the sections relating to *the implementation, the implementation model for the market and the transition model for the systems* have been removed from the MPM because these sections depend to a large extent on external developments such as the progress of the legislative process and the progress of laying down the Network Code. These subjects are now covered in a separate document.

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1. Introduction to the market model and the balancing regime

1.1 Introduction: reason and process

On 18 February 2008 the Minister for Economic Affairs sent a letter to the Lower Chamber in which she announced a modernisation of the rules for the Dutch gas market, described in the letter as follows:

> *To be better able to integrate our market in the North-West European gas market and thus promote liquidity, the following is required:*
> • *integration of the various gas qualities;*
> • *a simpler system for maintaining the balance of the gas transmission network;*
> • *better utilisation of the capacity of the gas transmission pipelines;*
> • *the merging of many small delivery points to form one large delivery point.*

The second point has resulted in the development of a balancing regime for the national gas transmission network, and the fourth to the development of a new market model for wholesale market gas.

There is an intensive interaction between changes to the market model and changes to the balancing regime. After all, both determine where, when and the volume of gas that market players have to feed into or extract from the gas network. It is therefore important to elaborate the details of both changes in conjunction with each other.

From 2007 GTS has worked in close consultation with the Netherlands energy sector on a study into a new balancing regime. The outlines of this new balancing regime were ready at the end of August 2008, then written out in more detail and discussed during eight workshops held with the sector. On the basis of this, a draft final report was drawn up in January 2009 and after discussion with the sector the final version was presented to the Ministry of Economic Affairs in June 2009.

The measures announced were elaborated further in a bill that was sent for consultation purposes in draft form to the Netherlands energy sector on 1 August 2008, the final version of which was presented to the Lower Chamber on 27 March 2009. The planned implementation date for the measures at the start of the process was 1 January 2010. In the meantime, in consultation with the Ministry of Economic Affairs, the sector indicated that a transition phase was desirable, as a result of which the new procedure was first tested step-by-step from 1 October 2010 resulting in the formal implementation on 1 April 2011.

1.2 Modifications market model and balancing regime 2014

The implementation of the European network code in 2014, results in a number of modifications to be implemented in de market model wholesale gas and the balancing regime of the national gas transmission network. These modifications are:

- Removal of assistance gas
- Removal of the Beta
- Balancing actions through Within Day Market (WDM), and not through the Bid Price Ladder
- Introduction of End-of-Day settlement through the implementation of a Linepack Flexibility Service.

Furthermore, on the basis of the evaluation of the market model wholesale gas and the balancing regime carried out under the auspices of the ACM (Authorithy of Consumers and markets)in 2012, the following modifications will be implemented:

- Removal of Call Correction Factor
- Removal of Incentive component

1.3 Outline of market model wholesale gas and balancing regime

The new balancing regime for the national gas transmission network has been developed in such a way that "every market party can personally contribute towards maintaining the balance of the gas transmission network". However, the configuration of the new balancing regime is also affected by the change to the market model which is aimed at "allowing a buyer of gas to personally decide what he does with his gas: consume or sell on". (The quoted texts are from the Explanatory Memorandum of the bill to change the Gas Act.) That is achieved through two levels of freedom:

a. the buyer of the gas may personally decide whether he does or does not transfer his programme responsibility to another party, and
b. the buyer and seller mutually decide through commercial negotiations the location where the gas is to be supplied, together with the associated nature and price of the product being traded.

The balancing regime is restricted to resolving imbalance among network users; the national gas transmission network operator remains responsible for the operational transport of gas.

For the purposes of clarity, this market process model uses the name Gasunie Transport Services (GTS) in the role of Network Operator for the national gas transmission network (LNB).

The bill **Amendment to the Gas Act and the Electricity Act 1998, to strengthen the operation of the gas market, improve certainty of supply and to lay down rules relating to the preference for sustainable electricity, as well as a number of other amendments to these Acts** introduces programme responsibility for all consumers in the gas transmission network, with the exception of residential end users, where the licensed supplier of household customers (supplier) carries programme responsibility. Programme responsibility involves the submission of a programme and carrying responsibility for deviations from the programme. The bill also provides for a separation between entry programmes and exit programmes, as a result of which the production and feed-in of gas is separated from the consumption of gas. Supply and take-off are brought together at a Virtual Point.

The heart of the new balancing regime is the submitted programme. This programme describes the way in which the market parties will provide for the gas supply and the gas take-off during the day. GTS sets specific requirements for this programme, with which the buffer effect of the gas transmission system, insofar as this is available, also benefits the market parties.

Programme Responsible Parties have access to near real-time information regarding deviations from their programme. This means, in principle, that they are able to balance their programme using the resources available to them, whether these are physical resources or commercial resources. They are also expressly invited to do so. In addition to this, the market parties also

have access to balance information for the total national system[1] (the balanced programme deviations) so that they can help balance the national gas transmission network.

If the balance situation is such that this is required, GTS buys or sells gas in order to restore the system balance. Programme Responsible Parties are only faced with the volume-related and financial consequences of imbalance if GTS needs to implement such restoring actions.

GTS buys or sells gas on the transparent Within Day Market to restore the system balance. The gas bought or sold by GTS is supplied to the programmes with imbalance at the volume weighted average price GTS has paid on the Within Day Market. For details of the interaction with the Within Day market, please refer to the DPM Within Day Balancing Action.

This means that balancing is a near real-time operational process, based on near real-time information. This also justifies the settlement of imbalances on the basis of this operational information. After all, at the moment of acting, no other information was available.

The process provides for a settlement after approximately one month. This settlement shall take place on the basis of a neutral gas price. The settlement has no effect on the near real-time allocation and settlement of imbalance gas.

If insufficient gas is offered on the Within Day Market to balance the system then GTS can issue instructions for the system balance to be restored.

A number of specific aspects

Under the balancing regime information about the portfolio imbalance is made available. This information forms the basis for settlement of the imbalance. The settlement of the imbalance therefore takes place on the basis of real-time data. The quality of the balance information, the entire chain from metering to information provision, is one of the most important risks that have emerged from an analysis. The availability of the signal, the underlying systems, data transfer, maintenance position and the way in which, if necessary, replacement values are achieved are points of attention in relation to this. Experience with part of this information supply (steering signal) has been gained since January 2009.

Market parties shall have to thoroughly realise that the near real-time information regarding portfolio imbalance, whether good or bad, is irrevocable because it is expected that the market parties respond to this imbalance signal. After all, it cannot be expected that the parties actively take part in balancing their portfolio and/or the total system if they can subsequently be faced with settlement of the imbalance on the basis of other, even contradictory, information.

The irrevocability of portfolio imbalance information and, with that, the settlement of imbalance also means that a decoupling is created between the settlement of imbalance on the basis of near real-time information and the settlement of commodity on the basis of definitive allocations / reconciliations. GTS has concluded that the simplification achieved through this is essential for keeping the administrative process manageable.

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[1]) The balance information for the total national system, the System balance Signal (SBS), shall also be made public by GTS.

The submission of programmes has, as regards process, a strong affinity with the nomination process as used in the current situation. However, there are a number of important differences. The current nomination process generates auxiliary figures that are used for:

1. determining the physical capacity required at specific locations in the national gas transmission network;
2. determining the technical setting of components in the national gas transmission network or connections with other gas transmission networks such as, for example, a regulator valve at a border point;
3. determining the distribution of the gas flow between multiple parties that supply to or extract from the same point at the same time and where only one meter reading is available.

Nominations can be amended during the gas day. Specific agreements are made for each point including, amongst others, the lead time.

On the other hand, programmes are submitted day ahead (D-1) and once set can no longer be amended.

The figures below provide a general summary of the total process, showing activities resulting from the market model *and* activities resulting from the balancing regime. The light-blue and the red ovals indicate the activities prior to the day.

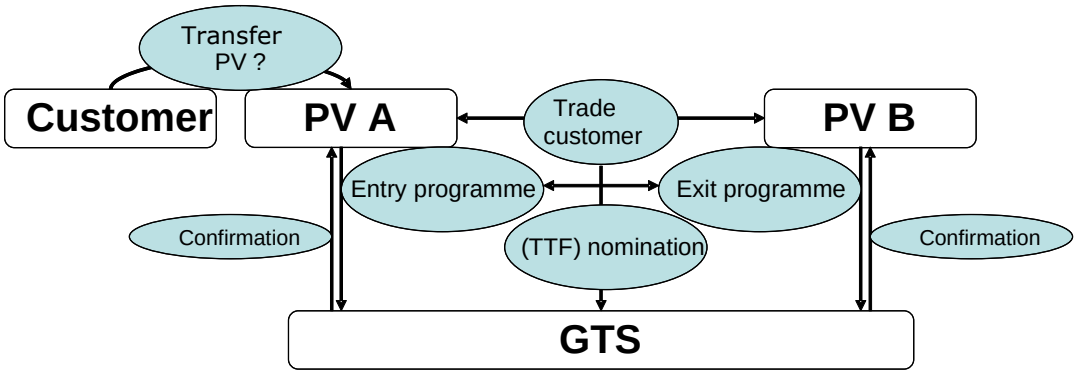

Figure 1.1: Main aspects of process prior to the gas day

The green ovals indicate the near real-time activities that serve to inform the acknowledged programme responsible party (PRP) about his own position and that of the system, the orange ovals indicate the potential activities arising from this on-the-day and the dark-blue indicate the effects of the potential deployment of Within Day Balancing Actions.

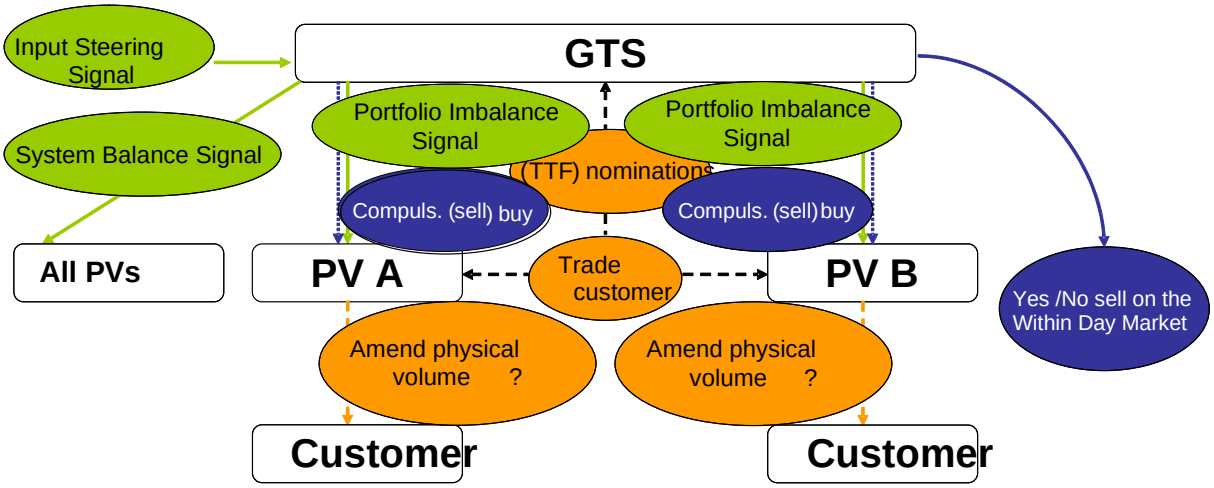

Figure 1.2: Main aspects of process on the gas day

Finally, the brown ovals show the settlement that is undertaken quite some time after the end of the day. The details of the various sub-processes shall be discussed in the following sections.

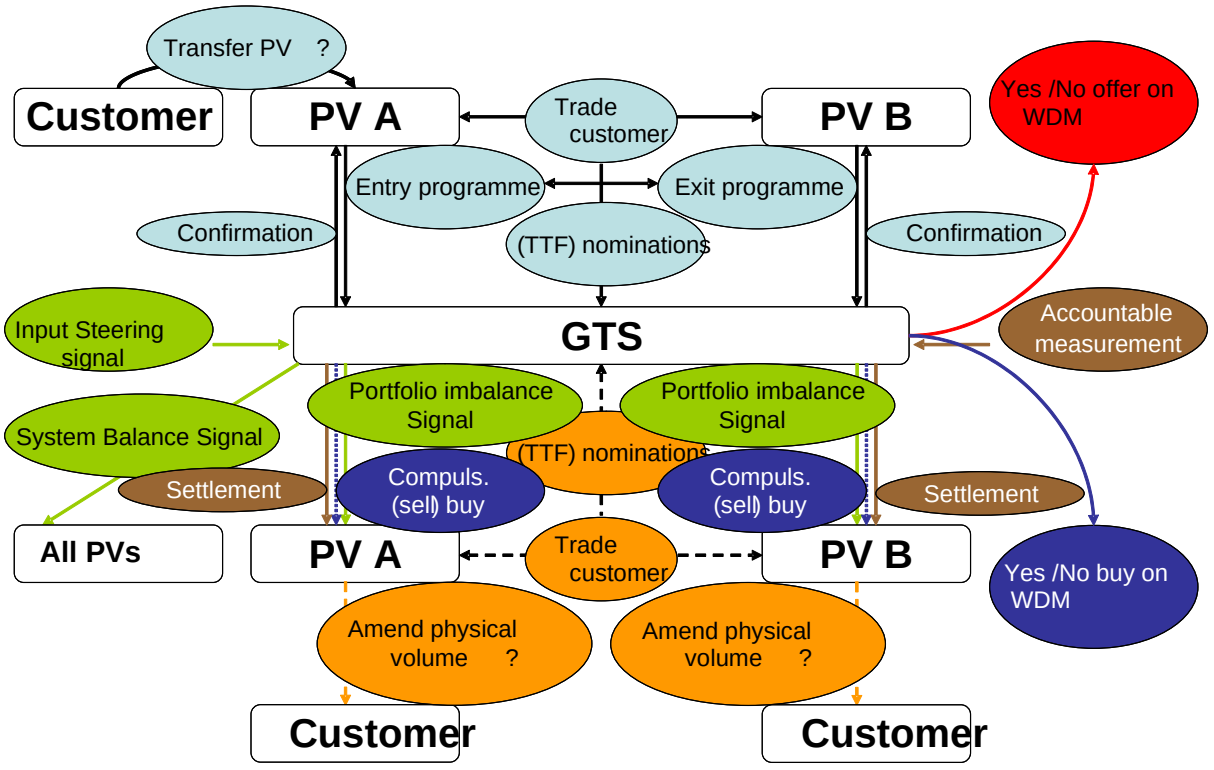

Figure 1.3: The main aspects of the entire process

2. Programme assumptions and responsibilities

2.1 Roles and responsibilities

In the main process as covered by Article 17b of the bill, the Programme Responsible Parties and GTS play the main role. For them, after implementation of the bill, a number of aspects will run substantially differently from the way they do at the moment. In addition, suppliers and local distribution companies shall also have a role in certain supporting processes, whereby there will be a limited shift in accents in respect of the current situation. The basic assumption is that the changes to the way in which the LDCs and suppliers work as a result of the bill **Amendment to the Electricity Act 1998 and the Gas Act to improve the operation of the electricity and gas market** [parliamentary papers of the Upper Chamber No. 31 374], for which the implementation date is still not known, shall not be touched in any way. This also means that the present MPM shall have no impact on the operations of the metering companies and the metering data companies.

A special point of attention in this, according to the bill, is that the supplier to residential end users shall be assigned the task of acknowledged programme responsible party for these residential end users. There is therefore mention of an *extra* task for these suppliers, that shall not affect the other tasks and responsibilities that they already had. There shall be no special attention paid to the task that a supplier must undertake in his role as acknowledged programme responsible party because this is included in the description of tasks, responsibilities and activities for all Programme Responsible Parties. In addition, every supplier is personally responsible for evaluating whether he wishes to perform his task as acknowledged programme responsible party personally or to transfer this task.

The table below shows the tasks and responsibilities of the various parties involved with regard to the balancing of gas in the gas transmission network.

Table 2.1: Market role responsibilities

Market role	Task	Status	Arises from
Connected party	In principle, Programme Responsible Party[2]	Compulsory	Gas Act
Statutory Programme Responsible Party	Transfer programme responsibility to an acknowledged programme responsible party or become the acknowledged programme responsible party	Compulsory	Network Code
Acknowledge Programme Responsible Party	Arrange acknowledgement	Compulsory	Network Code
	Submit programme	Compulsory	Gas Act
	Offer on the Within Day Market	Optional	Network Code
	Buy/sell gas from/to GTS if Within Day Balancing Action is invoked	Compulsory	Network Code

[2]) This MPM provides a further interpretation of this principle whereby it does not always apply that the connected party is a Programme Responsible Party. Also see figure 2.1

Market role	Task	Status	Arises from
	Administering and processing all trade transactions relating to a customer	Optional	Network Code
Trade PRP	Buy/sell gas on the TTF	Optional	
	Arrange acknowledgement	Compulsory	Network Code
	Submit programme	Compulsory	Gas Act
	Buy/sell gas from/to GTS if a Within Day Balancing Action is invoked	Compulsory	Network Code
Supplier[3]	Supply contract with consumer	Compulsory	
	Statutory Programme Responsible Party for residential end users	Compulsory	Gas Act
Seller	Selling gas to a party other than a consumer (no supply contract)		
RNB	Perform allocation and reconciliation for Net areas	Compulsory	Gas Act
	Provision of data for near real-time allocation for Net areas	Compulsory	Gas Act
	Provision of data for contracting capacity for Net areas	Compulsory	Network Code
	Registering each acknowledged programme responsible party connection in the connection register	Compulsory	Network Code
Operator closed distribution system	Perform allocation for Closed distribution system	Compulsory	Network code
	Provision of data for near real-time allocation for closed distribution system	Compulsory	Network code
	Registering each acknowledged programme responsible party connection in its connection register	Compulsory	Network Code
GTS	Monitoring balance in the national gas transmission network	Compulsory	Gas Act
	Acknowledge Programme Responsible Parties	Compulsory	Gas Act
	Registering each acknowledged programme responsible party connection in the connection register	Compulsory	Network Code
	Receive and evaluate programmes	Compulsory	Gas Act
	Invoking the Within Day Balancing Action	Compulsory	Network Code
	Preparing and sending POS	Compulsory	Gas Act

[3]) In this market process model, in accordance with the definition from the List of Definitions – Gas, the term supplier is used for a market party that provides the supply of gas for the benefit of the end user. A market party that provides the supply of gas to a party other than an end user, such as a supplier for example, is identified by the term seller.

Market role	Task	Status	Arises from
	Preparing and sending SBS	Compulsory	Gas Act
	Settling Imbalance	Compulsory	Network Code
	Settling Settlement	Compulsory	Network Code

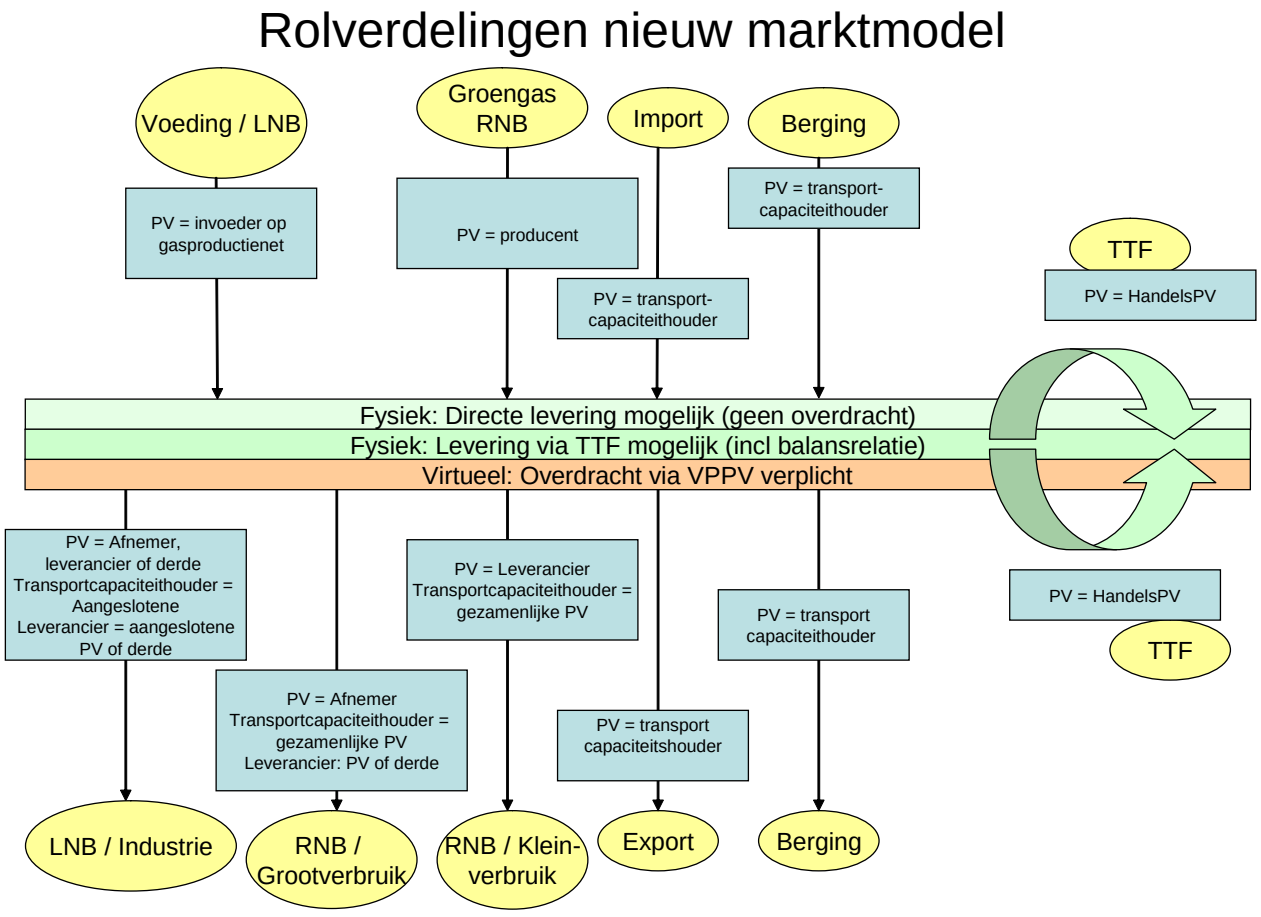

Figure 2.1: Distribution of roles in the market model (figure is in Dutch)

Note: The CDS-operator has the same rol for his CDS as the RNB/LCD for its net area

3. Further details of the market model

In the bill the market model is expressed as follows:
Article 1

y. programme responsibility: the responsibility for drawing up a programme as referred to in Article 17b, first or second paragraph;
z. Programme Responsible Party: the party with programme responsibility.

Article 17b

1. The party that feeds into the gas transmission network is responsible up to a virtual point on the gas transmission network for drawing up a programme that includes:
   a. the volume of gas and where this is to be fed into the gas transmission network and
   b. with regard to the net volume of gas at the virtual point on the gas transmission network when the programme responsibility transfers and to whom.
2. The party that extracts gas from the gas transmission network is responsible to a virtual point on the gas transmission network for drawing up a programme that includes:
   a. with regard to the net volume of gas at the virtual point on the gas transmission network when the programme responsibility transfers and to whom and
   b. the volume of gas and where it is extracted from the gas transmission network.
3. A Programme Responsible Party is responsible for a deviation from his programme.
4. A licensed supplier of household customers has programme responsibility for the extraction of gas by a customer as referred to in Article 43, first paragraph.
5. The programme responsibility can be transferred.

Further details of the market model are provided in the bill's Explanatory Memorandum. Further details of the proposed text of the Act and the Explanatory Memorandum are provided in this section of the MPM. Section 4 provides further details of the various processes that shall have to be configured for the new market model. Finally, in Annex 3 Numerical examples of this MPM, details are provided for a number of typical examples.

3.1 Basic assumptions

A few pre-assumed points:

- in the market model suppliers fulfil their current role as usual. According to the List of Definitions – Gas, the supplier is the party that provides the supply to an end user. Likewise, it remains possible that buyers and sellers of gas in commercial negotiations jointly determine the way in which they configure the trade. The balancing regime in itself has no effect on the possibilities for commodity trade;
- paragraphs 1 and 2 of Article 17b of the bill talk about a virtual point. This point shall be designated as the VPPV ("Virtueel Punt voor de overgang van Programma Verantwoordelijkheid") [Virtual Point for the transfer of Programme Responsibility]

3.2 Relationship between supplier and acknowledged PRP at exit points

Following implementation of the bill, the supplier and the acknowledged programme responsible party each also have their own role. The supplier provides the supply of gas for an end user, while an acknowledged programme responsible party is responsible for drawing up a programme and for (the correction of) the deviation from his programme. The relationship between supplier and acknowledged programme responsible party is not laid down in the bill, except for the initial situation for the residential end user for which the licensed supplier of household customers has programme responsibility.

The acknowledged programme responsible party is not therefore a trader but a service provider for customers, net feeders and traders with regard to balancing. In the first instance, apart from with residential end users, the customer is the party that determines who delivers this service; this can be the customer himself or a trader, but it can also be a service provider that has the delivery of the PRP service as his core business. To be able to perform his task adequately the acknowledged programme responsible party must be aware of all trade flows relating to the customer for which the acknowledged programme responsible party has programme responsibility. This knowledge of the acknowledged programme responsible party must also be up to date: if within-day changes occur in the trade flows then the PRP must know about them.

Amongst other things, this means that the acknowledged programme responsible party is responsible for tasks relating to the administration and processing of all trade transactions concerning a customer, tasks which in part are currently performed by the Network Operator.

When developing this MPM, one acknowledged programme responsible party per connection was assumed for the majority of the end users[4]. This acknowledged programme responsible party is responsible for the balance of the gas flow for that relevant connection. It is only possible for end users that are connected directly to the national gas transmission network to divide the programme responsibility over multiple acknowledged programme responsible parties, for which it applies that each acknowledged programme responsible party is responsible for his share of the balance on the connection and that the same rules apply to that part as apply for the connections with a single acknowledged programme responsible party.

The following situations are those that are expected to occur most often:

1. an end user buys his gas from a supplier and transfers his programme responsibility to that same supplier. The supplier ensures that he has access to the gas at an entry point of the national gas transmission network. This situation is detailed in case 1.1 (also see Annex 3 Numerical examples);
2. an end user buys his gas from supplier E1 and transfers his programme responsibility to that same supplier. Supplier E1 buys his gas directly from supplier E2 and transfers the programme

[4]) In the Netherlands there are currently only a limited number (<20) of parties connected directly to the national gas transmission network that annually consume large volumes of gas and, also, at the same time utilise the services of multiple shippers. Amongst other reasons, they do this in order to spread the risk of imbalance across multiple parties. To also make this risk spread possible in the new market model the large end users that are connected to the national gas transmission network can use multiple Acknowledged Programme Responsible Parties.

responsibility to E2. This situation is detailed in case 1.3 and currently occurs frequently in the Netherlands (also see Annex 3 Numerical examples). Note that in the case of supply to residential end users, supplier 1 is obliged to have a licence and supplier 2 is not. Because the connection registers of the Network Operators can only contain 'one layer' of licensed suppliers of household customers there will only appear to be one supplier, namely E1, and one acknowledged programme responsible party, E2. Other ways of characterising this situation are:

   a. E1 supplies exclusively to the end user, E2 provides balancing to E1
   b. E1 buys his gas from E2
   c. E1 is the only one that appears on the connection.

3. an end user buys his gas from supplier E2 and transfers his programme responsibility to another party, E1. This situation is detailed in case 2.1 (see Annex 3 Numerical examples). In this case E2 shall have to buy a fixed volume of gas from somewhere, that is supplied by E2 to the end user. For drawing up his programme E1 shall have to be aware of the fixed volume that E2 is going to supply to the end user. E2 shall notify this to E1, for example by means of a supply instruction (nomination). In addition, E1 is responsible for the (positive or negative) difference between the programme and the actual take off and he will ultimately have to settle this difference. In practice, this difference is "supplied" by E1 to the end user. For the administrative processing of this situation in the systems of the Network Operators, E2 is assigned the role of supplier, while E1 is recognised as the acknowledged programme responsible party.

3.3 (Trade) Programme Responsible Party

Article 17b of the text of the Act defines the role of the acknowledged programme responsible party. This definition talks of (physically) feeding into the gas transmission network or (physically) extracting from the gas transmission network. In addition, it stipulates that the acknowledged programme responsible party must state the net volume of gas for which programme responsibility transfers at the Virtual Point Programme Responsibility (VPPV) and to whom it is transferred.

Without insight into the trade transactions on the TTF it is not possible to be able to facilitate the previously referred to transfer of programme responsibility on the VPPV. The fact of the matter is that it is common for the gas on the TTF to be traded several times. GTS must therefore have insight into any trade transactions on the TTF that form the basis of the programmes submitted by the acknowledged programme responsible parties. To this end, it is necessary that the traders on the TTF also submit a type of programme which states the net volumes of gas expected to be transferred and to whom the transfer is to take place. For parties that are only active on the virtual point (TTF) the same conditions apply as for other Programme Responsible Parties. It is only in respect of the submission of programmes that they submit a trade programme rather than an entry and/or exit programme.

4. The processes

This section details the market process model for the balancing regime for the various processes between the market parties. These market processes show how information is exchanged between the market roles involved.

4.1 PRP process

4.1.1 Acknowledgement

Each party that is active as an acknowledged programme responsible party must be acknowledged. This also applies to legal entities that carry statutory programme responsibility and who wish to take that responsibility upon themselves. The Network Code shall stipulate that the acknowledgement process is to be undertaken by GTS. GTS acknowledges a party as an acknowledged programme responsible party provided they meet the requirements with regard to credit-worthiness and communication (electronic message exchange).

The PRP acknowledgement process is shown graphically in the figure below. This will be described in more detail in the following sections.

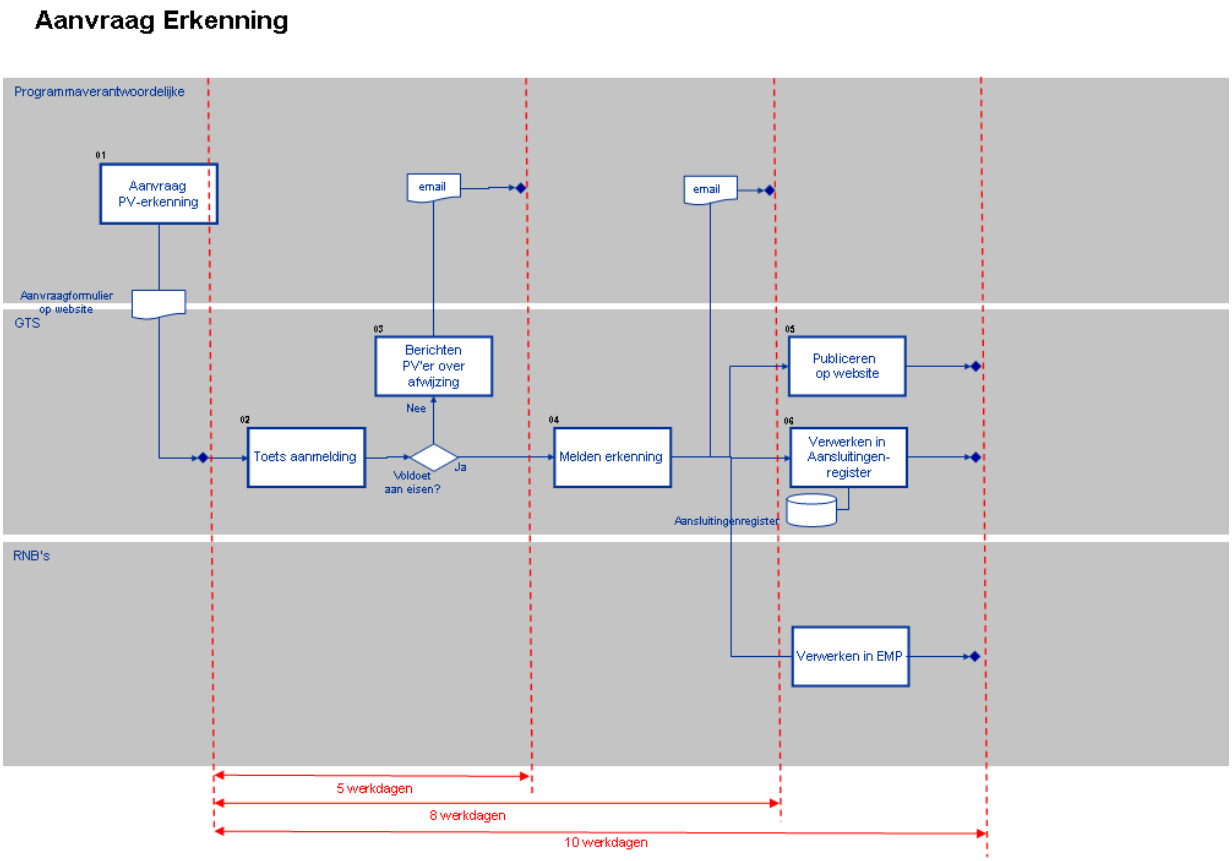

Figure 4.1: Process PRP acknowledgement

The requirements that the acknowledged programme responsible party must meet in order to gain acknowledgement shall have to be laid down in the Network Code.

4.1.2 Determining and maintaining credit limit

Monitoring credit limit for new market model/balancing.

GTS wishes to prevent exposure to any unacceptable financial risks and applies its credit-worthiness policy to the market model. This shall be applied by distinguishing within credit limit monitoring between:

1. credit limit monitoring for the transmission capacity holder;
2. credit limit monitoring for the acknowledged programme responsible party.

For each party that takes on either or both of the two roles GTS shall perform a credit analysis in accordance with the Gas LNB Transmission Code. As a result of this credit analysis the party shall be assigned a risk category and associated credit limit.

If a party has an exposure for GTS that exceeds its credit limit then GTS can demand additional security or decide on early settlement of accounts. The degree to which the exposure for GTS is determined is explained below for each role.

Monitoring credit limit for transmission capacity holder.

The degree by which the exposure increases for GTS is determined by the term of the contract. If the term exceeds 3 months then the value is equal to 3 times the maximum monthly invoice (excl. VAT) per month. For shorter contracts the exposure is proportionally lower in relation to the term and the period of 3 months.

Monitoring the credit limit involves checking each new contract as to whether the increase in the exposure fits within the credit limit for the relevant party.

Monitoring credit limit for the (Trade) Programme Responsible Party.

The exposure for balancing is equal to the maximum actual exposure relating to balancing in the previous 12 months.

The maximum actual exposure can be compiled by adding together the following components:

1) balance of the cumulative portfolio imbalance signal (POS)

2) Within Day Balancing Action exposure (incl. emergency measure and flex):

   i) cumulative balance still to be invoiced (monthly) and (possibly each hour) Within Day Balancing Actions

   ii) invoiced but not yet paid Within Day Balancing Action invoices (both credit and debit)

3) Outstanding position (both payable and receivable) as a result of the difference between online steering signal and accountable allocation (settlement)

For *new* entrants the exposure shall be determined on the basis of the maximum volume of gas that shall be supplied in a three-day period for which he shall carry programme responsibility and the maximum actual exposure as described above.

The financial position of acknowledged programme responsible parties on the Within Day Balancing Action shall be determined during the Within Day Balancing Action call. The method of settling the

Within Day Balancing Action is described in the Within Day Balancing Action section of this document.

The settlement of the difference between the near real-time allocations and the offline allocations (settlement) is described in the Settlement section of this document. GTS shall send an invoice for the Within Day Balancing Action, emergency measure, deployment of flex services as well as for the settlement.

4.1.3 Participation in Electronic Message Exchange

Depending on his role, an acknowledged programme responsible party shall participate in the following types of message exchange[5]:

- the submission of programmes;
- the electronic message exchange for the Within Day Balancing actions;
- nomination (current transport nomination)
  - the current Easeeg@s code shall remain in force for this (see www.easee-gas.org);
- message exchange for the allocation of Net areas and at direct exit connections on the national gas transmission network
  - in addition, supplementary requirements regarding communication are currently applicable for parties that utilise transmission capacity for a Net area. In that case, these parties must participate in the allocation message exchange.
- Within Day Balancing Action;
  - for details please refer to **Fout! Verwijzingsbron niet gevonden. Fout! Verwijzingsbron niet gevonden.**, which the Within Day Balancin Action process will be explained further
- transfer to acknowledged PRP
  - transfer of programme responsibility to another (Acknowledged) Programme Responsible Party takes place by the supplier sending a PRP-switch message (for details see paragraph 4.1.5)
- the ability to receive the Portfolio Imbalance Signal (POS) and system balance Signal (SBS).

For more detailed information about configuring the electronic message exchange please refer to Section 4.10.

4.1.4 Full acknowledgement and trade acknowledgement

According to Article 17b of the current bill the party that feeds gas into the gas transmission network up to a virtual point on the gas transmission network or the party that extracts gas from the gas transmission network from a virtual point on the gas transmission network is responsible for drawing up a programme. If the requirements in the Network Code are met GTS can appoint, on request, a natural person or legal entity as an acknowledged programme responsible party. For parties that are only active at the virtual point (TTF) the same code applies as for other programme

[5]) For this the PRP must have an EAN code, which can be requested from EAN-Nederland http://www.gs1.nl/

responsible parties. It is only that with regard to the submission of programmes they submit a trade programme rather than an entry and/or exit programme.

Table 4.1: Acknowledged programme responsible party acknowledgement service description

Name of service	PRP acknowledgement
Global description of service	Because GTS requires the entire chain of programmes for the approval of the programmes it therefore also requires a programme from traders on the TTF. With regard to the acknowledgement there are no other conditions for pure traders (parties that are only active on the TTF).
Type of service (informative / transaction)	T
Trigger for using service	▪ The applicant must submit a request for acknowledgement. Under the responsibility of GTS, a check is undertaken in accordance with the requirements laid down in the Network Code as to whether the applicant meets the requirements. If the requirements are met a party is registered as acknowledged. The package of requirements should originate from GTS. ▪ After a party has been acknowledged as a PRP it will be included in the public list of acknowledged programme responsible parties on the GTS website.
Frequency of use (number per min/hour/day/month/year)	Several times per year.
Time aspects	Processing may only take a few days.
Content of incoming information	Information for acknowledgement.
Volume of incoming information per request	
Content of outgoing information	Acknowledged yes/no
Extent of outgoing information per request	Small
Specific service requirements	A party that requests acknowledgement does not always need to personally be a statutory Programme Responsible Party.
Global description of service process	Note that this process is very similar to that of a Programme Responsible Party.
Contractual & legal aspects	▪ The requirements that an acknowledged programme responsible party must meet in order to gain acknowledgement are laid down in the Network Code. These are requirements that relate, amongst other things, to credit-worthiness and communication. ▪ Transfer of programme responsibility can only be made to acknowledged programme responsible parties. A list of acknowledged programme responsible parties shall be published on the GTS website. ▪ If a statutory Programme Responsible Party does not transfer his responsibility than he must be acknowledged.

4.1.5 PRP transfer

In the market model programme responsibility can be transferred[6] to an acknowledged programme responsible party. Two situations are distinguished here, with various consequences:

a. when an acknowledged programme responsible party transfers his entire programme to another acknowledged programme responsible party. This means an end to programme responsibility for the transferring party;
b. when an acknowledged programme responsible party transfers part of his programme to another acknowledged programme responsible party, whereby the cumulative position is not transferred to the receiving Programme Responsible Party.

There are two processes relating to the transfer of programme responsibility:

- the transfer of programme responsibility from a Connected Party who is also a customer to an acknowledged programme responsible party;
- the transfer of programme responsibility from a party that is not a customer to an acknowledged programme responsible party

Local distribution network (LDC)

Currently only a PRP/Shipper switch can be submitted by the supplier that is responsible for the connection. The "PRP/Shipper switch request" will be rejected by the local distribution company if the supplier that submits the "PRP/Shipper switch request" is not the actual supplier.

Because it is laid down in law that the licensed supplier of household customers carries the programme responsibility for the residential end users, it is logical that the licensed supplier of household customers submits the PRP-switch for the residential end users.

To be in keeping with the current procedure it is proposed to have the supplier submit the PRP-switch for large end users as well[7]. The supplier must ensure that he has a customer mandate for implementation of the PRP-switch because the large end user is the statutory Programme Responsible Party.

National gas transmission network

For the transfer of programme responsibility on the industry exit connections to the national gas transmission network the maximum synergy shall be sought with the current procedure for a supplier switch. The supplier must ensure that he has obtained a customer mandate from the Connected Party for the implementation of the PRP-change because the latter is the statutory Programme Responsible Party.

For the transfer of programme responsibility at network connections with adjacent TSOs and gas storage facilities (stores), GTS shall view the trading of the transmission capacity and the right of

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[6]) Sometimes the transition of programme responsibility from entry programme to exit programme is incorrectly designated with the term transfer of programme responsibility. This process is facilitated from the assigning via the programmes. This process is dealt with further in the programme process and is therefore outside of the scope of this paragraph.

[7]) Having the PRP-switch submitted personally by the large end user encounters the difficulty that the large end user does not generally have access to the switch message exchange.

use as a transfer of programme responsibility. A separate "PRP-change request" is therefore not applicable for this.

For the transfer of programme responsibility at connections between the national gas transmission network and a gas production network of a producer, the producer shall have to notify the transfer of his programme responsibility to GTS. The acknowledged programme responsible party shall notify GTS about his allocation role.

4.1.6 Termination of acknowledgement

The Network Code includes articles for terminating the acknowledgement of an acknowledged programme responsible party. Withdrawal of acknowledgement and the method by which this will be communicated shall be notified.

An acknowledgement is valid up to the moment at which it is withdrawn. GTS shall only withdraw acknowledgement:

- on the request of the acknowledged programme responsible party;
- if the acknowledged programme responsible party no longer meets the conditions stipulated under 'Acknowledgement of Programme Responsibility;
- if an acknowledged programme responsible party repeatedly and demonstrably (by GTS) fails to meet the requirements stipulated within the framework of programme control (see balancing regime final report, 3 June 2009).

GTS informs each local distribution company immediately about the withdrawal of an LB acknowledgement.

GTS publishes on its website a list of legal entities and natural persons who have had their acknowledgement withdrawn, stating the date on which acknowledgement was withdrawn.

Arrangement in the case of suspension of payments or bankruptcy

The procedure to be followed for dealing with this emergency situation that has occurred shall be detailed further in the DPM "Settlement of the sale and residual distribution of supply security E and G". The DPM 'Obtaining and terminating PRP' contains the initial impetus for this.

4.1.7 PRP registration

This is where the registration is undertaken of the legal entities that carry statutory programme responsibility (before any transfer has taken place).

Programme responsibility initially rests with:

- the Connected Party if the connection is in accordance with the Gas Act; this also includes the producer if it relates to an entry point in the Netherlands[8]. There is an exception for residential end users, whereby the licensed supplier of household customers carries programme responsibility;
- the transmission capacity holder if it relates to a border point or connection with a storage facility;
- the licence holder if it relates to a party that holds a TTF trade licence with GTS.

This registration is undertaken both with regard to parties that are connected to the GTS network and the parties connected to the RNB network. For customers, this registration shall be undertaken in the relevant connection registers of the Network Operators, whereby the vacant shipper field is used for the acknowledged programme responsible party.

It is intended that only the legal entities that carry statutory programme responsibility and also actually exercise the programme responsibility are registered in the connection registers. In the case of a legal entity that carries statutory programme responsibility and transfers this programme responsibility to an acknowledged programme responsible party then only the latter shall be included in the connection register.

4.2 Supplier process

4.2.1 Supplier registration

New suppliers must register with GTS.

If the supplier is active on a network point for which nomination is necessary or if he is active on the TTF then during registration a communication check shall be undertaken to ensure that the supplier meets the conditions. In addition to the current conditions for nominating, for which the Easeeg@s conditions remain in force (see http://www.easee-gas.org/ of a easily accessible web-based service.

In addition to this, the supplier shall provide an EAN code when registering. This is in accordance with the current notification procedure.

4.2.2 Supplier switch

For detailed information about the requirements applicable for the switch messages please refer to the Codes. For illustration purposes, the requirements set for the elapsed time of this switch process[9] are given below.

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[8]) The combined pipelines that enter the GTS network, for example at Balgzand (Nogat, Lo-cal, WGT) and Uithuizen (NGT), are also counted as entry points in the Netherlands in the sense that each and every producer that offers gas via the combined pipeline is dealt with as a Connected Party and therefore as a PRP.

[9]) When drawing up this MPM the information from the detail process models, such as those defined for the new 'Upstream' market model, was used.

Local distribution network

The new supplier is responsible for ensuring that he has a customer mandate for implementation of the supplier switch.

The supplier switch for residential end users is described in the "Markt- en subprocessen NEDU – Retailprocessen".

The following, which relates to the elapsed time of this switch process, has been extracted from that document and is for illustrative purposes only.

- *A "supplier switch request" notification can be submitted by the new supplier in the period of 20 working days up to and including 1 working day prior to the change date.*
- *For residential end user connections, with the exception of connections that form part of a multi-site contract (on the basis of Articles 95n and 95ca of the Electricity Act or Articles 44a and 52c of the Gas Act),the submission time for the supplier switch is one working day prior to the change date.*
- *The outcome of the sub-process "Notifying and evaluating a supplier switch request" is an instruction to the Network Operator to change the register on the change date, which is the input for the sub-process "processing a supplier switch in the connection register".*
- *A "supplier switch request" is evaluated by the Network Operator no later than one working day after receipt, whereby no later than one working day after receipt of the "supper switch request" the market parties involved are notified about the result of the evaluation.*
- *One working day after the connection register change date the master data are issued to the market parties that are active on the connection after the change has been implemented.*

The supplier switch for large end users is also described in the "Markt- en subprocessen NEDU – Retailprocessen".

The following, which relates to the elapsed time of the switch process, has been extracted from that document and is for illustrative purposes only.

- *A "supplier switch request" notification can be submitted by the new supplier in the period of 20 working days up to and including 5 working days prior to the change date.*
- *The outcome of the sub-process "notifying and evaluating a supplier switch request" is an instruction to the Network Operator to change the register on the change date, which is the input for the sub-process "processing a supplier switch in the connection register".*
- *A "supplier switch request" is evaluated by the Network Operator no later than one working day after receipt, whereby no later than one working day after receipt of the "supplier switch request" the market parties involved are notified about the result of the evaluation.*
- *One working day after the connection register change date the master data are issued to the market parties that are active on the connection after the change has been implemented.*

National gas transmission network

The supplier is responsible for ensuring that he has a customer mandate for implementation of the supplier change on the connection of the Connected Party.

The following process steps and elapsed times are intended for dealing with this process.

- A "supplier change request" notification can be submitted by the supplier 20 up to and including 5 working days prior to the change date.
- A "supplier change request" is evaluated by GTS no later than within 3 working days after receipt. The result of the evaluation is communicated by GTS to the market parties involved.
- One of the elements of the evaluation by GTS is a check as to whether the notified Programme Responsible Party has acknowledged status with GTS.
- If a "supplier change request" is evaluated positively by GTS then the requested change is implemented immediately in the connection register on the stated change date.

4.3 Programme process

According to the bill, acknowledged programme responsible parties shall submit entry, exit and trading programmes, that have to be linked together at the virtual point (VPPV), day-ahead (the day preceding the day on which the gas transport takes place). This link allows a comparison of the entry, exit and trade programmes to be undertaken so that it becomes possible to check whether the total of these programmes correspond. The legislator has assigned this checking task to GTS. The process that is described in this section in order to provide an interpretation of this task is only relevant to acknowledged programme responsible parties.

When designing the current balancing regime GTS has adopted the system of programmes to improve the performance of gas transport compared to the current situation. This improvement consists of a limited damping and delaying the physical entry in relation to the exit. This damping is processed into the exit programme as a difference between the stated total physical exit and the net value of the transfers on the VPPV, being the entry. The exit programme sets out between GTS and the acknowledged programme responsible party the expected difference (delta profile) per hour between the exit and the entry of the acknowledged programme responsible party. For each hour, this delta profile is equal to zero for an entry or trade programme and is volume-neutral on a gas-day basis.

The aim of the damping formula is to maximise the size of the Green Zone. By varying the alpha in de damping formula the resulting damping and delay is influenced

The added value of submitting a day-ahead programme is:

- making the damping between the exit and the entry available to acknowledged programme responsible parties;
- improving gas transport;
- recording the imbalance agreement in advance so that a clear, near real-time settlement of imbalance becomes possible.

Preconditions are:

- all acknowledged programme responsible parties must submit day-ahead programmes and GTS shall evaluate these;
- the transition of programme responsibility between entry, trading and exit programmes between acknowledged programme responsible parties shall be checked on the VPPV for all of the gas that flows through the national gas transmission network and the local distribution network.

4.3.1 Types of programmes

To provide interpretation of their programme responsibility acknowledged programme responsible parties have the possibility of submitting three types of programmes to GTS:

1. an entry programme in which the acknowledged programme responsible party states the volumes of gas per hour at physical entry points for which he receives programme responsibility and the volume per hour on the VPPV that this programme responsibility transfers again to acknowledged programme responsible parties;
2. an exit programme in which the acknowledged programme responsible party states the volumes per hour on the VPPV for which programme responsibility transfers to him from which acknowledged programme responsible parties and the volumes of gas per hour for which he carries responsibility at physical exit points;
3. a trade programme for acknowledged programme responsible parties without physical entry or exit. This contains the volumes of gas per hour per acknowledged programme responsible party for which he receives programme responsibility on the VPPV and the volumes of gas per hour per acknowledged programme responsible party to whom he transfers programme responsibility.

4.3.2 Portfolio procedure

In the balancing regime GTS communicates the imbalance of acknowledged programme responsible parties with these acknowledged programme responsible parties via a Portfolio Imbalance Signal (POS). The portfolio covers both the physical entries and the physical exits. These entries and exits are spread across an entry and an exit programme and are linked via the VPPV.

Acknowledged programme responsible parties can opt to have multiple portfolios registered with GTS. In this case they must state which portfolio contains each physical point for which they carry programme responsibility. Each portfolio can contain one or two programmes. These programmes are subject to the normal rules regarding balance, submission, approval, etc. GTS prepares a POS for each portfolio. Each portfolio is involved separately when the within day balancing action and emergency measures are invoked on the basis of its POS. The administration of the portfolios is separate because different EAN and EDIGAS codes are used for them.

4.3.3 Content of the programmes

Programmes must provide information for all physical exits and entries of an acknowledged programme responsible party. In addition, the acknowledged programme responsible party must also state the volume of gas for which programme responsibility transfers from/to an acknowledged programme responsible party on the VPPV. The exit in the exit programme contains information about the total exit flow per hour from a PRP, spread over two values: his exit for residential end users and his exit on the other network points. Transfers for balance agreements are stated separately and are likewise spread over transfers for residential end users and others. For the entry in the entry programme it suffices to state the total entry volume per hour added together for all network points for which he has programme responsibility.

The damping must also be incorporated into the programmes. The damping is compulsory for programmes that include residential end users. For all other programmes damping is optional. If it is decided to apply damping then this must always be done in the exit programme.

The difference between entry and exit in the exit programme that is the result of damping (the delta profile) is not imbalance! The way in which this is to be incorporated in the execution of balance agreements shall be described in the DPM.

The basic principle is that all programmes have to be in balance, in other words for all individual programme hours it applies that

$$\sum Entries_{\text{Programme}} + \sum Exits_{\text{Programme}} + Deltaprofile(Damping) = 0$$

.

When using the above formula the sign convention of the allocations should be used. The entry has a negative sign, the exit has a positive sign.

The programmes and the associated delta profile are set day-ahead and are not adjusted after that. Imbalance is accumulated and it is up to the acknowledged programme responsible party to determine how he is going to deal with it.

Annex 1 contains an explanation about the background of damping in the national gas transmission system. The basic principle is that damping is applied to the physical network points that are included in programmes: acknowledged programme responsible parties receive the full damping of the sum of the network points in their portfolio.

To make it possible to exempt damping for certain network points (a) separate portfolio(s) need(s) to be established for this.

The aim of balance agreements is to allow an acknowledged programme responsible party to transfer the imbalance risk for (part of) his exit programme to another acknowledged programme responsible party. Such trading relationships can be complex because multiple acknowledged programme responsible parties link their entry programmes to one exit programme and because extra rules can be agreed upon, for example limits.

To be able to check and to convey the portfolio imbalance signal for all acknowledged programme responsible parties, the acknowledged programme responsible parties must include in their exit programme a link on the VPPV (TTF balancing) to the total of their balancing supplies, subdivided into supplies for the residential end users and others.

For the exit programme, the balance agreement entered into can serve as the programme provided that the balance agreement is applicable for **all** physical exits in this exit programme. This can also be set for a longer period of time by GTS – the required messages can be sent to GTS 400 days in advance – whereby this exit programme is considered to have been submitted daily for this longer period.

Where a program responsible party has program responsibility for one or more end consumers connected to a closed distribution system (CDS) connected to a network area the PRP shall include these exits in its programs. The PRP registered for the connection of the CDS to the network area shall only include off-takes from the CDS for which it has program responsibility.

4.3.4 Form of the programmes

Programmes must be submitted as separate messages.

For acknowledged programme responsible parties the programmes shall appear as follows:

- for acknowledged programme responsible parties that are only active on the TTF the form and content of their programme is the same as their TTF nomination. However, they shall still have to submit a separate programme. They send one message to GTS[10];
- for acknowledged programme responsible parties that trade on the TTF and who are also an acknowledged programme responsible party for physical exits, their programme covers both activities in one message to GTS;
- for acknowledged programme responsible parties that trade on the TTF and who are also an acknowledged programme responsible party for physical entries, their programme covers both activities in one message to GTS;
- for acknowledged programme responsible parties that trade on the TTF and who are also an acknowledged programme responsible party for physical entries and physical exits, their entry programme or their exit programme covers their trading activities. They send two messages to GTS;
- for acknowledged programme responsible parties that are not active on the TTF but who do have programme responsibility for physical entries and physical exits, their entry and exit programmes create the link between these physical points. They send two messages to GTS.

4.3.5 Process of submitting programmes

The programme and nomination processes run independently and parallel to each other. Nominations do not form part of programmes and programmes are not compared with nominations.

Each day GTS checks the day-ahead programmes submitted by the Acknowledged programme responsible parties against the internal and external consistency rules. For the internal consistency check all programmes must be in balance, which means that entry plus exit plus delta profile is equal to zero. For acknowledged programme responsible parties that have to submit a programme or programmes and fail to do so, GTS shall prepare zero programmes for them and confirm these to the relevant PRPs. In these programmes the entry, exit and delta profile values shall be zero for all hours of the day.

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[10]) The reason for deciding that Acknowledged Programme Responsible Parties that are only active on the TTF are not allowed to submit their 14:00 TTF nomination also as a programme:
assume that GTS discovers errors in the submitted programmes and requests the Acknowledged Programme Responsible Parties to submit new programmes and an Acknowledged programme responsible party who is only active on the TTF submits a new nomination, then is this also a new programme that needs to be included in the new check regarding whether it is a normal TTF nomination that may be in imbalance because, after submitting his programme, the Acknowledged programme responsible party continues trading?
Conclusion: when using TTF nominations it is not clear to both the Acknowledged Programme Responsible Part and to GTS what the Acknowledged programme responsible party has submitted as his programme.

The aim of the checking process is to provide GTS with the certainty that entry and exit on the VPPV are matched to each other, with due regard to the agreed relationships between entry and exit (damping). The submitted programmes are checked for internal consistency (the correct application of the prescribed relationship between entry and exit) and for external consistency (whether the stated transfers of programme responsibility on the VPPV correspond). For this check GTS shall apply the default rule whereby errors in transfers on the VPPV will result in these transfers being set to zero. Errors in the submitted delta profile shall result in the delta profile being set to zero for all hours of the gas day. If all programmes pass the consistency check then these programmes shall be approved and it shall be no longer possible to submit new programmes for the next gas day.

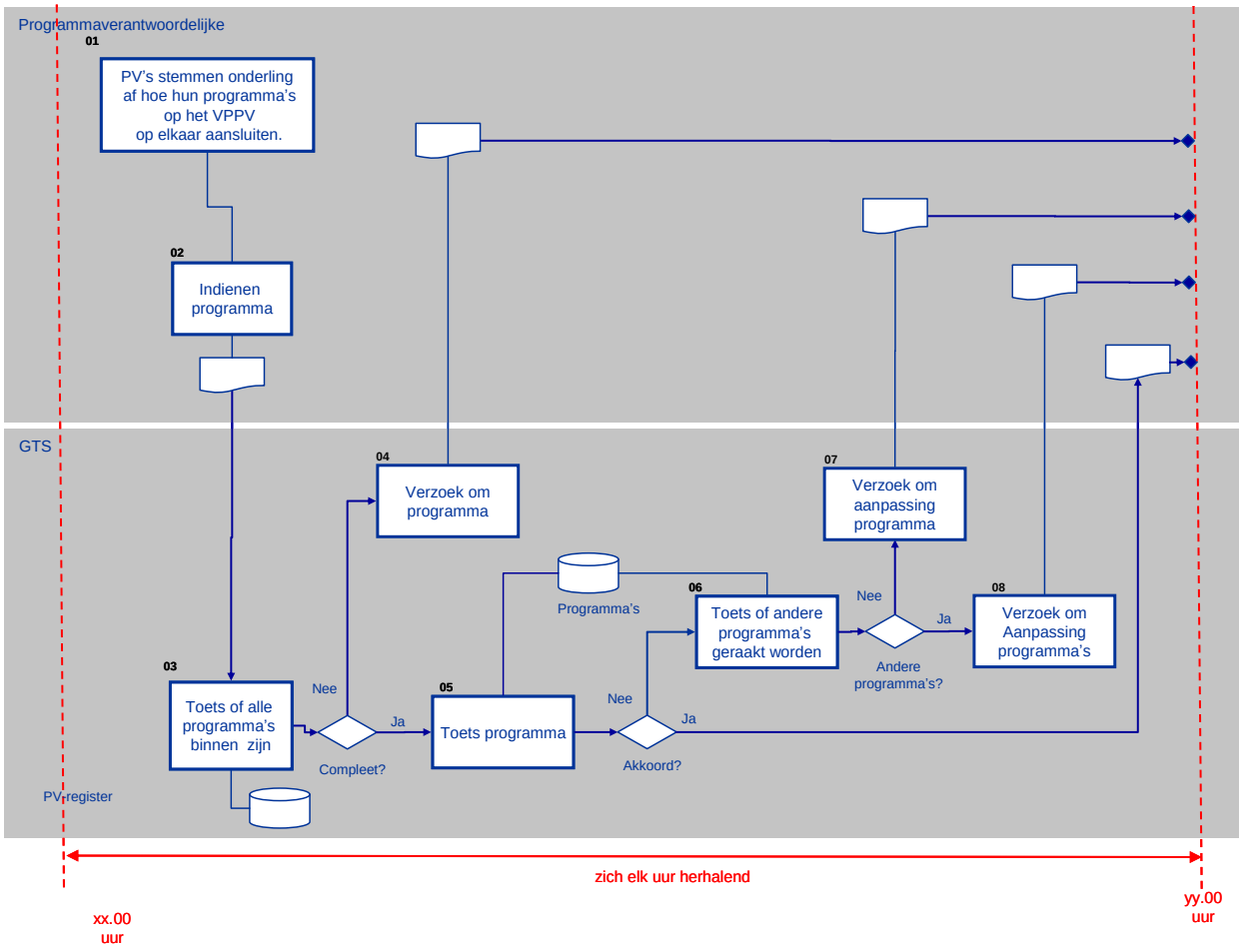


Figure 4.2: Submission and processing of a programme (figure in Dutch)

1. If a programme fails the consistency checks it is rejected. If the rejection is the result of failing the external consistency check then this rejection also has consequences for the programmes of the acknowledged programme responsible parties that appear as counter party in the rejected programme. Because of the incorrect link on the VPPV their programmes no longer therefore match and they too are rejected. If such a situation arises then GTS sends a message to the acknowledged programme responsible parties who have stated an incorrect link for their programmes on the VPPV and this message shall state that they will have to submit a new programme. When doing this, GTS notifies the link that has

caused the rejection. If the rejection is the result of failing the internal consistency check then the submitting PRP receives a message about this from GTS.

GTS checks the day-ahead programmes for the first time at 14:00. If incorrect programmes are found to have been submitted then a second check is undertaken at 18:00. The last programme submitted by an acknowledged programme responsible party replaces all previously submitted programmes and only the last submitted programme is included in the new check. Previous programmes are not saved. The checking process is repeated each hour from 18:00 up to and including 22:00 so long as all programmes are not yet approved.

After every check, unless there are changes in respect of the previous message, a PRP receives a programme confirmation message containing the imbalance agreement as now laid down by GTS for him for the following day. For the exit/entry programme this means: total hourly exit, total hourly entry and the hourly difference (delta profile). GTS shall send the same message for a trade programme, whereby the delta profile shall always be zero.

Incorrect programmes are rejected. The acknowledged programme responsible parties receive a programme confirmation (with amended values) in which the reason for rejection is also stated in the confirmation. The reason specifies with which acknowledged programme responsible party or Parties there is a discrepancy and in which hours this discrepancy occurs.

As long as there are incorrect programmes, correct programmes are approved together with a report in the associated status information that not all programmes are yet correct. Acknowledged programme responsible parties with approved programmes do not need to take any further action, however, they can still submit new programmes. However, they do know that there is still an error somewhere and that the programme checking process for the next day is still not completed.

Approved transfers on the VPPV cannot be unilaterally changed by one of the two parties that forms part of the transfer. The old transfer can only be changed when both parties amend the transfer so that it can be re-approved. This procedure is analogous with the current matching on the TTF and serves to provide acknowledged programme responsible parties with approved programmes with the certainty that their role in the programme checking process has been completed.

If, despite repeated attempts, an acknowledged programme responsible party appears unable to submit a correct day-ahead programme then by so doing he is demonstrating his inability to carry his programme responsibility associated with his role as acknowledged programme responsible party. If it appears that an acknowledged programme responsible party remains in default more often then this shall have consequences for his status as an acknowledged programme responsible party.

Details of the default rule for incorrect / missing programmes

The rules described above are applied to every programme check, for the first time at 14:00 day-ahead to transport. First of all a check is undertaken as to whether all programmes have been received from acknowledged programme responsible parties. Zero programmes are generated for every missing programme. In a zero programme the entry, exit and damping are equal to 0 for each hour.

After that, the transfers on the VPPV between acknowledged programme responsible parties are compared with each other for all programmes. When doing this the pairs of acknowledged

programme responsible parties and the stated values for the transfers are examined. If no errors are found then all acknowledged programme responsible parties that have submitted a programme receive a message that their programmes are approved and a programme confirmation. This programme confirmation contains the already stated total entry per hour, total exit per hour and the delta (difference between entry and exit arising from the damping formula) per hour. The acknowledged programme responsible parties that have not submitted any programmes now also receive a message about this fact, together with a programme confirmation containing a zero programme.

It is possible that part of the programmes is incorrect, for example when some pairs of acknowledged programme responsible parties or values for a transfer of programme responsibility do not correspond with each other. Fort the relevant pair of acknowledged programme responsible parties the values for the transfer of programme responsibility is then set to zero. The remaining values for the transfers on the VPPV are then added together. This total becomes the total of transfers of programme responsibility on the VPPV as well as the volume for the physical entry or physical exit. In the case of a trade programme the remaining volumes are added together for each sign (entry or exit). The lowest value of these two total volumes is then adopted as the total volume for both the entry and the exit. For all incorrect programmes the delta profile is reduced to zero.

4.3.6 Within-day procedure for Programme Responsible Parties

For acknowledged programme responsible parties the following basic principles apply for within-day:

- all acknowledged programme responsible parties can trade day-ahead and within-day and notify GTS of these via nominations. The procedure described below describes how GTS processes this additional trade into the POS of the relevant acknowledged programme responsible parties;
- a POS is maintained for **all** acknowledged programme responsible parties for each portfolio. This POS acts as the basis for settling the volume if a within day balancing action call or emergency measure is invoked.

The VPPV is used day-ahead as the point for establishing the link between trade, entry and exit programmes. Within-day, these programmes are the basis for determining the imbalance that an acknowledged programme responsible party has at a specific moment. The cumulative of imbalance is presented as the portfolio imbalance signal to the acknowledged programme responsible party.

The hour imbalance of a programme is defined as:

$$OB_{prog}(bp_i) = Entry_{real,prog}(bp_i) + Exit_{real,prog}(bp_i) - Entry_{plan,prog}(bp_i) - Exit_{plan,prog}(bp_i)$$

The planned entry and exit are expressed in the programme. The real entry and exit are determined by the near real-time allocations that are based on meter readings, nominations, supplied allocations and allocation rules insofar as this concerns physical points. For the virtual transfers of programme responsibility the programmes are used in conjunction with TTF nominations.

For an entry programme the real virtual exit is determined by the net volume of gas for which the programme responsibility on the VPPV transfers from one acknowledged programme responsible party to another acknowledged programme responsible party.

For an exit programme the same as above applies with regard to the virtual entry. For a trade programme the difference between the programme and the last TTF nomination is used to determine the imbalance.

4.3.7 Effects on bi-directional points

If a bi-directional point is used by an acknowledged programme responsible party as a "control point" and this forms the balance of the entire portfolio then the gas flow over that point shall fluctuate during the day in the exit or entry programme. The Programme Responsible Party must apply any damping correctly.

No programme changes take place during the day. The acknowledged programme responsible party can use the bi-directional point freely in order to meet the programme requirements.

4.3.8 Programme submission

Acknowledged programme responsible parties submit a programme. GTS checks the submitted programmes for internal consistency (do the programmes meet the requirements, such as damping for example) and external consistency (do the programmes match each other). The programmes are rejected if this is not the case. The programmes are approved if they pass the checks.

Table 4.2: Programme submission service description

Name of service	Programme nominations
Global description of service	The submission of a programme by an acknowledged programme responsible party
Type of service (informative / transaction)	T
Service provider(s)	GTS
Service customer(s)	Acknowledged programme responsible parties
Trigger for using service	Acknowledged programme responsible parties
Frequency of use (number per min/hour/day/month/year)	At least once per day per acknowledged programme responsible party. More often if an incorrect programme is submitted.
Time aspects	▪ Submission should be sent in before 14.00 day-ahead. ▪ Incoming programmes are checked immediately for internal consistency and immediately rejected if they do not meet the requirements. ▪ First check for external consistency takes place at 14:00. Subsequent checks take place each hour from 18:00 up to and including 22:00 unless all programmes are approved earlier.

Name of service	Programme nominations
Content of incoming information	▪ Type indication for programme and portfolio. ▪ Entry programme: total physical entry, transfer on VPPV to whom and for what volume. ▪ Exit programme: total physical exit spread over residential end users and others, transfer on VPPV from whom and for what volume. Any additional information for the total of balance agreements spread over residential end users and others. ▪ Trade programme: total extent of programme responsibility received, from whom and for what volume, total of transferred programme responsibility, to whom and for what volume.
Volume of incoming information per request	▪ Entry/exit programme: 24 hour values per counter party plus 24 hour values for entry or exit element. ▪ Trade programme: 24 hour values per counter party.
Content of outgoing information	Correct / not correct. Total entry, total exit, delta profile plus submitted programme containing information about transfers on the VPPV.
Extent of outgoing information per request	Submitted programme with status information with additional 3 times 24 hour values for the total entry, exit and delta.
Preconditions for use	▪ Only acknowledged programme responsible parties can submit programmes. ▪ It is possible to work with multiple portfolios. ▪ If not correct, a new programme can also be submitted after 14:00.
Specific service requirements	▪ A new programme replaces an existing programme. ▪ Check for internal consistency immediately on receipt. ▪ Check for external consistency at set times.
Contractual & legal aspects	Once GTS has approved the programme or has set a programme for a PRP at 22:00 on the basis of the default rule, then this forms the basis for determining the imbalance for an acknowledged programme responsible party

4.4 Within Day Balancing Action process

4.4.1 Introduction

If necessary, in the balancing regime GTS restores the system balance via products available on the Within Day Market. This means that resources which allows GTS to balance the system in the event that the system is in imbalance are products ordered by GTS at the Within Day Market via the Trading Platform. Volume will be bought or sold without delay at the best available price.

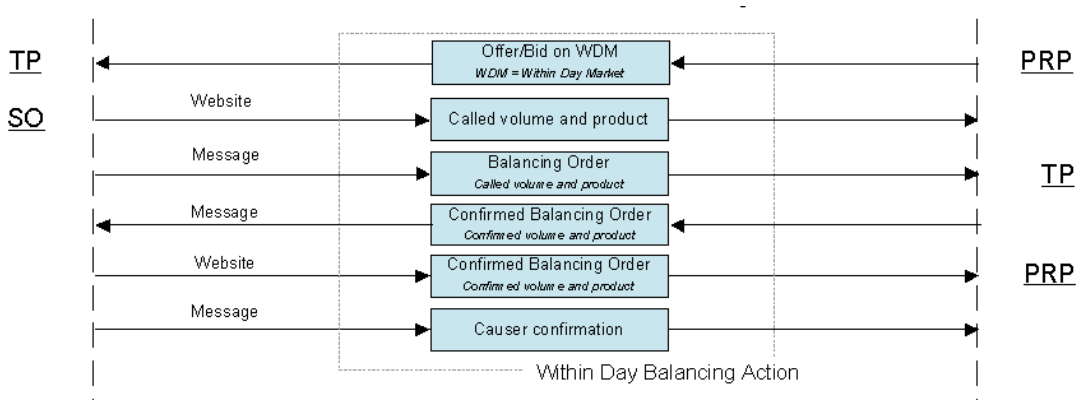
GTS balances the system through Within Day Balancing Actions when the system exceeds pre-defined imbalance limits (so called zones). Within the set limits the system is actually balanced by the acknowledged Programme Responsible Parties and GTS does not take balancing actions.

When a Within Day Balancing Action is invoked, financial settlement with the parties responsible for the imbalance (the Causers) is undertaken based on the volume weighted average price of balancing products bought or sold by GTS on the Within Day Market.

The volume bought or sold is divided amongst the parties that contributed to the imbalance.

The distribution of volumes in this way amongst the acknowledged Programme Responsible Parties takes place both in the near real-time process as well as the offline process.

The information flows concerning transactions, as a result of the Within Day Balancing Action, are depicted in the figure[11] below.



[11] SO = System Operator (GTS), TP = Trading Platform (Within Day Market), PRP = Programme Responsible Party (Shipper)

4.4.2 Nomenclature of the WDBA

Below the explanation can be found of some of the WDBA terms used in this MPM, together with a short explanation.

Term	Description
Offer/Bid on WDM	Bids (sells) or offers (buy) of parties on the Within Day Market.
Within Day Balancing Action Trigger	The trigger (as a result of the position of the SBS in the buffer zones) that there will be a Within Day Balancing Action.
Balancing Volume	The (imbalance) volume resulting from the position of the SBS in the light green, orange or red zone.
Updated Balancing Volume	In case of a Within Day Balancing Action Trigger, with an SBS in the light green zone, the Balancing Volume can be corrected with future to be delivered volume as a result of previous WDBA actions. This corrected volume is the Updated Balancing Volume.
Transaction Volume	The volume obtained from the Within Day Market Trading Platform as a result of the ordered – by GTS - (Updated) Balancing Volume. This volume will be pro rata allocated to the the parties that contributed to the imbalance (the Causers).
Ordered Balancing Product	The type of product needed for the concerning Balancing Order. Can be a Single Clock Hour Product or a Remainder of the Gas Day Product.
Single Clock Hour Product	Type of product that will be ordered in case the SBS forecast is in the orange zone.
Remainder of the Gas Day Product	Type of product that will be ordered in case the SBS forecast is in the light green zone. It is an hourly delivery until the end of the Gasday.
WDM Trading Platform Operator	The organisation which facilitates trading on the Within Day Market.
WDM Trading Platform	Automated platform of the Trading Platform Operator on which Within Day Market gas can be bought or sold.

Balancing Order	The Updated Balancing Volume and Balancing Product will be sent by GTS as an order to the WDM Trading Platform. This Balancing order will also be published by GTS for the concerning market parties (e.g. via Gasport).
Confirmed Balancing Order	The confirmation of the Balancing Order (volume and product), sent by the Trading Platform to GTS. This order will also be published by GTS for the concerning market parties (e.g. via Gasport). The volume can differ from the volume in the order. The price is added in the Confirmed Balancing Order (by the Trading Platform).
Causer Confirmation	Confirmation message used to divide the volume from the Confirmed Balancing Order among the Causers.
BVP, Balancing Virtual Point	Virtual point on which the Confirmed Balancing Order volume is allocated to the Causers. Previously known as the: BVP, *Biedladder Verdeel Punt*.

4.4.3 Triggering of the WDBA process and volume determination

The balancing regime uses balancing products obtained via the Within Day market. The so called balancing zones consist of the Dark Green Zone around the zero balance of the system, beyond that the Light Green Zone and beyond that, the Orange and Red zones. If the prognosis system balance signal (SBS) is increasing in the light Green Zone then Remainder of the Gas Day Products[12] will be ordered on the Within Day Market Trading Platform. If the SBS is in the Orange (or Red) Zone, then Single Clock Hour Products will be ordered – which will delivered the next hour - in order to meet the physical requirements. In the red zone, emergency measures can be used instead of or in addition to ordering on the Trading Platform.

The signal which triggers the Within Day Balancing Action, is the SBS prognosis signal at xx:15[13] and gives an SBS prognosis for the end of the current hour ((xx+1):00). This prognosis value is compared with the borders of the zones that are valid from xx:00 till (xx+1):00.

[12] In order to meet the wishes of the market to allow for slower – end of day - resources

[13] The prognosis is available for market parties at approx. xx:20.

Prior to the actual triggering of the Within Day Balancing Action based on the xx:15 SBS prognosis, GTS will determine:

- A prognosis (Updated) Balancing Volume at xx:05. This volume will be determined by comparing the actual zone borders of the hour with the prognosis SBS for the end of the current hour. The calculation is identical to the calculation used to determine the Updated Balancing Volume at xx:15. If the SBS is within the (dark green) borders of the zone, the provisional WDBA volume will be zero (or non existent).
- A prognosis (Updated) Balancing Volume at xx:10.

Both prognosis WDBA volumes will be published via web screens by GTS. They can differ from the actual to be ordered Updated Balancing Volume.

4.4.4 TSO ordering at the WDM

The Detailed Process Model Within Day Balancing Action process describes the order strategy used by GTS to determine the trigger, products and volumes of the Within Day Balancing Action.

After triggering the Within Day Balancing Action, the following steps are executed:

1. The needed volume and type of product are determined.
    a. In principle the volume to be ordered is the volume needed to bring the SBS back to the outer border of the dark green zone (i.e. Balancing Volume). When called in the light green zone, future – not yet delivered - volume already obtained from the Within Day Market (from previous orders) will be taken into account. This will result in the Updated Balancing Volume. In the orange zone, future – not yet deliverd - volume already obtained from the Within Day Market (from previous orders) will not be taken into account.
    b. The type of product depends on the position in the zones of the prognosis SBS: in the light green zone Remainder of the Gas Day Products will be ordered, in the Orange Zone Single Clock Hour Products will be ordered.
2. The Balancing Order (volume and type of product) will be published via public means (web screens).
   The Balancing Order will be sent to the WDM Trading Platform a random time between xx:21 and xx:22.

Remainder of the Gas Day Products will be delivered for the remaining hours of the gas day, starting in hour x+3 after the hour (x) in which the WDBA has been triggered. For example, the SBS prognosis enters the light green zone and a volume of 100 will be ordered at xx:15[14]. When a

[14] The call is made on basis of the available data for cycle time xx:15, this data (allocations, POS's and SBS) is available for market parties at approximately xx:20..The actual order will be placed between xx:21 and xx:22 and communicated immediately after the order has been sent.

confirmed order is received by GTS, the confirmed volume will be allocated (to GTS and subsequently by GTS to the causers) at hour xx+3 till the end of the gas day. (in equal parts over the remaining hours of the gas day).

Single Clock Hour Products will be delivered in the single hour after the WDBA action has been triggered. For example, the SBS prognosis enters the orange green zone and a (Updated) Balancing Volume of 150 will be ordered at xx:15. When a confirmed order is received by GTS, the Transaction Volume will be allocated (to GTS and subsequently by GTS to the causers) at hour xx+1.

Note that the orders placed by GTS at the WDM Trading Platform are market orders. The orders will not be delayed (i.e. placed immediately when a Within Day Balancing Action is triggered and matched directly with available offers) and no price limit will be given (i.e. volume will be bought at the best available price).

4.4.5 Processing confirmed order from the WDM

Shortly after the processing of the Balancing Order, the WDM Trading Platform will send a Confirmed Balancing Order to GTS. This confirmed order will contain, in addition to the original Balancing Order, the price (which is an volume weighted average price for the total volume bought or sold).

Only the Transaction Volume in this Confirmed Balancing order can differ from the Balancing Order GTS sent in. The Transaction Volume can be lower or equal to the volume in the Balancing Order sent in by GTS. The Confirmed Balancing Order will also be published by GTS (via web screens), including the applicable price.

4.4.6 Delivery of ordered WDM volume

In addition to the Confirmed Balancing Order, the WDM Trading Platform Operator will send in a regular nomination on the trade virtual point (TTF) in order to make the volume transfer from the WDM Trading Platform Operator (suppliers) to the TSO (GTS). Note that this is a non-physical delivery. At the starting and/or ending point of the trade chain, there will be a physical delivery or intake[15].

4.4.7 Distribution of the WDM volume

In the balancing regime the confirmed Transaction Volume confirmed by the WDM Trading Platform is distributed among the parties that were on the 'wrong side' (i.e. same side as the SBS) pro rata to their cumulative position. This volume distribution takes place at the designated 'Balancing Virtual Point'. This is undertaken via the confirmation process so that the portfolios are updated at the agreed transaction moment in real time.

GTS will send out Causer Confirmations to the 'causing' Programme Responsible Parties at approx. xx:23 in order to divide the Transaction Volume of the Confirmed Balancing Order pro rata among the causers. These Causer Confirmations will lead to allocations in the portfolios of the causers on a virtual point: the Balancing Virtual Point (BVP). By doing so, the POS of the causers will be adjusted.

Note that these causer allocations will follow the "timing pattern" of the confirmed products: Remainder of the Gas Day Products will lead to causer allocations for the remainder of the Gasday, Single Clock Hour Products will lead to a causer confirmation for the next hour.

Example: assume that of the 200 that has just been ordered and confirmed (and allocated on the TTF), GTS distributes 80 and 120 to acknowledged Programme Responsible Parties A and C

[15] There might be occurrences of non-physical action in case a trading PRP chooses to alter its position, e.g. when a PRP "sells (part of) its helper position".

respectively. GTS sends the following confirmation (on the BVP): GTS against party A 80 and GTS against party C 120. After this, GTS is once again volume neutral and the Transaction Volume is distributed to the various parties. The distribution over the causers of the gas that is obtained from the Trading Platform takes place in the same hour as the gas flows (i.e. is delivered via the Trading Platform Operator) and therefore has an effect on the POS for the relevant hour.

4.4.8 Pricing and invoicing of the WDBA

GTS registers a transaction for every Within Day Balancing Action. Amongst other things, this transaction includes:

- the Within Day Balancing Action gas (Transaction Volume and price) that is confirmed by the WDM Trading Platform;
- the Within Day Balancing Action Transaction Volume that is confirmed to the PRP's that have caused the system imbalance (Causers).

The Within Day Balancing Action charges to the PRPs that have caused the system imbalance shall be reflective of the costs for the undertaking of the balancing actions (e.g. commodity, clearing and trading costs at the Within Day Market Trading Platform).

The commodity will be invoiced to the causers as follows:

1. In case of a regular Within Day Balancing Action, the causers will be invoiced the volume weighted average price of the balancing products bought/sold by GTS in the Confirmed Balancing Order in that hour.
2. In case of a Within Day Balancing Action which unintentionally coincides with a case of physical emergency or a data emergency for both of which applies that the shippers are not the cause, the causers will be invoiced the Neutral Gas Price.

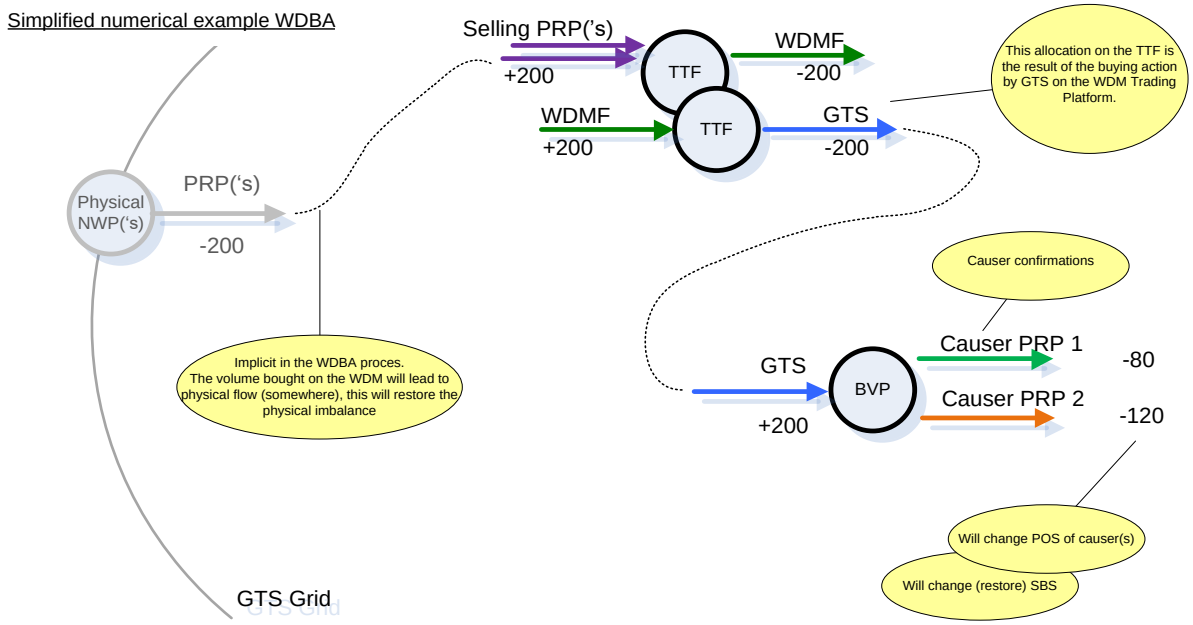
Invoicing takes place once a month on the working day that is published in the invoice schedule on the GTS website.

The commodity will be invoiced to the suppliers as follows:

1. The suppliers will be invoiced by the WDM Trading Platform on which they have bought or sold their commodity.

4.4.9 Flow example WDBA

Below an example is given of the results – allocation/confirmation flows - of a within day balancing action.



Assumed is an ordered (and confirmed) Balancing Volume of 200 (the SBS is short), to be delivered in one hour (as in this example). The figure depicts an hourly situation, in reality it could of course apply to more than one hour, in case of a Remainder of the Gas Day product delivery. The flow principle will be the same though for all hours in which the WDBA gas is transferred.

The Trading Platform will confirm the product and volume (200) to GTS. The Trading Platform Operator will also send in accompanying TTF nominations to effectuate the transaction (and flows) on the TTF.

The amount which is transferred on the TTF from the WDM to GTS, will be (pro rata to their cumulative position) transferred to the causers, which will lead to allocations to these causers on the BVP (Balancing Virtual Point). This in effect will alter (in this case lower) their imbalance (POS).

4.4.10 Emergency Measures

GTS is considering the following process with regard to emergency measures:.

The following basic principles are maintained:

- the decision-making takes place on the basis of effectiveness and the consequences on the market of the measures to be taken (maximum damage limitation);
- GTS determines the best solution for maintaining network integrity;
- emergency situations are notified to the market by GTS;

Operational handling:

If GTS issues instructions as described above:

- if GTS issues instructions to increase the entry flow then the parties are obliged to assist with this and indicate the possibilities that they have to do so;
- if a party receives an instruction for a specific volume then this volume shall be confirmed to that party by means of an Emergency Measure activation message. This is a BIDACT message because location price and volume can be incorporated in this;
- the relevant acknowledged programme responsible parties must adjust the agreed flow in accordance with the instruction. Capacity excesses that are the result of implementing emergency measures are not penalised;
- if the flow obtained in this way is insufficient for maintaining network integrity then a start shall be made on reducing the exit flows in a similar way to that which is described above;
- if the System Balance Signal enters the Red Zone the Within Day Balancing Action has already been invoked for that hour;
- the deployed emergency measure gas is distributed amongst the Causers on the Emergency Measure Distribution Point analogous to the ordered Within Day Balancing Action gas;
- the sending of confirmations associated with this is undertaken in exactly the same way as a normal Within Day Balancing Action;
- an instruction in the event of emergency measures therefore means that the POSs (Portfolio Imbalance Signal) are also updated and the financial consequences are processed into the account of the relevant acknowledged programme responsible parties.

4.4.11 Pricing and invoicing of the Emergency Measures

The commodity price which will be invoiced is dependant of the cause of the Emergency Measure:

1. In case the SBS is in the red zone due to shipper actions and GTS declares an Emergency measure (the WDM will also have been used in that hour):
    a. The causers will be invoiced the volume weighted average price of the balancing products bought/sold by GTS in the Confirmed Balancing Order in that hour.
    b. The Emergency Measure supplier will also be invoiced the volume weighted average price of the balancing products bought/sold by GTS in the Confirmed Balancing Order in that hour.
2. In case an Emergency measure is declared because of a physical problem (of which the shippers are not the cause):
    a. Imbalances of all PRP's will be invoiced against the Neutral Gas Price.
    b. The Emergency Measure supplier will also be invoiced the Neutral Gas Price.

4.4.12 WDBA and Emergency Measures situation matrix

Below you can find the different situations – with references to the code text - with regard to the regular WDB action and the emergency measure, including the pricing used.

status	**SBS in Light Green or Orange** **4.1.4.1**	**SBS in Red, no emergency** **4.1.4.1**	**(2)SBS in Red &** **Grid emergency** **4.1.4.1 + 4.1.4.4**	**(1)Grid emergency** **4.1.4.4 + 4.1.4.5**	**(1)(3)Data emergency** **4.1.4.6**
	Normal		Emergency declared		
			Shippers are "causer"	Shippers are not direct "causer"	
Price for causers in case of WDM-transaction	WDM-avg	WDM-avg	WDM-avg	Neutral gas price	Neutral gas price
POS of causer influenced by WDM-transaction	YES	YES	YES	YES	YES
Suspension of WDM-transactions possible	NO	NO	YES	YES	YES
Instructions possible	NO	NO	YES	YES	NO
POS of 'instructed party' influenced by instruction	N/A	N/A	NO	NO	N/A
POS of causer influenced by instruction	N/A	N/A	YES	NO	N/A

(1) In principle the WDM trigger will be suspended in this case. WDM-transactions are still possible, especially in case of declaring an emergency situation while a WDM-transaction has been executed around the same time.
(2) If during this situation, in addition grid and/or data problems occur, we switch to column "Grid emergency"
(3) If during this situation, in addition grid problems occur, we switch to column "Grid emergency"

4.5 Balancing process

The programmes that are submitted day-ahead are checked against the reality on the basis of the near real-time allocations and the imbalance is defined as the degree to which the actual instantaneous realisations deviate from the programme. Because a portfolio can contain one or more programmes the individual programme imbalances are aggregated to form the portfolio imbalance signal (POS).

Programme imbalance

The basis for determining the imbalance in a programme is the difference at the end of the balance period (bp) between programme and realisation. As a formula the programme base imbalance appears as follows:

$$OB_{prog}(bp_i) = Entry_{real,prog}(bp_i) + Exit_{real,prog}(bp_i) - Entry_{plan,prog}(bp_i) - Exit_{plan,prog}(bp_i)$$

A period of 1 hour has been chosen for the imbalance period. The realisations in the above formula are based on the data that make up the near real-time programme imbalance signal.

Portfolio imbalance

The individual imbalances per programme are then aggregated per portfolio into a portfolio basic imbalance for the balance period. As a formula:

$$OB_{portfolio}(bp_i) = \sum_{prog=1}^{n} OB_{prog}(bp_i)$$

Accumulation of the portfolio basic imbalance has been chosen as the determining magnitude for the portfolio imbalance. As a formula:

$$POS(bp_i) = OB_{portfolio}(bp_i) + POS(bp_{i-1})$$

The background to the use of the cumulative position is that not so much the imbalance in a period but the accumulation of imbalance over a larger number of periods forms the trigger for GTS to take action to restore the system balance. This also means that a party with an occasional imbalance is affected proportionally compared to parties that have contributed to imbalance during a longer period.

Restoring programme imbalance

An acknowledged programme responsible party is aware of the imbalance in his portfolio by means of the POS. Based on his opinion and depending on his options an acknowledged Programme Responsible Party can decide to adjust his imbalance by matching his entry more with his exit. Re-nomination of entries and/or exits and/or his trade transactions is the designated route for this, as well as adjusting the physical entry or exit. The realisation of the changes is notified in the programme imbalance signal. With that, the acknowledged programme responsible party is expressly invited to maintain the balance of his portfolio or the system as he sees fit.

When GTS buys or sells gas to restore the balance by invoking Within Day Balancing Actions, then this is expressed in programmes with imbalance because a part of this buying or selling is charged to the programme involved. There is then mention of forced buying or selling. The way in which this buying or selling is charged is described under Within Day Balancing Action process.

4.5.1 Publication of the Portfolio Imbalance Signal (POS)

The information requirement of the acknowledged programme responsible party is two-fold:

- information for the actual management of the portfolio;
- information about the position of the acknowledged programme responsible party that is used for settling imbalance measures (Within Day Balancing Action gas).

The publication of the Portfolio Imbalance Signal, that is intended to provide the acknowledged programme responsible party with the information that is used by GTS for settling the imbalance measures, is transferred between GTS and the acknowledged programme responsible party by means of message exchange.

The accountable POS can only be calculated when all near real-time data are available. The LDC steering signal (CSS) information is, in principle, available around 15 minutes past the hour so the POS for the last full hour will be calculated between 15 and 20 minutes past this full hour.

In addition, an estimate of the POS is calculated every 5 minutes on the basis of the near real-time (5 minute) allocations for the individual network points. This POS estimate has no accountable value and is not used in transaction regarding balancing the GTS system or in other formal processes.

For acknowledged programme responsible parties that have no programme responsibility in the LDC segment, the on-the-hour non-accountable POS – made available 5 minutes after the hour – is in principle equal to the accountable POS made available 15 – 20 minutes past the hour..

It goes without saying that the information above can also be used by the acknowledged programme responsible party for the actual management of his own portfolio. The acknowledged programme responsible party can also utilise the current near real-time information system. The metering data here are updated for all network points on a 5 minute basis. The acknowledged programme responsible party can download the required data and process into information that he considers to be relevant to him.

Table 4.3: Publication of the Portfolio Imbalance Signal service description

Name of service	Publication of the Portfolio Imbalance Signal
Global description of service	For all full hours the cumulative imbalance position (deviation of realisations compared to programmes in a portfolio) is sent to all identified active acknowledged programme responsible parties.
Type of service (informative / transaction)	I
Service provider(s)	GTS
Service customer(s)	Acknowledged programme responsible party.
Trigger for using service	Time trigger.

Name of service	Publication of the Portfolio Imbalance Signal
Frequency of use (number per min/hour/day/month/year)	Made available by GTS once per hour.
Time aspects	Due to the processing time of the CSS the acknowledged programme responsible parties that are active in the LDC segment only have access to the data 15 minutes after the full hour.
Content of outgoing information	The POS in energy volumes (MJ, kWh or m3(n;35.17)) per portfolio for each active acknowledged programme responsible party.
Specific service requirements	Information forms the basis for invoicing the within day balancing action calls and must not therefore be refutable.
Contractual & legal aspects	Under the law, the acknowledged programme responsible party must be provided with sufficient management information.

4.5.2 Publication of the System Balance Signal (SBS)

The System Balance Signal is an aggregate of the Portfolio Imbalance Signals of all acknowledged programme responsible parties active in the GTS network. The SBS can only be calculated when all of the POS values are available. Because the accountable POS values are available between 15 and 20 minutes after the hour, the accountable SBS is also available between 15 and 20 minutes after the hour.

As for the POS, a forecast value is also calculated for the SBS once every 5 minutes.

GTS also publishes the limit values for the various zones together with the SBS. The model-based determined total network buffer that is applicable at a certain network load is used to set the extremities of the limits. The size of the Green Zone shall remain after fixed values for the various zones have been deducted.

The SBS is also published by GTS on a website.

Table 4.4: Publication of the System Balance Signal service description

Name of service	Publication of the System Balance Signal
Global description of service	For every 5 minutes each active acknowledged programme responsible party is given the opportunity to access the cumulative position of the system balance (the sum of all portfolios of all active acknowledged programme responsible parties).
Type of service (informative / transaction)	I
Service customer(s)	Acknowledged programme responsible parties.
Trigger for using service	Time trigger (via subscription).

Name of service	Publication of the System Balance Signal
Frequency of use (number per min/hour/day/month/year)	Made available 1 x per 5 minutes by GTS (for determining the SBS it is not necessary to wait for the near real-time allocation of the CSS because the meter readings for net areas (LDC points) are available and can be used instead). A message is sent 1 x per hour in which the limit values for the zones are also given[16].
Volume of incoming information per request	For each active acknowledged programme responsible party the SBS including the limit values for the zones in energy volumes (MJ, kWh or m3(n;35.17).
Contractual & legal aspects	Under the law the acknowledged programme responsible party must be provided with sufficient management information.

4.5.3 Failure of near real-time data supply (POS, SBS)

Near real-time data provision is necessary for effective management by the acknowledged programme responsible party. The ICT systems that are responsible for metering and processing the necessary data therefore have a high level of availability.

In addition to this, all ICT systems have fall-back scenarios defined at the moment that (metering) data are temporarily unavailable. The main aspects of these fall-back scenarios are described in the near real-time allocation processes (see paragraphs 4.7.1 and 4.7.4).

However, it cannot be excluded that, as a result of (technical) faults, the near real-time data provision becomes temporarily (and partially) unavailable. Because the measures and the consequences depend to a major extent on the cause and the duration of the failure of the affected ICT systems it is difficult to define a fixed solution for this. However, the table below defines a number of failure cases, together with the consequences for the acknowledged programme responsible party and the way in which GTS takes this into account. This represents an initial interpretation of the various failure situations and the consequences relating to invoking the Within Day Balancing Actions.

Table 4.5: Unavailability of near real-time ICT systems

Risk	Action	Consequence for invoking the Within Day Balancing Action
Partial failure of underlying metering signals of GTS near real-time system	GTS near real-time system generates replacement value	None
Steering signal failure (from CSS)	GTS near real-time system generates replacement value	None
Complete failure of GTS near real-time system	No alternative available	Within Day Balancing Action is not invoked

[16]) The zones are also made available to the market parties on a day-ahead basis.

GTS unable to supply POS values	No alternative available	Within Day Balancing Action is not invoked
GTS unable to supply the 5-minute estimated POS values	No alternative available	None
GTS unable to supply the SBS values	No alternative available	Within Day Balancing Action is not invoked

In addition to the near-real time information flows referred to in this MPM for the entry and exit points, GTS also has access to the process metering readings in its network. These process metering readings allow GTS to have insight into the state of the national gas transmission network even when there is a (partial) lack of near-real time information for the entry and exit points.

4.6 LFS: Linepack Flexibility Service

The Programme Responsible parties in the GTS network are expected to have a balanced position at the end of the gas day (i.e. daily at 06:00). In order to meet a non balanced situation (i.e. a POS not equal to zero) of a PRP's portfolio at the end of the gas day, GTS offers the so called Linepack Flexibility Service (LFS). The LFS offers the possibility for PRP's to maintain a position at the end of each gas day by means of the physical buffering possibilities that a high pressure network (like GTS's) provides.

To calculate the extent to which a PRP uses of the LFS, each day at 06:00 the absolute value of the POS is calculated. The daily use of the LFS is the 06:00 absolute POS value. The LFS fee is a pre determined percentage of the neutral gas price of the respective day. The daily costs of the usage of the LFS is the absolute POS value multiplied by the LFS fee. The applicable LFS fee is published on the GTS website. The information regarding the daily use and costs of the LFS per portfolio is made available by GTS to the PRP. The use of LFS impacts the PRP's credit exposure. On a monthly basis the total amount of LFS usage is invoiced. The total revenue of the LFS is returned to the PRP's via the network point tariffs.

Note that use of the LFS is independent of the position of a PRP relative to the SBS and independent of a shortage or surplus (i.e. long or short). Only the absolute usage of the linepack flexibility of the GTS grid is relevant.

Note that situations outside the offered linepack flexibility mentioned above, are handled by respectively the Within Day Balancing Action and Emergency Measures.

4.7 Allocation process

This paragraph relates to both the near real-time (on-line) process for the POS and the off-line process for the settlement.

Within the market model the the gas day is used, including the winter time/ summer time transition (23 hours) and the summer time / winter time transition (25 hours).

The process shall be described in general terms and for each group of network points.

4.7.1 Near real time metering

With a frequency of 1 x per 5 minutes for the 5-minute transfers, GTS determines the energy volume that has flowed since the start of that hour via that network point. Allocation of this energy volume is undertaken in different ways depending on the nature of the network point. The following paragraphs cover the specific allocation procedure for each type of network point.

In addition to this, linear extrapolation based on the most recent 5-minute transfers is used to generate a forecast for the expected hour volume for that relevant network point. This process is shown schematically in the figure below. The extrapolated values for the transfers after 5 minutes and after 25 minutes are shown as an example.

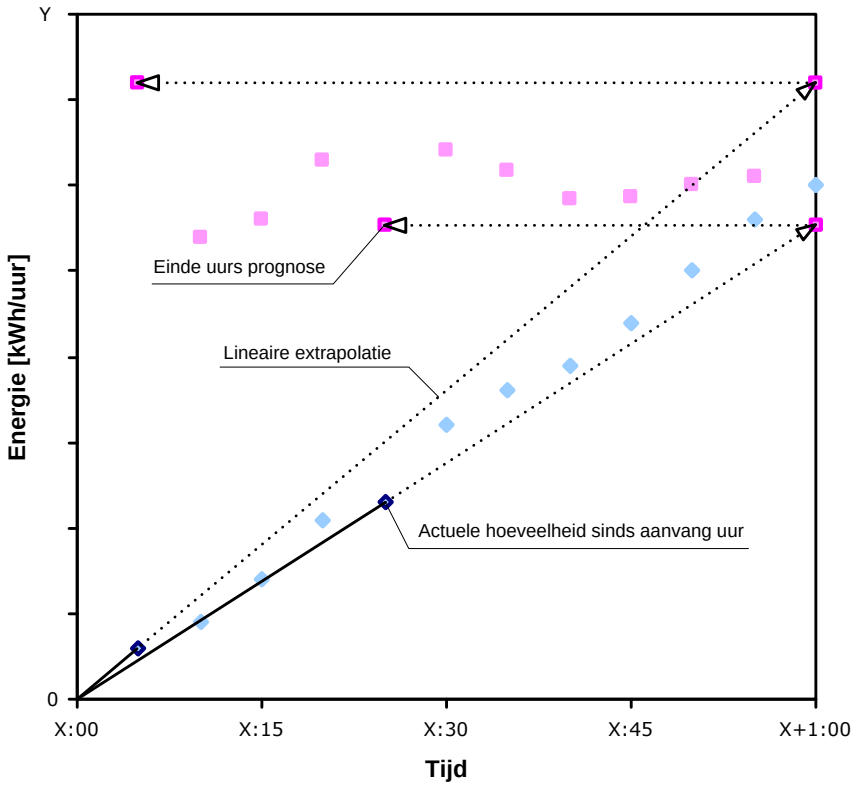


Figure 4.3: Extrapolation mechanism for expected hour value (figure is in Dutch)

If no metering value is available then the last correct metering value received is used as the replacement value for the relevant hour.

4.7.2 Supplied near real-time allocations

The following paragraphs describe the near real-time allocation process for each type of network point as facilitated by GTS under the market model.

For all types of network points, with the exception of the Net areas (LDC network points), there is the possibility that the near real-time and the off-line allocations are supplied externally to GTS. For that purpose, the acknowledged programme responsible parties can request GTS to have the allocation implemented on a point by the Network Operator of an adjacent network or by another party. For this an agreement needs to be drawn up between the involved acknowledged programme responsible parties and GTS which sets out the details to allow this process to dovetail as close as possible, both in near real-time and off-line, with the stipulations contained in the Gas Allocation Code.

If the supply of near real-time and/or off-line allocations is not supplied in accordance with the agreed stipulations, GTS determines the allocations for the relevant network point in accordance with the original procedure for this type of network point as described below.

4.7.3 Exit points between the national gas transmission network and a directly Connected Party

Allocation methodology:

For this type of network point one or more acknowledged programme responsible parties can be active on each network point. All acknowledged programme responsible parties that are active on these exit points shall have the balancing allocation role. On such a network point one or more suppliers can be active, whereby only one supplier is facilitated in the connection register. The entire volume (to be allocated) has to be ultimately allocated to both the acknowledged programme responsible party / Parties and the suppliers. The allocations for the suppliers that are not included in the connection register have to be facilitated by the acknowledged programme responsible party / Parties.

Near real-time allocation process:

The acknowledged programme responsible party is provided with the opportunity to follow the allocations per network point on a near real-time basis as described in paragraph 4.7.1.

The procedure adopted by GTS for the near real-time allocations corresponds to a large extent with the procedure for off-line allocations that should also be undertaken by GTS in accordance with the Allocation Code and which is based on the connection register of GTS, the nominations submitted by the acknowledged programme responsible parties and the near real-time metering values.

In the event of temporary interruptions to the metering and/or telemetry connections it is possible that differences arise between the near real-time allocations and the off-line allocations. In the event that metering values are lacking then the last correct metering value received is used as the replacement value.

The values relating to the full clock hours are designated as accountable, archived and subsequently made available to the acknowledged programme responsible parties. The values at the intermediate 5-minute intervals are only shown as interpolations between the full clock hours.

The supplier allocations are not calculated on a near real-time basis. The suppliers are notified of their allocations using the off-line allocation process and the message exchange based on that.

Off-line allocation process:

The definitive off-line allocations are established after the end of the gas month using the declared accountable metering values[17]. The PRP and supplier allocations are calculated on the basis of these metering values. The off-line PRP allocations serve as input for the settlement process (see later); for the acknowledged programme responsible parties and the suppliers the off-line allocations are used as input for the (commodity) invoicing. In addition, all off-line allocations are archived and made available to the acknowledged programme responsible parties or the suppliers.

The off-line allocations are designated as accountable since they do not overwrite the near real-time allocations (both data flows continue to exist side by side).

[17]) Within the framework of the daily allocation process the provisional allocation after the 6th working day is made available to the market. The supplier allocations will already have to be incorporated into this.

4.7.4 Exit points between gas storage facility and the national gas transmission network

For this type of network point one or more acknowledged programme responsible parties can be active on each network point. All acknowledged programme responsible parties that are active on these exit points can have a balancing or proportional allocation role.

Near real-time allocation process:

The acknowledged programme responsible party is provided with the opportunity to follow the allocations per network point on a near real-time basis as described in paragraph 4.7.1.

The procedure adopted by GTS for the near real-time allocations corresponds to a large extent with the procedure for off-line allocations that is undertaken by GTS in accordance with the Allocation Code and which is based on the connection register of GTS, the nominations submitted by the acknowledged programme responsible parties and the near real-time metering values.

In the event of temporary interruptions to the metering and/or telemetry connections it is possible that differences arise between the near real-time allocations and the off-line allocations. In the event that metering values are lacking then the last correct metering value received is used as the replacement value.

The values relating to the full clock hours are designated as accountable, archived and subsequently made available to the acknowledged programme responsible parties. The values at the intermediate 5-minute intervals are only shown as interpolations between the full clock hours.

The supplier allocations are not calculated on a near real-time basis. The suppliers are notified of their allocations using the off-line allocation process and the message exchange based on that.

Off-line allocation process:

The definitive off-line allocations are established after the end of the gas month using the declared accountable metering values[18]. The off-line PRP allocations serve as input for the settlement process (see later). In addition, all off-line allocations are archived and made available to the acknowledged programme responsible parties.

The off-line allocations are designated as accountable since they do not overwrite the near real-time allocations (both data flows continue to exist side by side).

4.7.5 Net areas (system connections between the national gas transmission network and LDC networks)

Allocation methodology:

Net areas are connected to the national gas transmission network by means of one or more system connections. Numerous LDC connections can be present within a Net area. These LDC connections are sub-divided into residential end users (KV) for connection with a connection capacity of up to a maximum of 40 $m^3(n)/h$ and connections with a larger connection capacity that is known as large

[18]) Within the framework of the daily allocation process the provisional allocation after the 6th working day is made available to the market.

end user (GV) (Article 43 of the Gas Act). Initially the programme responsibility for the GV connections rests with the end user (Connected Party). For the KV connections that are supplied by a supplier licensed to supply to household customers the initial programme responsibility rests with the licensed supplier (Gas Act Article 17b proposal).

Only one supplier (a supplier licensed to supply to household customers) and one acknowledged programme responsible party can be active on a residential end user KV connection. For large end user connections only one acknowledged programme responsible party and one supplier are facilitated in the connection register by the LDC. The entire volume (to be allocated) is allocated to the acknowledged programme responsible party. In the case of a residential end user connection the entire volume is allocated to the supplier licensed to supply to household customers whereas for a large end user connection the entire volume is allocated to the supplier. The acknowledged programme responsible party on a connection that is connected to a LDC network has the balancing allocation role.

Because a Net area is composed from the allocation results of (many) connections there will therefore be multiple acknowledged programme responsible parties active on a Net area. This point plays a role as administrative collection point in the administrative processing. The metering value is the basis for the allocation of the LDC connections for the Net area.

A large end user (GV) connected to a net area can be a CDS. For CDS connected to a net area the flow is not allocated to the program responsible party and supplier registered at the connection of the CDS, but to the program responsible parties registered for the connections to the CDS. The allocation methodology the CDS-operator uses within a CDS is consistent with the allocation methodology of a LDC within a net area.

Near real-time allocation process:

The acknowledged programme responsible party is provided with the opportunity to follow the allocations for each user category for each Net area on a near real-time basis. The information flow for the near real-time process is based on the steering signal as defined from the Central System Steering signal (CSS) that is facilitated by EDSN.

The allocation procedure used by the CSS for the near real-time allocations corresponds to a large extent with the procedure for the off-line allocations as should be performed by the LDCs and CDS operators in accordance with the Allocation Code.

The steering signal and the off-line allocations differ from each other on the following points:

- for determining the off takes of users with a GXX user category the Steering Signal uses a generalised GXX-profile that is composed on the basis of historical data and for which the annual consumption and the forecast for the effective daily temperature are used as input parameters. The GXX profile used in the CSS is approved in the ALV-NEDU;
- the take off for a Net area, including the associated calorific value, is made available to the CSS by GTS. This information is similar to the MINFO message in the off-line allocation process. When metering data are lacking for a Net area then GTS automatically determines a replacement value on the basis of the last correctly received meter reading(s) and makes this information available to the CSS;
- each day GTS makes a forecast for the day average effective temperature for the next gas day available to the CSS;

- in the event of a lack of metering data for GGV users, in the first instance the metering values for a previous week are used as fall-back. If these metering values are also lacking then the previously mentioned GXX profile[19] is used for determining the take off for the GGV user;
- in the event that a LDC has not provided information from the connection register to the CSS then the last available information from the connection register within the CSS is used.
- If the operator of a CDS provides CSS with connection information for a CDS connected to a net area, CSS will replace the connection information for the connection of the CDS to the net area with the information provided by the CDS-operator. For this purpose the information provided by the CDS-operator shall also include the identification of the connection of the CDS to the net area.

Immediately after the end of a full hour GTS sends the near real-time metering values for each network point (Net area) to the CSS. Within a short period of time after that, the CSS sends back to GTS the allocations per acknowledged programme responsible party per user category[20]. Immediately after this, GTS shows these allocations to the acknowledged programme responsible parties.

Every 5 minutes GTS shows the allocations per acknowledged programme responsible party per user category per Net area on the basis of the hourly allocations supplied by the CCS. The values relating to the full clock hours (based on the steering signal data that are supplied by EDSN after the end of each full hour) are designated as accountable, archived and made available to the acknowledged programme responsible parties. The intermediate 5-minute values are only shown as interpolations between the full clock hours, whereby the distribution of the allocations between the acknowledged programme responsible parties in the last EDSN message received is used for allocating the intermediate 5-minute values. The supplier allocations are not made available in near real-time[21]. The suppliers shall be notified of their allocation by the off-line allocation process and the message exchange based on that.

Off-line allocation process:

After the end of the gas month the off-line allocations are established on the basis of the metering values declared accountable. These metering values are sent to the LDCs by GTS, after which the LDCs calculate the PRP and supplier allocations and send them to the acknowledged programme responsible parties, to the suppliers and to GTS. After the end of the gas month the off-line allocations for a CDS are established on the basis of the metering values; the metering responsible party provides the CDS-operator with the volume, the LDC provides the net calorific value. The

[19]) The MPM and DPM for the Steering Signal stipulate that the GXX profile should be used for the GGV users as secondary fall-back.

[20]) The current configuration of the CSS does not take into account the transfer of the user category in the information flow to GTS on a near-real time basis for publication via an internet web page (GasPort) or via a XML-download facility (B2B-service).

[21]) The market has made a request for this. The extent of the near-real time message exchange shall increase considerably because of facilitating the supplier allocations, as a result of which the current ICT infrastructure is inadequate. For example: the presence of 10 suppliers in a Net area results in a ten-fold increase in the amount of messages.

CDS-operator calculates the PRP and supplier allocations and sends them to the acknowledged program responsible parties, to the suppliers and to GTS. GTS will add the allocations received from the CDS-operator to the allocations received from the LDC. For this purpose the CDS-operator shall allocate an entry flow to the programme responsible party registered by the LDC for the connection of the CDS to the net area and shall ensure that the sum of the allocation for the CDS is zero. The off-line PRP allocations are used as an input for the settlement process (see later). For the acknowledged programme responsible parties and the suppliers the off-line allocations are used as input for the (commodity) invoicing. In addition to this, all off-line allocations are archived and made available to the acknowledged programme responsible parties and/or the suppliers.

The off-line allocations are designated as accountable since they do not overwrite the near real-time allocations (both data flows continue to exist side by side).

GTS receives three versions of the GTS-LALL message (V2 to V4). For each of these messages the requirements remain in force with regard to consistency, in other words that the sum of the PRP allocations matches the metering value for the Net area. The sum of the supplier's allocations must also match the metering value for the Net area.

GTS receives two versions of the GTS-LALL messages (V3 and V4). For these messages the sum of the allocations is equal to zero; an entry allocation will be made for the flow from the Net area to the CDS[22].

Reconciliation:

The reconciliation process is described in the Gas Allocation Code. A requirement for a CDS is, that connections with a PRP or supplier are hourly metered and the reconciliation process doenot spply to CDS.

4.7.6 PNB network points on the national gas transmission network

Allocation methodology:

At a network point where a Private Network Operator (PNB) is connected to the national gas transmission network it is possible that several acknowledged programme responsible parties are active per connection and that one or more suppliers are also active. The entire volume (to be allocated) must ultimately be allocated to both the PRP(s) and the supplier(s). The possibilities of admitting multiple acknowledged programme responsible parties and/or suppliers depends on the technical possibilities that the PNB offers.

Near real-time allocation process

GTS has expressed its preference that the PNBs join in with the CSS and that the near real-time allocations are thus offered to GTS via EDSN (see paragraph 4.7.4).

As an alternative the near real-time allocations are calculated by GTS in exactly the same way used for the exit points between the national network and a directly Connected Party (see paragraph

[22] The CDS-operator receives the gross calorific values of the gas after the deadline for the version 2 LALL.

4.7.3). When necessary, the suppliers will then have to nominate for this. In any event, the result is a near real-time allocation. The values at the full clock hours are designated as accountable, archived and subsequently made available to the acknowledged programme responsible parties. The intermediate 5-minute values are only shown as interpolations between the full clock hours. The supplier allocations are not calculated in near real-time. The suppliers shall be notified of their allocations by the off-line allocation process and the message exchange based on that.

Off-line allocation process:

After the end of the gas month the off-line allocations are established on the basis of the metering values declared accountable. These metering values are sent to the PNBs by GTS, after which the PNBs calculate the PRP and supplier allocations and send them to the acknowledged programme responsible parties, to the suppliers and to GTS. The off-line PRP allocations are used as an input for the settlement process (see later). For the acknowledged programme responsible parties and the suppliers the off-line allocations are used as input for the (commodity) invoicing. In addition to this, all off-line allocations are archived and made available to the acknowledged programme responsible parties or the suppliers.

The off-line allocations are designated as accountable since they do not overwrite the near real-time allocations (both data flows shall continue to exist side by side).

GTS receives three versions of the GTS-LALL message (V2 to V4). For each of these messages the requirements remain in force with regard to consistency, in other words that the sum of the PRP allocations matches the metering value for the PNB network point. The sum of the supplier's allocations must also match the metering value for the PNB network point.

4.7.7 Border points

Operational matching:

At the border points, the processes of operational matching between GTS and the NNO takes place, whereby the acknowledged programme responsible parties are required to nominate. The normal match with the NNO follows from this process, after which GTS sends a confirmation to the acknowledged programme responsible parties. This confirmation is also used for the off-line and near real-time allocation process.

Allocation methodology for the acknowledged programme responsible parties:

On this type of network point it is possible for several acknowledged programme responsible parties to be active per network point. There are two allocation regimes: allocation based on allocation roles and allocation with an OBA (Operational Balancing Account). There are no "user" categories on this type of network points.

- Allocation based on allocation roles:
  The allocations of the various acknowledged programme responsible parties are calculated on the basis of the allocation roles as declared by the acknowledged programme responsible parties. Proportional and balancing roles are possible. Proportional means that if only acknowledged programme responsible parties are active with this role then the metering value is divided proportionally on the basis of the confirmations. Also, if an acknowledged programme responsible party is active with a balancing role then this party

is allocated a volume that is not known in advance and any acknowledged programme responsible parties that may be present with the proportional role are allocated their confirmation (provided that the metering value is higher than the sum of the confirmations of the proportional acknowledged programme responsible parties).

- Allocation on the basis of an OBA:
  Under this regime the operators (GTS and the NNO) take on the task of steering the gas flow in the best possible way on the basis of the nominations, as a result of which (in principle) all acknowledged programme responsible parties are given a proportional role. This means that in practice the acknowledged programme responsible parties are almost always allocated the confirmed volumes. The "shortage" or "excess" in relation to the match is, in principle, allocated to the operators.

Near real-time process:

The acknowledged programme responsible parties is provided with the opportunity to follow the allocations per import/export network point on a near real-time basis. For this, the output is calculated every 5 minutes. The values relating to the full clock hours are designated as accountable, archived and made available to the acknowledged programme responsible parties. The intermediate 5-minute values are only shown as interpolations between the full clock hours.

Off-line allocation process:

After the end of the gas month the off-line allocations are established on the basis of the metering values declared accountable (by GTS or by the NNO in the event that the metering station is the property of the NNO). The PRP allocations are calculated on the basis of these (supplied) metering values in exactly the same way as in the near real-time process. The off-line PRP allocations are used as an input for the settlement process (see later). For the acknowledged programme responsible parties the off-line allocations are used as input for the (commodity) invoicing. In addition to this, all off-line allocations are archived and made available to the acknowledged programme responsible parties.

The off-line allocations are designated as accountable since they do not overwrite the near real-time allocations (both data flows shall continue to exist side by side).

4.7.8 Entry points on the national gas transmission network

On this type of network point it is possible for several acknowledged programme responsible parties to be active per network point. The acknowledged programme responsible parties that are active on these exit points can have a proportional or a balancing allocation role. Entry points on the national gas transmission network are:

- entry points where a gas storage facility is connected to the national gas transmission network;
- entry points where a gas production network is connected to the national gas transmission network.

Near real-time allocation process:

The acknowledged programme responsible party is provided with the opportunity to follow the allocations per network point on a near real-time basis as described in paragraph 4.7.1.

The procedure adopted by GTS for the near real-time allocations corresponds to a large extent with the procedure for off-line allocations that should also be undertaken by GTS in accordance with the Allocation Code and which is based on the connection register of GTS, the nominations submitted by the acknowledged programme responsible parties and the near real-time metering values.

In the event of temporary interruptions to the metering and/or telemetry connections it is possible that differences arise between the near real-time allocations and the off-line allocations. In the event that metering values are lacking then the last correct metering value received is used as the replacement value.

The values relating to the full clock hours are designated as accountable, archived and subsequently made available to the acknowledged programme responsible parties. The values at the intermediate 5-minute intervals are only shown as interpolations between the full clock hours.

Allocation methodology:

On this type of network point it is possible for several acknowledged programme responsible parties to be active per network point. The entire metered volume is initially only allocated to the acknowledged programme responsible parties (primary allocation) in accordance with the existing allocation rules. For this, the allocations to the acknowledged programme responsible parties should match the upstream allocations of the producers so that there will be no inconsistencies between the producers and the acknowledged programme responsible parties.

There are three allocation regimes: allocation based on allocation roles, allocation with an OBA (Operational Balancing Account) and situations whereby the near real-time and/or off-line allocations are supplied externally.

- Allocation based on allocation roles:
  The allocations of the various acknowledged programme responsible parties are calculated on the basis of the allocation roles as declared by the acknowledged programme responsible parties. Proportional and balancing roles are possible. Proportional means that if only acknowledged programme responsible parties are active with this role then the metering value is divided proportionally on the basis of the confirmations. Also, if an acknowledged programme responsible party is active with a balancing role then this party is allocated a volume that is not known in advance and any acknowledged programme responsible parties that may be present with the proportional role are allocated their confirmation (provided that the metering value is higher than the sum of the confirmations of the proportional acknowledged programme responsible parties).
- Allocation on the basis of an OBA:
  Under this regime the operators (GTS and the NNO) take on the task of steering the gas flow in the best possible way on the basis of the nominations, as a result of which (in principle) all acknowledged programme responsible parties are given a proportional role. This means that in practice the acknowledged programme responsible parties are almost always allocated the confirmed volumes. The "shortage" or "excess" in relation to the match is, in principle, allocated to the operators.
- Supplied allocations (see paragraph 4.7.2):

Near real-time process:

The acknowledged programme responsible parties is provided with the opportunity to follow their allocations for each entry point on a near real-time basis. Producers have the possibilities of supplying GTS with near real-time steering information for the entry points within 15 minutes after the hour of transport, which is similar to the Central System Steering signal for the Net areas.

In the event that no external allocations are supplied or that the supplied external allocations are not supplied as agreed (see paragraph 4.7.2) then the following rules are applied by GTS(in accordance with the Gas Allocation Code):

- allocation pro rata to the nominations;
- if there are no nominations then allocation on the basis of the actual measurement, pro rata on the last known allocation values.;
- if the contract party and the acknowledged programme responsible party are not one and the same party or if other complications arise then a choice shall be made by GTS as it sees fit.

The output is made available every 5 minutes. The values relating to the full clock hours are designated as accountable, archived and subsequently made available to the acknowledged programme responsible parties. The values at the intermediate 5-minute intervals are only shown as interpolations between the full clock hours.

Off-line allocation process:

After the end of the gas month the off-line allocations are established on the basis of the metering values declared accountable (in practice by the NNO because for these types of network points the metering station is the property of the NNO). On the basis of these supplied metering values the PRP allocations are calculated by GTS in exactly the same way as in the near real-time process, or are supplied by the NNO or acknowledged programme responsible party in the case of "supplied allocations". The off-line PRP allocations are used as an input for the settlement process (see later). For the acknowledged programme responsible parties the off-line allocations are used as input for the (commodity) invoicing. In addition to this, all off-line allocations are archived and made available to the acknowledged programme responsible parties.

The off-line allocations should be designated as accountable since they do not overwrite the near real-time allocations (both data flows shall continue to exist side by side).

4.7.9 Entry points to the local distribution network

Entry points are also possible on the local (LDC) network and CDS (for example green gas producers).

Allocation methodology

On this type of connection only one "supplier" and one acknowledged programme responsible party can be active per connection (identical to the possibilities of LDC Connected Parties). The connection is, by definition, characterised as a large end user connection (GV) irrespective of the volume of gas to be fed in. For this type of connection two new market category codes, GIS and GIN, were introduced. The distinction between these two market category codes is the near real-time exchange (GIS) or the not near real-time exchange (GIN) of metering data with the Central

System Steering signal [23]. The entire volume (to be allocated) shall be allocated by the Central System Steering signal (near real-time allocation process) or the local distribution company (off-line allocation process) to both the PRP and the supplier.

Near real-time allocation process

The near real-time allocation process is performed in exactly the same way as described in the section covering "Net areas" (see paragraph 4.7.4), with the following remarks:

- the volume to be allocated is allocated by GTS as a negative volume to the acknowledged programme responsible party;
- the total allocated volume per Net area connection is identical to the near real-time metering values that are sent by GTS to the CSS (including the negative volume that is fed in);
- GTS assigns the allocated volumes with market categories GIS and GIN to a Virtual Point Infeeds (VPI) that is localised to the entry side of the entry programme. The allocations on the VPI are categorised by acknowledged programme responsible party and user category[24].

Off-line allocation process:

The off-line allocation process shall also be performed in exactly the same way as described in the section covering "Net areas" (see paragraph 4.7.4), whereby it also applies that:

- the volume to be allocated shall be allocated by the local distribution network operator as a negative volume to both the supplier and the acknowledged programme responsible party;
- the total allocated volume per Net area connection shall still always be identical to the near real-time metering values that are sent by GTS to the LDCs (including the negative volume that is fed in);
- GTS shall assign the allocated volumes with market categories GIS and GIN to a Virtual Point Infeeds (VPI) that is localised to the entry side of the entry programme. The allocations on the VPI are categorised by acknowledged programme responsible party and market category.

Reconciliation

The reconciliation process is described in the Gas Allocation Code.

4.7.10 TTF

Programme responsibility:

The TTF has no initial Programme Responsible Parties. Traders with acknowledgement as acknowledged programme responsible parties are active on the TTF and they can transfer gas between themselves. Acknowledged programme responsible parties can offer their gas on the TTF or take gas from the TTF.

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[23]) In accordance with the current procedure for the user categories GXX and GGV from an annual volume of 1 million m^3 (n) there is an obligation for the near real-time delivery of hourly metering values.

[24]) no information is therefore available on the VPI about the Net area and the supplier.

Allocation methodology:

There can be two types of allocations on the TTF, namely the normal ("deemed") transfer whereby two parties (buyer and seller) nominate the same volume with each other as counter party. If these volumes are not recalled (by both parties) then the matched and confirmed volume shall be transferred between both parties. In addition, acknowledged programme responsible parties can also enter into a balance agreement with each other. Here, the volume that is transferred is not determined in advance but is established on the basis of the agreed balancing agreement and the near real-time realisations (see paragraph 4.6.11).

Near real-time process:

For normal ("deemed") transfers near real-time display is not necessary because the volumes to be transferred can no longer be influenced by realisations.

Off-line allocation process:

For deemed transfers the off-line allocation process is not applicable because these are not influenced by the subsequent processes.

4.7.11 Balance agreement on TTF

Acknowledged programme responsible parties can also enter into a balance agreement. Here, the volume to be transferred is established subsequently, after the near real-time realisations are known.

Parties that participate in a balance agreement have different interests for (wishing to use) using a balance agreement for their activities. For example, a supplier that is a balance-receiving acknowledged programme responsible party does not want to perform a bulk switch in the connection registers of the Local Distribution Companies every time he chooses another balance-supplying acknowledged programme responsible party. On the other hand, a balance-supplying acknowledged programme responsible party does want to be provided with near real-time information concerning the service that he provides because this information will allow him to keep his portfolio well balanced.

Both parties that wish to enter into a balance agreement submit a special balance nomination in advance in which they jointly set the scope of the balance agreement. In a balance agreement a distinction is made between the balance-supplying acknowledged programme responsible party and the balance-receiving acknowledged programme responsible party. The gas transfer takes place on a virtual point that is specially set up for this that is located at the exits of the exit programme[25]. The transfer of own-use takes place on the normal TTF.

By means of a TTF balance agreement it is possible for the balance-receiving acknowledged programme responsible party to cover, for a portfolio, the risk of imbalance caused by the off take from inland exit points (industry network points and Net areas) that fall within the scope of the balance agreement.

[25]) The balance-supplying acknowledged programme responsible party may consider this transfer point as a virtual exit in his exit programme.

For each user category a maximum of one balance agreement can be specified for each unique combination of a portfolio of a balance-supplying acknowledged programme responsible party and a portfolio of a balance-receiving acknowledged programme responsible party.

A balance-receiving acknowledged programme responsible party can enter into a balance agreement with one or more balance-supplying acknowledged programme responsible parties.

In addition to a full balance agreement for each user category between the portfolio of one balance-receiving acknowledged programme responsible party and the portfolio of one balance-supplying acknowledged programme responsible party, there are the following variants[26] : possible between the portfolio of one balance-receiving acknowledged programme responsible party and the portfolios of one or more balance-supplying acknowledged programme responsible parties:

- percentage: by stating a percentage in the balance nomination the volume to be transferred is limited to the stated percentage (the sum of the percentages of the balance-supplying acknowledged programme responsible parties cannot exceed 100 percent, however, a percentage lower than 100 percent is possible). The percentage supply must be specified separately for each user category;
- own-use statement: the balance-receiving party can state via an own-use statement the volume that he wants to introduce into the balance agreement. The own-use amount will be introduced into the balance agreement by the balance-supplying acknowledged programme responsible party. The volume of gas that is introduced by means of own-use into the balance agreement is deemed and should be made available on the (normal) TTF;
- maximum: the balance-supplying party can state a (an absolute) maximum for the transfer within the balance agreement. When the maximum is reached then, in principle, the additional shall have to be supplied by the balance-receiving party. The maximum must be specified separately for each user category;
- minimum: the balance-supplying party can state a (an absolute) minimum for the transfer within the balance agreement. The volume above the minimum shall be supplied by the balance-supplying party and the volume below the minimum shall (in principle) have to be supplied/arranged personally by the balance-receiving party. The minimum must be specified separately for each user category. The parameter minimum cannot be used in conjunction with the parameter percentage.

By combining the maximum and minimum options in balance agreements it is possible for a balance-receiving party to have sequential balance agreements with several balance-supplying parties. After all, if balance-receiving party C enters into two balance agreements with balance-supplying parties A and B, whereby maximum X is agreed with A and minimum X is agreed with B, then the balance agreement shall take place as follows:

- transfer between 0 and X: supply by A;
- transfer from X: supply by B.

By agreeing both a minimum and a maximum with a balance-supplying party it is possible to expand the sequence of balance agreements referred to above. This provides, amongst other

[26]) GTS must be able to unambiguously implement the allocation process on the basis of the proposed combination.

things, an interpretation on the TTF for the maximum balance role as was used on the Industry exit points on the national gas transmission network.

By using one or more of the variants referred to above there is the possibility that part of the end user market of the balance-receiving PRP is not covered by the balance agreement. The balance-receiving PRP shall have to submit an exit programme for that specific part of his end user market.

A specific message is defined for nomination of the balance agreement. For each portfolio a balance-receiving acknowledged programme responsible party can only submit one message that includes the transactions with all involved balance-supplying acknowledged programme responsible parties.

The figure below shows the difference between the 'own-use' and 'minimum' options in the balance agreement for the balance-supplying acknowledged programme responsible party and the balance-receiving acknowledged programme responsible party.

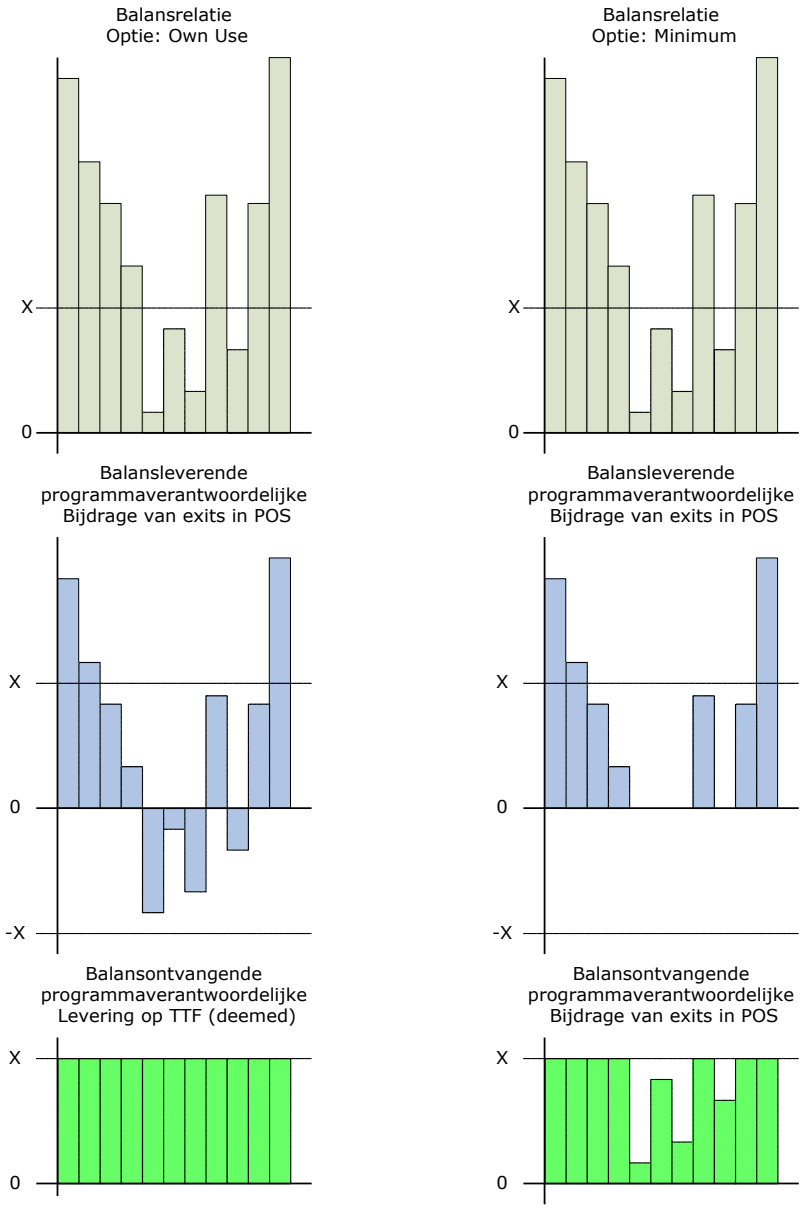


Figure 4.4: Difference in using own-use and minimum parameter (figure is in Dutch)

Near real-time process:

Balance agreements do need a near real-time display in order to provide balance-supplying parties with insight into the off takes of balance-receiving parties. The balance-supplying acknowledged programme responsible party receives near real-time information about the aggregated exit portfolio insofar as the scope of the balance agreement goes from the balance-receiving PRP.

Off-line allocation process:

The off-line allocation process for the TTF balance agreements is based on the off-line allocation process. The off-line allocations for the TTF balance agreements are calculated at the moment that a complete set of off-line allocations for the balance-receiving party is available (insofar as the

scope of the balance agreement covers this).The off-line allocations are designated as accountable since they do not overwrite the near real-time allocations (both data flows shall continue to exist side by side).

4.7.12 Allocation process for network points in the Netherlands

The current allocation process for Wholesale Gas for the industrial network points and Net areas is set forth in the Gas Allocation Code. The results of the allocation process are communicated via which is known as wholesale gas message exchange. The timing of sending these messages is set forth in the Gas Allocation Code.

Table 4.6: Service description for sending off-line allocation information

Name of service	VPN message exchange
Global description of service	Making off-line allocations available to acknowledged programme responsible parties and Suppliers (in multiple versions) via wholesale gas XML messages).
Type of service (informative / transaction)	I
Service provider(s)	GTS and LDCs and CDS-operators.
Service customer(s)	Programme Responsible Parties and Suppliers.
Trigger for using service	Fixed times.
Frequency of use (number per min/hour/day/month/year)	Daily (for the day messages) and 3 supplementary monthly messages.
Time aspects	▪ Day messages: no later than 6 working days after each gas day. ▪ Month messages: no later than the 6th and 16th working day after the end of the gas month and no later than the 10th working day and 4 months after the end of the gas month.
Content of incoming information	Prior to sending the allocation messages, GTS sends the LDCs metering messages and messages and temperature information.
Volume of incoming information per request	
Content of outgoing information	▪ Acknowledged programme responsible parties: allocations per acknowledged programme responsible party per supplier per user category per network point. ▪ Suppliers: allocations per acknowledged programme responsible party per user category per network point and allocations per user category per connection.
Extent of outgoing information per request	
Preconditions for use	The parties must have a secured internet connection and have an AOC for receiving / sending messages.
Specific service requirements	

Name of service	VPN message exchange
Global description of service process	
Contractual & legal aspects	Message exchange is set forth in the Network Code.

4.8 Processing of LDC net losses

As of 1-1-2019 LDC[27] net losses will be processed and administered explicitly, the LDC's (Local Distribution Companies) will be charged with the net losses. This paragraph describes the impact on the (wholesale) processes capacity determination, allocation and reconciliation.

Note: For a CDS the net losses are implicitly allocated to the PRP registered for the connection of the CDS to the net area; the processes described in this section do not apply to a CDS.

4.8.1 Net losses in the LDC net

Although not part of the wholesale process, a short description is given of the net loss processing in the LDC nets, as a context for the processes described in the next paragraphs.

Per net area, the LDC will create a connection with an EAN code (inside this net area) where the net losses for that area will be allocated to. The LDC can transfer the program responsibility for this connection to a shipper of choice. The user category for this net loss connection will be GMN. Each year the LDC makes a calculation of the hourly net losses for each net area for the next calendar year. The LDC will base these estimations on the actual net losses of the three most recently reconciled calendar years. These estimates will be used in the allocation process to calculate the hourly near real time and offline net losses . The calculated hourly net losses for the next year are made available by the LDC's each October (for the next year).

4.8.2 Net losses in wholesale allocation

The calculated hourly net losses will be used in the allocation process as follows:

1. Near Real Time: The hourly amount of the net loss will be allocated to the shipper which is active on this EAN. In the allocation flow from CSS to GTS the net loss will be allocated as an allocation value per hour, per net area (LDC network point), per shipper for the user category GMN.

2. Offline: The same EAN and hourly net loss will be used as in the NRT process. In the allocation flow from the LDC's to GTS, (net loss) shippers and suppliers, the net loss will be allocated as a value per hour, per net area (LDC network point), per supplier, per shipper for the user category GMN. The GMN allocation will be included in the LALL messages, not in the BALL messages.

For both the near real time as the offline allocation process, the GMN allocation will always be equal to or greater than zero, as a consequence of the algorithm to calculate the hourly net loss..

4.8.3 Net losses in reconciliation

The net losses (GMN allocations) will be handled in the reconciliation (messages) the same way as the other allocation values. Only in the reconciliation process can the net loss allocations have a negative value (i.e. net gains).

The MMCF (Monthly Measurement Correction Factor) will be set to one (1) as of 1-1-2019.

[27] a.k.a. DSO, Distribution System Operator

4.8.4 Net losses and OV Exit (capacity)

LDC Capacity

The capacity for the net losses will be administered as category GMN with a yearly usage in the same way as the capacity for G2C users with the standard yearly usage. This net loss GMN with yearly usage will be included in the OV-Exit messages.

The LDC's will, on a monthly basis, send out the OV Exit messages (regular process). As of 1-1-2019 , these monthly messages will contain the net loss capacity numbers: per net area (LDC network point) for a shipper/supplier combination , for the user category GMN, the yearly usage is given: m3(n; 35.17).

GTS Capacity

The determined monthly OV-Exit data is made available to the shippers and GTS. For each net area, per shipper/supplier/user category, a total capacity value is given: a sum SJV (standard yearly usage) per category (G1A, G2A and G2C), yearly usage (GMN) and a sum Max Usage per category (GGV and GXX).

The OV-exit capacity for GMN is calculated based on the provided yearly usage and the hourly fractions of the G2C profile. By treating GMN as a G2C off-take the net loss will be assigned to the GTS plan capacity profile..

4.9 Settlement process

The settlement sub-process describes the steps along which the volume difference between the near-real time allocations and the off-line allocations are settled financially. In addition, it also describes the provision of information in relation to this process.

The settlement process is subdivided into the following 3 process steps.

a. Settlement advance.
   The invoicing for the advance is started monthly by GTS as soon as the off-line allocations for the acknowledged PRPs are complete. This process will therefore be started after the processing by GTS of version 3 (16th working day after the end of the month) of the allocation messages.

b. Settlement payment.
   After processing version 4 of the allocation messages (10th working day of the fourth month after the end of the month) the process for paying the settlement shall be performed monthly.

c. Provision of settlement information.
   The aim of the provision of information for settlement is to allow the acknowledged PRPs to reproduce and to check their invoice. All data that are used for establishing the invoice are made available in the form of an electronic attachment to the invoice.

4.10 Electronic message exchange

4.10.1 Functional

Information that shall be exchanged between the parties:

- Programme information
- Within Day Balancing Action information
- Balance information (POS and SBS)
- Financial information

4.10.2 Organisation and planning

The specifics for the electronic message exchange can be found in the DPM information exchange. The final technical definitions are described in the technical specifications documents (e.g. message definitions).

5. Terminology list

This section gives the definitions of the terms that are used in this market process model. The existing definitions contained in legislation and regulations have been used as much as possible, however, some definitions are specific to this document.

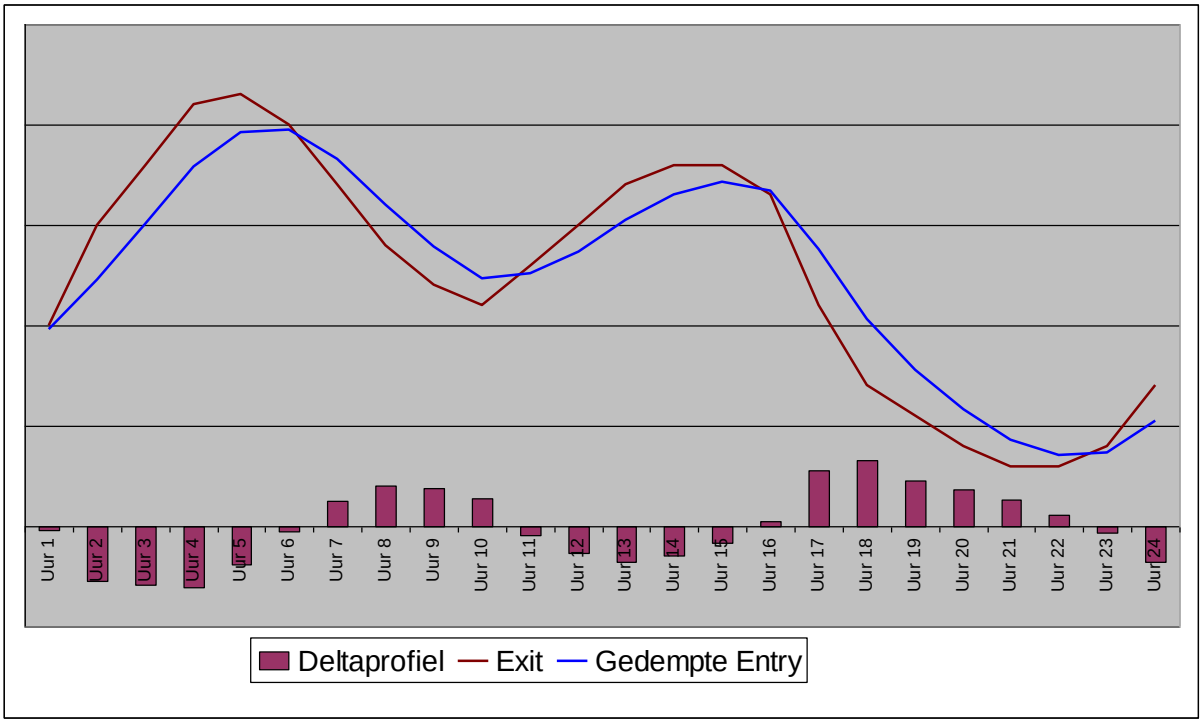
Name	Definition/description
Capacity Holder	The party who, at the moment the gas starts to flow, is responsible for ensuring that the contracted capacity is not exceeded.
Supplier	The party that provides the gas supply for the benefit of an end user.
Network Operator	A company that is appointed on the basis of Articles 10, 13 or 14 of the Electricity Act and/or Article 2 of the Gas Act to manage one or more networks. When Network Operator is referred to in this document it means the local distribution company.
Net area	Part of a local gas transmission network of one local distribution company for which it applies that the feed and offtake in the local gas transmission network, possibly corrected for network connections between the local gas transmission networks, is approximately the same. The Net area is defined by the [user] connections and the system connections that are linked to it. The [user] connections and the system connections shall never be connected together by more than one Net area. A Net area is connected to the smallest possible number of system connections.
Network point	The physical connection point between, on the one hand, the national gas transmission network and, on the other hand, the gas installation of a user or the gas transmission network of a Neighbouring Network Operator (NNO or an RNB). These network points have a unique EAN code.
NNO	Neighbouring Network Operator
POS	Portfolio Imbalance Signal (also see paragraph 4.5 for a more detailed definition).
Programme responsible Party (PRP)	See the Act.
PRP register (PVR)	The register in which the Network Operators keep all relevant information about the Programme Responsible Parties (PRP's) up to date.
SBS	System Balance Signal: sum of the POSs.
System connection	A facility in the national gas transmission network ending at the transfer point for the benefit of a connection between the national gas transmission network and a local gas transmission network, covering pipelines, including the necessary fittings, and the metering and control devices, via which the gas is transferred from the national gas transmission network to the local gas transmission network.
TSC	Transmission Service Conditions of GTS.
VPPV	Virtual Point Programme Responsibility. In the bill also designated as a virtual point where the programme responsibility transfers from the entry programme to the exit programme.
CDS	Closed distribution system, as defined in the Dutch Gas act, connected to a net area and for which the owner uses the allocation messaging process to facilitate free supplier choice for connected parties.

Annex 1 Background to Damping

Introduction

Due to the buffer effect of the network, a change in the gas flow on the exit side will, at a later moment, result in a required damped change in the gas flow on the entry side in order to keep the network in balance. This behaviour arises from the design of the network in which Slochteren, as the pressure controlled source, automatically balances the network. The gas demand is therefore the leading factor and is followed by changing the supply.

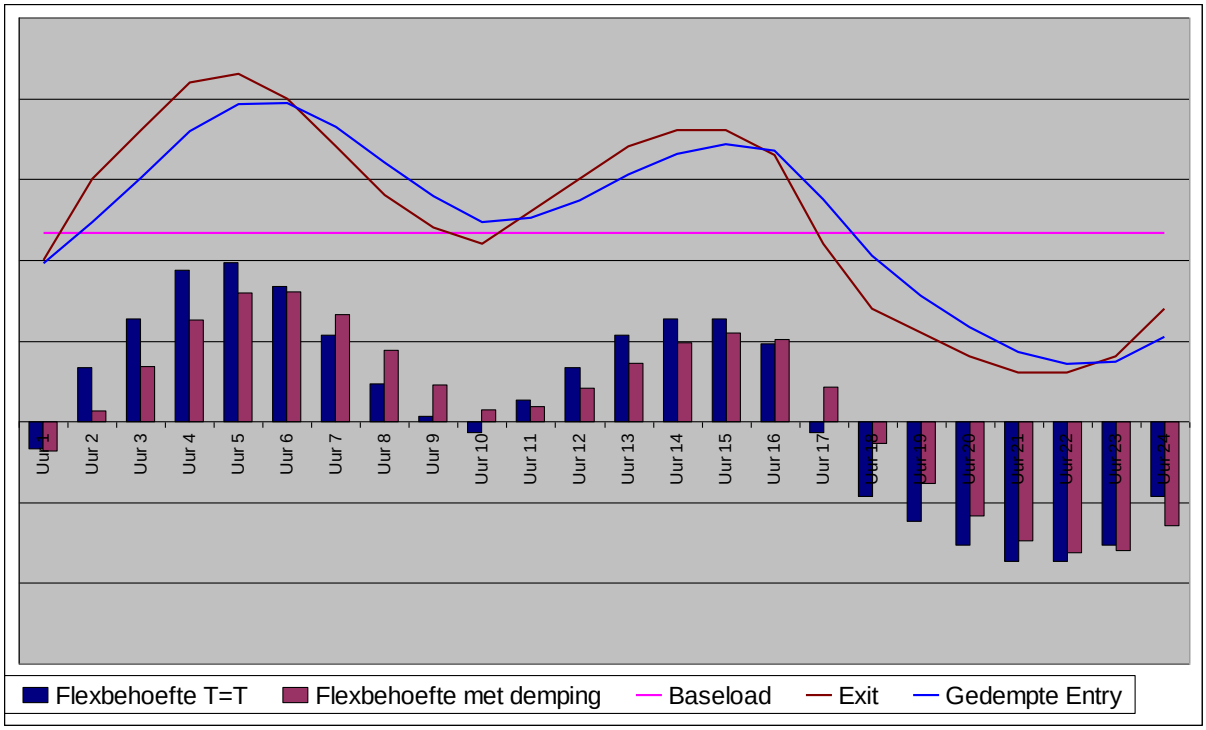
The graph below illustrates the damping that is applicable in the GTS network and how GTS wishes to have this applied by Programme Responsible Parties in the new programmes.



During the day the entry and exit volumes are the same. Just as much gas flows into the network as flows out of it. The advantage of this damping is that the peak entry capacity required to achieve the exit is smaller than the actual exit.

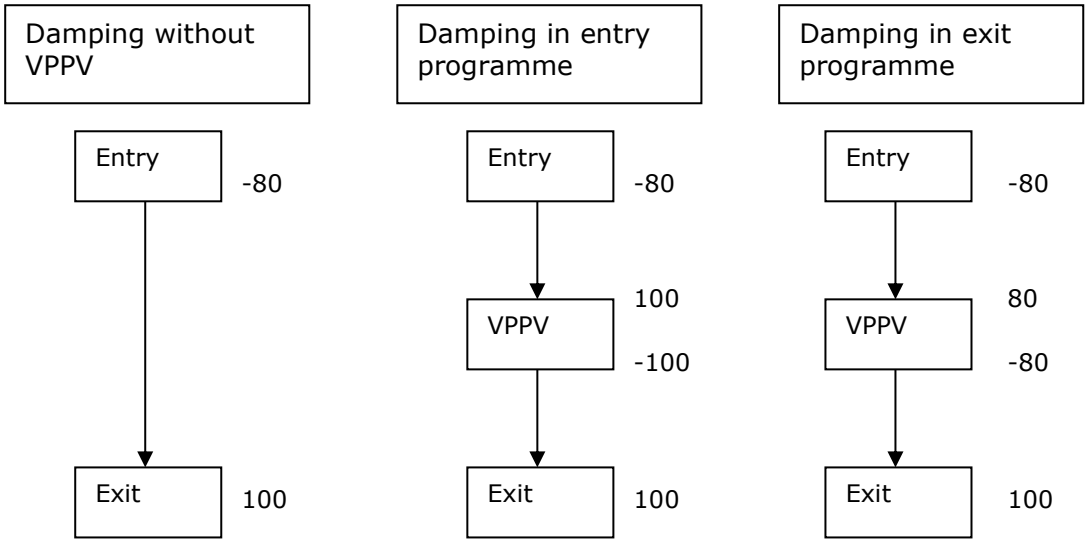
The graph below shows the advantage of the damping in more concrete terms. Assume that a party wishes to achieve the above exit. To do this he concludes a base load supply contract for all hours of the day. He chooses the base load volume in such a way that his maximum excess and maximum shortage of gas (difference between required damped entry compared to the base load) are the same. He then supplements the shortage and the excess using a flexible resource. The blue columns show the required extent of the flexible resource when it has to supply the difference between the exit and the base load and the reddish brown shows the required extent of the flexible resource when it has to supply the difference between the damped entry and the base load.

Using a flexible resource of a certain size it is therefore possible to serve a larger sized market.



Where is the damping applied?

In the new market model the damping has to be incorporated in the programmes. Irrespective of how the distribution takes place, the advantage outlined above always ends up with the parties that control the entry. The three numerical examples below show how damping leads to less entry being required than exit in this hour. The example on the left shows how the entry is in proportion to the exit if there were no VPPV. Adding the VPPV will result in the situations that have entry and exit programmes.



Annex 2 Examples of programme messages

It applies for all examples: entry is negative, exit is positive. Damping is omitted from these examples.

An example of a trade programme is shown below first.

Type: Trade programme
Submitted PV23

		VPPV							
		PV1	PV2	PV3	PV4	PV5	PV6	PV7	balance
06:00	07:00	-50000	-60000	35000	25000	25000	10000	15000	0
07:00	08:00	-50000	-60000	35000	25000	25000	10000	15000	0
08:00	09:00	-50000	-60000	35000	25000	25000	10000	15000	0
09:00	10:00	-50000	-60000	35000	25000	25000	10000	15000	0
10:00	11:00	-50000	-60000	35000	25000	25000	10000	15000	0
11:00	12:00	-50000	-60000	35000	25000	25000	10000	15000	0
12:00	13:00	-50000	-60000	35000	25000	25000	10000	15000	0
13:00	14:00	-50000	-60000	35000	25000	25000	10000	15000	0
14:00	15:00	-50000	-60000	35000	25000	25000	10000	15000	0
15:00	16:00	-50000	-60000	35000	25000	25000	10000	15000	0
16:00	17:00	-50000	-60000	35000	25000	25000	10000	15000	0
17:00	18:00	-50000	-60000	35000	25000	25000	10000	15000	0
18:00	19:00	-50000	-60000	35000	25000	25000	10000	15000	0
19:00	20:00	-50000	-60000	35000	25000	25000	10000	15000	0
20:00	21:00	-50000	-60000	35000	25000	25000	10000	15000	0
21:00	22:00	-50000	-60000	35000	25000	25000	10000	15000	0
22:00	23:00	-50000	-60000	35000	25000	25000	10000	15000	0
23:00	00:00	-50000	-60000	35000	25000	25000	10000	15000	0
00:00	01:00	-50000	-60000	35000	25000	25000	10000	15000	0
01:00	02:00	-50000	-60000	35000	25000	25000	10000	15000	0
02:00	03:00	-50000	-60000	35000	25000	25000	10000	15000	0
03:00	04:00	-50000	-60000	35000	25000	25000	10000	15000	0
04:00	05:00	-50000	-60000	35000	25000	25000	10000	15000	0
05:00	06:00	-50000	-60000	35000	25000	25000	10000	15000	0

Programme 0-1: Trade programme

For Programme Responsible Parties that trade on the TTF and who are also an acknowledged programme responsible party for physical exits, their programme contains both activities in one message to GTS.

Type: Exit programme
Submitted PV23

			VPPV					
		Exit 1	PV1	PV2	PV3	PV4	PV5	balance
06:00	07:00	40000	15000	25000	-25000	-100000	45000	0
07:00	08:00	40000	15000	25000	-25000	-100000	45000	0
08:00	09:00	40000	15000	25000	-25000	-100000	45000	0
09:00	10:00	40000	15000	25000	-25000	-100000	45000	0
10:00	11:00	40000	15000	25000	-25000	-100000	45000	0
11:00	12:00	40000	15000	25000	-25000	-100000	45000	0
12:00	13:00	40000	15000	25000	-25000	-100000	45000	0
13:00	14:00	40000	15000	25000	-25000	-100000	45000	0
14:00	15:00	40000	15000	25000	-25000	-100000	45000	0
15:00	16:00	40000	15000	25000	-25000	-100000	45000	0
16:00	17:00	40000	15000	25000	-25000	-100000	45000	0
17:00	18:00	40000	15000	25000	-25000	-100000	45000	0
18:00	19:00	40000	15000	25000	-25000	-100000	45000	0
19:00	20:00	40000	15000	25000	-25000	-100000	45000	0
20:00	21:00	40000	15000	25000	-25000	-100000	45000	0
21:00	22:00	40000	15000	25000	-25000	-100000	45000	0
22:00	23:00	40000	15000	25000	-25000	-100000	45000	0
23:00	00:00	40000	15000	25000	-25000	-100000	45000	0
00:00	01:00	40000	15000	25000	-25000	-100000	45000	0
01:00	02:00	40000	15000	25000	-25000	-100000	45000	0
02:00	03:00	40000	15000	25000	-25000	-100000	45000	0
03:00	04:00	40000	15000	25000	-25000	-100000	45000	0
04:00	05:00	40000	15000	25000	-25000	-100000	45000	0
05:00	06:00	40000	15000	25000	-25000	-100000	45000	0

Programme 0-2: programme with trade transactions

For Programme Responsible Parties that trade on the TTF and who are also an acknowledged programme responsible party for physical entries, their programme contains both activities in one message to GTS.

For Programme Responsible Parties that trade on the TTF and who are also an acknowledged programme responsible party for physical entries and physical exits, their entry programme or their exit programme contains their trade activities. They send two messages to GTS.

Type: Entry programme
Submitted PV23

			VPPV	
		Entry 1	PV23	balance
06:00	07:00	-150000	150000	0
07:00	08:00	-150000	150000	0
08:00	09:00	-150000	150000	0
09:00	10:00	-150000	150000	0
10:00	11:00	-150000	150000	0
11:00	12:00	-150000	150000	0
12:00	13:00	-150000	150000	0
13:00	14:00	-150000	150000	0
14:00	15:00	-150000	150000	0
15:00	16:00	-150000	150000	0
16:00	17:00	-150000	150000	0
17:00	18:00	-150000	150000	0
18:00	19:00	-150000	150000	0
19:00	20:00	-150000	150000	0
20:00	21:00	-150000	150000	0
21:00	22:00	-150000	150000	0
22:00	23:00	-150000	150000	0
23:00	00:00	-150000	150000	0
00:00	01:00	-150000	150000	0
01:00	02:00	-150000	150000	0
02:00	03:00	-150000	150000	0
03:00	04:00	-150000	150000	0
04:00	05:00	-150000	150000	0
05:00	06:00	-150000	150000	0

Type: Exit programme
Submitted PV23

	VPPV				
Exit 1	PV23	PV1	PV2	PV3	balance
40000	-150000	25000	110000	-25000	0
40000	-150000	25000	110000	-25000	0
40000	-150000	25000	110000	-25000	0
40000	-150000	25000	110000	-25000	0
40000	-150000	25000	110000	-25000	0
40000	-150000	25000	110000	-25000	0
40000	-150000	25000	110000	-25000	0
40000	-150000	25000	110000	-25000	0
40000	-150000	25000	110000	-25000	0
40000	-150000	25000	110000	-25000	0
40000	-150000	25000	110000	-25000	0
40000	-150000	25000	110000	-25000	0
40000	-150000	25000	110000	-25000	0
40000	-150000	25000	110000	-25000	0
40000	-150000	25000	110000	-25000	0
40000	-150000	25000	110000	-25000	0
40000	-150000	25000	110000	-25000	0
40000	-150000	25000	110000	-25000	0
40000	-150000	25000	110000	-25000	0
40000	-150000	25000	110000	-25000	0
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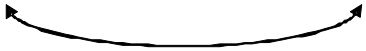
40000	-150000	25000	110000	-25000	0



Match between own programmes of this PV

Programme 0-3: Entry programme and exit programme with trade transactions

Type: Entry programme
Submitted PV23

			VPPV				
		Entry 1	PV23	PV1	PV2	PV3	balance
06:00	07:00	-205000	40000	60000	130000	-25000	0
07:00	08:00	-205000	40000	60000	130000	-25000	0
08:00	09:00	-205000	40000	60000	130000	-25000	0
09:00	10:00	-205000	40000	60000	130000	-25000	0
10:00	11:00	-205000	40000	60000	130000	-25000	0
11:00	12:00	-205000	40000	60000	130000	-25000	0
12:00	13:00	-205000	40000	60000	130000	-25000	0
13:00	14:00	-205000	40000	60000	130000	-25000	0
14:00	15:00	-205000	40000	60000	130000	-25000	0
15:00	16:00	-205000	40000	60000	130000	-25000	0
16:00	17:00	-205000	40000	60000	130000	-25000	0
17:00	18:00	-205000	40000	60000	130000	-25000	0
18:00	19:00	-205000	40000	60000	130000	-25000	0
19:00	20:00	-205000	40000	60000	130000	-25000	0
20:00	21:00	-205000	40000	60000	130000	-25000	0
21:00	22:00	-205000	40000	60000	130000	-25000	0
22:00	23:00	-205000	40000	60000	130000	-25000	0
23:00	00:00	-205000	40000	60000	130000	-25000	0
00:00	01:00	-205000	40000	60000	130000	-25000	0
01:00	02:00	-205000	40000	60000	130000	-25000	0
02:00	03:00	-205000	40000	60000	130000	-25000	0
03:00	04:00	-205000	40000	60000	130000	-25000	0
04:00	05:00	-205000	40000	60000	130000	-25000	0
05:00	06:00	-205000	40000	60000	130000	-25000	0

Type: Exit programme
Submitted PV23

	VPPV	
Exit 1	PV23	balance
40000	-40000	0
40000	-40000	0
40000	-40000	0
40000	-40000	0
40000	-40000	0
40000	-40000	0
40000	-40000	0
40000	-40000	0
40000	-40000	0
40000	-40000	0
40000	-40000	0
40000	-40000	0
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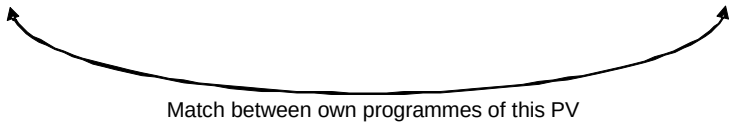
40000	-40000	0

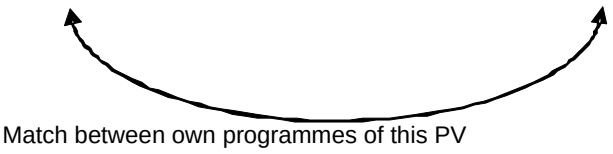


Match between own programmes of this PV

Programme 0-4: Entry programme with trade transactions and exit programme

For Programme Responsible Parties that are not active on the TTF but who do have programme responsibility for physical entries and physical exits, their entry and exit programmes establish the link between these two physical points. They send two messages to GTS.

Type:	Entry programme				Type:	Exit programme		
Submitted	PV23				Submmitted	PV23		
			VPPV				VPPV	
		Entry 1	PV23	balance		Exit 1	PV23	balance
06:00	07:00	-205000	205000	0		205000	-205000	0
07:00	08:00	-205000	205000	0		205000	-205000	0
08:00	09:00	-205000	205000	0		205000	-205000	0
09:00	10:00	-205000	205000	0		205000	-205000	0
10:00	11:00	-205000	205000	0		205000	-205000	0
11:00	12:00	-205000	205000	0		205000	-205000	0
12:00	13:00	-205000	205000	0		205000	-205000	0
13:00	14:00	-205000	205000	0		205000	-205000	0
14:00	15:00	-205000	205000	0		205000	-205000	0
15:00	16:00	-205000	205000	0		205000	-205000	0
16:00	17:00	-205000	205000	0		205000	-205000	0
17:00	18:00	-205000	205000	0		205000	-205000	0
18:00	19:00	-205000	205000	0		205000	-205000	0
19:00	20:00	-205000	205000	0		205000	-205000	0
20:00	21:00	-205000	205000	0		205000	-205000	0
21:00	22:00	-205000	205000	0		205000	-205000	0
22:00	23:00	-205000	205000	0		205000	-205000	0
23:00	00:00	-205000	205000	0		205000	-205000	0
00:00	01:00	-205000	205000	0		205000	-205000	0
01:00	02:00	-205000	205000	0		205000	-205000	0
02:00	03:00	-205000	205000	0		205000	-205000	0
03:00	04:00	-205000	205000	0		205000	-205000	0
04:00	05:00	-205000	205000	0		205000	-205000	0
05:00	06:00	-205000	205000	0		205000	-205000	0



Programme 0-5: Entry and exit programme without trade transactions

Annex 3 Numerical examples

Various cases are presented below, some with and some without further explanation. The cases also provide an overview of the programmes and nominations that have to be submitted, the POS[28] and SBS signals and the trade allocations.

In these numerical examples the usual sign convention shall be used for entry flows (negative) and exit flows (positive). The equation that shall be used for calculating the near real-time imbalance per programme (OB_{prog}, in the numerical examples denoted by POS) is:

$$OB_{prog}(bp_i) = Entry_{real,prog}(bp_i) + Exit_{real,prog}(bp_i) - Entry_{plan,prog}(bp_i) - Exit_{plan,prog}(bp_i)$$

This has the consequence that:

- a negative OB and thus negative POS and SBS means that more gas has entered the network than has exited (long);
- a positive OB and thus a positive POS and SBS means that less gas has entered the network than has exited (short).

The following formulae are applicable for the equation that is used for calculating the volume difference (Vv) (in the numerical examples denoted by settlement) within a portfolio of an acknowledged programme responsible party during the settlement period (vp). The settlement period is on a daily basis.

$$Vv_{prog}(vp) = Entry_{offline,prog}(vp) + Exit_{offline,prog}(vp) - Entry_{plan,prog}(vp) - Exit_{plan,prog}(vp) - OB_{prog}(vp)$$

User buys gas from supplier and transfers PRP to this supplier (Case 1.1)

Case 1.1 is the first most common situation as described in Section 3: an end user buys his gas directly from a supplier and transfers his programme responsibility to that same supplier. The supplier has gas available at an entry point, Feed 1, on the national gas transmission network.

[28]) The term POS is used in the examples. Because the imbalance only relates to a period of an hour one should officially talk about portfolio basic imbalance.

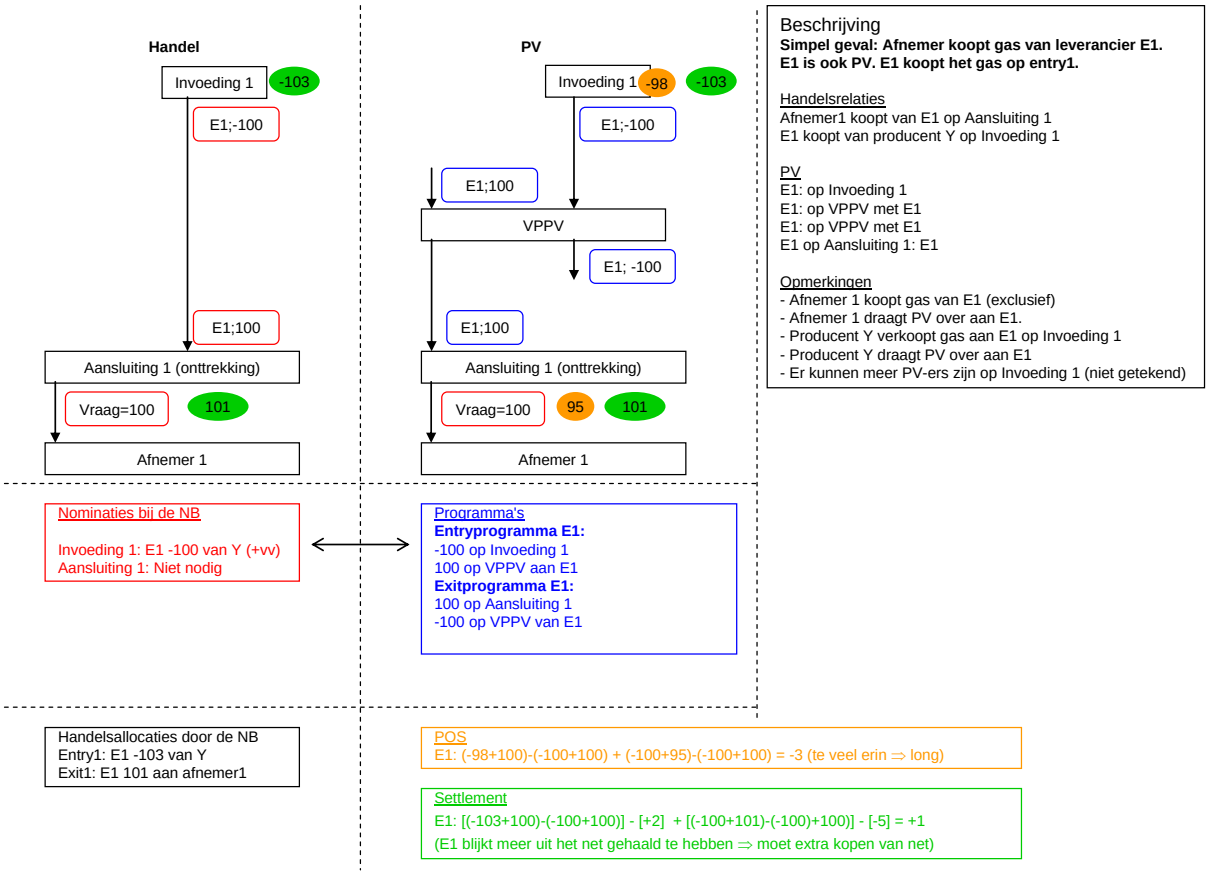


Figure 5.1: Working out Case 1.1 (Figure in Dutch)

A number of conventions are introduced in this figure:

- all figures in the examples show the situation in a specific hour: for the nominations, the programmes, the trade allocations and the settlement it is the value for the relevant hour. For the POS the value is the contribution to the POS of the relevant hour, in other words the value that is added to the POS in order to determine the status of the POS at the end of the hour. Because the settlement shall probably take place each month then the value for the settlement can also be viewed as the contribution for the relevant hour to the month value of the settlement;
- the left in the figure shows the situation of the trade contracts and the right shows the situation in respect of programme responsibility;
- according to the first paragraph of Article 17b of the bill, E1 must state how much gas he feeds in and where and the volume of gas on the VPPV the PRP transfers and to whom. The right arrows in the programme section show that E1 transfers 100 units on the VPPV to E1;
- according to the second paragraph of Article 17b of the bill, E1 must state for how much gas on the VPPV the PRP transfers to him and from whom and what volume of gas he takes off, and where. The left arrows in the programme section show that E1 has 100 units on the VPPV transferred to him from E1;
- in the case the programmes are associated with the legal obligation to state where the gas feed-in or offtake takes place. Another section of this MPM deals with a clustering of network points for the benefit of programmes.

Option 1 from the Explanatory Memorandum (Case 1.2)

Case 1.2 is in many aspects the same as case 1.1 except that the user, A1, now buys in gas himself and provides his own interpretation of programme responsibility for the exit programme[29]. This means that he personally takes on the role of E1 in case 1.1. This corresponds with option 1 from the bill's Explanatory Memorandum.

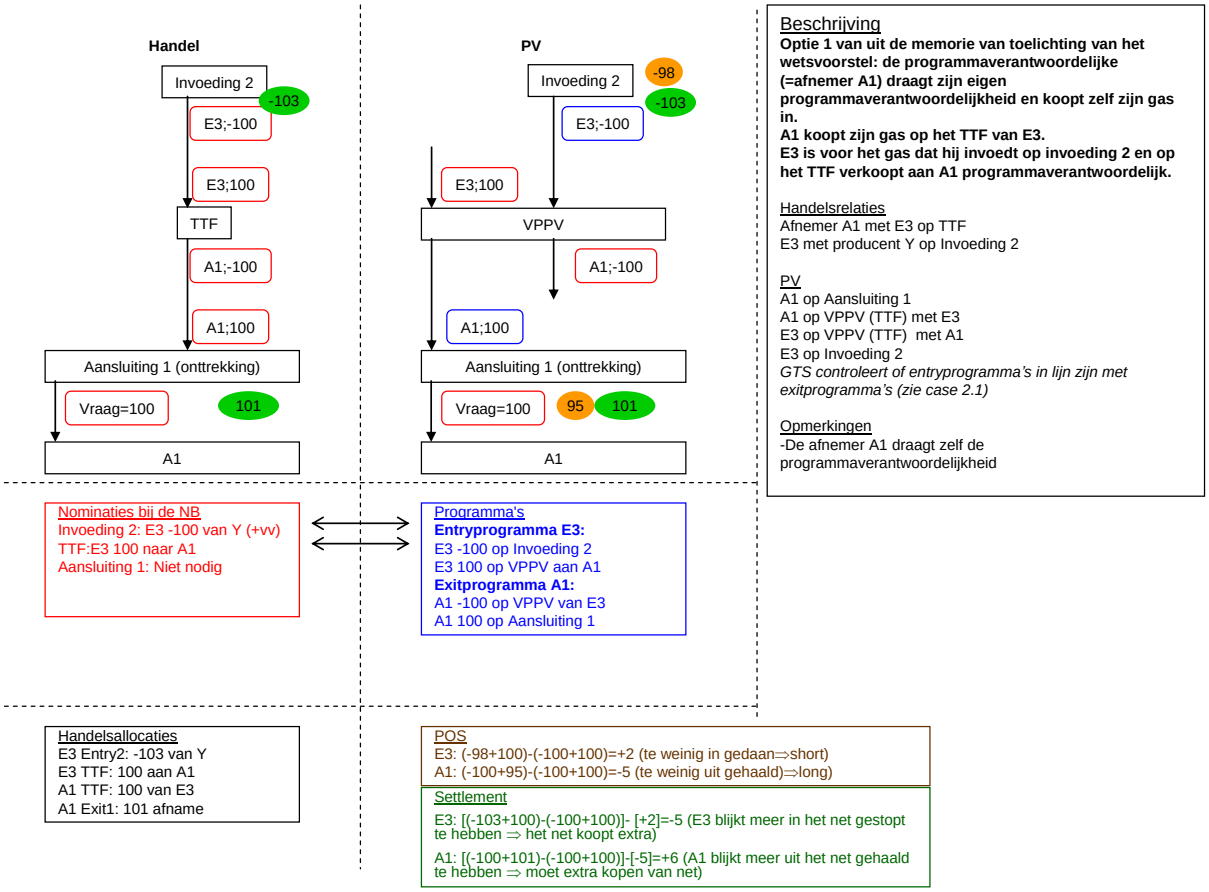


Figure 5.2: Case 1.2 (option 1 from the Explanatory Memorandum)

User A1 shall have to buy the required gas himself. In this example, A1 does this on the TTF from E3. E3 is the Programme Responsible Party for the gas that he feeds in at Feed 2 and for the gas he sells to A1 on the TTF.

Within the framework of his programme responsibility, A1 states for the benefit of the exit programme that the gas on VPPV originates from E3's transaction with A1 on the TTF[30].

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[29]) to personally provide interpretation of his programme responsibility the user shall have to be acknowledged as a PRP. Also, by means of a switch, he must ensure that he is listed in the Network operator's register as a supplier and as a PRP. *It is preferred that a simple solution is found for this "switching".*

[30]) If, within this framework, several trading steps occur on the TTF then the place of E3 is taken by the party that sells to A1 in the last step. If there are multiple steps A1 does not therefore know that E3 was responsible for the gas before the TTF.

Within the framework of his programme responsibility, E3 states for the benefit of his entry programme that the gas on the VPPV shall be used in the trade transaction with A1.

Supplier buys gas from another (Case 1.3)

Case 1.3 is the second most common situation as referred to in Section 3. An end user buys his gas from E1 and transfers his programme responsibility to that same E1. E1 buys the gas from E2 and transfers the programme responsibility on again to E2.

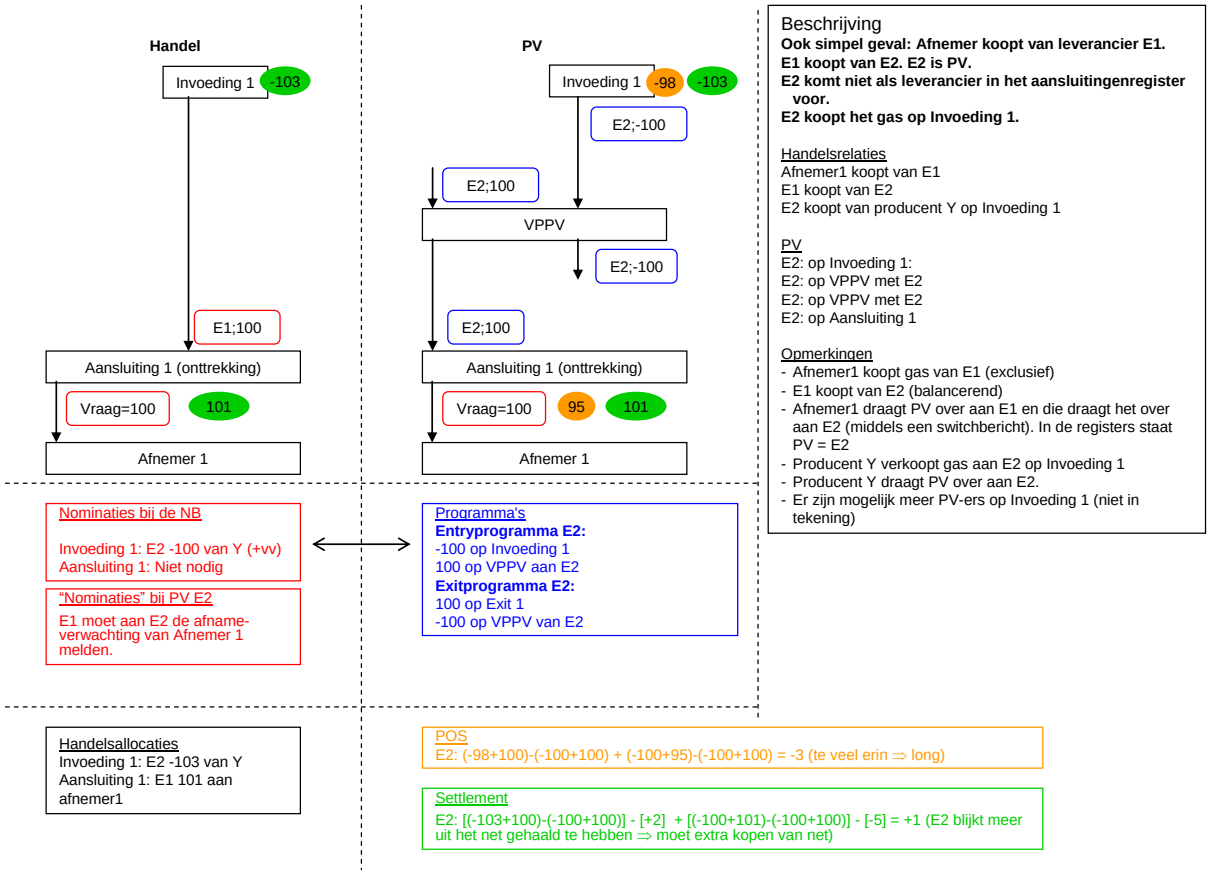

Figure 5.3: Case 1.3

This situation currently occurs frequently in the Netherlands as a continuation of the situation that applied prior to 1 July 2004 for residential end users.

Option 3 from the Explanatory Memorandum (Case 1.4)

Case 1.4 is very similar to case 1.1. The difference now is that E2 does not take the gas from a random entry punt but from the TTF. This case corresponds with option 3 from the Explanatory Memorandum of the bill.

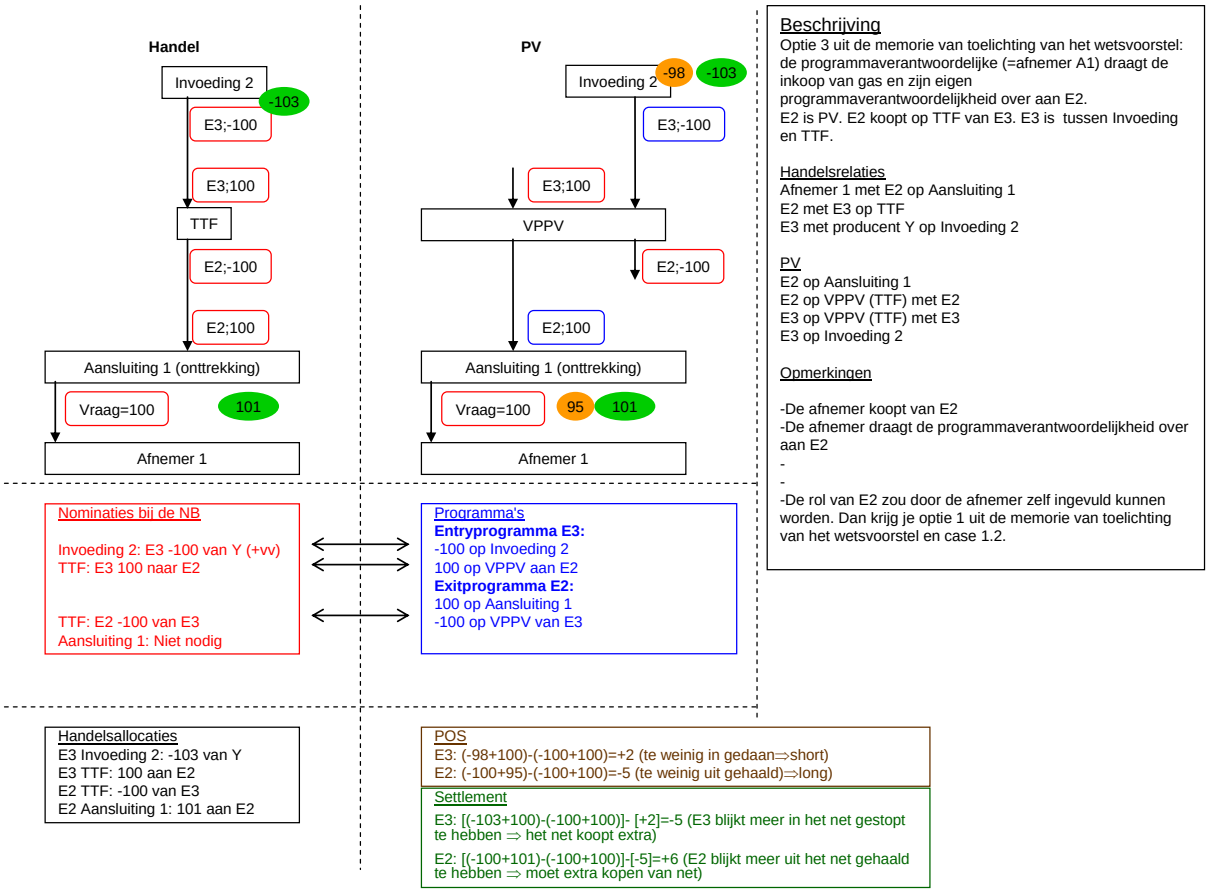

Figure 5.4: Case 1.4 (option 3 from the Explanatory Memorandum)

User buys gas from a supplier and transfers PRP to a third party (Case 2.1)

Case 2.1 is already described in paragraph 3.2 as the third most commonly occurring situation. An end user buys his gas from E2 and transfers his programme responsibility to E1. In this case, E2 shall have to buy a fixed volume of gas from somewhere that is to be supplied to the end user. For preparing his programme E1 must be aware of the fixed volume that E2 supplies to the end user. This could take place via a nomination or in another way. In addition, E1 is responsible for the (positive or negative) difference between the programme and the actual offtake and he will

ultimately have to settle this difference. In practice, this difference is "supplied" by E1 to the end user.

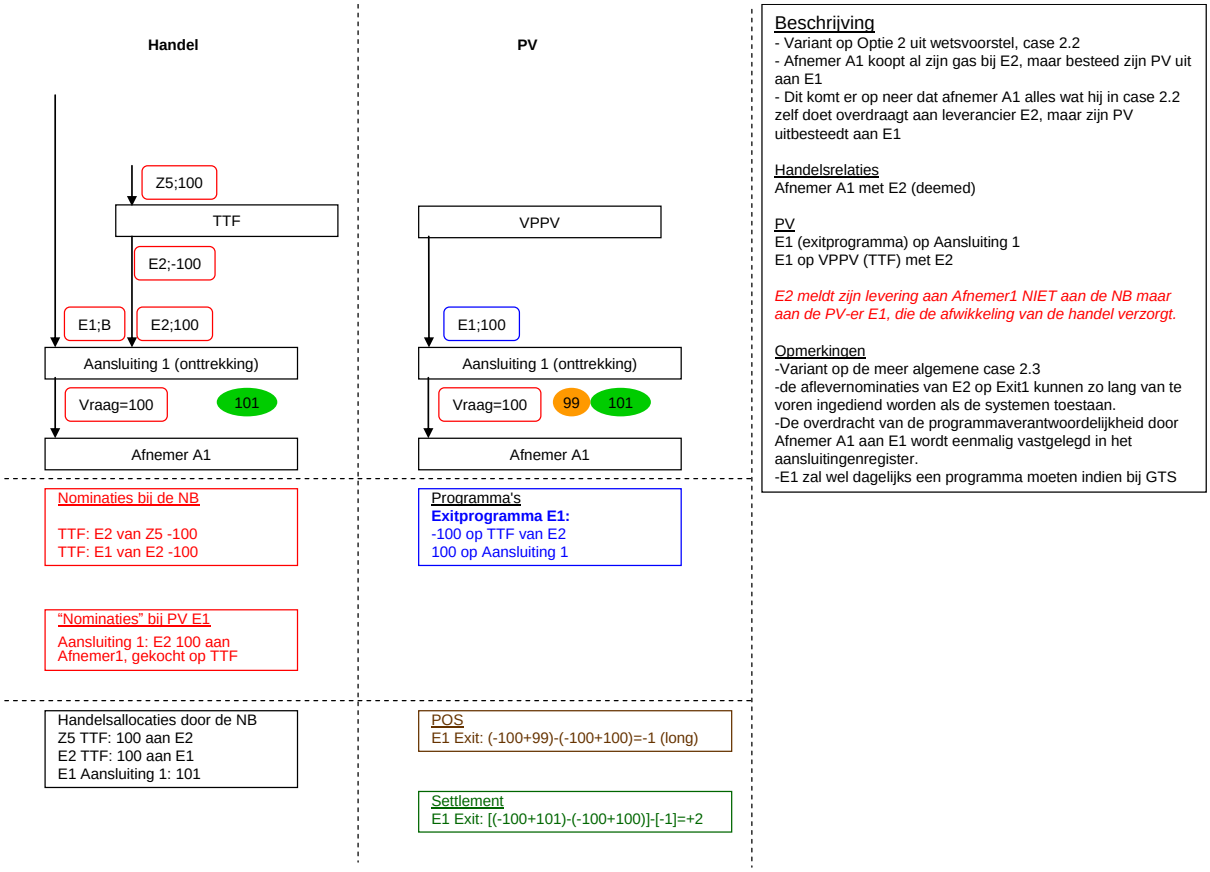

Figure 5.5: Case 2.1 (1 Supplier, 1 acknowledged programme responsible party)

Note that, in contrast with the current situation, the trade allocation to E1 can also be negative. Because the trade transactions are processed by the acknowledged programme responsible party are processed this shall no effect on the systems of the Network Operators. In the systems of the Network Operators there will be one allocation to the pair that are formed by the supplier E2 and the acknowledged programme responsible party E1.

For the benefit of his exit programme E1 must know that the gas that is transferred to him on the VPPV originates from an E2 transaction on the TTF; in this case E2 has received this gas via a trade transaction with Z5, but this gas does not originate from Z5.

Option 2 from the Explanatory Memorandum (Case 2.2)

Case 2.2 differs from case 2.1 only in respect that the user personally takes on the role of supplier E2 from case 2.1. As a result, this case corresponds with option 2 from the Explanatory Memorandum of the bill.

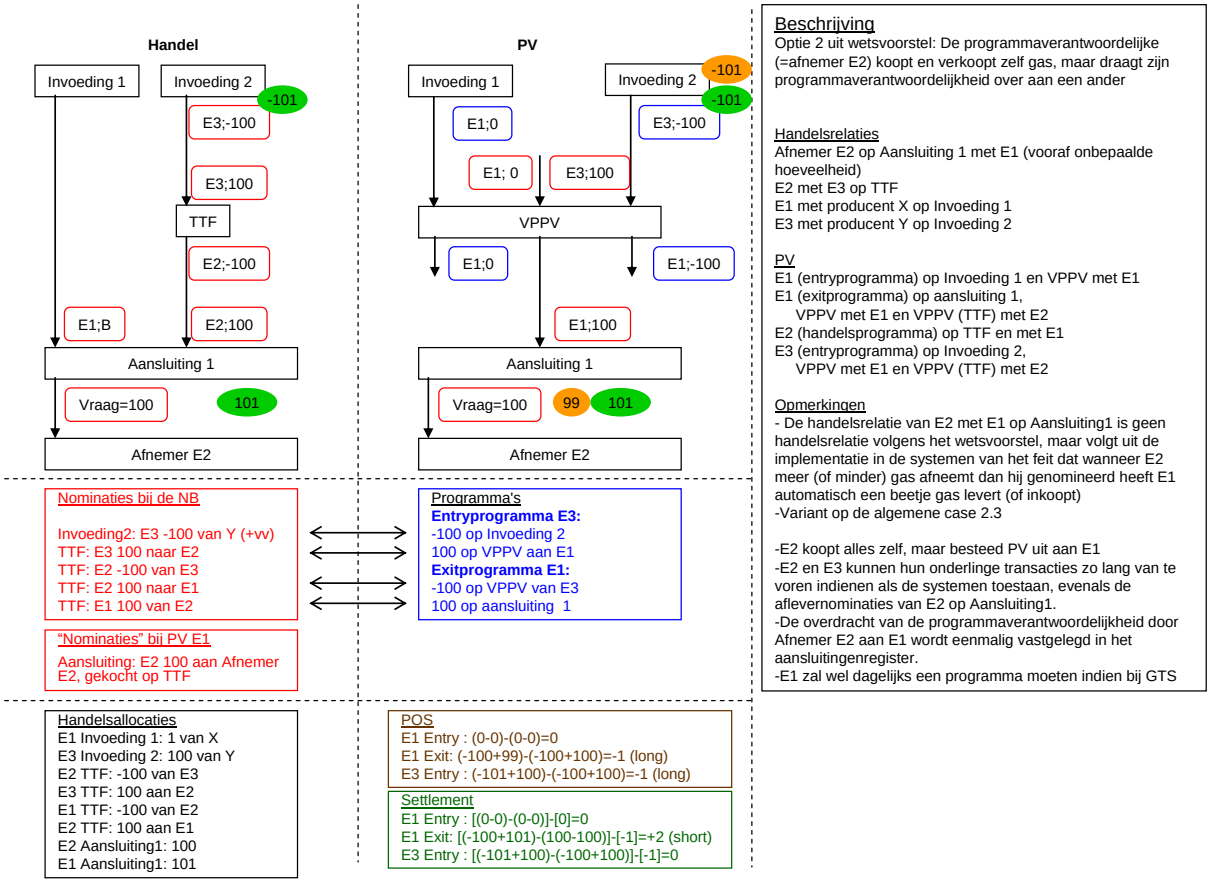

Figure 5.6: Case 2.2 (option 2 from the Explanatory Memorandum)

User buys gas from several suppliers, one of which takes on programme responsibility (Case 2.3)

Case 2.3 is a generalisation of case 2.1. In this case E1 is not only the "supplier" of the difference between the programme and the realisation of user A1, but E1 also supplies the difference between the fixed volume that is supplied by E2 and the offtake of user A1. In other words: E2 supplies a

fixed volume and E1 supplies "the rest". The supply from E1 is also called balancing. An example of this situation can be a base load supply by E2, in addition to a balancing supply by E1.

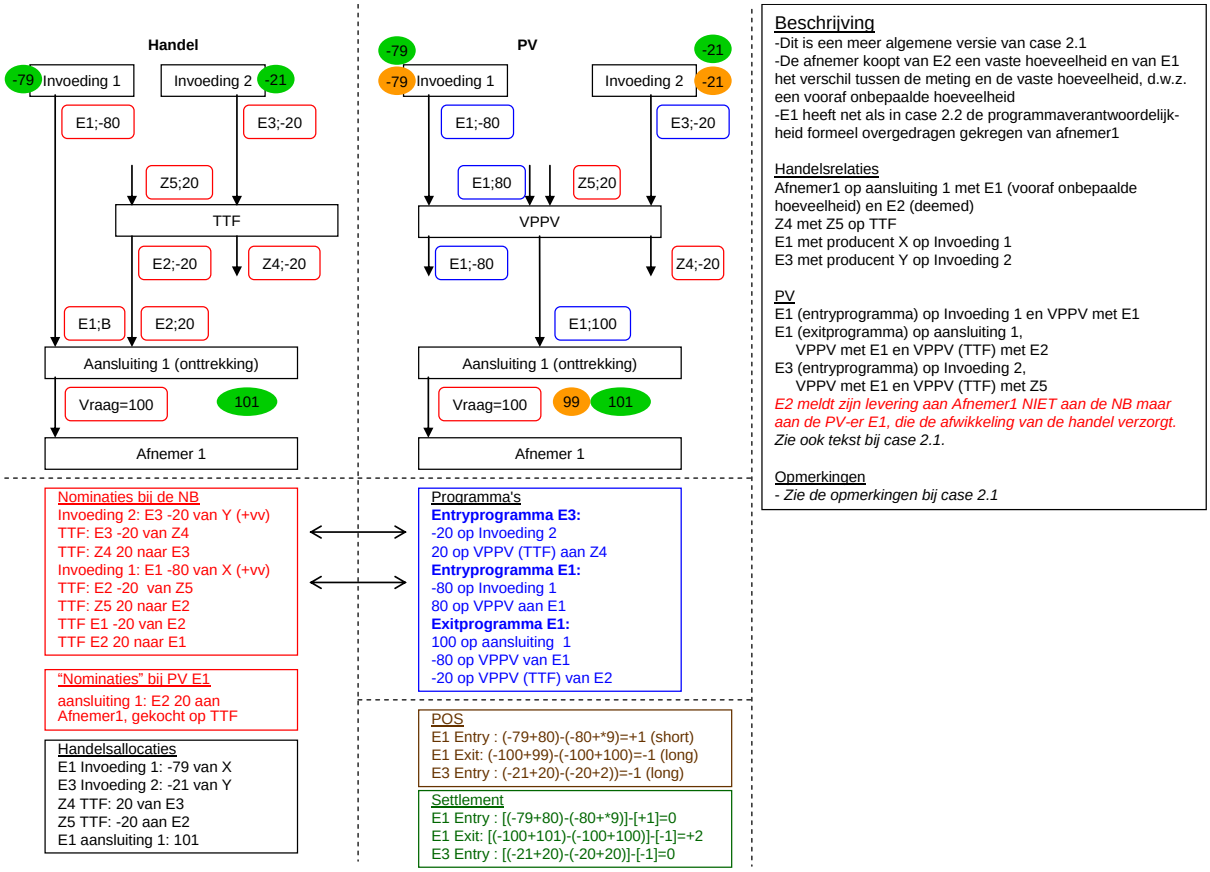

Figure 5.7: Case 2.3 (2 suppliers and 1 acknowledged programme responsible party)

In contrast to current practice, in this example the supply by E1 can be negative, up to -20 if the offtake is 0. If this is problematic then this situation must be discouraged by means of contractual stipulations.

Because a great deal of trade is possible in this case then a great deal also needs to be organised:

- E1 must know what total volume User1 expects to take off and what volume User1 will receive from E2. E1, User1 and E2 initially coordinate this between themselves. E1 and E2 then know the volume that they have to transfer mutually on the VPPV;
- the transfer from E2 to E1 is mutually arranged, for example by means of a nomination. The Network Operator has no role in this whatsoever. In the systems of the Network Operators there will be one allocation to the pair that is formed by supplier E2 and acknowledged programme responsible party E1;
- as the party trading on the TTF, E2 must have PRP acknowledgement;
- by means of the "exit nomination" by E2 on Connection 1 of E1, E1 knows what volume E2 will be supplying to User1 for the trade allocation on Connection 1;
- an acknowledged programme responsible party (trader) such as E2 can trade on the TTF *and* supply the customer. Day-ahead his trade programme is in balance. Within-day this balance should be maintained as simply as possible. This has to take place by notifying E1

of the re-nominations that E2 makes on the TTF and re-nominations that E2 makes on the exit point;

- as PRP, E1 shall have to determine both trading allocations on Connection 1 (in other words to E1 and to E2).

E2's activities with its customer are not visible to the Network Operator.

Two suppliers with maximum balance (Case 3.1)

In case 3.1 there are two suppliers who together are responsible for the gas that is supplied for Connection 1.

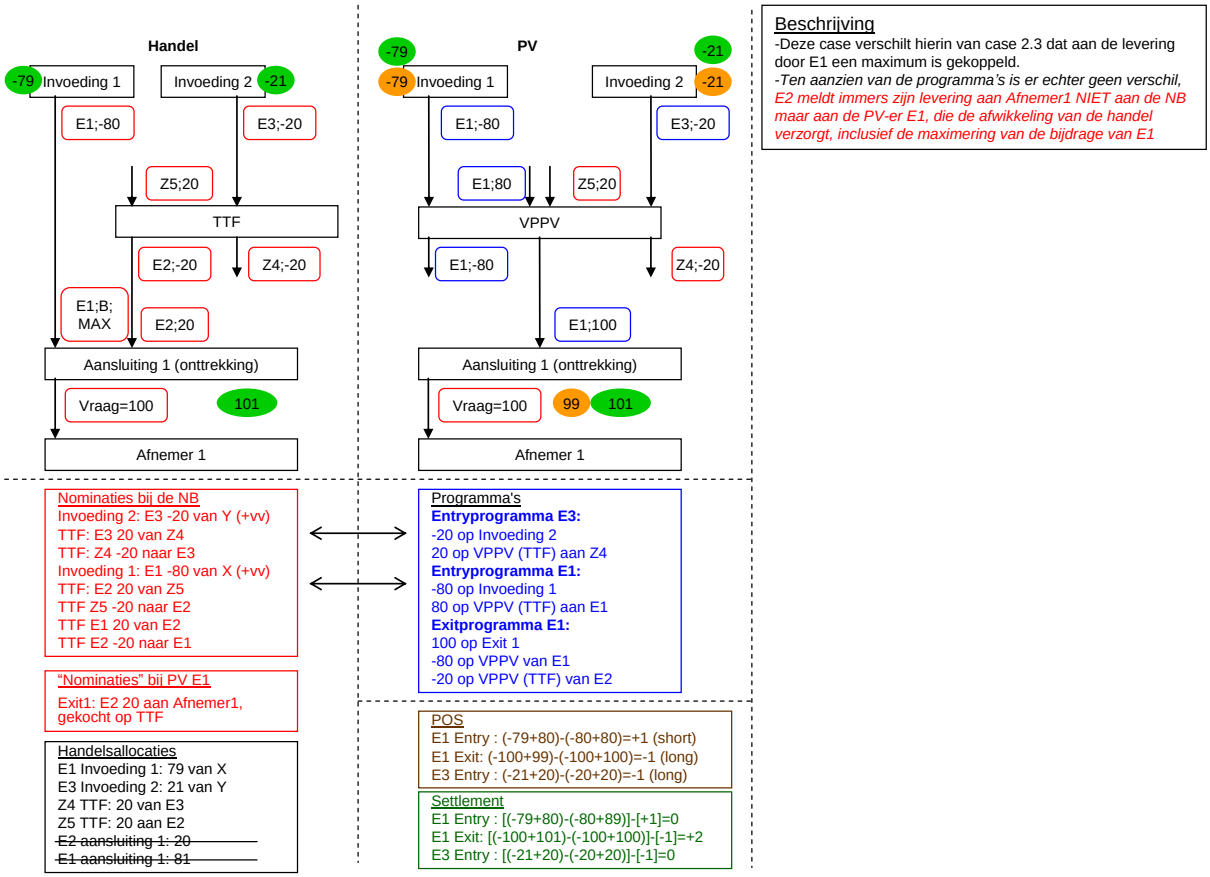

Figure 5.8: Case 3.1 (2 suppliers with maximum balance)

Also in this situation one party shall be responsible for balancing. This party shall have to process the trading transactions that the involved suppliers have agreed into his programmes and into the fulfilment of trade and transport. In principle the parties can themselves decide which variety of constructions can be processed for this. This also includes the maximum balance agreement on the exit point. The Network Operator has no duty whatsoever in facilitating trade agreements nor does he need to be aware of these agreements.

The case shows an example of the maximum balance agreement. The user buys on Connection 1 from E2 a fixed volume and from E1 the difference between the meter reading and the fixed volume, in other words a pre-unspecified volume. However, the pre-unspecified volume is linked to a maximum and above this maximum the additional volume is again supplied by E2.

In the systems of the Network Operators there will be one allocation to the pair that are formed by the supplier E2 and the acknowledged programme responsible party E1

Balance agreement on TTF (Case 4.1)

As already discussed in paragraph 4.7.11 a balance agreement gives a (balance-receiving) acknowledged programme responsible party the possibility of buying a volume of gas on the TTF from a counter party (the balance-supplying PRP), for which the volume is not known in advance and is equal to the physical supply on one or more user points in the Netherlands (taking into account any damping on the exit side that is stipulated in the exit programme).

The next example (**Fout! Verwijzingsbron niet gevonden.**) clearly shows how a balance agreement can work.

A balance-receiving PRP has a balance agreement with a balance-supplying PRP. The entire exit portfolio is balanced by the balance-supplying PRP; this therefore relates to a balance agreement without limitations (100% balancing). In this numerical example the damping is fictitious and the gas day only consists of 10 hours.

Table 5.1: Example of a balance agreement

	Exit programme balance-supplying PRP		**Realisations balance-supplying PRP**		**Deviation**		**Imbalance (POS) balance-receiving PRP**
Hour	**VPPV***	**Exit**	**TTF****	**Exit(s)**	**Entry**	**Exit**	**Entry-Exit**
1	12	9	13	10	+1	+1	0
2	12	11	12	11	0	0	0
3	12	10	11	9	-1	-1	0
4	12	12	13	13	+1	+1	0
5	12	14	12	14	0	0	0
6	12	15	12	15	0	0	0
7	12	14	13	15	+1	+1	0
8	12	13	14	15	+2	+2	0
9	12	12	11	11	-1	-1	0
10	12	10	10	8	-2	-2	0
Total	**120**	**120**	**121**	**121**	**+1**	**+1**	**0**

*) Entry programme of balance-supplying PRP must match the above exit programme.

**) Calculated volume by the balance agreement (balance-supplying PRP supplies stated volume on TTF).

In **Fout! Verwijzingsbron niet gevonden.** the balance-supplying acknowledged programme responsible party submits a programme (blue section) which incorporates the damping (defined on the exit side). The balance-supplying PRP submits an entry programme that matches the exit programme of the balance-receiving PRP.

During the realisation (orange section) the volume of gas that is transferred on the TTF is calculated in such a way by the balance agreement that there is no imbalance on the part of the balance-receiving PRP. This ensures that the deviation with regard to the programme on the entry side (TTF) is just the same as on the exit side (exits), which can be seen in the yellow section.

Ultimately, the supply is such that the imbalance for the balance-receiving party (pink section) is zero.

For further clarification, three examples are provided with increasing complexity. In case 4.1a (see **Fout! Verwijzingsbron niet gevonden.**) there is a balance agreement between E1 and E2, 100% of the E2 portfolio is supplied by E1.

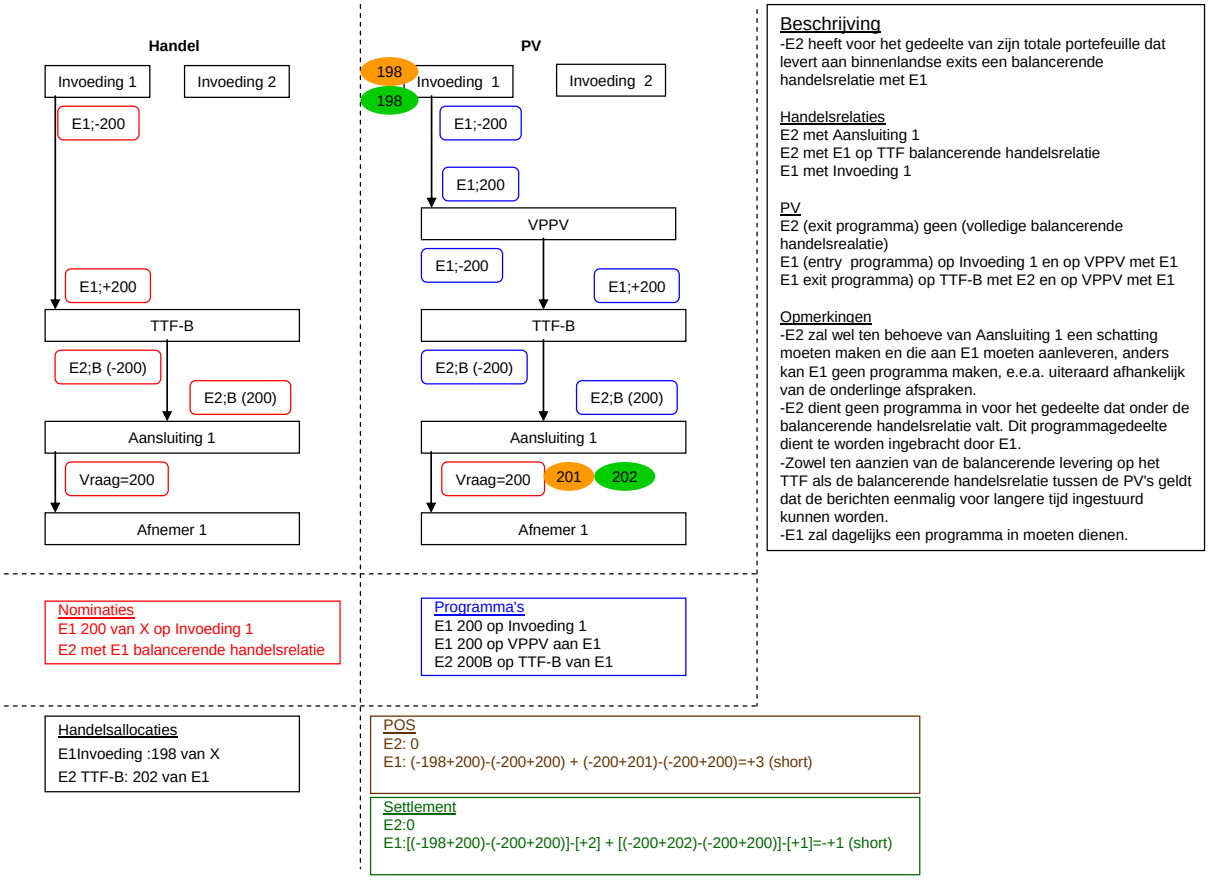

Figure 5.9: Case 4.1a: simple 1 on 1 case.

E1 has submitted a day-ahead exit programme which incorporates and identifies the E2 exit programme element and E1 will also submit a contiguous entry programme. During the gas day E1 supplies the exact volume via the TTF-B that E2 needs in order to serve his market. For this, E1 receives near real-time aggregated information about the offtake of E2's user market. In this case the offtake by User 1.

In case 4.1b a balance agreement is also concluded between two acknowledged programme responsible parties, however, this is restricted to one user category (G1A). Via the balance agreement, E1 supplies the exact volume that is required for the G1A category users. The forecast for this market category is submitted in the programme (by E1). E2 shall have to find another supplier for the remainder (in the example he supplies the gas himself for the remainder of his market).

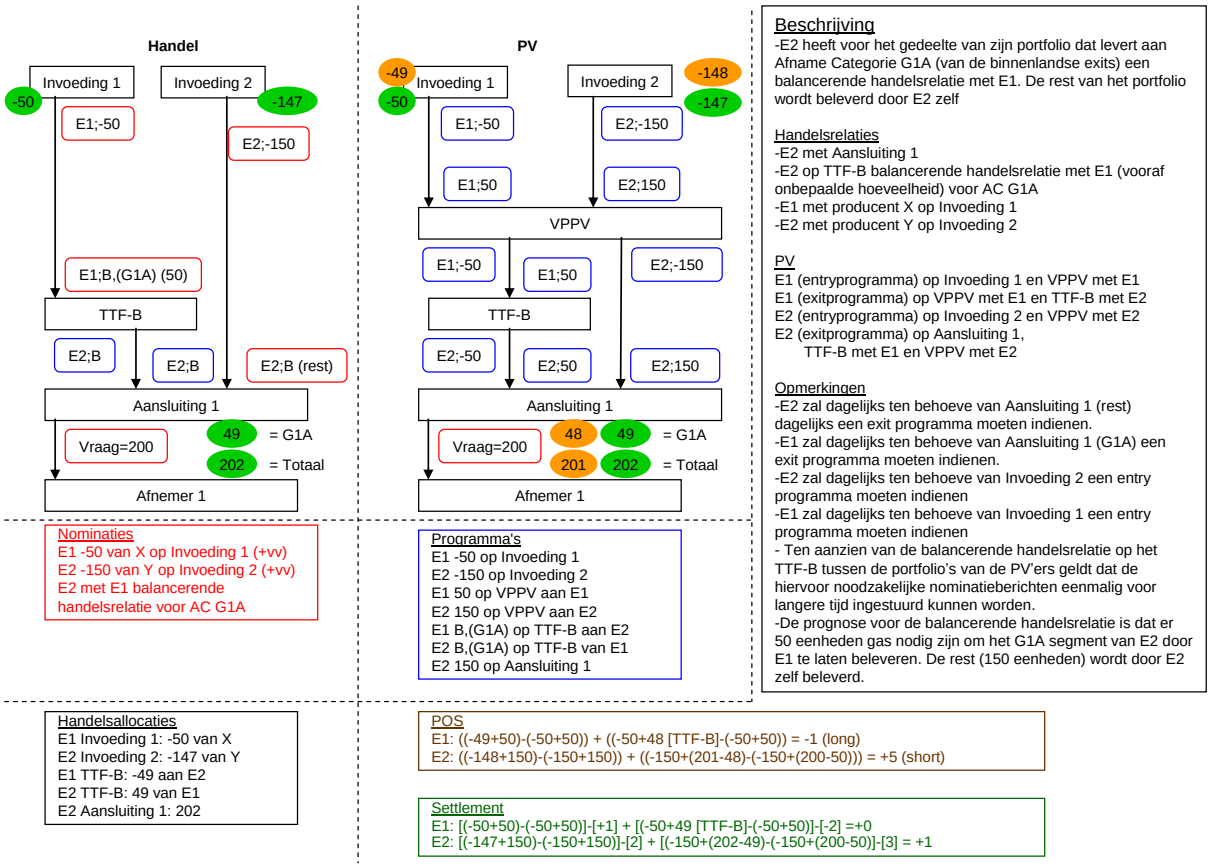

Figure 5.10: Case 4.1b: Balance agreement restricted to one user category

In case 4.1c a balance agreement is concluded between two balance-supplying acknowledged programme responsible parties (E1 and E2) who together supply 90% of the required volume to a balance-receiving acknowledged programme responsible party (E3). The remaining 10% is supplied by the balance-receiving PRP himself.

E3 shall conclude a balance agreement with each of the balance-supplying acknowledged programme responsible parties (E1 and E2) with a percentage of 45%, for which in each case a programme transfer will be defined on the VPPV. In addition to this, E3 should submit a programme transfer with himself for the remaining 10%.

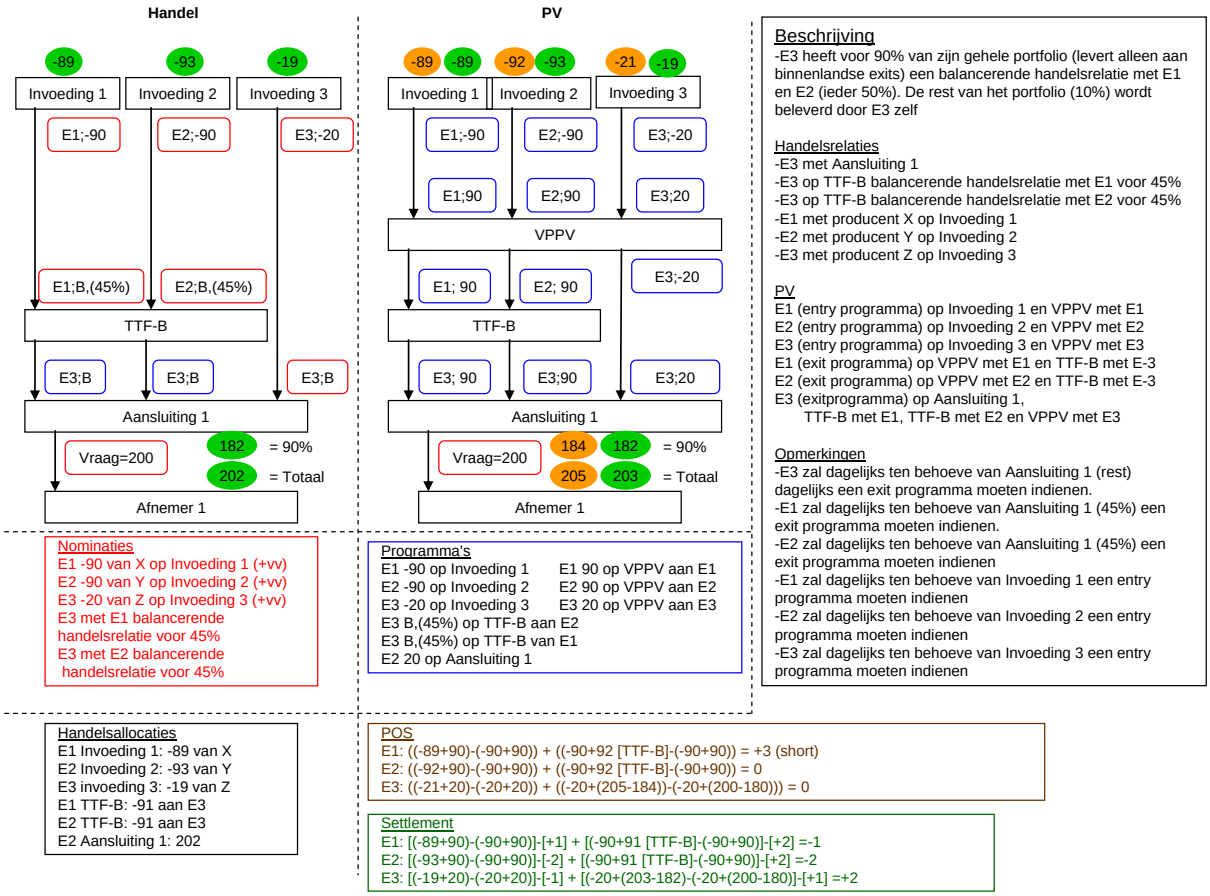

Figure 5.11: Case 4.1c: Balance agreement between two supplying acknowledged programme responsible parties with one receiving PRP, whereby 90% of the required volume is supplied by the balance-supplying acknowledged programme responsible parties

Importer supplies and personally carries programme responsibility (Case 5.1)

The next cases deal with the situation on the entry side. Case 5.1 is a mirror image of case 1.2 and, as in that case, corresponds with option 1 of the Explanatory Memorandum of the bill. To

emphasise the symmetry with the situation on the exit side the entry and exit have swapped places in the figures compared to the previous figures.

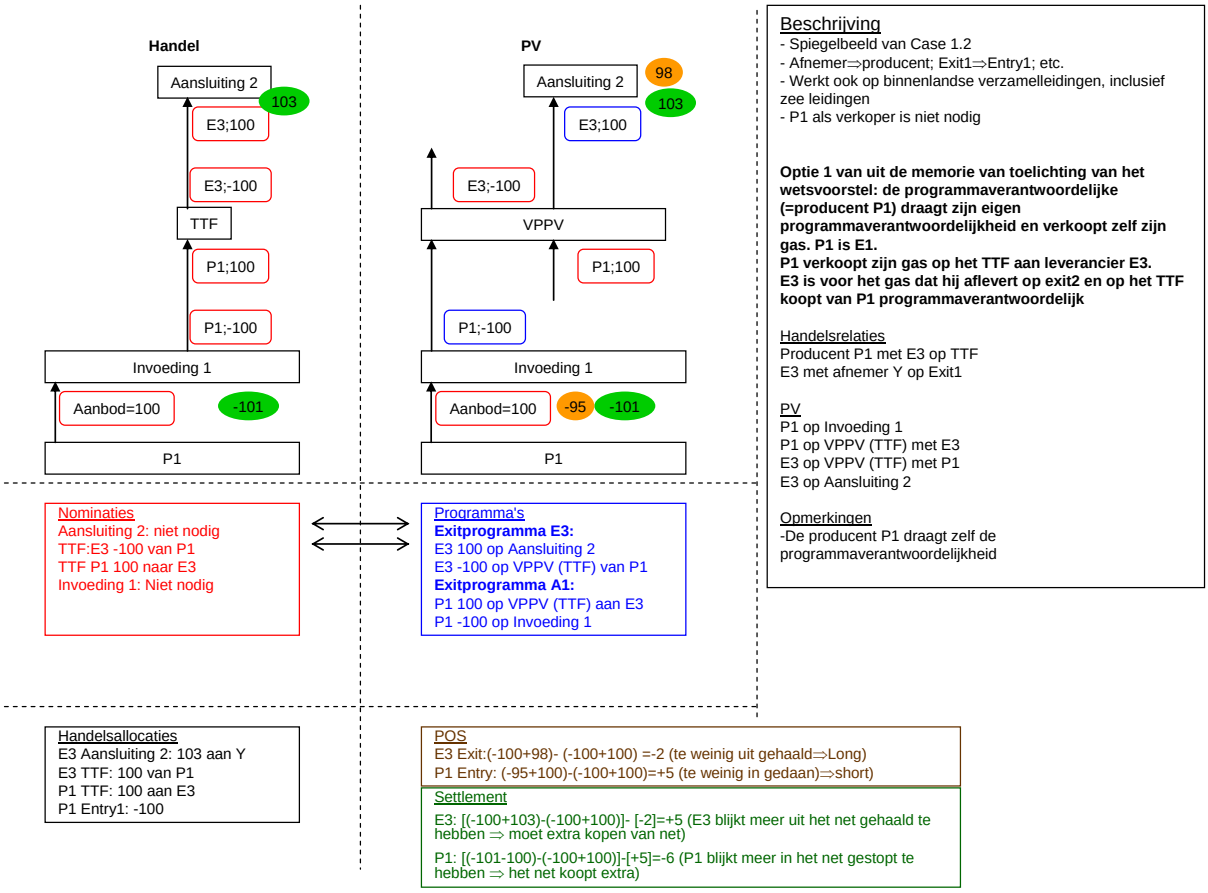

Figure 5.12: Case 5.1 (producer is PRP)

Note that because the entry and the exit are swapped over, the POS and the settlement have changed sign compared to case 1.2.

Because multiple producers are present at many entry points, all of whom can undertake their programme responsibility themselves, this case is also applicable for those points. In this case it is not the meter readings that are used for the near real-time and off-line entry values but the near real-time and off-line allocations that are used.

Importer transfers supply and programme responsibility (Case 5.2)

If the producer does not wish to sell directly and wishes to transfer the programme responsibility then we have case 5.2, which is a mirror image of case 1.4.

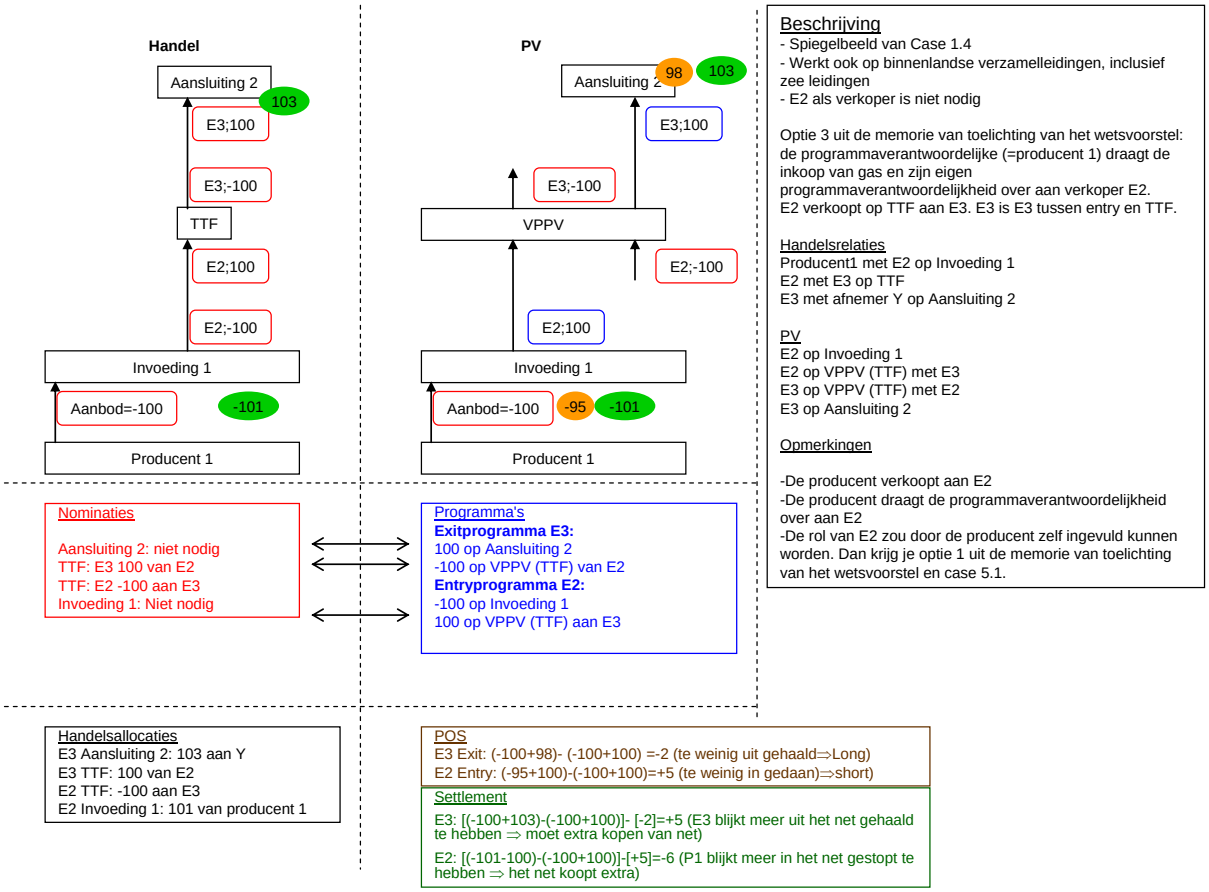

Figure 5.13: Case 5.2 (producer transfers gas and programme responsibility)

From a numerical point of view this case comes out at the same values as case 5.1, the only difference being that Seller2 takes over the task of the producer, as well as the programme responsibility.

Importer only transfers programme responsibility (Case 5.3)

In the above case 5.3 the producer (P2) wants to sell the produced gas himself on the TTF but does not wish to carry the programme responsibility, which he transfers to PRP1. This situation corresponds with option 2 in the bill.

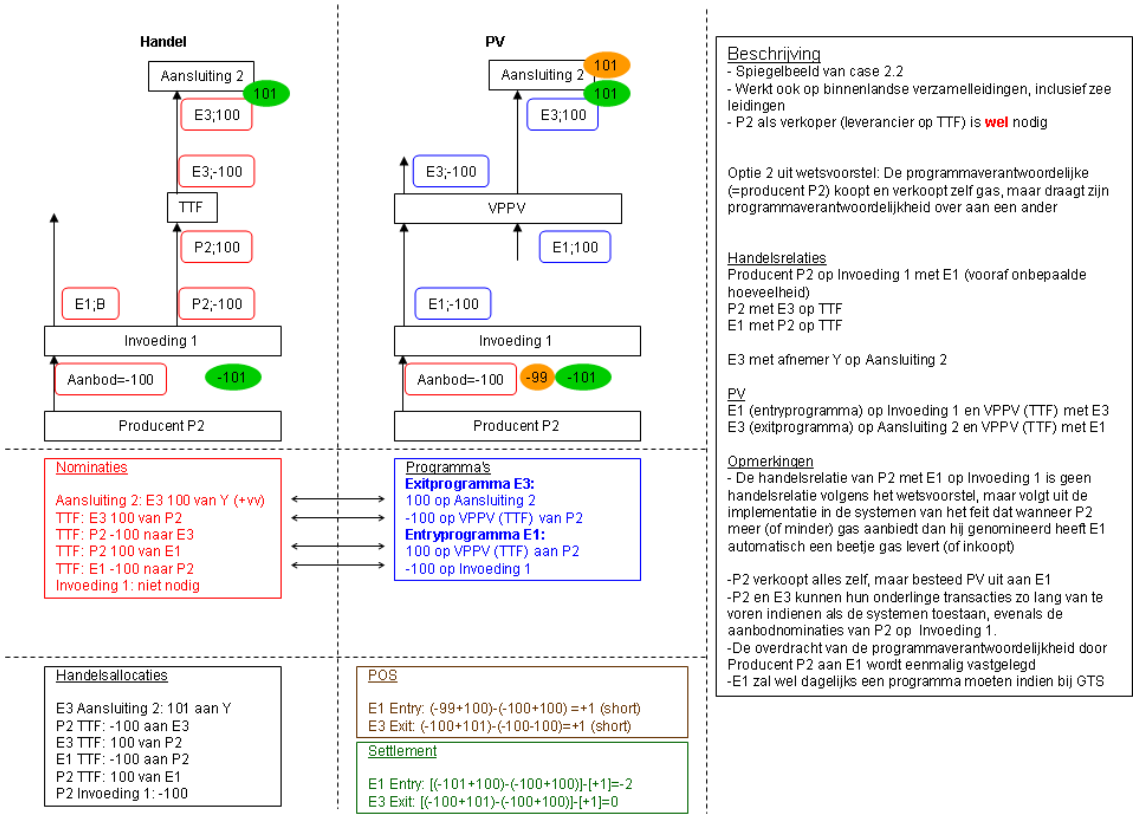

Figure 5.14: Case 5.3 (producer transfers PRP and sells gas directly on the TTF)

The situation means that PRP E1 is responsible for the difference between the submitted programme that will be based on information that the producer has supplied to him, and the actual gas fed in. In practice this means that, in relation to the programme, PRP E1 buys more that is produced from P2 and sells less that is produced to P2. In terms of systems, PRP E1 therefore has a comparable role to a balancing supplier on a user connection.

This distribution of roles differs substantially from the current situation at entry points to the national gas transmission network or connections with production networks such as NOGAT and NGT. Further discussion with producers active on these points shall have to be held in the detail phase.

It is anticipated that this role distribution, which is derived directly from the bill, may also be attractive to producers of new gas such as green gas. If these are connected to a local distribution network then with this role distribution they will encounter the fact that the registers do not permit more than one position for a supplier. By providing producers of new gas with a separate user category (GIS or GIN) in the local transmission network it is possible for GTS to identify these allocations and to attribute them to the Virtual Point Infeed (VPI). This virtual point is localised to the entry side of the entry programme.