

Framework Guidelines on Gas Balancing

A proposal by EFET¹

Summary

The most efficient way to balance supply and demand is through market mechanisms. In particular for the gas market there should be an intraday market that can be used by network users to efficiently manage their inputs and offtakes over the day. The transmission system operator should also access this intraday market when it foresees a need for residual system balancing to keep the gas pressure in the pipelines within safe limits.

The users of transmission systems should have economic incentives to bid or offer flexibility and to balance their inputs and outputs through a cash-out mechanism that uses prices from the local intraday balancing market. Users must be provided with both the information and the flexibility tools to balance their portfolios within the balancing period and thus to contribute to the efficient balancing of the system.

Imbalance charges shall be reflective of efficiently incurred costs, shall minimise cross-subsidisation between network users and shall ease the entry of new market entrants.

Article 6 of Regulation (EC) No 715/2009 on conditions for access to the natural gas transmission networks provides for the establishment of network codes, which shall cover, amongst other areas, rules on gas balancing. The Commission invited European energy regulators to draft a framework guideline on balancing in gas transmission networks, setting out clear and objective principles for the development of network codes relating to the area. These guidelines shall set the framework for development of consistent market based gas balancing arrangements across the EU. They shall help market entry, boost liquidity and facilitate the efficient and secure operation of transmission systems and contribute to the further integration of European gas markets.

EFET believes that in order to develop effective regional European gas markets and ultimately a common, pan European gas market two basic prerequisites have to be met:

- Transmission system operators shall harmonise balancing regimes and streamline structures (in particular the balancing period and the basis for calculating balancing charges, but also the calculation of line-pack and time, frequency and format of information provision) in order to facilitate cross border gas trade;

¹ The European Federation of Energy Traders (EFET) promotes and facilitates European energy trading in open, transparent and liquid wholesale markets, unhindered by national borders or other undue obstacles. EFET currently represents more than 90 energy trading companies, active in over 27 European countries. For more information: www.efet.org

- Network users must have market based access to sources of flexible gas (gas storage, gas upstream, cross border gas transport) intraday in order to be able to adjust supply-demand imbalances. Access to said sources shall not be administered (e.g. on the basis of volumes and/or capacity necessary to supply domestic costumers).

Below we outline the principles of a framework guideline on gas balancing, striving for a target model for balancing regimes in all European gas markets. While acknowledging the fact that physical specifics – particularly network design and available flexibility – will require time for some transmission system operators to implement this target model to full extent, we believe that every European network is ultimately able to meet the principles of the proposed target model. We further believe that implementing the target model in every European transmission system will lead to a natural merger of balancing zones wherever and whenever transport capacity between adjacent systems is not constrained. Regulatory assistance may then be required in ensuring there is sufficient investment in network infrastructure and in removing any barriers to the development of the most economically efficient balancing zones – including those covering multiple Member States.

This proposal contains a broad set of principles that can form the basis of a future network code on gas balancing. EFET is looking forward to engage in an open discussion with all stakeholders during the coming months on a further refinement of these principles and we are confident that this discussion will lead to a truly pan European model on gas balancing.

Guidelines – Target model

The Network code shall set out that...

1. **Primary System Balancing.** Each network user is responsible for the balance of its own system inputs and offtakes. Users may comply with this responsibility by balancing their positions either commercially, by having their imbalance cashed out at the end of the balancing period and by buying/selling gas at the virtual point, or physically, but they shall be commercially incentivised to aim collectively for the pipeline network to be physically balanced within the balancing period.
2. **Residual System Balancing.** The transmission system operator is ultimately responsible for maintaining the physical balance of the system and securing the operation of the transmission system within safe and reliable pressure margins. In the event that network users are not collectively balancing their inputs and offtakes sufficiently to maintain the ongoing safety and reliability of the network operations the transmission system operator shall take actions on the balancing market to rectify the imbalance.
3. **Balancing Period.** The balancing period is a day.

4. **Procurement of System Balancing Energy**
 - 4.1. **Integration with trading markets.** Without prejudice for provisions to cope with emergency situations, the transmission system operator shall be obliged to exclusively procure system balancing energy on a centrally cleared trading market used by other network users. This market might consist of a physical and/or locational market next to the title transfer market in order to provide the transmission system operator with the means necessary to procure system energy immediately and/or at a specific input or offtake point within the system. The transmission system operator shall be obliged to report on every physical action taken, whether location specific or not, and to publish the reasons why an action on the title transfer market was not deemed sufficient.
 - 4.2. **Procurement on spot markets.** Transmission system operators shall procure the energy they use for the carrying out of their balancing functions either day ahead or within the day of delivery.
 - 4.3. **Efficiency.** The transmission system operator shall have the incentive to minimise the costs of procuring balancing energy to the extent possible within the principles laid down in these Framework Guidelines. The respective system average price can serve as a benchmark.
 - 4.4. **Cost neutrality.** Any over- or under-recovery of balancing costs through the cash-out of imbalances shall be redistributed back to the network users on a non-discriminatory basis.
5. **Imbalance Settlement.** Network users are not obliged to balance their inputs and offtakes at the end of the balancing period physically. However, network users shall hold the transmission system operator harmless for any costs incurred in having to physically balance the system during or at the end of the relevant balancing period.
 - 5.1. **Cost reflective cash-out prices:** Prices for the financial settlement of imbalances at the end of the balancing period (cash-out) shall reflect the costs incurred by the transmission system operator in buying gas to input into the system (positive balancing energy) or selling gas to offtake from the system (negative balancing energy).
 - 5.2. **Two-price-system.** Cash-out prices shall be based on the marginal price of all sell and buy actions of the transmission system operator (system marginal price, SMP) during the balancing period or on the day ahead of it.
 - 5.3. **One-price-default mechanism.** Transmission system operators shall calculate a default system average price for each balancing period based on the volume weighted average price of all sell and buy actions in the market within the balancing period (system average price, SAP). In case the transmission system operator has taken no buy (sell) action during the balancing period or on the day ahead of it, the SAP shall replace the SMP buy (sell) as cash-out price for positive (negative) balancing energy.
 - 5.4. **Reconciliation.** Any reconciliation of imbalances after the final allocation of volumes shall be based on a neutral cost reflective market reference price.
6. **Pooling.** Network users shall be entitled to aggregate their inputs and offtakes in a balancing group. The balancing group together with an ultimate balancing responsible network user has to be registered with the transmission system

operator. The ultimate balancing responsible network user takes over the primary responsibility to balance the inputs and offtakes of all members of the group.

7. Information Provision.

- 7.1. **Principle.** In order to enable network users to take timely corrective action, the transmission system operator shall provide relevant and timely information on the balancing status of each network user (portfolio balance signal, PBS). In order to enable network users to assess the probable extent to which the transmission system operator will have to take action to balance the system and hence to assess potential cash-out and market prices likewise the transmission system operators shall publish a system balance signal (SBS or line-pack signal). The SBS shall be updated in real time as changes occur.
- 7.2. **Offtake Information:** The transmission system operator shall provide hourly offtake information for all consumers broken down to network users. The information provided shall reflect the level of information available to the transmission system operator. Where the transmission system operator does not have any within-day metering information on offtakes off the system and/or where he cannot obtain it from distribution system operators downstream he shall provide network users with end of day forecast volumes. The transmission system operator shall make these forecast volumes available to network users at least on the day ahead of delivery and well in advance of any nomination gate closure (if applicable). He shall update these as data becomes available on the day of delivery. Any calculation of imbalances shall be based on the latest information provided by the transmission system operator.
- 7.3. **Relevant offtake load profiles:** Additional to the obligation to submit day-ahead nominations of all input flows the transmission system operator may oblige network users to submit load profiles of those offtake points that are significant to the secure operation of the transmission system.
- 7.4. **Transparency on system balancing actions:** The transmission system operator shall publish cash-out prices as well as volumes and prices of every buy and sell action as soon as this information is available. Any calculation methodology for imbalance charges as well as the final tariffs shall be made public.
- 7.5. **Charging:** No charge shall be made for the provision of information under this paragraph.

Guidelines – Transitional Measures

In order to allow gas transmission systems to move from hourly or sub-daily to daily balancing periods and from long-term to intra-day procurement of balancing energy the following transitional measures may be granted by the National Regulatory Authority after a market consultation:

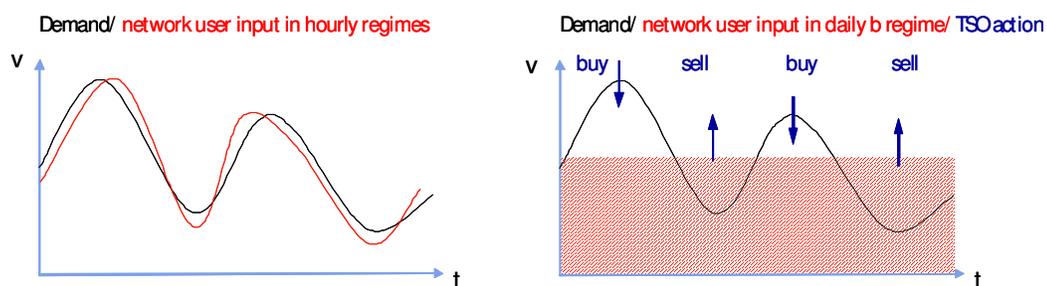
1. **Balancing Period:** In order to accommodate physical constraints in any given transmission system the balancing period may be one hour or any symmetrical multiple thereof within a day. TSOs are not required to settle imbalances at the end of every balancing period but may do so only when cumulative imbalances exceed pre-defined system parameters. The minimum length of the balancing period has to be consistent with the ability of network users to balance their portfolio in terms of information provision, renomination lead times and access to flexibility. The National Regulatory Authority shall regularly monitor the necessity of a shorter than daily balancing period and shall consult the market on this.
2. **Tolerances.** Tolerances reflecting the ability of network users to steer their portfolio shall be granted until such a time the ability of network users to balance their portfolio in terms of information provision, renomination lead times and access to flexibility is deemed sufficient by the National Regulatory Authority. It shall consult the market prior to any such decision.
3. **Procurement of system energy:** If the respective National Regulatory Authority, the transmission system operator and stakeholders deem the trading market not liquid enough to guarantee the procurement of the required system balancing energy, the transmission system operator shall have the option to procure balancing energy through a tender process on a balancing platform separate to the trading market. The term of the tender shall not exceed one year-ahead. Access to this procurement process shall be subject to non-discriminatory and transparent rules. Capacity option payments may be offered additionally to commodity exercise payments. The transmission system operator shall have the incentive to phase out any procurement separate to the trading market.
4. **Imbalance Settlement, Two-price-system:** Until the market liquidity is deemed sufficient to provide a system reference price, the SMP and/or SAP may be derived from a price basket of correlated liquid gas trading markets adjacent to the relevant transmission system as a proxy. The basket shall include the system's trading market. The price basket shall be reassessed each year by the National Regulatory Authority.
7. **Information provision**
 - 7.2. **Frequency:** If a shorter balancing period than daily is applied, the PBS provided shall reflect shall reflect the balancing period: The balancing period shall determine the frequency of information on the network user's portfolio balance or PBS. If hourly balancing is applied, the transmission system operator must provide network users with intra-hourly updates of the PBS. If the balancing period is a multiple of one hour, the transmission system operator must update the PBS accordingly.
 - 7.3. **Lead time.** Information on PBS must be provided at least 30 min plus the respective renomination lead time prior to the end of the respective balancing period.

Explanatory note

Balancing in gas transmission systems takes a number of different forms, with transmission system operators and network users each having distinct roles. In general each network user is responsible for the balance of its own system inputs and offtakes at the end of the balancing period (Primary System Balancing). Users may comply with this responsibility by balancing their positions either commercially or physically. The transmission system operator on the other hand is ultimately responsible for maintaining the physical balance of the system. He takes action if and when primary balancing is insufficient to secure the safe operation of the transmission system (Residual System Balancing).

Broadly speaking, three different forms of Residual System Balancing exist:

1. **Regular [or Operational] Balancing:** Represents the actions taken by transmission system operators to increase/decrease input/offtake flows in order to maintain system pressure and overcome short term operational stresses arising from within-day flow mismatches due to the time lag between inputs and offtakes, demand forecasting errors and short term transportation constraints. , primarily to incentivise network users to react to system line pack signals
2. **Diurnal Profile Balancing.** Gas transmission systems generally show a diurnal profile with two demand peaks and troughs respectively, arising mainly from the offtake pattern of residential customers. Transmission systems in different market areas have different characteristics as regards their topography, operating pressure, linepack, demand/supply profile, transit flows and storage availability. These characteristics determine the flexibility of the transmission system and its ability to absorb intra day mismatches in input and offtake flows within specific timeframes – which may arise, for example, due to the diurnal profile. This ability is, in other words, the systems line-pack. In hourly/ sub-daily balancing regimes diurnal profile balancing is undertaken by the individual network user. In daily balancing regimes and in networks with insufficient line-pack to cope with diurnal system requirements the TSO has to procure balancing energy either through regular intraday buy and sell actions or through the procurement of hourly products on the balancing market.



3. **Emergency Balancing:** Represents the actions taken by transmission system operators to protect the safety and integrity of the transmission system in unforeseen events such as compressor failures, sudden trips at entry/exit points or a major force majeure event.

Whereas emergency balancing clearly is outside the scope of these Framework Guidelines and the costs and consequences arising from it shall not feature in the cash out mechanism, regular [operational] balancing is clearly within its scope. The question is whether diurnal profile balancing should be covered by hourly constraints on the balancing obligation of network users or whether they should be part of the residual balancing obligation of the TSO.

EFET believes that even for networks with constrained line-pack daily balancing is possible and preferable. This is because :

1. End-of-day balancing is in general preferable to sub daily balancing as it allows network users more time and flexibility in adjusting their imbalance such that they can respond to commercial cash out incentives in the most efficient manner. Daily balancing is also less operational complex for network users and is (or should be) aligned with the timeframe for capacity sales and gas supply/trading. Transaction costs attached to end of day balancing therefore are lower and as such it can be expected to encourage new entrants and market liquidity thereby making wholesale gas markets more efficient and competitive.
2. Even with constrained line-pack daily balancing is possible: the underlying, physical flexibility does not depend on the balancing regime – it does not increase with hourly balancing as it does not decrease when daily balancing is applied. The difference between both regimes is that rather than individual network users the TSO buys and sells gas within-day. However, unlike individual network users TSOs will do so to a lesser extent and therefore more efficiently due to the system netting or portfolio effect. EFET acknowledges that unlike regular [operational] balancing TSOs will know at least parts of their diurnal profile balancing demand day-ahead and should therefore be able to use the day-ahead market next to the within-day market.
3. Moving away from sub daily / hourly balancing bears the risk of higher balancing costs for some network users – those with flexible supply sources and/or sufficient diverse portfolios to cope with hourly balancing. We believe however that these costs will be partly offset by the same shippers being able to offer flexibility to the TSO or to the market. Overall, intraday flexibility needs and balancing costs will come down though with TSOs procuring balancing gas short term and therefore more network users being able to offer flexible gas due to better forecasting abilities than on long term balancing markets.
4. Instruments like restrictions on ramp-up/down rates at system relevant input or offtake points, flow programs in combination with rescheduling charges might be necessary to effectively minimise any potential abuse of a daily balancing regime by network users. This is particularly true in networks characterised by high transit flows.

EFET believes that daily balancing with end-of-day cash out and TSOs acting on the trading market **forms ultimately the most cost efficient balancing regime in every European gas transmission system.**