Advice on the design of the Gas Transport Services ("GTS") capacity regime

On behalf of NMa/DTe

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EXECUTIVE SUMMARY

Report Scope

This report provides technical advice on three related areas of the GTS capacity regime.

1 The first is a proposal received on 30 January from the Joint Operator's Office (GTS and the regional grid operators ("RGOs")) for a new procedure for reserving GTS exit capacity at OV exit points (the connections between GTS and the downstream RGO networks). The proposal (the "JOP") responds to problems experienced by network users ("shippers") and GTS when the existing procedure is applied to the OV exit points.

2 The second relates to article 2.1.2a (TC-NGO) which was introduced in mid 2006 to address the concern that an existing shipper/supplier might be able to frustrate a consumer's decision to switch to a new shipper/supplier by refusing to transfer exit capacity rights.

3 The last area concerns article 2.3.1 (LD-NGO) which was intended to address a perceived risk that the security of supply for domestic consumers could be compromised because of a lack of transport capacity due to transit flows. The implementation of this article was suspended by a Central Court judge last October.

Context

Since 2004 GTS has been operating a third party access capacity regime known as the "entry-exit" model. This involves the complete separation of rights to input and offtake gas from the GTS network. The entry-exit model has emerged as the model which is preferred by regulators and network users within the EC. The key feature is that it facilitates the operation of traded markets in both capacity and gas, and therefore, the promotion of supply competition.

In a third party access regime it is shippers, and not the TSO, who control where gas enters (and leaves) the network. In the entry-exit model, the TSO is responsible for ensuring capacity to transport gas across the network from entry points to exit points in compliance with its capacity obligations measured at entry points and exit points. The TSO must: i) plan and implement investments in the longer term and, ii) operate its facilities successfully in the short term, across all possible gas flow scenarios.

Report Findings

Our findings in each of the three areas are summarised as follows:

1 The JOP is an excellent proposal which successfully addresses the main deficiencies of existing procedures at OV exit points. The JOP is non discriminatory; it provides: i) a consistent methodology for all gas consumers, ii) alignment of capacity allocated to GTS shippers with capacity allocated to RGO suppliers and, iii) consumer switches which are reflected in GTS capacity allocations once per month. Furthermore the proposal should be relatively simple to implement and ensures that GTS can recover its allowed revenue. The report makes suggestions about 10 issues arising from the details of the JOP, the 2 most important of which are:

- Any under booking of RGO capacity for large consumers (to avoid RGO charges), will in future also result in under booking of OV exit capacity. Under booking capacity leads to higher tariffs which amounts to cross subsidy, therefore effective preventative measures should be taken in the RGO rules.

- The JOP proposes that GTS will not correct capacity allocation errors. We are concerned that database anomalies and process errors can result in very significant invoice errors. We suggest that GTS should consider correcting all errors with a value above an agreed threshold level.

2 Consideration whether capacity hoarding can frustrate a consumer switching shipper/supplier needs to evaluate the position of large consumers directly connected to GTS, as well as loads connected to RGOs.

- Consumers connected to an RGO can only have one registered supplier at the same time, therefore, when a consumer switches supplier, the RGO capacity is automatically allocated to the new supplier. Furthermore, once the JOP is implemented, changes in RGO capacity allocation will automatically be reflected in upstream OV exit capacity allocations (once per month). This means an existing shipper/supplier cannot frustrate switching.
- Consumers connected to GTS are allowed more than one shipper so exit capacity does not automatically transfer to the new shipper. Potential hoarding problems can be addressed by these large consumers in their contracts with the shipper/supplier. Moreover, consumers are able to contract directly with GTS for their exit capacity (without requiring a shipper licence) and then allocate their capacity to one or more preferred shippers. If there is any residual concern about hoarding, we would suggest a simple change to technical codes allowing one shipper to make use of the other shipper's exit capacity booking.

Therefore, we do not see any requirement for article 2.1.2a, or similar.

3 To provide the context for consideration of article 2.3.1 (LD-NGO), our report explains the roles and responsibilities of a TSO operating in accordance with an entry-exit capacity model. Article 2.3.1 (LD-NGO) states that:

"The NGO (or GTS) reserves for security of supply, on the basis of exit capacity which is intended for connections to the domestic grids, transport capacity on the National Transport Grid"

Our technical assessment of this article is that:

- First, it is inappropriate for GTS to reserve capacity on the network, as reservation of capacity is primarily a shipper activity[1].
- Second, in an entry-exit capacity regime the TSO is required to ensure sufficient capacity to transport gas across the network from entry points to exit points in compliance with its capacity obligations measured at entry points and exit points.

[1] Except, (optionally) for entry capacity required for purposes of peak supply to small scale consumers (SSC), and relating to peak shaving LNG and short duration storage (Alkmaar).

A INTRODUCTION

The Office for Energy Regulation ("DTe") regulates the gas transmission and distribution networks in the Netherlands. The gas transmission network is owned by Gastransport Services ("GTS") and there are about 10 Regional Grid Operators (the "RGOs") which are responsible for the gas distribution networks (operating at pressures below 8 bar).

As a consequence of the introduction of the Dutch Gas Act in 2004, the regulation of GTS changed from negotiated to regulated TPA, and GTS became subject to income regulation (whereby a fixed level of allowed revenue is determined by the DTe).

GTS objected to this form of regulation and complained that the allowed revenue for their transportation activity was too low. GTS took their grievance to the Central Court (under the long term process) and, in November 2006, the court ruled in their favour with the effect that income regulation was suspended.

There is widespread agreement that GTS procedures for booking capacity do not work well at exit points with the RGO networks (known as the "OV exit points"). Since March 2006 a working group comprising GTS, the RGOs and shippers/suppliers have been meeting frequently to discuss how these problems should be rectified. On 30 January 2007, a proposal was published by the joint operators[2] (GTS and RGOs) reflecting the conclusions of the working group, except for a number of specific issues where a consensus was not achieved.

In the meantime the DTe have added two new articles in the technical codes to deal with related issues:

- Article 2.1.2a (TC-NGO)[3] - to address the concern that an existing shipper/supplier might be able to frustrate a consumer's decision to switch to a new shipper/supplier by refusing to transfer exit capacity rights.
- Article 2.3.1 (LD-NGO)[4] - to address a perceived risk that the security of supply for domestic consumers could be compromised because of a lack of transport capacity due to transit flows.

GTS objected to both of these articles in the technical codes (and a further article which is not relevant to this report) and took their grievance to the Central Court[5], (this time under the short term process). The hearing was held in October 2006 and the outcome was:

- Article 2.1.2a (TC-NGO) - The DTe qualified its interpretation of this article pending resolution of the technical codes appeal, and GTS withdrew its objection,
- Article 2.3.1 (LD-NGO) – The judge suspended the article and asked the DTe to reconsider and improve upon the article's formulation.

[2] Gezamenlijke netbeheerdeers
[3] Transportvoorwaarden Gas-LNB
[4] Wettelijke Taken LNB van Algemeen Belang
[5] College van Beroep voor het Bedrijfsleven

The DTe has retained TPA Solutions to provide technical advice regarding:

- The joint operators' proposals (the "JOP") for contracting capacity at OV exit points
- Article 2.1.2a (TC-NGO)
- Article 2.3.1 (LD-NGO)

In conducting its review TPA Solutions has reviewed: i) the JOP dated 30 January 2007 (translation provided by DTe), ii) the court transcript covering articles 2.1.2a (TC-NGO) and article 2.3.1 (LD-NGO) (translation provided by DTe) and, iii) materials in English from the GTS web site. In addition we have held three meetings with DTe experts to raise questions and discuss different aspects of the regime.

This report presents our findings. In doing this we have first of all, in **Section B, Conceptual Framework**, explained the underlying concepts which are fundamental to a third party access gas transportation regime of the type operated by GTS.

Having set these foundations of understanding in place we move on, in **Section C, GTS Situation Analysis**, to explain relevant characteristics of the transportation system, the third party access arrangements, the supply and demand position and, finally, the responsibilities of GTS for the provision of transportation capacity and network security.

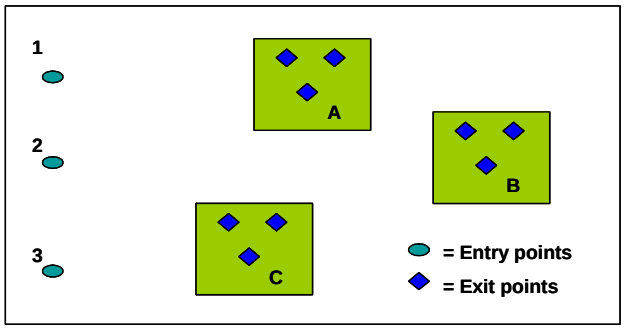
We then move, in **Section D, Areas for Investigation,** to consider the specific questions that we have been asked to address, and make suggestions for improvements for consideration by DTe.

B CONCEPTUAL FRAMEWORK

B1 Entry-exit capacity model

The entry-exit model (introduced by GTS in 2003) involves the complete separation of the input and offtake of gas from the transmission network. The service is to bring gas into the system (entry capacity) or to remove gas from the system (exit capacity).

The Entry – Exit Capacity Model

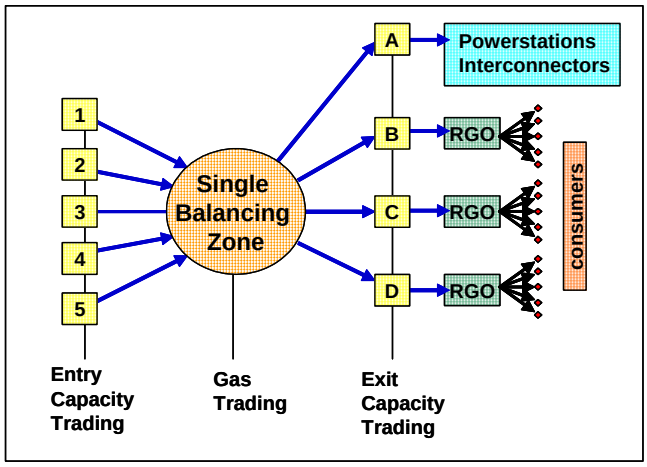


Note: Offtakes can be individual or combined into zones (A, B and C)

This means there is no defined contract path between entry and exit points. The key feature of the entry-exit model is that it facilitates the operation of traded markets in both capacity and gas:

The uncoupling of entry and exit capacity facilitates secondary market trading of capacity products (the trading of capacity rights between different shippers). For example, referring to the diagram below, any exit zone (A, B, C or D) can be supplied from any entry point (1, 2, 3, 4 or 5). However, detailed regime design can mean that exit capacity trading is only relevant at "export exit points" (or interconnectors). Where there are multiple shippers at entry points experience shows that very active markets can develop. Nonetheless, consideration needs to be given to the design of short term firm and interruptible capacity services, to avoid undermining the secondary capacity market whilst, at the same time, addressing the risk of capacity hoarding.

Secondary capacity trading and gas trading points



The model also enables any "entry paid" gas to be traded at a virtual hub(s)[6]. If the physical characteristics of the transmission network allow, it is highly desirable if there is just a single national balancing zone. In this case, trading can take place at a single "virtual hub". This promotes liquidity and supply competition compared to multiple balancing zones which fragment trade and market liquidity. It is accepted that a single balancing zone will be an inexact model of the physical network. Nonetheless, as long as safety can be assured, the inefficiencies associated with an inexact model can be less important than the benefits for competition.

A further benefit of the entry-exit capacity model implemented in conjunction with a single balancing zone is that balancing is aggregated (or "netted off") across the whole of a shipper's supply portfolio.

The entry-exit model was first introduced in the UK in 1996 and has come to be regarded as the preferred model within Europe by both regulators and shippers. However, many of the entry – exit models currently operated in Europe are hybrids – for example, multiple balancing zones (e.g. France and Germany), postalised tariffs (e.g. Denmark, the Republic of Ireland) or physical hubs (e.g. Belgium). The main alternative to the entry-exit model is known as the "point to point" model, which was adopted by GTS up until 2003.

B2 Transporter ("TSO") planning role

In a third party access regime the TSO does not control where gas enters and leaves the network. There may be considerable divergences between the "commercial flow" and the "physical flow" of gas. For example (referring to the "Secondary capacity trading and gas trading points" diagram in section B1 above) a Shipper may bring gas into the network at entry point 1 for delivery to exit zone D (the commercial flow), whereas the only gas physically flowing to exit zone D is coming into the network at entry point 5.

It is the responsibility of the TSO to manage these differences and comply with its obligation to maintain the physical balance of the network and its responsibilities to firm capacity holders. To do this the TSO has to determine, from system planning and related information, the variations in gas flow that can be expected at each entry point and exit point. This information enables the TSO to work out if it expects to be able to operate successfully across all foreseeable circumstances.

In fact, changing patterns of gas flow across the network may mean the TSO needs to invest in additional capacity (in terms of pipelines and/or compression), just in order to continue to meet its existing obligations. These supply and demand trends need to be anticipated in sufficient time for the TSO to plan and implement the necessary investments. Incremental investment may also be complemented by the acquisition of commercial tools to enable the TSO to fulfil a "residual balancing" function.

[6] In the Netherlands this is the TTF

The incremental expansion of national transmission networks in Europe is normally decided upon by the TSO with little or no commitments on the part of shippers[7] (known as "common carriage"). Therefore, the TSO must largely depend upon information about supply developments provided by shippers, suppliers and connected operators to inform its network investment decisions. By comparison US interstate pipelines and European transit pipelines are able to rely on long term contracts with shippers to underpin investments (known as "contract carriage").

UK experience is that the entire planning process relies on questionnaires and consultations leading up to a "10 year statement" published annually, and then reviewed and challenged at industry forums and one-to-one meetings. Even then, with the added benefits of investment signals from long term capacity auctions, planning still relies heavily on the skill of the planners and their gathering of intelligence. The regulatory and incentive regime also influences the approach taken.

The planning process can be fraught with difficulties and experience has shown the value to the transmission company of developing relationships (formal or otherwise) with all major players, e.g. importers, power companies, connected operators etc.

Some of the potential difficulties that can be experienced are:

- Some short term market players provide information based only on their expectations to use the network in the short term,
- Double-counting of prospective requirements can be a major problem as competition develops, and rigorous cross check processes are necessary to try to eliminate it,
- Requesting maximum and minimum values for supply and demand can be a bit misleading, unless this is qualified by the requirement to specify when the maximum and minimums occur e.g. loads with counter cyclical behaviour,
- Having no financial consequences associated with the provision of data raises the question of how reliable the information will be anyway, unless backed up by an enforceable licence condition,
- Shipper forecasts may be inconsistent with supply information provided by producers and/or demand information from local distribution companies,
- Consistency of methodology used by different shippers may also be an issue; particularly with respect to demand forecasts for emerging new supply areas.

To perform the planning function, it is important that the TSO is seen to be independent and not engaged in competing market activities. This enables greater access to market sensitive information and it means the planning information published by the TSO can be helpful to promote transparency in information provision which, in turn, can be expected to promote supply competition.

Attempting to move from a planning regime to a more "user commitment" based investment model poses a considerable dilemma. The very existence of planning criteria can tend to undermine migration to the user commitment approach, since it is known that the TSO will probably be required to invest even in the absence of long term capacity booking. However,

[7] Although the EU Gas Directive and Regulation 1775, does encourage arrangements to provide the TSO with an economic investment signal

relying exclusively on long term capacity bookings can represent a significant "leap of faith" for those regimes that have not traditionally operated on a "contract carriage" basis, and may even tend to undermine the drive for competition in gas supply.

B3 TSO security obligations

TSOs are responsible to ensure their networks have sufficient transportation capacity and are operated safely and reliably. All aspects of safety and reliability are absolutely critical for the gas industry as a failure of supply or infrastructure can be very costly in economic and social terms. Furthermore, a gas supply failure within local networks serving domestic premises directly exposes potentially large sections of the population to the risk of explosion. Electricity fails to safety, gas to danger.....

In the context of a third party access regime we would expect a TSO to have, as a minimum, the following roles:

- The provision of sufficient capacity to meet projected peak [day] demand,
- Where shippers in aggregate do not balance, the performance of a "residual balancing" function to buy or sell (or otherwise procure) gas to maintain pressures within safe operating limits,
- A planning function to forecast trends in supply and demand and publish information for the benefit of all market participants,
- In a gas supply emergency, to fulfill its obligations within the procedures that have been agreed in order to maintain system pressures and restore supply as quickly and safely as possible.

The capacity provision role would normally require some agreed form of public policy objective, perhaps expressed as a probability of avoiding failure due to lack of installed capacity. However, in a strict contract carriage transmission regime, it may be that the role of the TSO is simply to meet its explicit contractual commitments, with public policy security criteria only applying to local distribution companies (LDCs).[8]

In addition, the TSO may be given a role to ensure security in the supply of gas to vulnerable consumers. This is explained below.

It is generally recognised that large scale commercial and industrial consumers are capable of making their own choice of the level of security which they are prepared to pay for. Gas usage by larger consumers can be monitored in near real time and supply can be relatively easily and safely curtailed by the TSO, supplier or the consumer themselves.

The choices open to large consumers may involve types of lower priced interruptible capacity (where there is shown to be an economic benefit due to reduced investment or the connection of alternative loads) and/or supply contracts which can be curtailed when the spot market price or aggregate network demand exceeds specified thresholds.

On the other hand, for domestic and smaller industrial/commercial consumers it is generally considered impractical and/or economically inefficient to offer individual choice concerning the level of supply security. For example, daily measurement would be too expensive, and/or it would not be feasible to isolate such consumers from the network in the event that

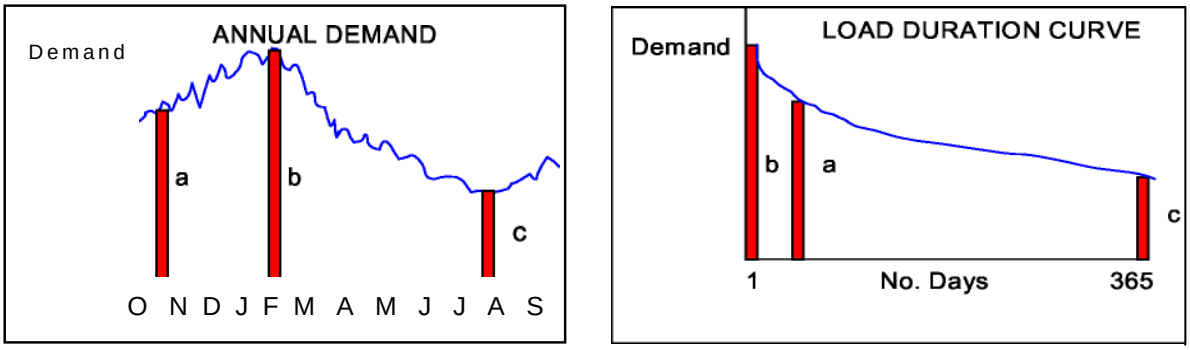
[8] This would be typical for interstate pipelines in the US, whilst the LDCs who largely book transmission capacity do so in the context of their own public policy criteria for security.

their supplier had agreed a lower level of security. For these consumers it is reasonable that a common security standard should apply, at least within a shared network.

If this conclusion is accepted, the question is then how to design and assure a common security standard for smaller consumers. This can be thought of as having two components, i) the provision of sufficient transportation capacity and, ii) the sufficiency of gas supply.

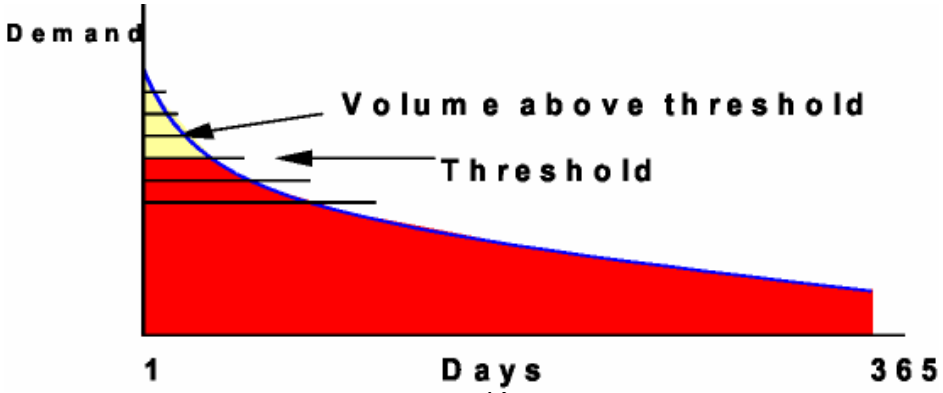
The consumption of gas by smaller consumers in Northern Europe is largely for space heating and is highly weather dependent. The correlation between weather and gas demand has been recorded and analysed over many years.

A load duration curve is widely used to understand the variations in demand (or load) over the course of the year. The daily demands are ranked so that the day with the highest demand becomes day one and the day with the lowest demand becomes day 365, and a curve is constructed (see below). Thus any point on the curve corresponds to a demand level and a number of days on which that demand level is equalled or exceeded in the year.



The definition of the mathematical relationship between weather and demand enables the derivation of load duration curves for different weather conditions. In defining security requirements there are generally two measures:

- Derivation of a "severe weather load curve" such that the volume of demand above any given demand threshold would only be exceeded very rarely (for example once every 50 years). This measure is used to determine the volumes of medium and short duration storage and/or supply interruption that need to be provided as insurance against severe weather conditions
- Derivation of a peak day demand level that would only be exceeded very rarely (for example, once every 50 years). This measure is used to determine the design capacity of the transmission network.



The occurrence of extreme weather is, by definition, a rare event. It is expected that many years may pass before the next occurrence. The concern is that reliance on the market to provide exclusively for such a rare event would create a significant risk of moral hazard or "free rider" behaviour – for example, suppliers competing with one another for market share in the short term may not book sufficient transportation capacity and/or storage volumes to cover security requirements in the longer term. In this case:

- Although the TSO provides sufficient capacity for the peak day, some shippers under book capacity, meaning the transporter has to increase tariffs to recover allowed revenue. In turn this leads to cross subsidies.
- If some shippers book insufficient storage volumes, this may result in inadequate storage investment and storage volumes. Ultimately, this also results in cross subsidies (see paragraph D3.4) between shippers and/or consumer categories.

These types of consideration, and the difficulty to objectively police whether an individual supplier has taken adequate precautions, have led to a number of methodologies being adopted, all of which aim to ensure security of supply for smaller consumers.

In one model the TSO is given responsibility to meet the incremental supply requirements of smaller consumers should the temperature fall below a pre determined level. To fulfil this responsibility the TSO provides sufficient transportation capacity and also procures storage services. The cost is recovered by means of a charge to the suppliers of small consumers. In summary, this is the approach taken in the Netherlands.

In a second model, an amount of storage capacity is allocated to those shippers who are supplying smaller consumers. A method of sharing out the storage capacity between shippers is developed based on the size and nature of the customer portfolio. Rules are needed for reallocation of storage capacity as shippers gain or lose market share. There should also be a storage monitoring process to ensure that storage space is filled in time and to manage stock depletion over the course of the winter season. This is in essence the model adopted in Italy.

In a third model, any shipper can purchase storage capacity. There are rules to ensure any unused storage capacity rights are available to the market on an interruptible basis. The TSO monitors storage stock levels, if necessary curtailing the withdrawal of gas from store, to ensure there is sufficient gas in store to meet the requirements of small customers in a severe winter. This is the model currently adopted in the UK.

B4 Emergencies and curtailment

TSOs should have well established procedures to ensure that circumstances of a gas supply emergency are managed safely. In circumstances where a TSO experiences a serious shortage of gas supply because of, for example, severe weather conditions, a supply failure or major infrastructure failure, these procedures are activated.

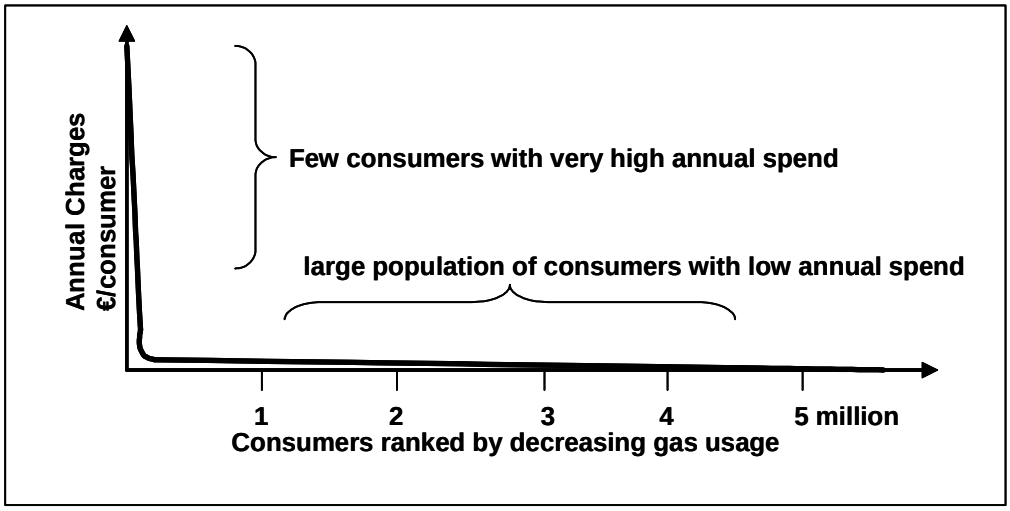
There are many examples of these procedures from gas industries around the World. Most share the absolute priority placed on safety and the maintenance of supply to smaller consumers and vulnerable loads, although some place rather more emphasis on maintenance of electricity production.

A curtailment hierarchy is usually followed involving curtailment of the largest loads on the system first; as these are the loads that can be taken off the network most quickly and safely and also have the largest impact in terms of demand reduction. Although safety should take priority in the selection of loads to be curtailed, there may be rules to share curtailment fairly, where safety allows. For example, if the TSO needed to interrupt 20% of overall firm capacity, this same % reduction could be equally applied to large national loads and firm interconnector export flows.

B5 Consumer characteristics

There can be major differences in the characteristics of consumers attached to a gas network.

There can be millions of small domestic and commercial consumers who are spending a few hundred €/year on gas transportation and distribution services. The administration of small customers needs to be delivered at lowest cost. This can be a focus of regime design but, most importantly, is achieved through automation using large scale databases and IT systems. Changes to the IT system are usually costly and take a long time to implement. It is often not practical for the TSO to offer bespoke services for small customers and service differentiation is normally provided by suppliers.



At the other end of the scale, there will be a few very large consumers who may be spending in excess of €1 million/year on gas transportation. These consumers are sophisticated and can request bespoke transportation services in any number of different areas. For example, the ability to profile capacity requirements, to be supplied by more than one shipper at the same time, or to reduce renomination lead times for the notification of changes in gas consumption. Many of these bespoke services can be provided by "manual workaround" (e.g. spreadsheets) without adapting the main IT system. The costs are often minor compared to the size of the consumer and can be charged for separately.

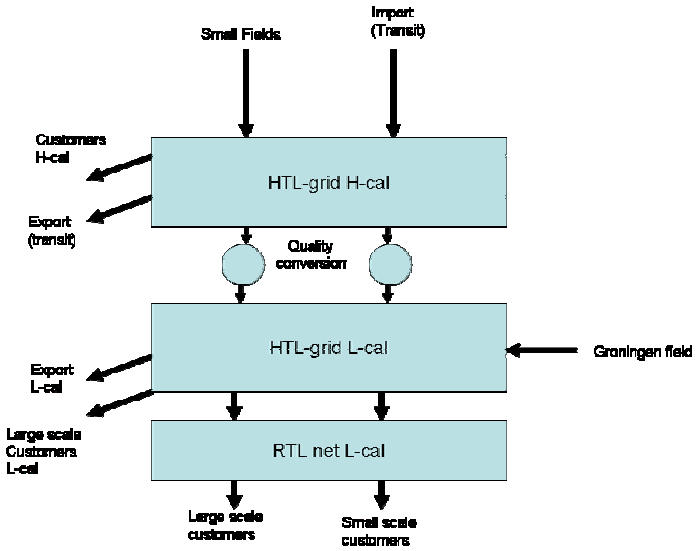
C GTS SITUATION ANALYSIS

C1 Network characteristics

The Dutch national gas network consists of one network for high calorific value gas ("Hi-cal") and a second network for low calorific value gas ("Lo-cal"). The Lo-cal network is used to supply 95% of small consumers in the Netherlands and for export to defined regions of Germany, Belgium and France.

The Hi-cal network accommodates gas from the Dutch "small fields" and imports from Norway and Russia. Hi-cal gas is used both for export and for local Hi-cal customers. The rest is converted to Lo-cal gas by the addition of nitrogen, and used for the base load in the Lo-cal system.

Diagram of the GTS network



C2 Third party access regime

Gas transportation is contracted on basis of the entry-exit model. At the present time capacity at all GTS entry points and exit points is booked by shippers on a "first come first served" (FCFS) basis. Capacity is defined hourly and shippers are free to book it daily, monthly or annually, including multiples thereof. Where capacity at a particular point is scarce, there can be an incentive for shippers to make long term bookings (which can be for many years). Shippers are responsible for the amount of capacity they book and a capacity overrun charge is applied should they be allocated a quantity of gas at a point which exceeds their booked capacity.

Capacity charges vary according to the duration (daily, monthly or annually) of the booking, with considerably higher charges applied for shorter bookings. Total charges are capped at the annual tariff. The methodology is designed to limit the benefits from profiling capacity to prevent under recovery of allowed revenue.

GTS operates both the Hi-cal and the Lo-cal network.. Shippers can purchase blending capacity to convert Hi-cal gas to Lo-cal by adding nitrogen. Lo-cal is not "physically" converted to Hi-cal anywhere on the network, however GTS may in future provide a "commercial" conversion service. Shippers are responsible for balancing their inputs with their outputs and, subject to an allowed tolerance, charges are applied to hourly and daily imbalances.

There is a virtual trading point known as the TTF which is a title transfer facility allowing shippers to trade Hi-cal gas. A shipper wishing to sell gas has to purchase TTF entry capacity and a shipper wishing to buy must purchase TTF exit capacity. Trading partners must then submit matching sale and purchase nominations. If all details match, the trade is registered automatically and title to the gas is amended.

The system integrity is the responsibility of the Central Control Unit (CCP). This unit monitors the pressure of the gas at points on the grid. When the pressure in the system is out of range, balancing action is taken by the CCP[9].

C3 Transport capacity and supply position

The minimum capacity of the network is determined by the firm load characteristics of the connected consumers. There are three elements:

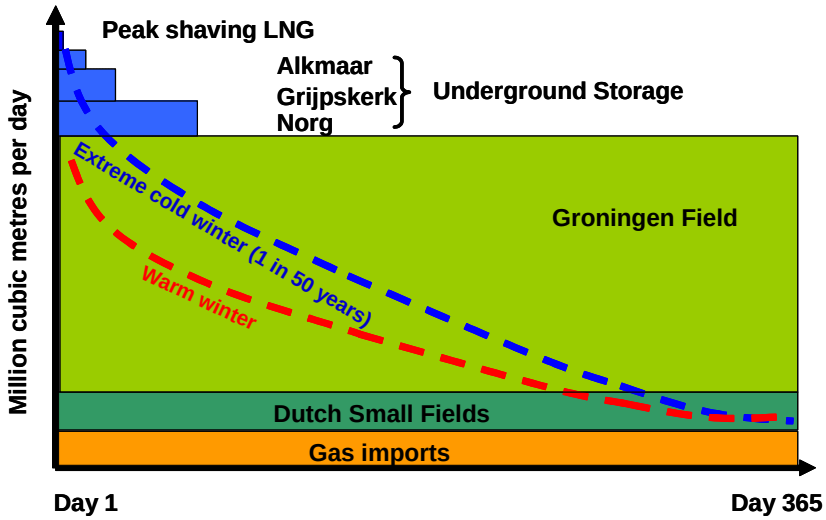
- The capacity required for large scale consumers (LSC) is based on the firm capacity booked at the consumer's offtake point,
- The capacity required for small consumers (SSC) is the peak day capacity, which is derived statistically, as the amount of capacity which would be required if the effective temperature dropped to -17˚C.
- The firm capacity booked at export exit points (or interconnectors)

In calculating the overall transportation capacity requirement, adjustments are applied to reflect the diversity principle that not all consumers offtake gas at maximum rates at the same time.

It is not sufficient for GTS to just ensure that sufficient capacity is available for the peak day; GTS also has a role to advise the market about the sufficiency of supply at every point along the load duration curve (see diagram below). To carry out this function GTS must understand the characteristics of gas supply contracts and storage facilities to ensure that gas supply is adequate for circumstances of a severe winter.

[9] The CCP is an operational arm of GTS

Load duration curve showing supply sources (approximate)



The blue line on the load duration curve shows the total forecast demand of all firm loads on the network assuming the weather experienced is comparable to the coldest year in a 50 year period. The red line is the forecast demand of all firm loads assuming the weather experienced is warmer than average compared to the same 50 year period.

At the top of the load duration curve, the peak shaving LNG facility can deliver gas at the maximum rate for a period of only 60 hours, after which supply is completed exhausted and cannot be replaced before the next winter. Moving down the load duration curve, there are the three underground storage facilities which can deliver gas at their maximum rated capacity for periods between 14 days and 70 days. We understand these storage and LNG facilities would be required in a severe winter, although in a warm winter, or a winter of average severity they may see little or possibly no use.

In next position, down the load curve, is the giant Groningen gas field. Although Groningen can be operated all year round, Dutch energy policy is to conserve Groningen reserves as much as possible. In view of this, Groningen does not produce in the summer period when gas is sourced principally from Dutch small fields, which are operated at a high load factor throughout the year, and from imports.

In recent years winter conditions have been quite mild and the Groningen field has met peak demand requirements with little or no need to withdraw gas from storage. In order to create the space needed to inject excess supply in the summer, gas is often withdrawn from storage during the spring, which also allows the Groningen field to be shut down for summer rather earlier.

C4 Capacity, capacity planning and security responsibilities

We base our understanding of the relevant GTS obligations upon translations of Gas Act (GA) provisions made available by the DTe[10]. The articles are provided in the Appendix (in Dutch). In summary:

C4.1 Transportation capacity

Article 10a, paragraph 1(g) (GA) states that GTS must *"put in place measures to ensure the availability of enough transport capacity, such that transport security is delivered"*

Article 3.1 (LD-NGO), goes on to say that capacity must be provided both *"in the short term and the long term"* by means of the *"capacity expansions in the capacity plans".* GTS realises short term objectives by "*distributing capacity in an objective, transparent and non – discriminating way*". If capacity is not used, GTS must offer it according to *"use it or lose it rules" or "UIOLI"*. UIOLI rules are set out in article 2.4.1 (TC-NGO).

Article 8a of the Gas Act states that rules can be set by an *"Order of the Council"* to address any concerns affecting reliability or safety. Article 9 (GA) goes on to say that if a Grid Operator ("GO") – which includes GTS - is operating in a way that insufficiently guarantees safety, reliability and efficiency, the Minister of Economic Affairs can require that measures are taken to rectify the deficiencies.

C4.2 Capacity planning

Article 8 (GA) states a GO must ensure a control system to ensure sufficient capacity for the total requirements for gas supply.

Article 8 goes on to say the GO must submit (and publish) a document making a reasonable case that the GO has made sufficient capacity available to meet the total requirements for the transportation of gas

The emphasis on "*total*" is noted and presumably means the capacity requirement relates to all (firm) demands on the network, and not just to smaller consumers.

C4.3 Security of supply

There are two very similar articles dealing with security of supply for smaller consumers; they are Article 2 of the Decree on security of supply and Article 2.1 (LD-NGO). In summary, GTS must reserve transportation capacity and procure gas supply in order to meet the incremental supply requirements of small consumers to the extent that the effective temperature drops below -9˚C, and down as far as -17˚C. An occurrence of -17˚C is expected to occur on only one day in a 50 year period. The costs incurred by GTS are recharged each month to the suppliers in proportion to their market share of smaller consumers. The market share information is provided monthly by the Regional Grid Operators ("RGOs").

[10] GTS residual balancing role is not covered as it is considered to be outside the scope of this report

C4.4 Emergencies and curtailment

Article 51 of the Gas Act covers the development of “an action plan for emergencies”. The MEA is responsible, in conjunction with the Grid Operators and shippers, for developing this action plan and, it is understood that this process is ongoing at present. In the meantime, it is expected that GTS and the RGOs will already have well established and detailed emergency procedures in place which are similar to the ones described in section B4 (although we cannot confirm this as the arrangements are not in the public domain).

D AREAS OF INVESTIGATION

D1 Contracting capacity at OV exit points

OV exit points are the connection points between GTS and the downstream RGO. The current approach to capacity booking, described in C2, has resulted in difficulties for both GTS and shippers when applied at OV exit points.

A special feature at OV exit points is that part of the exit capacity is reserved by GTS itself to meet its responsibility to make available incremental supply for SSC if the effective temperature drops below -9˚C (all SSC customers offtake from the RGO networks). So we have a hybrid model whereby shippers are "relied upon" to book capacity commensurate with -9^{o}C, and the TSO looks after the rest.

D1.1 Existing regime deficiencies

A key shipper concern is that when a customer in the downstream RGO switches to a new shipper, the existing shipper is left with GTS exit capacity that it does not need. (a shipper benefiting from switches can generally obtain extra capacity as, we understand, there is generally excess capacity available at OV exit points).

The GTS concern is that some shippers under book capacity leading to under recovery of allowed revenue. In turn this leads to overall tariff increases, amounting to cross subsidy amongst shippers.

Under booking also means that the aggregate quantity of capacity booked at an OV exit point may be insufficient for GTS to supply peak gas where the effective temperature drops below -9˚C (although this would not detract from physical capacity availability).

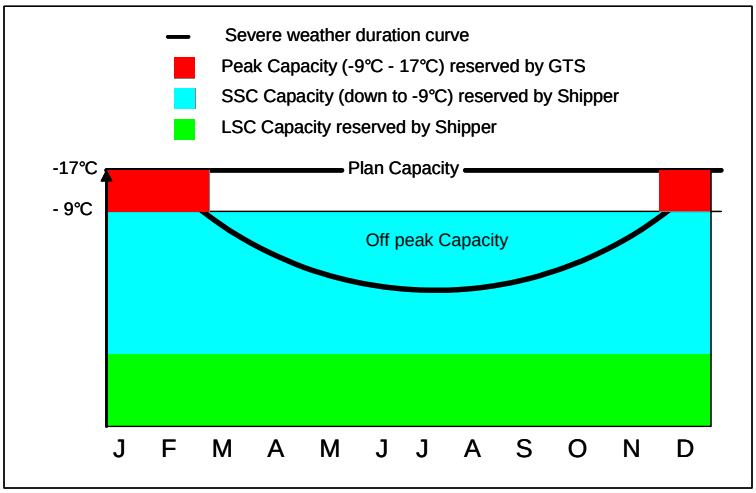
Furthermore, if GTS seek to recover the shortfall in their allowed revenue (due to under booking) by selling exit capacity, to incremental LSC and/or transit loads, this risks compromising security of supply (based on our understanding that the network is constrained at present).

D1.2 Proposal for a revised allocation methodology

Since March 2006 GTS, the RGOs and shippers have been meeting frequently to develop proposals to improve the methodology for booking exit capacity at OV exit points. On 30 January 2007, the JOP was presented to the DTe.

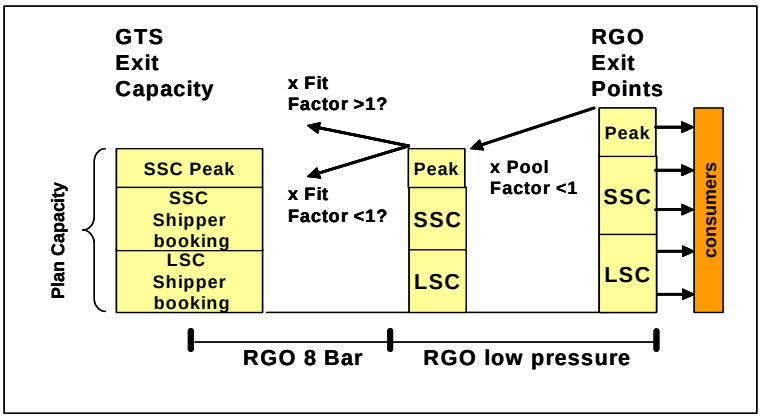
The JOP can be explained as follows:

- Before each year GTS determine the "Plan Capacity"[11] for each OV exit point by reference to the characteristics of the downstream load.



Note: Plan Capacity is defined as the maximum mcm/hour per OV exit point

- On the 15th of each month during the year, the RGO notifies GTS which consumers are registered to which shippers together with the load characteristics of each consumer. Each SSC is categorised within one of several profile bands to reflect seasonality, whilst LSCs have a capacity booking which remains constant throughout the year.
- GTS applies a pool "diversity" factor to the monthly capacity data to recognise that consumers do not use their capacity at the same time. The pool factor is always less than one.



[11] We understand Plan Capacity is determined by reference to the capacity requirement of the downstream consumers, (as opposed to the physical design capacity of the OV exit point), and is a constant amount throughout the year, although the peak capacity element is only booked by GTS for three months, between December and February.

- The RGO capacity data adjusted by the pool factor should equal the Plan Capacity +/- changes in consumer connections since Plan Capacity was determined [+/- errors].
- GTS then apply a "fit factor" which can be less than or greater than 1 as a final adjustment so the RGO data reconciles with the Plan Capacity.
- GTS then uses the data to apportion the Plan Capacity amongst the shippers at each OV exit point, and invoice them accordingly.
- The peak capacity element (for between -9˚C and -17˚C) is retained by GTS and invoiced to SSC suppliers using the existing separate procedure.

D1.3 Benefits of proposal

The benefits of the JOP are considerable:

- The methodology is fair and non discriminatory because:
  - It provides consistency as all RGO connection records are administered by a central agency, using a common process and methodology to categorize and assess load characteristics,
  - OV exit capacity allocations will be aligned with the aggregate of the capacities registered to a shipper's portfolio of consumers within each RGO,
  - OV exit capacity allocated to each shipper is updated each month to reflect the consumer switching that has taken place over the previous month,
  - "Free Rider" behaviour associated with capacity under booking will be eliminated; this will reduce cross subsidies and facilitate competition (assuming rules are introduced to eliminate under booking within the RGO regime – see D1.4.4).
- The methodology should be relatively simple to implement as it is based on the existing RGO connection records. It is expected to simplify shipper activities, as shippers will no longer need to determine OV exit capacity requirements for themselves. (except for LSC capacity within the RGO networks)
- GTS can be certain of recovering its costs associated with OV exit points. There is no longer a requirement for capacity overrun charges at OV exit points.

D1.4 Review and challenge of OV exit capacity proposals

When considering any major regime change it is important to carefully consider the possible downsides and unintended consequences of proposals. The following paragraphs consider a variety of potential issues, including those already raised by shippers.

D1.4.1 Allocation of peak capacity

The JOP does not impact the arrangements for GTS to reserve exit capacity to cover circumstances where the effective temperature drops below -9˚C. Presumably the booking of this peak capacity could be added to the capacity amounts allocated to SSC shippers, such that GTS would not need to reserve any OV exit capacity itself.

Although this would streamline the OV exit capacity booking process, this benefit may be outweighed by disruption to existing administrative processes and the requirements to amend legislation.

D1.4.2 Alignment of timescales with RGO switching rules

Under the RGO rules consumers can switch supplier with effect on any day of the month, however switches are only reflected in the allocation of OV exit capacity to GTS shippers once per month[12].

If an RGO supplier loses a consumer on the 16th of the month, the existing upstream GTS shipper will be obliged to pay for the associated OV exit capacity until the end of the month.

Conversely, if an RGO supplier gains a consumer on 16th of the month, the new upstream GTS shipper will avoid paying for OV exit capacity until the 1st of the following month (with no capacity overrun charge applicable)

This discrepancy has not been highlighted by shippers who may feel that the gains and losses will cancel out over time. Furthermore, the benefits of the daily adjustment of OV exit capacity allocation are offset by increased complexity and administration cost.

D1.4.3 Accuracy of RGO connection records

The JOP proposes that capacity allocations errors will not be corrected for.

Database anomalies can be a major cause of invoice errors and disputes. In the Netherlands there are 6 million gas consumers. A database of this size may give rise to very high volumes of invoice errors which may require costly manual intervention to resolve. Where the amounts involved are small this can be uneconomic, particularly for the indirect effects of resolving errors on other shipper's allocations. Nonetheless, some errors may well involve very significant amounts and it is difficult to justify refusing to make corrections in these circumstances. Perhaps a compromise could be reached whereby GTS would agree to correct errors with a value above an agreed threshold level.

D1.4.4 Under booking RGO capacity

The JOP states an attempt will be made to re-introduce an overrun charge for a shipper who exceeds booked capacity in the RGO. The obvious concern is that (in future) under booking RGO capacity will not only enable a shipper to avoid RGO charges, but will also result in avoidance of OV exit capacity charges (where no overrun charge will apply). Ultimately, this will result in higher tariffs and cross subsidies amongst RGO suppliers and amongst GTS shippers.

[12] It is noted that the responsibility for nominations, allocations and balancing will need to be reflected immediately a consumer switch occurs.

Fortunately this problem does not affect SSC[13] and is confined to LSCs. It is expected that a capacity overrun charge could be designed to provide an effective booking incentive.

D1.4.5 Tariff methodology

The methodology envisages different monthly fractions for LSC and SSC which will be determined and published in advance of the calendar year. There are no other details provided so it is not possible to assess the methodology.

We would expect the tariff methodology to recognize the assumption that GTS will not have any exposure to under booking (or revenue under recovery) at OV exit points. This provides an opportunity to introduce a very simple and transparent tariff methodology (based on Plan Capacity allocations) for the benefit of everybody.

D1.4.6 The Pool Factor

The pool factor is a statistical adjustment to take into account that consumers' individual peak requirements do not occur simultaneously. The pool factor is always less than 1 as the aggregate transportation capacity required is less than the sum of the capacities allocated to each consumer. This relationship holds true even when severe weather conditions are experienced, although different types of consumer do exhibit different pooling (or diversity) characteristics.

The JOP explains 3 different approaches to the pool factor that were considered by the working group; it is noted that the working group failed to agree on the best approach. The three approaches are:

- Option 1: The socialization of the pool factor, which means a single pool factor for all shippers and all types of consumer:

  Our comments: This is the simplest approach. The differences in consumer characteristics downstream of each OV exit point would not be taken into account so, presumably, an exit point specific adjustment would have to be made using the "fit factor". This approach provides a "level playing field" for shippers but is perhaps not fully cost reflective and might therefore result in some cross subsidies between different types of consumer.

- Option 2: The use of one pool factor per shipper, per OV exit point, taking into account the number of LSC (downstream of the OV exit point) in that shipper's portfolio:

  Our comments: We assume this method is based on aggregating the pool factors applying to each category of a shipper's consumers. SSCs are already categorized into [3] profile groups and a pool factor could be set for each group. A similar method could be used to categorize LSCs so that only a relatively small number of

[13] Because SSC are not daily metered, the RGO determines the capacity attributed to them and the applicable seasonal profile; the shipper has no choice in the matter. In recent years the lowest recorded effective temperature has been well above -9˚C so, if shippers decide their own booking, they might have a significant incentive to under book.

pool factors would be required in total. Implemented in this way, Option 2 can be cost reflective and provide a level playing field amongst shippers.

- Option 3: The use of one individual pool factor per end user:

  Our comments: It is not necessary or practical to have a pool factor for every consumer- (6 million).

The JOP recommends Option 2 on the grounds that it is practical, prevents cross subsidy and enjoys more support than the alternatives. We support Option 2 assuming it is implemented in the manner we have described above.

D1.4.7 Fit Factor

The "fit factor" is an adjustment between:

- (1) - the Plan Capacity determined by GTS before the year, presumably by reference to the RGO connection records and,
- (2) - the aggregate capacity from monthly data provided by the RGO from the connection records (after application of the pool factor)

In principle, the only difference between 1 and 2 relates to: i) the consumer additions and isolations which have occurred since GTS determined the Plan Capacity (which is carried out before the beginning of the calendar year) and, ii) errors or discrepancies.

The fit factor is applied to adjust the monthly data so that the aggregate of the monthly data is made equal to the Plan Capacity. The fit factor is expected to be close to 1, and will (generally) be:

- greater than 1 if there has been an overall reduction in the connected load since the calculation of Plan Capacity
- less than 1 if there has been an overall increase in the connected load since the calculation of Plan Capacity

The fit factor ensures that GTS recovers its allowed cost at each OV exit point. It means that GTS is revenue neutral to: i) the effects of data errors in the RGO connection records, ii) any errors in its own calculations, iii) capacity under booking by suppliers under the RGO regime and, iv) any changes in the connected load.

These positive and/or negative effects (unless corrected for) are spread amongst shippers as increases/decreases in OV exit capacity charges.

A weakness with the "fit factor" approach is that GTS do not have an incentive to avoid process errors, particularly as they are not required to make any corrections (see D1.4.4)

D1.4.8 Classification of GKV consumers

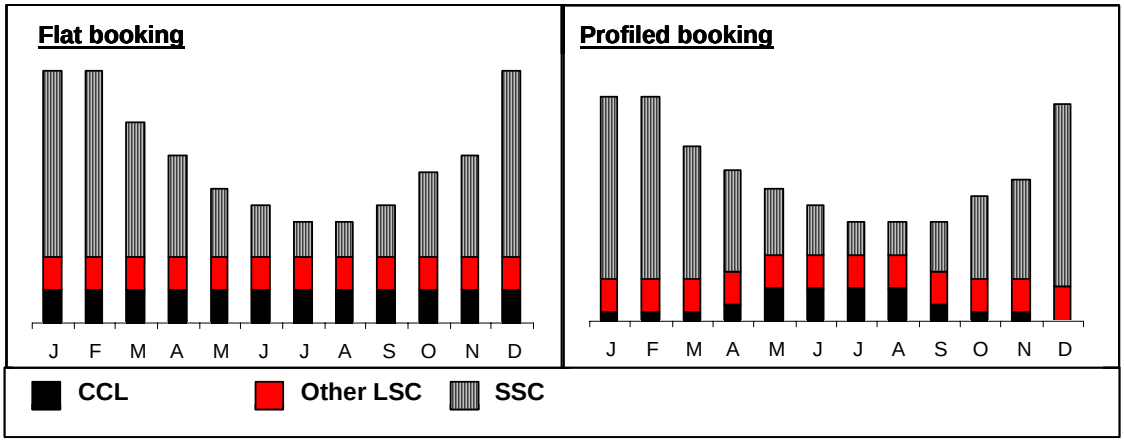
GKV is a category of SSC where daily meters are fitted. There are two opposing opinions for the treatment of GKV. Some parties favour treating them as LSC and other parties favour treating them as SSC. The JOP recommends treating GKV as SSC on the grounds that this is the most practical solution. Based on the very limited information available to us, we

would not expect treatment as a LSC to be cost effective, unless an additional charge was made.

D1.4.9 Treatment of counter cyclical loads ("CCL")

The RGO rules do not allow LSC to profile their capacity requirements. LSC are generally process loads which do not vary seasonally, in which case a flat capacity booking is reasonable. However the VEMW (large consumer association) has complained this is unfair to CCL, which have peak gas usage in the summer.

If CCL were allowed to profile their capacity booking, this would reduce the overall Plan Capacity requirement – see diagrams below.



Under the JOP, overstatement of Plan Capacity due to CCL would be adjusted using the LSC pool factor; this amounts to a benefit shared across all LSCs as opposed to being targeted correctly at CCL.

Generally speaking the added complexity to offer a more cost reflective service should be appropriate to the scale of the problem. The impact on a CCL with a large annual spend could be considerable. If there are only a very limited number of large CCL, it may be possible for RGOs to offer a capacity profiling service using a "spreadsheet workaround" - as opposed an expensive long lead time amendment to a large IT system (see also Section A5). However, it might be discriminatory if this service was not offered to smaller CCLs.

D1.4.10 Direct entry of gas into an RGO network

The working group also sought clarification about the treatment of gas entering the RGO networks directly (bypassing the GTS system), sourced from waste treatment plants. The JOP states that this is accounted for in the proposed allocation method [meaning?]. In the absence of further information we would only comment as follows - any alternate source of gas would need to be relied upon to enter the RGO network in severe weather conditions to be taken account of within the calculation of Plan Capacity.

D2 Transfer of exit capacity bookings

Concern has been expressed about the risk that an existing shipper/supplier might be able to frustrate a consumer's decision to switch to a new shipper/supplier by refusing to transfer rights to GTS exit capacity. This concern extends to all consumer types, either LSC directly connected to the transmission system, or SSC and LSC consumers within the RGOs.

Two anti hoarding measures have already been introduced:

- LSC who are directly connected to the GTS network are able to contract directly with GTS for exit capacity. The LSC can then transfer its exit capacity rights to a shipper [for a specified period] or become a shipper itself.

- In June 2006, the DTe introduced article 2.1.2(a) (TC-NGO) which states:

  "Exit capacity will be held by the TSO in favour of the connection behind the exit point. The exit capacity, contracted according to art 2.1.1, will be transferred to the shipper for the time that the shipper supplies the consumer behind the connection that the exit capacity is allocated to. In case the shipper switches of supplier, the exit capacity that has been allocated to the connection will be transferred to the new shipper".

  It is understood that GTS object to having to "hold capacity in favour of a connection". During the court proceedings in October 2006, the DTe offered to interpret article 2.1.2a (TC-NGO), pending a definitive judgement on the appeal, as obliging the new shipper to contract for exit capacity having demonstrated to GTS it is acting at the request of the consumer.

In D2.1 below, we suggest an alternative anti hoarding measure for LSC directly connected to GTS, and in D2.2 we review the position for consumers connected to the RGO networks in the light of the JOP:

D2.1 Consumers directly connected to GTS

Ideally, the LSC would ensure, in its supply contracts, the basis on which capacity should be transferred between its shipper/suppliers.

The existing GTS rules allow a LSC to have more than one shipper/supplier at any one time; therefore it is not possible to simply reassign exit capacity when a new shipper is registered to the consumer.

As an alternative (or in addition) to the existing anti hoarding measures, a rule might be introduced that GTS would not charge a capacity overrun unless the aggregate of the capacity booked by shippers at an exit point was exceeded. If this was the case, a new shipper could supply without holding any capacity of its own until such time as the previous shipper agreed to transfer its capacity booking or the booking expired.

D2.2 Consumers connected to an RGO

As it is only possible for one supplier to be registered to any one consumer premises (either LSC or SSC) within the RGO rules, the RGO switching process involves automatic transfer of the capacity recorded in the RGO connection records to the new shipper.

If the JOP is implemented, the RGO connection records made available to GTS would reflect consumer switches which will then be reflected in GTS allocations of OV exit capacity (see also D1.4.3). Therefore, the JOP removes any requirement for article 2.1.2a (TC-NGO), (or indeed a reformulation of article 2.1.2a) in respect of OV exit points.

Finally, on a related matter, we have noted VEMW comments that treatment of LSC connected to RGOs should be consistent with the treatment of LSC directly connected to GTS. It would be understandable if LSCs connected to an RGO sought to have the right to be supplied by more than one shipper (at the same time).

D3 Security of Supply

D3.1 GTS Capacity Plan

In compliance with article 8 (GA), we understand that GTS has prepared and published a document on the sufficiency of transport capacity on its network. This document is not available in English and we have not been able to review it.

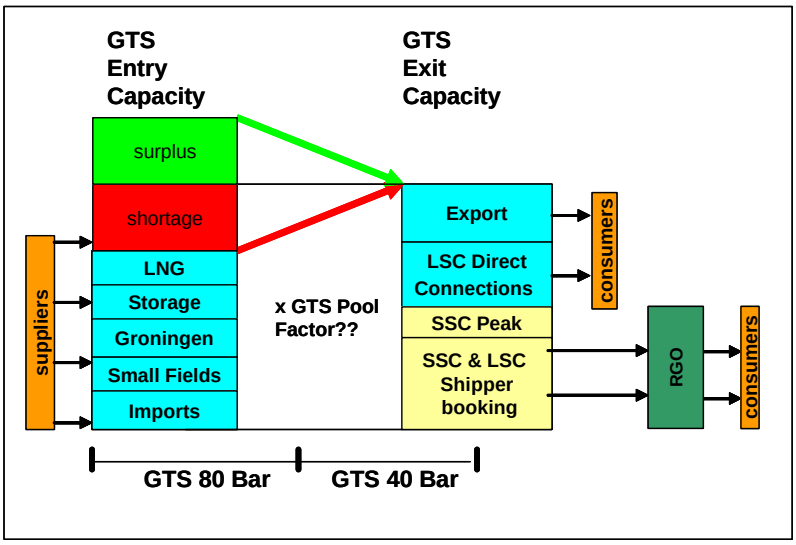
The DTe has explained to us that GTS conclusion is that there is insufficient capacity to meet all potential demands on its network.

It seems reasonable to assume the shortage in capacity identified by GTS relates to periods when demand is very high (e.g. due to severe weather conditions), as further down the load curve there appears to be considerable excess supply capability (see section C3).

D3.2 Capacity and supply responsibilities in an entry-exit model

In the context of an entry-exit regime, our technical (non legal) interpretation of roles and responsibilities is that:

- GTS must provide sufficient exit capacity for all firm loads on its network (see diagram overleaf).
- The total amount of exit capacity should be at least equal to the (fully diversified) sum of exit capacities booked for:
  - i) Large Scale Consumers (LSC),
  - ii) export and,
  - iii) Small Scale Consumers (SSC) assuming an effective temperature of -17˚C.
- The sum of (firm) entry capacity provided by GTS (after deduction of any under utilised entry capacity) should be at least equal to the (fully diversified) sum of exit capacities.



- GTS is responsible to ensure sufficient capacity to transport gas from entry points to exit points taking into account that it is ultimately the commercial decisions of shippers which dictate where gas enters and leaves the network. The loss of control over gas flows across the network in third party access regimes can be expected to require higher levels of investment and/or compressor fuel gas costs compared to the integrated gas industry model.
- In operating a third party access regime, GTS also has a short term operational responsibility to ensure delivery of capacity obligations to shippers by transporting nominated quantities gas across its network, as well as facilitating the utilisation of unused capacity rights. GTS receives shipper nominations on the day preceding the day on which the nominated gas flows. This allows GTS to schedule the flows of gas across the overall network. Any changes in nominations after this time can only be made for the remaining hours in the gas flow day, and subject to a notice period of 2 hours.
- Suppliers (and not GTS) determine sources of supply, but GTS needs to assess supply trends to:

  i) make timely decisions to invest in capacity for new supply sources and,

  ii) To anticipate when supplies can be expected to decline and the consequences for utilisation of entry capacity.
- GTS has an important role, as a party which does not engage in market activities itself, to inform the market about overall trends in supply and demand. This can be expected to facilitate a level playing field amongst suppliers to encourage supply competition and the timely development of new sources of supply.

  It is preferable to have a significant surplus of supply (up to a point) to encourage competition between suppliers and accommodate supply source failures without affecting the security of the network. Therefore GTS should be encouraged to

connect new sources of supply, subject to economic criteria. Ultimately this is an insurance issue that requires some public policy criteria to encourage adequate security at an affordable cost.

- If there is an overall shortage of entry capacity and/or supply, and firm exit capacity obligations are not reduced, there will be a decline in security of supply. If severe weather conditions are experienced a reduction in the security level could mean that GTS is forced to interrupt supplies, typically to large loads, in order to maintain supplies to SSC.

In essence, there is a fundamental trade-off to be made in the design of third party access regimes. Simplicity of the rules confronting shippers is desirable to restrict transaction costs and encourage competition. However, such simplicity may result in shippers being allowed more apparent commercial freedom than the network can physically support[14]. In order to avoid more sophisticated (and restrictive) rules, this requires new commercial tools for the TSO, or more investment, or some combination of the two. One of the key jobs of regulation is to determine the balance between these trade-offs, which may need to vary over time as the market evolves, and to provide the TSO with appropriate (and transparent) incentives to both develop effective rules and to operate the regime efficiently.

D3.3 Options to address shortages in capacity and/or supply

The investment required to connect new or incremental sources of gas supply is normally considered relatively minor compared to the benefits, in terms of lower gas prices, that can be expected from increased supply availability. (To be fair, this does rather depend on the location of the source in relation to rest of network and centres of demand). Therefore we would expect GTS to take all economic opportunities to expand the physical network and connect new supply sources.

In circumstances of a shortage of entry capacity and/or supply, and pending the connection of incremental sources of supply, there are a number of options that could be pursued:

- To address capacity shortages, GTS could offer existing LSC or transit loads the chance to convert to interruptible and/or off peak firm contracts in return for lower transportation tariffs,
- To address supply shortages GTS might act as agent to pursue options such as voluntary firm load management, whereby a large firm load may be prepared to offer to be curtailed in certain defined circumstances, in return for an option and exercise fee.
- Measures could be taken to facilitate investment in new storage facilities and/or the enhancement of existing storage facilities. GTS may have an important role to evaluate alternatives as the location of storage facilities may confer capacity benefits.

Except for responsibility for peak supply to SSC (below -9˚C) and its residual balancing role, GTS has no responsibility for the supply of gas.

If there is a shortfall in supply, we would expect GTS to engage in firm load shedding of large loads, so as to maintain sufficient base load supply to SSC. In practice GTS would probably find that a significant number of its large loads would voluntarily interrupt in these

14 In 2001 Professor C.J. Jepma published a report on the relationship between transportation pricing and transport security, which became known as the "Jepma Effect". We have considered the relevance of the "Jepma effect" in light of the current transportation regime and taking into account the recent proposal of the JOP. Our findings are presented in an Addendum on page 38.

circumstances to avoid high spot gas prices and/or take advantage of the high prices themselves by selling their supply into the market.

This is more likely to be the case when larger customers and shippers understand the prospect and consequences of involuntary load shedding, compared with the alternative of securing a commercial value for voluntary interruption.

In circumstances where forced firm load shedding is required, this would effectively amount to the cross subsidisation of SSC security of supply by large loads. However, this is an inevitable feature of the need to protect SSC on the RGO networks from the risk of supply failure, and reinforces the incentive on larger customers to voluntarily interrupt (for a price) before curtailment is required.

D3.4 Article 2.3.1 (LD-NGO)

Article 2.3.1 (LD-NGO) was due to come into force on 1 January 2007, however its implementation was suspended by the judge at the October court hearing, and the DTe was asked to reconsider the article's formulation.

Article 2.3.1 (LD-NGO) states that: *"The NGO (or GTS) reserves for security of supply, on the basis of exit capacity which is intended for connections to the domestic grids, transport capacity on the National Transport Grid"*

In our (technical) opinion, it would be inappropriate for GTS to reserve capacity on the network as the reservation of capacity is primarily a shipper activity[15],. The primary TSO activity should be limited to making transport capacity available for shippers to book.

In an entry-exit capacity regime the TSO is required to ensure sufficient capacity to transport gas across the network from entry points to exit points in compliance with its capacity obligations measured at entry points and exit points.

[15] Except (optionally) for entry capacity required for purposes of peak supply to SSC for peak shaving LNG and short duration storage (Alkmaar).

APPENDIX

GASWET (GAS ACT)

Artikel 8

1. Een netbeheerder beschikt over een doeltreffend systeem voor de beheersing van de kwaliteit van zijn transportdienst, waaronder in elk geval te verstaan de betrouwbaarheid en de veiligheid van die transportdienst, en over voldoende capaciteit voor het transport van gas om te voorzien in de totale behoefte.

2. De netbeheerder dient om het jaar bij de raad van bestuur van de mededingingsautoriteit een door hem vastgesteld document in waarin hij:

a. aangeeft welk kwaliteitsniveau hij nastreeft,
b. aannemelijk maakt dat hij beschikt over een doeltreffend kwaliteitsbeheersingssysteem voor zijn transportdienst, en
c. aannemelijk maakt dat hij over voldoende capaciteit beschikt om te voorzien in de totale behoefte aan het transport van gas.

3. Bij ministeriële regeling worden regels, die kunnen verschillen per drukniveau, gesteld over:

a. de eisen aan het kwaliteitsbeheersingssysteem;
b. de te verschaffen informatie over het nagestreefde kwaliteitsniveau en over het kwaliteitsbeheersingssysteem;
c. de wijze van ramen van de totale behoefte aan capaciteit voor het transport van gas;
d. de te verschaffen gegevens over de totale behoefte aan capaciteit voor het transport van gas en over de wijze waarop de netbeheerder voornemens is te voorzien in de totale behoefte aan capaciteit voor het transport van gas;
e. de periode waarop het document of onderdelen daarvan betrekking hebben.

4. De netbeheerder maakt het document op een geschikte wijze openbaar.

5. Bij ministeriële regeling kan worden bepaald dat een door een geaccrediteerde instelling aan een netbeheerder verstrekt certificaat van conformiteit aan het bepaalde bij of krachtens dit artikel, ten behoeve van het toezicht op de naleving van dit artikel, het vermoeden oplevert dat de netbeheerder een kwaliteitsbeheersingssyteem heeft en daaraan uitvoering geeft overeenkomstig het bepaalde bij of krachtens dit artikel.

Artikel 8a

Indien het niveau van de kwaliteit van het transport van gas reden tot zorg geeft, kunnen bij of krachtens algemene maatregel van bestuur regels worden gesteld omtrent de kwaliteit waaraan het transport van een netbeheerder, waaronder in elk geval te verstaan de betrouwbaarheid en de veiligheid van het transport, ten minste voldoet.

Artikel 9

1. Indien naar het oordeel van Onze Minister uit het document, bedoeld in artikel 8 of uit de overzichten, bedoeld in artikel 35b, of anderszins, blijkt dat een netbeheerder in onvoldoende mate of op een ondoelmatige wijze kan of zal kunnen voorzien in het door hem te bereiken niveau van kwaliteit van zijn transportdienst of in de totale behoefte aan capaciteit voor het transport van gas met behulp van de door hem beheerde netten, dan wel op een wijze die onvoldoende de veiligheid, doelmatigheid en betrouwbaarheid van de netten waarborgt en het milieu ontziet of duurzaamheid waarborgt, kan Onze Minister aan de desbetreffende netbeheerder opdragen voorzieningen te treffen teneinde zeker te stellen dat het transport van gas in voldoende mate plaatsvindt, op een wijze die de veiligheid, doelmatigheid en betrouwbaarheid van de netten waarborgt en het milieu ontziet of duurzaamheid waarborgt.

Artikel 10a

1. Onverminderd de artikelen 10, 42 en 54a, en hoofdstuk 2 heeft de netbeheerder van het landelijk gastransportnet tevens tot taak:

a. voorzieningen te treffen in verband met de leveringszekerheid,
b. het in evenwicht houden van het door hem beheerde gastransportnet,
c. gebruikers van het door hem beheerde gastransportnet aan te bieden het gas dat zij hem aanbieden voor transport door bijmenging van gassen of op andere wijze in een overeengekomen kwaliteit en samenstelling te brengen, tenzij dit redelijkerwijs niet van hem kan worden gevergd;
d. het aanbieden van flexibiliteitsdiensten aan een ieder die daarom verzoekt, voor zover de in artikel 54, eerste lid, bedoelde rechtspersoon een economische machtspositie heeft op de markt voor flexibiliteitsdiensten;
e. het op de grondslag van paragraaf 5.4 bevorderen van een planmatig beheer van voorkomens van gas;
f. indien Onze Minister hem dit opdraagt, werkzaamheden te verrichten ter uitvoering van de taak, bedoeld in artikel 52a, en
g. voorzieningen te treffen, gericht op de beschikbaarheid van voldoende transportcapaciteit met het oog op voldoende transportzekerheid.

2. Indien de netbeheerder van het landelijk gastransportnet bij de uitvoering van zijn wettelijke taken energie inkoopt, doet hij dit op basis van een transparante, niet-discriminatoire en marktconforme procedure.

3. De rechtspersoon, bedoeld in artikel 54, eerste lid, is verplicht de netbeheerder van het landelijk gastransportnet een aanbod met redelijke tarieven en voorwaarden te doen tot levering aan de door de netbeheerder van het landelijk gastransportnet ter uitvoering van zijn wettelijke taken benodigde hoeveelheden gas in de door hem gevraagde hoeveelheden en op de door hem gewenste tijdstippen.

4. Bij algemene maatregel van bestuur worden regels gesteld ter uitvoering van de taak, bedoeld in het eerste lid, onderdeel a en artikel 10, derde lid, onderdeel c. Deze regels hebben mede betrekking op de wijze waarop enerzijds de netbeheerder van het landelijk gastransportnet, en anderzijd gasproductiebedrijven, gasopslagbedrijven, LNG-bedrijven, andere netbeheerders, leveranciers en afnemers zich jegens elkaar gedragen.

5. De raad van bestuur van de mededingingsautoriteit brengt advies uit over het ontwerp van de algemene maatregel van bestuur, bedoeld in het vierde lid. De voordracht voor een krachtens dit artikel vast te stellen algemene maatregel van bestuur wordt niet gedaan dan nadat het ontwerp in de Staatscourant is bekendgemaakt en aan een ieder de gelegenheid is geboden om binnen vier weken na de dag waarop de bekendmaking is geschied, wensen en bedenkingen ter kennis van Onze Minister te brengen. Gelijktijdig met de bekendmaking wordt het ontwerp aan de beide kamers der Staten-Generaal overgelegd.

6. Een besluit als bedoeld in het eerste lid, onderdeel f, wordt gepubliceerd in de Staatscourant.

Artikel 51

1. Onze Minister stelt na overleg met de gezamenlijke netbeheerders en representatieve organisaties van netgebruikers op de gasmarkt, en met inachtneming van het bepaalde in artikel 10a, vierde lid, een calamiteitenplan vast.

2. Het besluit tot vaststelling van het calamiteitenplan wordt bekendgemaakt in de Staatscourant.

BESLUIT LEVERINGSZEKERHEID GASWET (DECREE SECURITY OF SUPPLY)

Artikel 2

1. De netbeheerder van het landelijk gastransportnet zorgt voor alle voorzieningen op het gebied van gasinkoop, flexibiliteitsdiensten en gastransport op het landelijke gastransportnet, nodig om vergunninghouders in staat te stellen de pieklevering te verzorgen voor alle kleinverbruikers in Nederland. Deze voorzieningen moeten volstaan om pieklevering te kunnen verzorgen op een dag met een gemiddelde effectieve etmaal temperatuur in De Bilt van – 17° C (graden Celsius).

2. De netbeheerder van het landelijk gastransportnet stelt ter uitvoering van zijn in het eerste lid genoemde taak gas beschikbaar aan vergunninghouders op de punten waar een verbinding bestaat tussen het landelijk gastransportnet en de netwerken van de netbeheerders, niet zijnde de netbeheerder van het landelijk gastransportnet.

3. De netbeheerder van het landelijk gastransportnet stelt de totale omvang vast van de voorzieningen nodig voor de pieklevering voor alle kleinverbruikers en stelt deze ter beschikking naar rato van het kleinverbruikersbestand van de vergunninghouders. De landelijke netbeheerder brengt de voorzieningen voor pieklevering dienovereenkomstig in rekening aan vergunninghouders, tenzij anders overeengekomen.

4. De netbeheerder van het landelijk gastransportnet hanteert een tariefstelling voor de pieklevering gebaseerd op de tarieven van de in lid 1 genoemde componenten. De tarieven van deze componenten zijn gebaseerd op ontwikkelingen in de relevante Europese markt.

5. De netbeheerder, niet zijnde de netbeheerder van het landelijk gastransportnet, verstrekt aan de netbeheerder van het landelijk gastransportnet de informatie die nodig is om per vergunninghouder de benodigde omvang van de voorzieningen, bedoeld in het tweede lid, te bepalen.

6. Indien de netbeheerder van het landelijk gastransportnet voor de uitvoering van de taak, bedoeld in het eerste lid, een openbare inkoopprocedure volgt, doet de in artikel 53 van de wet genoemde rechtspersoon een aanbod onder redelijke voorwaarden en tegen marktconforme tarieven.

WETTELIJKE TAKEN LNB VAN ALGEMEEN BELANG (LEGAL DUTIES NGO OF COMMON PURPOSE)

2.1 Pieklevering

2.1.1 Ingevolge het Besluit leveringszekerheid Gaswet treft de netbeheerder van het landelijk gastransportnet voorzieningen teneinde de vergunninghouder in staat te stellen de pieklevering te verzorgen aan alle kleinverbruikers in Nederland. Hiertoe reserveert de netbeheerder van het landelijk gastransportnet transportcapaciteit in het landelijk gastransportnet en kan de netbeheerder van het landelijk gastransportnet zowel productiecapaciteit als gas reserveren.

2.1.2 Op elke dag met een gemiddelde effectieve etmaaltemperatuur in De Bilt lager dan -9°C, zal de netbeheerder van het landelijk gastransportnet aan de vergunninghouders gas leveren om hen in staat te stellen de extra hoeveelheid gas te leveren aan kleinverbruikers die moet worden toegerekend aan het temperatuurbereik beneden een gemiddelde effectieve etmaaltemperatuur van -9°C, waarbij de temperatuurwaarneming in De Bilt maatgevend is.

2.1.3 De netbeheerder van het landelijk gastransportnet brengt de gereserveerde transportcapaciteit, het benodigde gas en overige (capaciteits-)middelen in rekening bij de vergunninghouders. Vaste kosten voor productiecapaciteit voor de pieklevering wordt gespreid over het hele jaar maandelijks per profielcategorie verdeeld over de vergunninghouders naar rato van hun marktaandeel in de profielcategorieën G1 en G2 van het kleinverbruikersegment. De variabele kosten, waartoe in elk geval de kosten van in het kader van de pieklevering feitelijk geleverde hoeveelheid gas moeten worden gerekend, worden bij de vergunninghouder over de desbetreffende maand achteraf in rekening gebracht. De bedragen toe te rekenen aan gereserveerde transportcapaciteit worden verdeeld over de maanden december, januari en februari aan de vergunninghouders in rekening gebracht. Een vergunninghouder betaalt de hem toe te rekenen bedragen aan de netbeheerder van het landelijk gastransportnet, tenzij de vergunninghouder met een shipper is overeengekomen dat de kosten voor de voorzieningen ten behoeve van de pieklevering in rekening gebracht kunnen worden bij de shipper.

2.1.4 De netbeheerder van het landelijk gastransportnet bepaalt ten behoeve van het afrekenen voor de pieklevering voor elke maand het marktaandeel van de vergunninghouders. De regionale netbeheerders doen aan de netbeheerder van het landelijk gastransportnet maandelijks uiterlijk op de eerste werkdag volgende op de 15e van de maand opgave van het aantal aansluitingen van elke

vergunninghouder, onderverdeeld naar de profielcategorieën G1 en G2, per de 15e van die maand. Wettelijke taken LNB van algemeen belang per 1 juli 2006 5/8 Directie Toezicht Energie (DTe)

2.1.5 De regionale netbeheerders en de netbeheerder van het landelijk gastransportnet dragen zorg voor de vaststelling van de aan de pieklevering toe te wijzen volumes. Daarbij wordt de onderstaande methode gebruikt voor elke gasdag die in het temperatuurdomein van de pieklevering valt als bedoeld in 2.1.2. Voor elk van de betreffende gasdagen worden de volgende aanvullende bewerkingen uitgevoerd op de allocaties van de hoeveelheden gas voor kleinverbruik op een GOS:

- Bepaal de maximale uurhoeveelheid van de reguliere levering door de volgende formule :

  Max. $uur_{regulier}$ = max uur_{totaal} / (1 + |(T_{eff} - -9)| x 0,0386) ; waarin

  max uur_{totaal} de hoogste uurwaarde van de allocatie

  T_{eff} de gemiddelde effectieve temperatuur van het etmaal en toegepast op de gasdag

  Max. $uur_{regulier}$ de hoogste uurwaarde (allocatie) van de reguliere levering

- Bepaal voor elk uur van de gasdag de pieklevering en de reguliere levering :
  - Er is geen sprake van pieklevering als de uurwaarde van de allocatie kleiner of gelijk is aan de berekende maximale uurhoeveelheid van de reguliere levering.
  - Als de uurwaarde van de allocatie groter is dan de berekende maximale uurhoeveelheid van de reguliere levering is het verschil tussen die twee gelijk aan de pieklevering.

2.3 Reservering van exitcapaciteit voor aangeslotenen op het Nederlandse gastransportnetten in het kader van de transportzekerheid

2.3.1 [Artikel 2.3.1 treedt in werking per 1 januari 2007]
De netbeheerder van het landelijk gastransportnet houdt in het kader van transportzekerheid, op basis van de exitcapaciteit die bestemd is voor aangeslotenen op de Nederlandse gastransportnetten, transportcapaciteit aan op het landelijk gastransportnet.

Wettelijke taken LNB van algemeen belang per 1 juli 2006 7/8.

3.1 De netbeheerder van het landelijk gastransportnet draagt zorg voor beschikbaarheid van voldoende transportcapaciteit met het oog op voldoende transportzekerheid als bedoeld in artikel 10a, eerste lid, aanhef en onder g, Gaswet, op de korte en op de lange termijn. De netbeheerder van het landelijk gastransportnet vervult deze taak op de lange termijn door middel van het realiseren van de capaciteitsuitbreidingen die worden voorzien in het capaciteitsplan en door te voldoen aan de aan de netbeheerder van het landelijk gastransportnet gestelde kwaliteitseisen op basis van artikel 8 Gaswet alsmede de Ministeriële regeling kwaliteitsaspecten netbeheer elektriciteit en gas. De netbeheerder van het landelijk gastransportnet vervult deze taak op de korte termijn door middel van het toedelen van transportcapaciteit op objectieve, transparante en non-discriminatoire wijze alsmede door het in voorkomende

gevallen toepassen van de regels voor het aanbieden van gecontracteerde transportcapaciteit die niet zal worden gebruikt als bedoeld in artikel 16 Ministeriële Regeling tariefstructuren en voorwaarden gas, een en ander conform de Transportvoorwaarden Gas - LNB.

TRANSPORTVOORWAARDEN GAS – LNB (TRANSPORT CODES GAS NGO)

2.1.2a Exitcapaciteit wordt door de netbeheerder van het landelijk gastransportnet aangehouden ten behoeve van de aansluiting(en) die zich achter een exitpunt bevinden. De exitcapaciteit, gecontracteerd op basis van 2.1.1, komt aan een shipper toe zolang hij de shipper is voor de afnemer(s) op de aansluiting(en) ten behoeve waarvan de exitcapaciteit wordt aangehouden. Indien een afnemer (deels) wisselt van shipper, komt de voor zijn aansluiting aangehouden exitcapaciteit (deels) toe aan de nieuwe shipper.

2.4 Use it or lose it

2.4.1 In geval van kunstmatige schaarste zal de netbeheerder van het landelijk gastransportnet aan de shipper alle rechten betreffende door de shipper bij de netbeheerder van het landelijk gastransportnet gecontracteerde transportcapaciteit en capaciteit voor kwaliteitsconversie ontnemen en zich deze capaciteit voorbehouden indien de shipper die capaciteit onvoldoende gebruikt. Van onvoldoende gebruik is sprake indien de volgende voorwaarden zijn vervuld:

a) het betreft alle of vrijwel alle gecontracteerde capaciteit van de shipper voor transport op het desbetreffende entrypunt of exitpunt of kwaliteitsconversie;

b) De netbeheerder van het landelijk gastransportnet heeft niet kunnen voldoen aan tenminste één verzoek van een geïnteresseerde tot het contracteren van (een deel van) de capaciteit die onvoldoende is gebruikt;

c) het onvoldoende gebruik heeft tenminste een gasmaand geduurd

ADDENDUM

The "Jepma Effect"

Professor C.J. Jepma carried out research on the relationship between transportation pricing and transport security and published a report on the subject, called "Gaslevering onder druk", in April 2001. We are told the report findings are often raised in discussions about transport security. TPA Solution's report addresses various aspects of transport security; therefore it is appropriate for us to briefly consider Prof. Jepma's conclusions[16].

Based upon the transportation rules applicable in 2001, Prof. Jepma concluded that the Dutch grid could become congested if there was an increase in the flow of German gas transiting the Netherlands. He proposed this would result in a reduction in the security of gas supply.

The Professor's analysis is based on the Dutch transportation regime rules which were in effect in 2001 and certain assumptions about the changes to these rules which were anticipated at that time; namely:

1) Replacement of shipper hourly balancing with a daily balancing obligation;
2) Removal of the obligation on shippers to submit underlying sales and purchase contracts as a pre-requisite for capacity booking (it was claimed this might provide more opportunity for capacity hoarding);
3) The introduction of short (daily) and medium (monthly) duration capacity services;
4) Reductions in GTS transport tariffs.

The report concludes that because of 1), 2) and 3), additional German transit flows could cause congestion on the grid, threatening the security of supply for domestic consumers as well as for other users of the GTS grid. The predicted consequence is known as the "Jepma" effect. If GTS was also forced to introduce 4), and lower its transport tariffs, the Jepma effect, according the report, would be even stronger.

In fact the rule changes anticipated by the Professor in 1), 2), 3) and 4) above (either individually or collectively), do not necessarily threaten transport security if the transportation regime rules are appropriately designed and administered. When the current GTS transportation rules are considered, it is our opinion that the "first come first served" (or "FCFS") rule, when applied to exit capacity booking, may be a root cause of concern about transport security. If shippers wishing to transit gas across the Netherlands are prepared to book exit capacity for longer durations (perhaps for many years) than shippers serving domestic loads, FCFS could operate to restrict the availability of exit capacity for shippers serving domestic consumers (as GTS should not sell more firm capacity than is physically available).

[16] It is not TPA's intention to discuss the validity of Prof. Jepma's analysis; our goal is merely to ascertain whether the "Jepma effect" as described in the report of Prof. Jepma can still take place, taking into account the recent proposal of the JOP and the recommendations of our report.

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The new exit capacity booking arrangements proposed by the joint operator's office for OV exit points are described in section D1 of this report. These rules ensure GTS will always reserve enough exit capacity for the Regional Grids. The Regional Grids supply all small and medium sized gas consumers as well as many large gas consumers in the Netherlands. If the sum of (firm) entry capacity provided by GTS is at least equal to the (fully diversified) sum of exit capacities, then these new arrangements appear to satisfactorily address the type of transport security concerns raised by Professor Jepma for the vast majority of gas consumers in the Netherlands.

The only loads which are not covered by the OV exit point arrangements are those which are directly connected to the GTS Grid. These are either very large gas consumers, such as power stations, or export flows (including transit). At present, exit capacity booking for these loads is to continue to be governed by FCFS and will be subject to the associated risk of crowding out. There are alternative approaches to exit capacity booking that could be considered for some or all of these load categories. Each approach would have characteristics requiring careful consideration from the perspectives of the various stakeholders. This subject area is beyond the scope of our report.