Secondary Markets:

The Way To Deal With Contractual Congestion on Interconnection Points?

A Study for the North West region of The Regional Gas Initiative, ERGEG

February 2007

Disclaimer

This paper focuses on the performance of the secondary market for transmission capacity and recommends adaptations in the design of the secondary market. Despite the fact that we feel the analysis and recommendations are objective and represent the general view of the majority of the market, we have taken the interest of the 'demanding' secondary market user as a starting point for this study. We acknowledge that not all stakeholders share this point of view with the national regulators.

We would like to make a number of remarks concerning the results of this study:

- we acknowledge that it is impossible to 100% generalize the performance of secondary markets on all NW European cross-border interconnection points. Each point has its own unique technical characteristics, unique role in the transmission network and different players with different objectives.;
- we realize that the behaviour and opinions of the stakeholders involved in the historic development and performance of the secondary market is a result of historical decisions. TSOs facilitating the secondary market do this in coherence with current regulation and the actions of shippers can be explained by their historical background.
- we acknowledge that a liquid secondary market should be a means and not an objective in itself. The motivation behind this study on secondary markets is to provide shippers with an opportunity to gain access to cross-border transmission capacity. We feel it is important to offer shippers multiple options to get access to transmission capacity. Therefore we welcome any suggestions for improvements to the other existing congestion management procedures (see § 2.3.) or even suggestions for entirely new congestion management procedures.

Executive summary

A quantitative analysis[1] shows that there are no liquid secondary markets[2] for transmission capacity at NW European cross-border interconnection points.

The results of the quantitative analysis are confirmed by a qualitative analysis (based on interviews with multiple stakeholders)[3]. This analysis identifies four main issues which are at the core of the liquidity problem;

- key market parties don't have any interest in the trade of capacity rights;
- the long term legacy contracts by which capacity has been allocated on the primary market results in a situation in which most (current and future) primary capacity rights are owned by these key parties;
- there is a lack of strong positive[4] or negative[5] incentives for these shippers to trade on the secondary market;
- the shippers that do want to make use of the secondary market (mostly as buyers) experience problems with the current design of the secondary market.

The report recommends a number of adaptations in the current design to deal with this issues concerning the design of the secondary market. We would like to make clear that these are just recommendations and they will be subject of discussion during a workshop held on the 8th and 9th of February on the GRI SG meeting in Bonn. The most important recommendations concern the implementation of an auction of secondary capacity rights (preferably an outside party that has experience with the design and operation of an auction platform), the offer of a coordinated (cross-border) secondary entry-exit product, regular trade, more transparency (on market outcomes) and the immediate ratification of a transaction[6] made on the secondary market by the TSOs.

The authors acknowledge that the initial impact of these recommended adaptations on the liquidity of the secondary market might be limited. This because of the influence of the other three issues discussed above. Especially the 'lack of an appetite for trade' among key market parties will reduce the impact of the adaptations. However, despite the negative impact of the other issues, we feel that the suggested adaptations will on the short term have a positive impact on the liquidity of the secondary market and will lay a solid foundation for the future of the secondary market.

We consider the secondary market as the congestion management procedure with the greatest potential in the long term. However, besides focusing on adaptations in the secondary market design, on the short term attention should be paid to the transparency issues surrounding the interruptible UIOLI mechanism. Right now interruptible capacity seems to be the congestion management procedure most frequently used by shippers. We stress that in order to provide shippers with multiple options to get access to capacity all congestion management procedures need to be improved.

[1] Based on the response on questionnaire "primary and secondary markets on interconnection points" (sent out by ERGEG to all SG members of the GRI in November 2006)..
[2] See Annex I for a list of definitions of the frequently used terms.
[3] See Annex III for an overview of the interviewed stakeholders
[4] Prices on the primary market are low, so no incentives to cut costs by selling unused capacity.
[5] The firm UIOLI mechanism is never applied.
[6] Referred to as the 'implementation lead time' in the EFET proposal on day ahead auctions of daily capacity and the TSO response.

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1 Introduction

1.1 Context

This report is a continuation of the (draft) paper on the work stream on the secondary market for transmission capacity at NW European interconnection points, published by ERGEG in May 2006 (ERGEG, GRI-GAS-NNW-GENERAL-01-05, 2006). In this paper it was signalled that: "the factual situation anno 2006 is that the secondary market doesn't yet appear to solve apparent congestion at border point by means of creating (additional) network access.". This paper presents a study on the reasons behind this performance and makes recommendations for improvements in the current secondary market design.

1.2 Objective

This report will:

- quantitatively assess the performance of the secondary market;
- present an overview of the reasons behind this performance of the secondary market;
- present recommendations for the adaptation in the current design of the secondary market.

1.3 Methodology

The study conducted for this report consisted of a analysis part and a design part.

The analysis was performed using the response[7] on the questionnaire "primary and secondary markets on interconnection points" (sent out by ERGEG to all IG members of the GRI in November 2006). Furthermore a broad range of different stakeholders[8] was interviewed to in order to perform a qualitative analysis. Outcomes of the quantitative and the qualitative analysis were discussed with and validated by national regulators.

The method of formulating recommendations for adaptations in the secondary market design is based on a design framework introduced by the Technical University Delft, Netherlands (Herder and Stikkelman, 2004). The requirements listed in § 4.2.1. and the design variables identified in § 4.3.2. are the result of interviews with multiple stakeholders. The alternatives for the design variables were selected after discussions with stakeholders, a study of relevant literature and a study of best practices (in the gas market and in other network bound sectors).

1.4 Outline

The structure of this report is as follows. First the problem context is explained, followed by a description of the current status of the congestion management procedures and the secondary market in particular.
Then the report will continue with an analysis, quantitative as well as qualitative of the secondary market. This analysis will deliver a number of issues that influence the performance of the secondary market.

These issues will be the basis for the recommendations for adaptations in the current secondary market design. These recommendations will be formulated by selecting specific adaptations in the design variables. These design variables will be identified on the basis of the issues influencing the performance of the secondary market as listed in the analysis chapter.

[7] For a list of respondents to the questionnaire see Annex II
[8] For a list of the parties that were interviewed see Annex III

2 Current Situation

2.1 Problem introduction

A free flow of gas through the NW European region is a prerequisite for the successful implementation of a single, unified market for gas in the NW European region. Discussions with participants in the gas market show that there is a need for more cross-border transmission capacity. At the same time multiple TSOs indicate that most interconnection points are subject to contractual congestion. Contractual congestion is defined as a shortage of capacity rights on the primary market, even though there is no physical congestion on the interconnection point (so the physical pipeline capacity is not utilized for 100%). This contractual congestion is an obstacle for achieving a single (NW) European (wholesale) market for gas

2.2 Allocation method

In general[9] the allocation method for transmission capacity consist of a primacy allocation method (also referred to as the primary market) and congestion management procedures. The primary allocation method implemented on the majority of the networks in the NW European region is the 'first-come-first-served' (FCFS) method. The figure below (figure 2.1.) presents an overview of the way in which the primary allocation method and the congestion management procedures interact.

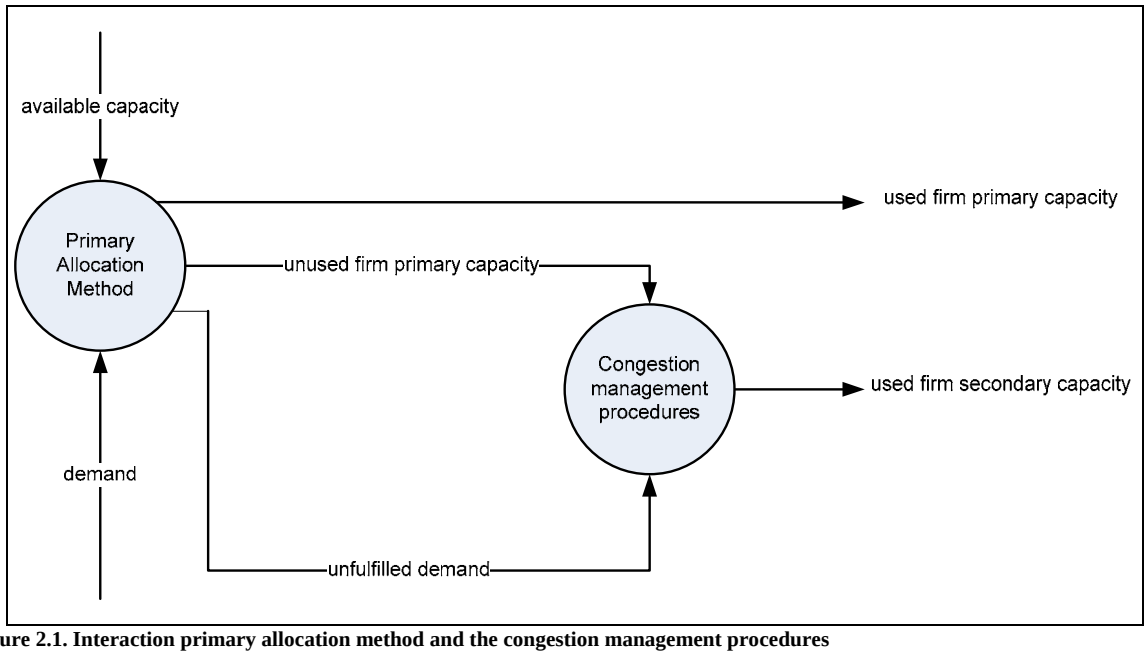

Figure 2.1. Interaction primary allocation method and the congestion management procedures

2.3 Congestion management procedures

European and national regulation provides a number of congestion management procedures to deal with the contractual congestion. EU Regulation 1775/2005 distinguishes three main types of congestion management procedures:

[9] This report has taken the entry-exit access system as a starting point. Please note that the Belgium access system has two transmission systems: a entry-exit system for domestic distribution and a transit system.

- **Firm (long term) UIOLI** (interpreted from EU Regulation 1775/2005 Art 5, 3.a, confirmed by stakeholders)**;** firm UIOLI provides the TSO with the option to take the capacity rights back form a capacity right holder that has been hoarding capacity for anti-competitive reasons. The reclaimed capacity rights are reoffered on the primary market as firm capacity rights. The capacity right holder is not compensated with a refund for the reclaimed capacity rights.
- **Interruptible (short term) UIOLI** (EU Regulation 1775/2005 Art 5, 3.a[10])**;** interruptible UIOLI provides the TSO with the option to re-offer capacity on the primary market before the actual utilization of this capacity by the primary capacity right holder. The TSO looks at the historical flow pattern of a capacity right holder and on the basis of this estimates the firm capacity that this capacity right holder will not use during the contracted period. The TSO re-offers this capacity on the primary market as interruptible capacity. If the primary firm capacity right holder decide to use all firm capacity rights the flow of the holder of the interruptible right is interrupted.
- **Secondary market for transmission capacity** (EU Regulation 1775/2005 Art 5, 3.b)**;** a secondary market enables primary capacity right holder to sell their unneeded primary capacity rights (firm or interruptible) to other interested shippers.

The figure (figure 2.2.) below shows the interaction between the primary allocation method and the congestion management procedures (as presented in figure 2.1.) in more detail.

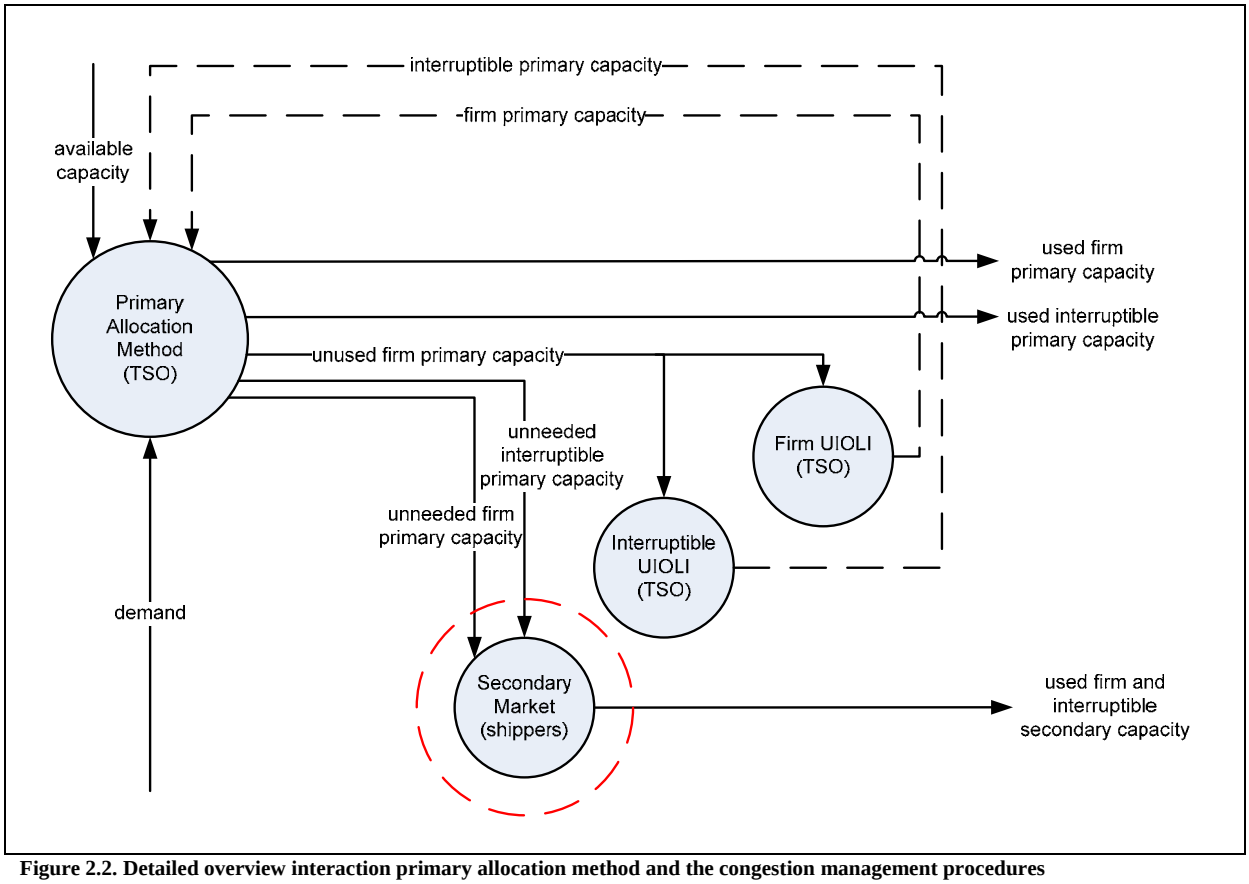

Figure 2.2. Detailed overview interaction primary allocation method and the congestion management procedures

The focus of this report is on the secondary market as congestion management procedure (circled in red in this figure) as agreed in Regional Gas Initiative, North West. The rest of the report will therefore primarily deal with this congestion management procedure, although it refers to the firm UIOLI and the interruptible UIOLI mechanisms as well, since both will have an effect on the performance of the secondary market.

[10] Stated as "in the event of contractual congestion, the transmission system operator shall offer unused capacity on the primary market at least on a day-ahead and interruptible basis" in EU Regulation 1775/2005 Art 5, 3.a

2.4 Tasks of the secondary market

In principle European policy makers (their regulation is monitored by the national regulators) foresaw two important tasks for a secondary market for transmission capacity:

- *A secondary market needs to reduce (or even completely solve) contractual congestion*; by allowing shippers with primary capacity rights to sell unneeded capacity rights to other shippers the contractual congestion should be reduced;
- *A secondary market needs to enable market players to optimize their position*; even in the event of no contractual congestion shippers should be able to buy or sell capacity rights, in order to adjust their position on the gas market.

2.5 Description current design secondary market

The response on the questionnaire "primary and secondary markets on interconnection points" provided an overview of current design of the secondary markets on NW European interconnection points. The response on the questionnaire shows that in general the designs of the secondary markets on the NW European transmission networks are similar to each other. The table (table 2.1.) below show this general design of the secondary market (exemptions on the general design are specified) [11].

Table 2.1. General Secondary Market Design

Secondary Market	Current situation
Market mechanism	Bilateral trade*
Facilitating party	Single TSO (*)
Method of facilitation	Central (national) bulletin board(*)
Capacity products tradable on secondary market	All capacity products (interruptible or firm) offered on the primary market are allowed to be traded on the secondary market
Capacity rights tradable on secondary market	• Capacity rights • Usage Rights
Coordination between secondary markets	None(**)
Method of facilitation	Central (national) bulletin board*
Level of transparency	Centralized information on buying and selling parties, specific information on capacities and price of capacity products offered and demanded.
Regularity of trade	Trade is irregular; transactions take place after a shipper offers or requests capacity (either by informal ways or on the bulletin board) and finds a counterparty for a transaction.
Procedures	1. shippers find each other on bulletin board or by networking (***); 2. shippers agree on volume and price; 3. shippers notify TSO by online form or by paper form (fax); 4. after an implementation lead time the TSO will ratify the transaction and capacity rights are officially transferred.
Ratification of transaction by TSO	• Capacity rights: max. of 10 days • Usage rights: no information obligation towards the TSO (the selling shipper still has the obligation to nominate and has balancing risk as well as billing obligations towards TSO)

* The German website Trac-x offers selling shippers the possibility to auction their capacity in an ascending, anonymous auction (by a bulletin board).
**The German TSOs offer the possibility of trading on a central bulletin board: Trac-x (www.trac-x.de), however this site does not offer the possibility to buy a joint entry-exit product.
*** Some national TSOs also offer to actively search for secondary capacity on an interconnection point, at the request of a shipper.

[11] The table forms a summary of analysis of regulatory framework, questionnaires and interviews with market parties.

3 The performance of the secondary market

3.1 The performance of the secondary market: quantitative analysis

3.1.1 Introduction

The response on the questionnaire "primary and secondary markets on interconnection points" provided representative[12] quantitative data on the performance of the secondary markets for transmission capacity in 2005 and 2006. The result for each year will be presented, using graphs to present the most important findings. At the end of this paragraph a brief conclusion is presented.

A preliminary remark concerning the data used for this analysis has to be made: the data used for this analysis only concerns capacity right transactions. In the case of a transaction of usage rights the parties involved do not need to inform the TSO of this transaction; the selling party still has the obligation to nominate the amount of capacity the buying party will flow. This means that TSOs do not have any data on this type of transaction. However, TSOs have indicated that they believe that the trade of usage rights is also very illiquid, a suspicion that is confirmed by interviews with stakeholders.

The distinction is made between entry and exit capacity, and these two capacity products are discussed separately for each year. In order to make a valid analysis of the performance of the secondary market on an interconnection point the respondent needed to provide information on the contractual congestion and on sufficient information on the transaction made on the interconnection point.

3.1.2 The performance of the secondary market in 2005

As was mentioned in the previous paragraph, the number of interconnection points suitable for analysis is 21. For this analysis it is important to distinguish de different levels of congestion on an interconnection point. The figures (see figures 3.1. and 3.2.) below show the level of contractual congestion on both entry and exit points.

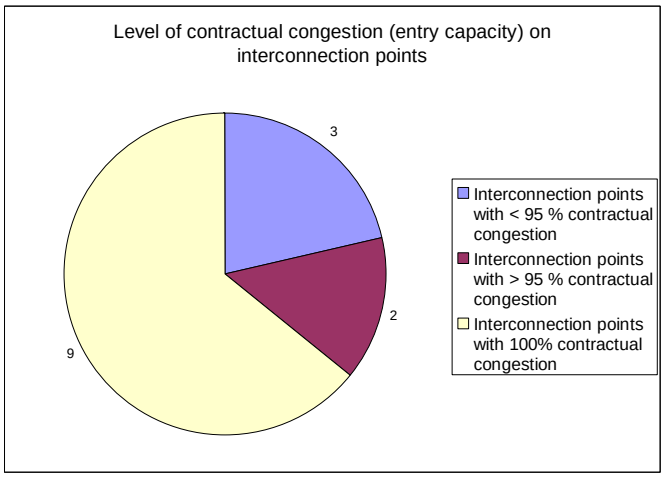

Figure 3.1. Level of contractual (entry) congestion in 2005

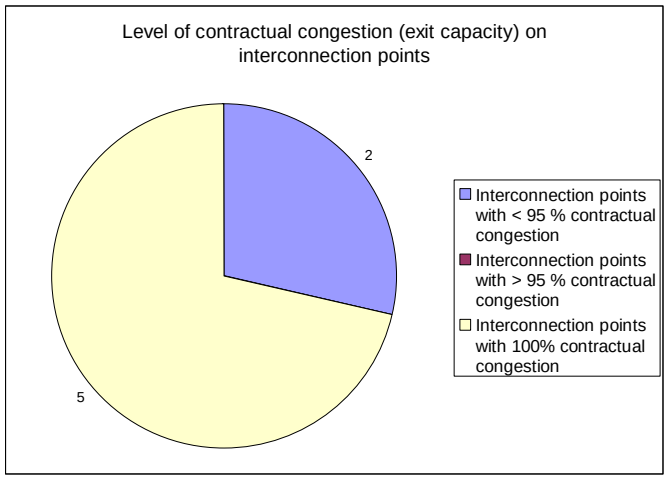

Figure 3.2. Level of contractual (exit) congestion in 2005

[12] The usable response presented results that appear to be representative for all researched interconnection points. For the year 2005 21 (entry and exit capacity combined) interconnection points out of the 38 questionnaires returned were suitable for analysis and for 2006 this was the case for 22 of the 39 questionnaires that were returned. The results of analysis of usable questionnaires are confirming the results for all interconnections from interviews with stakeholders. Furthermore the TSOs that were informed of missing data in their response qualitatively confirmed that there had been no transactions on the secondary market on their interconnection points. Sector Inquiry of the DG Com (10 January 2007) further confirms the analysis for North West region.

The figures show that in 2005 5 out of the 7 analyzed exit interconnection points were contractually congested for 100% of the time and 9 out of the 14 analyzed entry interconnection points. The analysis of the performance of the secondary market will be limited to the interconnection point which were 100% congested. For interconnection points that were not contractually congested 100% of the time, a lack of liquidity on the secondary market might be explained by the fact that shippers were still able to buy capacity rights on the primary market.

The table below presents an overview of the top 3 of maximum active parties per month on the NW European interconnection points with 100% contractual congestion, the top 3 number of transactions made and the top 3 of amount of capacity traded relative to the total amount of unused capacity. The different top 3 can refer to different interconnection points (so number 1 in the top 3 on the number of parties may not be the same interconnection point as the number 1 in) .

Table 3.1. Overview of the performance of the secondary markets in 2005

2005	Entry Capacity	Exit Capacity
Number of interconnection points on which actual transaction in capacity rights took place	3	1
Top 3 of maximum number of parties active on the secondary market in a month	1. 3 parties 2. 2 parties 3. 2 parties	1. 2 parties 2. 0 3. 0
Top 3 of maximum number of transactions on the secondary market in a month	1. 3 transactions 2. 1 transaction 3. 1 transaction	1. 1 transaction 2. 0 3. 0
Top 3 total amount of capacity traded relative to the total amount of unused capacity in a month	1. 2,2 % 2. < 1% 3. <1%	1. < 1% 2. 0 3. 0

3.1.3 Analysis performance secondary market over 2006

An analysis of the secondary market over 2006 shows the following results.

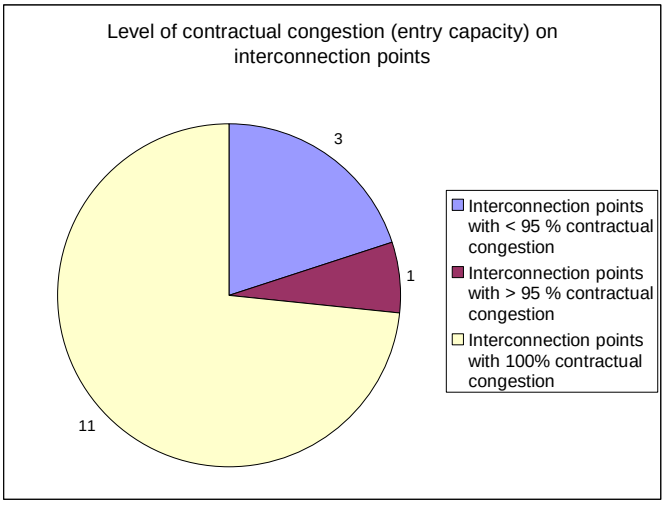

Figure 3.3. Level of contractual (entry) congestion in 2006

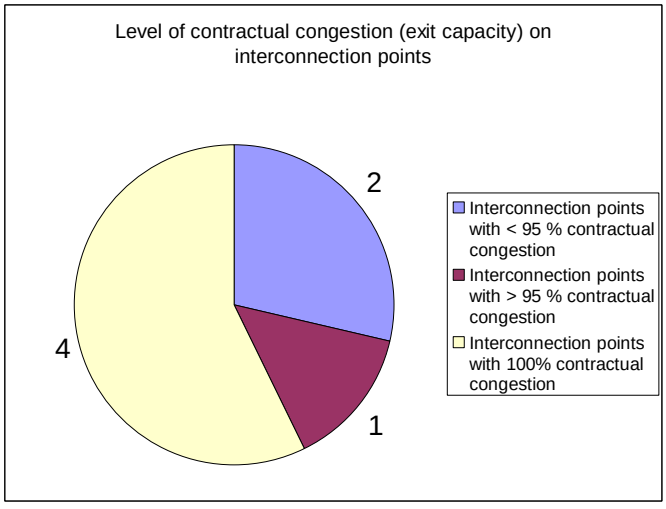

Figure 3.4. Level of contractual (exit) congestion in 2006

The figures show that in 2006 4 of the 7 analyzed exit interconnection points were congested for 100% and 11 out of the 15 analyzed entry interconnection points.

The table below presents an overview of the top 3 of maximum active parties per month in 2006 on the NW European interconnection points with 100% contractual congestion, the top 3 number of transactions made and the top 3 of amount of capacity traded relative to the total amount of unused capacity.

Table 3.2. Overview of the performance of the secondary markets in 2006

2006	Entry Capacity	Exit Capacity
Number of interconnection points on which actual transaction in capacity rights took place	4	0
Top 3 of maximum number of parties active on the secondary market in a month	1. 10 parties 2. 2 parties 3. 2 parties	1. 0 2. 0 3. 0
Top 3 of maximum number of transactions on the secondary market in a month	4. 6 transactions 5. 1 transaction 6. 1 transaction	1. 0 2. 0 3. 0
Top 3 total amount of capacity traded relative to the total amount of unused capacity in a month	1. > 8% 2. > 3,6% 3. < 1%	1. < 1% 2. 0 3. 0

3.1.4 Conclusion

The response on an international questionnaire showed that the there is no trade in secondary capacity rights on the majority of interconnection points. On the secondary markets on which trade does occur, the secondary markets are not liquid. On a positive note: trade on some interconnection points has increased in 2006 compared to 2005.

3.2 The performance of the secondary market: qualitative analysis

Besides the information acquired form the response on the ERGEG questionnaire, informal interviews were organized with a broad selection of stakeholders. Their experiences and opinions on the secondary market are presented, in a general summarisation, in this paragraph.

3.2.1 Tasks of the secondary market as experienced by shippers

In § 2.3 the tasks of secondary market, as foreseen by the national regulators, were introduced:

- *A secondary market needs to reduce (or even completely solve) contractual congestion*; by allowing shippers with primary capacity rights to sell unneeded capacity rights to other shippers the contractual congestion should be reduced;
- *A secondary market needs to enable market players to optimize their position*; even in the of no contractual congestion shippers should be able to buy or sell capacity rights, in order to adjust their position on the gas market.

Multiple shippers, that categorize themselves as buyers on the secondary market, indicated that they see two purposes for the secondary market:

- To get access to long term firm capacity products in order to enter a national consumer market;
- To get access to short term firm capacity products for portfolio optimizing, i.e. for trading on and between commodity hubs.

It appears that, at least on the demand side, the visions of the national regulators and multiple shippers on the tasks of a secondary market for transmission capacity suit another.

In practice, however, it appears that there are few parties offering unneeded capacity on the secondary market. Their motivation for withholding unneeded capacity form the secondary market are discussed in the next paragraph.

3.2.2 Motives for not selling or buying capacity on the secondary market

During the interviews with multiple primary capacity right holders it became clear that they distinguish two types of unused capacity rights: needed unused capacity rights and unneeded capacity rights. Needed unused capacity rights are unutilized capacity rights for which the owner of these rights still has a purpose. Unneeded capacity rights are rights that a shipper has no further need for; it is this type of capacity rights a primary capacity rights holder will offer on the secondary market. In practise it appears that little or no unneeded capacity is offered on the secondary market.

Multiple shippers (both buyers and sellers) agree there are three main motives for primary capacity right holders to regard unused capacity rights as needed unused capacity rights:

- **To avoid extra risks;** primary interconnection capacity right holders might feel that the risks of not being able to follow up on contractual obligations due to a sudden increase in demand are greater than the financial losses made on unused capacity rights. Another way to state this is that the benefits of selling capacity on the secondary market are smaller than the risks of not being able to follow up on contractual obligations**.**
- **To retain the flexibility to optimize the gas portfolio;** primary interconnection capacity right holders might feel that the benefits than can be gained from having excess capacity available for the optimization of their portfolio (for example by trading between hubs in the event of price differences) are greater than the financial losses of not using capacity.
- **Hoarding for anti-competitive reasons;** primary interconnection capacity right holders might feel that the benefits of not providing competing shippers with capacity to enter a certain market are greater than the financial losses of not using capacity.

Multiple shippers agree that it is hard to indicate what the main motive for not offering unneeded capacity on the secondary market is. Some shippers even feel that the hoarding for anti-competitive reasons is a non existing motive, since a primary capacity right holder knows that the capacity it does not use will be made available to potential competitors in the form of interruptible capacity. They argue that this makes holding back capacity rights from possible competitors pointless. However, multiple shippers have indicated that they do not experience the security that interruptible capacity offers to be equal to that of firm capacity. Therefore interruptible capacity is indicated by most shippers as less desired and valued (inferior to firm) product.

Multiple shippers also agree on three motives that influence shippers to not use the secondary market to buy secondary capacity:

- **Lack of trust in the secondary market;** shippers in need of interconnection capacity might feel that the chance of getting access to the firm capacity product they need is too small on the secondary market and will therefore look at other options to get access to commodity on a network (or might even decide not to deploy any activities on a certain network).
- **Competing congestion management tools;** interruptible capacity; shippers in need op interconnection capacity might also turn to the interruptible capacity product offered on the primary market by the TSO.

- **Other, non pipe-line infrastructure bound, sources of commodity;** shippers in need of commodity on a certain network might turn to other sources of commodity, such as LNG, gas storage facilities or (virtual) commodity hubs.

3.2.3 Issues behind shipper motives

The motives for shippers not to sell or buy capacity on the secondary market are the result of four main issues:

- **A lack of an 'appetite for trade' by market parties**; it appears some market participants don't have any appetite for the trade in capacity rights. These parties are not likely to use the secondary market, for buying or capacity, on a regular basis. They either do not have the expertise or the manpower to actively trade on the secondary market, or they just don't want to.
- **Impact of the primary market;** it appears that the way in which interconnection capacity has historically been allocated on the primary market results in a situation in which most primary capacity rights are owned by parties that can be categorized as the parties with the least appetite for trade.
- **A lack of strong positive or negative incentives for shippers to offer capacity on secondary market;** it appears that with relatively low prices on the primary market (in relation to price of commodity) shippers have little (positive) incentive to sell capacity in order to get a return on unused capacity rights. Furthermore the fact that the firm UIOLI mechanism has never been applied (status 11 January 2007) provides no (negative) incentives for primary capacity right owners to sell unneeded capacity on the secondary market.
- **Shortcomings in the design of the secondary market;** multiple shippers that do (try to) use the secondary market indicate that they experience the design of the secondary market (presented in table 2.1.) to be flawed. Shippers bring forward the following main shortcomings in the facilitation of the secondary market:
    - non-transparency on available capacities, prices and capacity products;
    - coordination between markets on the same interconnection points (lack of a joint entry-exit product);
    - irregular trade (no concentration of supply and demand on fixed times);
    - lack of standardized contracts;
    - a relatively long ratification time of a transaction by the TSOs (average around 4/5 days, maximum of 10);
    - trade is non-anonymous on most markets (presents an opportunity for hoarding for anti-competitive reasons).
    - Some shippers also indicate that they experience (perhaps perceive) legal bottlenecks for transactions on the secondary market[13].

3.2.4 Conclusion

The results of the qualitative analysis, as presented in this paragraph, confirm the results of the quantitative analyses. A majority of the shippers interviewed agree that the secondary market is not performing as they expect it to do. It appears that the parties that own a majority of the primary capacity rights ((pre-liberalisation) legacy contracts allocated this way by the FCFS) lack a appetite for trade. This in combination with a lack of positive or negative incentives to offer capacity on the secondary markets results in illiquid secondary markets. Furthermore it appears that the shippers that do want to make use of the secondary market (mostly as buyers) experience problems with the design of the secondary market (presented in table 2.1.).

[13] An example of a perceived legal bottleneck is the statement made in §14.4. of the Gasnetzzugangsverordnung (GasNZV) which states that the price of capacity rights sold on the secondary market is not allowed to substantially exceed ("wesentlich überschreiten") the price for which it was initially bought on the primary market. However an exact (quantitative) definition of what is meant by 'substantially exceed' is not included in the GasNZV, so this article leaves room for interpretation.

4 Recommendations for adaptations in the secondary market design

4.1 The ambition level of the recommendations

For the recommendations for adaptations[14] in the design a distinction is made between the short and the long term. Not all of the four main issues discussed in the last chapter can be changed over a relatively short period of time; some issues cannot be directly influenced by the market and regulators at all.

Since the short and the long term solution have different ambition levels, they also deal with other issues. Figure 4.1. shows an overview of the issues the short and the long term recommendations will deal with.

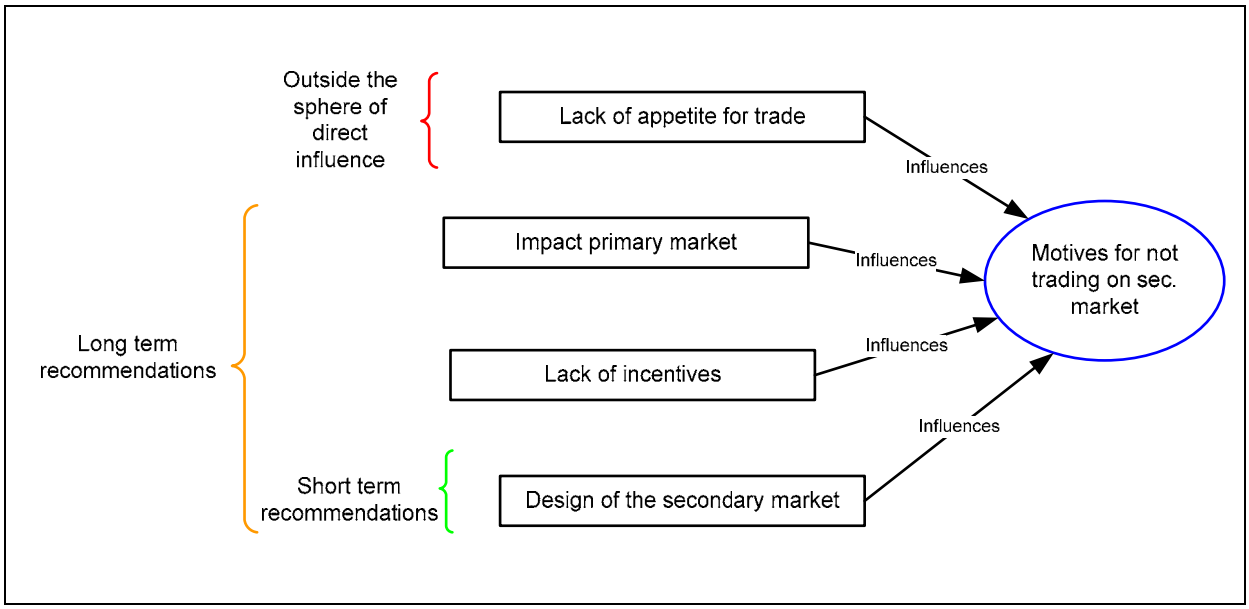

Figure 4.1. Ambition level of the short and the long term recommendations

4.2 Requirements for the adaptations

The requirements the possible adaptations in the secondary market design must meet are listed in this paragraph. These requirements are the result of interviews with multiple stakeholders (see appendix III). Since different types of stakeholders issued different types of requirements this paragraph presents the opinions of multiple stakeholders.

4.2.1 Short term requirements

The short term requirements focus on the issues surrounding the design of the secondary market. Stakeholders issued the following requirements for an alternative secondary market design.

[14] The ambition level of the recommendations made in this part of the report are made within the context and ambition level of the work stream secondary market for interconnection capacity of the NW region, GRI. Since the scope of this work stream is limited to the secondary market for transmission capacity the recommendations in this report will only concern the design of the secondary market.

However, the authors of this report are aware that adaptations in the design of the secondary market can only be successful if the other issues that influence the behaviour of shippers on the secondary market are tackled. We therefore present a number of long term recommendations which concern the primary market and the firm UIOLI mechanism (§ 4.3.2).

Already in place in the current design:

- central platform;

Required adaptations:

- transparency on price, volume and capacity product tradable on the secondary market;
- regular trade at fixed times;
- central platform;
- anonymous trading;
- easy to use IT system;
- standardized contracts for transactions;
- costs of facilitation should be low;
- standardized and transparent procedures;
- short ratification time by TSO of transactions;
- high level of coordination of secondary markets on interconnection points;

4.2.2 Long term requirements[15]

Besides the issues concerning the design of the secondary market (covered in the short term solution) the long term solution will also look at the positive and negative incentives for primary capacity rights holder to offer capacity on the secondary market and the impact of the primary market. This results in requirements for the primary market and the firm UIOLI method.

Multiple stakeholder have indicated that, in order for the performance of the secondary market to improve, the following adaptations need be made on the long term:

- Primary market:
  - should offer coordinated entry and exit capacity on interconnection points;
  - should offer standardized capacity types;
  - should offer capacity on a regular basis and on specific, fixed moments
- Firm long term UIOLI mechanism:
  - Clear criteria for applying firm UIOLI mechanism;
  - Standardized, non-complex procedures for applying firm UIOLI;

4.3 Design variables

4.3.1 Ambition level of the report

Since this report is written in the context of the GRI work stream on the secondary markets decisions made based on this report will specifically concern the secondary market. Since the primary market and the firm UIOLI mechanism are out of the scope of the work stream the report will focus on short term recommendations. However, the participants of the work streams on the primary market (and the firm UIOLI mechanism)[16] are recommended to keep the requirements made in the previous paragraph in mind in their decision making process on the best way forward.

[15] The information on primary market is checked and confirmed with primary market team (CRE/BNetzA), however methodology of presentation in primary market reports can differ.

[16] Although the firm UIOLI mechanism it outside the scope of this study we would like to make a suggestion for discussion (inspired by releasable capacity product offered by GRTgaz, see http://www.grtgaz.com/telechargements/allocation_rules_01072006.pdf). We argue for introduction of an automatic firm UIOLI method which, based on economic dominancy in national markets and non-utilisation of interconnections incl. correction for seasonal effects, reallocates unused capacity from dominant parties to the market parties with market shares below 20% (via TSO).

4.3.2 Short term design variables

This paragraph identifies the parameters of the secondary market design which are indicated by multiple shippers as in need of adaptation (from hereon referred to as 'design variables'). The (short term) recommendations will concern the way in which these design variables are adapted.

The following design variables have been identified:

- Market mechanism;
- Facilitating party;
- Method of facilitation;
- Level of coordination of the secondary markets capacity products on both sides of the interconnection point
- Capacity products tradable on the secondary market;
- Capacity rights tradable on the secondary market;
- Level of transparency;
- Regularity of trade;
- Ratification time of the transaction by the TSO

4.3.3 Alternatives for the adaptations of the design variables

The design variables identified in the previous paragraph can be adapted in different ways. This paragraph presents a short overview of the available alternatives for the adaptation of each of the design variables, without indicating any preference. Although for some design variables multiple alternative adaptations are possible, this paragraph limits itself to presenting a maximum of three alternatives (deemed as most relevant by the authors).

Market mechanism

- *Bilateral trading:* transaction on the secondary market can be conducted bilaterally. Supply and demand come together through bilateral, closed, negotiations between the trading parties.
- *Auction:* transaction on the secondary market can be conducted through an auction. Demand and supply come together by an auction of the supplied capacity products.
- *Broker trade:* transaction on the secondary market can be conducted through a broker office. Demand and supply come together through the agency of a broker office.

Facilitating party

- *TSO:* the secondary market can be facilitated by the TSO responsible for the interconnection point (and thus the secondary market) is part of, or by a joint venture of TSOs in the event of a coordinated secondary market.
- *Professional trading office*: a secondary market can be facilitated by a professional trading office that is specialized in the facilitation of markets (regardless of the market mechanism that is selected).

Method of facilitation

- *Central marketplace*: the secondary market can be facilitated by a central (online) marketplace for all interconnection points the subject to this secondary market. In the event of multiple internationally coordinated secondary markets (see next design variable) the central market place will need to have an international character.
- *Decentralized trading*: the secondary market can be facilitated by decentralized trading, in such a system there is no need for a central market place. Parties that want to trade need to find each other in other ways.

Level of coordination of the secondary markets capacity products on both sides of the interconnection point

- *Coordination of secondary markets on a national level*: a secondary market design can foresee in the offer of a coordinated entry-exit product on a national level.
- *Coordination of secondary markets on a international level*: a secondary market can foresee in the offer of a coordinated entry exit products on cross-border interconnection points.

Capacity products tradable on the secondary market

- *All products available on the primary market:* the secondary market design can allow the trade of all capacity products (yearly, monthly cap. etc.) available on the primary market (capacity products will differ between different TSO networks).
- *Specific products:* the secondary market design can allow the trade of only one (or multiple) specifically defined type of capacity product; for example the trade of firm, daily capacity.

Capacity rights tradable on the secondary market

- *Capacity rights:* the secondary market design can allow the trade of capacity rights;
- *Usage rights:* the secondary market can allow the trade of usage rights.

Level of transparency;

- *Transparency on individual bids and transactions:* a secondary market design can foresee in the publication information on the bids (demand and supply) made and the specific details of transactions. This includes the publication of specific names of active parties and the capacities, capacity products and prices they are offering or demanding on the secondary market. A secondary market design that foresees in transparency on individual bids does not necessarily need to be transparent on specific transactions and vice versa.
- *Transparency on general market results:* a secondary market design can foresee in the publication of general information on bids made and transactions concluded; for example names of traders and the details of their transactions can be kept confidential, while still publishing the total volume and average price of each capacity product traded. A secondary market design that foresees in general transparency on bids does not necessarily need to provide general information on the transaction outcomes and vice versa.

Regularity of trade

- *Irregular trade*: a secondary market can foresee trade on an irregular basis, when capacity is offered to the market;
- *Regular trade*: a secondary market can foresee in regular trade on fixed moments; for example daily auctions.

Ratification time of the transaction by the TSO

- *General ratification procedures for all capacity right procedures*: a secondary market design can foresee in a ratification time of transactions which is similar to ratification time of all capacity related procedures on the TSO network (i.e. primary market).
- *Specific ratification procedures for the secondary market*: a secondary market design can foresee in a specific ratification time of transactions for the secondary market; for example the direct ratification of a transaction by the TSO after the transaction has been agreed upon by market parties.

4.4 Recommendations for adaptations in the design variables[17]

4.4.1 Selection of an alternative for the adaptation of the design variable

This paragraph makes suggestions for a specific selection of one of the alternatives for adaptation of a design variables as discussed in the previous paragraph. These recommendations reflect the opinion of the authors and will be subject of discussion during the workshop on secondary markets during the SG meeting in Bonn.

For each design variable the motivation of the authors behind the selection of an alternative will be (briefly) discussed.

Market mechanism

A capacity auction is recommended as the best market mechanism for the secondary market. An auction of capacity enables shippers to value the available capacity, i.e. to allow the shipper that wants the capacity the most to offer the highest price. This market mechanism also reduces the opportunity for hoarding (for anti-competitive objectives) since a selling party has no choice to whom it wants to sell the capacity, once it has been offered on the auction the capacity will go to the highest bidder. There are different types of auctions (see McDaniel, 2003). in this case a sealed, simultaneous auction with a clearing price is recommended. This type of auction provide shippers with anonymity (on the demand and on the supply side) and also provides clear information on average initial demand and offer prices, capacities that are demanded and offered and on the final average clearing price that is the result of the simultaneous bidding process.

Facilitating party

As a facilitator the selection of an professional market facilitator, preferably an auction office, to facilitate the secondary market is recommended. In order to reduce implementation costs for the TSO and to prevent the making of unnecessary mistakes (already made in the past by the auction office) an auction office is a valid option. This auction office will have the specific knowledge, IT platform and standardized contracts available that are necessary to successfully set-up a secondary market in a relatively short time.

Possible difficulties that might be experienced with the outsourcing of the secondary market facilitation to an outside market facilitator is the information interaction with the TSO and the possibility of different market formats on different TSO networks in the case of multiple auction offices facilitating secondary markets.

Method of facilitation

It is suggested that the secondary market should be facilitated on a central market place, grouped around active hub(s). Such a market place will make the market more transparent for the active shippers and will reduce their transaction costs (made during the search for information on available or requested capacity and on the contact information of other market parties).

Coordination of secondary markets

It is recommended that coordinated entry-exit products are offered on cross-border interconnection points. This requires international coordination between the TSO on both sides of an interconnection points. One needs to keep in mind that this might result in higher costs for the TSO active on these interconnection points.

Capacity products tradable on the secondary market

[17] The recommendations are meant as preparation for a workshop held on the 8th and 9th of February on the GRI SG meeting in Bonn. During this workshop each specific design variable will be subject of discussion.

All capacity products (firm and interruptible) available on the primary market should be allowed to be traded on the secondary market. Although it appears that in practice shippers are mainly interested in firm, short term capacity, shippers should also be able to get access to firm and interruptible long term capacity and interruptible short term capacity on the secondary market.

Capacity rights tradable on the secondary market

It is recommended to only allow the trade of capacity rights. The (decentral) trade in usage rights make the secondary market less-transparent, so it is suggested to let all trade take place on the central market place.

Level of transparency

It is suggested to provide general information on bids (in this case information on the total volume and average reserve price of the capacity products offered for auctioning) and general information on the outcomes of transactions (in this case the clearing prices for each capacity type auctioned). Too much information on the bidding parties might stimulate anti-competitive behaviour. The same goes for too much information on the transactions (in this case the bidding ladder). Since the number of players trading on the secondary market will always be limited (in comparison with other markets) even anonymous detailed information on the transaction process (in this case the bidding process) might be reducible to certain parties.

Regularity of trade

The regularity of trade depends on the type of capacity which is traded. The trading frequency should be focussed on concentrating the supply and demand in order to maximize the liquidity of market. In order to provide shippers with the security that there will be the possibility to trade on a regular basis, it is suggested that a secondary market design should foresee in daily trade frequency for short term capacity (day/week), on a day ahead basis, and in weekly auctions for long term capacity (month/season/year). In the event of an auction this auction should take place on a daily basis (shot term capacity) and weekly basis (long term capacity) and should have fixed procedures with fixed timeslots.

Ratification time of the transaction by the TSO

A transaction on the secondary market should be immediately ratified by a TSO. Although this might request some changes, and costs, in the system of a TSO the secondary market will benefit from such a change. Since shippers indicate that they wish to use the secondary market for the trade of short term capacity the ratification period should be as short as possible.

4.4.2 Suggestions for the implementation of the adaptations

To implement these adaptations we suggest to set up a pilot. A number of interconnection points suitable for such a pilot will have to be selected[18]. The TSOs responsible for these interconnection points will have to be asked to present their vision on the adaptations they will need to make in their systems. Furthermore the regulators and TSOs will need to study and identify any possible legal bottlenecks[19]. An auction office will have to be selected (perhaps by a call for tenders) to set-up and facilitate the auction. This auction office will need to make its arrangements with the TSOs concerning coordination and information exchange. Next shippers will have to apply for the right to participate in the auction at the auction office (and at the relevant TSOs if they do not have a shippers status on one of the networks) and the pilot can start.

[18] We would suggest an integration of this pilot into the EFET proposal for the auction of daily capacity on a day ahead basis on Bunde/Oude Statezijl and Ellund. This proposal can be downloaded at: http://www.efet.org/default.asp?Menu=283.
[19] If there are any bottlenecks it is up to the regulators, national governments and the EU to address them

We would like to conclude this report by underlining the remarks concerning the potential for success of the secondary market made in the disclaimer at the beginning of this report. We recognize the fact that a secondary market will only be successful if the primary capacity right holders are willing to develop 'an appetite for trade'. However we feel that even though this process could take a relatively long time all should be done to make sure that the secondary market design is as best as possible.

We realize that the our suggestions forces TSOs to make costs. We feel however that the source of these costs, the adaptations in their IT system, are adaptations that TSOs will need to make at some point in the future (we believe that in the future primary markets will also require the TSO to offer coordinated entry-exit products and will require shorter ratification times of transactions). We also believe that introducing an outside market facilitator will reduce the implementation and operational costs for the TSOs as well as for the shippers.

4.5 Conclusion

In this chapter a number of recommendations were made for adaptations in the current secondary market design. The table below (table 4.1.) present an overview of the current situations (as presented in § 2.5) and the recommended adaptations.

Table 4.1. Overview of the current situation and the recommended adaptations in the secondary market design

Design variables	Current situation	Recommendations
Market mechanism	Bilateral trade	Sealed, simultaneous auction with clearing price
Facilitator	TSO	Auction office
Facilitation	Central (national) bulletin board	Central market place
Level of coordination between secondary markets	None	International coordination on interconnection points; offer of a coordinated entry-exit product
Capacity products and types tradable on secondary market	All capacity products (interruptible or firm) offered on the primary market are allowed to be traded on the secondary market	All capacity products (interruptible or firm) offered on the primary market are allowed to be traded on the secondary market
Capacity rights tradable on secondary market	• Capacity rights • Usage Rights	• Capacity rights
Level of transparency	Centralized information on buying and selling parties, specific information on capacities and price of capacity products offered and demanded.	Centralized general information on bids (total capacities and average reserve price of offered products) and general information on the outcomes of transactions (clearing prices for products)
Regularity of trade	Trade is irregular; transactions take place after a shipper offers or requests capacity (either by informal ways or on the bulletin board) and finds a counterparty for a transaction.	Trade is regular; daily trade in short term capacity (on a day-ahead basis) and weekly trade in long term capacity
Ratification time of the transaction by the TSO	• Capacity rights: max. of 10 days • Usage rights: no information obligation towards the TSO (the selling shipper still has the obligation to nominate)	Immediate ratification of transactions

5 Conclusion

This report presented an analysis of the current situation of the secondary market for transmission capacity at cross-border interconnection points. It also made a number of recommendations for adaptations in the current design of the secondary markets in the NW-EU region.

A quantitative analysis (see § 3.1.) of the secondary markets shows that the current secondary markets are not performing as was hoped for by national regulators. The response on an international questionnaire showed that the there is no trade on the majority of interconnection points. On the secondary markets on which trade does occur, the secondary markets are not liquid. This despite an increase in trade in 2006 (in respect to 2005) on some interconnection points.

A qualitative analysis (see § 3.2.) of the secondary markets shows that primary capacity right holders offer little capacity on the secondary market. This behaviour of the primary capacity right holders is caused by a lack of appetite for trade among primary capacity right holders, a negative impact of the primary market, a lack of incentives for parties to offer capacity on the secondary market and a general design of the secondary market which multiple shippers experience as insufficient.

We recommend a number of changes in the current secondary market design (see § 4.4.) in order to improve the performance of the secondary market. An auction office should be selected to set up and run an auction on a central (NW-EU) market place. The capacity rights of all products (firm and interruptible) available on the primary market should be eligible for the auction. The auction office will have to publish general information on bids (total capacities and average reserve price of capacity products offered) and general information on the outcomes of auctions (clearing prices for the capacity products). We recommended to organize daily, day-ahead, auctions for short term capacity (day/week) and weekly auctions for long term capacity (month/season/year).The last adaptation we suggest is to offer a coordinated entry-exit product on both sides of an interconnection point.

The last remark we would like to make is that we consider the secondary market as the congestion management procedure with the greatest potential in the long run. However, besides focusing on adaptations in the secondary market design, on the short term attention should be paid to the transparency issues surrounding the interruptible UIOLI mechanism. Right now these seems to be the congestion management procedure most frequently used by shippers. We stress that in order to provide shippers with multiple options to get access to capacity all congestion management procedures need to be improved.

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Appendix I: Definitions

Allocation method: procedures surrounding the distribution of transmission capacity among interested shippers; the allocation method consist of a **primary allocation method** and the **congestion management procedures.**

Capacity product: the capacity product refers to the contract duration of the ***capacity right*** available on the ***primary market*** . An example of a capacity product is daily capacity.

Capacity right: capacity rights provide the owner of this right with the right to flow commodity through an ***entry*** or ***exit point*** in the transmission network. The right obligates the owner with the responsibility to nominate (and renominate) the exact volume of commodity it plans to flow through this point (in coherence with the right it has reserved through the capacity right). The ***capacity right*** is distributed by the **TSO** on the primary market and is tradable on the ***secondary market***.

Capacity type: the capacity type refers to the security of flow the TSO provides with the distribution of a ***capacity product*** on the ***primary market***. The two possible capacity types are ***interruptible*** and ***firm capacity***.

Contractual congestion: congestion (i.e. the all *available capacity* has been allocated) on an ***entry point*** or ***exit point*** where there is no ***physical congestion***. Contractual congestion implicates that capacity right holders aren't utilizing all of the allocated capacity.

Cross-border point: transfer point between two national *transmission networks*. An interconnection point consist of an *exit point* of a national transmission network and the *entry point* of the neighbouring transmission network. Also referred to as *interconnection point*.

Entry point: node in the transmission network where a physical gas flow is injected into the *transmission network*. Entry points are either ***interconnection points*** with neighbouring networks or connection with domestic production facilities and LNG terminals. The right to flow gas into an entry point is allocated by the ***TSO*** by an ***allocation method***. The amount of gas flowed into the network has to be *in balance* with the amount of gas extracted from an ***exit point***.

Exit point: node in the transmission network where a physical gas flow is extracted from the *transmission network*. Exit point are connections interconnection points with neighbouring networks, exits to regional networks or exits to large consumers. The right extract gas form the network using an exit point is allocated by the ***TSO*** using an ***allocation method***. The amount of gas extracted from the network has to be *in balance* with the amount of gas flowed into an ***entry point***.

Firm capacity rights: capacity rights offered by a *TSO* on the *primary market* with a 100% guarantee of availability at the time of flow.

Firm (long term) 'use-it-or-lose-it' (UIOLI): firm UIOLI provides the TSO with the option to take the capacity rights back from a capacity right holder that has been hoarding capacity for anti-competitive reasons. The reclaimed capacity rights are reoffered on the ***primary market*** as ***firm capacity rights***. The capacity right holder is not compensated with a refund for the reclaimed capacity rights.
Example: a capacity right holder has been allocated 1000 MW on a certain entry point for a period of 1 year. If the TSO or the regulatory agency determine that during (for example) a period of 6 months this capacity right holder has utilized a maximum of 60% of its capacity, the formal UIOLI tool provides the TSO or regulator with possibility of reclaiming 40% of the capacity right holders capacity for the remaining 6 months and to re-offer this 40% on the primary market as firm capacity.

First-come-first-served (FCFS): type of allocation method. FCFS distributes capacity at fixed tariffs at the sequence of applying for this capacity to the shippers.

Interruptible (short term) 'use-it-or-lose-it' (UIOLI): interruptible UIOLI provides the TSO with the option to re-offer capacity on the primary market before the actual utilization of this capacity by the primary capacity right holder. The TSO looks at the historical flow pattern of a capacity right holder and on the basis of this estimates the firm capacity that this capacity right holder will not use during the contracted

period. The TSO re-offers this capacity on the ***primary market*** as ***interruptible capacity***. If a capacity right holder uses more than the estimated amount the holder of the interruptible capacity right is interrupted.

Interruptible capacity: capacity offered by a ***TSO*** on the primary market at a reduced tariff, with a chance of interruption at the time of flow. Interruptible capacity is the result of the ***interruptible UIOLI*** mechanism.

Interconnection point: see ***cross-border point***

Physical congestion: congestion on an entry point or exit point because the full technically available physical capacity has been utilized.

Primary allocation method: the primary allocation method allocates the available capacity on an ***entry*** *point* or ***exit point*** to interested parties.

Primary market: see *primary allocation method.*

Secondary market: a ***secondary market*** enables primary capacity right holder to sell their unneeded primary capacity rights (firm or interruptible) to other interested shippers.

TSO: Transmission System Operator, party responsible for the exploitation and maintenance of the network is in often also the owner of the network, this is however not a prerequisite.

Unneeded capacity***: capacity rights*** which are not utilized by a ***capacity right*** holder and for which the capacity right had no purpose. This is are the capacity rights which a shipper will offer on **the *secondary market.***

Unused capacity: capacity rights which are not utilized by the ***capacity right*** holder; unused capacity is not necessarily the same as ***unneeded capacity.*** Although a shipper might decide not to utilize capacity rights, these rights might still have a benefit as risk hedging tool or as a flexibility option.

Usage right: a usage right is a tradable right on the ***secondary market.*** **A** usage right provides the buying party with the right to use a part of the ***capacity rights*** of the selling shipper. The selling shipper remains responsible for the nomination of the commodity the buying shipper plans to flow. Since the selling shipper remains the responsible party the ***TSO*** needs not to be informed about a transaction of ***usage rights***

Appendix II : List of respondents of the ERGEG questionnaire on primary and secondary markets

Respondents with complete data:

- GRTgaz (F);
- BEB Transport(D);
- RWE (D);
- EWE Netz(D)
- Wingas (D)
- (E.ON Gastransport (D)[20])

Responsed with data missing[21]:

- Bord Gais (IRL);
- Energinet.tk (DK);
- GTS (NL);
- National Grid (UK)
- Nova Naturegas (S);
- ONTRAS – VNG Gastransport GmbH (D);
- Svenska Kraftnät (S)

No response (most important parties):

- Fluxys (B)
- GdF Deutschland (D)
- Gassco (N)
- Interconnector (UK): questionnaire was sent later to this respondent, their deadline was the 19th of december, expected time of return unknown.

[20] E.ON Gastransport submitted their response on the 19th of January, however this was to late to process their response into the final results of the quantitative analysis. However E.ON Gastransport has confirmed the general conclusion of the quantitative analysis.
[21] Data might be missing for several reasons; stakeholders might not want to disclose confidential data, might not have access to certain data (in the case of a shipper) or might not have any data on available (for TSOs).

Appendix III : List of parties interviewed

Regulatory agencies:

- CRE (F)
- CREG (B)
- Ofgem (UK)
- DTe (NL)

TSOs:

- BEB (D)
- Eon Gas Transport (D)

Shippers:

- Centrica (UK)
- Enel (I)
- EDF trading
- Gasterra (NL)

Other parties:

- APX group (NL)
- 4 more active stakeholders that did not wish to be disclosed.