Further analysis of gas flexibility services

SENSITIVITY ANALYSIS OF RESEARCH UNDERLYING THE FRONTIER REPORT

DTe is consulting on a draft decree in relation to the position of Gasunie in the Dutch markets for gas flexibility services. DTe has asked Frontier to carry out further analysis on gas flexibility services in relation to comments made by market participants during DTe’s consultation about the gas market and the findings in Frontier’s report “Research into Flexibility Services – Final Report” dated March 2005. This note presents the results of the further analysis.

INTRODUCTION

DTe is consulting on a draft decree in relation to the position of Gasunie in the Dutch markets for gas flexibility services. DTe is drafting the decree on the basis of its investigation as to whether Gasunie is dominant in the provision of gas flexibility services in the Netherlands.

As part of the investigation, DTe commissioned Frontier Economics to analyse the markets for gas flexibility in the Netherlands and to take a view as to Gasunie’s position in the markets. The findings of Frontier’s analysis are presented in the report Research into Flexibility Services – Final Report, dated March 2005 (“the Report”).

The key conclusions of the Report with respect to the L-gas and H-gas markets were:

**Extract from conclusions on L-gas (pg. 4)**

The L-gas system causes the greatest concerns about possible dominance by Gasunie. Gasunie has a very high capacity share in all market segments and is pivotal for a significant proportion of the year. The very low cost of incremental flexibility from Groningen combined with excess capacity is likely to provide a greater entry deterrent than for the H-gas market. Finally, due to its greater capacity share in the L-gas market, Gasunie is likely to make relatively more profits through foreclosure of L-gas flexibility for its rivals than it would for foreclosure of H-gas rivals.

**Extract from conclusions on H-gas (pg. 5)**

The H-gas market also raises concerns of dominance although to a lesser extent than for the L-gas market. Gasunie has a capacity share of 50% or more in all market segments with the exception of the hourly segment. If these shares in excess of 50% were market shares and not capacity shares, absent evidence to the contrary, European Court of Justice precedent would presume dominance. We note that Gasunie’s market shares in these segments would in all probability exceed their capacity shares if Gasunie is not withholding capacity because it generally controls and has an interest in the lower cost sources of flexibility.
DT(e) consulted on the gas market and the findings of the Report and, as a result of comments received from market participants, asked Frontier to undertake specific further analysis on gas flexibility services. This note presents the results of that further analysis.

This note is structured as follows:

- **Section 1: Sensitivity analysis regarding sources of flexibility.** This section reports on sensitivity analysis of the research set out in the Report to changes to new sources of supply of flexibility to the Dutch markets. The sensitivity analysis is carried out for the L-gas and H-gas systems for the years 2005, 2007 and 2009.

- **Section 2: Contract assessment.** This section assesses the effects of contracts for the sale of gas by Gasunie to other parties on the analysis set out in the Report. The contract assessment is carried out for the L-gas and H-gas systems for the year 2005.
SENSITIVITY ANALYSIS REGARDING FLEXIBILITY SOURCES

Overview of sensitivity analysis regarding flexibility sources

As a result of comments received to the consultation on the Report, DTe asked Frontier to explore the sensitivity of the analysis in the Report to:

- new developments that may increase the capacity of flexibility available to the Dutch markets; and
- a reduced ability of the Groningen field (controlled by Gasunie) to supply flexibility.

Additional capacity to supply flexibility

Through comments from market participants and further analysis DTe and Frontier identified a set of (potential) new projects that could affect the capability to supply flexibility to the market in the future. The new developments investigated would take place over the period 2005-09, as summarised in Table 1.
<table>
<thead>
<tr>
<th>Year</th>
<th>System</th>
<th>Description of development</th>
<th>Flexibility capacity (max to min) (Geq)</th>
<th>Sources of information</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>H-gas</td>
<td>Import capacity from Belgium that becomes available (through the Zelzate GTS interconnection)</td>
<td>1.36 mcm/h</td>
<td>Fluxys, GTE</td>
</tr>
<tr>
<td>2005</td>
<td>H-gas</td>
<td>Backhaul from exports to Belgium and Germany (through Bocholz and s’Gravenvoren)</td>
<td>0.66 mcm/h</td>
<td>GTS</td>
</tr>
<tr>
<td>2007</td>
<td>H-gas</td>
<td>Start of operation of the BBL pipeline(^1) between the UK and the Netherlands providing 16 bcm/year</td>
<td>2.07 mcm/h</td>
<td>BBL company</td>
</tr>
<tr>
<td>2009</td>
<td>H-gas</td>
<td>GTS open season(^2) increasing import capacity from Germany Emden-Bunde (30 bcm/year) and export capacity to Belgium (allowing backhaul of (11 bcm/year)</td>
<td>5.29 mcm/h</td>
<td>GTS open season information brochure</td>
</tr>
</tbody>
</table>

Table 1: Assumptions about new developments of capacity to supply flexibility

*Source: GTS, GTE, Fluxys*

Our assumptions for the sensitivity analysis are conservative in that they err on the side of overstating new non-Gasunie capacities and underestimating Gasunie’s capacity shares:

- We assume that all export capacity available from 2009 to export gas from the Netherlands to the south-west (Belgium) could be used for imports or backhaul into the Netherlands. However, such backhaul would require a corresponding increase in supply of flexibility to Belgium (or reduction in demand) and it is questionable whether this would occur.

- It is questionable whether flexibility can be procured from all of the mentioned sources over short and unpredictable periods (e.g. to meet hourly demand) due to limitations in nomination rules. However, we assume that all new sources of flexibility could, during the period 2005-09, offer flexibility to each market segment (hourly, daily, …, seasonal flexibility).

- We assume that all new supplies of flexibility are cumulative. However, it is possible that as some sources become available, other sources may not be developed.

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\(^1\) BBL is a relatively expensive source of flexibility due to the opportunity cost of running the pipe at less than maximum flow capacity over long distances.

\(^2\) GTS has not made public whether it intends to develop new capacity as a result of the open season process, and if so, the size of new capacity it plans to develop. Our assumptions are based on information provided in the GTS brochure accompanying the open season.
We assume that the maximum possible capacity will be made available to provide flexibility (rather than “flat” deliveries) at the earliest likely time.

We consider the maximum physical flexibility that could be delivered due to the extra capacity (and that gas flowing through extra capacity is able to supply extra flexibility).

All new sources of flexibility are controlled by non-Gasunie parties.

For the analysis, we also assume that demand for gas increases in the Netherlands during the period 2005-09.\(^3\)

**Separate markets for H-gas and L-gas**

The Report concluded that the L-gas and H-gas systems form distinct markets, as follows:

**Extract from conclusions on product market (pg. 2)**

“The L-gas and H-gas systems form distinct markets. The markets are linked through quality converters and therefore a part of each market – up to the maximum conversion capacity – can be considered as part of the other market.”

For this reason we undertake the sensitivity analysis separately for the H-gas and L-gas markets (whilst taking account of the effect of quality conversion).

**L-gas market**

The Report found that in the L-gas system Gasunie was pivotal for approximately 2,900 hours of the year. The report concluded:

**Extract from conclusions on L-gas (pg. 4)**

*The L-gas system causes the greatest concerns about possible dominance by Gasunie. Gasunie has a very high capacity share in all market segments and is pivotal for a significant proportion of the year. The very low cost of incremental flexibility from Groningen combined with excess capacity is likely to provide a greater entry deterrent than for the H-gas market. Finally, due to its greater capacity share in the L-gas market, Gasunie is likely to make relatively more profits through foreclosure of L-gas flexibility for its rivals than it would for foreclosure of H-gas rivals.*

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\(^3\) Demand is assumed to increase in accordance with figures published by the Economist Intelligence Unit (EIU).
Gasunie and GTS commented that in their view, the Groningen field is approximately half the size that Frontier used in the analysis included in its Report. DTe requested that Frontier undertake a sensitivity analysis with Groningen capacity equal to that claimed by Gasunie.

Our sensitivity analysis shows that the period over which Gasunie is pivotal is unchanged when the size of the Groningen field is reduced from that assumed in the Report (and all other capacities remain unchanged). This is because the amount by which Gasunie is pivotal depends upon the capacity of non-Gasunie players. Reducing the capabilities of the Groningen field, however, does not affect the capabilities of non-Gasunie players.

However, there is some interaction between the H-gas and L-gas markets through the quality conversion facilities. The flexibility able to be transferred from the H-gas to the L-gas system is assumed to be the minimum of the converter capacity and the sum of non-Gasunie flexibility available on the H-gas system. Therefore, the increase in supply of flexibility from non-Gasunie players to the H-gas market assumed for the sensitivity analysis also increases the supply of flexibility from non-Gasunie players to the L-gas market. Consequently, the duration for which Gasunie is pivotal in the L-gas market falls. Figure 1 illustrates this affect.

The duration for which Gasunie is pivotal is about 2,100 hours per year in 2005, which is for fewer hours than shown in the Report. However Gasunie remains pivotal for a significant portion of the year.

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4 We deal with the issue of the on-sale of Gasunie flexibility through long-term contracts elsewhere.

5 Gasunie also raised a question about the quantity of flexibility able to be provided by the storage facilities at Norg, Grijpskerk and Alkmaar. We have not altered the assumptions made in the Report with respect to these facilities since the assumptions were sourced from the study by BET into the technical capability of storage: “Technical Study Gas Storage – Final Report”, 16 May 2001.

6 For the pivot analysis, we conservatively do not take account of Gasunie’s share of converter capacity. This would tend to conservatively understate Gasunie’s excess capacity in the market.

Further analysis of gas flexibility services
Gasunie’s capacity shares in the L-gas market segments for 2005 are set out in Table 2. The capacity shares are in excess of 50% for all market segments for both summer and winter.

<table>
<thead>
<tr>
<th></th>
<th>Hourly</th>
<th>Daily</th>
<th>Weekly</th>
<th>Seasonal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max-Average</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Summer</td>
<td>64</td>
<td>76</td>
<td>83</td>
<td>84</td>
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<tr>
<td>Winter</td>
<td>69</td>
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</tr>
<tr>
<td>Max-Min</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Summer</td>
<td>67</td>
<td>73</td>
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<tr>
<td>Winter</td>
<td>62</td>
<td>73</td>
<td>77</td>
<td>76</td>
</tr>
</tbody>
</table>

Table 2: Sensitivity analysis - Gasunie’s capacity shares (%) in the L-gas market, 2005

Assessment for the period 2007-09 for L-Gas

We are not aware of current plans for additional capacity to supply flexibility to the L-gas system during this period. Therefore, we limit the sensitivity analysis of the L-gas market to 2005.7

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7 We have also checked for any supply effects feeding through the quality conversion facilities due to proposed developments in the H-gas market on the L-gas market during the period 2007-09.
Conclusions for L-Gas

We find that Gasunie would be pivotal in the L-gas market for a significant portion of the year even if we assumed that the Groningen field were able to deliver at about half the rate assumed in the Report and the capacity of flexibility able to be transferred from the H-gas market increased in accordance with additional sources of flexibility supply to the H-gas market. In addition, Gasunie has high capacity shares in all segments of the L-gas market.

Therefore, our conclusions about Gasunie’s position in the L-gas market remain unchanged from the Report as a result of the sensitivity analysis.

H-gas market

In the H-gas system, the report found Gasunie not to be pivotal. However, high capacity shares in certain market segments were found to be a cause for concern.

Extract from conclusions on H-gas (pg. 5)

The H-gas market also raises concerns of dominance although to a lesser extent than for the L-gas market. Gasunie has a capacity share of 50% or more in all market segments with the exception of the hourly segment. If these shares in excess of 50% were market shares and not capacity shares, absent evidence to the contrary, European Court of Justice precedent would presume dominance. We note that Gasunie’s market shares in these segments would in all probability exceed their capacity shares if Gasunie is not withholding capacity because it generally controls and has an interest in the lower cost sources of flexibility.

The extract from page 5 of the Frontier report sets out how the use of capacity shares relates to the use of market shares (even in cases where capacity overhang may be an issue). Table 3 illustrates the capacity shares for each market segment for the H-gas market as set out in the Frontier report.

<table>
<thead>
<tr>
<th>Max-Average</th>
<th>Hourly</th>
<th>Daily</th>
<th>Weekly</th>
<th>Seasonal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer</td>
<td>57</td>
<td>63</td>
<td>74</td>
<td>77</td>
</tr>
<tr>
<td>Winter</td>
<td>39</td>
<td>56</td>
<td>70</td>
<td>77</td>
</tr>
<tr>
<td>Max-Min</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Summer</td>
<td>53</td>
<td>60</td>
<td>67</td>
<td>67</td>
</tr>
<tr>
<td>Winter</td>
<td>44</td>
<td>60</td>
<td>67</td>
<td>67</td>
</tr>
</tbody>
</table>

Table 3: The Report – Gasunie’s capacity shares (%) in the H-gas market in 2004

Source: Frontier report, March 2005

8 The precedence for using capacity shares is set out on page 63 of the Frontier report.
Approach to sensitivity analysis for H-gas

We assessed Gasunie’s capacity shares in the supply of flexibility to the H-gas system in each market segment for the three years 2005, 2007 and 2009. These years correspond to changes in assumptions about the available capacity to supply flexibility to the Dutch markets:

- import capacity at ‘Zelzate GTS’ will become available to allow H-gas imports from Belgium from 2005 onwards (1.36mcm/h(Geq));
- the entire H-gas backhaul capacity from exports to Belgium and Germany at Bocholz and s’Gravenvoren becomes available to non-Gasunie parties from 2005 onwards (0.66mcm/h(Geq));
- there is an increase in H-gas capacity to import gas to the Netherlands due to the commissioning of the BBL pipeline between the UK and the Netherlands in 2007 (16bcm per year or 2.07mcm/h(Geq)); and
- there is an increase in imports of H-gas from Germany due to new entry capacity at Emden-Bunde (30bcm per year) and an increase in backhaul capacity due to increased H-gas import / export capacity on the Belgian-Dutch border (11bcm per year or 5.29mcm/h(Geq)) – both capacities being available from 2009.

Figure 2 sets out our assumptions for cumulative capacity supplying the H-gas market in the context of existing Gasunie and non-Gasunie capacity for the period 2005-09.
Results of sensitivity analysis for H-gas

In Table 4, we present capacity shares in the flexibility market for H-gas for summer and winter for max – min during 2005, 2007 and 2009.

<table>
<thead>
<tr>
<th>Season</th>
<th>Market segment</th>
<th>2005</th>
<th>2007</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer</td>
<td>Hourly</td>
<td>48</td>
<td>43</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>Daily</td>
<td>54</td>
<td>49</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>Weekly</td>
<td>60</td>
<td>54</td>
<td>43</td>
</tr>
<tr>
<td></td>
<td>Seasonal</td>
<td>59</td>
<td>53</td>
<td>41</td>
</tr>
<tr>
<td>Winter</td>
<td>Hourly</td>
<td>39</td>
<td>36</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td>Daily</td>
<td>54</td>
<td>49</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>Weekly</td>
<td>60</td>
<td>54</td>
<td>43</td>
</tr>
<tr>
<td></td>
<td>Seasonal</td>
<td>59</td>
<td>53</td>
<td>41</td>
</tr>
</tbody>
</table>

Table 4: Sensitivity analysis – Gasunie’s capacity shares (%) in the H-gas market for the period 2005 to 2009

Source: Frontier analysis

Conclusions for H-gas

Although Gasunie is not pivotal, its high capacity shares in most segments in 2005 and 2007 indicate that dominance remains a concern in the flexibility market for H-gas with the assumptions about new developments for the supply of flexibility. This is because the projected new capacity only adds to supply capacity to a limited extent.

Concerns are reduced but not eliminated for 2009 if all assumed schemes are developed. Gasunie’s capacity shares are between 40% and 50% for the weekly and seasonal segments for 2009. Even if Gasunie were found not to be dominant in 2009 under the conservative set of assumptions used here, this would not obviate the need for intervention if Gasunie was found dominant in prior years.

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9 Gasunie’s capacity shares are greater than 50% in all but the hourly segment for 2005 and in the weekly and seasonal segment for 2007. Gasunie’s capacity shares are between 40% and 50% in the hourly segment (summer) for 2005, in the hourly and daily segment (summer) for 2007 and in the daily segment (winter) for 2007.

10 The additional capacity assumed for 2005 is less than 8% of already installed capacity in 2005 and the additional capacity assumed to be installed during the period 2005 to 2007 is about 16% of already installed capacity in 2007.
Conclusions about whether Gasunie remains dominant in the H-gas market for those segments and years in which its capacity share is below 50% would need to additionally take account of incentives to raise price.

Conclusions to sensitivity analysis regarding flexibility sources

The sensitivity analysis illustrates that under the assumptions of development of additional capacity to supply flexibility over the foreseeable future (2005 to 2009) and the reduction in the capacity associated with the Groningen field, we conclude the following:

- In the L-gas market, Gasunie remains pivotal and has a high capacity share in all segments for 2005. This raises concerns about dominance. The few changes assumed to the L-gas market for 2007 and 2009 are unlikely to remove concerns of dominance during that period.

- In the H-gas market, Gasunie is not found to be pivotal. However, Gasunie’s high capacity shares in most market segments for 2005 and 2007 raise concerns of dominance. Concerns of dominance are reduced but not eliminated in 2009 if all possible schemes are developed that effect supply to the H-gas system. Conclusions as to whether Gasunie is dominant in the H-gas market in 2009 would need to additionally take account of incentives to raise price.

Further analysis of gas flexibility services
ASSESSMENT OF IMPACT OF CONTRACTS

Overview

In the Frontier Report, we assumed that if Gasunie had market power and manipulated the price for flexibility that it would gain from the price rise in respect of all of the flexibility that it sells to the Dutch markets. However, in commenting on the Report, ExxonMobil said the following: “The Report assumes that Gasunie has 100% control over the Groningen flexibility. This is not correct as Gasunie has sold most of the flexibility under (long term) contracts. Consequently this flexibility is under the control of Gasunie’s domestic and international customers”.

In order to assess the importance of this comment, DTe requested Gasunie to provide contractual information concerning the sale of gas. Gasunie has provided DTe with information about gas sale contracts and Frontier has been asked by DTe to assess the impact of the contracts on its calculations and conclusions.

In this section, we address the issue of long-term contract coverage. This issue can only be addressed at this stage as the required data had previously not been available to DTe or Frontier.

 Issues related to contract coverage

In order to fully appreciate the role of long term contracts for Gasunie’s position in the markets, four issues need to be considered:

- transfer of control;
- incentives for players under contract;
- how flexibility should be considered under contracts; and
- the role of capacity sold under long-term export contracts in the Dutch market.

We consider each in turn.

Transfer of control

In order for a contract to reduce Gasunie’s potential ability to manipulate market prices through capacity withdrawal, it would need to transfer control of the capacity to the counterparty or isolate the price Gasunie received under the contract from the market price in the Netherlands. Transfer of control would not have fully occurred under a long-term contract if Gasunie were able periodically to renegotiate prices or other terms. In such an instance, the transfer of control would be effective only until the time of the next renegotiation when Gasunie could potentially set prices in such a way as to encourage the counterparty to terminate the contract or to mark up prices. The effect may be that the duration of each contract is in effect limited to the point in time of the next option to renegotiate terms. For the purposes of our following calculations, we assume that the contracts commit Gasunie to sell the option for flexibility to
counterparties for a longer period of time. We note that this is a conservative assumption following which we tend to understate Gasunie’s position in the market.

**Incentives for players under contract**

Incentives of players change as contract termination approaches. Even with a long-term contract, as the contract termination approaches, Gasunie may have the incentive to raise price to create the expectation of high prices for future contract negotiations. For the purpose of this analysis, we have made the conservative assumption that no export contract signed by Gasunie is close to expiry or re-negotiation.

**How flexibility should be considered under contracts**

Flexibility under the contracts is an option. Through the contracts Gasunie has provided counterparties with an option over flexibility. If not all options over capacity are called simultaneously, the amount of physical capacity required by Gasunie to back the contracts would be less than the sum of the capacities in the contracts. For the analysis, we have made the conservative assumption that the amount of physical capacity that Gasunie requires to meet its contractual obligations is equal to the sum of the capacities in the contracts.

**Role of capacity sold under long-term export contracts in the Dutch market**

A further question is, whether the flexibility sold by Gasunie under long-term contract – mainly to foreign gas suppliers - could be re-imported to the Dutch market to create a competitive constraint for Gasunie, and if so, whether it is likely to be re-imported (i.e. whether players that have contracted from Gasunie have an incentive to re-import the flexibility implied in the contract to the Netherlands).

For the purposes of this analysis, we consider that all flexibility sold under long-term export contracts could physically or technically be fully re-imported to the Dutch market. This is additional to re-imports and backhauls that can be carried out using physical declared cross-border capacity and is a highly conservative treatment of the potential role of contracted flexibility in the Dutch market.

Even if flexibility could be re-imported, whether players would actually have the incentive to re-import flexibility depends on the cost to the counterparty of returning the flexibility to the Netherlands (its opportunity cost11) relative to the value of flexibility in the Netherlands. If the opportunity cost is greater in neighbouring markets, then it could reasonably be expected that gas flexibility would be exported from the Netherlands. If, however, the price of gas flexibility was sufficiently high in the Netherlands, then it could reasonably be expected

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11 The opportunity cost of flexibility for a party considering whether to re-import flexibility into the Netherlands is the cost of flexibility in a relevant bordering country (Germany or Belgium) adjusted for any transportation costs associated with the border location plus the re-entry charge into the Netherlands plus any other costs of re-entry.

**Further analysis of gas flexibility services**
that flexibility would be imported and exports under export contracts would be re-imported.
Depending on the differential between values of flexibility in the Netherlands and other neighbouring markets, there is a range of possible outcomes:

- **In the case that the value of flexibility in neighbouring markets is significantly higher than in the Netherlands:**
  - **Likely outcomes:** There will be no imports of gas flexibility from neighbouring markets and no re-imports of contracted export capacity.
  - **Reasoning:** the significantly higher value of flexibility in markets neighbouring the Netherlands implies that even if Gasunie tried to raise prices for flexibility beyond competitive levels, it would be more attractive to parties that control flexibility services to sell these in neighbouring countries with higher prices. Under these assumptions, potential importers of flexibility would not have an incentive to import flexibility into the Netherlands and non-Gasunie players who have contracted from Gasunie would not have a commercial incentive to re-import the flexibility even if they technically could do so. This scenario is not unrealistic considering that the Netherlands has historically been a net exporter of gas and gas flexibility.

- **In the case that the value of flexibility in neighbouring markets is equal or lower than in the Netherlands:**
  - **Likely outcomes:** There would be imports of gas flexibility from neighbouring markets and re-imports of contracted export capacity.
  - **Reasoning:** Flexibility imports to the Netherlands and full re-imports of contracted export flexibility would be most likely to occur if the opportunity cost of flexibility in neighbouring markets is comparable to or lower than in the Netherlands. In this case Non-Gasunie players who have contracted from Gasunie could have a commercial incentive to re-import the flexibility to the Netherlands thereby representing some competitive restraint on Gasunie. We consider this to be an unlikely scenario on the basis of market observations (a more detailed explanation is provided in the conclusion to the contract analysis).

- **A case in between, where the value of flexibility in neighbouring markets is higher than in the Netherlands:**
  - **Likely outcomes:** There are imports from neighbouring markets but no re-imports of contracted export capacity.
  - **Reasoning:** depending on the level of opportunity cost of gas flexibility in neighbouring markets, it may be the case that there will be some imports but non-Gasunie players do not have enough incentive to re-import contracted export capacity.

For the reasons stated in section 7.5.2 of the draft decree, DTe has asked us to provide further analysis of the last case. This is a more conservative case than the first case that we consider as being not unrealistic.

Further analysis of gas flexibility services
Analysis of effect of contracts

DTc has asked us to analyse the case where the value of flexibility in neighbouring markets is higher than in the Netherlands. There is prima facia evidence to suggest that this situation exists (a more detailed explanation is provided in the conclusion to the contract analysis).

In this case the opportunity cost of gas in neighbouring markets is at a level that non-Gasunie players do not have an incentive to re-import gas that has been purchased for export. However, some imports of flexibility do occur. This is a more conservative case than the situation where no imports or re-imports of exports would take place.

For the analysis, we apply the level of imports (only) that were set out in the sensitivity analysis for 2005 12. These are assumed to consist of flexibility from sources outside the Netherlands from non-Gasunie parties. We continue with the applicable conservative assumptions set out for the sensitivity analysis (pages 4 and 5).

Additionally, we assume that:

- all flexibility sold under export contracts is exported from the Dutch market. It is therefore explicitly removed from Gasunie’s ownership within the Netherlands for the purposes of capacity share analysis; and
- no other flexibility (e.g. flexibility potentially sold by smaller Dutch players to foreign players) is re-imported or backhauled.

Under these assumptions, we consider each of the L-gas and H-gas markets in 2005.

**L-gas**

We illustrate the pivot chart for the L-gas market with imports and no re-imports of contracted export capacity below.

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12 This includes new developments for 2005 that were taken into account in the sensitivity analysis. We use the figure for additional imports, i.e. the first row in Table 1. This is in addition to imports that were assumed in the Report. We assume that no backhaul takes place under these conditions, and therefore do not include the figure in the second row in Table 1.
In the Dutch market for gas flexibility, physical demand consists of Dutch national demand (represented by the load duration curve (2) in the pivot chart in Figure 3) and demand from exports. The total demand needing to be met by the Dutch system is illustrated by load duration curve (1) in the pivot chart.

Demand for flexibility will be met using supply from non-Gasunie players (curve (A) in the pivot chart) and Gasunie.

Under this case, Gasunie is pivotal in the supply of physical flexibility for a period of over 2,000 hours. However, prior sales under contracts may reduce Gasunie’s incentives to raise price with respect to the capacity sold under contract.

In Table 5, we present capacity shares for summer and winter under the above assumptions for the L-gas market. Gasunie has a capacity share of over 50% in all market segments with the exception of the hourly segment in winter for the max – min case. For this segment, Gasunie’s capacity share is 49%.
### Table 5: Contract analysis – Gasunie’s capacity shares (%) in the L-gas market (imports but no re-imports of export capacity)

<table>
<thead>
<tr>
<th></th>
<th>Hourly</th>
<th>Daily</th>
<th>Weekly</th>
<th>Seasonal</th>
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</thead>
<tbody>
<tr>
<td>Max-Average Summer</td>
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<td>78</td>
<td>64</td>
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<td>Winter</td>
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</tr>
<tr>
<td>Max-Min Summer</td>
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<tr>
<td>Winter</td>
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<td>63</td>
<td>68</td>
<td>58</td>
</tr>
</tbody>
</table>

Source: Frontier analysis

### H-gas

We illustrate the pivot chart for the H-gas market with imports and no re-imports of contracted export capacity below.

The analysis shows that as in the Report, Gasunie does not hold a pivotal position in the H-gas market for gas flexibility.

In Table 6 we present capacity shares for summer and winter for the H-gas market. Gasunie has a capacity share of more than 50% in the daily, weekly and seasonal market segments for the max – min case. It also has a capacity share of over 50% in the weekly segment of the max – average case. In most other market segments, Gasunie’s capacity share is between 40 and 50%.

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**Further analysis of gas flexibility services**
<table>
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<th>Hourly</th>
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<th>Weekly</th>
<th>Seasonal</th>
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<tr>
<td>Max-Min</td>
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</tr>
<tr>
<td></td>
<td>Winter</td>
<td>34</td>
<td>50</td>
<td>57</td>
</tr>
</tbody>
</table>

Table 6: Sensitivity analysis – Gasunie’s capacity shares (%) in the H-gas market taking account of long-term export contracts and no re-imports

Source: Frontier analysis

We note that capacity shares in the H-gas market are lower for most market segments than those presented in the Frontier report. This is primarily because we remove contracted exports from Gasunie, and at the same time, include imports which are controlled by players other than Gasunie. The weekly and seasonal market segments raise the most concerns for the H-gas market under this case.

Conclusions on impact of contracts

The fact that flexibility is exported from the Netherlands through the long term contracts provides prima facia evidence that the opportunity cost of flexibility was higher in other countries than in the Netherlands when the contracts were freely entered into. The premium of the opportunity cost of flexibility in other countries over that of the Netherlands is very likely to have been at least as great as the transaction costs (including transportation costs) of procuring flexibility in the Netherlands and delivering it to the other country. Frontier has not seen evidence to suggest that market conditions would be different now.

The normal test as to whether a source of supply is able to apply competitive pressure in a market is whether it can be delivered at a price no more than 5% to 10% higher than the competitive market price. Given the size of the re-entry cost (Gasunie have quoted entry costs of €11.64 to 15.07/m3/hr/yr) and the fact that the opportunity cost of flexibility in neighbouring countries is expected to be greater than that in the Netherlands by at least as much as the transaction costs, the competitive price of flexibility in the Netherlands would need to be well in excess of the published prices for third party access to the Dutch storage facilities for there to be any possibility that re-imported flexibility could provide a competitive constraint.

Therefore, Frontier has seen no persuasive evidence that the opportunity cost of flexibility in the adjacent countries plus the re-entry cost would form an adequate competitive constraint on the actions of a dominant party in the Netherlands.

Frontier has examined areas that could provide evidence to contradict this conclusion. The evidence that Frontier has found is consistent with the conclusion, although Frontier notes that this evidence does not prove the conclusion:

Further analysis of gas flexibility services
• historically, re-entry of flexibility obtained through the contracts has not occurred except for a very minor quantity; and
• posted prices of storage in Germany and Belgium are generally higher than posted prices of storage in the Netherlands.

Therefore, we draw conclusions regarding Gasunie’s dominance on the basis of assuming that no re-imports of contracted export capacity takes place. Under these assumptions, we find that Gasunie remains pivotal in the L-gas market. Capacity shares are mostly between 60 and 80%, creating concerns of dominance.

Although not pivotal, Gasunie continues to have relatively high capacity shares in certain market segments of the H-gas market and therefore continues to raise concerns of dominance.
ANNEXE A

Assumptions in the analysis that are additional/differ from the assumptions made in the Frontier report

- **Treatment of Groningen:**
  - Production for the purposes of hourly, daily and weekly market segments has been reduced from figures used in the Frontier report to new figures provided by Gasunie in their comments to the report (9.3 mcm/hr).

- **Treatment of quality conversion:**
  - Capacity available from quality conversion takes account of the reduced size of Groningen and Gasunie’s sales under export contracts where this is relevant.

- **Definitions of flexibility for gas under export contracts:**
  - Max - Min is defined as the maximum contracted annual capacity/hour – minimum capacity that needs to be taken annually/hour under the contract (we use the conservative assumption of 0 where we have not been informed of contractual minimum off-take requirements).
  - Max – Average is defined as the maximum known annual capacity/hour – average annual capacity/hour (which is the difference between the “contracted capacity” and the “base capacity” as referred to by Gasunie in their comments).

- **Demand for gas in the Netherlands and for exports is based on actual hourly data for 2004 provided by GTS (as in the Frontier report), adjusted for 2005 based on EIU gas demand forecasts.**

- **Size of backhaul capacity at cross-border points is sourced from Exhibit J to the Transmission Service Code 2005, published by GTS.**