

DISCUSSION DOCUMENT

Modification Proposals to the Gas Transmission Transportation Charging Methodology

NTS GCD 02:

**Introduction of NTS Exit (Flexibility) Capacity and
Commodity Charges under the enduring offtake
arrangements**

20th October 2006

Table of Contents

EXECUTIVE SUMMARY	1
1 INTRODUCTION	2
2 BACKGROUND	2
3 PROPOSED METHODOLOGIES.....	4
NTS Exit (Flexibility) Capacity Reserve Prices.....	4
NTS Exit (Flexibility) Commodity Charge and amendment to SO (Flat) Commodity Charge.....	5
4 JUSTIFICATION.....	8
Assessment against Licence Relevant Objectives.....	8
5 LEVEL AND IMPACT OF THE CHARGE	8
6 SUMMARY AND QUESTIONS FOR DISCUSSION	9
APPENDIX A: NTS EXIT (FLEXIBILITY) CAPACITY PRODUCT DEFINITION	10
APPENDIX B: TARGET REVENUE FOR SO EXIT (FLEXIBILITY) COMMODITY CHARGE	11

Executive Summary

This document sets out for discussion National Grid NTS's proposals for amending the Gas Transmission Transportation Charging Methodology (the "Charging Methodology") in respect of the introduction of NTS Exit (Flexibility) Capacity and Commodity Charges, and a change to the NTS (Flat) Commodity Charging methodology from 1 October 2010. The proposed charges are required in the event of implementation of UNC Modification 0116 ("Introduction of NTS Offtake arrangements"), which would make available an NTS Exit (Flexibility) Capacity product to all Users as part of the enduring offtake arrangements. This product would be made available on a zonal basis with NTS Exit Zones as defined in the Exit Capacity Release Methodology Statement (ExCR).¹

It is envisaged that changes to the charging structure associated with the purchase of NTS Exit (Flexibility) Capacity will be needed in time for the first annual auctions proposed to be held in July 2007. The introduction of the NTS Exit (Flexibility) Commodity charge would become effective in October 2010, coincident with the first opportunity that NTS Exit (Flexibility) Capacity could be utilised.

National Grid NTS proposes for discussion that:

- a zero reserve price for all NTS Exit Zones is introduced for the annual auction of NTS Exit (Flexibility) Capacity, the first of which is proposed under Modification 0116 to be held in July 2007;
- the reserve price for daily NTS Exit (Flexibility) Capacity would be the same as the reserve price for annual Exit (Flexibility) Capacity, with the first daily auctions proposed under Modification 0116 to be held in October 2010;
- the NTS SO Exit (Flexibility) Commodity Rate will be the same rate for all NTS Exit Zones and determined each Gas Year based on identifying relevant proportions of SO costs attributable to flexibility product usage, according to the ratio of NTS Exit (Flexibility) Capacity baseline for the NTS to the aggregate NTS Exit (Flat) Capacity baseline for all NTS Exit Points;
- there will be no change to the current SO under/over-recovery mechanism. Any under/over-recovery amounts arising from the NTS SO Commodity Charges (Flat and Flexibility) would be combined and the respective commodity rates scaled by a common factor to manage the under/over-recovery, hence maintaining initial price ratios (referred to as Option (a) in the paper);
- the NTS SO Exit (Flat) Commodity Rate at NTS Exit Points would be set at a level which when combined with the proposed NTS SO Exit (Flexibility) Commodity Rate would recover 50% of the SO allowable revenue.

For clarity, these proposals, if implemented, would not change the target level of revenue to be recovered through NTS SO Commodity Charges.²

It should be noted that National Grid is also currently proposing the introduction of a Storage NTS Commodity Charge (NTS GCM03) and therefore Respondents may also wish to refer to NTS GCM03 when considering their responses.

¹ Note the ExCR is under consultation in parallel with this discussion paper.

² The Standard SO commodity rate, the proposed SO storage commodity rate, the NTS Optional commodity rate, & the St Fergus compression charge

1 Introduction

- 1.1 National Grid NTS has proposed UNC Modification Proposal 0116 “Reform of the NTS Offtake Arrangements” in respect of the release of Exit Capacity for utilisation from 1 October 2010. In the event that this proposal is implemented, National Grid NTS would make available a capacity product referred to in the proposal as “NTS Exit (Flexibility) Capacity”.
- 1.2 In light of the development of this product, National Grid NTS is required by Standard Licence Condition A4 of its GT Licence to consider any associated changes to the Gas Transmission Transportation Charging Methodology (the “Charging Methodology”). This paper sets out our proposals, for discussion, in respect of:
 - the setting of reserve prices for both annual and daily auctions of NTS Exit (Flexibility) Capacity; and
 - a methodology for setting an NTS Exit (Flexibility) Commodity Rate.
- 1.3 It is envisaged that changes to the charging structure associated with the purchase of NTS Exit (Flexibility) Capacity will be needed in time for the first annual auctions proposed to be held in July 2007. The introduction of the NTS SO Exit (Flexibility) Commodity Rate would become effective in October 2010, coincident with the first opportunity that NTS Exit (Flexibility) Capacity could be utilised.
- 1.4 It should be noted that this charging proposal is consistent with the legal text included within UNC Modification Proposal 0116. Changes to the exit flexibility product that may arise during the consultation on UNC Modification 0116 may impact the proposed charging methodology described in this paper.

2 Background

Current Arrangements

- 2.1 Under the current regime, a DNO User is able to book a capacity product (“NTS Offtake (Flexibility) Capacity”) at each NTS/LDZ Offtake to ensure it has the right to offtake gas from the NTS at a non-uniform flow rate, typically to cover diurnal storage requirements and within day demand changes. In addition, a DNO User is able to book a capacity product (“NTS Offtake (Flat) Capacity”) at each NTS/LDZ Offtake to ensure it has the right to offtake an end of day quantity from the NTS at a uniform flow rate. DNO Users do not currently pay National Grid NTS for such capacity services, but are incentivised under their respective Licences to not overbook capacity.
- 2.2 In contrast, Shippers at NTS Supply Points and Connected System Exit Points (CSEPs) book a bundled product (“NTS Exit Capacity”) for both its within day and end of day requirements. Shippers pay the relevant capacity charge for any booked capacity and the SO Commodity Charge based on its operational use of such capacity.

UNC Modification Proposal 0116

- 2.3 UNC Modification Proposal 0116 “Reform of the NTS Offtake Arrangements” proposes that common exit capacity products and registration processes are made available to all Users under the enduring offtake arrangements, commencing operation from 1 October 2010. Both an NTS Exit (Flat) Capacity product and an NTS Exit (Flexibility) Capacity product are proposed as described below:

- **“NTS Exit (Flat) Capacity”** - to provide Users the ability to obtain rights to offtake a daily quantity of gas at an NTS Exit Point, with the implied right to offtake at an even flow rate across the Gas Day. This in effect extends the current NTS Offtake (Flat) Capacity available to DNO Users at NTS/LDZ Offtakes to all Users and all NTS Exit Points. Such a product is anticipated to provide National Grid NTS with clear locational signals for where, when and how much transportation capability may be required by Users to support anticipated end of day demand, and will facilitate efficient NTS investment planning and operation. Charging proposals to support the introduction of this product are considered in paper GCD 01;
- **“NTS Exit (Flexibility) Capacity”** - to provide Users the ability to obtain rights to offtake gas in aggregate over a Gas Day at one or more NTS Exit Points within an NTS Exit Zone (to be defined in the enduring ExCR Methodology Statement) at flow rates which deviate from the even flow rate conferred through holding NTS Exit (Flat) Capacity. Actual utilisation of NTS Exit (Flexibility) Capacity for each User at each NTS Exit Zone on each Gas Day will be determined by subtracting 2/3 of its total end of day allocated quantity from the cumulative allocated quantity it has offtaken between 06:00 and 22:00, including a tolerance of 1.5% on measurements of the cumulative flow. This in effect extends the current NTS Offtake (Flexibility) Capacity available to DNO Users at NTS/LDZ Offtakes to all Users and all NTS Exit Points within NTS Exit Zones. Such a product is anticipated to allow Users to compete, on a non-discriminatory basis, for constrained amounts of within day system capability that National Grid NTS will make available in accordance with its Licence obligations and incentives. In addition, this product, in the context of the proposed regime, will allow National Grid NTS to better manage the system, particularly in the context for large and/or unexpected within day flow rate variations. A description of the proposed NTS Exit (Flexibility) Capacity product is included within Appendix A.

Release of NTS Exit (Flexibility) Capacity

- 2.4 Both Shippers and DNO Users will require to book and pay for NTS Exit (Flexibility) Capacity to avoid potential overrun charges. Users are able to book NTS Exit (Flexibility) Capacity:
- as an annual bundle of daily rights via annual auctions in July of Gas Year Y for Gas Years Y+1 to Y+5 (inclusive). The quantities of capacity to be made available will be consistent with National Grid NTS’ Licence obligations and is intended to represent the amount of NTS Exit (Flexibility) Capacity that is available without NTS investment; and
 - as a daily right via submission of Individual Offtake Profile Notices (IOPNs) or if required by National Grid NTS, daily capacity auctions.

NTS Exit (Flexibility) Commodity Charge

- 2.5 Under UNC Modification Proposal 0116, Shippers and DNO Users will also require to pay a commodity charge associated with their use of NTS Exit (Flexibility) Capacity (referred to as the “NTS Exit (Flexibility) Commodity Charge”).
- 2.6 The NTS Exit (Flexibility) Commodity Charge is defined as the User Daily Flexibility Quantity (see Appendix A for definition, and UNC Mod 0116 legal text for fuller explanation) multiplied by the Applicable Commodity Rate. This discussion document sets out views on the Applicable Commodity Rate.

NTS Exit (Flat) Commodity Charge

- 2.7 Under UNC Modification Proposal 0116, Shippers and DNO Users will also require to pay a commodity charge associated with their use of NTS Exit (Flat) Capacity (referred to as the “NTS Exit (Flat) Commodity Charge”).
- 2.8 The NTS Exit (Flat) Commodity Charge is defined as the User Daily Quantity Offtaken (see legal text drafting for definition) multiplied by the Applicable Commodity Rate and replaces the NTS SO Commodity Charge in respect of NTS exit flows. This discussion document also sets out views on this Applicable Commodity Rate and suggests that this rate would be set at a level which, when combined with the proposed SO (Flexibility) Commodity Charge, would recover 50% of the SO allowed revenue (net of St Fergus Compression Charge and the NTS optional commodity tariff).

3 Proposed Methodologies

NTS Exit (Flexibility) Capacity Reserve Prices

- 3.1 When considering the setting of the reserve prices for NTS Exit (Flexibility) Capacity, the relevant licence objectives must be applied i.e. where prices are established by auction, the reserve prices should be set at levels best calculated to promote efficiency and avoid undue preference in the supply of transportation services and promote competition.
- 3.2 Prior to Network Sales, investments in the NTS have been undertaken based on the outcome of the integrated planning process across both the NTS and DNs. This considered the diurnal storage requirements of the DNs and whether this could be better provided from the NTS. Typically, such diurnal requirements could be provided as a result of NTS investments for end of day requirements.
- 3.3 It is also assumed moving forward that it is more efficient and economic for DNs to invest on their own networks for such diurnal requirements. Users will therefore not be able to bid for NTS Exit (Flexibility) Capacity above existing capability levels in the annual auctions and thereby trigger investment specifically to release additional NTS Exit (Flexibility) Capacity.
- 3.4 On the basis that investments have historically been for end of day requirements, and that this will continue into the future, National Grid NTS considers that NTS investment costs should be related to NTS Exit (Flat) Capacity charges only. This therefore suggests a zero reserve price for annual auctions of NTS Exit (Flexibility) Capacity, unless there are grounds for setting higher levels for any NTS Exit Zone to overcome any concerns regarding lack of competition between any such zone.
- 3.5 To ensure allocation of such capacity levels consistent with the physical capability of the system, National Grid NTS will allocate capacity subject to national, area and zonal limits (as specified in the Exit Capacity Release Methodology Statement). The proposed allocation process requires that all User bids are ranked in price order, regardless of their zone. Bids are then allocated in price order subject to national, area and zonal limits. This allocation process therefore prevents, to an extent, Users in zones with fewer Users having access to potentially cheaper Exit (Flexibility) Capacity than Users in zones with a larger number of Users. A zero annual reserve price is therefore considered appropriate.
- 3.6 It is proposed that the reserve price for daily auctions will be at the same level as the reserve price for annual auctions.

NTS Exit (Flexibility) Commodity Rate and NTS Exit (Flat) Commodity Rate

Costs associated with NTS Exit (Flexibility) Capacity Usage

- 3.7 Under the UNC Modification Proposal 0116, a User may utilise its purchased NTS Exit (Flexibility) Capacity on any Gas Day. Use of the flexibility product may increase the frequency and extent of NTS pressure variation, resulting in:
- Increase the likelihood of compressor trips
 - Increase OM requirements & likelihood of usage
 - Increase shrinkage costs
 - Increase risk of NTS Exit (Flexibility and Flat) Capacity buy-back
 - Reduce End of Day (EoD) balancing flexibility and increase EoD balancing costs
- 3.8 Under the prevailing arrangements, these costs are recovered either via the SO commodity charge (e.g where they fall within the cost items listed in the Cost Allocation Matrix in Appendix B) or are fed back to Users via Capacity Neutrality or Energy Balancing Neutrality. It is National Grid NTS's view that the use of the flexibility product would affect these costs. At the extreme, if there was no flow profiling across the NTS, SO costs would be lower. Similarly, if all parties profiled their flows simultaneously across the NTS then there would be an increase in SO costs. Therefore in order to achieve the relevant licence objective to set charges which reflect the costs incurred, it is appropriate to consider modifying the SO Commodity Charge to take account of flexible capacity utilisation. Furthermore, without a cost reflective charge for the use of the NTS Exit (Flexibility) Capacity product there is the risk that parties will alter their behaviour compared with historical performance on grounds that may be economic for the individual, but which could introduce industry inefficiencies. For example, a DNO's decision to offtake from the NTS at a higher than 1/24th rate early in the gas day to restore diurnal stock levels could result in lower NTS pressures thus prompting additional compression and greater risk of Operating Margins (OM) usage. In such a circumstance, one party's action would increase SO costs, which in part could be born by the wider community.
- 3.9 In addition to addressing the cost reflectivity requirements, the establishment of a new NTS Exit (Flexibility) Commodity Charge would be consistent with existing product and charging structures. For both entry and exit capacity there is a corresponding SO Commodity Charge. If NTS Exit (Flexibility) Capacity were to be unbundled from exit capacity, then it would seem consistent to identify a separate SO commodity charge element for the use of the product.
- 3.10 In assessing the pricing arrangements for the use of the flexibility product, all the relevant licence objectives must be considered in addition to cost reflectivity. These include the facilitation of competition between shippers and suppliers, and the requirement to take account of changes in the transportation business. Clearly the introduction of an SO (Flexibility) Commodity Charge would impose costs in terms of resource, systems and processes, in addition to the charge itself, on those parties using the product. If the revenue recovery is relatively small, it could be argued that the additional cost to the industry of managing the new charge was not justified by the benefits, and the charge would therefore not facilitate competition. Although this could be argued it should be noted that the requirement for charges to facilitate competition is a second order objective, with cost reflectivity being the primary objective.

- 3.11 An alternative option that may have merit is to recognise the relatively small amounts of revenue concerned and not introduce an NTS Exit (Flexibility) Commodity Charge immediately. However, to address the concerns over changes in behaviour and the associated inefficiencies that would be a consequence, National Grid NTS would commit to introduce an appropriately priced Flexibility Commodity Charge in the future if behaviours change significantly, from that experienced to date. This would effectively establish the principle that the cost of the current levels of usage of flexibility capacity should be socialised and remain within the standard SO Commodity Charge.
- 3.12 It is difficult to accurately identify the SO cost of using NTS Exit (Flexibility) Capacity, however to calculate a cost reflective charge, a sensible and reasonable mechanism is needed for allocating flexible capacity SO costs. Such a mechanism to allocate SO costs between NTS Exit Capacity and NTS Exit (Flexibility) Capacity is contained in Appendix B, along with an indication of the impact of such a charge. The approach in Appendix B results in an allocation of 3.5% of SO costs (for 2006/7) to the use of NTS Exit (Flexibility) Capacity.

Proposed Options for Implementation

- 3.13 If an NTS Exit (Flexibility) Commodity Charge were to be introduced, it would not change the target level of revenue to be recovered through the NTS SO Commodity Charges. The net revenue to be recovered via the SO Exit, Entry and Flexibility Commodity charges would be the total SO allowed revenue less that recovered by the St Fergus Compression Charge and by the NTS Optional Commodity Charge. We would propose that the levels of charges for Entry Commodity, Exit (Flat) Commodity and Exit Flexibility Commodity would be set such that approximately 50% of the revenue collected is obtained at entry with the remaining 50% recovered from a combination of Exit (Flat) Commodity and Exit (Flexibility) Commodity.
- 3.14 The unit SO Commodity Charge Rate applicable for exit would therefore be lower than that which would otherwise apply if the SO Exit (Flexibility) Commodity Charge were not introduced. The unit Commodity Charge rate applicable for entry would equal that which would otherwise apply if the SO Exit (Flexibility) Commodity Charge were not introduced.
- 3.15 We believe an NTS SO Exit (Flexibility) Commodity Charge should be applied on an identical charging base to the NTS SO Exit (Flat) Commodity Charge but applied to the positive flexible capacity quantity utilised (ie. during the period 06.00 – 22.00 hrs) rather than the end-of-day allocated quantity. Both the NTS Exit (Flexibility) Capacity charge and the NTS SO Exit (Flexibility) Commodity Charge would be levied on the parties holding the NTS Exit (Flexibility) Capacity and hence the charges will be levied on Shippers in relation to NTS Supply Points and CSEPs and on the DNO Users in relation to NTS/LDZ exit points. The NTS SO (Flexibility) Commodity Charge would apply on a zonal basis (with the zones as specified in the proposed Exit Capacity Release methodology).
- 3.16 National Grid NTS would aim to set the NTS SO Exit (Flexibility) Commodity Charges to recover the relevant percentage of the NTS SO target revenue by setting the charge rate equal to that target revenue divided by forecast flexible capacity usage. In order to maintain the 50%/50% division of the NTS SO Commodity Charge between entry and exit, the NTS SO Entry Commodity Charge would be set to recover 50% of the NTS SO target revenue. Once the NTS SO Exit (Flexibility) Commodity Charge has been set to recover the appropriate percentage of SO costs (ref. Appendix B) the NTS SO Exit (Flat) Commodity Charge would be calculated to recover the remaining SO Exit Commodity revenue.

3.17 Forecast over or under recovery for the SO Exit (Flexibility) Commodity Charge could be managed within-year in a number of ways, as described in the table below :

Option	Description	Pros	Cons
Single Target Revenue Ratios	SO Commodity rates would be set for the Entry, Exit and flexibility charges for the beginning of each gas year. If there was a forecast net over or under recovery all prices would be scaled to manage the over or under recovery and hence the initial price ratios would be maintained.	As over or under recovery would be managed at a net level there could be greater price stability and hence greater certainty. Cost reflective over the longer term as the likelihood of any under or over recovery is likely to be proportional to the individual target revenues for each component.	The revenue collected from the flexibility charge would not necessarily equal the target revenue.
Individual Target Revenues	SO Commodity rates would be set for the Entry, Exit and flexibility charges for the beginning of each gas year. If there was a forecast over or under recovery for any component, prices would be scaled independently to manage the over or under recovery and hence the initial price ratios might not be maintained.	The revenue collected from the flexibility commodity charge would approximately equal the target revenue.	As over or under recovery would be managed separately for the entry, exit and flexibility revenue streams there could be greater price variation and hence greater uncertainty.
Fixed Flow Flex	SO Commodity rates would be set for the Entry, Exit and flexibility charges for the beginning of each gas year. If there was a forecast over or under recovery for any component, only SO entry and exit prices would be scaled to manage the over or under recovery and hence the initial price ratios would not be maintained.	Recognises the sensitivity of the small flexible capacity charging base	Less cost reflective, as any under/over recovery caused by flexibility would not be charged to parties causing under/over recovery.

- 3.18 National Grid NTS believes that the **Single Target Revenue** approach would be the most appropriate mechanism to deal with any under/over-recovery as it is cost reflective and could deliver greater price stability.
- 3.19 National Grid NTS would publish changes to the NTS SO Exit (Flexibility) Commodity Charge in accordance with its Licence and UNC obligations.

4 Justification

Assessment against Licence Relevant Objectives

The National Grid Gas plc Gas Transporter Licence in respect of the NTS requires that proposed changes to the Charging Methodology shall achieve the relevant methodology objectives.

- 4.1 Reflect the costs incurred by the licensee in its transportation business;
- The proposed new SO Exit (Flexibility) Commodity Rate has been derived based on a methodology that identifies those SO costs that can be readily attributed to the provision of system flexibility to Users, and therefore is considered an approach that better reflects the costs incurred by the NTS.
- 4.2 So far as is consistent with (4.1) properly take account of developments in the transportation business;
- The proposed NTS Exit (Flexibility) Capacity and Commodity Charges have been developed as a result of the proposed introduction of the NTS Exit (Flexibility) product as part of the enduring NTS offtake arrangements (UNC Modification 0116) and thus, in National Grid NTS' view, as a consequence of developments in the transportation business.
- 4.3 Where prices are established by means of auctions, either
- (1) No reserve price is applied or
 - (2) Reserve prices are calculated at a level that promotes efficiency, avoids undue preference in the supply of transportation services and promotes competition between gas shippers and between gas suppliers.

A feature of the allocation process for NTS Exit (Flexibility) Capacity described earlier in Section 3.5, is that it prevents, to an extent, Users in zones with fewer Users having access to potentially cheaper NTS Exit (Flexibility) Capacity than Users in zones with a larger number of Users. This process improves market liquidity, thus the use of a zero annual reserve price is considered appropriate, and ensures an efficient auction process.

5 Level and Impact of the Charge

- 5.1 Based on the cost allocation matrix described in Appendix A, and a forecast of flexibility usage, for financial year 2006/7 the SO Exit (Flexibility) Commodity Rate would be set at 0.0343 p/kWh, and would generate revenue in the region of £10.5m.

- 5.2 In order to maintain collectable SO commodity revenue in line with target SO revenue, this would require a lowering of the standard SO commodity charge from 0.0114 p/kWh to 0.0103 p/kWh.
- 5.3 At this stage, there is uncertainty of the likely level of the proposed SO Exit (Flexibility) Commodity Rate that would apply from 1 April 2007 as this would be subject to the finalising of the allowable revenues as part of the Transmission Price Control Review process, forecasts of gas costs, and the level of SO under/over-recovery during the current financial year.

6 Summary and Questions for Discussion

This paper has discussed the issues and National Grid NTS' views relating to the pricing implications of the introduction of an NTS Exit (Flexibility) Capacity product. National Grid NTS believes that in order to meet its licence obligations, it is necessary to develop a charging methodology that achieves the relevant objectives for both the pricing of flexibility capacity and for the use of flexibility capacity.

We would be pleased to receive views on this discussion paper and, in particular, the following points for discussion regarding possible changes to our Transportation Charging Methodology relating to NTS Exit (Flexibility) Capacity:

- a zero reserve price to be introduced for all NTS Exit Zones for the annual auction of NTS Exit (Flexibility) Capacity, the first of which is proposed under Modification 0116 to be held in July 2007;
- the reserve price for daily NTS Exit (Flexibility) Capacity to be the same as the reserve price for annual Exit (Flexibility) Capacity;
- the NTS SO Exit (Flexibility) Commodity Rate to be the same rate for all NTS Exit Zones and determined each Gas Year according to the methodology put forward in this paper;
- any under/over-recovery amounts arising from the NTS SO Commodity Charges (Flat and Flexibility) to be combined and the respective commodity rates scaled by a common factor to manage the under/over-recovery, hence maintaining initial price ratios (referred to as Option (a) in the paper);
- the NTS SO Exit (Flat) Commodity Rate at NTS Exit Points to be set at a level which when combined with the proposed NTS SO Exit (Flexibility) Commodity Rate would recover 50% of the SO allowable revenue.

The closing date for submission of your response is 24th November 2006.

Your response should be e-mailed to jan.gascoigne@uk.ngrid.com alternatively by post to Jan Gascoigne, Regulatory Frameworks, National Grid NTS, NG House, Gallows Hill, Warwick, CV34 6DA. If you wish to discuss any matter relating to this charging methodology consultation then please call Dominic Harrison on 01926 656316 or Eddie Blackburn on 01926 656022.

Should you wish your response to be treated as confidential, please mark it clearly to that effect.

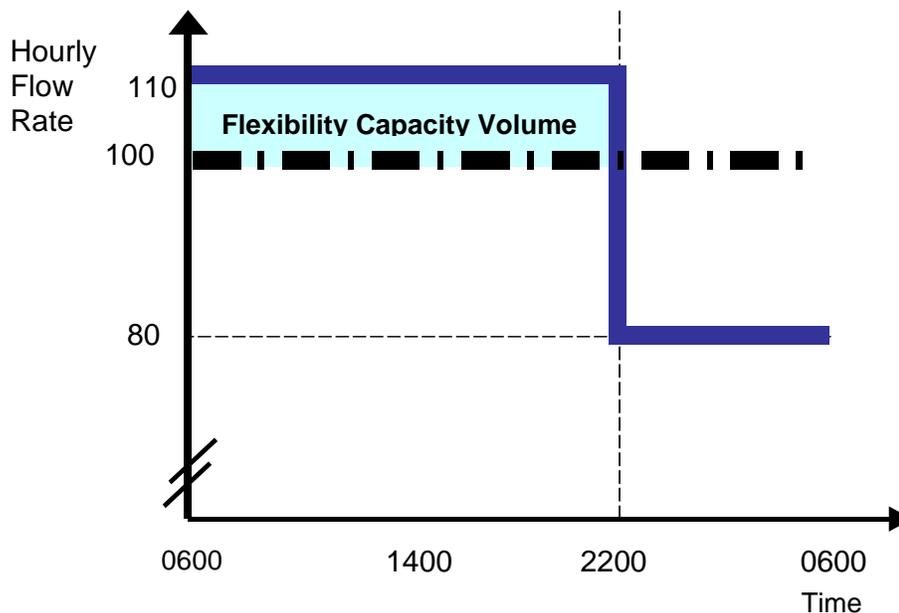
Appendix A: NTS Exit (Flexibility) Capacity Product Definition

Determination of Capacity Requirement

The required amount of flexibility capacity for a gas day can be determined by the following calculation for each User and at each NTS Exit Zone:

- Forecast cumulative volume offtaken between 06:00 and 22:00hrs (net of 1.5% flexibility tolerance), minus
- 2/3 of the total forecast end of day quantity

In the following example the offtake is expected to flow at an hourly rate of 110 units for 16 hours and then 80 units for the remaining 8 hours. This equates to an average hourly rate of 100 units as shown. The volume offtaken in the first 16 hours will be 1760 units and the volume offtaken over the day will be 2400 units. The calculated flexible capacity requirement is therefore $1760 - (2/3) * 2400 = 160$ units.



Determination of Flexibility Commodity Charge

The NTS Exit (Flexibility) Commodity Charge for each User for each NTS Exit Zone will be calculated as :

- User Daily Flexibility Quantity (UDFQ) x NTS Exit (Flexibility) Commodity rate

where the UDFQ will be determined as :

- cumulative volume offtaken between 06:00 and 22:00hrs, minus
- 2/3 of the total end of day quantity

for all NTS Exit Points in the relevant zone and determined in accordance with UNC Modification Proposal 0116.

Appendix B: Target Revenue for SO Exit (Flexibility) Commodity Charge

The target revenue for the NTS SO Exit (Flexibility) Commodity Charge could be identified based on the forecast applicable percentages of SO cost for each SO cost component for the relevant year and the percentage of the cost component applicable to flexible capacity. It is envisaged that this assessment would be reviewed for the purposes of providing an indicative charge for the 150 day notice of indicative charges, and for the purposes of the final charges notice (to be published at two months notice from the 1 April effective date). The interaction of flexible capacity for each component of SO costs is discussed below.

Internal Costs

Internal costs are driven largely by the volume of data processing and hence are not driven by either changes in the level of flow or flexible capacity. Clearly some internal costs, such as flexible capacity auction costs, will be directly linked to flexibility if a flexible capacity product is implemented. Some internal costs could be linked to the flexible capacity product through the workload generated by Users ability to vary flows within day. National Grid NTS believes that the most appropriate allocation of costs would be to pro-rata 50% (i.e. the exit proportion) of internal costs based on the exit and flexible capacity baseline daily volumes as these are the primary products that National Grid NTS is making available.

System Reserve

Operating Margins Gas is gas held in storage by National Grid NTS that can be withdrawn to maintain system pressures within day in the event of an incident that cannot be managed by the use of market balancing actions. Extremity pressures on the NTS fall as the demand level increases due to pipeline friction effects. Extremity pressures on the NTS are also dependent on linepack and hence fall as flexible capacity usage increases. Network analysis of a 900mm 75 bar pipeline indicates for a given maximum inlet and minimum outlet pressure, the maximum flow that can be achieved is ten times the maximum flexible capacity that can be generated. This implies that the impact of one unit of flexible capacity is **ten** times the impact of a unit of flow. Therefore, National Grid NTS believes that the most appropriate allocation of costs would be to pro-rata applicable OM costs based on the impact of the flexibility and flat capacity baseline volumes (i.e. in the ratio 10:1) as a proxy for allocating between flow and flexible capacity.

Shrinkage

Shrinkage can be divided into own use gas (OUG - compressor fuel) and unaccounted for gas (UAG). UAG is largely driven by meter error and hence is not driven by changes in the level of either flow or flexible capacity. Compressor fuel usage and hence compressor fuel is driven by the requirement to maintain system pressures. The volume of compressor fuel is driven by both flow and flexible capacity usage. National Grid NTS believes that the most appropriate allocation of shrinkage costs would be to pro-rata 50% (i.e. the exit proportion) of the UAG costs based on the exit and flexible capacity baseline daily volumes as these are the primary products that National Grid NTS is making available. National Grid NTS believe that the most appropriate allocation of OUG costs would be to pro-rata these costs based on exit and flexible capacity baseline volumes as a proxy for allocating between flow and flexible capacity.

Constrained LNG

Constrained LNG service represents gas held in storage by National Grid NTS to meet firm demand in excess of pipeline transportation capability. The service supports both exit and baseline flexible capacity simultaneously and hence National Grid NTS

believes that the most appropriate allocation of CLNG costs would be to pro-rata the costs on the exit and flexible capacity baseline volumes as these are the primary products that National Grid NTS is making available via the use of the service.

Cost Allocation Matrix

Using the analysis above, the following table shows the cost allocation calculation based on 2006/7 data; e.g. SO internal costs represent 19% of total SO costs, with 2.8% of SO Internal costs deemed to be applicable to flexibility capacity; so 0.7% (19% * 2.8%) of total SO internal costs are applicable to flexibility capacity.

SO Cost Component	Percentage of Total SO Cost (A)*	Percentage applicable to FF (B)	Percentage of Total SO Cost applicable to FF (AxB)	Comment
Internal Costs	19%	2.8%	0.52%	Auctions & Data processing (Pro-rata 50% on baseline capacity)**
System Reserve (OMG)	7%	22%***	1.5%	Driven by pressure loss with flexible capacity having ten times the impact compared with flow (based on 10:1 ratio of maximum flow of FF for a 100km 75bar 900mm pipeline)
Shrinkage UAG/CV	10%	2.8%	0.26%	The main driver is Meter error and is not flow dependent (Pro-rata 50% on baseline capacity)**
Shrinkage OUG	38%	2.8%	1.05%	Compressor fuel (own use gas) maintains Exit Capacity (transmission & FF) equally (Pro-rata on baseline capacity)**
Constrained LNG	1%	2.8%	0.03%	CLNG Maintains Exit Capacity pressures for both Transmission & FF equally. (Pro-rata on baseline capacity)**
TOTAL	-	-	3.5%	

* to be reviewed annually

** Based on Baselines of 22 MCM for flexibility capacity, 776 MCM for flat capacity

*** The proportion of System Reserve Costs applicable to Flexible Capacity utilisation (i.e. 22%) is calculated based on the pressure reducing impact of both the Flat and Flexible Exit product, as follows :

Flat baseline (ExitBL)= 776 MCM

Flexibility baseline (FlexBL) = 22 MCM

Ratio of Pressure Impact (R) = 10

Proportion of costs = $(\text{FlexBL} * R) / (\text{ExitBL} + (\text{FlexBL} * R))$

The net revenue to be recovered via the SO Exit, Entry and Exit (Flexibility) Commodity Charges will be the total SO allowed revenue less that recovered by the St Fergus Compression Charge, the NTS Optional Commodity Charge and, subject to the decision of the Authority, the proposed SO Storage Commodity Charge (the subject of consultation paper NTS GCM 03) . The above cost allocation implies that 46.5% of SO revenue would be recovered by the SO Exit (Flat) Commodity Charge, 3.5% recovered by the proposed SO Exit (Flexibility) Commodity Charge with the remaining 50% recovered via the SO Entry Commodity Charge.

Indicative SO (Flat and Flexibility) Commodity Prices

Based on 2006/7 data the following prices would apply if they were to be introduced in the current charging period (i.e. 1 October 2006 – 31 March 2007). The NTS Exit (Flexibility) Commodity Rate has been based on an annual usage of 30,440 GWh³ and a cost allocation of £10.5m.⁴

Commodity Rates (p/kWh)		
SO Commodity	Prevailing Arrangements	NTS GCD02 Change
NTS Entry	0.0114	0.0114
NTS Exit (Flat)	0.0114	0.0103
NTS Exit (Flexibility)	-	0.0343

³ Forecast derived from historical offtake flexibility usage data for all NTS offtakes for the period Oct 2002 – Sept 2005 , and peak flexibility capacity availability

⁴ £10.5m derived from 3.5 % (ref. Cost Allocation Matrix) x £309m (SO Allowable Revenue 2006/7)