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Gas Entry Capacity Substitution Methodology - Initial Impact Assessment

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Target audience: NGG, gas shippers, producers, storage operators, interconnectors, GDNs, other stakeholders and other interested parties

Overview:
Entry capacity substitution is the process by which unsold entry capacity is moved from one or more National Transmission System (NTS) entry points to meet the demand for incremental entry capacity at another NTS entry point. Following a series of workshops in 2008 and 2009, National Grid Gas (NGG) has developed a methodology to implement entry capacity substitution.

NGG's methodology is based on an approach which allows shippers to signal future capacity needs via a financial commitment for that capacity. The proposed methodology also limits the amount of capacity which may be moved away from an entry point by use of exchange rates between entry points. In this document we set out our initial impact assessment of the methodology.

The primary focus of this impact assessment document is on the submitted methodology. However, it also considers the characteristics of alternative methodologies and provides an assessment of the relative merits of these in relation to the proposal. The Authority is minded to accept the proposed methodology. Responses to this impact assessment will inform our final decision.

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Context

Entry capacity substitution is the process by which unsold non-incremental obligated entry capacity is moved from one or more NTS entry points to meet the demand for incremental obligated entry capacity at another NTS entry point. Ofgem introduced a new obligation to develop and implement gas transmission entry capacity substitution for the gas National Transmission System (NTS) as part of the 2007-2012 Transmission Price Control Review (TPCR4).

This document sets out Ofgem's Impact Assessment of the gas entry capacity substitution methodology developed by National Grid Gas (NGG).

This impact assessment takes into account the issues raised throughout the methodology development workshops and correspondence that accompanied the process.

Associated Documents

- Modification of Special Condition c8D of National Grid Gas PLC's Gas Transporter Licence in Respect of its National Transmission System Under Section 38A of the Gas Act 1986. 23 October 2009 (ref 128/09)
- Section 23 Notice - Special Condition C8D, 18 September 2009 (Ref 113/09)
- Substitution licence change, second informal consultation, 12 August 2009 (Ref 103/09)
- Open letter: Development of a methodology to implement National Transmission System (NTS) Entry capacity substitution. 3 July 2009.
- Proposed licence change to clarify substitution licence conditions, first informal consultation, 1 July 2009 (ref 77/09)
- Letter to NGG re Derogation notice to delay the introduction of gas transmission entry substitution 17 December 2008
- Open letter: The Introduction of National Transmission System (NTS) Entry Capacity Substitution, 11 September 2008
- Letter to NGG re. Delay to the NTS Entry Capacity Substitution Obligation, 4 March 2008
- Direction issued to National Grid Gas plc by the Gas and Electricity Markets Authority pursuant to paragraph 10 of Special Condition C8D of the gas transporter licence issued in respect of the NTS, 3 March 2008
- TPCR Gas Entry Baseline Review - Final Proposals, 30 May 2008 (Ref:72/08)
- Associated documents: Responses to TPCR Gas Entry Baseline Review - Impact Assessment document, 20 March 2008 (Ref: 28 / 08)
- TPCR Gas Entry Baseline Review - Impact Assessment document, 20 March 2008 (Ref: 28 / 08)
- Associated documents: Responses to TPCR Gas Entry Baseline Review - Baseline proposals document, 20 December 2007 (Ref No. 299/07)
- Open Letter: Timeline and Way Forward on NTS Gas Entry Baselines, 8 February 2008

- TPCR Gas Entry Baseline Review - Baseline proposals document, 20 December 2007 (Ref No. 299/07)
- Transmission Price Control Review - gas entry baseline re-consultation, 3 October 2007 (Ref No. 234/07)
- Approval of the Entry Capacity Transfer and Trade Methodology Statement, 6 September 2007 (Ref No. 220/07)
- TPCR 2007-2012 Direction issued to National Grid plc by the Gas and Electricity Markets Authority pursuant to paragraph 10 of Special Condition C8D of the Gas transporter licence, 5 September 2007 (Ref No. 218/07)
- TPCR 2007-2012 Direction issued to National Grid Gas plc by the Gas and Electricity Markets Authority pursuant to Special Condition C8E paragraph 4(d)(v) of the gas transporter licence, 5 September 2007 (Ref No. 219/07 (a))
- TPCR 2007-2012 Explanatory Note for a Direction to National Grid Gas plc under Special Condition C8E(4)(d)(v), 5 September 2007 (Ref No. 219/07(b))
- TPCR 2007-2012 Decision to modify the gas transporter licence under Section 23 of the Gas Act 1986, 5 September 2007 (Ref No. 217/07 (a))
- TPCR 2007-2012 Section 38A notice in respect of reasons for the decision to modify the licence of National Grid Gas plc, 5 September 2007 (Ref No. 217/07 (b))
- TPCR 2007-2012 Schedule to Decision under section 23 of the Gas Act 1986, 5 September 2007 (Ref No. 217/07 (c))
- TPCR 2007-2012 Notice under section 23(3) of the Gas Act 1986, 30 July 2007 (Ref No. 195/07)
- TPCR 2007-2012 Schedule to Notice under section 23 (3) of The Gas Act 1986 - Clean version, 30 July 2007 (Ref No. 195/07a)
- TPCR 2007-2012 Schedule to Notice under section 23 (3) of the Gas Act 1986 - Track change version, 30 July 2007 (Ref No. 195/07b)
- Open Letter - Further consultation on NTS entry capacity baselines, 27 July 2007 (Ref No. 192/07)
- Open letter - National Grid Gas National Transmission System Entry Capacity: Development of the regime in the medium to longer term (capacity substitution), 27 June 2007
- TPC 2007-2012 Notice under section 23(3) of the Gas Act 1986, 25 June 2007 (Ref No. 151/07)
- TPCR 2007-2012 NGG NTS Proposed Licence Mods, 25 June 2007 (Ref No. 151b/07)
- TPCR 2007-2012 Modification of the Gas Transporter Licence Under Section 23 of the Gas Act 1986, Ofgem letter (30 March 2007)
- TPCR 2007-2012 Section 38A notice in respect of reasons for the decision to modify the licence of National Grid Gas plc (Ref No. 61/07)
- TPCR 2007-2012 Notice under section 23(3) of the Gas Act 1986 (16 February 2007)
- TPCR 2007-2012 Final Proposals, Appendices, December 2006 (Ref No. 206/06b)
- TPCR 2007-2012 Addendum to Updated Proposals, Appendices (Ref No. 170/06a)
- TPCR 2007-2012 Updated Proposals, September 2006 (Ref No. 170/06)
- TPCR 2007-2012 Updated Proposals - Appendices, September 2006 (Ref No. 170/06a)
- TPCR 2007-2012 Initial Proposals, June 2006 (Ref No. 104/06)
- TPCR 2007-2012 Initial Proposals, Main Appendices, June 2006 (Ref No. 104b/06)

- TP50CR 2007-2012 Initial Proposals, Appendix: Offtake Revenue Drivers and Baselines for NGG NTS , June 2006 (Ref No. 104c/06)
- TPCR 2007-2012 Initial Proposals, Draft Enduring Offtake Impact Assessment, June 2006 (Ref No. 104d/06)
- TPCR 2007-2012: Third Consultation, March 2006 (Ref No. 51/06)TPCR 2007-2012: Third Consultation, Supplementary Appendices, March 2006 (Ref No. 51/06b)
- TPCR Capital Expenditure Projections 2007-2012 (open letter), 1 February 2006 (Ref No. 21/06)
- TPCR Second Consultation, December 2005 (Ref No. 277/05)
- TPCR Initial Consultation, July 2005 (Ref No. 172/05)

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Summary

Background

We introduced a new obligation on NGG NTS to introduce entry capacity substitution at the time of the last transmission price control review (TPCR4). Entry capacity substitution is a mechanism which facilitates the permanent transfer of unsold entry capacity at one or more entry points to meet the demands for capacity elsewhere.

We remain of the view that this policy is in the interests of consumers and consistent with our duties. We consider that entry capacity substitution will guard against the risk that capacity is sterilised at an entry point where it is not needed. By reducing the obligation on NGG to provide capacity at such entry points, additional capacity can be made available elsewhere. Where this occurs, the need for investment in new network reinforcement may be avoided. We consider that this has three advantages: (1) lower costs to customers as a result of the avoided capex, (2) environmental benefits associated with avoidance of constructing cross-country pipelines, and (3) avoiding potential delays and costs associated with the planning process linked to investment projects which can impact the timing of the delivery of new infrastructure.

Savings in capital expenditure will depend on the pattern of incremental signals received and on their size. The approach we have taken is to assess three potential signals at Barrow, Easington and the South East zone. We have assumed that the likelihood of each signal is broadly similar. Were each signal independent, the saving in capital expenditure under the proposed methodology would be £27m, £0, or £51m respectively. Further substitution opportunities could generate additional capex savings.

Some industry participants argue that the substitution will cause security of supply concerns where inadequate provision has been made by users for future flows. We consider that the approach which has been proposed by NGG provides users with the necessary means to secure future capacity for these future flows at minimal cost, without undermining the entry capacity auction regime.

NGG's proposed methodology

The proposed methodology has, at its core, the establishment of exchange rates which define the ratio of capacity moved from one entry point to another, and ways of prioritising which entry points receive capacity and which entry points provide capacity. The methodology also proposes a mechanism through which users can limit the capacity that can be moved to another entry point by making a payment (a capacity retainer). Finally, the proposed mechanism provides for the use of an exchange rate cap, which will also limit the amount of capacity which can be substituted. We consider that the exchange rate cap provides a "soft landing" for the introduction of the proposed methodology, which will reduce the risk of large-scale unanticipated consequences.

NGG's Gas Transporter Licence requires it to use reasonable endeavours to ensure that the methodology facilitates the achievement of the objectives set out in its licence. The objectives are set out in paragraph 10(c) of Special Condition C8D of the Gas Transporter Licence.

This impact assessment assesses the methodology against these objectives and other relevant considerations. It also considers the quantitative and qualitative costs and benefits and requests views on these to inform our final decision.

During the course of industry discussions a number of different approaches to substitution have been debated. Towards the end of the most recent process, NGG focused on three alternative methodologies – the retainer approach, two-stage auction approach and a mechanistic approach based on the use of data drawn from NGG's Transporting Britain's Energy (TBE) process. Ofgem signalled in July 2009 that it did not consider a mechanistic approach would be in line with the principles for substitution. Following this intervention, NGG chose to devote further work to the development of the retainer approach which forms the basis of the proposed methodology. Our Impact Assessment focuses on the retainer methodology; however, we also comment on the merits of the alternative approaches, since we consider that these comments may help to inform industry about our views on entry capacity substitution.

Initial Views

We are minded to approve NGG's proposed methodology, subject to consideration of the responses to this Impact Assessment and without fettering the discretion of the Authority.

We consider that the proposed methodology is likely to deliver the benefits anticipated from substitution whilst minimising the risk that inappropriate levels of capacity are substituted. We also consider that the proposed methodology will not place an undue burden on shippers as it builds on existing processes associated with the long term entry capacity auctions. We understand that the methodology is simple to administer, does not need major changes to IT systems and that its implementation will not give rise to significant costs.

We welcome views on all aspects of this impact assessment, including our assessment of the potential impacts associated with the implementation of the proposed methodology and on any impacts which respondents consider to be relevant. Where in this document we refer to Ofgem's views, that is a reference to our provisional views, and is subject to further consideration of any points raised in response to this consultation process. The consultation on this impact assessment will close on 1 December 2009.

1. Introduction

This chapter sets out the aim of the impact assessment of NGG's substitution methodology and explains the original rationale for introducing the substitution obligation as part of TPCR4. It outlines briefly some recent developments and considers their relevance to substitution.

1.1. We introduced a new obligation on NGG NTS to introduce entry capacity substitution at the time of the last transmission price control review (TPCR4). Entry capacity substitution facilitates the transfer of unsold capacity at one or more entry points (the donors) to meet the demands for capacity elsewhere (the recipient). It is the process by which unsold non-incremental obligated entry capacity[1] is moved from one or more NTS entry points to meet the demand for incremental obligated entry capacity at another NTS entry point. Under the licence, NGG is required to develop and submit a methodology for substitution to the Authority for approval.

1.2. The Authority is required to decide whether the methodology submitted by NGG is consistent with NGG's licence obligations. The aim of this impact assessment is to assist in this decision process. The principal focus of this document is therefore to look at how the methodology supports the aims and objectives of substitution and to assess the likely impact of its implementation. However, in order to provide context to this evaluation this chapter sets out the background to the introduction of the substitution methodology.

Rationale for substitution

1.3. As part of the TPCR4 settlement, NGG agreed to three new obligations. It was required to introduce mechanisms for NTS entry capacity trade, NTS entry capacity transfer and NTS entry capacity substitution. The rationale for substitution was set out in the open letter to National Grid Gas dated 7 June 2007.

"We think that capacity trade, transfer and substitution will be increasingly important given the ongoing changes in the sources of supply to the UK gas market. The NTS and the associated commercial arrangements for securing entry capacity will need to become more flexible with the decline in gas supplies from the North Sea and increased dependence on gas imports from a diverse range of sources. Movements in the price of gas in the UK relative to prices in the US, NW Europe or Asia could lead to changes in the sources of gas supply to the UK.

The commercial arrangements will need to allow for capacity to be transferred or traded between entry points, where this is physically possible, in response to these changes. In the longer term, it will be important that the arrangements allow for capacity substitution, where this is physically possible, from terminals where there is spare capacity, for example because of declining production from the North Sea, to

[1] NGG's entry capacity release obligations are defined in its gas transporter licence. Non-incremental obligated entry capacity is the volume of baseline capacity which the licensee is required to offer for sale at an entry point.

terminals where additional capacity is required to meet new or existing sources of supply.

The objective of this new obligation is to reduce the risk of not fully utilising the existing network assets by enabling unsold baseline capacity at a certain point of the network to be moved to another point on the network where users have given a signal for incremental entry capacity through the LTSEC (long-term system entry capacity) auctions. Substitution will only occur if shippers do not purchase all baseline capacity at a specific entry point through buying long-term entry capacity rights at that entry point in the LTSEC auctions..”

Concerns expressed

1.4. During the workshops and meetings held over the past two years to discuss and develop a substitution methodology, some industry participants have questioned the overall merits of substitution. Whilst we have addressed such comments and concerns in discussion and in other documents, we consider that there is merit in presenting and discussing the salient features of these views below. We remain of the view that substitution will reduce the risk of not fully utilising the network, to the benefit of consumers. For the avoidance of doubt, the discussion below relates only to the general principles of substitution and not to any specific methodology for the implementation of substitution.

Competition effects

1.5. Entry capacity is offered for sale on a competitive basis at NTS entry points. The regime is based on user commitment. Some shippers have argued that if unsold capacity is substituted away from an entry point this could make it harder for a new project to connect at that entry point. The reason given is that it will not be able to access unsold baseline capacity.

1.6. However, we consider that without substitution, the primary risk to a shipper seeking to access capacity is that the capacity is bought by a competitor who is willing to pay more/commit earlier for that capacity. With substitution, this risk is fundamentally unchanged; the only difference is that an incremental demand at another Aggregate System Entry Point (ASEP) would also indirectly compete for the capacity. In effect, substitution only broadens the market for capacity.

1.7. Currently, a project that is under development is able to access capacity by bidding for incremental capacity at that ASEP. The introduction of substitution does not alter the choices faced, and may even have a beneficial effect, since any reduction in baseline which follows as a result of substitution may serve to reduce entry prices at the donor ASEP. An important feature of substitution is that it only results in capacity being moved between entry points when a signal, which passes the NPV test, triggers it.

1.8. Some shippers have suggested that baselines should be left unchanged, so as to facilitate connection of potential new supplies at some time in the future. We

consider this would potentially lead to distortions of the competitive nature of the entry capacity regime. We also consider that this would result in the reservation capacity for uncertain future needs which would expose consumers to unnecessary investment costs. Without substitution, NGG may be required to invest elsewhere on the network to accommodate firm projects which are able to make a financial commitment now when it may have been more efficient to have substituted capacity from other entry points.

Wholesale gas prices

1.9. Some shippers also expressed the view that substitution could result in shippers being unable to flow as much gas as they want to and this could have a potential upward impact on the wholesale gas price and adversely impact on security of supply.

1.10. Whilst we recognise that this is a real concern, we have not been shown any quantitative evidence in support of this assertion. We would observe that substitution of entry capacity will only occur in response to a signal for increased entry capacity elsewhere and that, in itself, this additional capacity might be expected to reduce wholesale prices and improve security of supply. Furthermore, the approach to substitution that has been proposed by NGG and which is discussed in subsequent chapters would provide a mechanism to mitigate the risk that future gas developments could be stranded offshore due to a lack of available NTS capacity.

Short-term capacity

1.11. The enduring capacity trade and transfer regime was implemented in 2008 and provides shippers with alternative means of securing additional capacity, especially over the winter period. NGG also have the ability to offer discretionary firm capacity products as a result of the implementation of Uniform Network Code (UNC) modification proposal 216[2]. We believe that these entry products offer shippers greater flexibility and facilitate the transfer of capacity to those entry points where it is valued most.

1.12. It has also been suggested that substitution will reduce the availability of short term capacity. We would observe that ten per cent of baseline capacity is excluded from the Quarterly System Entry Capacity (QSEC) auctions (and from substitution) and remains available through the shorter term auctions. We would also note that work is currently being conducted through the European Regulators' Group for Electricity and Gas (ERGEG) which is considering the appropriate level of capacity that should be held back for short term access arrangements[3]. Any conclusions from this work would be binding on the proportion of short term capacity to be excluded from the QSEC auctions in the GB regime.

[2] "Introduction of an additional Discretionary Release Mechanism for NTS Entry Capacity", available at www.gasgovernance.co.uk/0216
[3] ERGEG principles: Capacity allocation and congestion management in natural gas transmission networks, ref E08-GFG-41-09

Project Discovery

1.13. The most recent contribution to the debate on the future development of secure and sustainable energy supplies is set out in our initial report on Project Discovery[4]. In this report we analysed four scenarios for the next decade and beyond. We assumed that UK Continental Shelf indigenous resources will deplete from around 60 bcm/year to around 26 bcm per year by 2020 in all scenarios.

1.14. Project Discovery also identifies that there are two very different futures for LNG terminal usage. In the "Dash for energy" and "Slow Growth" scenarios, regassification terminal utilisation factors increase from current levels of around 20% to 60-70%. In the "Green stimulus" and "Green Transition" scenarios, LNG usage falls and capacity becomes significantly underutilised over time, in line with falling gas demand due to expansion of renewable and energy efficiency. Where utilisation of LNG would diminish, substitution would allow entry capacity associated with LNG facilities to meet demand at other entry points.

Carbon capture and storage

1.15. Project Discovery suggests that by 2025 there could be up to 6.4GW of generation fitted with CCS in the "Green stimulus" scenario, with none in the "slow growth" scenario. We set out the potential implications of the use of certain sections of the NTS for Carbon Capture and Storage (CCS) in a separate consultation earlier this year. The current CCS proposal does not change NGG's baseline obligations in any way and whilst there may be some potential interaction between such developments and substitution, we will make the decision on any proposal to dispose of part of the gas transportation system for CCS purposes on its own merits, taking account of NGG's ability to meet future demands for capacity and other relevant considerations.

Exit capacity substitution

1.16. This document discusses entry capacity substitution. NGG also has a licence obligation to implement exit substitution. A derogation[5] was granted on 23 February 2009 which delays its introduction, requiring NGG to submit an exit substitution methodology by 4 January 2011 to the Authority for approval, so that a methodology is in place to be implemented from the July 2011 Application window. In light of the complexity of the issues involved, when granting this derogation, we set out our view that it would be better to start work on the exit methodology when the entry methodology had been agreed.

1.17. We are mindful of the fact that while entry capacity substitution can have an impact on GB security of supply through its potential impacts on flows of gas into GB through interconnectors, exit substitution can have a potential impact on the security

[4] Project Discover Energy Market Scenarios (122/09) 9 October 2009
[5] Derogation notice to delay the introduction of exit substitution and baseline revision methodology statements - (Reference number: 10/09)

of supply for other regimes, particularly those downstream of the Moffat interconnector. We would be looking to engage with these parties at an early stage of the methodology development process so that the outcome is compatible with their supply requirements.

2. Background

In this chapter we highlight the overall stages which have been taken in developing a methodology to implement substitution and summarise the earlier informal and formal consultations undertaken by NGG.

New obligations introduced as part of TPCR

Re-allocating baselines

2.1. In our TPCR Initial Proposals document[6], published in June 2006, we introduced the concept of re-allocating baselines[7] and described the framework that we anticipated would be developed to make this possible. The principles which we set out for re-allocating baseline capacity were as follows:

- After each long term capacity allocation NGG will review demands for capacity relative to the current baseline levels
- If there is an entry or offtake point where demand exceeds the baseline level of capacity and there is a 'reasonably substitutable' entry or offtake point with unsold, baseline capacity, then NGG will develop a proposal to transfer capacity between the relevant points
- NGG would need to consult and develop a methodology for identifying and proposing appropriate substitutions in these circumstances, and the methodology would be subject to Ofgem approval
- NGG would then submit a report to Ofgem following each long term capacity allocation setting out how it proposed re-allocating baseline capacity. Once approved the baselines would be changed with effect from the delivery date of the capacity bought in the relevant long term auction.

Capacity substitution and associated methodologies

2.2. In the Initial Proposals consultation for TPCR4 we proposed the introduction of obligations on NGG for the substitution of capacity between gas entry points and for the substitution of capacity between gas offtake points. Under these proposals, unsold baseline capacity could be allocated to where it is most in demand after each long term capacity allocation. The Initial Proposals consultation indicated that there would be an obligation on NGG to carry out "all reasonable" transfers of capacity between entry points and between exit points before receiving additional remuneration for incremental capacity. This is known as the substitution obligation.

[6] TPCR 2007-2012 Initial Proposals, June 2006 (Ref No. 104/06)
[7] Baselines define the levels of capacity that the transmission licensee is obligated to release. Baselines also determine the levels above which incremental capacity is defined.

2.3. We further developed our views in the TPCR Updated Proposals[8] document and proposed a framework for the substitution and reallocation of baselines in the context of long term capacity allocations, including the introduction of a substitution obligation. In particular, we proposed that:

- NGG NTS should be obliged under its licence to consult on and develop a transparent methodology for baseline revisions. This methodology would address processes associated with substitution and the upward revision of baselines to reflect developments at offtake and entry. The methodology would need to reflect NGG NTS's statutory and licence obligations with respect to efficient network development. NGG NTS will be obliged to use all reasonable endeavours to identify capacity transfers.

- NGG NTS would be required to offer capacity transfer exchange rates to shippers who request them to facilitate the transfer of sold and unsold capacity between entry points.

- Ofgem approval would be required before baselines are substituted or revised;

- NGG NTS would also be required as part of its application to revise baselines to set out the exchange rate that was applied in undertaking any substitution;

- NGG NTS would be required to publish a statement setting out revised baseline numbers reflecting any revisions that have been approved by Ofgem; and

- NGG NTS would be required to submit to the Authority an annual statement explaining the basis upon which it has reached the view that user demands signalled through long term allocations cannot be satisfied by substitution.

Capacity release

2.4. We set out our views on gas transmission entry capacity substitution in TPCR Final Proposals, published in December 2006[9] and we introduced a new obligation on NGG NTS to facilitate the transfer of unsold capacity to meet demands for capacity elsewhere. To give effect to this obligation in a transparent manner we required NGG NTS to establish a methodology, which would need to be consulted on with interested parties, and approved by Ofgem.

2.5. In order to give effect to this policy, we made modifications to NGG's gas transporter licence. We consulted on these proposals and updated our views in the TPCR Updated Proposals document, published in September 2006, following careful consideration of the consultation.

[8] TPCR 2007-2012 Updated Proposals, September 2006 (Ref No. 170/06)
[9] TPCR 2007-2012 Final Proposals, December 2006 (Ref No. 206/06)

Development of a substitution methodology

2.6. Following the conclusion of TPCR4, Ofgem published a Notice under section 23 (3) of the Gas Act 1986 proposing to modify NGG's licence for the TPCR4 package, setting out amongst other things, the full licence terms for substitution. On 18 May 2007 NGG started an informal consultation on a draft Entry Capacity Substitution Methodology Statement. The initial consultation by NGG was closed out on 15 August 2007, as NGG considered that it was not appropriate to submit the proposed methodology because of issues that had been raised regarding its scope, and the fact that licence consultations were ongoing. This initial methodology is described throughout this document as the "Core" methodology (this change in nomenclature is to assist clarity in the context of this assessment). The primary difference to the proposed methodology is that it had no mechanism to limit the amount of unsold obligated capacity moved from ASEPs.

2.7. Discussion between NGG, the industry and Ofgem on substitution occurred through a series of workshops from April 2008 to July 2009[10].

- Workshop 1 (8 April 2008): This analysed the issues raised with by industry following circulation of a draft method. It explored the policy aims of substitution, the consequences of substitution, how much capacity should be made available to any substitution process and what constraints might apply in relation to substituted capacity.

- Workshop 2 (7 May 2008): In which NGG developed an example based on a hypothetical request for incremental capacity at Easington ASEP, as a method to indicate the processes involved and to indicate in a general way the type of outcome that could be expected.

- Workshop 3 (13 June 2008): This consisted of further detailed development by NGG of the example provided in Workshop 2.

- Workshop 4 (9 July 2008): A discussion paper was presented which identified key questions on which NGG sought industry views. These were related to a draft Entry Capacity Substitution methodology statement which was subsequently circulated for comment.

- Workshop 5 (5 December 2008): Reviewed the costs, benefits and impacts of substitution on charges. A total of 11 options and components of the methodology were presented and discussed.

- Workshop 6 (7 January 2009): provided further information on pricing impacts and carried out an option sift. It was agreed to focus on the two stage auction approach which had received the highest score from shippers, an option product, and to consider an methodology that combined the elements of an exchange rate cap with limits on the quantities substituted (a mechanical approach).

[10] Hosted by Joint Office. Details of workshops are available on their website e.g. http://www.gasgovernance.com/NR/rdonlyres/555D3D93-A763-4E27-A8DD-C64DF67AA197/24814/EntrySubstitutionWorkshop1_Apr_08.pdf

- Workshop 7 (10 February 2008): The three main alternatives were developed in further detail. NGG presented information on the potential use of TBE data in the mechanical approach, the nature and operation of the option model was discussed, and there was a discussion of how the Two Stage auction approach would work, with emphasis on its incorporation existing processes.

- Workshop 8 (7 April 2009): NGG provided worked examples based on the three alternatives and further refinements of the methods were discussed. Based on the information presented it was agreed that it was appropriate to proceed to informal consultation.

- Workshop 9 (10 July 2009): This workshop followed the informal consultation and Ofgem's open letter (see below) and considered the two user commitment models previously detailed. NGG indicated that there were practical issues that would mean that the two stage approach would be difficult to implement. Following discussion, NGG identified that the option approach would be developed for formal consultation.

Timetable for implementation

2.8. On 3 March 2008 we granted a derogation[11] to NGG in respect of its obligation to have capacity substitution in place by June 2008. This derogation changed the obligation on NGG so that NGG was required to prepare an entry capacity substitution methodology and submit this to the Authority, to allow substitution to be in place by the later date of April 2009.

2.9. NGG consulted informally on its first draft methodology for the introduction of NTS entry capacity substitution in July 2008. Gas shippers asked Ofgem to elucidate certain aspects of the manner and timing of the introduction of capacity substitution. In particular, there were requests for Ofgem to make clear whether the initial implementation of substitution could occur before a future Quarterly System Entry Capacity (QSEC) auction.

2.10. On 11 September 2008 we published an open letter[12] in response to requests from shippers for clarification on the process and timetable for the introduction of NTS entry capacity substitution. In the open letter we reiterated our commitment to the introduction of substitution and to the timetable set out in the March derogation, which had remained unchanged throughout; namely, that we would expect NGG to submit an entry capacity substitution methodology to Ofgem by early January 2009 and we would make a decision on the methodology by early April 2009 at the latest.

11 www.ofgem.gov.uk/NETWORKS/TRANS/GASTRANSPOLICY/Documents1/Direction%20issued.pdf

12 www.ofgem.gov.uk/Networks/Trans/GasTransPolicy/TTS/Documents1/080911%20The%20introduction%20of%20capacity%20substitution.pdf

2.11. On 17 December 2008 we issued a further derogation[13] which changed the obligation such that NGG were required to prepare an entry capacity substitution methodology and submit this to the Authority, to allow substitution to be in place by 1 March 2010. This followed an informal consultation by NGG on a draft methodology following a series of workshops over the summer, and a Conclusions Report which was published in September 2008. Most respondents expressed support for the principle of entry capacity substitution, although there was no clear consensus on a preferred methodology.

2.12. We recognised concerns that application of substitution, in the manner described in the draft methodology, could have undesirable consequences and in view of these outstanding concerns we felt it appropriate to allow more time for the development of the methodology. This would permit a more comprehensive and flexible solution, greater consensus, reinforce user commitment and provide greater transparency about the risks and effects of substitution.

NGG's informal consultation on the substitution methodology

2.13. NGG's informal consultation on the entry capacity substitution methodology was initiated on 15 May 2009 and consulted on three methodologies: the mechanical approach, the retainer approach and the two stage auction approach.

2.14. The mechanical approach would utilise data from the Transporting Britain's Energy (TBE) process.

2.15. The consultation also included specific questions on the core methodology which NGG had previously consulted on in 2008. A total of 15 responses were received. These are published on the NGG website[14].

2.16. Respondents indicated that they considered that the core methodology provided insufficient safeguards which would allow them to buy future baseline at ASEPs where capacity might be moved to meet incremental signals elsewhere. The calculation of the amounts to be substituted was considered to be important and it was suggested by respondents that figures should be subjected to audit and presented with as much transparency as possible.

2.17. The consultation considered the efficient use of capacity available and the possible use of economic tests in the methodology. Respondents considered that the latter would introduce complexities. The consultation sought views on the use of the three methodologies. The results of the consultation indicated that 8 shippers were in favour of a mechanical (forecast flow limit) approach that uses TBE data. The two stage auction received the backing of two shippers. Although no shippers expressed a first preference for the "retainer approach"[15] three respondents indicated that it

[13] www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=177&refer=Networks/Trans/GasTransPolicy
[14] http://www.nationalgrid.com/uk/Gas/Charges/statements/.
[15] The "retainer approach" was initially referred to as the "option approach" during the

was their second preference and three others indicated that it was acceptable (with caveats).

2.18. When questioned on whether it was appropriate that capacity could be withheld from substitution with lower user commitment, one respondent suggested that this was acceptable while two indicated that they considered the cost of the user commitment to be too low. A number of additional issues were considered. Four respondents identified that they were in favour of the use of entry zones in the methodology, while one respondent did not. The use of a soft landing in the methodology was supported by all respondents. Eight respondents indicated they were in favour of exchange rate caps with one respondent opposed to their use.

Ofgem open letter

2.19. On 3 July 2009 Ofgem published a further open letter[16] in order to clarify the principles that we considered should be applied to the substitution methodology. We indicated that a key principle which underpins the NTS entry capacity arrangements is that users face a choice. If users want financially firm rights to use the system they need to purchase them and make a financial commitment to pay for them. The arrangements allow them to secure rights for up to seventeen years into the future through a series of auctions that are held every year.

2.20. Where users choose not to secure rights and therefore rely on auctions of firm or interruptible capacity which are held for each gas day, then they face the risk that entry capacity is not available if the system is constrained. The introduction of the substitution regime does not change these choices or risks in a fundamental way, but substitution may broaden the pool of parties who might bid for and secure the capacity at a particular entry point and increase the risk that a shipper who has not chosen to buy capacity is unable to access entry capacity on the day.

2.21. The letter indicated that although many respondents expressed views indicating their support for the "mechanical" methodology, in Ofgem's view, the "mechanical" methodology is not an appropriate means of rationing available unsold capacity which may be substituted in the event that another shipper signals a requirement for incremental capacity. Thus, it was suggested that the use of future forecast flows is moving away from the fundamental principles of user commitment set out above, and risks distorting the inputs to the TBE process.

2.22. These views were discussed at Workshop 9 and the mechanical approach was removed from the methodology alternatives available to NGG.

workshops held to develop the methodology.

[16] www.ofgem.gov.uk/NETWORKS/TRANS/GASTRANSPOLICY/Documents1/Open%20letter%20on%20the%20methodology%20for%20entry%20capacity%20substitution.pdf

NGG's formal consultation on the substitution methodology

2.23. The formal consultation on the substitution methodology was initiated on 24 July 2009. A total of 10 responses were received. One respondent indicated that they were not in favour of NTS entry capacity substitution in general.

2.24. Five of the ten respondents explicitly stated that they do not support the proposed methodology statement. Two were unambiguously opposed to the methodology: one referring to it as "fundamentally flawed" but without explanation and another saw "little merit in the Retainer approach as currently drafted". Three respondents expressed disappointment that NGG had not consulted on the Two-Stage Auction method. NGG emphasised in the conclusions report that the Licence requires NGG to submit to the Authority for approval a single methodology statement, not a range of statements.

2.25. A total of 5 responses indicated support for the Two-Stage Auction method while several responses indicated concerns regarding the process by which the methodology submitted by NGG was identified.

Substitution Licence Change

2.26. On 23 October 2009 Ofgem published a section 23 licence modification Direction[17] which amended the substitution licence condition. We consider that the original obligation on NGG was clear; however, a number of industry participants expressed the view that there was scope to improve the clarity of the substitution obligation. Therefore, the purpose of the licence changes was to clarify the objectives which should be followed when deciding whether to substitute entry capacity or not, and in particular to clarify the need for future capacity requirements to be underpinned by some form of user commitment, with appropriate credit arrangements. In addition, the licence change provides for Ofgem to have a three month assessment period for the substitution methodology, if undertaking an impact assessment, to bring the assessment period into line with other licence conditions.

2.27. The licence change made was to Special Condition C8D: NTS gas entry incentives, costs and revenues; Part C – Capacity release obligations. Paragraph 10:Entry capacity substitution obligation states that:

" … the licensee shall use reasonable endeavours to ensure that the entry capacity substitution methodology facilitates the achievement of the following objectives (the "entry capacity substitution objectives"):

> (i) ensuring that entry capacity substitution is effected in a manner consistent with the licensee's duties under the Act and the standard, Standard Special and Special Conditions, in particular the duty to develop and maintain an efficient and economical pipeline system;

[17] Modification of Special Condition C8D of National Grid's gas transporter licence - (Reference number: 129/09)

(ii) in so far as is consistent with (i) above, ensuring that entry capacity substitution is effected in a manner which seeks to minimise the reasonably expected costs associated with funded incremental obligated entry capacity, taking into account the entry capacity that shippers have indicated they will require in the future through financial commitment to the licensee;

(iii) ensuring that entry capacity substitution is effected in a manner which is compatible with the physical capability of the pipeline system to which this licence relates;

(iv) in so far as is consistent with (i) above, avoiding material increases in the costs (including entry capacity constraint management costs in respect of obligated entry capacity previously allocated by the licensee to relevant shippers) that are reasonably expected to be incurred by the licensee as a result of substituting entry capacity; and

(v) in so far as is consistent with (i), (ii), (iii), and (iv) above, facilitating effective competition between relevant shippers and relevant suppliers."

2.28. For the avoidance of doubt we are assessing the proposed methodology against these licence conditions (as amended).

3. NGG's Substitution Methodology

This chapter describes the methodology submitted to Ofgem. It outlines how the methodology would work and indicates the potential effect of the methodology on capacity obligations by considering three scenarios with potential signals for incremental capacity.

Question 1: Are there additional aspects of the methodology that should be highlighted?

Question 2: Are the scenarios analysed appropriate and relevant to system development? If not, why not?

Proposed methodology

3.1. NGG submitted its methodology to Ofgem on 7 September 2009 following informal and formal consultation.

3.2. The methodology submitted by NGG sets out a process by which capacity is moved from donor Aggregate System Entry Point (ASEP)s to recipient ASEPs. A donor ASEP is an entry point on the NTS at which obligated capacity is permanently reduced to create additional entry capacity elsewhere. A recipient ASEP is the entry point that receives capacity.

3.3. NGG's methodology groups together "interactive" ASEPs (these share common infrastructure on the NTS) into seven zones. The zones identified include: Easington, Theddlethorpe, South East Zone, Northern Triangle, Northwest Corridor, West UK and South west. All zones have two or more ASEPs apart from the Theddlethorpe zone in which the Theddlethorpe ASEP is the sole ASEP.

3.4. The capacity available for substitution is defined following a series of rules including the rule that the substitution methodology will not be applied to the 10% of capacity held back for Annual Monthly System Entry Capacity (AMSEC) auctions. Additional rules are detailed which govern the treatment of incremental capacity release as a result of QSEC auction pre and post 2007 (when there was a licence change affecting their treatment). Capacity allocated in previous auctions will not be available for substitution.

3.5. For each ASEP, the substitutable capacity will be the lowest value of unbooked capacity for any quarter following the default lead time for the release of incremental capacity. The default lead time for the release of incremental capacity is 42 months.

When more than one incremental signal occurs, recipient ASEPs are considered in order of revenue driver[18], from lowest revenue driver to highest.

3.6. The order in which donor ASEPs are considered for providing substitutable capacity is determined by whether they are within the recipient ASEP's zone or outside it. Within the recipient's zone, the sequence is related to the exchange rate. This is the ratio of capacity removed from (donor) ASEP to meet a unit of incremental capacity is the exchange rate. The within zone exchange rate is determined by network analysis. Where two within zone donor ASEPs have the same exchange rate, the donor with the shortest pipeline distance from the recipient will be selected for substitution purposes. When substitutable capacity has to be provided from outside the zone, donors will be considered on the basis of shortest pipeline distance.

3.7. The exchange rate of any donor ASEP/Recipient pairing will not be permitted to exceed 3:1.

3.8. Potential substitutions are validated through network analysis which seeks to ensure that the substitution does not increase the incremental risk to the network; in other words, to ensure that NGG's existing commitments to flow gas can be met. The detailed steps that NGG will follow in conducting this assessment are explained in their methodology.

3.9. Network analysis will also be used to confirm an appropriate level of substitution and investment. Where, after exhausting the scope for substitution, a residual requirement for reinforcement remains and this reinforcement is uneconomic due to economies of size, then some of the proposed substitution may be rejected.

3.10. The methodology includes a detailed description of the operation of a retainer product. The retainer is an annual product which can be taken out for any entry point with substitutable capacity. When it is requested ahead of the QSEC it allows the volume of capacity identified by the retainer to be excluded from being treated as substitutable capacity during the QSEC or in any other quarterly entry capacity auctions during the year. It does not create rights for the user to be allocated the capacity nor does it withhold the capacity from being offered for sale at the QSEC or any other auction. The user must buy capacity at a QSEC in the normal way in competition with other users. There is no limit to the number of retainers that can be purchased sequentially.

3.11. A refund of the retainer cost to the initial user can be obtained if capacity is subsequently purchased by any user. The refund will be triggered by capacity purchases at the next three QSEC auctions and also at AMSEC auctions as detailed by the methodology. This provides considerable flexibility for users. The retainer charges and the refund mechanism are set out in NGG's Gas Charging Methodology modification proposal GCM 018, which is subject to separate approval.

[18] A revenue driver is means of linking the revenue allowance in a price control to specific measurable events (see Glossary for more information)

3.12. The charge for the retainer is subject to separate consideration (Uniform Network Code Modification 265[19] and Gas Charging Modification 18[20]). UNC 265 'Creation of a NTS Entry Capacity Retention Charge within the UNC' is a modification proposal that has been raised by NGG to facilitate the implementation of this methodology. Our assessment of the methodology and any decision subsequently taken does not fetter the discretion of the Authority in respect of its assessment of this UNC modification proposal. Charging Modification 18 is a charging consultation intended to determine the magnitude of the charge, the treatment of revenues, and derivation of the charge and is subject to approval. The charge is stated as 0.2920 p/kWh of entry capacity retained in the consultation. Within this document, based on discussions to date, we understand that the charge would be paid approximately three to four months after a QSEC auction.

Analysis of three potential scenarios

3.13. We have analysed the way in which the proposed methodology would impact on three separate potential signals for additional incremental capacity; namely, at Barrow, Easington and in the South East zone. These signals have been highlighted by industry within workshops and in correspondence with Ofgem as potential developments that might trigger substitution.

3.14. We have asked NGG to supply data on the impact of the methodology on the network. In particular, they were asked to identify which ASEPs would donate capacity in order to meet the specific signal and in what order. To support this, we also asked NGG to provide network analysis for the Easington and Barrow examples.

Scenario 1: Incremental signal at Barrow

Outcome for a 216.6 GWh/d incremental signal

3.15. It is assumed that, at a QSEC auction, bids are received for incremental capacity at Barrow that are sufficient to pass the NPV test for a 216.6 GWh/d (this is equivalent to 20 mcmd) of capacity from 42 months. Barrow's existing obligated level is 309.1 GWh/d.

3.16. Barrow is in the Northern Zone. Within this zone, the potential donors are: Teesside, Glenmavis and St Fergus. Analysis showed that the most favourable exchange rates (1:1) were at Glenmavis and Teesside, but Teesside was preferred due to shorter pipeline distance. No St. Fergus capacity was required to meet the required recipient bid and there was no need to utilise "out of zone" donors. Analysis by NGG indicates that the exchange rate between St Fergus and Barrow would have been 1. 6 to 1, had additional donor capacity been needed to satisfy the signal.

[19] www.gasgovernance.com/Code/Modifications/

[20] www.nationalgrid.com/uk/Gas/Charges/consultations

3.17. Table 1 illustrates the key capacity parameters at Teesside before and after substitution.

Table 1 Entry capacity characteristics at Teesside before and after application of substitution methodology

	Initial	Revised after substitution
	GWh/d	
Total baseline	476.0	476.0
Reserved for AMSEC (10%)	47.6	47.6
Obligated level	476.0	259.4
Sold level	161.6	161.6
Available for substitution (=obligated-reserved-sold)	266.8	50.2
Obligated capacity substituted	216.6	

3.18. The substitution of capacity between Teesside and Barrow can be achieved at an exchange rate of 1:1 which means that there is a permanent move of 216.6 GWh/d of obligated capacity from Teesside to Barrow.

Scenario 2: Incremental signal at Easington

Outcome for 108.3 GWh/d incremental signal

3.19. As a result of local constraints on Easington, analysis was undertaken at an assumed new entry point at Paull in the Easington Zone. With a 3:1 exchange rate cap there were no substitution opportunities available either within or outside zones. The exchange rate cap eliminated potential substitutions from either Theddlethorpe or Teesside to Easington.

3.20. During Workshop 2 (7 May 2008) NGG provided an earlier analysis of a 108.3 GWh/d (10 mscmd) bid for incremental capacity at Easington which is included here for illustrative purposes. This example was refined in workshop 3, and the results which would have been achieved are summarised in Table 4. Because the 3:1 exchange rate cap was not in place these are notional outcomes. The overall exchange rate in this earlier example was calculated at 9:1 and under the proposed methodology substitution would not be allowed.

Table 2 Notional entry capacity characteristics at donor ASEPs providing obligated capacity to Easington[21]

	Hornsea		Hatfield Moore		Theddlethorpe		Bacton	
	Initial	Revised after subtitution	Initial	Revised after subtitution	Initial	Revised after subtitution	Initial	Revised after subtitution
	mscmd							
Total Baseline	16.2	16.2	2.3	2.3	56.4	56.4	164.7	164.7
Reserved for AMSEC (10%)	1.6	1.6	0.2	0.2	5.6	5.6	16.5	16.5
Obligated level	21.5	20.6	2.3	1.5	56.4	7.2	164.7	123.0
Sold level	19.0	19.0	1.3	1.3	1.6	1.6	52.5	52.5
Available for substitution	0.9	0.0	0.8	0.0	49.2	0.0	95.7	54.0
Obligated capacity substituted	0.9		0.8		49.2		41.7	

Source: Workshop 3 data presented by NGG

Scenario 3: Incremental signal in the South East

Outcome for a 175.0 GWh/d signal

3.21. There are a number of possible signals that could arise in the South East zone. In this example, NGG has assumed the signal would be for a new entry point on the existing pipeline halfway between Tatsfield and Farningham. This is met by substitution from, in order, the Isle of Grain, Bacton and Theddlethorpe. However, it is emphasised that this location assumption is for analytical tractability and does not imply a specific development.

3.22. We have included two sections of analysis: first, where substitution occurs at exchange rates of either 1:1 or 3:1, and second, where a retainer is taken out to protect capacity at one of the potential donor ASEPs.

3.23. The first analysis is based on a theoretical assessment, assuming that exchange rates are either 1:1 or 3: 1 and does not include network analysis.

3.24. From the last column of Table 3 it can be calculated that at the Isle of Grain, 21.8 GWh/d would be removed to be used in substitution with 153.2 GWh/d removed at Bacton.

[21] The ASEPs are presented in order of potential substitution i.e. Hornsea, Hatfield Moore, Theddlethorpe, and Bacton.

Table 3 Entry capacity characteristics at donor ASEPs before and after application of substitution methodology assuming 1:1 exchange rate

	Isle of Grain		Bacton	
	Initial	Revised after subtitution	Initial	Revised after subtitution
	GWh/d			
Baseline	218.0	218.0	1,783.4	1,783.4
Reserved for AMSEC (10%)	21.8	21.8	178.3	178.3
Obligated level	699.7	677.9	1,783.4	1,630.2
Sold level	656.1	656.1	895.3	895.3
Available for substitution	21.8	0.0	709.8	556.6
Obligated capacity substituted	21.8		153.2	

3.25. With a higher exchange rate assumed as in Table 4, the Isle of Grain donates 21.8 GWh/d while Bacton donates 503.0 GWh/d .

Table 4 Entry capacity characteristics at donor ASEPs before and after application of substitution methodology assuming 3:1 exchange rate

	Isle of Grain		Bacton	
	Initial	Revised after subtitution	Initial	Revised after subtitution
	GWh/d			
Baseline	218.0	218.0	1,783.4	1,783.4
Reserved for AMSEC (10%)	21.8	21.8	178.3	178.3
Obligated level	699.7	677.9	1,783.4	1,280.2
Sold level	656.1	656.1	895.3	895.3
Available for substitution	21.8	0.0	709.8	206.8
Obligated capacity substituted	21.8		503.2	

3.26. The second part of our analysis, for this scenario, examines the impact of a retainer on substitution. A retainer makes it possible to signal that capacity is required at a particular ASEP that may otherwise donate. However, in this example it is assumed that the retainers are taken out to withhold capacity to a particular flow level of 600 GWh/d. The unsold amount of 709.8 GWh/d minus the required quantity of 600 GWh/d, gives a new available quantity of 109.8 GWh/d. The impact of the reduced quantity available for substitution is to increase the amount of capacity reallocated from the next potential donor. The impact of a retainer is greater at high exchange rates and this is demonstrated below for the 3:1 exchange rate.

Table 5 Entry capacity characteristics at donor ASEPs before and after application of substitution methodology assuming 3:1 exchange rate and a Retainer of 600 GWh/d taken out at Bacton

	Isle of Grain		Bacton		Theddlethorpe	
	Initial	Revised after substitution	Initial	Revised after substitution	Initial	Revised after substitution
	GWh/d					
Baseline	218.0	218.0	1,783.4	1,783.4	610.7	610.7
Reserved for AMSEC (10%)	21.8	21.8	178.3	178.3	61.1	61.1
Obligated level	699.7	677.8	1,783.4	1,659.0	610.7	224.6
Sold level	656.1	656.1	895.3	895.3	19.8	19.8
Retainer	0.0		600.0		0.0	
Available for substitution	21.8	0.0	109.8	0.0	529.9	143.7
Obligated capacity substituted	21.8		109.8		393.4	

3.27. Table 5 indicates that the use of the assumed retainer at Bacton would limit the amount substituted at Bacton to 109.8GWh/d, and 393.4 GWh/d would come from Theddlethorpe.

4. Assessment of NGG's methodology

This chapter sets out and seeks views on our assessment of the impact of the proposed substitution methodology, including our qualitative and quantitative analysis.

Question 1: Do you agree with our assessment of the methodology (within the framework of the current licence)?

Question 2: Are there any quantitative benefits that have not been included in our assessment?

Question 3: Are there any qualitative benefits that have not been included in our assessment?

Question 4: Are there any quantified costs that have not been included in our assessment?

Question 5: Are there any qualitative costs that have not been included in our assessment?

Ofgem's assessment of qualitative and quantitative impacts.

4.1. The impact of substitution will depend on the opportunities that arise to apply the methodology. It is difficult to anticipate when incremental signals that meet the Incremental Entry Capacity Release (IECR) test will arise on the network, so we have restricted our analysis to the three potential signals set out in the previous chapter, namely at Barrow, Easington and in the South East zone.

Quantitative benefits

4.2. A major benefit arises from avoided capital expenditure. We have estimated the capital costs avoided by substitution using the NGG methodology from the Revenue Drivers calculated at TPCR4. Thus the deemed capital expenditure is the total revenue received from the revenue driver (i.e. the revenue driver times 5 years). We have assessed the three scenarios using the values from revenue drivers to calculate deemed capex. In the case of Barrow, the deemed capital expenditure is £27.4 million. The signal at the South East is a generic signal, so might arise from a new entry point or an existing entry point such as the Isle of Grain. The deemed capital expenditure is calculated for the Isle of Grain is £50.7m (revenue driver x 5). In the Easington example, no substitution took place and so there is no associated capex saving.

4.3. Each of the examples considers a single incremental signal and no account has been taken of additional future substitution opportunities which may arise in

response to additional auction signals for incremental entry capacity. The signals analysed are therefore likely to underestimate the total benefits of the substitution methodology. However we consider that it is impractical to project longer term substitution opportunities and impacts. We therefore anticipate these estimates are the lowest estimates of benefits that might be expected from the methodology.

4.4. The upper limit on benefits would be defined by the pattern of substitutable capacity which became available over time and the ability of a particular methodology to capture substitution opportunities.

Qualitative benefits

Environmental benefit

4.5. Construction activity can have both temporary and longer lasting effects on the countryside, even where it is carefully planned and appropriate mitigating measures are identified and properly applied. Our initial view is that the proposed methodology will lead to a beneficial impact on the environment through the avoidance of such works and any associated impacts.

Planning benefit

4.6. A further benefit is the avoidance of planning costs and planning-related delays that can be associated with the delivery of additional built capacity on the network. Where a signal can be met by substitution of capacity there are benefits to the economy as a whole. Construction of cross-country pipelines and associated installations has well defined planning processes which allow for objections about the development to be raised during the consultation stages. Resolving such objections and agreeing appropriate mitigating measures can increase the time it takes to conclude the process and this can result in significant planning delays. We believe that substitution will create many opportunities to avoid such difficulties altogether.

Quantitative costs

Implementation costs

4.7. NGG undertook a preliminary assessment of the IT impacts of the three potential methodologies being considered for an interim report[22] on progress. NGG indicated that it did not foresee IT issues being an impediment to the implementation of entry capacity substitution provided that this happened in line with the proposals outlined. In the first instance NGG would look to a combination of adapting existing functionality with off-line processes to facilitate the introduction of substitution. However, some system work may be necessary to totally automate the process in the longer term. NGG have confirmed that there are no significant system development costs associated with implementing their proposed substitution

[22] www.nationalgrid.com/uk/Gas/Charges/statements/

methodology - the costs are relatively small and related to minor changes to invoicing systems.

Retainer costs

4.8. Based on the current charging proposal, which is subject to separate Ofgem approval, the cost to users of the retainer is anticipated to be modest relative to capacity charges. If capacity which has a retainer is subsequently bought, then the cost of the retainer would be refunded. It is unlikely to be a significant element of overall costs. We think this conclusion is robust for a range of retainer charges centred on the values in the current proposal.

Qualitative costs

4.9. None identified

Other considerations

Impact on consumers

4.10. We assume that the savings in capital expenditure that have been identified will be passed through to consumers. Although it has previously been suggested that the overall benefit to consumers will be negligible relative to the transportation costs which typically constitute 2% of the final energy bill charged to consumers, our focus is on the net benefits that the methodology can deliver. In this context, we consider the savings from substitution to be worthwhile. Therefore, we consider that a methodology that facilitates the delivery of these consumer benefits would have a positive contribution.

Impact on competition

4.11. The methodology is likely to be beneficial for competition. New demands for capacity can be met more reliably because there is no need to lay any pipeline or build additional compressor stations or other related facilities.

4.12. We consider that the reduction in probability that gas capacity will be available on the day at any entry point to be beneficial to competition. We think that it will encourage users who rely on the regular availability of on-the-day capacity to consider entry capacity as a scarce resource and treat it accordingly. It is usually found that the provision of any resource for free leads to inefficiency and waste. We consider entry capacity is a locational resource and should be priced accordingly.

Impact on Sustainable Development

Security of Supply

4.13. One of the key concerns of industry during the development of the process was that substitution might occur without constraint and that large amounts of capacity could be moved from some entry points with little gain at other points. This gave rise to concerns that it would be harder for new projects to secure entry capacity than at present, with a consequential negative impact on security of supply.

4.14. The methodology that has been submitted contains mechanisms which will safeguard industry from this effect. The retainer allows any user to retain capacity and exclude it from being substituted away. This allows projects under development to signal their future capacity requirement and allows them to bid for baseline entry capacity in the same way as at present. We believe that this mechanism will provide a safeguard to address security of supply concerns.

Environment

4.15. Where incremental capacity is signalled and results in release of capacity, network reinforcement may be needed. If substitution is not implemented (through the proposed methodology), pipelines may be put in the ground where they are unnecessary. This is potentially damaging to the environment, as described above. Substitution provides opportunities to avoid the construction of network such unnecessary network assets and this is consistent with Ofgem's obligation to contribute to the achievement of sustainable development.

Impact on health and safety

4.16. We consider that substitution will have a potential positive impact on health and safety. This is because it is likely to result in less construction of pipelines which is likely to reduce the health and safety risks which are associated with this type of activity.

Risks and unintended consequences

4.17. Some respondents to the final consultation suggested that the retainer method might result in insufficient spare capacity in the gas transportation system, which would limit the flexibility to respond to future, unanticipated need. We have not been presented with evidence in support of this position. We invite respondents to the Impact Assessment to present any evidence that they have which is in support of this position.

4.18. Two shippers who responded to NGG's final consultation have suggested that the retainer is an extra element in an already complex regime. We recognise the proposed methodology is complex, however, we consider that it is a methodology that only applies to incremental signals and therefore should only be used by

developers who wish to retain capacity. We expect that most other users will book capacity in the usual manner.

Distributional effects

4.19. Potentially, through the introduction of substitution methodology, there could be three types of distributional effect (i) through the way baseline capacity has been allocated to individual entry points as a result of capacity substitution; (ii) as a result of the impact of different baseline levels on entry capacity charges and (iii) through the impact of the retainer mechanism on the costs borne by different shippers.

4.20. In terms of the first of these, as a result of the capacity transfer and trade mechanism, and as a consequence of the proposed substitution mechanism itself, any increases in capacity will be accessible to the entire shipper community, even if they do not have access to the physical infrastructure at that entry point. If shippers do not procure capacity rights, then any unsold baseline capacity can be permanently moved to other entry points where there is clear demand for additional capacity.

4.21. It is difficult to envisage a negative distributional effect, as a result of entry capacity charges where the baseline is lowered as a result of substitution. The proposed mechanism ensures that any baseline reduction reflects the removal of capacity that is unwanted and this would be reflected in charges. In such circumstances we consider there is unlikely to be distributional impacts.

4.22. The charges envisaged for the retainer mechanism are relatively low and, even these charges, should have a very low distributional impact particularly if, as currently proposed, the proposed methodology includes the provision for refund of the retainer charge if the capacity retained is subsequently purchased.

Impact on small businesses

4.23. We do not expect the proposed introduction of gas transmission entry capacity substitution to have any direct impact on small businesses.

Other effects

4.24. The possibility of there being entry/exit point interactions was raised by one participant in the development process in relation to linepack. The interaction between gas flowing onto the network and flowing off the network will result in linepack either being created or used, as part of the operational actions undertaken to manage the physical flows. Linepack is a function of the physical operation of the NTS and is generated as result of the flows onto and off the network. The network is not being physically changed as a result of substitution and the ability of the network to accommodate linepack remains linked to the pattern of flows. Substitution is not expected to change these flows since the methodology will only substitute unused capacity. Therefore we do not believe this is a significant issue.

4.25. The Trade and Transfer system allows a short term transfer of capacity between entry points where substitution allows a longer term shift of capacity. There is the potential for substitution to reduce the amount of capacity available under Trade and Transfer. In our view, this may reduce the extent of short term trading. This may lead to situations where short term benefits are foregone in favour of long term benefits.

4.26. NGG NTS sell capacity that is financially firm. This means that if NGG is unable to deliver the capacity it has sold it must buy back capacity until it is able to meet its obligations. We note that there have been no concerns expressed by shippers in relation to buy back, however, we would welcome views from parties who consider that the impact on buy-back is a material concern.

Conclusions

4.27. From our assessment of the benefits, costs and risks we believe that the methodology submitted to us will have a net positive benefit as set out above. We are minded to approve NGG's proposed methodology, subject to consideration of the responses to this consultation and without fettering the discretion of the Authority.

5. Alternative methodologies developed by NGG

This chapter considers the alternative methodologies - the two stage auction approach and the mechanical approach, relative to the retainer methodology.

Question 1: Do you agree with our assessment of the relative differences between the capacity retainer methodology and the other methodologies?

Background

5.1. During the development of the proposed methodology a large number of potential methodologies were considered. These were presented and discussed in the series of workshops described earlier. This resulted in three options being more fully developed which incorporated many of the features that had been considered separately during the methodology development process. These were the mechanical approach, the two stage auction and the retainer methodology. Our assessment of alternatives is restricted to these more fully developed methodologies.

5.2. Worked examples[23] of how each methodology would implement substitution were presented by NGG during the workshops. These indicated likely outcomes for the values considered.

Mechanical Approach

5.3. This relies on the same core mechanism as both the retainer methodology and the two-stage auction approach. Substitution is effected using the same entry zones, merit order based on revenue driver and/or minimum pipeline distance and a calculation of exchange rates, with an exchange rate cap. Where this methodology is different is the way that it allows future capacity needs to be signalled, and so determine the capacity available for substitution. We note that an exchange rate cap of 5:1 had been suggested, in contrast to the exchange rate cap of 3:1 which is included in the proposed retainer methodology.

5.4. There are difficulties with such an approach because not all entry points have forecast flows associated with them. For example forecasts are not available for storage sites and it has been suggested that maximum deliverability could be used as a proxy for forecasts of future flows. A similar difficulty arises with LNG import terminals, LNG storage sites and interconnectors. There is a risk that relying on the maximum flow rate may not be a true representation of future utilisation, which could result in capacity being withheld from substitution unnecessarily. This approach effectively limits substitution to specific beach terminals.

[23] These were presented in workshop 8 on 7 April 2009 and are published on the Joint Office website - http://www.gasgovernance.co.uk/tx/070709

5.5. Whereas TBE captures data about future supplies and field developments, uncertainty remains about the timing of these and indeed it may not always be clear which entry point a supply development will connect to. (The choices about whether the Langeled pipeline would connect to St. Fergus or Easington, for example, illustrate this).

5.6. TBE is a consultative process in which NGG develops scenarios for future UK gas demand. These scenarios incorporate data provided by industry on potential developments in the gas sector. As individual projects that are planned have different probabilities of success and their anticipated flows cannot be known securely, Ofgem views the information which is derived from TBE as being most useful at the aggregate level. We consider that it has limitations for the planning of individual entry points.

5.7. We consider the TBE process is a valuable contribution to the industry's strategic planning process and we do not question this role. We simply consider that relying on this information to decide whether to move capacity between entry points or whether to invest in new capacity has significant risks. By creating a mechanistic link to TBE data, there is a risk that companies change the way they view and participate in the TBE process. Companies may no longer submit their current best view but provide information to keep options open. This would potentially place NGG in a very difficult position – NGG would have to make largely subjective judgements amongst competing demands for capacity.

5.8. In addition this methodology requires no financial user commitment to indicate future capacity needs. Capacity would be excluded from substitution on the basis of the forecast flows captured by NGG in their annual TBE process. Excluding capacity from substitution on this basis is not consistent with NGG's licence obligations.

Two stage Auction methodology

5.9. This relies on the same core mechanism as both the retainer methodology and the mechanical approach. Substitution is effected using the same entry zones, merit order based on revenue driver and/or minimum pipeline distance and a calculation of exchange rates, with an exchange rate cap. Where this methodology is different is the way that it allows future capacity needs to be signalled, and so determine the capacity available for substitution. We note that an exchange rate cap of 2:1 had been suggested, in contrast to the exchange rate cap of 3:1 which is included in the proposed retainer methodology.

5.10. Shippers would have a further opportunity to bid for unsold baseline capacity in a second stage of the usual QSEC auction. This methodology provides a means to prevent capacity being substituted away from a particular ASEP by allowing shippers an opportunity to respond to perceived vulnerability at certain ASEPs when incremental capacity has been requested elsewhere. Only obligated baseline capacity would be offered for sale in the second stage. This requires shippers to make a full financial commitment to the capacity they need since it has to be purchased outright if they want to be certain that it will not be substituted.

5.11. This methodology would require a major UNC modification to re-design the auction processes. There is also a question as to how interim ad-hoc auctions could be accommodated.

Overview

5.12. The major differences between the alternative methodologies is the financial commitment users need to make, and when they need to make it, to indicate future capacity needs and exclude available capacity from substitution. There are no costs associated with the mechanical approach and the absence of any user commitment for capacity could result in opportunities for substitution not being realised. The two-stage auction has merits but would have a greater impact on the current auction and would need further development.

5.13. One concern that shippers have expressed is the timing of their acquisition of capacity. Where there is an abundance of unsold baseline capacity, shippers may choose to wait and purchase capacity at a QSEC auction 18 months ahead of it being needed. If an entry point is sold out or capacity has been substituted away (in the absence of a mechanism for signalling future capacity needs in some way) then shippers would need to bid for incremental capacity, in the usual way, which has a default lead time of 42 months before it is released.

5.14. The alternative methodologies address this in different ways. The two-stage auction and the retainer methodology are consistent with the licence obligations faced by NGG and both have their merits. We think that it would be appropriate for NGG to consider both of these methods in any future review of the substitution methodology.

6. Way forward

6.1. The Authority received the proposed NGG methodology on 7 September 2009. Since that time the licence has been changed to reflect a need to clarify the substitution obligation and provide the usual time for an impact assessment. NGG gave consent to the change, which was effective from 23 October 2009. This means that a methodology prepared under the old licence obligation will be assessed against the amended licence obligation.

Ofgem's discretion

6.2. Early in the methodology development process Ofgem was assigned an action to define the criteria to be applied in rejecting a particular proposal to substitute capacity. This sought to clarify the principles which should be applied by Ofgem in exercising discretion over whether to approve an application for substitution or not. At the time, the initial methodology options under discussion were less clearly framed and did not address the concerns about high exchange rates, or providing a mechanism for future capacity needs to be signalled at entry point.

6.3. The proposed methodology is clearly defined and provides safeguards against the principal concerns that have been expressed by shippers, namely, of capacity being moved away from an entry point when it might be needed in future, and avoiding the destruction of capacity through very high exchange rates.

6.4. For the purposes of the retainer approach we would envisage applying the same principles that are applied to current applications of capacity release under the IECR methodology. These include consideration of rejection if the methodology has not been followed, or if the proposal has foreseeable and substantive security of supply implications and other relevant factors consistent with Ofgem's wider duties and powers.

Way forward and timetable

6.5. This document provides four weeks for respondents to submit any comments. The aim is to have a substitution methodology in place for the scheduled March 2010 QSEC.

6.6. The Authority will consider any responses to this consultation before reaching its final decision. The Authority currently anticipates that it will publish its decision towards the end of 2009.

Appendices

Index

Appendix 1 - Consultation Response and Questions

1.1. Ofgem would like to hear the views of interested parties in relation to any of the issues set out in this document.

1.2. We would especially welcome responses to the specific questions which we have set out at the beginning of each chapter heading and which are replicated below.

1.3. Responses should be received by 1 December 2009 and should be sent to:

Bogdan Kowalewicz
Senior Manager, Gas Transmission Policy
Ofgem
9 Millbank
London
SW1P 3GE

Email responses should be sent to:
Gas.transmissionresponse@ofgem.gov.uk

1.4. Unless marked confidential, all responses will be published by placing them in Ofgem's library and on its website www.ofgem.gov.uk. Respondents may request that their response is kept confidential. Ofgem shall respect this request, subject to any obligations to disclose information, for example, under the Freedom of Information Act 2000 or the Environmental Information Regulations 2004.

1.5. Respondents who wish to have their responses remain confidential should clearly mark the document/s to that effect and include the reasons for confidentiality. It would be helpful if responses could be submitted both electronically and in writing. Respondents are asked to put any confidential material in the appendices to their responses.

1.6. As noted above, this document and the responses received are intended to inform the Authority's decision making process. Any questions on this document should, in the first instance, be directed to:

Bogdan Kowalewicz
Senior Manager, Gas Transmission Policy
Ofgem
9 Millbank
London SW1P 3GE

Email questions should be directed to:
Gas.transmissionresponse@ofgem.gov.uk

CHAPTER: Three

Question 1: Are there additional aspects of the methodology that should be highlighted?

Question 2: Are the scenarios analysed appropriate and relevant to system development? If not, why not?

CHAPTER: Four

Question 1: Do you agree with our assessment of the methodology (within the framework of the current licence).

Question 2: Are there any quantitative benefits that have not been included in our assessment?

Question 3: Are there any qualitative benefits that have not been included in our assessment?

Question 4: Are there any quantified costs that have not been included in our assessment?

Question 5: Are there any qualitative cost that have not been included in our assessment?

Chapter: Five

Question 1: Do you agree with our assessment of the relative differences between the capacity retainer methodology and the other methodologies?

Appendix 2 - The Authority's Powers and Duties

1.1. Ofgem is the Office of Gas and Electricity Markets which supports the Gas and Electricity Markets Authority ("the Authority"), the regulator of the gas and electricity industries in Great Britain. This Appendix summarises the primary powers and duties of the Authority. It is not comprehensive and is not a substitute to reference to the relevant legal instruments (including, but not limited to, those referred to below).

1.2. The Authority's powers and duties are largely provided for in statute, principally the Gas Act 1986, the Electricity Act 1989, the Utilities Act 2000, the Competition Act 1998, the Enterprise Act 2002 and the Energy Act 2004, as well as arising from directly effective European Community legislation. References to the Gas Act and the Electricity Act in this Appendix are to Part 1 of each of those Acts.[24]

1.3. Duties and functions relating to gas are set out in the Gas Act and those relating to electricity are set out in the Electricity Act. This Appendix must be read accordingly[25].

1.4. The Authority's principal objective when carrying out certain of its functions under each of the Gas Act and the Electricity Act is to protect the interests of consumers, present and future, wherever appropriate by promoting effective competition between persons engaged in, or in commercial activities connected with, the shipping, transportation or supply of gas conveyed through pipes, and the generation, transmission, distribution or supply of electricity or the provision or use of electricity interconnectors.

1.5. The Authority must when carrying out those functions have regard to:

- The need to secure that, so far as it is economical to meet them, all reasonable demands in Great Britain for gas conveyed through pipes are met;
- The need to secure that all reasonable demands for electricity are met;
- The need to secure that licence holders are able to finance the activities which are the subject of obligations on them[26]; and
- The interests of individuals who are disabled or chronically sick, of pensionable age, with low incomes, or residing in rural areas.[27]

1.6. Subject to the above, the Authority is required to carry out the functions referred to in the manner which it considers is best calculated to:

[24] entitled "Gas Supply" and "Electricity Supply" respectively.
[25] However, in exercising a function under the Electricity Act the Authority may have regard to the interests of consumers in relation to gas conveyed through pipes and vice versa in the case of it exercising a function under the Gas Act.
[26] under the Gas Act and the Utilities Act, in the case of Gas Act functions, or the Electricity Act, the Utilities Act and certain parts of the Energy Act in the case of Electricity Act functions.
[27] The Authority may have regard to other descriptions of consumers.

- Promote efficiency and economy on the part of those licensed[28] under the relevant Act and the efficient use of gas conveyed through pipes and electricity conveyed by distribution systems or transmission systems;
- Protect the public from dangers arising from the conveyance of gas through pipes or the use of gas conveyed through pipes and from the generation, transmission, distribution or supply of electricity;
- Contribute to the achievement of sustainable development; and
- Secure a diverse and viable long-term energy supply.

1.7. In carrying out the functions referred to, the Authority must also have regard, to:

- The effect on the environment of activities connected with the conveyance of gas through pipes or with the generation, transmission, distribution or supply of electricity;
- The principles under which regulatory activities should be transparent, accountable, proportionate, consistent and targeted only at cases in which action is needed and any other principles that appear to it to represent the best regulatory practice; and
- Certain statutory guidance on social and environmental matters issued by the Secretary of State.

1.8. The Authority has powers under the Competition Act to investigate suspected anti-competitive activity and take action for breaches of the prohibitions in the legislation in respect of the gas and electricity sectors in Great Britain and is a designated National Competition Authority under the EC Modernisation Regulation[29] and therefore part of the European Competition Network. The Authority also has concurrent powers with the Office of Fair Trading in respect of market investigation references to the Competition Commission.

[28] or persons authorised by exemptions to carry on any activity.
[29] Council Regulation (EC) 1/2003

Appendix 3 - Glossary

A

Aggregate System Entry Point (ASEP)

A point where gas can enter the NTS.

Annual Monthly System Entry Capacity (AMSEC) auction

An auction, held annually, for the sale of monthly rights to enter capacity on to the NTS at the various entry points for up to two years in advance.

The Authority (Ofgem)

Ofgem is the Office of Gas and Electricity Markets, which supports the Gas and Electricity Markets Authority (GEMA), the body established by Section 1 of the Utilities Act 2000 to regulate the gas and electricity markets in Great Britain.

B

Baseline

Baselines define the levels of capacity that the transmission licensee is obligated to release. Baselines also determine the levels above which incremental capacity is defined.

Baseline Capital Expenditure

Baseline capital expenditure is the total amount of capex required in association with the baseline. It includes both load related capex and non-load related capex.

Buy-back

The process of compensating users if NGG is unable to honour entry capacity holdings, which have been sold on a financially firm basis and users wish to flow against them.

C

Capacity retainer

A contract enabling the holder the prevent entry capacity being substituted for any quarter for which capacity may be released, in any QSEC auction held in the year for which the retainer is valid.

Capital Expenditure (Capex)

Expenditure on investment in long-lived transmission assets, such as gas pipelines or electricity overhead lines.

D

Donor ASEP

The ASEP which releases baseline obligated entry capacity to be used at another ASEP.

E

Exchange rate

The ratio of the capacity removed at the donor ASEP to the capacity added to the recipient ASEP.

F

Free increment

The highest amount of additional capacity that can flow into that zone without investment.

I

Incremental Entry Capacity

Entry capacity in addition to the baseline which NGG releases for allocation. Incremental Obligated Entry Capacity is capacity which has been signalled to be released as a result of QSEC auction. The need for capacity can either be met by substitution or by the reinforcement of the NTS to create new capacity.

L

Least helpful Supply Substitution

This is an approach to determine the level of baselines which seeks to identify the maximum capacity that could be released at each entry point at system peak. It can be characterised by increasing the supply at the entry point being investigated whilst reducing supply across other entry points in order to keep the NTS balanced. Supply is reduced at other entry points according to which has least benefit to the NTS in terms of incurring lower network reinforcement costs, with the least helpful reduced first. This is likely to be the entry point which is geographically furthest from the one under investigation.

N

National Grid Gas (NGG)

The licensed gas transporter responsible for the gas transmission system, and four of the regional gas distribution companies.

National Transmission System (NTS)

The high pressure gas transmission system in Great Britain.

O

One in Twenty Obligation

This is a security standard for the licensee to have a pipeline network which meets peak aggregate daily demand at levels which would be expected to occur in one year in twenty when considering the historical weather data for at least the previous 50 years, and other relevant factors.

P

Practical Maximum Physical Capacity

An approach to determining the level of baselines which can be characterised by estimating the volume of maximum capacity available at each node on the network, according to a range of plausible flow scenarios whilst taking into account interactions with flows elsewhere on the network.

Q

Quarterly System Entry Capacity (QSEC)

Firm NTS Entry Capacity which may be bid for in the Quarterly System Entry Capacity (QSEC) auctions and registered as held by a User for each day in a particular calendar quarter. Entry capacity is sold forward via QSEC Auctions which offer capacity at each aggregate system entry point between two and sixteen years in advance.

R

Revenue driver

A means of linking revenue allowance in a price control to specific measurable events. Revenue drivers have been set for incremental signals on the NTS, and provide revenue if NGG provides additional capacity on the NTS to meet an incremental entry capacity signal.

Recipient ASEP

The ASEP which uses released baseline obligated capacity from a donor ASEP (or ASEPs) to meet the demand for incremental obligated entry capacity.

S

Substitution of Entry Capacity

As part of the TPCR 2007-2012 package, NGG is obliged to facilitate the permanent substitution of baseline capacity from one or more entry points to another entry point to meet the demand for incremental obligated entry capacity.

System Operator (SO)

The system operator has responsibility to construct, maintain and operate the NTS and associated equipment in an economic, efficient and co-ordinated manner. In its role as SO, NGG NTS is responsible for ensuring the day-to-day operation of the transmission system.

T

Ten Year Statement (TYS)

Special Condition C2 (Long Term Development Statement) requires NGG NTS to annually publish a ten-year forecast of NTS usage and likely developments that can be used by companies, who are contemplating connecting to the NTS or entering into transport arrangements, to identify and evaluate opportunities.

Theoretical Maximum Physical Capacity

An approach to determining the level of baselines which can be characterised as the maximum amount of gas that can be taken through a particular entry or offtake point by reducing supplies at other nodes in order to balance the network but not taking into account interactions with flows elsewhere on the network.

Transfer and Trade of Entry Capacity

As part of the TPCR 2007-2012 package NGG is obliged to facilitate the temporary transfer of unsold capacity (and trade of previously sold capacity) at an entry point to another entry point on the NTS where there is demand for this capacity.

Transmission Owners (TO)

Companies which hold transmission owner licences. NGG NTS is the gas TO.

Transmission Price Control Review (TPCR)

The TPCR established the price controls for the transmission licensees and took effect in April 2007 for a 5-year period. The review applies to the three electricity transmission licensees, NGET, SPTL, SHETL and to the licensed gas transporter responsible for the gas transmission system, NGG NTS

Transporting Britain's Energy (TBE)

Transporting Britain’s Energy (TBE) is a consultation process organised by National Grid in which energy demand and supply forecasts are refined taking into account government energy policy and targets and views from the regulator, generators and consumers

U

Unit Cost Allowance (UCA)

A parameter of the current revenue restriction for NGG. A UCA is set for each entry point, and is intended to reflect the cost of providing additional capacity at that point on the network. The actual additional revenue entitlement for NGG if it releases such additional capacity at a particular entry point is a function of the UCA for that entry point.

Uniform Network Code (UNC)

As of 1 May 2005, the UNC replaced NGG NTS's network code as the contractual framework for the NTS, GDNs and system users.

Appendix 4 – Capacity available for substitution

1.1. Table 1 indicates the baseline capacity, obligated capacity, capacity reserved for the Annual Monthly System Entry Capacity (AMSEC) auction, the sold level of capacity and capacity available for substitution. The baseline capacity at an ASEP is reduced by 10% to provide the amount available in long term auctions. In TPCR4 it was indicated that this percentage may be reviewed hence the capacity available for substitution in the future cannot be precisely defined beyond the current price control period.

Table 1 Baselines and substitutable capacity, August 2009

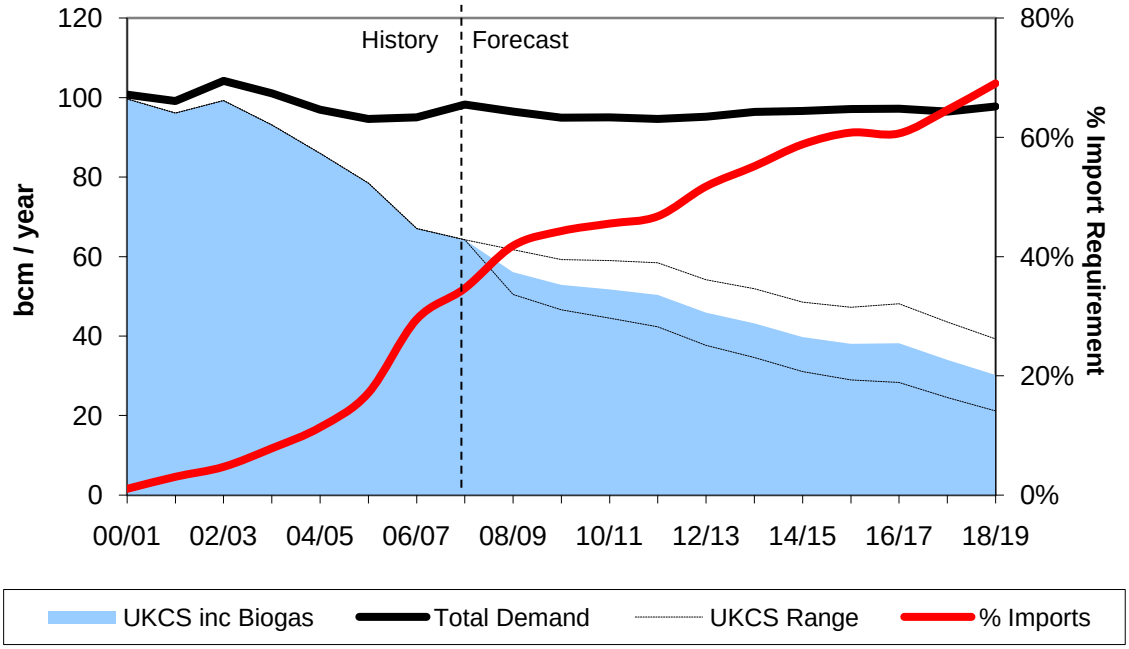
ASEP	Baseline	Obligated level [1]	Reserved for AMSEC	Sold level [2]	Available for
	GWh/d				
St Fergus	1,671	1,671	167	472	1,031
Bacton	1,783	1,783	178	895	710
Theddlethorpe	611	611	61	20	530
Teesside	476	476	48	162	267
Partington LNG	215	215	22	22	172
Avonmouth LNG	179	179	18	22	139
Glenmavis LNG	99	99	10	-	89
Barton Stacey [3]	83	173	8	90	74
Burton Point	74	74	7	13	53
Isle of Grain LNG	218	700	22	656	22
Hornsea Storage	175	233	18	206 [4]	10
Wytch Farm onshore	3	3	0	0	3
Hatfield Moor Storage	25	25	3	22	1
Hatfield Moor onshore	0	0	0	0	0
Barrow	309	309	31	278	0
Caythorpe	0	90	0	90	0
Cheshire Storage	286	543	29	514	0
Easington	1,062	1,407	106	1,301	0
Fleetwood	0	650	0	650	0
Garton	0	420	0	420	0
Holehouse Farm	132	132	13	118	0
Milford Haven	0	950	0	950	0
Totals [5]	**7,400**	**10,742**	**740**	**6,696**	**3,100**

[1] Includes all incremental capacity released pre-2007 PCR and post-2007 PCR.
[2] Maximum sold level for any quarter from October 2013.
[3] Incremental capacity was released at Barton Stacey when the baseline was zero. The baseline was subsequently increased and remains unsold.
[4] Incremental capacity released at Hornsea when 20% baseline withheld. Subsequently only part of the extra 10% released has been sold. Hence remainder available for substitution.
[5] Data for Dynevor Arms LNG storage which is now closed has been excluded.

1.2. The greatest amounts of unsold baseline (shown in the final column of Table 1) are at St. Fergus, Bacton, Theddlethorpe and Teesside. If analysed by Entry Zone the three Zones with highest unsold capacity are the Northern Triangle which has 1,387 GWh/d unsold, the South East Zone which has 732 GWh/d unsold and Theddlethorpe which has 732 GWh/d unsold.

1.3. The major influence on the amount of unsold baseline available is the reduction in United Kingdom Continental Shelf (UKCS) supplies. Figure 1 illustrates the projections made at NGG's 2009 Transporting Britain's Energy seminar[30]. The Figure indicates that UKCS supplies are already substantially lower than at the start of the decade and by 2018/19 UKCS supplies may be less than 40 billion cubic metres per year.

Figure 1 UKCS Annual Supplies



Source: National Grid Gas (2009). Transporting Britain's Energy.

1.4. The UKCS supply decline is predicted to be matched by increasing imports. Already there has been a considerable expansion in the facilities available for Liquid Natural gas (LNG) imports with major infrastructure projects such as the Milford Haven pipeline and expansion of facilities at the Isle of Grain. One respondent to the formal methodology consultation pointed out that it is possible that a UKCS terminal may decline but may then recover when used for imports. If such an outcome were in view, then for the short term a capacity retainer could be used to keep baseline capacity available. If this were a longer term less certain prospect the IECR

[30] http://www.nationalgrid.com/uk/Gas/OperationalInfo/TBE/

methodology could be used to re-establish baseline once the need was more firmly established. Thus, we see no conflict between substitution and the evolution of the NTS to meet new needs.

1.5. The decline in UKCS supplies has led to a network with surplus capacity. Winter 2008/09 was relatively cold and the highest gas flow rates were in January 2009. At peak flow during this period gas flows were only 67% of total capacity[31]. An indication of the additional capacity that is planned to be added to the NTS is given by sales of incremental capacity. In the 2004 -2008 period a total of 3,342GWh/d of incremental capacity was signalled (including Milford Haven and Fleetwood).

1.6. The figures described here, indicating capacity available for substitution, will need to be updated to reflect the capacity allocations from the September 2009 QSEC auction.

[31] Based on capacity and flow data for Bacton, Easington, Barrow, Hatfield, Hornsea, Isle of Grain, Teesside, Theddlethorpe, St Fergus.

Appendix 5 – Financial implications

Charging Impact

1.1. Charges for entry capacity are derived from the NTS transportation model. This consists of two elements the transport model and the tariff model. The transport model calculates the Long Run Marginal Costs (LRMCs) of transporting gas from each entry point to a "reference node" and from a "reference node" to each relevant offtake point. The tariff model adjusts the LRMCs to maintain an equal spit between Entry and Exit points to obtain auction reserve (P_0) prices. All valid bids for capacity will be met at the reserve price until the available capacity is exhausted.

1.2. Price steps beyond P_0 are obtained using the IECR methodology. This methodology establishes prices for each step of incremental capacity which are the minimum that National Grid would expect to receive over a sustained period in order to justify releasing the capacity. The incremental prices for each step are found by estimating the costs of physically providing each level of incremental capacity, annuitizing the cost and adding it to P_0. Substitution does not impact on the physical means of providing capacity at an entry point, which means that the relationship underlying the expansion of the network is unchanged.

1.3. Entry capacity charges are determined from obligated capacity (baseline + obligated incremental +/- substituted capacity). Capacity that is substituted away from an ASEP will lower the entry charges (reserve price) for any remaining unsold capacity. As substitution changes the level of obligated capacity at donor ASEPs the incremental price step schedule that is offered after substitution will have a revised limit of 150% of the new obligated level, and may offer different incremental steps[32].

1.4. In general, as illustrated in Table 1, where a significant amount of available unsold capacity is substituted away there is a reduction in the reserve price.

[32] The IECR contain conditions which govern the step prices created. These depend on the level of obligated capacity at the ASEP and generally seek to release capacity in steps up to 150% of obligated capacity. For existing ASEPs if the ASEP has 300GWh/ day or over, 20 steps are created. These will be of a minimum step of 7.5 GWh/d. Where the ASEP has less than 300 GWh/d, will offer 15GWh/d in increments to provide no less 50% of the obligated capacity level. However, no less than 5 increments are permitted and where the 15 GWH/d increment would result in less than 5 steps, 50% of the prevailing obligated capacity is divided in 5 equal increments.

Table 1 The impact of substitution on reserve prices of donor ASEPs

ASEP	Initial Obligated level	Available for substitution	Initial P_0	Revised P_0 after substitution of x percentage of available capacity for substitution		
				x =25%*	x =50%	x=100%
	GWh/d		p/kWh			
St Fergus	1,670.7	1,031.3	0.0383	0.0355	0.0307	0.0173
Bacton	1,783.4	709.8	0.0089	0.0089	0.0084	0.0083
Theddlethorpe	610.7	529.6	0.0115	0.009	0.0086	0.0086
Teesside	476	266.8	0.0103	0.0093	0.0078	0.0034
Partington LNG	215	171.5	0.0001	0.0001	0.0001	0.0001
Avonmouth LNG	179.3	139.4	0.0001	0.0001	0.0001	0.0001
Glenmavis LNG	99	89.1	0.012	0.012	0.012	0.0115
Barton Stacey	172.6	74.3	0.0001	0.0001	0.0001	0.0001
Burton Point	73.5	52.9	0.0001	0.0001	0.0001	0.0001
Isle of Grain LNG	699.7	21.8	0.0026	0.0026	0.0021	0.0021
Hornsea Storage	233.1	9.8	0.0001	0.0001	0.0001	0.0001
Wytch Farm	3.3	3	0.0001	0.0001	0.0001	0.0001
Hatfield Moor	25	0.5	0.0001	0.0001	0.0001	0.0001
Hatfield Moor	0.3	0.3	0.0045	0.0045	0.0045	0.0045

* at St Fergus for example 258 GWh/d (25% times 1031.3) is substituted. The reserve price is reduced from 0.00383 p/kWh to 0.0355 p/kWh.

1.5. The examples given in Table 2 relate to substitution at a single ASEP. Where more than one ASEP is affected there may be interactions that affect charges. In Substitution Workshop 6 an example was presented based on a 10 mscmd signal at Easington. In this example there was a 0.8 mscmd reduction in the obligated level at Hatfield Moor. Nevertheless, at Hatfield Moor the reserve price increased over initial prices by 7% and the maximum price step changed from P_5 to P_8 with a 6% increase in price.

1.6. NGG indicates that this result arose because the charging model reduced flows at Theddlethorpe to its revised obligated flows and balanced flows at Garton (this was the nearest ASEP with spare capacity, i.e. obligated minus forecast). The increased Garton and Easington flows push gas from Hatfield Moor deeper into the network. It can be concluded that if the substitution causes a particular ASEP to flow at a lower rate but deeper into the network, then higher prices can result. The frequency with which this could occur is uncertain.

1.7. At an existing ASEP where incremental capacity is released the reserve and step price charges will increase by an identical amount irrespective of whether this is met by substitution or investment.

Charging impact of Barrow substitution

1.8. Table 2 demonstrates that for the recipient ASEP there is no difference in charging between the provision of capacity using substitution or investment. The users of this ASEP are therefore unaffected by the charging effects of substitution. Table 3, indicates that for the Barrow substitution example, the users of donor ASEPs will benefit from lower charges as a result of substitution. At the reserve price the reduction is 0.0033p/kWh or a 32% fall.

Table 2: Comparison of Initial Prices versus new prices: Barrow

	Initial	Post Auction (with substitution)	Post Auction (with investment)
	p/kWh/d		
Po	0.0018	0.0068	0.0068
P10	0.0050	0.0092	0.0092
P20	0.0060	0.0102	0.0102

Table 3: Comparison of Initial Prices versus new prices: Teesside

	Initial	Post Auction (with substitution)	Post Auction (with investment)
	p/kWh/d		
Po	0.0103	0.0070	0.0103
P10	0.0125	0.0093 (p_9)	0.0125
P20	0.0141	0.0102	0.0141

1.9. To re-establish the initial obligated level (to increase from 259 GWh/d to 476 GWh/d) would take a step price trigger of 0.0104p/kWh/d. To trigger incremental capacity the NPV of the revenue of accepted bids must exceed half of the costs of providing the capacity. The estimated Project Value to trigger this recovery the capacity would be £79m. In context of the IECR this would require an NPV of bids of £39.5 million to trigger the release of the incremental capacity required to return to initial obligated level.

Table 4 Charging impact of South East substitution

ASEP	Initial Prices, p/kWh/d			Change in obligated level GWh/d	Post Auction Prices with Substitution		
	P_0	P_{10}	P_{20}		P_0	P_{10}	P_{20}
South East	0.0001	0.0011	0.0060 @ P_{18}	175	0.0001	0.0048 @ P_6	
Isle of Grain	0.0028	0.0249	0.0259	-21.8	0.0023	0.0247	0.0257
Bacton	0.0092	0.0121	0.0141	-153.2	0.0092	0.0102	0.0126
Theddlethorpe	0.0117	0.0127	0.0137	0	0.0117	0.0127	0.0137

Capacity Retainer

1.10. It is proposed that the NTS Entry Capacity Retention Charges in regard to non-incremental obligated entry capacity would be calculated based on the minimal capacity charge rate of 0.0001 pence per kWh per day applying over a time period of 32 quarters; this equates to 0.2920 p/kWh of entry capacity retained. For each GWh retained the charge would be 1,000,000 kWh*0.2922 i.e. £2,922.

Comparative advantage of retainer

1.11. Ofgem recognises that under the existing rules a single quarter booking would be sufficient to preserve baseline. We consider that such action would be undesirable and would lead to inefficiencies in the use of the network. The purpose of the analysis in this section is to confirm that there is a comparative advantage to the use of the retainer within the methodology.

1.12. In the short term (3.5 to 5 years), the quantity required in a single quarter booking could be the unsold 'baseline at risk' (obligated minus maximum sold level). However, in the longer term, the only secure way of protecting an ASEP from substitution would be to book out all capacity for a complete quarter. The retainer must be less costly than any of these strategies to be attractive to shippers.

1.13. The main potential donors are Bacton, Teesside and St Fergus. The cost to book 'baseline at risk' or all capacity at these entry points is shown in Table 5.

Table 5 Financial commitment required to buy out a final quarter of substitutable capacity or an equivalent retainer.

	Bacton	Teesside	St Fergus
Reserve Price (p/kWh/d)	0.0084	0.0083	0.0378
Total baseline (GWh/d)	1,605	428	1,504
Single quarter cost @ yr 17(£m)	12.1	3.2	51.2
Retainer (£m)	4.8	1.25	4.4
Baseline at risk (GWh/d)	851	184	508
Single quarter cost@ yr 4(£m)	6.4	1.4	17.3
Retainer (£m)	4.8	1.25	4.4

1.14. Table 5 suggests that the retainer mechanism should offer a preferred solution to shippers than booking single quarters.

Impact on bids before and after substitution

1.15. Table 6 provided the a summary of an analysis of the impact of the methodology in the situations:

- where a bid can be met from within unsold obligated baseline before and after substitution
- where a bid can be met from unsold entry capacity before substitution but in the post-substitution scenario an incremental signalled.

1.16. The analysis is based on bids for capacity after the default lead time (42 month) for a period of 32 quarters. Uniform quarterly bids are assumed. NPV values are calculated from the initial bid at 42 months.

Table 6 The cost of incremental capacity to shippers

	ASEP	Bacton	Teesside
	Substituted (GWh/d)	503	217
	Remaining unsold (GWh/d)	207	50
	Require Y	200	50
Before substitution	*NPV (£m) of bid for Y*	*38*	*11*
After substitution	*NPV (£m) of bid for Y*	*36*	*7*
	Require X	300	150
	Minimum incremental capacity required	93	100
Before substitution	*NPV (£m) of bid for X below unsold level*	*56*	*33*
After substitution	*NPV (£m) bid for X beyond unsold level*	*60*	*30*

Bacton Scenario C.

1.17. The table indicates that after the substitution to meet the SE signal 207GWh/d would remain unsold at Bacton. If 200 GWh/d were required by a user (and there is no competition for the capacity) then a requirement for 200 GWh/d could be met from unsold obligated capacity both before and after substitution. The effect of a lower reserve price is evident in the lower NPV (measured at 42 months at a discount rate of 8.3%). For Teesside a smaller signal is considered but a larger saving is made because of the reduction in the reserve price (from Po= 0.0103 p/kWh/d to Po=0.007 p/kWh/d) as a consequence of substitution.

1.18. The table also presents the result of analysis of signals that can be met from within unsold capacity before substitution but require incremental capacity to be triggered in order to meet the signal after substitution is also considered. If a 300GWh were triggered at Bacton, a bid would be required at the P (3) level and this would provide 133 GWh/d. In this case, a bidder would have wanted 93 GWh but be required to bid for an additional 40 GWh/d. The cost of capacity would however, be only 7% higher than had substitution not occurred.

1.19. The Teesside example assumes that there is a bid for 150GWh/d which translates to a requirement for 50 GWh /d. Price step 9 would provide 107 GWh of capacity at Teesside which is closer to requirements than in the Bacton example. The reduction in the reserve price in this example means that at this price step (0.0093p/kWh/d), the cost of capacity is lower than the Reserve Price before substitution (0.0103p/KWh/d), which is reflected in the £3 million reduction in NPV.

Impact on National Grid Gas Revenues

1.20. NGG receives revenues for any incremental capacity that is constructed in the current price control period based on the Revenue Drivers estimated at TPCR 4. Revenue drivers are *ex ante* estimates of the unit cost of providing incremental capacity. The revenue driver calculations give a deemed capex value that is associated with the additional release of capacity

1.21. Where capacity is provided through substitution there are no incremental revenues received, ie the revenues received for the provision of the incremental capacity is set against baseline revenues. Table 7 shows the annual revenues that would go towards baseline revenues for a period of 5 years if the incremental capacity is provided from substitution.

Table 7 Revenue Drivers received by NGG for providing incremental capacity to the signal level

ASEP	Signal	Revenue Driver (£m)
Barrow	216.6 GWh/d	5.5
Easington	103.3GWh/d	2.8
Isle of Grain	175 GWh/d	7.7

Appendix 6 – Issues from NGG'S formal consultation

Ofgem's assessment of potential methodology changes suggested by shippers in NGG's formal consultation (24 August 2009)

1.1. The retainer mechanism gives the user the opportunity to exclude capacity from substitution but does not give the right to obtain capacity. One respondent argued that the retainer should have rights for first call on capacity. We believe that this change would not be appropriate as it undermined the competitive allocation of capacity

1.2. In response some shippers sought interest payments on the money committed to retainers. Charging issues are to be dealt with by Uniform Network Code (UNC) 256[33] and Gas Charging Methodology 18[34] currently under consultation this is issue is considered outside the decisions being considered here. One respondent suggested that a retainer longer than one year's worth of capacity should be developed to decrease the risks on shippers who want to retain capacity for a longer term. We consider that as the retainer does not give rights to capacity purchase, there are limited risks to consider.

1.3. We disagree with the suggestion of one respondent who considered that a refund should be triggered by any capacity purchased during the period for which the retainer applied. NGG argue against this on the grounds of practicality. We consider this view to be justified.

1.4. One respondent suggested that the amount of unsold capacity should play a part in the order of substitution so that only those with a greater amount of unsold capacity would contribute more to the requirement. However, NGG argue that using the best exchange rates ensures that efficient outcome is achieved. While there are a number of alternatives methods that could be used, we consider that the use of an efficiency measure such as the exchange rate is justified.

1.5. The exchange rate is capped at a ratio of 3 to 1 in the existing methodology. NGG argue that this is a reasonable balance between the possibility that substitution is prevented from occurring and that it is seen as too severe. The ability to adjust the exchange rate cap at the annual review provides an opportunity to modify the cap as appropriate. Four respondents suggested that exchange rates should be set at a lower level. Another respondent suggested that as exchange rates moved away from 1:1 greater scrutiny should be applied to the real long term benefits from substitution.

1.6. A point made by one shipper is that where there is the possibility of a partial substitution, adjustment of the exchange rate would change the balance between

[33] www.gasgovernance.com/Code/Modifications/

[34] www.nationalgrid.com/uk/Gas/Charges/consultations/CurrentPapers/

funded incremental capacity and substituted capacity. This is a valid concern and we believe that there may be scope to review the exchange rate cap and the way it is applied, in the light of experience. We believe that the proposed methodology does set out to implement substitution in a measured way and this helps to deliver a "soft landing" in terms of the capacity moved by substitution and in this context the exchange rate cap helps to achieve this outcome.

1.7. A number of process changes in the application of the methodology were suggested by respondents in the final consultation and have been taken into account in the proposed methodology. These include the need to acknowledge receipts of retainer requests and to inform users of the retainers granted. There has been amendment to ensure that any users receive a refund as soon as possible and to clarify how refunds will be targeted to shipper's allocated capacity.

Appendix 7 - Feedback Questionnaire

1.1. Ofgem considers that consultation is at the heart of good policy development. We are keen to consider any comments or complaints about the manner in which this consultation has been conducted. In any case we would be keen to get your answers to the following questions:

1. Do you have any comments about the overall process, which was adopted for this consultation?
2. Do you have any comments about the overall tone and content of the report?
3. Was the report easy to read and understand, could it have been better written?
4. To what extent did the report's conclusions provide a balanced view?
5. To what extent did the report make reasoned recommendations for improvement?
6. Please add any further comments?

1.2. Please send your comments to:

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