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**Gas and Electricity Markets  
Authority Decision on UNC  
Modifications 116V and 116A**

Expert Witness Statement Submitted to  
the Competition Commission

**NERA**

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27 April 2007



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**Abbreviations Used in This Statement:**

The Authority	The Gas and Electricity Markets Authority
FIA	Final Impact Assessment
DNO	Distribution Network Operator
GDN	Gas Distribution Network
IDN	Independent Distribution Network
Mod	UNC Modification Proposal
NGG	National Grid Gas
NTS	National Transmission System
Ofgem	The Office of Gas and Electricity Markets
RDN	Retained Distribution Network
TCC	Transmission Connected Customer
UNC	Uniform Network Code

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## 1. Introduction

- 1.1 My full name is Graham Shuttleworth. I am a Director in the energy team of NERA Economic Consulting (NERA), based in NERA's London office at 15 Statford Place, London, W1C 1BE. In 1981 I was awarded a double first BA degree in economics by Cambridge University (subsequently upgraded as is usual to a MA). In 1985, I was awarded a MPhil degree in Economics by Oxford University. Since 1988, I have been employed by NERA, where I have worked on a wide variety of projects concerned with the economics of network regulation and energy market operation. My CV, including a list of my more recent projects, is appended to this statement as Exhibit GS1.
- 1.2 In 2005, I was part of a team commissioned by the Gas Forum to comment and to evaluate the reforms to the National Transmission System (NTS) gas offtake arrangements that were being discussed at that time. The output of that exercise was a joint report produced by NERA and TPA Solutions,<sup>1</sup> which included a commentary on the proposals and a cost-benefit analysis based on surveys of affected parties. In 2006, the Gas Forum asked me to update and revise the analysis in the light of proposed Modification 116 (Mod 116) to the Uniform Network Code (UNC). I led the NERA team that produced a new report containing an updated cost-benefit analysis, again based on surveys of affected parties, covering Mod 116 and the variants of it being discussed at that time.<sup>2</sup> That report is appended to this witness statement as Exhibit GS2. On 9 January 2007, I visited Ofgem with Peter Bolitho (representing the Gas Forum) to present the report and its findings to David Gray, Ofgem's "Managing Director, Networks".
- 1.3 In 2007, Ofgem produced a "Final Impact Assessment" (FIA) for Mod 116, Ofgem document reference 23/07.<sup>3</sup> The Gas Forum asked me to write a report commenting on this Final Impact Assessment, which I completed on 5 March 2007.<sup>4</sup> That report is appended to this witness statement as Exhibit GS3.
- 1.4 Ofgem produced a decision document<sup>5</sup> on 5 April 2007, announcing the decision by the Gas and Electricity Markets Authority (the Authority) to direct National Grid to implement proposed modification 0116V (a slightly amended version of Mod 116) and rejecting other variants of Mod 116 being considered at the same time (namely, Mods 116A, 116BV, 116CVV and 116VD). Following publication of this decision, E.ON UK plc (E.ON UK) asked me to provide a witness statement for the Competition Commission on this and related documents.

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<sup>1</sup> NERA and TPA Solutions (2005), *Review of the Proposed Gas Exit Arrangements; Report for the Gas Forum*, NERA, London, 28 June 2005.

<sup>2</sup> NERA (2006), *Reform of NTS Gas Offtake Arrangements; Report for the Gas Forum*, NERA, London, 7 December 2006 – Exhibit GS2.

<sup>3</sup> Ofgem (2007a), *National Grid Gas – Offtake Arrangements Final impact Assessment on Modification Proposals*, Ofgem 23/07, 7 February 2007.

<sup>4</sup> NERA (2007), *Ofgem's Final Impact Assessment of Mod 116; A Review for the Gas Forum*, NERA London, 5 March 2007 – Exhibit GS3.

<sup>5</sup> Ofgem (2007b), *Uniform Network Code (UNC): Reform of the NTS offtake arrangements (UNC 0116V, 0116BV, 0116CVV, 0116VD and 0116A)*, Ofgem 80/07, 5 April 2007.

- 1.5 My instructions are included in this statement at Appendix A. In brief, they are to comment, as an economic expert, on:
- (i) the Decision Document issued by Ofgem on 5 April 2007;
  - (ii) the Final Impact Assessment published by Ofgem on 7 February 2007;
  - (iii) E.ON UK's response of 8 March 2007 to the Final Impact Assessment; and
  - (iv) any other aspect of the proposals, or the Consultation Documents issued on them, that I feel may be of assistance to the Commission.
- 1.6 E.ON UK is aware that I have already made some commentary through the reports prepared for the Gas Forum referred to above and is happy that I should refer to those in my evidence. As indicated above, my comments on the Final Impact Assessment are to be found in Exhibit GS3, dated 5 March 2007. The rest of this statement deals with the remaining instructions.
- 1.7 The outline of this statement is as follows:
- Section 2 sets out an economic framework in which I discuss certain issues that arise repeatedly in the Decision Document ("Ofgem 80/07") and elsewhere;
  - Section 3 reviews the discussion of key issues in Decision Document;
  - Section 4 reviews the Authority's appraisal of the proposed modifications by the Relevant Objectives, as described in the Decision Document.
  - Section 5 contains my comments on E.ON's submission in response to Ofgem's Final Impact Assessment ("Ofgem 23/07").
  - Section 6 contains my conclusions and Section 7 sets out my statement of duties as a witness.

## **2. Economic Framework**

- 2.1 I have reviewed the Decision Document (Ofgem reference 80/07) issued by Ofgem on 5 April 2007, summarising the decision on Mod 116 and its variants taken by the Authority. In later chapters of this statement, I discuss the specific economic aspects of this document. However, several statements in the document seem to be based on a misunderstanding of the economics of gas pipelines or cost-benefit analysis. These misunderstandings undermine the robustness and transparency of the appraisal methodology used by the Authority to explain and justify its decision.
- 2.2 In my earlier reports, I made two substantial points about the economics of the National Transmission System in Britain:
- First, the entry-exit regime is not a good representation of the underlying network, so that signals derived from demands for entry capacity and exit capacity indicate little about the need for investment in the network;<sup>6</sup>
  - Second, interruptible users do not impose any costs of building capacity, since whenever the capacity they use is constrained (and no matter where that constraint arises in the network), their usage can be curtailed.<sup>7</sup>
- 2.3 Several arguments stated by the Authority in the Decision Document overlook these important points, or indicate that Ofgem or the Authority had failed to understand them and had reached incorrect conclusions as a result. To avoid ambiguity, I restate my points briefly below and indicate their consequences.
- 2.4 The appraisal of economic costs and benefits set out in the Decision Document also raises points of principle that require closer examination. The Authority adopts Mod 116V, despite acknowledging that its quantifiable net benefits (i.e. benefits minus costs) are negative, because of non-quantifiable benefits associated with discrimination and competition. These arguments raise the following points:
- Non-discrimination does not necessarily mean treating all users the same, if differences in treatment can be justified by differences between users; and
  - Non-quantifiable benefits need to be rigorously defined, or else they provide a subjective and arbitrary basis for overriding any objective quantified evidence.
- 2.5 In the rest of this chapter, I discuss these four methodological problems in the way that the Decision Document discusses the economics of the modifications.

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<sup>6</sup> E.g. See Exhibit GS2, section 5.4, and Exhibit GS3, section 3.3.1.

<sup>7</sup> E.g. See Exhibit GS2, section 5.1.2.

## 2.1. Exit Capacity Is Not Identifiable Real Capacity

### 2.1.1. The entry-exit tariff system

- 2.6 The entry-exit tariff system has been used for many years in Britain and is becoming more widespread on gas transmission networks in Europe. It simplifies energy trading and retail competition, since all gas passes through one virtual (i.e. imaginary) point of sale, referred to in Britain as the National Balancing Point (NBP).
- “Entry capacity” offers access from points of entry into the NTS (mainly beachhead terminals, but also interconnectors, storage facilities and LNG terminals) to the NBP.
  - “Exit capacity” offers access from the NBP to points of exit from the NTS, either onto lower pressure gas distribution networks (GDNs), or direct to “Transmission Connected Customers” (TCCs).
- 2.7 In practice, the NTS does not consist of a set of pipelines bringing gas to and disseminating from a central point. The NTS consists of a network of specific point-to-point routes. Each segment of the network has certain fixed characteristics, but National Grid can use the network to move gas around Britain in a number of different ways (subject to various technical constraints). There is no formal or technical distinction between parts of the network devoted to entry capacity and parts devoted to exit capacity.
- 2.8 In practice, therefore, only National Grid can decide what investment is required to meet the various demands for capacity. A demand for exit capacity (however it is expressed) does not correspond directly to any particular investment in pipelines. National Grid may be able to provide the exit capacity in a number of different ways and can choose which is best suited to the overall level of demand for entry and exit capacity.

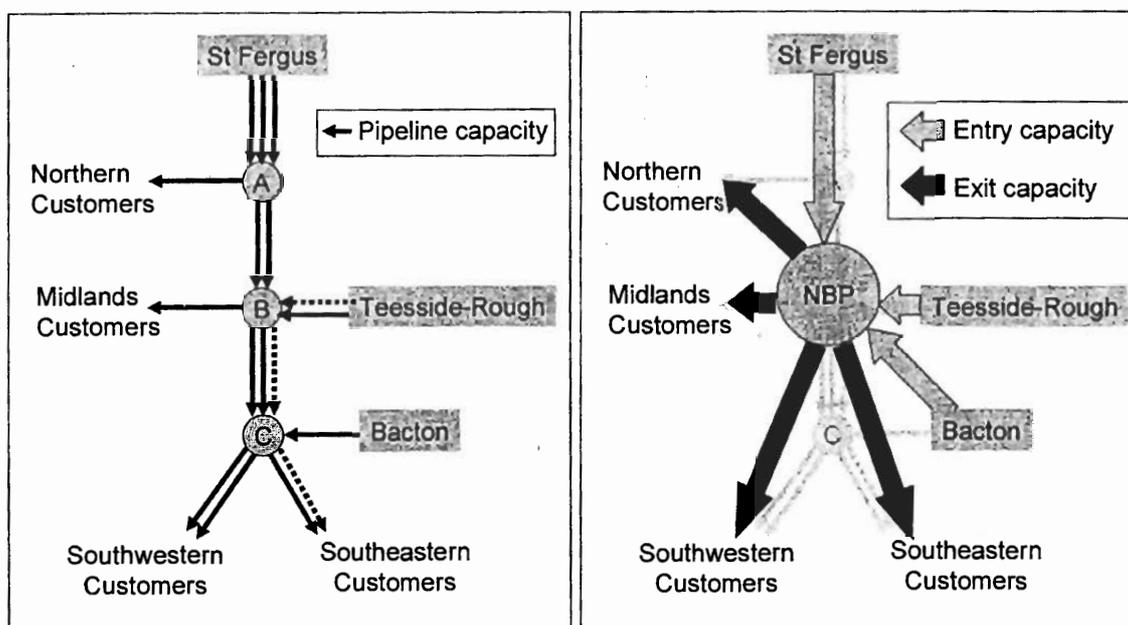
### 2.1.2. Real and commercial capacity products

- 2.9 Investments in pipelines are very long-lived. Around Europe, different regulatory systems assign different lives to high pressure gas pipelines when calculating regulatory depreciation, but lives in the range 40-60 years are not uncommon. The requirement for users to commit to pay tariffs for shorter periods (even 7 years) therefore do not signal the full costs involved in providing new capacity. A user’s willingness to pay for exit capacity for next 7 years cannot be taken as a sign that the user would not be willing to pay the full cost of real investment in pipelines, or that such investment would be economically efficient.
- 2.10 However, users who might be prepared to pay the full cost of a real pipeline have a very real reason to be less willing to make long-term commitments to pay for exit capacity, since a real pipeline has more uses, and is valuable to a wider range of users, than exit capacity. A real gas pipeline transporting gas from A to E can also deliver gas to points B, C, D along its length, and so it may have some value in resale to a large number of potential users. In contrast, exit capacity *only* provides access from the NBP to a specific exit point; it is therefore useful only to users who demand gas at that exit point. Thus, users who are prepared to pay the whole cost of a real gas pipeline might be unwilling to make long-term commitments to pay for exit capacity which has little or no value on resale. A user’s unwillingness to pay for exit capacity cannot be taken as a sign that the user would not be

willing to pay for real investment in pipelines, or that such investment would be economically *inefficient*.

- 2.11 Figure 2.1 shows schematic diagrams of a gas transmission system that bears some resemblance to the NTS. The left hand side shows real pipeline capacity. The right hand side shows how it is represented in an entry-exit capacity regime. In reality, gas enters the system at three points: St Fergus in the north of Scotland; Teesside-Rough, representing a number of entry points in the northeast of England; and Bacton, on the east coast. Gas flows to customers (including those connected via distribution networks) in the North, Midlands, South-East and South-West. Each *solid* arrow represents a certain amount of pipeline capacity. If the capacity represented by each of these solid arrows is fully utilised, flows of gas on the system are balanced. Constraints may arise at other times if users try to nominate flows in a way that is inconsistent with the limited capacity on the routes A-B and B-C.<sup>8</sup>

**Figure 2.1:**  
**Schematic View of the Gas Transmission System:**  
**Real Pipeline Capacity**                      **Entry-Exit Capacity Regime**



- 2.12 Now suppose that an increase in demand from southeastern customers is matched by increased supply of gas at “Teesside-Rough”. To link supply to demand requires the additional pipeline capacity represented by the *dotted* arrows linking Teesside-Rough to point B, point B to point C and point C to the exit point for southeastern customers. There are two points to note about this additional pipeline capacity.

<sup>8</sup> For instance, a constraint would arise if demand from northern customers were equivalent to half the capacity of a single pipeline (arrow), demand from other customers were equivalent to two-and-a-half times the capacity of a single pipeline, and shippers tried to meet the total demand (equivalent to three arrows) from St Fergus alone. That pattern of nominations would overload the capacity from A to B.

- 2.13 First, this investment is not obviously divided between entry capacity for Teesside-Rough and exit capacity for southeastern customers. The allocation of the total allowed revenue for National Grid Gas NTS (NGG NTS) to these different services is decided by a stable (if arbitrary) aim of dividing revenues 50/50 between entry and exit. However, it is not possible to say whether investment in route B-C is required for entry capacity or for exit capacity; in reality it is required for both together.
- 2.14 Second, southeastern customers might be prepared to pay for the gas pipeline capacity from B to C even if they are unsure about their own future demand, because it can be used to serve not only their own demand, but also demand from southwestern customers. However, under the entry-exit regime, southeastern customers receive “exit capacity” which is limited to delivering gas from the NBP to their own exit point. These customers neither know that they have paid for capacity on segment B-C, nor have any right to capture the benefits of that investment, if it is used to serve other (i.e. southwestern) customers. The inability to capture these potential benefits will make southeastern customers less willing to pay the full costs of the investment in segment B-C, or even that share of the cost allocated to exit capacity, than if they owned all the rights to the capacity. In practice, NGG NTS owns the right to reallocate pipeline capacity to other users, when such possibilities arise.
- 2.15 Because of this mis-match between the commercial regime for selling capacity (entry-exit) and the real underlying investments (pipelines offering point-to-point capacity over a defined route), it is inevitable that National Grid will retain a role as the central planner of the NTS. Reforming the definition of capacity whilst retaining the basic form of the entry-exit regime will not remove the requirement for National Grid to act as the central planner. Even the introduction of “market signals” provides no guarantee that those signals will encourage more efficient investment, since the market signals are related to an unreal or imaginary product.

### 2.1.3. Implications for investment planning

- 2.16 At various points in the Decision Document, the Authority indicates that “market-based” demands expressed by systems users (via advance reservations of exit capacity and short-term capacity auctions) will lead to more efficient investment than the current system of central planning.<sup>9</sup> However, on various occasions, National Grid has indicated that the market signals will not supersede or override its own planning criteria, and that it will not invest specifically to produce flexibility capacity, regardless of the signal from users. The Authority has not however taken these statements properly into account and the Decision Document contains an unresolved tension between statements that investment will be market-driven and statements that National Grid will override market signals.
- 2.17 For instance, various respondents pointed out that converting interruptible exit capacity for storage facilities into firm exit capacity would provide an erroneous signal, if interpreted as a demand for investment in additional capacity. The Authority rejected these concerns, because “NGG NTS has obligations under section 9 of the Gas Act to develop and maintain an efficient pipeline system.”<sup>10</sup> The Authority makes a similar observation in relation to the

<sup>9</sup> E.g. see Ofgem 80/07, page 5 and pages 9-10.

<sup>10</sup> Ofgem 80/07, page 15, paragraph 1.

provision of “improved information” about demand for exit capacity to storage facilities.<sup>11</sup> However, if the Authority relies in some cases on the legal obligations placed on National Grid to invest efficiently, the Authority would have to explain in detail how market signals will change – and, separately, improve the efficiency of – investment in the NTS. Instead of providing such an explanation, the Authority expects “market-based” signals to improve efficiency as, apparently, an article of faith.

- 2.18 In practice, the mis-match between exit capacity and real pipeline capacity means that “market-based” signals will be an incomplete and unreliable guide to investment needs. National Grid will only be able to determine what investments are needed by reference to the combination of its legal duties and regulatory incentives. Thus, any assertion that investment will be more efficient requires detailed examination of the way a modification affects National Grid’s performance of its legal duties and response to its regulatory incentives.

#### 2.1.4. Discussion procedures

- 2.19 I mentioned the mis-match between exit capacity and real investments in the reports I wrote for the Gas Forum and in person at the meeting with David Gray on 9 January 2007. In its Final Impact Assessment, Ofgem wrote “Further, this document is not intended to comment in detail on the conclusions of the Gas Forum report. Instead, the Authority will consider the points raised in this report in its decision letter on the modification proposals.”<sup>12</sup> I took this to mean that the effect of the mis-match on efficient decisions would be considered in the Decision Document. However, neither the Final Impact Assessment (23/07) nor the Decision Document (80/07) mentions these difficulties with the entry-exit system or explains how Mod 116 is going to overcome them in a way which improves efficiency.

## 2.2. Interruptible Service Does Not Impose Investment Costs

### 2.2.1. Costs and Charges for Interruptible Service

- 2.20 In my reports for the Gas Forum, I explained how interruptible transmission service did not impose any investment costs on the network, as long as interruptible users were prepared to stop using capacity whenever it was needed by “firm” users. The costs of interruptible use are therefore limited to the operating costs of moving gas along uncongested pipelines (chiefly, I believe, the costs of compression).<sup>13</sup> Interruptible use does not impose any fixed costs of investing in capacity, no matter how many times it is actually interrupted, as long as it can be interrupted whenever it would otherwise use a pipeline that was congested.
- 2.21 Accordingly, users of the NTS who take interruptible exit capacity only pay the “commodity charge” (per kWh of gas moved) and do not pay the “capacity charge” (per peak-day kWh, i.e. per unit of exit capacity). This “commodity charge” may exceed the operating costs, since such costs normally form about 10% of total costs, whereas the “commodity charge” represents a higher share of National Grid’s total revenue from NTS users. (Prior to April

<sup>11</sup> Ofgem 80/07, page 10, paragraphs 4 and 5.

<sup>12</sup> Ofgem 23/07, paragraph 1.9.

<sup>13</sup> E.g., see Exhibit GS2, section 5.1.2.

2002, the “commodity charge” was set to recover 35% of total revenue, whereas now the proportion emerges from the separate Transmission Operator and System Operator price controls applied to NGG NTS.<sup>14</sup>) I have heard several possible explanations for the decision to make interruptible users pay a higher share of costs, including:

- Social Policy: The reallocation of costs from firm customers to interruptible customers may reflect a desire to reallocate costs from domestic customers with a low load factor to industrial customers (including interruptible ones) with a high load factor;
- Efficient Revenue Collection: an efficient structure of tariffs would allocate fixed costs on top of variable operating costs in the way best calculated to minimise the associated loss of welfare due to a reduction in demand; allocating some of the fixed costs to interruptible users may discourage demand for its services less than a policy of allocating all fixed costs to firm users (as in the case of “Ramsey pricing”, which applies a mark-up over variable operating costs that is inversely related to demand elasticity);
- Discouraging the “Flight from Firm”: users can choose whether to select firm or interruptible service, so increasing the charge for interruptible service reduces the incentive for potentially firm users to avoid capacity charges by selecting interruptible service and helps to protect National Grid’s revenues from firm service.

2.22 Whatever the ultimate justification for the current NTS commodity charge, it is likely that interruptible customers are paying more than the costs that they impose on the system in any one year.

### 2.2.2. Charges for interruptible service and the probability of interruption

2.23 The Decision Document discusses the charges for interruptible exit capacity in several places by reference to a different view of tariff policy, unrelated to costs, namely that the *discount* for interruptible capacity should be “...related to the frequency or probability of interruption”. In support of this approach, the Decision Document refers to the “European Transmission Access Regulation” and its “requirement[...]that interruption is priced on the basis of probability”.<sup>15</sup>

2.24 Although the reference in the Decision Document is rather vague, I believe it refers to the European “Regulation (EC) No 1775/2005 of the European Parliament and of the Council of 28 September 2005 on conditions for access to the natural gas transmission networks”. In that regulation, Article 4.1(b) says “The price of interruptible capacity shall reflect the probability of interruption”.

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<sup>14</sup> NGG NTS (2007), Statement of the Gas Transmission Transportation Charging Methodology Effective from 1 April 2007, Issue 1 (Revision 0), section 1.2, paragraph 2.

<sup>15</sup> Ofgem 80/07, page 14.

**Box 1: Interruptions, Pricing and Discounts: an Analogy**

An analogy may help to explain why prices for interruptible service should not be proportional to interruptions (or even the probability of interruptions). Consider a holiday apartment that is available for three weeks in the year: two out-of-season weeks, in November and January; and one high season week in July. The price for renting the apartment in July includes a £400 contribution towards the capital cost of building the apartment and £100 to cover the operating cost of making available to guests (security, cleaning, laundry, etc) and maybe a small margin for profit. The price of £100 per week for renting the apartment out-of-season covers just the operating costs and the small profit margin.

- If I rent the apartment for all three weeks – equivalent to firm capacity – I must pay £700 (= £400 capital costs plus three times £100).
- However, if I give up the July week – equivalent to being interrupted once – I only pay £200 for the other two out-of-season weeks.
- If I give up the July slot and the November slot – equivalent to being interrupted twice- I pay £100 for the remaining week in January.

These different payments (£700/£200/£100) are not proportional to the number of weeks I rent the flat (usage) or to the number of weeks I give up (interruptions). Moreover, if the owner of the apartment tried to impose some kind of pricing policy involving proportional discounts (say £700, £400, £100), holiday-makers might well refuse to take the middle option of paying £400 for a low value out-of-season slot. The holiday-makers would miss out on a holiday that they would have been prepared to pay for, whilst the owner would lose the small profit margin that could have been recovered by charging £100.

In some cases, of course, the apartment may not be rented at the price of £700 in the high season week, in which case a holiday maker may be able to make a deal with the owner to pay less. The owner will then be better off accepting any price greater than the operating costs, so that the apartment remains rented out at all times (equivalent to interruptible service without interruptions).

This example shows why a policy of setting “discounts” proportional to (i.e. “on the basis of”) the probability of interruptions (or actual interruptions) is inefficient.

- 2.27 Interpreting this phrase as a requirement to set gas network capacity tariffs (or tariff “discounts”) directly proportional to the probability of interruption would lead to inefficiency. Such a tariff policy would not reflect the underlying cost structure of interruptible service and would cause inefficient use of capacity. Assuming that the European Union did not intend to promote economic inefficiency, I take the phrase in Article 4.1(b) to mean that gas transmission network companies should only offer lower tariffs for interruptible service if the user can truly be interrupted, and not (for instance) as a way to cross-subsidise favoured users whose service is *de facto* firm (i.e. available at all times).
- 2.28 In some cases, interruptible service is available at all times (or almost all times), because available capacity is sufficient to meet all firm *and* interruptible demands. The Decision Document appears to regard this outcome as unacceptable, or as potentially incompatible with the European Regulation 1775/2005. However, this outcome can be the result of overinvestment in the past, or of a local reduction in demand that causes some capacity to be underutilised. In such conditions, the cost of providing capacity to interruptible users is still only the variable operating cost. It would be inefficient to insist that all users of this capacity must pay the full capacity charge, just because they are not interrupted, if some former users would then choose not to take the service.
- 2.29 Interruptible service allows users to gain access to capacity even if they place a relatively low value on the capacity, and would not be willing to pay much more than the operating costs of using it. A tariff policy that removed this possibility would discourage low value users, e.g. those with access to alternative fuels, or those engaged in industrial processes with low value added, or those who only want to use the NTS as a source of back-up fuel in off-peak periods. These users would be prepared to pay the operating costs and to make a small contribution towards the fixed costs of investment, but may not be prepared to pay the full costs of capacity. Discouraging such users from using the network would lead to reductions in network utilisation and consumer welfare. Box 1 provides an analogy that may help to clarify this point.

### 2.2.3. Implications

- 2.30 Given the arguments above about costs and probability of interruption, there is no economic basis for appraising arrangements for interruptible service by reference to whether charges are related to the probability of interruption. Instead, the economic efficiency of outcomes would provide an objective and meaningful economic decision criterion. For legal reasons, the Authority may have to assess whether users of interruptible capacity are truly interruptible. I cannot comment on legal arguments, but in any case the Decision Document does not provide any evidence as to whether system users taking interruptible service are really interruptible or not.

## 2.3. Non-Discrimination Is Not Treating Everyone the Same

- 2.31 The Decision Document contains several discussions of the potential for Mod 116 to remove or reduce discrimination. In previous cases where questions about discrimination have arisen, it has been explained to me that undue discrimination is treating comparable cases differently, or treating different cases the same, without objective justification. I cannot find any coherent discussion of these concepts in the Decision Document, or in Ofgem’s FIA. Instead, the Decision Document implies at several points that non-discrimination simply means

offering services on the same basis to all users, which would not be consistent with my understanding of the concept.

- 2.32 The Decision Document says on page 6 that “The Authority considers that whilst the present arrangements appear to be unduly discriminatory in nature, it is important also to consider whether any such discrimination is justifiable.” By the criterion in the previous paragraph, it is impossible for discrimination to be *both* undue *and* justifiable. This sentence implies that the Authority did not understand the concept of discrimination that it was trying to apply, or was applying a totally different concept from the one I set out above.
- 2.33 Moreover, the Decision Document states that the Authority has not concluded on whether the arrangements in Mod 116A constitute unlawful discrimination. Since the arrangements in Mod 116A are the same as the status quo, it appears to me that the Authority cannot have concluded that the current arrangements constitute undue, unjustifiable, or unlawful discrimination. I cannot therefore see any basis on which the Authority could decide that other modifications would remove or reduce undue discrimination.
- 2.34 Hence, in the Decision Document, the general discussion of discrimination, and whether it is undue or not, appears to be incomplete and/or contradictory.
- 2.35 In my earlier reports, I discussed specific forms of behaviour which might permit discrimination. I pointed out that NGG NTS would retain scope for discrimination under Mod 116, in decisions requiring the use of discretion. The lack of transparency in the definition and allocation of “flexibility capacity” provides one opportunity. The allocation and pricing of offers to buy back firm capacity from holders (which is the substitute for interruptible capacity under Mod 116) provides another opportunity for discrimination. At no point has Ofgem or the Authority acknowledged this argument. The discussion of discrimination in the Decision Document and the appraisal of the associated (but non-quantifiable) benefits are therefore partial and the resulting conclusions will be biased.

#### **2.4. Quantifiable and Non-Quantifiable Appraisal Criteria**

- 2.36 Ofgem prepared a cost-benefit analysis of the proposed modifications and I commented on it in my report for the Gas Forum in March 2007. The Decision Document reports some results of cost-benefit analysis which indicate that the proposed modifications all impose a net cost. However, the Authority reversed or overrode this result by assigning certain “non-quantifiable” benefits to the proposals. In principle, this decision means that the Authority implicitly assigned a value to these “non-quantifiable” benefits that was at least as great as the quantified net costs. However, I find it difficult to see how the Authority arrived at such a decision.
- 2.37 The principal sources of the non-quantifiable benefits are contributions to “competition” and “non-discrimination”. However, the Decision Document does not describe any source for such benefits in terms of specific changes in behaviour. There is no analysis of competitive markets and the analysis of discrimination effects is at times incoherent, as described above. Several of the supposed “non-quantifiable” benefits (such as the efficiency of allocating flexible capacity in a non-discriminatory manner) seem to repeat supposed efficiency gains included in the “quantifiable” benefits, in which case their inclusion amounts to double-counting.

- 2.38 Given the pivotal role of these benefits in the overall appraisal, the Decision Document is incomplete due to the lack of analysis to support their valuation at more than the net costs. In consequence, the final decision appears to be little more than a subjective choice by the Authority in favour of one modification over the others.
- 2.39 I have therefore commented on the individual elements of the Authority's appraisal, but have not attempted to appraise the overall result or to reconstruct an alternative analysis.

## **2.5. Summary**

- 2.40 There is a mis-match between the real investments in the National Transmission System and the commercial arrangements for selling "entry capacity" and "exit capacity" to system users. As a result, users' willingness-to-pay for capacity does not indicate what investments would be efficient. In practice, investment decisions remain the responsibility of National Grid, as owner of the NTS, and National Grid cannot rely fully on signals received from system users to decide what investments are efficient. I set out the economic framework described above in my earlier reports and discussed it in a face-to-face meeting with Ofgem on 9 January 2007. However, neither Ofgem nor the Authority took account of these points when considering the likely efficiency gains arising from the implementation of Mod 116V.
- 2.41 As long as system users are prepared to be interrupted whenever there is a real constraint within the NTS (and National Grid knows that they are interruptible), such users do not impose any costs of building capacity on the NTS. The cost of interruptible service is limited to operating costs, regardless of the probability of interruption. A charge for interruptible service built up from costs would therefore only cover operating costs. In practice, for a number of reasons, interruptible users of the NTS pay a "commodity charge" which covers operating costs and also makes a contribution towards investment costs. There is no economic basis for assessing interruptible tariffs by reference to the probability of interruption.
- 2.42 With regard to potential discrimination, I found the arguments in the Decision Document to be inconsistent and selectively applied to the effects of the proposed modifications. The lack of coherent analysis makes it difficult for me to appraise these arguments from an economic point of view, although I have tried to interpret what the Authority meant.
- 2.43 The Authority's approach to "non-quantifiable" benefits also prevents detailed analysis of its arguments, since the description of such benefits is extremely vague. For some of these benefits, the Decision Document contains no supporting evidence, whilst some of these benefits seem to overlap with quantified benefits that are already included in the cost-benefit analysis. These methodological problems are significant, since the Authority relies on the implied value of non-quantifiable benefits to offset the substantial net cost of Mod 116V that emerges from the quantifiable analysis.

### **3. Key Issues Considered by the Authority**

- 3.1 Pages 5 to 9 of the Decision Document discuss a number of “key issues” that the Authority considered in making its decision. I have several comments on this discussion.

#### **3.1. Non-Discriminatory Allocation of Flexibility Product**

- 3.2 The Authority appears to place great – but non-quantified – weight on the elimination of, or reduction in, discrimination by NGG in the allocation of flexibility. However, the Authority provides no coherent analysis to justify placing such a great weight on this element. As a result, it appears to be a subjective and arbitrary basis for overturning the results of the cost-benefit analysis. Below I outline some of the problems in the Authority’s economic analysis of potential discrimination.

##### **3.1.1. Nature of discrimination**

- 3.3 I have already commented on the confusion in paragraphs 2-4 on page 6 of the Authority’s Decision Document as to whether the current method of allocating flexibility is discriminatory or not. It is a major short-coming of the overall appraisal that the basis for this non-quantifiable benefit remains in doubt.
- 3.4 I have also pointed out that the Authority nowhere considers the potential for discrimination implicit in the proposed modifications. A serious problem with Mod 116 is the non-transparency of the method used by NGG NTS to calculate the total amount of available flexibility and to allocate it to “areas” and “zones”. Where a method is non-transparent, it allows the party who undertakes the calculation to exercise discretion in the choice of inputs or algorithm so that the outputs favour certain parties. I made this point in section 3.4.1 of my second report (Exhibit GS2) but the Decision Document does not consider it at all.

##### **3.1.2. Shortages and the potential for discriminatory allocation**

- 3.5 Ofgem and the Authority have consistently failed to show that there is any shortage of flexibility that obliges NGG NTS to allocate what is available. The Decision Document even says in paragraph 8 on page 6 that “current evidence suggests that there is sufficient flexibility available to the market”. The strongest argument the Authority can make in the Decision Document for raising the concern about allocation is “this may not necessarily be the case in future”. This seems to me to be a very weak pretext for action: it implies that any phenomenon that “may not necessarily be the case in future” provides an excuse for regulatory action. However, it would not be efficient or rational to impose costly obligations in order to deal with problems that were unlikely to arise. Indeed, such a framework would make any detailed or objective analysis unnecessary or irrelevant.

##### **3.1.3. Categorisation of users**

- 3.6 The final paragraph of this section considers the views of respondents that differences in the treatment of GDNs and shippers are justified. The Authority quotes the argument that GDNs are regulated whilst shippers are not, but rejects it as a basis for different treatment, on the grounds that both types of user impose the same costs on the NTS. The Authority also says that both GDNs and shippers serving TCCs are acting as the agents of others (and ultimately

for end consumers). These arguments seem to contain a logical error. The fact that two classes of user are similar in one respect does not rule out the possibility that they differ in other respects that would justify discrimination. Noting some similarities between GDNs and shippers does not therefore provide grounds for the Authority to rule out different treatment.

- 3.7 On the other hand – from an economic point of view – the fact that two classes of user differ in some respect (such as being regulated or not) would not be sufficient to justify discrimination by itself. Some further analysis is required to establish whether different treatment of comparable classes is justifiable because of its economic *effects*.
- 3.8 A key characteristic of any regulated business is that it has a reasonable prospect of recovering any cost it incurs. (Regulatory systems that do not offer a reasonable prospect of cost recovery break down sooner or later, either because the regulated company has no incentive to continue to operate, or because it actually goes bankrupt.) In contrast, companies operating in a competitive arena are not able to increase the prices they charge for their output when their costs rise – unless the whole sector experiences a similar increase in costs. Hence, if transmission connected customers make up a small part of the producers in their market (as is the case with gas-fired generators), they might well find it hard to recover the additional costs of flexibility capacity – particularly if those costs vary by location. Differences in their prospects of cost recovery would distort the willingness of users to bid for exit capacity, thereby reducing the likelihood that such auctions would allocate exit capacity efficiently. Such an argument would provide an economic justification for treating different classes of user differently, but the Authority did not consider it.
- 3.9 My analysis of the mis-match between entry-exit capacity regimes and real pipelines provides another justification for differentiating between GDNs and the shippers who serve TCCs.
- 3.10 As I explained above, exit capacity is in some senses a very limited product which offers access only from the NBP to a specific exit point. For a transmission connected customer (and the shippers acting on its behalf), such capacity has a limited range of alternative uses. If few or no customers are served from the same exit point, the exit capacity has limited potential for resale – even if the investments within the NTS needed to provide that capacity would be useful to a number of different users. This situation might make TCCs reluctant to take on long-term commitments to pay for exit capacity – even if they were willing to pay for investment in a real pipeline that could serve many different users over its whole length.
- 3.11 In contrast, GDNs serve a large number of customers, so exit capacity devoted to serving the exit points from which GDNs draw gas has a large number of potential users. In this case, the GDN might well be willing to make long-term commitments to pay for exit capacity (subject to the regulatory regime offering a reasonable prospect of cost recovery). If one user disappears from the system, the GDN is likely to be able to transfer the exit capacity to another user and/or to spread the cost of the exit capacity over the remaining users.
- 3.12 In other words, although exit capacity has a more limited range of uses than actual pipeline capacity, a GDN has many more opportunities than a TCC to redirect exit capacity among alternative users (and so to extract value from exit capacity). This difference affects the willingness of GDNs and TCCs to make long-term commitments to pay for exit capacity and hence provides at least one economic justification for treating them differently in the allocation and pricing of exit capacity.

**3.1.4. Implications**

- 3.13 Ofgem and the Authority did not take up the discussion of the mis-match between entry-exit capacity and reality, even though Ofgem's FIA appeared to signal that the Decision Document would do so. Hence, there has been no opportunity to discuss or to analyse in detail how the mis-match might justify different treatment of different categories of user.
- 3.14 The mis-match between real capacity and exit capacity does provide a possible reason for distinguishing between GDNs and TCCs, were such a distinction necessary to justify a difference in their offtake arrangements. However, it is not clear to me whether such a distinction is necessary, due to the muddled discussion of discrimination in the Decision Document.
- 3.15 Paragraphs 5 and 6 on page 6 of the Decision document contain the Authority's decision on proposed modifications 116A and 116CVV. The Authority says it made a judgement on the balance between (1) the costs of the reform, (2) the practical risk of constraints in the availability of flexibility, and (3) whether the costs of reform justify continuation of discriminatory arrangements. "Having assessed these factors", the Authority does not consider it "appropriate" to allow the existing arrangements for flexibility to persist, as would be implied by Modifications 116A and 116CVV. On this basis, the Authority rejects these two modifications in favour of the others (Mods 116, 116BV and 16VD). The Authority assigns additional net benefits of £36-44 million to modification 116CVV relative to these other modifications (see section 3.3 below). Ofgem awarded modification 116A a net benefit of approximately zero in the FIA. The Authority must therefore have assigned a large, if unquantified, value to the benefit of eliminating discrimination in the allocation of a limited volume of flexibility.
- 3.16 However, the Authority acknowledges that flexibility is not constrained at the moment and states only that this situation "may not necessarily be the case in future", which seems to indicate a low level of risk. Moreover, the Authority does not conclude that the current arrangements constitute unlawful (i.e. undue and unjustified) discrimination. As a result, I am unable to understand how the Authority could decide Modifications 116A and 116CV were not "appropriate", or even the standards by which they were not appropriate, or how the Authority could determine that the larger net cost of the other modifications was a price worth paying.
- 3.17 I cannot therefore evaluate (or even identify) the Authority's reasons for rejecting modifications 116A and 116CVV.

**3.2. The Costs of Reform – Transporter Costs**

- 3.18 On page 7 of the Decision Document, the Authority discusses the treatment of the implementation costs to be incurred by "transporters", i.e. the GDNs. Ofgem argued in the FIA that such costs should be omitted from the cost-benefit analysis, on grounds that they represent a commitment under the sales programme. I have never been able to understand the legal or regulatory basis for excluding these costs and my reports for the Gas Forum duly recorded them.

- 3.19 For the Decision Document, the Authority now accepts that it would be unreasonable to exclude “ongoing operational costs to GDNs”. With respect to the costs of the GDNs, Ofgem’s Final Impact Assessment distinguishes between “ongoing costs” of £35.5 million and “Upfront costs” of £20million.<sup>16</sup> I assume that the Authority has included only the “ongoing costs”, but in that case the Authority provides no explanation as to why the “Upfront costs” should be excluded whilst “ongoing” costs are included. The Decision Document refers to a “review of previous statements made by the Authority on the treatment of operational costs of GDNs in a divested industry structure”, but does not summarise or repeat those statements, or provide any indication of the principle used to justify including or excluding certain costs.
- 3.20 The treatment of GDN costs is significant. I have no more detailed information about the costs of GDNs than Ofgem. Even including the £20 million Upfront costs of the GDNs reported by Ofgem would significantly increase the net costs of implementing Mod 116V, as reported by the Authority. However, from the Decision Document, I cannot tell what estimate of GDN costs the Authority included in its assessments, or whether such an estimate is reasonable.

### 3.3. Impact of Quantitative Analysis (and Non-Quantified Benefits)

- 3.21 Paragraphs 5 and 6 on page 7 of the Decision Document report the Authority’s conclusions on quantitative assessment of net costs and benefits. Paragraph 5 records the basic results of the Authority’s cost-benefit analysis. Paragraph 6 on page 7 provides alternative estimates of net costs derived by using the costs of the lowest four shipper submissions.
- 3.22 I note that using only the lowest cost estimates is selective, is not standard practice and has no basis in economic theory, but I cannot appraise the Authority’s estimates in detail, because the Authority does not provide a breakdown or relate them to Ofgem’s FIA. I note also that in paragraph 5 the Authority assigns a net *cost* of £20-28 million to Modifications 116V, 116BV and 116VD and a net *benefit* of £16 million to Modification 116CVV.<sup>17</sup> Modification 116V therefore appears to incur additional net costs of £36-44 million relative to Modification 116CVV (the precise figure depending on which net cost is attributable to which modification).
- 3.23 The difference between these two modifications lies principally in the exclusion from Mod 116CVV of any mention of “flexibility exit capacity.” By selecting Mod 116V rather than Mod 116CVV, therefore, the Authority has attributed non-quantifiable benefits to flexibility exit capacity (and the other minor differences) which have a value of at least £36 million and possibly as much as £44 million – despite the inability of the Authority to identify any problem in the availability of flexibility at present (other than a vague fear that “this may not necessarily be the case in future”). I cannot see any basis for assigning such a relatively large value to such dubious non-quantified benefits.
- 3.24 The precise details of investment policy are a matter of pipeline engineering, in which I am not an expert, but my reports for the Gas Forum quoted statements from National Grid

<sup>16</sup> Ofgem 23/07, Table 3.13 on page 33.

<sup>17</sup> V or VV indicates a particular variant of the original proposal developed during the industry’s evaluation process.

indicating that the company's investment policy would be driven by the need to meet peak demand and not by any demand for flexibility. These statements seem to me to imply that continued investment in pipeline capacity will produce sufficient additional flexibility as a joint product or by-product. I cannot therefore see any basis for the Authority's concern that sufficient flexibility "may not necessarily" be available in the future, or for considering this possibility as a significant risk.

- 3.25 The Authority acknowledges at the foot of page 7 of the Decision Document that "the potential benefits of non-discrimination and competition are inherently diffuse and difficult to quantify." In fact, if the Authority had ever specified in detail the source of these benefits in terms of changed behaviour, it might have proven possible to quantify them. However, in practice, the source and nature of these benefits – let alone their size – remains opaque.

### 3.3.1. The evaluation of discrimination

- 3.26 The Authority's discussion of the relative importance of quantified and non-quantified costs and benefits appears to me to be highly subjective and selective. For instance, in paragraph 2 on page 8, the Decision Document contains the following discussion of quantifiable cost estimates:

"In this respect, the Authority also shares the concerns outlined in the Final IA that the cost data submitted may represent an over-estimate of the costs of reform, *particularly if major flexibility constraints do not occur in practice.*"  
(emphasis added)

- 3.27 The Authority concludes that it is therefore important "not to give undue weight" (i.e. to give less weight) to quantitative analysis. However, proper analysis would have identified the statement above as a sensitivity test. *If major flexibility constraints do not occur in practice*, the costs to users of operating the system might be lower, because they face less risk of overrun charges.<sup>18</sup> However, *if major flexibility constraints do not occur in practice*, the benefits of a new system for allocating flexibility capacity will also be lower or non-existent. Thus, in these conditions, both *costs* and *benefits* would be lower, but the Authority has only identified and accounted for a possible reduction in *costs*. The Authority's conclusion is biased in favour of modifications 116V, 116BV and 116VD by this methodological error.

### 3.3.2. The evaluation of competition

- 3.28 In passing, the Decision Document mentions "competition" as a source of non-quantifiable benefits. The Authority admits on page 7 that this benefit is "inherently diffuse". In fact, I cannot find any discussion of competitive effects other than (1) the effects of auctioning flexibility (on page 12) and (2) the potentially adverse effects of "prevailing rights" (on page 8) and (3) the potentially adverse effects of implementation costs on entry into the gas sector (on page 15).

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<sup>18</sup> Even this conclusion is misleading. Under Mod 116V, users are liable for overrun charges if they book too little flexibility exit capacity at times of shortage, even if the shortage is confined to their own exit point. Thus, a general abundance of flexibility may still require careful monitoring, in case National Grid's non-transparent method of allocating flexibility capacity to "areas" and "zones" creates an artificial local shortage.

- 3.29 I assume that the Authority would not count the same benefit twice, even if it counts as a benefit under more than one criterion. The effects of introducing flexibility (which I would in any case dispute, for the reasons given above) can therefore count as an efficiency gain or a competitive benefit, but not both. The Authority has already counted the gains from introducing flexibility capacity as a benefit to efficiency; counting them as a benefit to competition amounts to double counting.
- 3.30 I do not necessarily agree with the Authority's view on prevailing rights, but I note that the Authority regards prevailing rights as having a negative effect on competition. The need to manage flexibility appears to impose an irreversible (one off) fixed cost on shippers, in which case it would indeed create a barrier to entry and would also have a negative effect on competition. Thus, when the Authority identifies separate competitive effects, their impact is negative.

### 3.3.3. Implications

- 3.31 I find it impossible to check the basis for the Authority's decision to override the quantitative cost-benefit analysis by imputing non-quantified benefits, as the value attributed to these non-quantified benefits lacks any rigorous or objective justification. Indeed, it seems to me that the Authority has identified only negative competitive effects and that the supposed benefits of removing non-discrimination remain – by the Authority's own admission – undecided. I cannot therefore find any grounds within the Decision Document for the Authority's decision to favour some modifications over others on the basis of non-quantified benefits, despite their substantially higher net cost.

### 3.4. Prevailing Rights

- 3.32 The Authority discusses prevailing rights on page 8 (and page 15) of the Decision Document. These deliberations do not affect the Authority's final decision (since they actually count against Mod 116V, which the Authority eventually approved), but they provide further evidence of confusion in the Authority's thinking on discrimination.
- 3.33 The Authority expresses concern about the way in which the award of exit capacity to existing users ("prevailing rights") "differentiates" between existing holders of capacity and parties requiring incremental rights, (1) because new users must "provide greater levels of user commitment" than existing capacity holders and (2) because new users may be denied the opportunity to compete with existing holders for existing capacity. I cannot see any basis for the first of these criticisms, since Mod 116V does not require greater financial commitments from new users than from existing users. I find the second criticism bizarre, since it applies equally to the situation that will be a permanent result of implementing Mod 116V, even after the prevailing rights have lapsed.
- 3.34 Under Mod 116V, all users will be required to commit to pay for capacity at least three years in advance and to take part in auctions for capacity four-to-seven years in advance (unless they wish to take a risk that capacity will be available in short-term auctions). The award of three years' capacity to existing users therefore creates precisely the situation that pertains at all future times under Mod 116V.

- 3.35 The Authority may have some concern about the transitional arrangement which awards existing users exit capacity outside an auction. However, this arrangement is not giving existing users any rights that they do not have at present. Under the present offtake arrangements, users' rights to exit capacity are "evergreen", in that they can be rolled over on an annual basis. Existing users therefore already have rights to take exit capacity in the next three years, if they so wish. Mod 116V is not therefore giving existing users any additional rights
- 3.36 Indeed, Mod 116V actually removes from existing users a right that they have now, i.e. to terminate their holdings of exit capacity within three years.
- 3.37 I cannot therefore see how the Authority might conclude that the inclusion of prevailing rights in Mod 116V has a negative impact on competition relative to the status quo (as suggested on page 9). The Authority also seems to have misunderstood the nature of the proposal when it suggests (also on page 9) that NGG should review the question of "prevailing rights" in case it distorts competition, since the creation of three-year exit capacity rights and obligations for existing users is an intrinsic element of all capacity allocations under Mod 116V. Given that the Authority expressed concerns that this element of Mod 116V might create potential for discrimination or distort competition, it seems inconsistent to approve Modification 116V, whilst rejecting Modifications 116A and 116CVV for the same reason.

### 3.5. Summary

- 3.38 The Decision Document contains a discussion of certain key issues raised by respondents or considered important by the Authority. On the basis of this discussion, the Authority rejects two of the proposed modifications (Mod 116A and Mod 116CVV) and assigns non-quantifiable benefits to the other proposed modifications (Mod 116V in particular). The Authority's decision relies on these non-quantifiable benefits being sufficient to offset substantial net costs arising from the quantified analysis. However, the discussion of the key issues is selective and contains some methodological errors.
- 3.39 The Authority uses potential for discrimination as a reason for rejecting Mods 116A and 116CVV. The problem identified by the Authority concerns the retention of existing arrangements for allocating "flexibility capacity", despite the admission on page 6 of the Decision Document that the Authority has not concluded whether or not these arrangements constitute unlawful discrimination.
- 3.40 The Authority also accepts that there is no evidence at present of a shortage of flexibility which would be needed to make discrimination possible. The Authority presents no evidence of a future risk, only a statement that the availability of sufficient flexibility "may not necessarily be the case in future". The Authority did not comment on the statements by National Grid that demands for flexibility would not in any case drive its investment in the future, which suggests that National Grid does not foresee a shortage sufficient to merit any investment.
- 3.41 In any case, further consideration of the differences ("mis-match") between exit capacity and real pipeline capacity leads me to identify possible reasons why it would be justifiable to adopt different treatment of exit capacity, depending on whether it serves GDNs or TCCs.

Neither Ofgem's FIA nor the Decision Document consider the nature of this mis-match or the implications for analysis.

- 3.42 Similarly, neither the FIA nor the Decision Document provide an analytical basis for the attribution of non-quantifiable competitive benefits to the introduction of flexibility capacity. Indeed, the arguments presented by the Authority appear to be little more than an article of faith that trading in flexibility capacity is synonymous with a benefit for competition, despite the possibility of inefficiency arising because of the mis-match between exit capacity and real pipeline capacity. In general, it is difficult to reconcile an increase in inefficiency with an increase in competition.
- 3.43 Finally, the Decision Document briefly discusses the assignment of "prevailing rights", but the basis for the Authority's concern seems to be a confused set of ideas. The "prevailing rights" element of Mod 116 does not award existing users any rights that they do not possess at present, and indeed withdraws their ability to terminate payments for capacity within three years. As a result, this provision does not create any new or additional scope for discrimination or distorting competition. Indeed, the situation in which existing users have three-year rights to exit capacity is a key provision of Mod 116V; if the Authority had concerns about this situation as applied to "prevailing rights", the same concerns would apply to the future application of Mod 116V.

## 4. Appraisal by Relevant Objectives

- 4.1 After the discussion of key issues, the Decision Document sets out the Authority's appraisal of the Modifications by reference to the "Relevant Objectives":
- (a) The efficient and economic operation of the [NTS] pipeline system;
  - (b) The coordinated, efficient and economic operation of (i) the combined pipeline system, and/or (ii) the pipeline system of one or more relevant gas transporters;
  - (c) The efficient discharge of the licensee's obligations (i.e. the obligations of NGG NTS); and
  - (d) The securing of effective competition between relevant shippers and/or between DN operators and relevant shippers.
- 4.2 Most of this appraisal repeats or refers back to arguments discussed in the section on key issues, but some of the new points merit comment.

### 4.1. Efficient & Economic Operation of [NTS] Pipeline System

- 4.3 The Authority believes that all modifications better facilitate this objective except Mod 116A, but gives no reasons for rejecting Mod 116A. Mod 116A would replace a "black hole" in the exit arrangements from September 2010 (on which date, the current offtake arrangements simply cease to apply) with the continuation of the current arrangements. I cannot see how such a change would fail to facilitate this Objective, since the complete absence of any exit arrangements after September 2010 could not conceivably enhance efficiency. The Authority's decision seems to be driven by a comparison between Mod 116A and some other, preferable way of filling the "black hole" after September 2010. The Decision Document does not specify the basis of this comparison, but it affects all the subsequent discussions of Objectives.

#### 4.1.1. Improved Information

- 4.4 The Decision Document assumes that the new framework will provide better information for National Grid's planning purposes and will therefore increase the efficiency of investment. This assumption is doubtful on two grounds: (1) information about demand for exit capacity may not indicate what investment in pipeline capacity would be efficient, due to the mismatch discussed above; and (2) National Grid has indicated at several times that its investment policy will be driven by concerns other than prices emerging from exit capacity allocation procedures. On page 10 of the Decision Document, the Authority acknowledges National Grid's intention not to invest to create flexibility capacity. However, the Decision Document does not consider the implications of these arguments for efficiency.
- 4.5 The Decision Document asserts (without supporting evidence or analysis) that the proposed framework will improve the allocation of risk "between industry participants and customers". There is no definition of either term, but one possible interpretation is that "industry participants" means shippers and GDNs, whilst "customers" means consumers of gas. However, both GDNs and shippers will be acting as agents of gas consumers and will pass

the risks associated with long-term capacity obligations onto their respective customers, through regulatory and contractual mechanisms. Hence, under this interpretation, the proposals are likely to change the allocation of risk among consumers, but not between consumers and others. The Decision Document does not consider this possibility.

- 4.6 Alternatively, it is possible that the Authority wishes to distinguish between small gas consumers connected to GDNs (“consumers”), and industrial gas consumers (including generators) connected to the NTS (“industrial participants”). I do not know on what basis the Authority would wish to divide up consumers in this way. The Decision Document does not explain why a reallocation of risk between these different groups of customer would be desirable.
- 4.7 The Authority discusses separately the view of some respondents that it is preferable for NGG NTS to manage risk. According to the Decision Document, the Authority believes that TCCs and their shippers are best placed to manage risks associated with investment on the NTS.<sup>19</sup> Thus, a third possible interpretation would be that “industry participants” refers to NGG NTS, whilst “customers” refers to “TCCs and their shippers”. (The position of GDNs remains ambiguous under this definition, since they are not a customer, but play a similar role to TCCs and their shippers under Mod 116V.) The Authority does not explain why “TCCs and their shippers” are better placed to bear investment risk than NGG NTS (or than other customers).
- 4.8 My analysis of the mis-match between the definition of capacity and the real capacity created by investments (see section 2.1.2 above) suggests that National Grid is much better placed to bear the associated risks. On page 10 (in relation to flexibility capacity), the Authority itself acknowledges that National Grid’s investment policy will not be driven by exit capacity bookings. On page 11, the Authority notes that National Grid’s investment criteria will have to override market signals in the provision of exit capacity to storage facilities, in order to ensure an efficient outcome.
- 4.9 It seems to me inevitable that only National Grid can ultimately decide what investment the NTS requires – and that the risks (i.e. costs) will be borne by consumers in general, subject to regulatory scrutiny. Given the mis-match between exit capacity and real pipeline capacity, the “market” signals provided by the new regime will contribute little to the appraisal of National Grid’s individual investment decisions.

#### **4.1.2. Market-based interruption arrangements**

- 4.10 The Decision Document refers to “market-based” arrangements for interruption providing “improved signals and more robust information”, allowing National Grid to compare various costs. The Authority does not set out what benefit arises from this aspect of the reform. Since this argument falls under Objective (a), the Authority probably means that it will generate more efficient and economic operation of the pipeline. However, there is no guarantee that the creation of “market-based” arrangements will necessarily promote greater efficiency in investment and operations. Section 2.1.3 above discussed how National Grid’s legal duties and regulatory incentives would override market-based signals.

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<sup>19</sup> Ofgem 80/07, page 9, last paragraph.

- 4.11 In some cases, exit capacity linking the NBP to a particular exit point has only one potential user, i.e. the shipper serving the TCC at that exit point or (under Mod 116V) the GDN served by that exit point. In such cases, a “market” outcome involves bargaining between one buyer (NGG NTS) and one seller (the single user). The efficiency of the outcome driven by such bilateral monopoly pricing is not assured. National Grid has already suggested that prices for buying back exit capacity in such conditions will be subject to (i.e. determined by) calculated reserved prices.
- 4.12 In any case, any benefit in the form of greater efficiency is captured already in the cost-benefit analysis (as a reduction in investment). To avoid double-counting, it should not be counted again as an additional benefit.

#### 4.1.3. Flexibility proposals

- 4.13 The Authority claims that targeting the costs of flexibility on TCCs and GDNs will better facilitate the efficient operation of the NTS. However, the Authority has not defined the nature of these costs. Statements by National Grid indicate (as discussed above) that flexibility arises as a joint product or by-product of investment in basic capacity, thereby incurring no additional costs.
- 4.14 The Authority refers to the possibility that the flexibility proposals will reduce the need for National Grid to take balancing actions. I believe that the Authority means that putting a constraint on the amount of available flexibility will require customers to moderate the variation in their use of gas, thereby reducing the volume of gas that National Grid must buy and sell to balance the system.
- 4.15 Imposing such a constraint is only useful if it reflects a real shortage. As mentioned above, even the Authority recognises that a shortage of flexibility is only a possibility. However, nothing is free. If the Authority really believes that the imposition of a realistic constraint on flexibility will change the behaviour of *gas consumers*, its assessment of the costs and benefits of the change should have included the costs to those consumers of changing their behaviour (as well as the costs of implementing the new regime). For example, if gas-fired generators run more in night-time hours to smooth their pattern of gas usage, they will suffer a reduction in profits (and the efficiency of the electricity sector will decline). I cannot see any reason for excluding this cost to gas consumers from the cost-benefit analysis, but I do not believe that the Authority has made proper allowance for it.
- 4.16 The discussion on page 11 of the Decision Document about tolerance levels concerns a technical matter, rather than an economic one. However, the Authority overlooks the possibility that a wider tolerance would result in fewer “false positives”, i.e. fewer cases where an artificially low constraint bites even though adequate flexibility is available. Again, such false positives would impose costs on consumers that should be included in the assessment. The Authority also does not discuss the potential for a wider tolerance to reduce implementation costs (because users’ need to monitor and to adjust their use of flexibility is reduced) or to reduce the number of cases where consumers use less flexibility unnecessarily.

- 4.17 The Authority links the proposal to adopt a 1.5% tolerance band to a (previous) decision on the amount of capacity that National Grid should be releasing; however, this decision is only incompatible with a 3% tolerance band if the estimates of available capacity have a very small margin of error. This seems unlikely to me, given the non-transparent process involved.

#### **4.1.4. Overall**

- 4.18 As a result of these omissions, the reasons given in the Decision Document for preferring Mod 116V over two others with a wider tolerance (Mods 116BV and 116VD) lack proper support.

### **4.2. Efficient Coordination of Pipeline Systems**

- 4.19 The Authority's appraisal under Objective (b) depends on the belief that the new arrangements will remove (potential) discrimination and provide market signals for increased efficiency of investment. As explained above, there are strong reasons for doubting the validity of these arguments, which I do not repeat here.
- 4.20 In this context, I note the reference to auctions as a guide to the market value of flexibility for GDN investment choices. Since the exit points serving GDNs do not, in general, serve many other customers, and since (according to National Grid) flexibility at one point has limited substitutability with flexibility at other points, it is unlikely that a competitive auction for a GDN's flexibility exit capacity will be feasible. Prices will then depend on the National Grid's method of setting reserve prices. The Authority's belief in this benefit seems therefore to be a matter of faith, rather than the result of empirical or theoretical analysis.

### **4.3. Efficient Discharge of the Licensee's Obligations**

- 4.21 The Decision Document says the assessment of modification proposals by Objective (c) is effectively covered by the considerations under Objectives (a) and (d) and so the Authority has not considered Objective (c) further. Without touching upon the Authority's legal duties, I find this approach surprising, as I would have expected each Objective to cover different matters. If, as the Decision Document suggests, the Objectives refer to the same matters or matters that overlap, I cannot see how the Authority would structure an appraisal without double-counting some effects and/or omitting some Objectives entirely.
- 4.22 I have always thought that Objective (c) (and the equivalent Objective related to modifications of the Balancing and Settlement Code) provides a reason for assessing the costs of implementing the modification. Since the Objective refers to efficiency, and not the licensee's own costs, I have always assumed that it permits consideration of the implementation costs borne by others. My interpretation may be wrong, but in that case there seems to be no place in the Authority's consideration of the Objectives to take account of implementation costs included in the cost-benefit analysis.
- 4.23 The Authority's own figures show that Mod 116V has net costs that are £36-44 million greater than Mod 116CVV, and the difference lies in the inclusion of flexibility exit capacity. I cannot evaluate the Authority's figures but the estimates in my reports for the Gas Forum also indicated a high implementation cost for introducing flexibility exit capacity (calculated by comparing the results for the different proposals – see Exhibit GS2). Since the Authority

has at times indicated that implementation of new offtake arrangements is an obligation of National Grid, I would have expected the Authority to assess under Objective (c) whether the extra implementation costs of Mod 116V represent an efficient discharge of this obligation.

#### **4.4. Securing Efficient Competition**

- 4.24 Although presented under the heading of Objective (d) relating to competition, this part of the Authority's decision contains no analysis of the competitive process or of the effect of the modifications on competitive outcomes. Instead, it repeats and expands the discussion of discrimination in the allocation of flexibility and in the use of interruptible service. I have already commented extensively on these matters. My main comments are that the reforms may not reduce potential for discriminatory action by National Grid (but will merely replace it with a new potential for discriminatory action) and that non-discrimination does not necessarily mean treating everyone the same. Below, I add a few short comments on specific text in this section of the Decision Document.

##### **4.4.1. Detailed discussions**

- 4.25 The section on "flexibility proposals" promotes the adoption of an "equivalent framework" for "each class of user" and rejects the notion that there are justifiable reasons for different treatment of GDNs and shippers. See my comments in section 2.3 above.
- 4.26 Paragraph 2 on page 13 of the Decision Document begins "Further, based on the capacity booking framework that was established through the GDN sales process, in booking NTS offtake capacity GDNs are acting, in effect, as agents on behalf of shippers (and ultimately end consumers) and are therefore in the same position as shippers acting for TCCs." I do not think that this observation (or any observation relating to a single similarity) supports the conclusion, stated later in the paragraph, that there is no basis for discriminating between GDNs and shippers (by which I believe the Authority means shippers serving TCCs).
- 4.27 I have not seen any technical or economic analysis to support the sections on "release of flexibility information" and "transfer of flexibility capacity" and the relative impact of tolerances. The text consists merely of a set of assertions by the Authority ("The Authority considers.....") I cannot appraise these assertions from an economic point of view.
- 4.28 The section on "interruption arrangements" discusses the appropriate "discount" for interruptible service. My comments on this topic are set out in section 2.2 above. It is not necessarily desirable for future discounts to reflect the probability of interruption (as opposed to the users' willingness to be interrupted). Hence, it is not necessarily an advantage that Mods 116V, 116BV, 116CVV and 116DV provide no discounts to exit points that are unlikely to be interrupted on the 1-in-20 peak day.
- 4.29 In the section on interruption arrangements, the Authority chooses to refer to the obligations placed on NGG NTS under section 9 of the Gas Act to develop and maintain an efficient pipeline system. It is selective to refer to these obligations for central planning in response to a criticism of the proposals, and yet to insist elsewhere that the proposals will bring substantial benefits for efficiency as a result of introducing market signals for planning.
- 4.30 My comments on the treatment of "prevailing rights" are set out in section 3.4 above.

- 4.31 The section on “costs of implementation and ongoing operation” raises the issue of implementation costs associated with the flexibility product and notes that they “could potentially have adverse impacts on entry in the gas sector with detrimental impacts upon competition.”<sup>20</sup> This seems to be the only discussion of competitive impacts, other than the vague and inconsistent references to discrimination. It is also the only point at which the additional implementation costs associated with flexibility exit capacity are mentioned; the Decision Document says that “whilst the costs of implementation are potentially significant, in the Authority’s view they do not justify the continuation of the existing arrangements for flexibility”. I cannot find any analytical or empirical support for this “view”, other than the Authority’s discussions of potential shortages and discrimination in the allocation of flexibility. For the reasons listed elsewhere in this statement, these discussions do not provide a coherent or convincing economic reason for the Authority’s decision.

#### 4.4.2. The Authority’s conclusions

- 4.32 Separately, the Authority relies on its conclusion about flexibility to decide that Mods 116A and 116CVV do not better facilitate the achievement of this Objective. It is not clear to me how the Authority can reach this conclusion. These Mods do not change the flexibility arrangements, but that should not count against them in a comparison with the status quo. The existence or otherwise of discrimination in the allocation of flexibility would also not change and would be irrelevant to the appraisal. In any case, the Authority has not concluded that the existing arrangements are discriminatory and so has no basis for arguing that a change is necessary.
- 4.33 Only a small benefit in terms of competition would be needed to award these modifications a positive score under this Objective. Both Mod 116A and Mod 116CVV remove the “black hole” in offtake arrangements after September 2010, which must provide a more secure basis for shippers to compete in the market after that date. Hence, I cannot see any basis on which the Authority would conclude that these modifications do not better facilitate Objective (d), except by reference to some hypothetical or possibly irrelevant alternative that is not the status quo.
- 4.34 Overall, the Authority’s conclusions and decisions in relation to the Relevant Objectives rely on mistaken analysis or on non-transparent assertions which I cannot appraise.

#### 4.5. Other Statutory Duties

- 4.35 From page 16 onwards, the Decision Document considers other statutory duties. This section merits a few comments from an economic point of view.

##### 4.5.1. Security of supply

- 4.36 The Authority believes that Mod 116V will improve security of supply. This belief is subject to the criticism that the mis-match between exit capacity and real pipeline capacity will continue to make investment decisions – and hence security of supply – reliant on the planning efforts of National Grid.

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<sup>20</sup> Ofgem 80/07, page 15, paragraph 6.

- 4.37 The Authority quotes evidence from *entry* capacity to indicate that long-term commitments have not hindered investment in new sources of supply. Entry capacity is also unrelated to real investments in pipeline capacity within the NTS. However, until now, entry capacity from any terminal to the NBP has had a large number of potential users (i.e. developers of North Sea gas fields and gas importers), so that it has retained some value on resale. The ability to transfer entry capacity to other users will have encouraged users to take on the associated risks – but this ability is lacking for most exit capacity held on behalf of TCCs (see section 3.1.3 above). Thus, the experience with entry capacity is not directly comparable with the proposals for future treatment of exit capacity.
- 4.38 I cannot comment on the discussion of back-up facilities at the top of page 17, as I am not aware of the precise circumstances of these cases. However, the Authority's discussion on the possible behaviour of GDNs seems to be based on an incomplete understanding of the incentives and opportunities that they face.
- 4.39 Paragraph 2 on page 17 of the Decision Document suggests that GDNs might begin to rely more heavily on NTS flexibility, with the result that less flexibility is available for gas-fired generators. This fear is repeated on page 19 of the Decision Document. The Authority does not appear to have analysed this concern properly.
- 4.40 A GDN can decide to provide less flexibility from its own diurnal storage facilities and to rely more heavily on the NTS. However, under both the current arrangements and Mod 116A, this GDN would then have to reserve more NTS exit capacity to serve a higher offtake at peak times. Thus, the GDN would have to pay for more investment in the NTS's capacity to deliver gas.
- 4.41 To the extent that flexibility is provided as a joint product or by-product of investment in exit capacity, the GDN's increase in peak time offtake will generate investment that is also likely to provide more flexibility. (This is my interpretation of National Grid's statement that no investment will be devoted to providing additional flexibility, regardless of market signals.<sup>21</sup>) Hence, the GDN's decision will not take flexibility away from generators and other users.
- 4.42 Hence, under the current arrangements and under Mod 116A, it does not seem likely that GDNs will take flexibility away from generators if they rely more heavily on flexibility in the NTS, since such a decision would require them to pay for more exit capacity.
- 4.43 This finding does not apply under Mod 116CVV, since it would require the GDN to pay only for "flat capacity", i.e. for average "deliverability" over the whole day. This figure would not be affected by a GDN deciding to reduce its own provision of diurnal storage, since its daily average offtake of gas would remain the same.
- 4.44 It appears that the Authority has not noticed this difference between Mods 116A and 116CVV, since it attributes the same problem to both, whereas in fact it applies only under Mod 116CVV.

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<sup>21</sup> Ofgem 80/07, page 10, second full paragraph.

**4.5.2. Other Considerations**

- 4.45 I have no comments on the sections of the Decision Document entitled “Safety”, “Compliance with European Law” and “Implementation Timetable”.
- 4.46 The section on “Better Regulation” repeats arguments made earlier in the document and on which I have already commented. Similarly, the section entitled “Assessment against the Authority’s principal objective” contains no arguments or material on which I have not already commented.
- 4.47 I have no comments on the section entitled “Other Considerations”, except to note that I am unsure why the Authority did not consider the concerns of pipeline users and operators in the Republic of Ireland, the Isle of Man and Northern Ireland under Objective (b), “the coordinated, efficient and economic operation of...the pipeline system of one or more other relevant gas transporters”.

**4.6. Summary**

- 4.48 The Authority’s appraisal of the proposed modifications contains the same unsupported or conflicting claims about efficiency, discrimination and competition as the earlier sections of the Discussion Document. The appraisal relies heavily on the Authority’s belief that market signals derived from sales of flat and flexibility capacity will drive more efficient investment. I have identified several reasons why this belief and the conclusions founded upon it are unjustified.
- 4.49 The Authority’s discussion of risk allocation between different parties is confused and unsupported by evidence. My analysis of exit capacity gives strong reasons to believe that National Grid will remain responsible for planning investment in the NTS, even if consumers in general bear the costs.
- 4.50 The Authority’s determination to introduce new arrangements for allocating flexibility rests on two assumptions: the current system constitutes or permits actual or potential discrimination; and the risk of a future shortage makes decisions about allocation significant. Both these assumptions are subject to so much doubt that any decision based upon them is a leap in the dark. The Authority’s analysis of discrimination is incomplete, contradictory and unsupported by evidence, whilst even the Decision Document claims no more that the current situation of abundant flexibility “may not necessarily be the case in future”.
- 4.51 The Authority’s appraisal of the proposals against the Objectives adopts some approaches that I find surprising. At several points, the conclusions appear to be unrelated to any particular evidence. I have noted cases where I cannot comment on the decision because the reason is no more than a statement of the Authority’s subjective “view”.
- 4.52 The Authority seems to have made an error in analysing Mod 116A and Mod 116CVV as if they had the same implications for GDNs that reduce their own provision of flexibility (i.e. diurnal storage). Whilst GDNs would not bear any extra cost under Mod 116CVV, and so might take inefficient decisions, Mod 116A would require such GDNs to pay more for the current exit capacity product, which would most likely translate into additional investment and provision of additional flexibility. Thus, whilst Mod 116CVV might conceivably

threaten security of supply in the generation sector, as the Authority suggests, the Authority cannot level the same accusation against Mod 116A.

- 4.53 Because of problems with the Authority's analysis of discrimination and efficiency, the Decision Document provides no robust objective reasons for approving Mod 116V in spite of the cost benefit analysis that shows it imposes a net cost.
- 4.54 Because of the lack of evidence of any problem in the allocation of flexibility, and the errors in analysis of GDN behaviour, the Authority's grounds for rejecting Mod 116A are economically unsound.

## 5. Review of E.ON Consultation Response

- 5.1 In this chapter, I comment on E.ON's consultation response to Ofgem's FIA ("E.ON's submission"), by section.

### 5.1. Introduction

- 5.2 I have no comments on this section.

### 5.2. Comments on the Process

- 5.3 I agree with E.ON's view that Ofgem's FIA was not a robust appraisal of the costs and benefits of the modification proposals.<sup>22</sup> I reviewed the FIA in detail in Exhibit GS3. My analysis indicates that Ofgem's FIA overstated the benefits of Mod 116 and understated the costs.

### 5.3. Investment Signals

- 5.4 I agree with E.ON's view that constraints in entry and exit capacity are poor signals of the need for investment on the NTS as a whole and do not reflect the type of capacity investment required (see section 2.1 above).<sup>23</sup>
- 5.5 Because there is a mis-match between the commercial regime for selling capacity (entry-exit) and the real underlying investments (pipelines offering point-to-point capacity over a defined route), National Grid will retain a role as the central planner of the NTS in order to meet its 1-in-20 peak day obligation. As long as the current entry-exit regime remains, National Grid will need to act as the central planner of the NTS. The introduction of "market signals" will not necessarily "increase the efficiency of NTS investments", as Ofgem claims,<sup>24</sup> because the signals do not relate to a real cost or product.
- 5.6 The mis-match between capacity sold to shippers and real NTS investment requirements requires National Grid to obtain information on required NTS investments from other sources. I agree with E.ON that the information National Grid will obtain from financially backed user commitments "will not improve to any real degree on the information which is already available to NGG for its investment planning".<sup>25</sup> The new system may change the information that users submit, but there is no guarantee that the new information is a better indication of efficient investment. National Grid will still have to judge when it is required to invest (as both National Grid and the Authority acknowledge).
- 5.7 E.ON writes that regulatory pressure from Ofgem to justify investment decisions based on "user signals" may motivate NGG NTS to operate an overly cautious or "risk-averse" investment strategy and that such a strategy would have a negative impact on security of gas

<sup>22</sup> E.ON Submission, page 5, paragraph 6.

<sup>23</sup> E.ON Submission, page 6, paragraphs 4-5.

<sup>24</sup> Ofgem 23/07, paragraph 3.11.

<sup>25</sup> E.ON Submission, page 7, paragraph 2.

supply.<sup>26</sup> I agree that this outcome is a possibility. Regulated companies will be less willing to invest (all else equal) if they are uncertain about the criteria the regulator will use to determine whether the company may recover the cost of the investments. The reason for the increased reluctance to invest is the benefit that the company receives by waiting until the regulator clarifies the criteria. Clarifying the criteria allows the company to avoid investments the regulator would eventually disallow and increases expected returns. Hence, the confusion in the Decision Document about the proper roles of market-led and centrally-planned investment could well have a dampening effect on National Grid's willingness to invest, with a knock-on effect on security of supply.

- 5.8 E.ON describes ARCAs as a sufficient financial commitment from users and notes that they provide "an efficient and flexible alignment of the planning timetables of NGG and the user".<sup>27</sup> I cannot say whether ARCAs provide a financial commitment of sufficient time or duration. However, they do provide an avenue for flexible negotiation, which I believe to be useful in an entry-exit regime, given the mis-match between the general commercial arrangements and the real investments in capacity. Negotiated ARCAs provide, in principle, a way to bridge that gap and to increase efficiency.

#### 5.4. Non-Discrimination

- 5.9 E.ON's submission sets out the legal principles regarding discrimination. I have no comment on the legal comments in E.ON's submission, as it falls outside my expertise. However, I have already commented extensively on the economics of "undue discrimination" in this statement and in Exhibit GS2. More specifically, in Exhibit GS2, I commented on:

- Potential discrimination between firm and interruptible users in section 8.1;
- Potential discrimination between IDNs and TCCs in section 8.2; and
- Potential discrimination between IDNs and RDNs in section 8.3.

- 5.10 E.ON's submission notes that the "*general principle of equality and non-discrimination [...] requires that comparable situations must not be treated differently, and different situations must not be treated comparably, 'unless such treatment is objectively justified.'*"<sup>28</sup> I recognise this definition and have used it in economic analysis of discrimination in the past. E.ON notes that GDNs and shippers/suppliers are not competitors, and are not comparable for the purposes of non-discrimination provisions.<sup>29</sup> I have provided some economic reasoning for distinguishing between service to GDNs and service to shippers serving TCCs in section 3.1 above. I agree with E.ON that Ofgem has failed to justify properly its non-discrimination arguments.<sup>30</sup>

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<sup>26</sup> E.ON Submission, page 7, paragraph 4.

<sup>27</sup> E.ON Submission, page 8, paragraph 4.

<sup>28</sup> E.ON Submission, page 11, paragraph 7.

<sup>29</sup> E.ON Submission, page 13, paragraph 4.

<sup>30</sup> E.ON Submission, page 14, paragraph 3.

- 5.11 E.ON has commented on Ofgem's suggestion that NGG may discriminate against Independent Distribution Networks (IDNs – i.e. those networks that NGG sold in 2005) in favour of Retained Distribution Networks (RDNs – i.e. those networks that NGG still owns).<sup>31</sup> E.ON notes that this argument does not concern any potential for discrimination in favour of shippers/TCCs.<sup>32</sup> This argument has some logic to it. Ofgem may have intended to say that NGG might discriminate in favour of RDNs and against IDNs *and* TCCs, but I am not aware of any publication that states this view. Nevertheless, it may not be necessary to reform shipper/TCC access arrangements in order to regulate NGG's relations with IDNs. Moreover, a solution does not necessarily require that NGG apply the same arrangements to RDNs, IDNs, TCCs, shippers, interconnectors and storage facilities. Indeed, there is a strong economic case for allowing storage facilities to retain interruptible status (see section 7.2 of Exhibit GS2) and to adopt different rules for shippers serving TCCs (see section 3.1 above).
- 5.12 With respect to access to NTS flexibility capacity, E.ON writes that the proposed new arrangements are likely to disadvantage TCCs and their shippers in auctions for flexibility capacity.<sup>33</sup> There are economic grounds for this argument. GDNs are regulated businesses subject to a price control and licence obligations to invest for "1-in-20" conditions. They would have a strong motivation to procure enough NTS flexibility capacity to meet these licence obligations. The regulatory regime also offers them a reasonable prospect of cost recovery, which increases their willingness to bid for capacity, relative to competitive firms. (Ofgem has argued that the GDNs' prospects for cost recovery are limited by the regulatory process of scrutinising costs. However, Ofgem will not be able to assess whether GDNs have overpaid for flat or flexibility capacity, if the prices are determined by NGG or in auctions.) TCCs operate in competitive industries when any costs of capacity reduce their profits. Thus, TCCs and their shippers would face a disadvantage when bidding for flexibility capacity against GDNs.
- 5.13 Ofgem argues that once an ARCA (which triggers capacity investment) expires, the sole users of capacity at a particular exit point may have an incentive to switch to interruptible usage, to avoid capacity charges.<sup>34</sup> E.ON notes that there is no evidence of a "flight from firm" to interruptible usage.<sup>35</sup> If this is true, it constitutes important evidence which the Authority should have considered when assessing the costs and benefits of removing long-term interruptible exit capacity.

## 5.5. Reduced Incidence of ARCAs

- 5.14 E.ON's submission states that Ofgem's FIA exaggerates the likelihood of ARCA disputes under the present arrangements. E.ON also notes that the Marchwood and Lantage determinations have set precedents which are "very likely to reduce the likelihood of further contentious disputes."<sup>36</sup> If this is true, the Authority should have taken it into account.

<sup>31</sup> Ofgem 23/07, paragraphs 3.26 – 4.26

<sup>32</sup> E.ON Submission, page 16, paragraph 10.

<sup>33</sup> E.ON Submission, page 16, paragraph 6.

<sup>34</sup> Ofgem 23/07, paragraph 4.30.

<sup>35</sup> E.ON Submission, page 15, paragraph 6.

<sup>36</sup> E.ON Submission, page 17, paragraph 7.

Unfortunately, the presentation of costs and benefits in the Decision Document does not allow scrutiny or adjustment of the individual components that the Authority adopted, so I cannot comment on the likely impact of this point.

- 5.15 I agree with E.ON's suggestion that the complexities of the new arrangements are likely to cause as many disputes as the existing arrangements (see section A.5 of Exhibit GS2).<sup>37</sup> The disputes may arise in centralised regulatory processes (such as price control reviews) rather than in bilateral negotiations (over ARCAs), but that does not mean that the costs involved will be any lower. Indeed, the involvement of all interested parties in the process may actually increase costs.

### 5.6. Quantitative Costs

- 5.16 E.ON's submission criticises Ofgem's FIA for having "massaged down" the costs reported by respondents to its cost survey.<sup>38</sup> I have repeatedly argued that the approach Ofgem uses to eliminate high cost estimates is economically and statistically inappropriate (see section A.7.1 of Exhibit GS2 and section 4.1.1 of Exhibit GS3).
- 5.17 This section of E.ON's submission makes other legal points on which I have no comment.

### 5.7. Overall Quantitative Assessment

- 5.18 Following appraisal of Ofgem's quantitative analysis as set out in its FIA, E.ON's submission contains a form of sensitivity analysis. E.ON notes that inclusion of transporters' costs and Irish costs in the net benefit calculation makes the overall net benefit negative for all the Modification Proposals except Mod 116A, even using the FIA's own figures.<sup>39</sup> Although I cannot comment on the Authority's legal obligation to consider the costs to Irish and Northern Irish energy market participants, I have stated that I see no reason why the Authority should exclude the costs of transporters – or, even just some of their costs – from any cost-benefit analysis (see section 3.2 above).
- 5.19 Aside from the sensitivity analysis in the E.ON submission, the cost-benefit analysis in Exhibit GS2 indicates that the net benefits of Mod 116V become negative after inclusion of transporters' costs and a small reduction in the benefits attributed to increased investment efficiency.<sup>40</sup> I therefore agree with E.ON in as much as the cost-benefit analysis in the FIA is extremely sensitive to arbitrary assumptions made by Ofgem. However, the Decision Document does not provide a breakdown of the Authority's assumptions, so I cannot tell whether the results presented in that document are equally sensitive to arbitrary assumptions about costs and benefits.

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<sup>37</sup> E.ON Submission, page 17, paragraph 6.

<sup>38</sup> E.ON Submission, page 18, paragraph 4.

<sup>39</sup> E.ON Submission, page 19, paragraph 2.

<sup>40</sup> Exhibit GS2, section A.8.

## 5.8. Qualitative Assessment

- 5.20 I agree with E.ON's view that there are positive benefits to introducing Mod 116A due to the removal of regulatory risk and uncertainty to market participants.<sup>41</sup> I took this approach in the cost-benefit analysis I undertook in Exhibit GS2. However, in this cost-benefit analysis, I attributed the same "imputed benefit from removing regulatory uncertainty" equally to all modification proposals, as any permanent decision removes such uncertainty.<sup>42</sup>

## 5.9. Network Development and System Operation

- 5.21 I have no comments on this section.

## 5.10. Competition

- 5.22 E.ON believes that the competition analysis conducted in the FIA is "wholly inadequate."<sup>43</sup> E.ON has suggested that the appraisal should have followed the OFT guidance. I agree that the FIA did not include any substantive analysis of how the modifications would affect particular markets, the competitive behaviour of players within those markets or the implications for competition, efficiency or consumer welfare. Instead, the FIA and, indeed, the Decision Document rely on vague and inadequate assertions about the potential for discrimination and its effect of competition in abstract terms. Given the lack of formal competition analysis, Ofgem's view that Mod 116V would improve competition<sup>44</sup> is little more than an article of faith.
- 5.23 I agree with E.ON's view that the advanced user commitments proposed under the new arrangements will act as a barrier to entry in the shipping and supply markets and may hinder switching between shippers/suppliers.<sup>45</sup> Shippers that are independent of the TCCs they served would not wish to take on long-term commitments on behalf of TCCs, without some means of arranging a transfer when the customer chose a new shipper. (Ofgem's discussion of the proposed modifications never raised this point.) However, the costs and complexity of making this arrangement are likely to favour TCCs who are vertically integrated with their shipper (such as integrated electricity and gas companies that ship gas to their own power stations). This bias against independent shippers derives solely from the transactions costs imposed by the modification.

## 5.11. Allocation of Risk

- 5.24 E.ON observes that "*only NGG can in reality assess the physical consequences for the system as a whole of off-take at particular exit points, and only NGG can plan the necessary investment.*"<sup>46</sup> There seem to be many statements by NGG supporting this observation and it

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<sup>41</sup> E.ON Submission, page 20, paragraph 8.

<sup>42</sup> Exhibit GS2, section 9.3.1.

<sup>43</sup> E.ON Submission, page 22, paragraph 2.

<sup>44</sup> Ofgem 23/07, paragraph 4.9.

<sup>45</sup> E.ON Submission, page 24, paragraphs 2-3.

<sup>46</sup> E.ON Submission, page 25, paragraph 3.

is also a consequence of my own analysis of the mis-match between exit capacity and real pipeline capacity. I believe that NGG NTS is best placed to manage risks associated with NTS investment (see section 4.1.1 above).

### 5.12. Simplicity and Transparency

- 5.25 E.ON says that *“the new auction arrangements for flexibility capacity will introduce artificial restrictions on the amount of NTS flexibility that can be made available, will create false scarcity, and will ultimately result in TCCs being outbid by DNs.”*<sup>47</sup> I have described my views on this point at length in section 6.3 of Exhibit GS2. I have also noted in section 8.2.1 of Exhibit GS2 that the opaque method used to allocate flexibility and to determine the level of available flexibility capacity leaves National Grid immense scope for use of its discretion.

### 5.13. Security of Supply

- 5.26 I have discussed my views on the issues E.ON raises in this section of its submission in sections 4.5.1 and 5.3 above.

### 5.14. Electricity Sector

- 5.27 E.ON’s submission notes that Ofgem’s FIA does not consider the effect on the electricity sector. The submission suggests that the effect on this sector is to reduce security of electricity supply and competition in the electricity market.<sup>48</sup> I agree that the proposals are likely to reduce competition between shippers and to discourage investment in gas-fired power stations, which will reduce security of supply. This is because users (such as a CCGT power station) might be prepared to connect under the current arrangements, but be less willing to make long-term commitments to pay for exit capacity that has a limited range of possible users (see section 3.1.3 above).

### 5.15. Examples of Adverse Effects

- 5.28 The final section of E.ON’s submission notes that the modification will have negative implications for TCC power stations, storage facilities, new investments in power stations and new investments in storage facilities. I believe that this is likely to be the case and discuss the reasons for this conclusion in Exhibit GS2. (In particular, see sections 7.1 and 7.2 of Exhibit GS2.)

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<sup>47</sup> E.ON Submission, page 26, paragraph 4.

<sup>48</sup> E.ON Submission, page 27, paragraph 7.

## 6. Conclusions

- 6.1 In the light of my comments above, I have reached the following conclusions.
- 6.2 The entry-exit capacity regime does not provide a good or accurate representation of the real pipeline capacity underlying it. As a result, signals derived from demand for exit capacity do not provide a sound basis for investment planning. For as long as the entry-exit system persists, National Grid will retain a role in deciding what investment is required. The Authority is therefore mistaken in *assuming* that markets in new exit products will provide better investment signals or encourage more efficient investment.
- 6.3 To achieve an efficient outcome, charges for interruptible capacity should be related to the costs of service, which depend upon the willingness of the user to be interrupted. The Authority has no economic grounds for criticising the current charges for interruptible service just because they are not related to the probability of interruption.
- 6.4 The Authority adopts a confusing and inconsistent approach to the presence of discrimination, stating at one point that it has not concluded that the existing arrangements constitute unlawful discrimination, but insisting at other points that action is needed to remove discrimination.
- 6.5 In its appraisal of the proposed modifications, the Authority adopted a naïve view that imposing on all users the same arrangements for booking and paying for exit capacity would eliminate discrimination. In doing so, the Authority failed to consider the potential for discrimination under the new offtake arrangements. Such potential exists particularly in areas where National Grid's actions are non-transparent, such as in the definition and allocation of flexibility capacity by area and zone, and in the allocation and pricing of capacity buy-back.
- 6.6 The Authority's own assessment of the quantified costs and benefits awarded a large net cost to Mod 116V, but a net benefit to Mod 116CVV. The Authority eventually approved Mod 116V, after assigning large and non-quantified benefits to Mod 116 on the grounds that it would enhance competition and eliminate discrimination. However, the Authority did not provide any evidence to back up these claims, only vague statements that relied upon the mistaken views of investment signals and the potential for discrimination under the new arrangements.
- 6.7 The Authority's quantified cost-benefit analysis includes the ongoing costs of transporters (i.e. of GDNs) but omits their upfront costs. The Authority provides no justification for this selective approach to cost-benefit analysis. A sensitivity analysis involving the removal of some shippers' costs is also so selective as to be virtually useless.
- 6.8 The Authority provides no breakdown or justification for the net costs and benefits quoted in the Decision Document, so it is not possible for outsiders to scrutinise the figures, to see what costs and benefits the Authority included, or to understand the basis of the Authority's decisions.
- 6.9 The Authority's method of appraisal by reference to Relevant Objectives appears to include some methodological errors. In particular, the appraisal of Mod 116A assigns it no benefit

for efficiency, whereas the removal of the “black hole” after September 2010 ought to have had some beneficial effect, *relative to the status quo*. I conclude that the Authority must have appraised Mod 116A relative to some basis other than the status quo. However, since the Authority does not state that basis, it is impossible to check whether the Modifications have been appraised on the same basis.

- 6.10 The Decision Document presents a confused discussion of risk allocation. It refers to the allocation between “industry participants and customers”, when several “industry participants” are also “customers”. This confusion makes it impossible to understand the Authority’s arguments. In any case, the Authority overlooked many arguments implying that NGG NTS will inevitable have to manage the risk associated with planning real pipeline investments under an entry-exit regime (even if consumers in general end up paying the associated costs).
- 6.11 The Authority’s appraisal of the proposed modifications repeats the vague assumptions about the potential for each modification to increase efficiency, enhance competition and eliminate discrimination, and contains a number of methodological errors. The decisions to approve Mod 116V and to reject Mod 116A are both based on unsound economic analysis.

## **7. Witness Statement**

- 7.1 I understand that my duty is to assist the Commission by way of my objective opinion in relation to matters within my expertise. I understand that this duty overrides any obligation to the party by whom I am engaged or who has paid or is liable to pay me. I have complied and will continue to comply with this duty. I confirm that my fees are not dependent on the outcome of this appeal.
- 7.2 I have considered all material relevant to my expertise. I have clearly stated the limits of my expertise. Where I have been provided with insufficient material to form a proper conclusion or view on any point, I have indicated that this is the case, and I have indicated what further material I would need to see in order to form a conclusion or view. Where I have been unable to give my opinion without qualification, I have stated the qualification.
- 7.3 I confirm that insofar as the facts stated in this report are within my own knowledge, I have made clear which they are and I believe them to be true. I also confirm that the opinions I have expressed represent my true and complete professional opinion.



G. Shuttleworth

NERA Economic Consulting

**Appendix A. Instructions**

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24 April 2007

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Director of Regulation

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Dear Graham

**Modification Proposal 0116V**

As you may be aware, E.ON UK is minded to bring an appeal to the Competition Commission under section 173 of the Energy Act 2004 in respect of:

1. the rejection by the governing Authority of Ofgem of Modification Proposal 0116A; and
2. the Authority's approval of Modification Proposal 0116V.

Parties to such an appeal may rely on expert evidence put before the Commission and I would like to like to instruct you to give such evidence, for E.ON UK plc.

I am aware that you are familiar with these modification proposals and that you have done some previous work on them for the Gas Forum, of which E.ON UK is a member. In the context of the proposed appeal, I envisage the scope of your role to be to comment, as an economic expert, on:

- (i) the Decision Document Issued by Ofgem on 5 April 2007;
- (ii) the Final Impact Assessment published by Ofgem on 7 February 2007;
- (iii) E.ON UK's response of 8 March 2007 to the Final Impact Assessment; and
- (iv) any other aspect of the proposals, or the Consultation Documents issued on them, that you feel may be of assistance to the Commission.

E.ON UK plc Registered office: Westwood Way, Westwood Business Park, Coventry. CV4 8LG  
Registered in England and Wales. No 2366970

**Expert Witness Statement Submitted to  
the Competition Commission**

**G. Shuttleworth  
27 April 2007**

I appreciate that you have already made some commentary through the reports prepared for the Gas Forum referred to above and am happy that you should refer to those in your evidence.

May I remind you that, should you accept these instructions, your obligation is to the Competition Commission to ensure that you provide assistance to it by way of your objective opinion in relation to matters within your expertise and not to E.ON UK plc. You may find it helpful to refer to the Competition Commission Guide to Appeals in Energy Code Modification cases (CC11) in this context - this is available on the Competition Commission website.

Please contact me if you have any questions arising out of these instructions.

Yours sincerely



**Sara Vaughan**

# NERA

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