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**AN APPEAL UNDER SECTION 173 ENERGY ACT 2004**

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**E.ON UK PLC**

**- AND -**

**GEMA**

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**WITNESS STATEMENT OF GEORGE YARROW**

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I, George Keith Yarrow of 31-33 Westgate, Oxford OX1 1NZ, will say as follows:

1. I am a Non-Executive Director of the Gas and Electricity Markets Authority ("the Authority"). In that capacity, I participated in the decision to approve modification proposal 0116V. The background and the decision are described in the witness statement of David Gray. I have read the witness statement of David Gray and confirm that the material concerning the Authority's process and decision is true to the best of my knowledge, information and belief. I do not repeat that material here.
2. I have, however, been asked to comment on the issues raised in this appeal from the perspective of my expertise in energy economics and in the conduct of impact assessment. I set out here my opinion on what I consider to be the key issues in this case. I do not believe that it is necessary or helpful for me to respond to every point raised in E.ON's statement of case and the witness statement of Graham Shuttleworth and I have not done so. I should, however, make clear that this does not imply an acceptance of any point not dealt with.

3. The key economic issues on which I focus are:
  - A. the entry/exit capacity regime and user commitment (paragraphs 10 – 26);
  - B. quantitative and qualitative aspects of impact assessment (paragraphs 27 – 38);
  - C. the principle of non-discriminatory access to infrastructure (paragraphs 39 – 46);
  - D. competition assessments in a regulatory context (paragraphs 47 – 55); and
  - E. the economics of interruption (paragraphs 56 – 65).
4. I confirm that insofar as the facts stated within the witness statement are within my own knowledge I have made clear which they are and they are true to the best of my knowledge, information and belief.
5. The documents referred to in this witness statement are contained in the exhibit marked GY1. Where in this statement I refer to page numbers, they are references to pages within that exhibit, unless specifically stated otherwise.
6. I adopt the defined terms used in the witness statement of David Gray.
7. I am currently Director of the Regulatory Policy Institute, Oxford (an independent, charitable organisation dedicated to the study of all aspects of regulation and deregulation), an Emeritus Fellow of Hertford College Oxford, and a Visiting Professor at Newcastle University. In the course of my academic career I have been associated with the universities of Warwick, Newcastle, Oxford, London, Harvard and California (San Diego). My principal academic work has been in the areas of privatisation, regulation and competition, but I have also written papers in monetary, financial, health and environmental economics, and monographs on reform of social security and the welfare state.
8. Throughout my career, I have advised public sector bodies and the private sector on a range of economic and regulatory issues. For example, I am currently an advisor to the Civil Aviation Authority and a member of the National Audit Office's advisory panel on regulatory impact assessment. At the time of the first electricity privatisations, I was an advisor to NGG on the development of the charging structures for use of the high voltage transmission system in England and Wales.

9. I have been an external adviser to Ofgem for a number of years in relation to, among other things, the development of transmission charging principles, capacity auction arrangements in gas, deregulation of gas storage, retail price deregulation in electricity and gas, and various aspects of price controls. I have also been a member of the Ofgem Executive. I am currently a Non-Executive Director of the Authority and considered the economic and regulatory issues relating to the proposed modifications to offtake arrangements in that context.

#### **A. The entry/exit regime and investment signals**

10. In his expert witness statement, Graham Shuttleworth states that *“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”* (paragraph 2.2). This leads to an immediate puzzle: if the (entry-exit) charging regime were subject to such obvious economic weaknesses, it would be odd that this type of system *“is becoming more widespread on gas transmission networks in Europe”* (Shuttleworth, paragraph 2.6), has been imitated beyond Europe, and is also used as the preferred method of charging for access to high-voltage electricity transmission capacity. I do not understand Mr Shuttleworth’s arguments on the relevant points, which appear to me to be divorced from the relevant factual context; as exhibited, for example, by the reference to *“unreal or imaginary”* products at paragraph 2.15 (there is nothing unreal or imaginary about offtake rights at defined locations). I can, however, explain the rationale for the entry-exit approach, which in the UK was first used in context of electricity transmission charging, at the time of the initial privatisations.
11. Entry/exit pricing systems levy charges at the points at which a commodity enters the relevant transportation system and the points at which the commodity leaves that transportation system. The charges can be set to reflect any physical reality within the transportation system. In technical terms, the price structure provides sufficient degrees of freedom to reflect any transportation cost structure for movement of the commodity from and to any pair of the defined locations.
12. This can be seen by noting first that the existence of transport costs implies differences in the economic values of the commodity at different locations. This

(difference in economic value) is so whether or not there exist commodity markets at the various, relevant locations. For example, a planning model that seeks to minimise the total costs of transporting a set of locationally differentiated supplies to meet a set of locationally differentiated demands will generate, as an integral part of the mathematics of optimisation (cost minimisation), a set of 'dual prices' or 'shadow prices'. These 'prices' indicate the marginal cost of accommodating additional loads, each defined by a point of origin and a point of destination, on the system. To each relevant location (entry or exit point) is attached one 'shadow price', although there is one degree of freedom to fix one of these values (i.e. one of the values can be set arbitrarily).

13. The one degree of freedom is associated with the fact that the existence of transport costs determines price/value *relativities*: for example, gas might be more expensive at location A than at location B because of the costs of moving it from B to A. Given two locations, A and B, there are two shadow prices from any optimisation exercise, one at A and one at B; but the transport costs are relevant only to determining the *difference* in gas values between A and B. However, if the price of gas is fixed at one location, then transport costs can be used to determine its value at all other locations.
14. In implementations of entry/exit charging, one way of utilising this available degree of freedom is to deem one of the relevant physical locations (the various entry and exit points) to be the anchor for the pricing system by setting the relevant entry or exit charge at that location to be zero. For example, in relation to the NTS, the entry charge at, say, the Bacton terminal could be set to zero.
15. In such an arrangement, Bacton might become a trading hub, in which case the outcome would be a situation in which gas trading determined a market price of gas at the 'physical' hub and entry-exit charges gave rise to spatial variations in the value of gas, measured relative to the hub price.
16. A second possible entry-exit implementation option is to use the available degree of freedom in pricing to serve some other commercial/economic purpose. This is the approach adopted by NGG for the NTS in that it sets the charges to achieve a desired balance between entry charge and exit charge revenues. In this case,

there is no fixed physical location that definitionally carries a zero (entry/exit) charge.

17. Under the second approach, it is possible to create a useful fiction, in the form of the notion of a 'national balancing point' ("NBP"). Entry charges can be interpreted as charges for the transport of gas to this imaginary location, and exit charges can be interpreted as charges for the transport of gas from the imaginary location. According to this fiction, it is 'as if' all gas passes through the imaginary location; 'as if' it were the equivalent of a physical hub through which all gas has to pass.
18. This NBP metaphor has substantial power, since traders have long been familiar with buying and selling commodities by reference to physical hubs/markets, and since, according to the fiction, all gas goes through the NBP, there are perceived beneficial effects for market liquidity.<sup>1</sup> I have heard the UK implementation of entry/exit charging hailed by a trader as a work of genius, because the NBP fiction removes from traders any concerns about being able to deliver the commodity at a designated physical location if the need arose, and because it thereby promotes (gas) market liquidity. In truth, in the context of public policies committed to market liberalisation, the NBP fiction has simply been a very useful side-product of charging arrangements that flow from much more basic economic considerations.
19. Judging by the remarks that he has made concerning entry/exit charging, it appears to me that Graham Shuttleworth has confused the fictional interpretation of the arrangements, popular with traders, with the underlying, fundamental rationale for the charging structure, as developed by engineers and economists, first (in the UK) for electricity transmission charging and later for the gas NTS. That, at least, is what I infer from paragraphs 2.6 to 2.8 of his statement, although I recognise that, given the gaps in reasoning, the matter is not entirely clear.
20. As indicated above and in footnote 1, in terms of charging for transportation of gas, equivalent results could be obtained by setting the entry charge to zero at, for

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<sup>1</sup> Setting aside the fiction, what is really being traded is 'entry-paid' gas: for commodity traders, the entry-exit system automatically sorts out the division of the burden of transport costs between buyers and sellers, and it is this that is the liquidity-promoting mechanism. Thus, it would be feasible to implement entry-exit arrangements based on a physical reference point (e.g. Bacton), whilst maintaining the

example, Bacton. If that were done, it would then be obvious that, in so proceeding, it would not be being assumed that all gas flows go to and from Bacton.

21. Insofar as the claim is that Ofgem/the Authority do not understand these things, this is clearly incorrect. Whilst many welcome the happy fiction of the NBP, I have yet to meet anyone associated with Ofgem/the Authority who does not well understand how the gas actually gets delivered. And, to repeat, the entry/exit charging approach flows directly from the physical and economic realities of the NTS: it is implicit in the fundamental duality between prices and quantities which underlies much of economic analysis.
22. Given that the entry/exit approach can be used to reflect the physical dynamics of the NTS, I simply do not see how it could possibly be any sort of barrier to the effective use of demand side information for investment purposes. To the contrary, cost-reflective entry/exit pricing can be expected to facilitate investment planning.
23. In making its investment decisions, NGG NTS will seek to assess the evolution of demand for use of the NTS. This will require the assessment of information on the changing pattern of gas supply and demand. Locational information, as well as information on prices and quantities, can be expected to be of major importance. The NTS is, after all, a *transportation* system, shifting gas from some locations to others. Users of the NTS want gas to be transported among these locations: they do not have demands for particular pipeline configurations. NGG NTS, in contrast, has a strong interest in what the pipeline system looks like, but in developing the system in an efficient way, it will need information on what customers want and would be willing to pay for in terms of volumes and locations.
24. As in relation to entry/exit charging, I found Graham Shuttleworth's comments (at paragraphs 2.15 – 2.18) on the translation of demand-side information into investment decisions to be confused and confusing. Information about precisely where demand for use of the NTS might reasonably be expected to turn up is highly relevant input data for investment planning. How that information is

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beneficial effects on liquidity, by defining the product to be traded as entry-paid gas, rather than 'gas at the Bacton hub'.

interpreted, and how it influences capital expenditure programmes, is a matter for NGG NTS, subject to some regulatory oversight (e.g. to protect network users and energy consumers from the consequences of major inefficiencies which, under the terms of the privatisation settlements, fall rather to investors). There are no rigid, prescriptive rules as to how this translation of demand-side information into investment decisions should be done. There is no 'either-or' choice between different sets of information to be used in making investment decisions, and it is difficult to see how incremental information about what it is that network users want could be expected to have other than positive value to NGG NTS in developing its investment plans and to Ofgem in exercising its supervisory powers.

25. What user commitment does is to provide network users with stronger incentives to reveal their true access requirements to NGG NTS, and hence to provide NGG NTS with better information about demand going forward. Better information should translate into better investment planning, including via the indirect effects associated with regulatory supervision of NGG NTS's capex. Thus, additional information will also be available to Ofgem, which should facilitate assessments of whether capital expenditure has or has not been efficiently incurred.
26. The relevant exercises – whether associated with NGG NTS investment appraisals or with Ofgem capital expenditure assessments – are not mechanistic but, particularly in a period in which capital expenditures on energy networks are increasing rapidly as a result of shifting locational patterns in supply, the value of additional information could potentially be very large.

## **B. Quantitative and qualitative aspects of impact assessment**

27. E.ON's Statement of Case alleges that the Authority has given insufficient weight to the negative quantitative cost benefit analysis in its decision and/or excessive weight to the qualitative benefits of non-discrimination and competition (SOC, paragraph 29.) Graham Shuttleworth expresses the same view at paragraph 2.36 of his witness statement.
28. In order to evaluate these claims it is necessary to consider the role of impact assessments in Authority decision-making.

29. As described by the Better Regulation Executive ("BRE"):

*"Impact Assessment is both:*

*a continuous process to help the policy-maker fully think through and understand the consequences of possible and actual Government interventions in the public, private and third sectors; and*

*a tool to enable the Government to weigh and present the relevant evidence on the positive and negative effects of such interventions, including by reviewing the impact of policies after they have been implemented."*

[GY1/1/1].

30. Earlier statements of the purposes of impact assessment, including the seminal EU Mandelkern Report, speak of impact assessment as serving to inform the final decision, and I believe that is a good formulation of its contribution. Thus Mandelkern says of regulatory impact assessment that *"it provides in a structured manner some of the factual information essential to a good policy development process and a well-informed final decision"* (page 19 [GY1/2/34]).

31. An important component of impact assessment is consultation. Thus all responses to Ofgem consultation are properly regarded as part of the impact assessment process, including, for example, documents such as the NERA Report for the Gas Forum of 6 December 2006. All this material, together with the modification panel report and the FIA Consultation Document [PB1/6/64] which was produced by Ofgem staff, was available to the Authority, and collectively they comprise what is properly meant by the impact assessment.

32. In relation to the conduct of impact assessment, it is well recognised that it is generally not feasible to quantify (or, as the current version of BRE guidance puts it, to 'monetise') all impacts, at least in any very helpful way. I add this last point because, from experience, there can be a tendency to forget that the purpose of impact assessment is to inform and facilitate decision making, not to promulgate the use of particular economic techniques.

33. Quantification sometimes requires judgments about the *value* of certain potential effects of a particular course of action; and, if value judgments that have been



made are 'hidden in the numbers', that can be an impediment to better decision making, not least because another commonly observed bias in economic decision making is to attribute to numbers a rather greater information content than they merit. Thus, in order to interpret a particular number it is necessary to know something of the process by which that number was generated, of its personal biography so to speak; and such information will itself tend to be non-quantitative. This is particularly important when there is no market price or no immediate proxy for a market price that can be used to value some of the possible effects/impacts. In the Hitchhiker's Guide to the Galaxy, the mice know that the answer to Life, the Universe and Everything is 42; but the information content of the answer is not particularly high.

34. Impact assessment is, then, or at least should be, all about the discovery, analysis, interpretation and presentation of relevant information to decision makers. Quantification has a significant role to play in this, particularly where the interpretation of the numbers presented is straightforward and the numbers themselves are relatively reliable (which does not mean that estimates have to be near exact: there will typically be uncertainties surrounding estimates but, provided that the uncertainties themselves can be assessed, estimates themselves can be informative).
35. One of the particular dangers of over-stressing quantification is that effects that cannot easily be quantified will simply be ignored. A good impact assessment, whilst seeking to quantify where feasible, should also provide a counter-balance against such measurement bias, not magnify it, by seeking to ensure that relevant effects are not discounted. This is in line with guidance in the Treasury Green Book, which states at paragraph 5.76 that: *"Costs and benefits that have not been valued should also be appraised; they should not be ignored simply because they cannot easily be valued. All costs and benefits must therefore be clearly described in an appraisal, and should be quantified where this is possible and meaningful"* [GY1/3/136].
36. Since the reporting of any impact assessment process will be a mixture of both quantitative and qualitative material – at a minimum, the processes used to generate any reported set of numbers will need to be understood – no special

significance can usually be attached to the balance of monetised impacts, at least taken in isolation from the wider context in which the numbers are produced. What matters to decision makers is the overall balance of the pros and cons, and the contribution of (feasibly) monetised impacts to the overall balance of advantage will vary from case to case. In some cases extensive quantification may be feasible and appropriate, in other cases very little quantification may be feasible.

37. In the process of energy market liberalisation, which in the UK has encompassed issues of vertical separation such as those raised by the GDN sales, it has frequently proved impossible to quantify very many of the longer term benefits of policy reforms. The creation of new markets, new products, new trading arrangements, and so on has been a process of discovery, which has produced many surprises. Things that were deemed impossible *ex ante* have sometimes turned out to be reasonably straightforward to implement (e.g. in electricity, a market in reactive power), and factors that have turned out to be central to market functioning were sometimes hardly considered in the development of those markets (e.g. dual-fuel supply in retail markets).

38. When dealing with the creation of new markets and with the promotion or protection of competition, therefore, UK and EU policy has tended to adopt principles-based approaches. It is recognised, for example, that in assessing competition, whilst there are certain impacts of changes in market conditions that can be quantified in the given state of knowledge, there will be other potential impacts that cannot. Precisely because competition can be expected to affect later information conditions in unknown ways, and because experience teaches that competitive markets tend to be highly effective in the discovery of new information and in innovation based on such discovery, it will tend to have value (and potentially very substantial value) beyond any quantitative valuations that can reasonably be made on the basis of today's information. Thus, whilst it is reasonable to seek to quantify what is reasonably and proportionately quantifiable, that should not lead to the neglect of the wider, non-quantifiable benefits of competition.

### C. Non-discriminatory access to infrastructure

39. In the current context, one of the principles of great importance for UK and EU policy is that of non-discriminatory access to monopolistic infrastructure, such as the NTS. Across a range of different contexts, the big debates nowadays tend to be about *how* this should be achieved – for example, whether or not it requires vertical separation by ownership of the relevant infrastructure – rather than whether or not it is a good principle to rely on.
40. In economics literature, in determining whether there is discrimination, it is differences in the services provided, their prices, and their costs of supply (which may include costs of risk) that stand to be evaluated, not differences in characteristics of the customer which have no bearing on those factors. For example, a classic definition of price discrimination is that it involves two or more similar goods being sold at prices that are in different ratios to marginal costs (George Stigler, *Theory of Price*, New York: Macmillan, 1987).
41. Implementation of the principle of non-discriminatory access is, however, subject to tests of proportionality. Given that the replacement of central planning by markets and trading (and by decentralisation in general) tends to increase transaction costs (“freer markets, more rules”), access reforms will frequently lead to the emergence of new categories of cost. In general, these transaction costs are more readily monetised than the benefits of markets, and any over-emphasis on those things that can most readily be measured – which, as already noted, is itself a bias often associated with bureaucratic planning – could easily lead to an anti-market bias.
42. It is critical for energy policy, therefore, that the right balance be struck.
43. In response to this situation – higher transaction costs of markets relative to more centralised resource allocation processes; the known, *general* beneficial effects of markets for performance in innovation, coupled with the extreme difficulty of anticipating what particular innovations might look like – Ofgem has, historically

and in line with other UK authorities, placed significant weight on a number of key principles when making significant decisions. Some of these principles are, in effect, specified in statutory duties, others are implied by the criteria against which the Authority is required to assess modification proposals, yet others have been developed as matters of policy.

44. To be clear, none of this is to suggest that quantifiable costs and benefits are to be ignored. Proportionality, which is one of the principles of good regulation, requires, for example, that a principle such as non-discriminatory access to monopolistic infrastructure should not necessarily be pursued in circumstances where the costs of so doing would be exorbitant. Thus, if it were judged that the transaction costs of better promoting the relevant objectives were disproportionately high, then it would be right not to proceed.
45. This is the balancing judgment that the Authority has made, informed by a range of available evidence from the impact assessment process, which includes, but is not confined to, the impact assessment document produced by Ofgem. That available evidence included responses to the Ofgem impact assessment consultation from E.ON, Graham Shuttleworth, and many others.
46. I believe, therefore, that E.ON is right in one respect on the relevant points: the Authority has given a relatively high weight in its decision to the principle of non-discriminatory access to NTS services. More specifically, it has given high weight to the principle that similar services, provision of which imposes similar costs on the NTS, should be supplied on similar terms to different users of those services. In my view, that weight reflects the effectiveness of the principle in promoting a level playing field in downstream markets for users of network infrastructure, as revealed in other energy policy contexts over the years. An early example of such effectiveness was the deregulation of the Rough and Hornsea gas storage facilities in the late 1990s, when price control was replaced with a commitment by British Gas Storage to make all capacity at the facilities available for purchase on non-discriminatory terms. As well as facilitating competition in retail gas supply, the reforms gave rise to a subsequent, marked improvement in storage capacity utilisation; and, whilst these general, directional effects were anticipated by Ofgas when promoting the deregulation, the much more flexible way in which the Rough

facility came to be utilised and to be operated was not. New possibilities were discovered.

#### **D. Competition assessment**

47. One particular criticism made of the Authority's analysis is that it should have undertaken a more detailed competition assessment, including a market definition analysis (see paragraph 90 of the Statement of Case and paragraph 5.22 of Graham Shuttleworth's witness statement). Graham Shuttleworth also suggests that the Authority may have double counted benefits of competition (for example, at paragraph 3.29).
48. The OFT first published guidelines on the use of competition assessments in Regulatory Impact Assessments in February 2002 ("the February 2002 guidelines") (see [GY1/4]). Revised draft guidelines were published for consultation purposes in February of this year ("the revised draft guidelines") (see [GY1/5]) and the outcome of the consultation can be expected later in the year. The stated rationale for revision is a desire to shift the emphasis in assessment away from formalistic evaluation of market structures and market shares and towards evaluation of the likely effects on competition (see the introduction to the consultation [GY1/5/283]).
49. Regulatory impact assessment guidance indicates that recourse should be had to a 'competition filter', which amounts to asking a number of questions designed to indicate whether it is likely that the measures in contemplation might be expected to have significantly adverse effects for competition. It is only when this filter indicates that there might be significant competition issues that more detailed assessment is warranted (see pages 15 to 21 of February 2002 guidelines [GY1/4/236–242] and pages 6 to 8 of the revised draft guidelines [GY1/5/290-292]). It is in the latter circumstances that it might sometimes be appropriate to undertake a market definition exercise of a type that is typically conducted in the enforcement of competition law.
50. Impact assessment is conducted, across government, in a very wide range of different economic contexts, and this is reflected in the way the OFT guidelines

have been developed. A principal aim is, quite sensibly, to seek to raise challenges to regulations that might have significant but avoidable, adverse effects on competition, but the extent of analysis expected is limited, the competition test being but one of the many components of an impact assessment.

51. In practice, and in line with statutory duties, it is my experience, both from familiarity with Ofgem/Authority impact assessments and with the National Audit Office's annual reports on Regulatory Impact Assessments across government, that Ofgem/Authority impact assessments typically pay far greater attention to the consideration of impacts on competition than do the great majority of such exercises. In the current context, the substantive information that the standardised filter test is intended to elicit was assessed during the course of the impact assessment – the guidance questions, except where immaterial, can be answered from the information provided to the Authority – with greatest attention devoted to those of the issues that were of most relevance. These included the potential effects of higher transactions costs on competition and possible differential impacts on incumbents and on new entrants.

52. Turning to much wider issues than are encompassed by the formal guidance, I believe it is reasonable to conclude that *ex ante* implementation of the principle of non-discriminatory access to monopolistic infrastructure has tended to have pro-competitive effects in UK energy markets, and its more active enforcement at EU level can be expected to have similar effects across European markets. It was key, for example, in promoting the rapid, post-privatisation development of competition in electricity generation; and potential pro-competitive effects are one, but not the only, reason for the widespread adoption of the principle (equity or fairness considerations are another obvious motivating factor). In the current case, for example, discrimination by which the same offtake rights have been supplied on different terms to different users of the NTS could potentially give rise to distortions in downstream markets. To give just one example of a problematic effect (of such discrimination), a power plant taking gas from a distribution network would, other things equal, trigger different payments for NTS capacity than would an identical plant that was directly connected to the NTS and was imposing identical costs on the NTS.

53. Other policy approaches are, of course, possible, including an approach in which access issues are addressed, on a case-by-case basis, as and when they arise, on an *ex post* basis. This alternative, however, is prone to higher dispute resolution costs and, of more relevance here, tends to give rise to uncertainty about, and delay in establishing, terms and conditions of access, which can have a chilling effect on investment and competition in markets downstream of access provision. Most important of all, in terms of evidence it does seem fairly clear that *ex ante* requirements that access be non-discriminatory have been the more successful in promoting competition in energy markets, and that this has been persuasive in influencing the direction of EU policy on access issues.
54. As to the suggestion that benefits of competition have been double counted, the position is the same as for all other components of the exercise of evaluating impacts, which is to quantify where possible but to recognise that there can also be effects that it is not feasible to quantify but which, consistent with impact assessment guidance, should not be ignored simply because they are difficult to value. The evaluation of competition therefore tends to involve consideration of a mix of quantifiable and non-quantifiable effects, and it is not double counting to take account of the latter alongside the former.
55. Finally, it is relevant to remember that the purpose of market definition in the application of competition law, which is where this particular activity has blossomed, is to help assess the scope and extent of market power (of an undertaking, of a group of undertakings, or of merged undertakings). In the current context, the situation is transparent on this point: NGT is the (regulated) monopoly supplier of NTS services.

## **E. Interruption**

56. Graham Shuttleworth argues that the changes to interruption arrangements in modification proposal 0116V would not be efficient. I do not agree with that view.
57. Graham Shuttleworth commences his analysis of interruptible services by stating that such services do not impose any investment costs on the network, as long as interruptible users are prepared to stop using capacity whenever it is needed by

firm users (paragraph 2.20). The first point I would make is to signal the significance of the “*as long as*” in the relevant statement. As a matter of fact, the implicit assumption is not satisfied by the interruptible contracts that are currently available.

58. Current contracts allow for interruption on up to 45 days of the year, which means that they cannot be interrupted on at least 320/321 days. It is quite possible, particularly when the relevant load is relatively substantial, that the additional demand created on days of the year when interruption might not be possible under the terms of the contract could be such as to give rise to a requirement for additional capital expenditure on the NTS.
59. In consequence, it cannot be assumed that additional interruptible contracts at an exit point will impose no capacity/investment costs on NGG NTS.
60. Capacity or investment costs are not the only costs of relevance when considering an interruptions regime: a new interruption customer may also impose opportunity costs on other interruptible customers. Currently, when interruption is required, there is frequently an issue as to which particular sites are to be interrupted. The approach to date has been to rely upon administrative mechanisms to allocate/ration the withdrawal of offtake services. If this is done such that the ‘burden’ of interruption is shared around, the addition of new interruptible load may, by raising the probability of interruption (other things equal), have adverse effects on other interruptible customers. The simplest example is where capacity is sufficient to accommodate all existing load without interruption, but where the incremental load will lead to a positive probability of interruption.
61. In economic terms, interruptions that are not allocated by price, but rather by administrative mechanisms, can be a source of inefficiency. Resource allocation could therefore potentially be improved if, when interruption is required, it is ‘supplied’ by the customer who is able to reduce load at least cost, rather than a customer who just happens to be ‘next on the roster’. Under such an arrangement, some customers would be interrupted more than others, and, in order to induce them to sign the relevant contracts, those who are interrupted more often might reasonably expect to be offered larger discounts. In general, therefore, it is to be



expected that, in a fully efficient set of arrangements, there would be some relationship between access terms for interruptible load and the probability with which that load was interrupted.

62. Finally, it can be noted that inappropriate access charges for interruptible load can have adverse effects on customers relying on firm contracts by tending to raise the level of capacity charges levied on the latter in order for NGG NTS to achieve a level of total revenue sufficient to remunerate NTS costs, including capital costs. This raises issues of discrimination and equity. One possible context in which this occurs is when the interruptible load does impose capacity costs for which it does not pay (see paragraph 58 above). A second is when there is excess capacity in the system. In such circumstances it will be true that incremental interruptible load imposes no additional capacity costs, but equally true that incremental firm load also imposes no additional capacity costs. Yet if interruptible load is exempted from the capacity costs, the burden of (sunk) capacity cost recovery will fall entirely on firm loads, which, of course, include the great mass of household supplies.

63. I cannot comment on the legal issues relating to the interpretation of the EU Regulation No. 1775/2005. However, what all this adds up to is that, as a matter of public policy (rather than of legal interpretation), the requirement that *“the price of interruptible capacity shall reflect the probability of interruption”* appears to me to be entirely sensible in terms of both the efficiency and equity issues with which UK and EU policy makers have been concerned over recent years. I note that E.ON’s statement of case asserts (at paragraph 85(6)) that *“Interruptible capacity should not be priced in accordance with the probability of interruption, because this does not reflect the cost of providing the service”*, but, for the reasons given, I think that this is simply incorrect, at least if it is intended to be a general statement applicable across a range of economic contexts.

64. In relation to Graham Shuttleworth’s statement concerning the implications of discounts that are directly proportional to the probability of interruption (paragraph 2.27), whether or not this could be expected to lead to any significant inefficiencies is a matter for determination in a relevant factual context. There will be certain factual contexts in which direct proportionality might be a good approximation, others in which it will not. It all depends.

65. My understanding of modification proposal 0116V is that it does not require direct proportionality between charges and the probability of interruption. In any period, the precise relationship between offtake capacity and probabilities of interruption will be a matter to be determined in the marketplace, reflecting the relevant market conditions of the time.

**Statement of truth**

I believe that the facts stated in this witness statement are true.

Full name: \_\_\_\_\_

Signed: \_\_\_\_\_

Date \_\_\_\_\_

Position Held: \_\_\_\_\_

BEFORE THE COMPETITION COMMISSION

CC02/07

GEMA  
GEORGE YARROW  
FIRST WITNESS STATEMENT  
GY1  
22 MAY 2007

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**AN APPEAL UNDER SECTION 173 ENERGY ACT 2004**

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**E.ON UK PLC**

**- AND -**

**GEMA**

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**EXHIBIT GY1**

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This is the exhibit marked GY1 referred to in the first witness statement of George Yarrow, dated 22 May 2007.

Signed: \_\_\_\_\_

Date: