



# **NETA - THE NEXT PHASE**

A report for press release

**March 2002**



Copyright © 2002 ILEX Energy Consulting Limited

All rights reserved

No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means electronic, mechanical, photocopying, recording or otherwise without the prior written permission of ILEX.

#### Disclaimer

While ILEX considers that the information and opinions given in this work are sound, all parties must rely upon their own skill and judgement when making use of it. ILEX does not make any representation or warranty, expressed or implied, as to the accuracy or completeness of the information contained in this report and assumes no responsibility for the accuracy or completeness of such information. ILEX will not assume any liability to anyone for any loss or damage arising out of the provision of this report.

The report contains projections that are based on assumptions that are subject to uncertainties and contingencies. Because of the subjective judgements and inherent uncertainties of projections, and because events frequently do not occur as expected, there can be no assurance that the projections contained herein will be realised and actual results may be different from projected results. Hence the projections supplied are not to be regarded as firm predictions of the future, but rather as illustrations of what might happen. Parties are advised to base their actions on an awareness of the range of such projections, and to note that the range necessarily broadens in the latter years of the projections.

## TABLE OF CONTENTS

1. NETA IS ONE YEAR OLD – BUT IS IT A BEAUTIFUL BABY?	1
2. THE NETA DESIGN	3
3. THE COST OF DOING BUSINESS IN NETA	9
4. IN CONCLUSION	15

[This page is intentionally blank]

## **1. NETA IS ONE YEAR OLD – BUT IS IT A BEAUTIFUL BABY?**

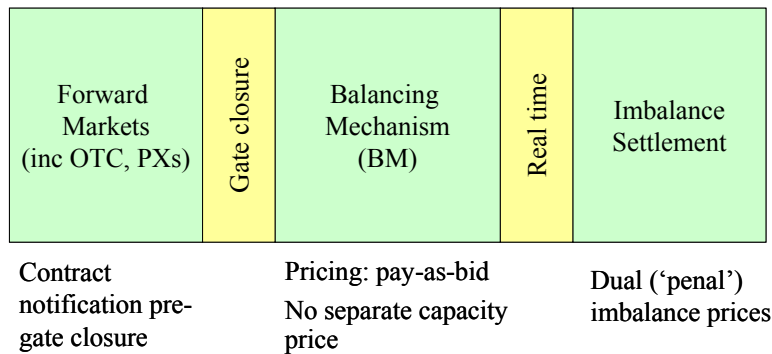
- 1.1 NETA - The New Electricity Trading Arrangements in England and Wales – is about to celebrate its first birthday. The sleepless nights and teething problems of the early days are now, largely, behind us.
- 1.2 Public comment on the performance of the new arrangements varies from Ofgem’s consistently upbeat assessments, through the quietly supportive comments of the larger generator/suppliers to the various concerns expressed by consumer groups and the unrelenting criticism of the renewable and CHP communities.
- 1.3 In this paper, we attempt to make a balanced assessment of the impact of NETA to date, and comment on some of the issues that have been most debated. We conclude that while NETA has delivered some of what Ofgem set out to achieve, major problems remain, most of them directly or indirectly attributable to the dual imbalance price mechanism.

[This page is intentionally blank]

## 2. THE NETA DESIGN

- 2.1 Figure 1 summarises the essential elements of NETA, which replaced the England and Wales Pool on 27 March 2001.

**Figure 1 - Essential elements of NETA**

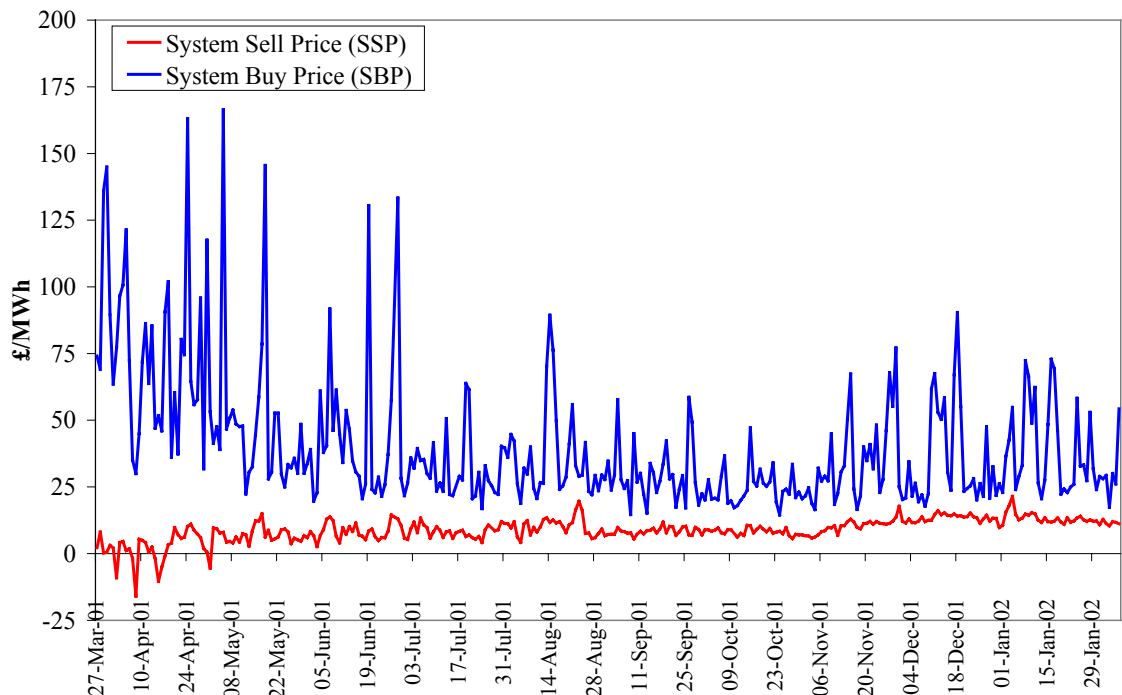


- 2.2 At the core are the Balancing Mechanism and Imbalance Settlement processes. Generators and suppliers (and traders) buy and sell electricity in the various forward markets, and notify their contractual positions to the central settlement system, at 'gate closure' (currently 3.5 hours before real time).
- 2.3 At the same time, generators and suppliers notify the System Operator of their expected output and demand (physical notifications), and offer to deviate from the expected levels at specified prices (offers and bids into the Balancing Mechanism). The System Operator uses the offers and bids (and other contracted services) to balance supply and demand in real time. Parties selling into the Balancing Mechanism are 'paid-as-bid', rather than receiving a market-clearing price. Flexible generators (and suppliers), able to change output (or demand) at short notice, can potentially earn premium prices in the Balancing Mechanism.
- 2.4 After real time, the contractual position of each market participant is compared with its actual metered output or demand. Any differences are 'cashed-out' using dual imbalance prices. Parties who are 'short' pay a 'high' price for their shortfall (System Buy Price, or SBP). Parties who are 'long' receive a 'low' price for their surplus (System Sell Price, or SSP).
- 2.5 In this sense, the settlement mechanism ignores the diversity provided by an interconnected network – parties are penalised for their individual imbalances independent of the position of the market overall.
- 2.6 Ofgem's rationale for adopting a market design based around bilateral contracting and dual imbalance prices was two-fold:
- parties should be incentivised to self-balance in the forward markets, thereby minimising the balancing role required of the System Operator and maximising the role of markets; and

- imbalance prices should be cost-reflective. Parties that cause imbalances should face the costs that they impose.
- 2.7 Developing a methodology for calculating two imbalance prices for each and every half-hour that complied with these two potentially conflicting objectives proved rather difficult. The underlying reason for this difficulty is that the market as a whole is either short or long in any half-hour trading period - there can only be one price representative of the value of electricity for the half-hour as a whole; a second price has to be contrived in some way.

*Imbalance prices to date*

- 2.8 The dual imbalance prices were extreme and erratic in the early months of NETA (see Figure 2 below), with severe consequences for those unlucky enough to be out of balance at the wrong time. There was general agreement that the imbalance price spreads were not (remotely) cost-reflective
- 2.9 Rule changes and increased experience of operating within NETA have combined to reduce the imbalance price spreads over time, but the average price spreads remain very substantial (over £20/MWh for January 2002) in the context of a system with a supply surplus.
- 2.10 The high SBP (on average more than 100% above the baseload forward price for January 2002) is particularly difficult to understand in a system that is invariably long. Because market participants appear to be consistently and deliberately aiming to go 'long', one might argue that the high SBP is not an issue in practice. But the high SBP is driving perverse behaviour, and, in any event, some market participants do end up short (with the sum of individual short positions being around 700MW on average since July 2001).

**Figure 2 – Daily SBP and SSP since start of NETA**

### *The case for a single imbalance price*

- 2.11 In our view, cost-reflective pricing should be a central objective of any market design, but seeking cost-reflectivity via the calculation of dual energy imbalance prices is simply not possible.
- 2.12 In practice, Ofgem has been more concerned at making sure that the imbalance prices are sufficiently unattractive as to drive very high levels of forward contracting. A central theme of this paper is that the dual imbalance prices are not cost-reflective, create perverse incentives and inefficient behaviours and drive a substantial and unnecessary increase in the cost and risk of doing business in NETA.
- 2.13 Ofgem's desire to force active bilateral contracting until as close to real time as possible may be an over-reaction to the 'excessive' central control of the Pool<sup>1</sup>. Individual generators and suppliers clearly understand their own cost structures and physical flexibility much better than the System Operator ever could – a strong reason for moving away from central dispatch via a mandatory pool. However, forcing market participants to (attempt to) carry on proactively trading until very close to real time, in order to minimise exposure to imbalances, may be taking things too far. Market outcomes are likely to be less efficient than if participants were allowed the option of buying or selling through a System-

<sup>1</sup> Central dispatch over (roughly) a 24-hour period using day-ahead offers from generators

Operator-facilitated imbalance (spot) market (which the Balancing Mechanism was specifically designed not to be), with a single price for imbalances.

- 2.14 A single imbalance price would be cost-reflective in the sense of being high when the system is short and low when the system is long. A single price would be inherently volatile, incentivising forward contracting. Provision of accurate information to the System Operator could be financially incentivised; the cost to market participants of providing accurate information is substantially less than the cost of continuously adjusting bilateral trading positions but is a more direct influence on the cost of system balancing. Flexible plant would continue to be rewarded through the Balancing Mechanism. Cost-reflective charging could be pursued further via changes to the basis for allocation of the costs of system operation (although the complexity of doing so might outweigh any benefits).

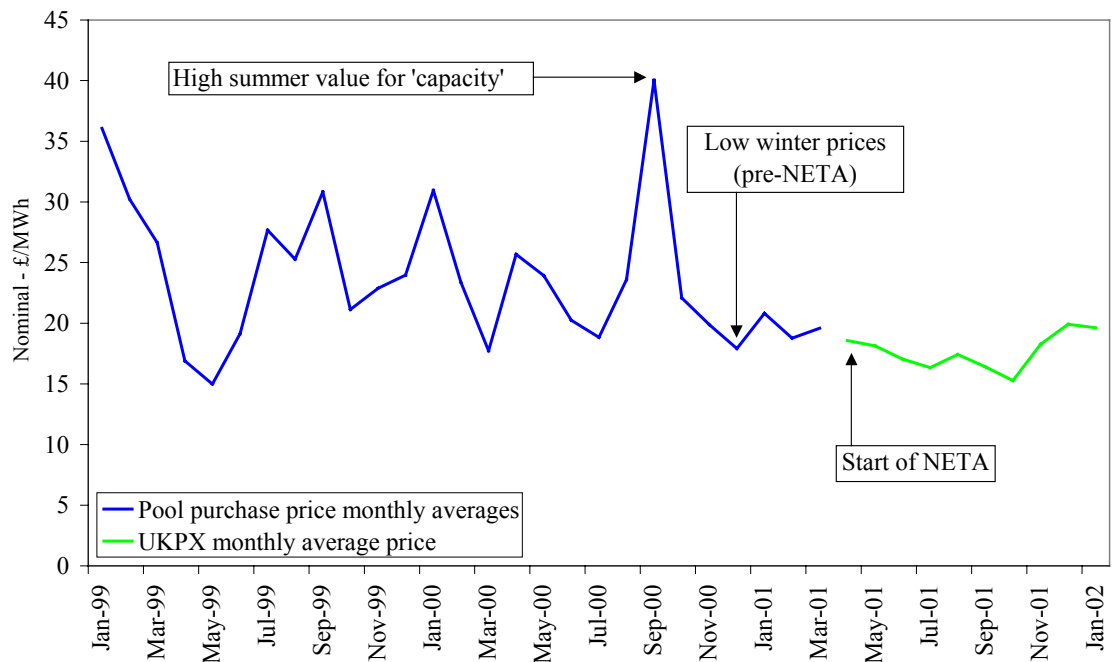
***NETA and market prices***

- 2.15 Ofgem has argued on a number of occasions that NETA has contributed to a substantial fall in wholesale electricity prices.
- 2.16 Wholesale electricity prices have fallen sharply in recent years, despite a substantial increase in gas prices. There are three main potential drivers of the lower prices:
- Offer/Ofgem-initiated plant divestments from late 1999 onwards, which greatly increased the extent of competition in generation (see Figure 6 below);
  - increases in system margin as new generation has been commissioned – NGC data suggests an increase in the margin from around 22% in 1999/00 to an estimated 28% in 2001/02<sup>2</sup>; and
  - NETA replacing the Pool (as at 27 March 2001).

---

<sup>2</sup> Source: PIU Energy Review, February 2002 (page 72)

**Figure 3 - Trend in wholesale electricity prices since January 1999 (monthly average)<sup>3</sup>**



2.17 In our view, the first two of these factors have been the dominant drivers of the falling prices, as evidenced by the fall in Pool prices in the winter of 2000/01 (which cannot be attributed to the imminence of NETA).

2.18 However, the advent of NETA may well have caused lower prices than would otherwise have occurred, by:

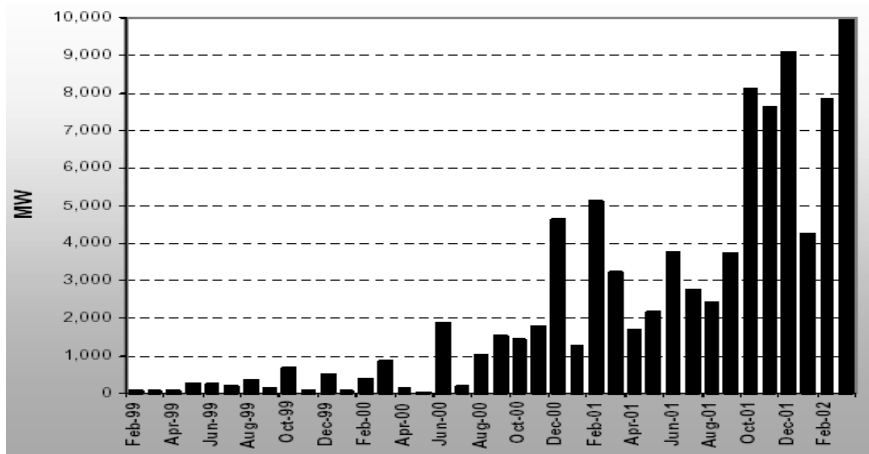
- removing the possibility of a repeat of the high summer 2000 values for the Pool’s availability payment (the LoLP/VoLL mechanism), although the higher system margin in 2001 would have made such an outcome unlikely; and
- a dislocating impact on trading and on plant scheduling which, combined with the increasing levels of competition and of system margin, may have contributed to downward pressure on prices.

***NETA, trading and transparency***

2.19 Liquidity of reported forward trading has increased since the advent of NETA (illustrated in Figure 4 below), as Ofgem and market participants had hoped.

<sup>3</sup> Since NETA start-date, generators have paid close to 50% of variable transmission costs

**Figure 4: Heren-reported forward monthly trade volumes**



Source: Heren EDEM 6.039

- 2.20 Concerns about non-transparency in prices have been largely allayed. A number of price-reporters provide daily information on deals transacted in the Over-The-Counter (OTC) market. The power exchanges also report prices, while a vast amount of Balancing Mechanism data is publicly available (albeit difficult to use in-the-raw).
- 2.21 Although large, bespoke trades continue to go unreported, we believe the data available is representative of the prevailing market prices, although more for baseload prices than peak, at least to about two years out. Thereafter liquidity falls away substantially.
- 2.22 Within-day trading liquidity remains very limited – a problem for parties seeking to trade out of imbalances late in the day, or to optimise their positions. Reversion to a single imbalance price or something closer to it would substantially reduce the imperative for within-day liquidity. Small players have found that the smallest unit of power commonly traded within-day is too large to be of use in managing their imbalances.
- 2.23 No single reference price that is commonly accepted for use in financial contracts has emerged; nor does such a commonly accepted reference price appear imminent (particularly a price with half-hourly definition). This remains an issue for parties still seeking to renegotiate enduring replacements for the Pool price in their long-term gas sales and power purchase agreements, and for parties who would like to trade financial (rather than physical) contracts in NETA.

***NETA and economic efficiency***

- 2.24 In a number of respects, NETA appears not to be facilitating economically efficient outcomes. Here we focus on two particular aspects.

### **3. THE COST OF DOING BUSINESS IN NETA**

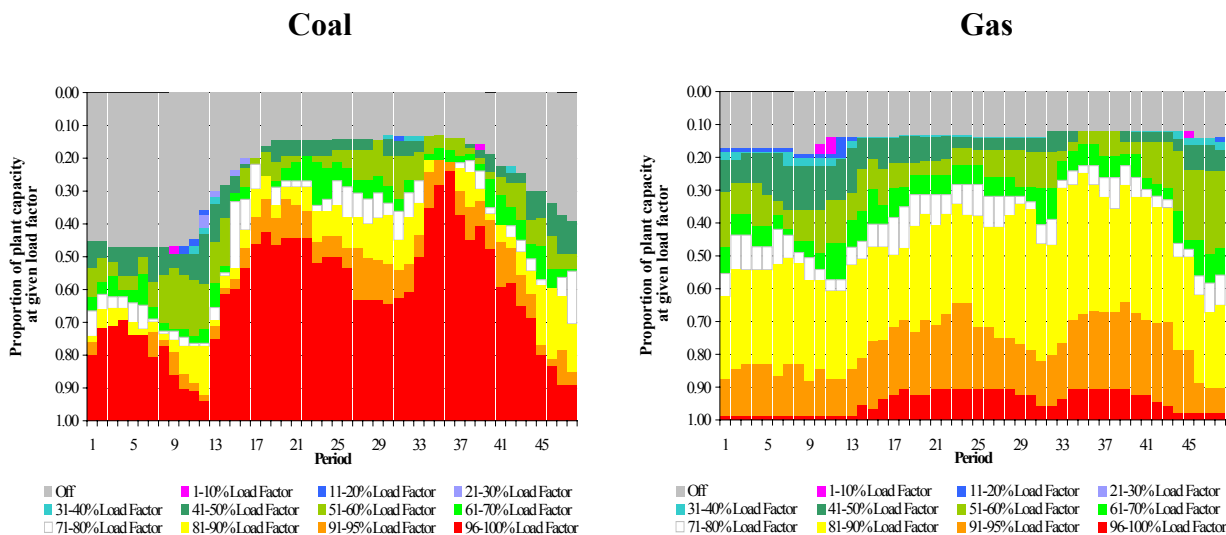
- 3.1 NETA is much more resource intensive than the Pool was, with the intentionally unattractive imbalance prices incentivising market participants to monitor and trade out of expected imbalances on a continuous basis.
- 3.2 The NETA set-up costs have been very substantial (as would have been the case for any major reform/replacement of the Pool), but are now largely sunk.
- 3.3 Of more concern looking ahead is the impact of these set-up costs as a potential barrier to entry by smaller generators and suppliers, and the high level of ongoing costs. Estimates of the set-up costs vary widely, but the cost of establishing a fairly full trading and risk management capability might be in the range £0.8 million - £5 million.
- 3.4 One single-plant Independent Power Producer we talked to estimated that the resources (mainly staff-related) required to trade within NETA were four to five times greater than for the same set of activities under the Pool. The resource impact on suppliers may have been even greater (and may have accelerated the trend to vertical integration), while active participation in the various NETA markets appears not to be a viable option at all for smaller CHP and renewable players.

#### **Efficiency of plant operation**

- 3.5 The intentionally unattractive imbalance prices, and System Buy Price in particular, are driving inefficient behaviour.
- 3.6 More plant is running at part-load (inefficiently) than was the case in the Pool. Generators are self-dispatching against their varying contractual positions and are self-insuring against exposure to System Buy Prices. The system is regularly long (by 1100MW on average, since July 2001).
- 3.7 Figure 5 below illustrates the extent to which gas and coal generating sets are running at part-load through the day, based on physical notifications to the System Operator at gate closure on a January business day. The chart does not capture any further de-loading of plant as a result of the System Operator accepting bids into the Balancing Mechanism to reduce the output of some generators, because the system as a whole is long. Preliminary analysis of DTI energy statistics suggests that coal input per unit of electricity output for coal-fired power stations increased by 2.6% for April – November 2001 as compared to the same period in the previous year.
- 3.8 This phenomenon highlights an inherent inefficiency in the existing NETA design. Generators are unlikely ever to complete all the bilateral trades necessary to result in an optimal utilisation of the available stock of power stations on any given day.

3.9 Other likely inefficiencies include over-maintenance and over-design of plant (relative to the economic value of reliability).

Figure 5 - Coal and gas genset capacities based on FPNs<sup>4</sup> for 21 January 2002

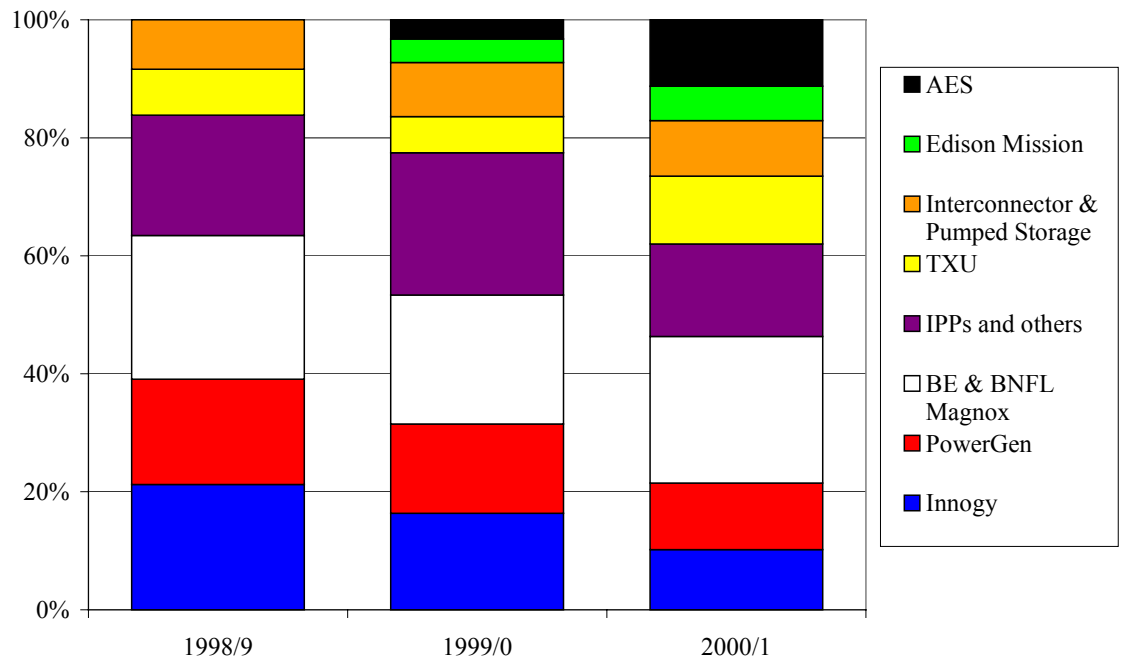


*NETA and market power*

3.10 One of Ofgem’s drivers in the design of NETA was to reduce the effects of generator market power. For example, Ofgem argued that the setting of a single market-clearing price in the Pool meant that all generators could access prices set by those with market power. The idea with NETA seemed to be that only those with the market power should be able to benefit from it.

<sup>4</sup> Final physical notifications (i.e. planned output), submitted to the System Operator at Gate Closure

**Figure 6 – Generator market shares over time**



- 3.11 A number of market participants and commentators expressed concern that the potentially less transparent nature of NETA (e.g. the lack of a natural ‘reference’ price against which parties could trade, loss of information on generators’ offer prices) would advantage the larger players relative to others.
- 3.12 Ofgem’s own confidence in the extent to which NETA would mitigate the exercise of generator market power seemed to reduce over time, to the extent that Ofgem sought (but did not get) new licence powers to prevent any generator behaviour that Ofgem might regard as anti-competitive.
- 3.13 In practice, as illustrated in Figure 6 above, the generation market is now so competitive that market power does not appear to be an issue, regardless of the detail of the market rules. In that sense, NETA remains untested; changes in market rules can change the way in which market power (if any) manifests itself, but are unlikely to do any more than that.

***NETA and new investment in generation***

- 3.14 Some have questioned whether the absence of any form of explicit capacity pricing under NETA will threaten timely investment in new generation, and point to forward prices in support of this concern. Events in California have demonstrated the folly of ever taking security of supply for granted.
- 3.15 Forward prices in England and Wales currently appear to be below the level at which the marginal plant on the system will recover its year-on-year fixed costs, never mind make any contribution to recovery of sunk costs. As discussed above, given the current over-supply of generation, we would expect prices to be below

new entry levels, and prices could remain below the level necessary for the marginal generators to cover their year-on-year costs for a limited period, at least until some plant is mothballed or retired.

- 3.16 Looking to the future, we have seen no sign that developers or their financiers will not invest just because of NETA. A number of CCGT projects appear still to be under active consideration, despite the low level of electricity prices relative to gas prices.
- 3.17 Whether or not prices rise in an orderly manner as the system tightens and the need for new generation gets closer, remains to be seen. ‘Very low’ prices followed by ‘very high’ prices might be more likely.

***NETA and the demand-side***

- 3.18 Facilitating greater demand-side participation was one of the main thrusts of NETA. To date, evidence is of very little participation by the demand-side. The main reasons for this appear to be:
- prices are low, reducing the incentive for demand-side management. The sporadically very high System Buy Prices have probably been too unpredictable to elicit a demand-side response; and
  - the mechanics for active participation (such as selling into the Balancing Mechanism) are viewed as too complex and costly. Sale of ancillary services - such as frequency response - to the System Operator may remain the most viable form of market involvement by the demand-side (subject to resolution of the associated risk of exposure to imbalance charges).
- 3.19 Nonetheless, and subject to simplification of the mechanics of participation, NETA has removed some of the barriers to active demand-side participation that existed in the Pool.

***NETA, CHP and renewables***

- 3.20 The impact of NETA on CHP and renewables has been widely debated before and since NETA commenced operation. Some CHP and some renewable technologies (notably wind) are particularly exposed to the intentionally unattractive dual imbalance prices. The cost and complexity of the various options (including consolidation) by which such players can seek to mitigate some of the impact of the dual imbalance prices are disproportionately high for small players.
- 3.21 Most CHP and renewable generation is embedded within distribution networks. Under the prevailing commercial arrangements, these generators can realise commercial gain (‘embedded benefits’) if they sell their output to suppliers with offsetting demand within the relevant distribution network. This element of the commercial arrangements reduces the number of suppliers with whom such generators can negotiate and (in combination with the absence of a viable market-of-last-resort) leaves them particularly vulnerable to any exercise of supplier market power.

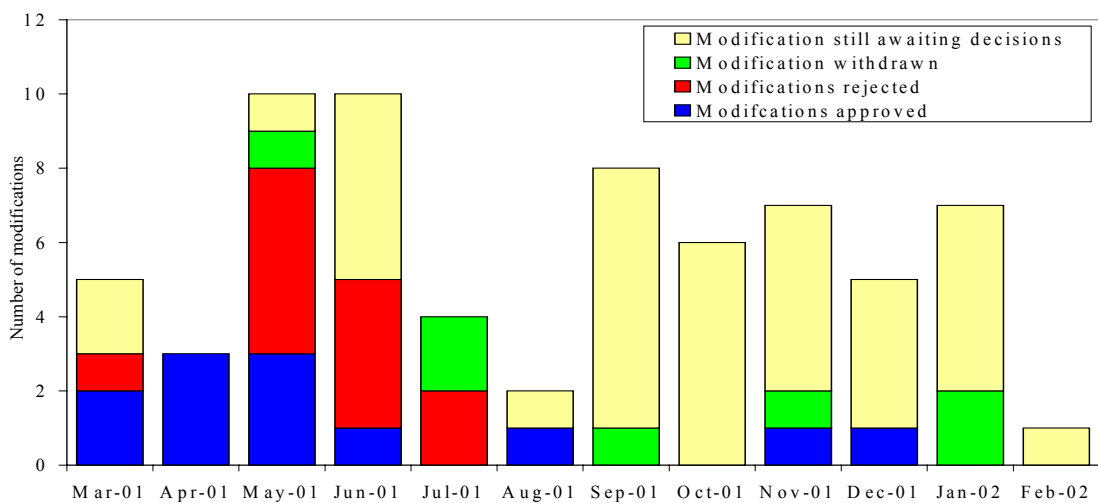
3.22 In our view, NETA undervalues intermittent generation relative to its underlying economic value and unduly hinders small players generally. Reversion to a single imbalance price (and therefore removal of the cost and complexity of managing the risk associated with the dual imbalance prices) would help substantially.

**NETA and governance**

3.23 Ofgem wanted governance arrangements for NETA that enabled the market rules to evolve as necessary. Market participants have certainly entered into the spirit of things (Figure 7), with 68 proposed modifications of the Balancing and Settlement Code (BSC) already. A number of concerns remain, however, including:

- ‘too many’ proposed and actual rule changes will impose unnecessary cost and increase uncertainty;
- the largely piecemeal approach to modification proposals;
- the time taken to implement some approved rule changes; and
- governance of NETA (including such critical matters as the calculation of imbalance prices) is effectively split between the Balancing and Settlement Code and NGC’s Connection and Use of System Code.

**Figure 7 – BSC modification proposals over time<sup>5</sup>**



3.24 In our view, the governance arrangements for NETA will require significant revision, to achieve better integration across the various core industry documents, and to enable a more holistic approach to perceived problems in the existing rules.

<sup>5</sup> Each modification proposal is recorded in the month in which it was submitted

***Winners and losers in NETA***

- 3.25 As discussed above, NETA may have contributed to wholesale electricity prices being somewhat lower than they otherwise would have been. If so, and to the extent that lower wholesale prices flow through to lower retail prices, then this is a gain for consumers generally, at the expense of generators.
- 3.26 Insofar as NETA has increased the cost of doing business, and results in less efficient outcomes, prices (and emissions) over time are likely to be higher, to the disbenefit of consumers as a whole, without benefiting generators as a whole. Instead, the main beneficiaries have been IT providers, lawyers, traders, consultants and so on.
- 3.27 In addition, NETA has had redistributive effects. These are difficult to quantify reliably but, generally speaking:
- large generators and large suppliers have benefited relative to small generators and small suppliers, with large and vertically integrated players probably the biggest beneficiaries;
  - predictable generation has benefited relative to unpredictable generation; and
  - consumers with predictable demand have benefited relative to consumers with unpredictable demand (to the extent reflected in their respective contractual relationships with suppliers).

As discussed above, the extent of these redistributive effects appear to be greater than warranted by the underlying economics.

## 4. IN CONCLUSION

- 4.1 As with any new market design, NETA is far from perfect, and is already evolving. Some of the concerns expressed before NETA commenced operation have proved to be largely groundless. Some of the benefits promised have been realised.
- 4.2 However, significant problems remain, many of them caused directly or indirectly by the intentionally unattractive dual imbalance prices. Reversion to a single imbalance price has the potential to be more cost reflective, to reduce the cost and risk of doing business and to avoid incentivising perverse and inefficient behaviours