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Liquidity Proposals for the GB wholesale electricity market

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Overview:
Liquidity in the GB wholesale electricity market has declined since 2001 and is low compared to that of many other countries and other commodity markets.
The low level of liquidity makes it difficult to enter the market and operate as a non-vertically integrated market participant. A key concern is the impact that this has on energy supply markets. Ensuring that small/independent suppliers are able to enter the market and grow their customer base is important to provide competitive pressure, particularly on the Big 6 suppliers who account for over 99% of the domestic retail customer market.

A liquid wholesale market is also important for investment in generation. Given the scale of investment required over the next decade and beyond, we need to ensure that there are no material obstacles to attracting new investors into the market.

We would like to see market initiatives deliver the required improvements in electricity wholesale markets, and have set out high level criteria by which we propose to assess them. However, given the importance of the issue and the persistent low level of liquidity in recent years, we are now setting out for consultation policy options which we will progress if market initiatives do not show clear signs of delivering in the course of this year.

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Associated documents

- Liquidity in the GB wholesale energy markets, 8 June 2009, 62/09 http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=58&refer=Markets/WhlMkts/CompandEff
- Project Discovery – Options for delivering secure and sustainable energy supplies, 3 February 2010, 16/10 http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=73&refer=Markets/WhlMkts/Discovery
- Energy Supply Probe - Initial Findings Report, 6 October 2008, 140/08 http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=4&refer=Markets/RetMkts/ensuppro
- Energy Supply Probe – Proposed Retail Market Remedies, 15 April 2009, 99/09 http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=199&refer=Markets/RetMkts/ensuppro
- Quarterly Wholesale / Retail Price Report - March 2010, 23/10 http://www.ofgem.gov.uk/Markets/RetMkts/ensuppro/Pages/Energysupplyprobe.aspx
- Project Discovery – Energy Market Scenarios, 9 October 2009, 122/09 http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=2&refer=Markets/WhlMkts/Discovery
- Addressing Market Power Concerns in the Wholesale Electricity Market - Initial Proposals, 30 March 2009, 30/09 http://www.ofgem.gov.uk/Markets/WhlMkts/CompandEff/Documents1/Market%20Power%20Concerns-%20Initial%20Policy%20Proposals.pdf
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Executive summary

Need for Action

Liquidity in the GB wholesale electricity market is low in comparison with both other commodity markets and electricity markets in a number of European countries. The 2008 Energy Supply Probe (The Probe) found that there has been very limited new entry in energy supply markets and those who have entered have not grown to a size close to that of the former incumbents. The domestic supply market remains highly concentrated with the Big 6 vertically integrated companies accounting for over 99% of the market.

The Probe also found that low liquidity is one of the most important barriers to entry in GB supply markets. Subsequent investigations have found that existing small and independent suppliers struggle to access the forward products that they need to meet customer demand and manage wholesale market related risks.

The threat of new entry acts as an important competitive constraint on incumbent suppliers as it provides incentives to price keenly, improve efficiency and offer innovative products. Improving wholesale market liquidity is therefore essential to delivering these benefits to customers.

A liquid wholesale electricity market is also important for investment in generation. Given the scale of investment required over the next decade and beyond, we need to ensure that there are no material obstacles to attracting new investors into the market. In their response to Ofgem's June 2009 Liquidity Discussion Document[1], independent and small generators were of the view that liquidity, particularly in forward products, is insufficient to manage effectively their wholesale market related risks.

Success criteria for market initiatives

There are a number of market initiatives, in place or coming in the future, which could help to improve GB wholesale market liquidity. These include the launch of a new electricity exchange by N2EX, APX's auctioning of Britned capacity once it comes on stream, and potentially wider European market coupling. Ofgem strongly welcomes market initiatives to improve liquidity. Our preferred outcome is that the market develops solutions to address the liquidity issue and the availability of products that market participants need. We have therefore set out the success

[1] Liquidity in the GB wholesale energy markets (62/09)

criteria by which we propose to judge whether the market has addressed the concerns that we have identified. Specifically, we want to see the market delivering:

- High volumes traded in standard products;
- The availability of key longer dated products and/or financial derivatives;
- Use of trading platforms by small/independent suppliers; and
- Positive feedback from small/independent suppliers and potential entrants.

Policy proposals

If the market does not deliver against these proposed criteria within a reasonable timeframe, then Ofgem is determined to act and to introduce suitable policy remedies. We are consulting on a range of policy options which could be introduced in these circumstances, either individually or in combinations, as follows:

- **An obligation requiring large generators to trade with small/independent suppliers.** Currently there is no requirement to trade; the obligation would require large generators to offer terms when approached by small/independent suppliers. The obligation would be supplemented by guidelines. We may also consider extending this to requiring large suppliers to offer purchase terms to small/independent generators.

- **Market making arrangements**, supported by a licence obligation on the Big 6 to provide electricity in defined products. Under this option the Big 6 would be obliged to provide electricity to a Market Making Agent who would make this available to market participants via a trading platform.

- **Mandatory auctions**, focused either on the prompt market with the aim of developing trusted reference prices and hence financial derivatives, and/or focused on longer term products. This would be supported by an obligation on all large generators to offer volume into the auction.

- **Self-supply restrictions** on the large vertically integrated utilities, which would limit the extent to which they may supply their own retail business from their own generation output and would force a proportion of their requirements to be traded through the market.

The aim of these interventions is to improve overall liquidity in the GB wholesale electricity market, including liquidity in forward products. They are also specifically aimed at improving the ability of small/independent suppliers and potential new entrants to meet their wholesale energy purchasing and risk management needs, and thereby to promote supply market contestability.

We are also seeking views on various approaches related to the collateral requirements faced by small suppliers. However, at this stage it is not clear that regulatory intervention specifically on collateral is appropriate.

Interactions with Project Discovery

The measures proposed in this document would complement the majority of the policy packages in Project Discovery[2]. Improved wholesale liquidity could help to facilitate investment by independent generators and support retail market competition, and thereby contribute to the objective of delivering sustainable and secure energy supplies at affordable prices. The exception might be the Project Discovery Central Energy Buyer package, where at the most extreme, a single buyer might replace the market for wholesale electricity, making our liquidity proposals unnecessary.

Next steps

We invite views on the proposals that we have set out and on the design options within each proposal.

Over the coming months we will monitor the progress of the market. We expect to publish a further document in the summer of 2010 which could include a preliminary assessment of the progress of market initiatives, further detail on the metrics against which market success will be judged, and our views as to the preferred policy options should market initiatives not deliver. We aim to be in a position to implement an appropriate remedy at the end of the year, if market initiatives are not delivering.

[2] Project Discovery – Options for delivering secure and sustainable energy supplies (16/10)

1. Defining the Problem

Chapter Summary
This chapter outlines the problem of low liquidity in the GB wholesale energy market and how this affects market participants. It also considers the extent to which low liquidity affects contestability in the retail and generation markets.

Question 1: Do you agree that the harm caused by low levels of liquidity is sufficient to merit policy intervention, if such low levels persist?

Question 2: Do you agree that the focus should be on electricity markets?

Liquidity and trading in GB wholesale electricity markets

1.1. The Probe highlighted a lack of liquidity in GB wholesale markets as one of the key barriers to entry in energy supply. Building on this finding Ofgem published a report on liquidity in GB wholesale electricity and gas markets in June 2009[3] (the Liquidity Discussion Document). This report found that liquidity in the GB wholesale electricity market was lower than in other energy and commodity markets and was low enough to be potentially detrimental to the effective functioning of the GB energy market. The report also found that wholesale electricity market liquidity was particularly poor further along the forward curve. Conversely, GB wholesale gas liquidity compared well to that in other countries and other commodity markets.

1.2. The Liquidity Discussion Document showed that churn[4] in the GB electricity market declined from an average of around 5.5 for the period 2001-2004 to an average of 2.5 over the last three years. There has been a slight improvement with churn rising to 3.3 in 2009 from about 3 in 2008. Trading further along the curve remains low despite modest improvements in prompt market liquidity.

1.3. Liquidity is an important feature of a well functioning market for a number of reasons. Liquid wholesale energy markets give market participants the confidence that they can buy and sell at prices that reflect underlying demand and supply conditions. They allow firms to manage risk effectively and reduce the scope for market manipulation. Importantly, they also provide transparent prices on which firms can base their investment decisions, and potential entrants can assess opportunities to enter the market.

[3] Liquidity in the GB wholesale energy markets, (62/09)
[4] Churn is the ratio of traded volume of a commodity to throughput, or some other measure denoting physical consumption of the traded commodity, i.e. if all energy consumed is traded only once churn is 1, whilst if all energy is first bought and then re-sold once churn is 2.

1.4. Declining liquidity is likely to eventually result in a self re-enforcing cycle where low levels of liquidity prevents entry and leads companies to find alternative ways of trading which in turn may lead to further reductions in liquidity. In our view, this vicious cycle is well under way. The behaviour of a number of independent market participants provides some support for this. For instance Drax and International Power have entered the supply market and the output of a number of independent power stations is sold on a long term basis to the Big 6[5]. In addition, many market participants have expressed significant concern over the lack of GB wholesale electricity market liquidity, particularly in the forward market.

1.5. Following publication of the Liquidity Discussion Document, Ofgem hosted a seminar[6] and held discussions with market participants to understand further their concerns relating to low electricity market liquidity. One of the main concerns raised by small/independent suppliers is that they have limited access to efficient risk management tools in the form of appropriate forward physical or financial products. In addition, they noted significant challenges in relation to credit requirements when seeking to grow their customer base. Respondents also cited short term imbalance risk as an important barrier as they find it difficult to trade out of imbalance positions close to real time (in part due to a lack of suitable products and the lack of scale needed to support specialist trading skills).

1.6. Access to risk management tools is essential to participate effectively in GB energy supply markets. While prices charged to domestic customers change infrequently, wholesale prices can be very volatile. To reduce the risk of volatile energy costs suppliers seek to buy energy in advance to hedge their predicted customer demand. Market participants have a range of options for buying and selling energy and hedging wholesale price risk. They can trade on exchanges such as APX, ICE or N2EX or over-the-counter (OTC) platforms such as Spectron. They can also enter into bilaterally negotiated structured contracts. Alternatively they can invest in (or contract long term with) generation assets enabling them to source the volumes required to meet their customer demand[7].

1.7. For vertically integrated firms, generation assets can provide a natural hedge against volatile wholesale prices; when wholesale prices are high, generation margins increase whilst retail margins fall, and vice versa. Independent suppliers and generators do not have the natural hedge of integrated players, but ideally they should be able to hedge as effectively through trading in a liquid and accessible wholesale market.

[5] In Appendix 3, we summarise the reciprocal externalities theory which is an academic theory of how markets can sometimes settle into sub-optimal positions.
[6] All the presentations from the seminar can be found at: http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=58&refer=MARKETS/WHLMKTS/COMPANDEFF
[7] For a fuller discussion of trading options see the Liquidity Discussion Document.

1.8. However, many of the products that small/independent suppliers need to hedge are either not currently available or infrequently traded. Small/independent suppliers seeking to grow their customer base require both near term and forward products with small clip sizes to hedge their position as they acquire new customers or demand changes unexpectedly (e.g. due to the weather). The clip sizes traded on exchanges and OTC platforms are larger than those required by small market participants; the average size for an annual forward contract is between 1MW and 5MW, compared to a required clip size of significantly less than 1MW.

1.9. Existing small/independent suppliers therefore typically seek bilaterally negotiated structured products provided by the Big 6 or intermediaries to hedge wholesale costs. However, these contracts can take a long time to negotiate (up to 18 months) and the prices on offer are often more than the typical retail margin. It is clear that the large, vertically integrated companies do not have the same incentives to engage with small/independent suppliers as with their own final customers. Therefore the concern is that even when they do offer products, these are not on comparable terms to those offered to their own retail business (allowing for legitimate adjustments such as credit). Evidence provided to us by existing small/independent suppliers indicates that the price quoted by the Big 6 for structured products are generally at a premium of between 5-10% of the market price. This is in addition to contract set up costs and collateral requirements to cover default risks.

Collateral/credit requirements

1.10. Collateral and credit requirements can be a significant barrier to trading and growth for small suppliers and new entrants. Requiring counterparties to post collateral is a well-established method of mitigating the risk of a counterparty defaulting on a traded position[8]. However, it is important that collateral requirements are not unduly onerous and reflect risk appropriately.

1.11. Collateral requirements have increased over time, initially following the exit of Enron and TXU and then again following the recent financial turmoil. Small suppliers and new entrants typically do not have a credit rating, and face much higher collateral requirements than large, established market participants. Current small/independent suppliers are often required to post substantial cash holdings before other parties will trade with them at all.

[8] Margining is used for both exchange and OTC trades. In the case of exchange trading the exchange takes on the counterparty risk, so the margin (collateral requirement) is posted directly with the exchange's clearing house. In the case of OTC trades, if margin is posted it is usually directly with the counterparty.

Wholesale markets and contestability in supply and generation

1.12. A market can be said to be contestable if firms can enter and exit the market easily, i.e. there are low barriers to entry. The Probe found that a number of new entrants had entered the GB supply market in the years following privatisation, but by 2007, most had either exited the market or merged with one of the Big 6. Of the entrants that remain, none has grown to a size anywhere close to that of the former incumbents. As a consequence the domestic electricity supply market remains highly concentrated with the Big 6 accounting for over 99% of the market.

1.13. The threat of new entry, along with actual new entry, acts as an important competitive constraint on incumbents in providing incentives to price keenly, improve efficiency and offer innovative products. Whilst non integrated suppliers have a combined market share of less than 1%, evidence suggests that new entrants can have a far greater impact on the competitive market than reflected in their market share[9]. They arguably tend to price more competitively and are quicker to innovate. They may also face a better trade-off from lowering prices to win customers, because they have a proportionately smaller existing customer base for whom prices would also need to be lowered[10]. Moreover, by influencing incumbents' behaviour, they can wield an effect on competition that is disproportionate to their own customer volumes. The harm from a market that is not contestable may include uncompetitive pricing, poor service and a lack of product choice.

1.14. Ofgem's most recent Quarterly Report[11] on the relationship between wholesale and retail prices, shows the Big 6's margins on an upward trend, and above their long term average, emphasising the need to ensure that markets are contestable. In contestable markets incumbent firms cannot sustain high margins, as new entrants will come in and drive these down.

1.15. The Probe and related work has identified a number of possible barriers to entry in the energy supply market, including economies of scale, branding, cost of finance, regulatory and compliance requirements and the imbalance charging regime (cash out). However, liquidity was identified as one of the most significant barriers to entry.

1.16. Liquid wholesale markets are also important for independent generators. In their responses to the Liquidity Discussion Document a number noted that whilst liquidity in prompt wholesale electricity was broadly sufficient to meet their needs,

[9] Stephen Littlechild, Smaller Suppliers in the UK Domestic Electricity Market: Experience, Concerns and Policy Recommendations, June 2005.
[10] The extent of the impact of a new low-priced offer on prices offered to existing customers depends on a number of factors, including whether they are supplied on the same contract terms and whether they are likely to take advantage of any new offer.
[11] Quarterly Wholesale / Retail Price Report - February 2010 (23/10)

liquidity further along the forward curve was very low making it difficult to hedge in certain circumstances.

1.17. In contrast to supply markets, where the independent sector accounts for less than 1% of the market, non Big 6 generators accounted for around 28% of generation capacity in 2009 and around 32% of generation output in 2009. (This figure is likely to understate the percent of generation output controlled by the Big 6 as it ignores the presence of contracts such as Centrica's tolling agreement with the Spalding power station). There has also been some investment in the generation market by non Big 6 firms. Overall the GB generation market is not highly concentrated with an HHI[12] of 1195 (based on generation output in 2009). Some independent generators have also entered the supply market, albeit on a small scale and focusing on the non-domestic sector.

Conclusions

1.18. The GB wholesale electricity market suffers from low levels of liquidity which causes a range of problems. Low levels of liquidity, in particular limited trading of forward products, leads to lack of transparency regarding wholesale electricity costs for supply businesses and revenues for generation businesses. This makes it difficult for existing participants and potential entrants to take effective decisions on investment and entry. There is also a notable lack of wholesale products required by small/independent suppliers to meet the demand and manage the risks associated with a smaller customer base. These factors pose significant barriers to entry. This is of particular concern in the supply market where there has been very limited entry (the Big 6 account for over 99% of the market) and where we have recently seen a steep rise in retail margins.

Structure of the document

1.19. The rest of this report is organised as follows:

- **Chapter 2** outlines a set of high level success criteria for assessing whether voluntary market initiatives are delivering the required improvements.
- **Chapters 3 to 8** discuss possible remedies that could be implemented if the market is not delivering. Chapter 3 provides an overview of all the options outlined in the Liquidity Discussion Document and those that have been developed further in this consultation. Subsequent chapters consider policy options to address liquidity and related wholesale market problems in more detail. Chapter 8 considers options relating to collateral requirements.
- **Chapter 9** sets out our initial conclusions and the next steps.

[12] The HHI is a measure of market concentration calculated by summing the square of the market shares of each firm in the market.

2. Success criteria for market initiatives

Chapter Summary
This chapter discusses monitoring of market initiatives against a set of success criteria.

Question 1: Do you think our high level success criteria are appropriate?

Question 2: Do you have views on how these can be quantified and the appropriate target levels of performance?

Question 3: When should market success be judged?

2.1. Recent market initiatives include the launch of a new electricity exchange by N2EX[13], APX's announcement to allow trading on its intra-day spot market up to 15 minutes before gate closure, and the introduction of a month-ahead price index by LEBA (London Energy Brokers Association). Further liquidity improvements are expected when APX commences auctions for Britned interconnector capacity and following further interconnection and integration (market coupling) with neighbouring markets.

2.2. A number of respondents to the Liquidity Discussion Document argued that Ofgem should allow time to determine whether market initiatives help to improve liquidity before taking any regulatory action. Ofgem strongly welcomes market initiatives to improve liquidity. Our preferred outcome is that the market develops solutions to address liquidity and product availability issues.

2.3. Although the volumes traded through N2EX are beginning to rise, it is too early to know how this most recent initiative will affect overall liquidity, what further products it might develop, and whether small suppliers will find it useful. While some respondents to the Liquidity Discussion Document were optimistic about N2EX, others questioned whether it brings anything fundamentally new to the market. More generally, it is not clear whether the market is on track to deliver liquidity solutions within a reasonable period of time. This chapter outlines the criteria against which we propose to assess the success of market initiatives and a proposed time frame for this assessment. If the market fails to deliver against these criteria then we would expect to implement policy remedies.

[13] N2EX is an industry-backed initiative launched on 12th January this year. It aims to increase liquidity at the day-ahead and prompt stage, and then develop a financial derivatives market on the back of this. The stated intention of N2EX is that a wide range of market participants will benefit from its activities, including small/independent suppliers and generators.

Success criteria

2.4. The criteria that we propose to use to assess whether market initiatives are delivering the required improvements are the following:

- **High volumes traded in standard products.** It is likely that we will review how the volumes of standard baseload and peak products are developing. It will be important that there is evidence that volumes are increasing in a sustained fashion.

- **Availability of key longer dated products and/or financial derivatives.** An important consideration will be the extent to which it has become easier for market participants to hedge their positions over longer time periods. Consequently, we will be looking to see whether suitable products have emerged or become more readily available. With respect to the development of financial derivatives and forward products, we will be looking to see whether there is a consensus that there is a trusted reference price and for indications that financial products are being developed.

- **Use of trading platforms by small/independent suppliers.** A key element within this will be development of products with a clip size, shape and duration to meet small/independent suppliers' needs. Increased trading volumes on their own may not improve retail market contestability if it remains difficult for small/independent suppliers to hedge their positions. An important indicator of improving contestability will be evidence that the products available on trading platforms are beneficial to small/ independent suppliers.

- **Positive feedback from small/independent suppliers and potential entrants.** We will continue to canvass the views of small/independent suppliers and potential entrants to assess whether they consider that trading conditions are improving for them.

2.5. These success criteria are set out at a high level and we expect to develop more specific measures building on responses to this consultation. Any one criterion will not give a definitive view on how successful market initiatives have been, but taken together the criteria should indicate whether market initiatives are delivering the required degree of liquidity and contestability. The assessment will need to take into account both the trend progression in relevant variables and the absolute level achieved at any point in time.

Time frame

2.6. Below we indicate the time frame for evaluating the market's progress in meeting these criteria. The timing is driven by three main considerations:

- Allowing time for market initiatives to yield results;
- Avoiding the risk of delaying policy interventions, in the event that they are necessary; and

- The need for a final decision on whether a policy intervention is required before committing significant expenditure on implementation.

2.7. On the basis of these considerations, we suggest:

- A preliminary assessment around the summer of 2010, to take stock of the latest developments and industry participants' views; and to outline numeric targets;
- On the basis of that preliminary assessment, a decision on whether to proceed further with developing potential policy interventions; and
- A further assessment towards the end of 2010, on the basis of which a decision would be taken as to whether the policy option(s) should be implemented.

2.8. In a situation where the market succeeds in delivering some but not all of what is needed to meet the criteria and address our concerns, it may be possible to tailor the policy remedies in such a way as to address the specific gaps. We also note that the policy options could be withdrawn or scaled down at any stage if we felt that self-sustaining developments in the market made them unnecessary.

2.9. We welcome views on the proposed success criteria, appropriate quantitative measures where relevant, and target levels of performance. We would also welcome views on the appropriate timetable for assessment.

3. Overview of the possible remedies

Chapter Summary
We summarise the policy options that have been developed for consultation.

Question 1: Are there any other policy options, beyond those set out in chapters 4-8, which merit attention?

3.1. In the rest of this document we focus on possible remedies to address the problems outlined in chapter 1, should market initiatives not deliver the required improvements. This chapter summarises the options that were outlined in the Liquidity Discussion Document and those that are being taken forward as part of this consultation. It also considers interactions with Project Discovery and with developments in Europe.

Remedies considered in the Liquidity Discussion Document

3.2. The Liquidity Discussion Document outlined a range of possible options to improve GB wholesale electricity market liquidity, as follows:

- Wait and see (allow market initiatives time to work);
- Self-supply licence condition;
- Auctioning;
- Greater information provision by vertically integrated companies;
- Introduction of subsidised/regulated intermediaries/market makers;
- Further interconnection with European markets;
- Reforms to cash out arrangements;
- Measures relating to credit/collateral requirements; and
- Changes to industry structure.

3.3. In developing policy options for this consultation, we have focused on those that have the potential to improve overall levels of liquidity and address the specific problems faced by independent supply market participants who need to grow their customer base organically (i.e. not through acquisition or merger).

3.4. The policy options which in our view merit consideration are as follows:

- **Obligation to trade directly with small/independent suppliers.** A licence condition would be placed on large generators to trade directly with small/independent suppliers.
- **Require the Big 6 to provide product via a Market Making Agent** who would post firm buy and sell prices for the relevant products on a trading platform. A licence condition obligation would be placed on the Big 6 to establish, and provide the relevant products through, the Agent.
- **Mandatory Auctions**, supported by a licence condition on all large generators to offer a certain percentage of their output into an auction. The auction would focus

on the prompt market with the aim of developing trusted reference prices and financial derivatives, and/or longer term products.

- **Self-supply restriction.** This option would place a requirement on vertically integrated utilities to source a certain percentage of their wholesale electricity requirements from outside their own generation business.

3.5. **Collateral requirements.** We have assessed a range of ideas for improving the ability of small/independent suppliers to meet their collateral/credit requirements. However, at this stage it is not clear that regulatory intervention specifically on collateral is appropriate (please refer to chapter 8).

3.6. A number of the ideas initially advanced in the Liquidity Discussion Document are not being pursued directly within this consultation. This is for a range of reasons. We briefly cover these other options in turn.

3.7. **Increased information provision by vertically integrated companies.** Respondents to the Liquidity Discussion Document suggested that additional information items, particularly related to the vertically integrated companies, would be useful. We note that we have recently put in place, as part of the Probe, a new licence condition requiring each of the Big 6 to publish separate financial information on their gas supply, electricity supply and electricity generation businesses[14]. Respondents also suggested that greater information on the availability of plants in both the short and medium term would aid transparency. In that respect, the recent BSC modification P243 will enable publication of generator forward availability by fuel type on the Balancing Mechanism Reporting Service (BMRS)[15].

3.8. Respondents also highlighted the importance of a robust and reliable reference price. Over recent years, market initiatives have developed a number of reference prices but it has been suggested that these are not accepted by all market participants as sufficiently reliable to form the basis for financial trading. The emergence of a trusted reference price is an intended feature of a number of the current market initiatives and of several of the policy options developed further in this document.

3.9. One respondent suggested that the development of a standard measure of liquidity for the GB electricity market, similar to that provided under UNC219 in the gas market would be useful. They suggested that a Liquidity Matrix could be developed to provide information on how initial electricity generated is traded by generators and which would be broken down by short term market, forward market and off-market trading.

[14] Financial Information Reporting: Guidance
[15] For more details please see: http://www.elexon.co.uk/changeimplementation/ModificationProcess/ModificationDocumentation/modProposalView.aspx?propID=268

3.10. **Reforms to the cash out arrangements.** Cash out arrangements have an important bearing on supply market risks and attractiveness of entry. The Liquidity Discussion Document mentioned possible changes to the cash out arrangements to reduce the risks faced by small suppliers when out of balance. However, imbalance prices play an important role in influencing generation investment and determining security of supply. Changes to cash out arrangements have been considered within Project Discovery.

3.11. **Encourage demand side participation**. Active demand side participation is a feature of some of the most liquid wholesale markets, most notably Nord Pool, however active participation is limited in GB. The respondents to the Liquidity Discussion Document were uncertain as to how demand side participation could be improved significantly. Some of the policy options in this document could potentially lead to greater demand side participation. In addition, Ofgem will continue to support the Demand Side Working Group[16] to address barriers to participation in the wholesale energy market. Project Discovery also considers the importance of improving the ability of the demand side to respond.

3.12. **Changes to industry structure.** The Liquidity Discussion Document referred to the possibility of structural reforms if other, less radical and potentially less costly, options had been exhausted. This remains our position; the policy options developed further in this document are designed to be proportionate responses to the identified problem.

3.13. Ofgem will continue to consider a range of reforms to achieve supply market contestability and improve overall market liquidity. We would welcome respondents' views as to whether there are other reforms, beyond those developed in this document, which would be equally or more effective in achieving the desired outcomes.

Interaction with Project Discovery

3.14. Project Discovery sets out a number of possible policy reforms and packages aimed at helping the UK to achieve its security of supply and carbon reduction targets.

3.15. The policy measures proposed in this document would complement the majority of the policy packages in Project Discovery. Improved wholesale market liquidity would be favourable for independent generation investment, because it would give generators increased options for selling their output or meeting any output shortfall against their contracted position. It would therefore help to support

[16] http://www.ofgem.gov.uk/Markets/WhlMkts/CustandIndustry/DemSideWG/Pages/DemSideWG.aspx

the objective of delivering sustainable and secure energy supplies at affordable prices.

3.16. The exception might be the Central Energy Buyer package within Project Discovery. At its most extreme, a single buyer would replace the market for wholesale electricity and this would make our liquidity proposals unnecessary. Supply market contestability could still be important but retail competition would likely focus on factors such as service and product innovation.

3.17. We also note that some of the options considered in Project Discovery could have a significant impact on supply markets. For instance, changes to cash out arrangements and new obligations on suppliers would impact both existing suppliers and potential new entrants, by changing market exposures and regulatory duties. However, the measures advanced in this consultation would remain important and relevant to keep barriers to entry as low as possible and protect consumer interests. Furthermore, if price signals are improved (as they would be under four of the five Project Discovery packages), liquidity measures would potentially gain increased importance as they would improve the ability of suppliers (and generators) to manage their exposure to cash out risk.

3.18. We will pay close attention to the interaction between the remedies discussed in this consultation and the wider energy policy framework.

Interactions with Europe

3.19. There are a number of important interactions with Europe and issues arising from the Third Package that are likely to have an impact on liquidity in the GB wholesale electricity market and potentially affect some of the options outlined in this document. We summarise the key areas below.

Increasing interconnection and integration with other markets

3.20. As noted in the Liquidity Discussion Document**,** increased interconnection and integration is likely to have a positive impact on both prompt and forward market liquidity which we welcome. We note that there are several GB related interconnector projects planned (outlined in the Liquidity Discussion Document). If all are constructed this implies that by 2020, the total interconnector capacity with GB could be around 8GW.

3.21. Ofgem is an active participant in shaping interconnector and European integration policy through its participation in the European Regulators' Group for Electricity and Gas (ERGEG). Measures to increase cross-border trading**,** maximise the efficient use of cross border capacity and issues such as the extent to which cross**-**border capacity should be financially firm are being actively debated. Key suggestions include the use of explicit auctions of long and medium term capacity for either physical or financial rights with a secondary market and implicit allocation of

remaining capacity through price coupling (also known as market coupling) between electricity exchanges[17].

3.22. Day-ahead market coupling is already in place between the French, Dutch and Belgian markets and has been seen to be successful. Extension to include Germany is planned for spring 2010. There is support to integrate the France-UK-Ireland region into this price coupling arrangement. It should be noted that APX is to allocate capacity via market coupling on the Britned interconnector which is due to commences operation in 2011.

3.23. Increased interconnection and integration is likely to improve liquidity in the GB wholesale electricity market by providing access to additional generation in other markets and allowing a wider pool of parties to trade in the GB market. In particular, price coupling at the day-ahead stage could improve prompt market liquidity.

Other issues

3.24. There are a number of additional areas to note with respect to interactions with Europe, in particular the Third Package and the options outlined in this document:

- The Third Package requires National Regulatory Authorities (NRAs) to be given powers (from March 2011) to decide upon and impose any necessary and proportionate measures to promote effective competition and to ensure the proper functioning of the market (Article 37.4 (b) of the Electricity Directive). One example of the measures the NRA could take given in the Recitals to the Electricity Directive is the establishment of virtual power plants – electricity release programmes whereby electricity undertakings are obliged to sell or to make available a certain volume of electricity or to grant access to part of their generation capacity to interested suppliers for a certain period of time.

- The Commission is currently considering proposals with respect to the regulation of derivatives and potentially the manner in which energy is traded more generally. Some of the proposals, if implemented, could result in higher collateral requirements and force some trading onto specific platforms. Please refer to appendix 6 for further details. The proposals for energy trading could involve additional transparency requirements and potentially requirements to report trades to a central repository, which may then be available to energy regulators.

- ERGEG is working on advice concerning the regulatory supervision of energy exchanges, which will include consideration of the different approaches adopted across the EU.

[17] For further information please refer to Electricity Interconnector Policy, 12/10

4. Direct trading obligation

Chapter Summary
In this chapter we discuss the possibility of imposing a licence condition on large generators requiring them to offer terms to small suppliers and setting out requirements for the terms under which such trades take place.

Question 1: Is a direct trading obligation an appropriate solution to the problems related to wholesale market liquidity?

Question 2: Which licensees should be subject to the obligation?

Question 3: What requirements should be put in place relating to products, pricing, collateral and other conditions of trade?

Question 4: Is it appropriate to extend the obligation to cover generation purchases?

Question 5: What costs would this option impose?

4.1. This policy option is aimed primarily at addressing the problems faced by small/independent suppliers who seek to hedge their customer demand and grow their customer base organically. It could also be extended to provide a route to market for independent generators.

4.2. As discussed in chapter 1, small/independent suppliers and potential new entrants find it difficult to purchase the longer term hedging products that they require. For instance there is no liquid market in forward standard products with the required shape and clip size that small/independent suppliers need. In addition, the Big 6 and large independent generators are not required to trade with them and may attach low priority to providing the products that they need. Introducing a licence obligation on large generators requiring them to trade with small suppliers would be one way of addressing the wholesale hedging difficulties that small suppliers face and the barrier to entry that this creates.

Design issues

4.3. Key design issues related to such a licence condition are set out below.

The nature of the obligation

4.4. There are different ways in which the obligation could be formulated. The obligation could require large generators to:

- take all reasonable endeavours to meet small suppliers' requests in a timely fashion without offering unduly onerous terms, having regard to market circumstances; or

- trade with all suppliers (including their own supply arms in the case of vertically integrated entities) on equivalent or comparable terms.

4.5. These formulations are intended to capture only the broad concepts; clearly there would be significant design issues, as we discuss below.

4.6. The licence condition would be accompanied by guidelines, published by Ofgem, outlining in more detail what the large generators would be expected to offer. These would provide some certainty to the relevant parties as to the type of behaviour that would be deemed acceptable because they would give rise to legitimate expectations as to how Ofgem would enforce the licence condition. The guidelines would cover some or all of the following elements:

- The products that would need to be offered;
- How prices should be determined;
- The framework for collateral requirements; and
- Obligations regarding the timeliness of offers.

Products

4.7. The intention of introducing a licence condition would be to require large participants to trade with small suppliers on equivalent or comparable terms. As different small/independent suppliers have somewhat different requirements the condition needs to be designed in such a way that it gives market participants sufficient flexibility to negotiate products which meet individual suppliers' needs. To prevent any undue restrictions being placed by large generators on the types of product that they were prepared to offer, the guidelines could indicate the types of products that would need to be offered.

4.8. The guidelines could specify an upper limit for the energy that would need to be made available to an individual supplier through the exercise of this obligation. We envisage that any limit of this sort would be set at a high enough level to provide headroom for robust growth by small suppliers and new entrants.

Pricing

4.9. The guidelines may need to include requirements relating to the appropriate pricing of products.

4.10. Appropriate benchmarks for pricing could be based on market reference prices (where available), the prices of products offered to Industrial and Commercial (I&C) customers, and the internal transfer prices applying to wholesale energy provided to the company's own retail unit in the case of vertically integrated generators, or a mix of these.

4.11. Where direct reference prices are not available, or where a reference price may be unreliable because the product is traded only infrequently, affected licensees

would need to demonstrate that they use an appropriate and competitive pricing methodology. For example, the price for a shaped product might be constructed by combining prices derived from the forward curve, half-hourly pricing data from the day-ahead market, and appropriate allowances for price volatility and a trading margin.

4.12. The transfer price used for providing wholesale energy to the company's own retail unit could be another relevant benchmark for the Big 6 when pricing products to small/independent suppliers. The terms offered would not need to be identical, insofar as the duration of the hedge, its shape, and perceptions of the forward curve at the time of the deal may all be different from the basis on which the internal transfer price was calculated. While products traded internally and externally may differ, we would expect to see a strong similarity for similar products.

4.13. We are aware that an obligation on vertically integrated utilities to provide energy to small/independent suppliers on "equivalent" terms could lead to perverse incentives. For instance if the internal transfer price is used, this could provide an incentive to set a high internal price which would also apply to the external price, and thereby transfer the profit to the generation or trading arms of the business. However, we note that this type of approach would be evident to the industry through information disclosure requirements, and could risk inducing additional entry into generation if the high margins were seen as sustainable.

4.14. In this context, we note that Articles 31 and 40 of the Directive 2009/72/EC[18] promote greater financial disclosure. Article 31 requires electricity undertakings to keep separate accounts for each of their transmission and distribution activities and to keep consolidated accounts for other activities not relating to transmission and distribution. Article 40 requires supply undertakings to keep records relating to supply contracts and electricity derivatives for 5 years. If necessary, Ofgem may in due course be able to make use of these provisions to gather data comparing the product prices offered to different suppliers.

4.15. We also note that the guidelines would need to cover the framework for determining collateral requirements.

Timeliness of offers

4.16. Chapter 1 noted concerns with the length of time that it can take large market participants to respond to small/independent suppliers' enquiries. Accordingly, the guidelines could include requirements on the length of time that large participants could take to respond to requests for offers. Such conditions would apply both to the initial negotiation of general terms and to responding to specific requests for offers.

[18] Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC.

On the latter point, it may be appropriate to allow longer turnaround times for more complicated products.

4.17. We would welcome views on the requirements that should be put in place relating to products, pricing, collateral and other conditions of trade.

Implementation

Enforcement

4.18. The guidelines would aim to achieve the right balance between compelling non-discriminatory behaviour and allowing normal contractual freedom. However, it may be difficult to achieve this balance, and subsequently to monitor compliance and to identify a breach.

4.19. Our approach to compliance with this licence condition would follow our normal enforcement procedure (as laid out in the Enforcement Guidelines published on the Ofgem website[19]). If we became aware of a potential breach, either through our own market monitoring efforts or because a complaint was raised, we would normally conduct an initial investigation to assess whether there was a prima facie case to answer. This would involve assessing whether the behaviour of the licensee appeared to have run counter to wording in the condition or the requirements set out in the guidelines.

Costs

4.20. The main relevant costs associated with this option are those that the affected licensees face in responding to requests for contracts from small suppliers. Given that the number of small/independent suppliers and the volumes involved are likely to be small, the direct costs associated with providing contracts to small suppliers are unlikely to be significant. Nonetheless licensees would need to make changes to ensure that internal resources were available to deal with requests promptly and that processes were fit for purpose in dealing with small suppliers. We also acknowledge that costs could grow in the face of significant new entry. There are also likely to be enforcement costs for Ofgem.

4.21. We would welcome views on the expected costs of this option.

[19] Enforcement guidelines on complaints and investigations (232/07)

Extension to cover purchases from small/independent generators

4.22. In principle, this option could be extended to require large suppliers to purchase electricity from small, independent parties wishing to sell electricity in a timely fashion and on terms that are not unduly onerous having regard to market circumstances. This obligation would apply to supply licensees above a certain size threshold.

4.23. As well as providing a route to market for independent generators, this option might help small suppliers who want to adjust their hedged position by selling electricity back to market.

4.24. We would welcome views on whether an extension of the obligation to cover purchases of generation is appropriate.

Overall assessment

4.25. Introducing a licence obligation requiring large generators to trade directly with small suppliers could be effective in encouraging the relevant entities to deal with small suppliers more promptly and act as effective providers of competitively priced, structured hedging products. It could provide confidence to potential new entrants that they would be able to source competitive wholesale products on a continuing basis, supported ultimately by regulatory sanctions. This remedy could also be relatively quick to implement. We estimate that it should be possible to introduce a licence condition of this nature within six to nine months following a final decision to proceed with this option, provided that the introduction of the licence condition is not contested.

4.26. However, this option could face enforcement challenges; the guidelines would be difficult to define, and it may be difficult to monitor compliance and to identify a breach. While it may provide access to products, this option would not promote overall liquidity in the wholesale market (at least not on its own or until it had led to a substantial growth in small supplier market share). It would also not promote transparency, as the contract terms would be confidential.

4.27. We would welcome views as to whether this policy option could be designed in such a way as to provide an effective and proportionate response.

5. Market Making Agent

Chapter Summary
In this chapter we discuss the policy option that would oblige the Big 6 to support a Market Making Agent who would post specified products on an exchange. It explains what is meant by a market maker, key design issues, and how the concept could be adapted to provide a policy solution to the liquidity problems faced by small/independent suppliers.

Question 1: Is a market making arrangement of the kind set out in this chapter an appropriate solution to the problems related to wholesale market liquidity?

Question 2: What products should be made available through a market maker?

Question 3: What volume obligation would be appropriate?

Question 4: Would the establishment of a "Market Making Agent" facilitate the introduction of market making?

Question 5: What costs would this option impose?

What is a market maker?

5.1. Market makers are a common feature of many markets including financial and commodity markets. A market maker is a market participant that simultaneously quotes a firm bid price (the price at which it is willing to buy) and offer price (the price at which it is willing to sell) for a given product.

5.2. Many exchanges operate with officially designated market markers. Typically, the exchange will stipulate a cap on the bid/offer spread that the market maker is allowed to quote. Exchanges may also require market makers to commit to a minimum volume that they are prepared to buy/sell. Market makers are active on the Nord Pool and EEX exchanges and are credited with playing an important part in the growth of liquidity on those exchanges.

5.3. Voluntary market makers undertake the role either in the expectation of a financial return or because the development of liquidity is in their long term strategic interest. A market maker makes a return partly through its bid/offer spread (which provides a margin when there are matching transactions). In addition exchanges may offer the market maker reduced exchange transaction fees and/or a direct compensation per trade. The market maker's incentive is to develop high levels of liquidity in its products, as it will thereby increase both its trading returns and its transaction income.

5.4. This type of market making can involve substantial market exposure and some market makers have incurred significant commercial losses. If the market maker misjudges the market price or if the market price changes before the market maker can react and adjust its bid and offer prices, losses may be incurred. To deal with the

latter, trading platforms typically include rules which mitigate some of these risks, such as permission to widen the bid/offer spread or reduce volumes at times of price volatility.

5.5. Appendix 4 summarises the experience of market makers in international electricity markets. We note that as well as voluntary market makers acting out of their own interests, there are precedents for regulators requiring a party to act as a market maker to address concerns, including low levels of market liquidity, for example in Denmark and New Zealand.

Design issues

5.6. The key design issues are: determining who bears the market maker exposure, the products to be provided by the market maker, and the volumes to be made available. We briefly discuss these issues, and how they impact on a solution (outlined below) intended to address the wholesale liquidity problems faced by small/independent suppliers and non-vertically integrated market participants, as well as overall wholesale liquidity. We then set out a specific option for consultation, based on a "Market Making Agent" approach.

Exposure

5.7. Any market maker needs to understand the risks it could be exposed to and be confident of its ability to manage these risks. Market makers in electricity markets are typically well capitalised firms with a strong generation portfolio. The market makers on Nord Pool and EEX are usually the dominant utility in the region as they have the required balance sheet strength, trading experience and generation portfolio to manage the risks associated with market making more effectively than other market participants.

5.8. In terms of adapting the idea to the GB wholesale market, this suggests that the Big 6 are best positioned to take the risk involved in being a market maker. They have the attributes outlined above which would enable them to manage the risks. However, it is possible to design arrangements in which other entities participate, either sharing a more general obligation or on a voluntary basis. The Market Making Agent, which we describe later in this chapter, would bear no collateral or market exposure, as the underlying product ownership would remain with the Big 6, until the point at which a transaction is made on the exchange.

Products

5.9. A market maker will make a market in a standardised product, posting transparent prices on a trading platform. To help address the liquidity problems faced by small/independent suppliers who start off with a small customer base, the market maker should provide products which are of value to small suppliers and which are not well provided through other routes.

5.10. The main gap currently facing small suppliers is in forward products with small clip sizes. Options for products range from small clip sizes of standard shapes (base/ peak/super-peak) through to more sculpted shapes that match customer demand profiles. Contract duration should be over the sort of time horizon that matches the hedging period sought by small suppliers. To meet the needs of small/independent suppliers, it would be important that the minimum clip size is set at an appropriately low level. We would welcome views on which products would be best suited to this arrangement.

5.11. It may be appropriate to limit the remit of the market maker to a few key products to start with. Additional products could then be developed, as required, by a "Product Panel", involving the Market Making Agent and a range of industry participants, including smaller market participants.

Volume requirements

5.12. A key design issue is the volume obligation placed on the market maker. There are two potential approaches, involving either a limited volume geared to the needs of small/independent suppliers or a larger volume requirement geared towards achieving wider market liquidity.

5.13. A limited volume approach focuses on the specific products and volumes required by small/independent suppliers. The volume obligation on the Big 6 would have to be sufficient to enable robust growth by small/independent suppliers or new entrants. For example, if the market maker were to supply volumes required for an independent sector serving 500,000 domestic customers, this would amount to approximately 1.7TWh in total across all the entities obliged to supply the Market Making Agent and be well beyond the number of customers served by small/independent suppliers today. This energy volume would correspond to around 0.5% of total GB electricity consumption and around 0.8% of domestic demand. With this level of volume, it could be appropriate to restrict participation just to small/independent suppliers to ensure that they could access the products.

5.14. A potential problem with a low volume approach is the possibility that a separate market would form, where few trades would be transacted and there could be a disconnect from wider wholesale prices. Another concern relates to the ability of market participants to game the arrangements. For instance, it could be in the interests of the Big 6 to set high prices in the expectation that there would be limited interest. However, the requirement to post both bids and offers with a fixed narrow spread reduces this incentive as they would be obliged to buy energy at nearly the same price at which they are offering to sell (though this may not be a strong disincentive if volumes are low).

5.15. The second approach is designed to promote liquidity more generally, and so a higher mandated volume would be required. This would enable more parties to take part in the arrangement and aid price discovery. With larger aggregate volumes and the ability to access larger clip sizes, there would be less risk of the products offered by the market maker forming a separate market, seldom utilised by most traders,

and subject to disconnected prices. Larger volumes would also make the arrangements less susceptible to gaming. However, larger volumes would correspondingly increase the exposure borne by the Big 6.

5.16. We would welcome views on what volume obligation would be appropriate.

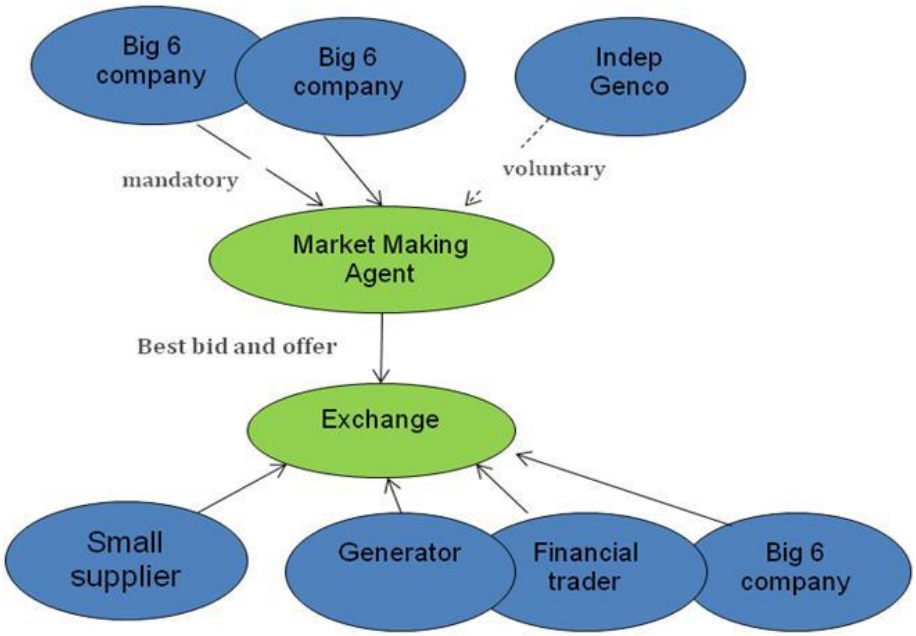
Market Making Agent model

5.17. An option for the GB market would be to create a "Market Making Agent". Under this approach, the Big 6 would provide relevant product to a specially created agent, who posts the best bid and offer on a trading platform (most likely to be an exchange). Suppliers (and other allowed participants) then purchase the relevant products if they so want.

5.18. The key elements of this approach are as follows:

- There would be a licence obligation on the Big 6 to provide Bids and Offers for all the defined products, subject to a maximum bid/offer spread.
- The Big 6 would be required to ensure availability in the defined products, with a minimum volume available at any one time.
- A Market Making Agent would be created, with the role of selecting the best bid and offer placed with it by the Big 6; and posting this bid and offer on the trading platform.
- Independent generators could also place offers with the Market Making Agent.
- Eligible participants (including small/independent suppliers, and possibly other trading entities) could then accept the bids and offers, following the trading platform's normal trading rules.
- The Market Making Agent itself would bear no collateral or market exposure, as the underlying product ownership would remain with the Big 6.
- The trading platform would define counterparties' collateral requirements.

5.19. The diagram below summarises the key relationships in this model (assuming that the bids and offers are posted on an exchange). It could be tailored to accommodate both low and high volume obligations applying to the products provided by the Big 6.



5.20. Further detail is provided in appendix 5.

5.21. We would welcome views on whether the establishment of a Market Making Agent of this sort would facilitate the introduction of market making in the GB wholesale market.

Implementation

5.22. To establish market making arrangements of this nature would require a number of steps, including the following:

- A licence condition on the Big 6 establishing the relevant obligations;
- Appropriate decision on products to be covered and volume requirements;
- Definition of the governance of the Market Making Agent;
- Funding mechanism for the Market Making Agent; and
- Selection of a party to undertake the Market Making Agent role.

5.23. The functions undertaken by the Market Making Agent are quite limited, and its costs should also be low. Nonetheless, it may need some external funding. We envisage that a wide variety of parties could be interested and competent to undertake the Market Making Agent's role.

5.24. The arrangements would impose costs on the Big 6 who would be required to provide the underlying products and maintain market liquidity. Under this option, the bulk of the relevant costs fall on the Big 6. We would welcome views on the costs of this option.

5.25. Support for the Market Making Agent could be reduced over time based on a range of factors such as when a certain level of liquidity is reached or when market conditions allow small/independent suppliers to achieve their hedging requirements without the support of regulated arrangements.

Overall assessment

5.26. A market making solution would facilitate small/independent suppliers' access to appropriate hedging products. A requirement to post both bids and offers and the use of a maximum spread provides an incentive to price products in a way that fairly reflects their market value (though there may be risks to this if volume obligations are low). The high volume approach could improve overall market liquidity, create a robust market price and help to promote price transparency. It could be of value not only to small/independent suppliers, but potentially also to independent generators and financial intermediaries. Where the Market Making Agent operates on an exchange this will ensure that all counterparties will face standard collateral terms and reduced counterparty risk due to centralised clearing[20]. It can be flexible and evolve over time in response to market conditions and market participants' needs.

5.27. There are various areas of concern. There are challenging design issues relating to the product range and volume obligations. A market maker option would take longer to implement than one based around a licence obligation to trade directly with small/independent suppliers. It would provide a limited range of standardised products and so would potentially be less flexible than a direct trading obligation. In addition, it will be important to ensure that the trading rules are not susceptible to gaming.

5.28. We would welcome views as to whether this policy option could be designed in such a way as to provide an effective and proportionate response to the problem of liquidity and access to wholesale electricity.

[20] See the Liquidity Discussion Document for a more detailed explanation of the benefits of exchange based trading and centralised clearing.

6. Mandatory auctions

Chapter Summary
In this chapter we discuss the option of introducing mandatory auctions, applying either to day-ahead volumes and/or to longer dated forward products.

Question 1: Are mandatory auctions an appropriate solution to the problems related to wholesale market liquidity?

Question 2: How should the volume of generation subject to a mandatory auction be set?

Question 3: Who should be obliged to offer into the auction?

Question 4: What design features should be incorporated into the auction process and rules?

Question 5: Should the mandatory auction apply to day-ahead volumes and/or to longer dated forward products?

Question 6: What costs would this option impose?

Background

6.1. In the Liquidity Discussion Document, we asked for views on whether it was appropriate to impose some form of requirement for generators to sell a proportion of their output through a specified auction process. An auction ensures that primary generation output is made available to the market that could improve overall levels of GB market liquidity. It is important to note that auctions may not necessarily improve overall levels of liquidity (churn), if volume is sold and bought only once - it is secondary trading (re-trading) that is the key driver of market liquidity. An auction also has the potential to provide a transparent way of selling electricity, to create robust reference prices and to ease access to the market for smaller market participants by providing confidence that they will be able to purchase products to meet their hedging needs.

6.2. There are a variety of ways in which mandatory auctions could be introduced. In this chapter, we focus on two possible versions. One version is a day-ahead auction which would allow for the development of a robust reference price for day-ahead electricity, thereby improving transparency and encouraging the development of forward and financial products covering longer term periods. The existence of derivatives would, in turn, encourage greater liquidity and reduce barriers to entry. Whilst our Liquidity Discussion Document found that the prompt market (one month to within-day) was broadly liquid, some concerns were expressed that prompt liquidity could be low at times.

6.3. In the second approach, there is an auction for forward physical electricity to address directly the problems of liquidity further out on the curve.

Two versions of mandatory auctions

A day-ahead auction

6.4. Day-ahead auctions are a common feature of a number of European markets where they attract significantly greater volumes compared to the continuous market. In GB, where both APX and N2EX currently offer a day-ahead auction (APX also offers a continuous market), the reverse is true. Whilst a number of European markets who operate day-ahead auctions have significantly higher overall levels of liquidity than GB it is important to recognise that correlation does not necessarily imply causation and that the higher overall liquidity may be due to differences in market structure and trading arrangements. However, an advantage of a liquid day-ahead auction is that it can provide robust references prices.

6.5. A robust day-ahead reference price is one which market participants generally accept as a price at which electricity can be traded and that appropriately reflects market fundamentals. Robust reference prices typically imply that the market from which they are derived is liquid. As a track record of robust reference prices emerges, it becomes possible to carry out the type of risk management assessments, such as volatility analysis, necessary to trade forward with confidence and to develop financial derivatives around the reference price.

6.6. Whilst reference prices exist currently (e.g. the day-ahead LEBA, UKPX RPD, N2EX, Platts and Heren indices), none are universally accepted as reflecting a fair market price. Concerns regarding the volume of trades used to define the reference price, the manner in which the prices are obtained and the period over which prices are averaged are all cited as reasons why the existing reference prices may be unreliable.

The role for a mandatory day-ahead auction

6.7. Robust reference prices, and the benefits that flow from them, will only emerge if there is a day-ahead market that is reliably deep and liquid. A number of respondents have suggested that to date, such a market has not emerged, at least in the sense of providing generally accepted reference prices.

6.8. One way of ensuring that there is always a deep and liquid prompt market would be to impose some form of requirement for generators to sell a proportion of their generation through a day-ahead auction. This would ensure that a minimum volume of electricity was traded every day and, provided that this volume represented a sufficient proportion of physical electricity requirements for that day, that the auction price was representative of the price for electricity across the day. Also, whilst mandatory auctions could not be guaranteed to lead to the development of financial derivatives, they should help to provide conditions conducive to their emergence.

Auctions for forward products

6.9. An alternative version of a mandatory auction (which could be combined with day-ahead auctions) would be to require generators to sell physically delivered electricity forward. This option could address concerns over the lack of liquidity along the forward curve and the difficulty that smaller market participants face in hedging forward.

6.10. This option corresponds closely to the requirements to hold virtual power plant (VPP) auctions that have been imposed in France, Belgium, Netherlands, Denmark, Spain and elsewhere. There are also similarities to gas release programmes adopted in a number of countries. The Third Package provides for energy regulators to be given powers to introduce such arrangements where they will benefit consumers through promotion of effective competition. Another example, geared towards participation by small suppliers, comes from the Non-Fossil Purchasing Agency (NFPA)'s auctions of energy from contracts awarded under the Non Fossil-Fuel Orders (NFFOs).

6.11. Under this option, the products to be offered – their size, type (peak/off-peak, shape and so on) and duration – would be on the basis of consultation with market participants. If the product form and the auction process were suitably designed, it may be possible that industrial and commercial customers (I&C), as well as licensed suppliers, could participate, and this would help to increase the diversity of participation in the wholesale market. An annual product would match the purchasing needs of many large energy consumers.

6.12. We would welcome views on whether this option would be more appropriate than a mandatory day-ahead auction or whether the two approaches can be/should be combined.

Design issues

6.13. There are a number of design issues that would have to be considered before mandatory auctions could be introduced. Below, we highlight some of the most important.

Volume requirements

6.14. A key design issue for mandatory auctioning relates to the extent of the obligation placed on generators, i.e. how much volume would they be required to offer into the auction. If the obligation is too small, there may not be a significant increase in liquidity and the prices emerging from the auction may not be considered to be robust reference prices. There might be a perception that the auction could be gamed.

6.15. If the obligation is too large then it could limit the choice over how a generator chooses to manage risk, which could increase overall costs of hedging. In addition,

there may be a risk of fragmenting existing volumes (e.g. from the continuous market) or moving liquidity from one period to another (e.g. from prompt to forward).

6.16. We would welcome views on what level of obligation on generators would be appropriate.

Coverage

6.17. It will be necessary to decide which generation companies should be subject to a mandatory auctioning requirement. Relevant criteria in determining the obligation's coverage could include market share in generation, taking account of affiliates and common ownership structures, and the absolute value of generation output.

6.18. We would welcome views on how the coverage of any mandatory auctioning obligation should be determined.

Auction rules

6.19. The rules governing any mandatory auction would need to be carefully designed. There is a wide range of international and GB experience on which it would be possible to draw. Below we set out a range of questions that would need to be addressed.

- Should there be restrictions on who can participate in the auctions? In particular, should the retail arms of the companies subject to the auctioning requirement be allowed to participate in the auction?
- Should there be a prohibition on the generation and supply arms of a vertically integrated company exchanging information before it is made available to the market? How might such a prohibition be monitored?
- Is there a need for some form of reserve price or other restrictions on bid and offer prices? Could complex bids and offers placed by vertically integrated utilities effectively circumvent the mandatory auctioning requirement?
- When should the auction take place? The timing of the auction will have an important bearing on the integration with other auctions and trading, both cross-border and within the GB.
- How often should the auction take place? This relates primarily to mandatory forward auctions; by way of illustration, many VPP auctions take place on a monthly or quarterly basis.
- What products should be auctioned, and what volume of each product could be sold in any single auction? For instance, it may be helpful for the auction of longer dated products to release volume on a rolling basis, so that at least some of the products sold in earlier auctions are still available when the next auction takes place. This gives buyers confidence that they can adjust their contract cover.

6.20. It is important to note the need to dovetail any new mandatory auction with relevant measures arising from Project Discovery. Of particular note, Project

Discovery considers the introduction of a centralised renewables market. This would include a within-day auction by the SO (System Operator) of renewable volume. It is envisaged that other sellers (and demand-side response) could also submit offers into this auction. Whilst this could potentially also be the mechanism used for the mandatory auction described here, the aims of the two auctions are such that they are unlikely to take place at the same time. The renewables auction needs to take place within a few hours of each settlement period, whereas the aim of the mandatory auction is to set a price at the day-ahead stage. The existence of two auctions could be beneficial to liquidity by providing the market with different products at different lead times, but the design of the two auctions would need to be complementary.

6.21. We would welcome views on features that should be incorporated into the auction process and rules.

Implementation

6.22. To establish either form of a mandatory auction would require a number of steps, including the following:

- Determining auction design.
- A licence condition on the relevant entities establishing the obligation, including setting out the volume requirement.
- Definition of the governance of the auction.
- Selection of a party and platform to undertake the auction.

6.23. The platform where the mandatory auction would take place would have to be designated. We envisage that the platform for the mandatory auction would be chosen by a competitive tender, with the tenders being evaluated by Ofgem and a representative selection of industry participants. At present, there are, two day ahead auctions held by APX and N2EX and these companies, as well as any other interested entities, could respond to the call for tenders.

6.24. The costs associated with the introduction of a mandatory auction would depend on the type of auction and what trading platform organised the auction. For example, both APX and N2EX have developed the functionality for day-ahead auctions. The costs of setting up auctions for forward products may be higher than for day-ahead auctions if it necessitated new systems development.

6.25. The arrangement would impose costs on a number of entities, most significantly on those generators who would be required to provide the underlying products. We would welcome views on the expected costs of this option.

Overall assessment

6.26. Mandatory day-ahead auctions could help to improve the ability of small/independent suppliers to hedge (depending on auction and product design)

and boost overall liquidity in the wholesale market. The development of a liquid financial market is not guaranteed, but experience in other countries (most notably Nord Pool) shows that with a substantial volume of generation passing through a day-ahead auction, trusted reference prices can develop and a wide range of financial products emerge, providing risk management tools for small suppliers and new entrants. However, this option would have a significant impact on the current contractual arrangements of major generators and could be disruptive, at least initially.

6.27. A further consideration is that voluntary day-ahead auctions already exist, although the volumes trading through them have been limited to date. We note, however, that the trading platforms themselves could be significant beneficiaries from the introduction of mandatory auctions if regulatory intervention stimulates liquidity.

6.28. Mandatory auctions of longer dated products have a different set of expected benefits and risks. They could be designed to accommodate small suppliers, by increasing the range of options they have for buying forward product. They could become self-sustaining if generators and suppliers increasingly decided to use this route for their energy contracts.

7. Self-supply restriction

Chapter Summary
In this chapter we discuss the option of introducing a self-supply restriction which would require integrated utilities to purchase a certain proportion of their wholesale needs through the market.

Question 1: Is a self-supply restriction an appropriate solution to the problems related to wholesale market liquidity?

Question 2: Who should be covered by the self-supply restriction?

Question 3: How should the extent of a self-supply restriction be set? Should it relate only to the supply of domestic customers?

Question 4: Should a self-supply restriction be accompanied by measures to ensure that small participants have access to the products they need? If so, which products?

Question 5: How could the previous problems related to enforceability be overcome?

Question 6: What costs would this option impose?

Background

7.1. The Liquidity Discussion Document asked for views on whether it would be appropriate to reintroduce some form of self-supply licence condition as a means of increasing liquidity in the GB electricity market. Respondents to the Liquidity Discussion Document had a wide range of views on its desirability, with all the vertically integrated respondents opposed to the idea but a number of respondents, including some independent generators and small suppliers in favour.

7.2. Respondents suggested that a self-supply restriction would improve overall levels of liquidity by ensuring that vertically integrated market participants do not internalise volume (i.e. use output from their own generation assets to meet their customers' demand) which results in volume being lost to the market and does not aid price transparency. However, a number of integrated participants argue that they currently do not internalise significant volumes of electricity and trade multiplies of their own generation output.

7.3. The original self-supply licence condition, which was removed in 2004, applied only to vertically integrated companies whose supply businesses had previously been Public Electricity Suppliers (PES). It was removed in part because Ofgem felt that it was ineffective and discriminatory (because it did not apply to all vertically integrated companies). Also, the restriction only applied to retail volumes sold within the former monopoly area of a PES. With the advent of full retail competition it became impossible for Ofgem to determine whether or not a contract was being signed by a PES for the purpose of supply to their "in area" customers.

7.4. In this chapter, we consider whether it would be possible to reintroduce a self-supply restriction which would overcome the problems identified with the previous version, lead to increased liquidity and, possibly, contestability. We outline some of the key design challenges that would need to be addressed.

Design issues

Coverage

7.5. It would be necessary to determine to whom the self-supply restriction should apply. Our initial view is that it would apply to the large vertically integrated utilities, although a number of smaller companies in the GB electricity market also have some degree of vertical integration. It is arguable that the self-supply restriction should only apply to companies above a certain size, given that the underlying intent is to boost market liquidity and facilitate the ability of small suppliers to access wholesale products.

7.6. The relevant licence condition could be included in all supply licences, along with criteria specifying the conditions under which it would apply. Relevant criteria might include market share in supply; or market share in domestic supply, since I&C demand is already largely met via the traded market.

7.7. We would welcome views on how to determine which companies would be covered by the self-supply restrictions.

Proportion of demand requirements covered by the restriction

7.8. A complete self-supply restriction would be the simplest option. However, it is not clear that such a restriction would be proportionate to the objective of improving liquidity and access to wholesale market products.

7.9. The restriction could be set as a percentage of total sales. We note, however, that I&C sales are mostly sourced from the traded market, so it might be possible for companies to comply with a condition of this sort without altering their behaviour which would limit the benefit from the restriction. This potential problem could be overcome by applying the restriction only to domestic sales.

7.10. We would welcome views on how the extent of a self-supply restriction should be set and whether the restriction should be applied only to the supply of particular classes of customers.

Detailed form of the restriction

7.11. In determining the form for any self-supply restriction, a number of issues arise where a total restriction is not applied. First, customer switching means that the size of a company's retail business can vary over the course of a year. If the

restriction were to be based on annual historic sales volumes, companies losing significant market share may end up with an unduly stringent restriction whereas companies gaining market share may end up with an unduly lax restriction. This problem could be overcome by adjusting the restriction on a monthly basis i.e. the restriction would equal a certain percentage of a company's customer demand from the previous month, adjusted for seasonal variations in demand.

7.12. Second, setting the restriction on the basis of average sales volumes might not increase the availability of shaped products. A company could meet its obligation by trading baseload energy. Applying the restriction as a percentage of expected sales volumes in every half-hour would generate a greater need for shape to be traded although it would also increase monitoring and compliance costs.

7.13. Third, there is a question of how to ensure the self-supply restriction avoids the issue of inadvertent self-supply. For example, suppose the generation arm of a vertically integrated company uses an exchange or a broker to sell contracts for its electricity. The company will not know its counterparty until the trade has been made; it is possible that the counterparty turns out to be the supply arm of the same company. Such a situation could arise accidently even if there is an information ring-fence.

7.14. Finally, an advantage of the self-supply restriction is that it gives vertically integrated utilities a degree of flexibility as to how they interact with the market to meet their self-supply restriction. However, for the condition to be effective in terms of increased price transparency and ensuring that volumes are made available to all market participants it may be necessary to restrict certain routes by which suppliers could source their supply requirement (for example through excluding off market contracts). We note that as more conditions of this sort are imposed, the closer the self-supply restriction comes to a measure which mandates the use of one or more trading platform.

7.15. We would welcome views on what form any self-supply restriction should take, including any detailed conditions that should be applied.

Ensuring access to wholesale energy for small suppliers

7.16. A self-supply restriction may not necessarily address a key concern for small suppliers, namely their inability to obtain products they require in small enough volumes to be useful. It is not obvious that a self-supply restriction would increase the availability of small clip size products. Indeed, it seems likely that vertically integrated companies would seek to cover their un-hedged supply positions by entering into large volume, possibly long-term, contracts. However, if the self-supply restriction was applied in a way that meant that traded volumes were profiled, then this would likely be more helpful for small suppliers. In addition, it may be possible to impose an obligation to make available the specific products which small suppliers require.

7.17. We would welcome views on whether a self-supply restriction should be accompanied by measures to ensure that small suppliers could benefit from the increase in traded volumes that would result.

Implementation

Enforceability

7.18. One of the reasons why Ofgem removed the previous self-supply restriction was that it was not convinced that it was effective. It was argued that *"it seems very possible that suppliers who ensure compliance do so through a complex (and more costly) corporate structure that creates no benefits in terms of contribution to market liquidity"*. Another concern expressed in 2003 was that suppliers were deciding *"to ignore the licence condition, in the belief that Ofgem was unlikely to be able to detect such non-compliance so long as it did not create significant anti-competitive effects."*[21] Ofgem concluded that the self-supply condition was essentially unenforceable without it being significantly revised and extended.

7.19. Given our previous concerns regarding the enforceability, this is likely to be a particularly important consideration. It would be necessary for companies subject to the self-supply restriction to provide sufficient evidence for Ofgem to be satisfied that the condition was being met. This could impose a significant compliance and monitoring cost unless most of the electricity was traded via brokers or exchanges, and these entities were required to provide the necessary data to Ofgem. We also note that European developments may lead to more reporting and monitoring in any event.

7.20. We would welcome views on the best way of ensuring that the provisions of any self-supply restriction could be enforced without undue costs being incurred.

Costs

7.21. Key costs involved in this option are the compliance and monitoring costs incurred by market participants and Ofgem. We also note the possibility of increased transaction and operating costs and increased counterparty default risk that could arise for a vertically integrated supplier with a self-supply restriction. We would welcome views on the magnitude of the costs of this option.

[21] Restriction on self-supply, Final proposals, Ofgem, October 2003

Overall assessment

7.22. A fully effective self-supply restriction is likely to ensure that volume goes through the market and has the potential to increase overall liquidity (although as noted above secondary trading is a key driver of overall liquidity). It gives vertically integrated utilities a degree of flexibility as to exactly how they interact with the market to meet their self-supply restriction. To the extent that the self-supply condition does not directly address small suppliers' ability to access clip size and shape, it could be combined with additional measures aimed more directly at ensuring that small participants are able to meet their hedging needs.

7.23. However, it does face a wide range of design challenges to ensure that it is effective and enforceable. It is possible that a self-supply restriction would increase primary trading without increasing overall trading. Costs of monitoring and enforcing the obligation could be material, as could the compliance costs of the companies subject to the restriction.

8. Collateral requirements

Chapter Summary
In this chapter we discuss a number of possible approaches for making it easier for small suppliers to meet their collateral requirements.

Question 1: Do you think that any of the possible approaches outlined in this chapter have merit and should be pursued further?

Background

8.1. Collateral obligations normally take the form of an initial margin, covering some percentage of the counterparty's potential exposure (including its settlement risk in the case of physical contracts), plus a daily variation margin ("mark-to-market"), that provides protection against changes in the market price that place one or other counterparty in a loss-making position. Some small/independent suppliers have suggested that potential counterparties can use initial margins as a way of deterring trading. Of the two types of collateral, small suppliers typically find variation margins more burdensome, because they are difficult to predict. Moreover, since illiquid markets tend to be more volatile than liquid markets, the current low level of liquidity in the GB market may be making variation margins particularly onerous. Smaller market participants may therefore have to restrict trading in volatile market conditions to limit the risk of a sudden rise in their mark-to-market requirements.

8.2. Where contracts are negotiated bilaterally, collateral obligations will vary depending on the perceived credit worthiness of the contract counterparties. This can disadvantage new entrants, who will not have a credit history, unless they can provide parent company guarantees. By contrast, all market participants face the same collateral terms for exchange based trades. This can reduce the attractiveness of cleared trades for companies with strong credit ratings, who may be able to negotiate very low collateral obligations on a bilateral basis.

8.3. In this chapter, we consider in more detail possible approaches that could ease collateral and credit requirements. However, we note that any changes to collateral arrangements would need to be consistent with prudent risk management practices. Our initial view is that it is not clear that regulatory intervention specifically on collateral is appropriate at this stage.

Possible approaches to collateral

Non-standard collateral

8.4. Typically, collateral has to be provided as cash, letters of credit, or parent company guarantee. But another way that some small participants have approached the issue has been to post non-cash assets as collateral. Ofgem are aware of a number of small participants that have used Renewables Obligation Certificates (ROCs) or a claim on their business as collateral.

8.5. How attractive these non-standard approaches to collateral appear to potential counterparties will depend on their position in the market. For example, participants who do not face a renewables obligation and do not routinely trade ROCs are unlikely to be interested in accepting ROCs as collateral. Similarly, participants without supply licences are unlikely to want to accept a claim on a supplier's business as collateral since the value in the company is in the revenue it is owed by its customers. Even if a potential counterparty holds a supply licence, it may consider that the small supplier's customer base does not represent a reliable revenue source. For example, domestic customers can only be locked into a contract for 28 days and so little revenue certainty can be attributed to them.

8.6. Ofgem are interested in exploring further the use of non-standard approaches to collateral. We would welcome views on whether there are non-standard approaches that might be generally applicable and, if so, whether there are market barriers that complicate their wider use.

Pooling credit

8.7. A number of industry participants have proposed that one way to reduce the credit obligations faced by small suppliers would be to "pool" credit requirements. In this approach, a limit would be placed on the collateral requirements (both initial margin and variation margin) that small suppliers face; any remaining collateral requirements that counterparties wished to impose would be recovered from all market participants by smearing the costs across the market.

8.8. A key challenge with this approach is how an appropriate limit for the direct collateral exposure of small suppliers would be determined. If it were set too low, then it might encourage under-capitalised firms to enter the market, who would be unable to survive adverse trading conditions. This might increase the number of bankruptcies, thus undermining confidence in more robust small suppliers and so, potentially having an adverse impact on retail market contestability. On the other hand, if it were set too high, it would at best have little or no impact and might actually encourage participants to impose more onerous collateral terms than are currently the case[22].

8.9. A further issue is whether a cap would need to be placed on the remaining collateral requirements (over and above the agreed collateral limit of small suppliers). There could be perverse incentives on some participants to increase the collateral they require from small participants, if the proportion of the pooled credit to which they were exposed were to be less than the financial benefits that would accrue to them from larger collateral holdings. To combat this risk, some limit on the level of pooled credit may have to be imposed but, again, it would be difficult to

[22] Participants could argue that Ofgem had determined that such collateral requirements were affordable.

determine what that cap should be. Too low a cap and counterparties who trade with small suppliers might be inappropriately exposed to risks, because the overall collateral provided by small suppliers (direct plus pooled credit) might be insufficient to cover the losses to which the counterparty was potentially exposed. Too high a cap and, for the reasons just explained, market participants would be paying inefficiently high levels of pooled credit.

8.10. Finally, it would be necessary to decide how the remaining credit requirements would be recovered after small suppliers have posted their direct collateral requirements. Would it be from all market participants via some form of network charge and, if so, on what basis?

Credit insurance

8.11. Like any other form of insurance, the idea behind credit insurance is to spread the risks faced by individual market participants by merging their risks with those of other participants. For example car insurance works because a large number of car owners pay a relatively small premium (small compared to the costs they would be likely to face if they were involved in an accident) and the sum of these premiums is sufficient to cover the accident costs associated with the small number of premium payers who actually have accidents. The same idea applies to credit insurance, but in this case the risk that is being mitigated is that one of the premium payers will default on a contract. In the event of a default by a small supplier, its counterparties would receive compensation[23].

8.12. Insurance works best when the risks can be spread over a large number of premium payers. Consequently, we consider that credit insurance would only be successful if all participants were required to participate. Imposing mandatory insurance requirements is a well-established practice in other situations, e.g. third-party car insurance and employer's liability insurance.

8.13. A credit insurance arrangement would make sense only if the insurance premiums reduced the overall collateral that market participants, particularly small suppliers, had to post and yet at the same time were sufficient to cover all credible default scenarios. Consequently deciding on a methodology for determining how the premiums payable by market participants would be set would be an important design issue. In normal insurance markets, premiums reflect the risks associated with the party taking out the insurance. This approach may mean that small suppliers had to pay proportionately higher premiums than larger participants (per MWh), which might undermine the benefit of imposing a mandatory credit insurance requirement.

[23] There is, of course, nothing in principle to stop counterparties to small suppliers taking out credit insurance themselves to guard against default risk.

Forced clearing

8.14. Another way of ensuring that small participants are not unduly disadvantaged with respect to the collateral that they have to post would be to impose a requirement that all trades had to be cleared i.e. conducted via a central counterparty (CCP)[24]. This approach is similar to that being considered by the EC for derivatives trading (see appendix 6).

8.15. However, the EC proposals only envisage requiring standardised trades to be conducted via a CCP. It may be of limited use to market participants who require highly structured products. Since these are not routinely traded, it may be difficult to assess the risks associated with such products and to establish a market price against which to calculate variation margins. Consequently, it may be difficult to find an entity willing to undertake this CCP role.

8.16. A further disadvantage of this approach, which to some extent is shared by the approach of predefining credit terms discussed below, is that it removes any flexibility in negotiating credit terms. As discussed earlier, some companies have successfully used non-standard approaches to collateral and such innovative methods would not be possible with forced clearing.

Predefined credit terms

8.17. Another approach to ensuring that the credit terms available to all suppliers are set consistently could be to require credit terms to be pre-defined for all electricity contracts. Under this approach, it would be necessary first to define a baseline level of collateral requirements, consistent, for example, with the terms that the Big 6 are able to obtain. There would then be a set of criteria ("matrix") that would define what additional collateral requirements participants perceived to be less creditworthy would have to post. Criteria that could be used for this purpose include the level of working capital held by a company, the length of time that it had been trading without default and the type of contract required.

8.18. This approach could be implemented in a uniform way, with the criteria being developed by an industry working group. This would have the advantage that there would not need to be a separate assessment of a participant every time that it wanted to start contracting with a new counterparty.

8.19. In essence, this approach consists largely of making explicit and standardising the type of risk management practices that prudent companies are likely to

[24] A central counterparty is an entity that interposes itself between counterparties to contracts traded in one or more financial markets, becoming the buyer to every seller and seller to every buyer.

undertake anyway when deciding whether to agree to trade with a new counterparty. It would have the advantage for small suppliers of aiding transparency and removing one potential barrier that they can face when seeking to enter into contracts with large participants[25].

8.20. However, it is likely to be very challenging to define the credit terms and requirements associated with this approach.

Overall assessment

8.21. Whilst collateral and credit requirements can be a significant barrier to trading and growth for independent/small suppliers and new entrants, requiring counterparties to post collateral is a well-established method of mitigating the risk of a counterparty defaulting on a traded position. Any arbitrary reduction in collateral requirements could lead to the entry of participants who are not able to bear the market risk. Consequently, we have concerns as to whether any of the approaches represent an effective and proportionate response to the collateral problems faced by small suppliers.

8.22. We would welcome feedback as to whether any of the approaches discussed in this chapter could help smaller participants without damaging the ability of counterparties to manage their risk exposure appropriately or creating perverse incentives.

[25] As noted earlier, some small suppliers have indicated that it can take up to 18 months to agree trading terms, with much of this time being spent on defining collateral requirements.

9. Conclusions and next steps

Chapter Summary
In this chapter we discuss our proposed assessment criteria, initial views on the options, and the next steps.

Question 1: Do you agree with the proposed assessment criteria?

Question 2: Which do you think is the best policy option or combination of options?

Assessment criteria

9.1. As an initial set of high-level measures against which the options are to be assessed we propose the following:

- Improving the ability of small/independent suppliers to meet their wholesale energy purchasing and risk management needs and thereby to sustain and improve supply market contestability;
- Improving overall liquidity in the wholesale electricity market, including liquidity along the forward curve;
- Other benefits, including improving the ability of large consumers and independent generators to access appropriate wholesale liquidity and thereby improve market investment and efficiency; and
- Least cost and disruption to efficient market outcomes and minimising unintended consequences.

9.2. We note that the assessment criteria need to be consistent across all options. Applying different criteria risks coming to a sub-optimal choice through not assessing options against a common set of standards. However, we also note that different policy options achieve the high level criteria through different specific routes or levers; so it will be possible to have different targets for each option, tailored to assessing whether the specific levers are on track to support and sustain contestability and liquidity. This applies to the success criteria for assessing market initiatives, outlined in chapter 2.

Initial views on the options

9.3. Ofgem would prefer the market and market initiatives to develop solutions to deliver liquidity and access to wholesale market electricity. We have accordingly set out criteria and an initial timetable for assessing market initiatives.

9.4. Policy options will be pursued if market initiatives do not deliver. Ofgem's initial view is that the policy options outlined in this document have different strengths and weaknesses; they would deliver different benefits in terms of promoting supply market contestability and liquidity; and much depends on the detail of how they would be implemented. Different options could be used to build on market initiatives

if these are only partially successful in meeting market participant needs. At this point, all the policy options are considered as viable.

9.5. We note that in responses to the Liquidity Discussion Document and in subsequent conversations with key stakeholders, different parties have expressed a preference for different policy options. No single option stands out as commanding support across all industry stakeholders.

9.6. We also note that the options outlined above are not necessarily alternatives and combinations of policies could be implemented. For instance, it would be possible to combine solutions geared primarily toward helping small suppliers and new entrants with other measures geared more towards promoting overall wholesale market liquidity.

9.7. It might also be desirable to specify the circumstances under which any obligation placed on licensees would be switched off. This would provide greater regulatory certainty for market participants.

9.8. We welcome feedback on the relative merits of the options, including any attractive packages or combinations of options.

Legal framework

9.9. The policy interventions are all likely to require licence modifications - to impose an obligation to provide offers to small/independent suppliers, to provide product through a Market Making Agent, to auction a proportion of generation or to restrict the extent of self-supply. The exception to this may be where Ofgem is given such powers (perhaps through licence conditions) in the transposition of the Third Package or other European or domestic legislation.

9.10. There are two broad routes to amendment of licence conditions which Ofgem would need to consider if any of these conditions are to be taken further: first, the terms of licences may be modified where agreement can be reached with the relevant licence holders (either individual licensees or the relevant majority of a class of licence holder under the Collective Licence Modification route); secondly, licences may be modified where a licence modification reference to the Competition Commission leads to a favourable report by that body on the public interest in making a particular modification to a licence or licences. Ofgem would in any event conduct a full consultation and consider the views of third parties as well as the views of the licensees directly affected.

Next steps

9.11. We are allowing a two month period for consultation and seek responses by 23rd April 2010. We welcome views on all the questions raised in this consultation document, including whether the proposed remedies are a proportionate response to the identified problems and, if so, which remedies are most appropriate.

9.12. Following publication of this consultation document, we will engage with relevant parties. We are conscious of a wide spread of opinion amongst stakeholders and are keen to engage actively with all parties so as to understand more fully the merits and costs of alternative ways forward.

9.13. We expect to publish a further document in the summer of 2010. This could include our preliminary assessment of market initiatives; greater detail on targets for assessing market initiatives; and our views as to the preferred policy options and whether it is appropriate to continue to develop them in the light of market progress.

9.14. If work continues to develop the policy options, a decision whether or not to implement could take place towards the end of 2010 or early in 2011, following a further assessment of market initiatives and the extent to which they are delivering liquidity and contestability. The policies would then become operational during the course of 2011.

Appendices

Index

Appendix 1 - Consultation response and questions

1.1. Ofgem would like to hear the views of interested parties in relation to any of the issues set out in this document. In particular, we would like to hear from energy suppliers and generators, consumer bodies and representatives, and academics.

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

1.3. Responses should be received by 23 April 2010 and should be sent to:

gb.markets@ofgem.gov.uk

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

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

1.6. Any questions on this document should, in the first instance, be directed to:

James Grigor,
Economist, Energy Economics
Ofgem, 9 Millbank
London
SW1P 3GE
020 7901 7000
gb.markets@ofgem.gov.uk

CHAPTER: One

Question 1: Do you agree that the harm caused by low levels of liquidity is sufficient to merit policy intervention, if such low levels persist?

Question 2: Do you agree that the focus should be on electricity markets?

CHAPTER: Two
Question 1: Do you think our high level success criteria are appropriate?

Question 2: Do you have views on how these can be quantified and the appropriate target level of performance?

Question 3: When should market success be judged?

CHAPTER: Three

Question 1: Are there any other policy options, beyond those set out in chapters 4-8, which merit attention?

CHAPTER: Four

Question 1: Is a direct trading obligation an appropriate solution to the problems related to wholesale market liquidity?

Question 2: Which licensees should be subject to the obligation?

Question 3: What requirements should be put in place relating to products, pricing, collateral and other conditions of trade?

Question 4: Is it appropriate to extend the obligation to cover generation purchases?

Question 5: What costs would this option impose?

CHAPTER: Five

Question 1: Is a market making arrangement of the kind set out in this chapter an appropriate solution to the problems related to wholesale market liquidity?

Question 2: What products should be made available through a market maker?

Question 3: What volume obligation would be appropriate?

Question 4: Would the establishment of a "Market Making Agent" facilitate the introduction of market making?

Question 5: What costs would this option impose?

CHAPTER: Six

Question 1: Are mandatory auctions an appropriate solution to the problems related to wholesale market liquidity?

Question 2: How should the volume of generation subject to a mandatory auction be set?

Question 3: Who should be obliged to offer into the auction?

Question 4: What design features should be incorporated into the auction process and rules?

Question 5: Should the mandatory auction apply to day-ahead volumes and/or to longer dated forward products?

Question 6: What costs would this option impose?

CHAPTER: Seven

Question 1: Is a self-supply restriction an appropriate solution to the problems related to wholesale market liquidity?

Question 2: Who would be covered by the self-supply restriction?

Question 3: How should the extent of a self-supply restriction be set? Should it relate only to the supply to domestic customers?

Question 4: Should a self-supply restriction be accompanied by measures to ensure that small participants have access to the products they need? If so, which products?

Question 5: How could the previous problems related to enforceability be overcome?

Question 6: What costs would this option impose?

CHAPTER: Eight

Question 1: Do you think that any of the possible approaches outlined in this chapter have merit and should be pursued further?

CHAPTER: Nine

Question 1: Do you agree with the proposed assessment criteria?

Question 2: Which do you think is the best policy option or combination of options?

Appendix 2 – Summary of responses to the June 2009 Liquidity Discussion Document

1.1. The "Liquidity in the GB wholesale energy markets" discussion paper published in June 2009 (the Liquidity Discussion Document) sought the views of interested parties in relation to its findings and proposed remedies. We received 34 responses of which 7 were marked confidential in whole or in part. This appendix lists the respondents and summarises their views.

List of Respondents

	Name
1	APX Endex
2	Argus Media
3	BOC (Confidential)
4	Centrica (Confidential)
5	CIA Chemical Industries Association
6	CIPS Chartered Institute of Purchasing & Supply
7	Conoco Phillips (Confidential)
8	Consumer Focus
9	Cornwall
10	Dong
11	Drax
12	E.On
13	Ecotricity (Confidential)
14	EDF
15	EEE Limited
16	Elexon
17	EnDCo Ltd
18	ESB International
19	ExxonMobil
20	First Utility (Confidential appendix)
21	Global Energy Advisory
22	InterGen
23	International Power
24	Laser Energy Buying Group
25	Morgan Stanley (Confidential)
26	National Grid
27	Opus Energy

28	Rio Tinto Alcan (Confidential)
29	RWE
30	Scottish Power
31	SSE
32	Summerleaze
33-34	Independents

1.2. Where received in a publishable form, responses that were not marked as confidential can be found on Ofgem's website (www.ofgem.gov.uk) and copies are also available from Ofgem's library.

Summary of responses

1.3. The following is a summary of the responses we received. Generally views were polarised although there were a number of areas of consensus such as agreement that the focus of any remedies should be on liquidity in the GB wholesale electricity market.

Chapter 2: Liquidity in the GB wholesale gas and electricity markets

Liquidity in the GB gas market

1.4. There was agreement among most respondents that there is sufficient liquidity in the GB gas market when compared both to other European gas markets and to the GB wholesale electricity market.

1.5. A number of respondents noted that although liquidity in the gas market is good, the lack of alignment between the electricity and gas wholesale markets, particularly in terms of the trading periods and traded volumes used in each, was of some concern.

Liquidity in the GB electricity market

1.6. The majority of the Big 6 indicated that levels of liquidity are, although less than ideal in the forward markets, more than adequate in the spot, prompt and near curve. A number of other respondents agreed that the prompt market is sufficiently liquid, with most of the concern with liquidity a year or more out.

1.7. Some respondents commented that there are issues with the availability of shape on the near curve. As small suppliers often attempt to trade in small volumes, they stated that even prompt liquidity can be an issue.

Evidence on liquidity in the Liquidity Discussion Document

1.8. The Big 6 expressed some concern that the analysis in the Liquidity Discussion Document did not portray the full picture of liquidity in the GB electricity market. They agreed that the analysis was useful in assessing GB market liquidity, but noted that as the data is reported rather than actual, there could be an element of uncertainty over any conclusions reached. They also indicated that liquid markets are defined by more than just the volumes traded. They considered that comparing the GB markets with other European markets could be misleading due to the differences in market structures.

1.9. Overall, there was general agreement from other respondents that the data is a fair representation of liquidity in the GB wholesale markets. A number of respondents suggested additional analysis should be undertaken including analysis of frequency of trading across the forward curve as well as more in depth analysis of bid/offer spreads and market depth. One respondent argued that the high levels of liquidity occurred just before gate closure and wide bid/offer spreads exist before this.

1.10. A number of the Big 6 agreed that insufficient liquidity could result in inefficiency, but did not think it is currently a significant issue in the GB electricity market and did not agree that current liquidity is an impediment to effective competition.

1.11. There was strong support from the majority of other respondents that Ofgem is right to be concerned by low levels of liquidity. Many respondents expressed concern with forward liquidity, but also raised issues with near term and prompt market liquidity, particularly in regard to shape and product availability. Concern was also expressed that low levels of liquidity created a deterrent for non-physical players.

Chapter 3: Possible causes of low liquidity in the GB wholesale electricity market

Vertical Integration

1.12. The Big 6 did not believe that vertical integration was responsible for the low levels of wholesale electricity liquidity. They supported this view by citing the amount of volume that they put into the market (which was greater than their own generation output) and point to the exit of financial players in 2003 as a more important driver for the lack of liquidity. Respondents also noted that integration is a feature of other electricity markets which enjoy higher levels of liquidity than GB.

1.13. A number of other respondents suggested that vertical integration is a key reason for the decline in the GB wholesale electricity liquidity as it removes the fundamental reason to trade. Some respondents suggested that there should be a change in market design to combat this. Respondents also noted that integrated players only trade 'excess' volume, i.e. generation output that is not used to meet their customers' demand, thus trading volume in the short term rather than further along the curve.

Market size

1.14. The general view from almost all respondents is that the GB market is not too small to support higher levels of liquidity. Not only has the GB market been characterised by higher liquidity in the past, but also other more liquid markets are of a smaller size.

Interconnection

1.15. Most respondents broadly agreed that increasing connectivity between markets to the levels seen in other European markets would increase liquidity. It was noted that the current levels of risk associated with trading over interconnectors may be limiting their use due to the lack of flexibility of contractual and trading arrangements.

1.16. Some respondents agreed that whilst increased interconnection and integration would assist in the development of a liquid market, they did not believe that the lack of interconnectivity has played a significant role in reducing GB market liquidity to date. Generally, respondents strongly supported increasing connectivity with other markets, together with suitable contractual arrangements.

Impact of regulatory and Government intervention

1.17. A number of respondents felt that the GB market has seen, and continues to see, significant regulatory reform which creates a level of uncertainty in the market which in turn discourages investment and new entrants. Other respondents, whilst noting the issue of regulatory uncertainty, suggested there was limited evidence that this has adversely impacted market liquidity.

1.18. Some respondents expressed concern relating to uncertainty surrounding the implementation of Phase III of the EU ETS as it makes it more difficult to price electricity.

Cash out

1.19. The majority of the Big 6 did not believe that current cash out arrangements affect market liquidity, although one suggested that they may improve liquidity as it forces market participants to trade to avoid imbalance.

1.20. Other respondents' opinions were divided, with some suggesting that the current cash out arrangements impede liquidity, for instance by producing highly volatile system prices. Conversely, some respondents did not think that cash out had an appreciable effect on liquidity and suggested that it encouraged trading by forcing players to balance and that altering the arrangements could damage market participants' incentives to balance. Others noted that whilst cash out arrangements did not impede liquidity, they create unnecessary risk for smaller players and need reviewing.

Reference prices

1.21. A number of respondents noted that whilst reference prices are available they are not always universally accepted as being wholly independent and representative and that robust reference prices are limited. A small number of respondents questioned whether robust reference prices even exist. Respondents also suggested that a robust reference price was a symptom rather than a cause of a liquid market.

Exchange based trading and clearing

1.22. A number of the Big 6 respondents suggested that the perceived size and robustness of the exchanges and clearing houses in the UK may have limited the extent to which firms are prepared to trade on them. One respondent suggested that exchange based trading and clearing drives liquidity in European markets because of the high levels of interconnection between markets which creates the opportunity for large volumes of location arbitrage trades.

1.23. Several respondents noted that exchange trading is limited as the market structure encourages OTC and bilateral trading, with vertically integrated players preferring OTC trading due to the NETA/BETTA arrangements. Other respondents suggested that there is a disincentive to trade on exchanges due to the credit requirements.

Product availability

1.24. A number of the Big 6 noted that creating increasingly granular products is likely to decrease the supply and demand for each new product.

1.25. Other respondents agreed that shape and liquidity generally are an issue further along the forward curve with some suggesting six months out is when liquidity becomes a significant issue. A number of respondents noted that within-day trading is sporadic, which makes adjusting traded positions difficult.

1.26. Limited product availability and price premiums applied to bespoke products were identified as major issues for small suppliers. Some respondents stated that they struggle to trade the volumes that they require as the standard clip sizes are too large for their needs. They also stated that appropriately shaped products are not available to them, or where they are, they see these as not being competitively priced. One respondent suggested that the lack of products is a symptom rather than a cause of low liquidity.

Information transparency

1.27. Most respondents suggested that detailed information is currently available and the GB electricity market is the most transparent in Europe. Some respondents did not believe that increased information would solve the fundamental problem of lack of liquidity. Other respondents noted that whilst relevant information is available

there may be a cost of obtaining and/or processing the information which is sometimes out of reach of new entrants.

1.28. One issue of concern for some respondents was the lack of information transparency in the Big 6 financial accounts.

Price volatility

1.29. The majority of respondents noted that price volatility was needed to attract liquidity to the market, although they also noted that it might act as a deterrent to small players. Some respondents suggested that volatility and the current market arrangements, whilst not directly responsible for lowering liquidity, are the key drivers for increased vertical integration which has led to decreases in liquidity.

1.30. A number of respondents noted that a key impact of higher volatility could be higher credit costs, particularly for smaller market participants. One respondent argued that the day-ahead market by its very nature is volatile and hence volatility should be analysed on a month-ahead basis.

Grid Trade Master Agreement (GTMA)

1.31. Some of the Big 6 suggested that GMTA's can act as a barrier to entry due to their complexity. However, others argued that they are a robust and beneficial contract and so are good for the market. Some also questioned the 18 month period cited for agreeing a GTMA and considered this to be an overestimation.

1.32. Other respondents were split on how difficult it is to set up a GTMA. Some agreed that, if required, a GTMA could be put in place within 24 hours, although it is suggested that this is only the case if negotiation takes place between parties of roughly equal standing in terms of trading volumes, risk appetite and credit status. This is often not the case when a small company attempts to put a GTMA in place with a large company. Most respondents saw GTMAs as a barrier to entry due to their complexity.

Credit and collateral requirements

1.33. Credit costs were recognised as a barrier to entry by most respondents; however, large players noted that it is vital that credit risk is correctly priced. Several respondents noted that credit issues have increased over the past few years and have contributed to the reduction in liquidity.

1.34. Onerous collateral requirements were cited as the second most important issue for small suppliers after a lack of liquidity. Other respondents agreed that credit costs have increased to some degree and have contributed to the reduction in liquidity.

Chapter 4: Possible measures to improve liquidity

Current market initiatives

1.35. Views on current market initiatives were mixed regarding the prospects of the N2EX for developing liquidity and a reference price. Respondents expressed concern that further regulatory intervention may undermine the development of the N2EX and that market initiatives should be given sufficient time to work.

1.36. A number of market participants noted that current initiatives may not improve liquidity without collateral reform. Some were concerned that the creation of a new exchange – N2EX - may fragment liquidity. There was a general consensus that the new initiatives on their own will not solve the problems of liquidity as they do not address the underlying causes of illiquidity.

Self supply licence condition

1.37. The Big 6 all noted that vertical integration does not harm liquidity and that a self supply licence condition is unlikely to improve liquidity. They also noted that liquidity could actually be negatively affected given they currently trade many times their generation output.

1.38. There was some support for a self supply licence obligation as a means of increasing liquidity. One respondent argued that a self supply condition would only be of use to smaller players if the granularity of available products was also addressed.

Current market and governance arrangements

1.39. Most Big 6 respondents suggested that current market arrangements do not act as a barrier to liquidity. A number of other respondents noted the complexity of governance arrangements could act as a potential barrier to entry.

Product offerings for small suppliers

1.40. The Big 6 generally advocated a market based approach to increasing product availability, with one sighting the N2EX as a source of potential product development.

1.41. Other respondents expressed mixed views on possible measures to increase product offerings for small suppliers. Several argued that addressing the issue of shape availability would assist liquidity more generally, whilst others considered that a lack of product availability is a symptom rather than a cause of low liquidity. One respondent argued that market participants with flexible plant should be required to offer certain shaped products. Another suggested introducing a spark spread market and harmonising the gas and electricity markets.

1.42. Several respondents suggested the introduction of an obligation on the Big 6 to sell volume on a cost reflective basis to smaller participants and potential new entrants. Another noted that shape is essential to smaller participants and therefore should be considered in the context of designing compulsory auctions.

Compulsory auctions

1.43. The Big 6 universally opposed compulsory auctions they argued that such auctions may not improve liquidity if the volumes sold are not subsequently re-traded. They added that such auctions may actually reduce the volumes they trade reducing overall liquidity.

1.44. Opinion amongst other respondents was divided. Several suggested that compulsory auctions could attract new participants which may deliver increases in liquidity. However, they also noted that the auctions would need to be designed to ensure that they deliver appropriate products, particularly further along the forward curve. One respondent noted that as products will have to be pre-defined, auctions will not help small players unless the needs of small suppliers are taken into account.

1.45. One respondent noted that mandatory auctions introduced in Spain in 2007 had the effect of increasing both OTC and exchange trading.

Possible information transparency measures

1.46. The majority of respondents stated that information provision in the GB wholesale market is currently adequate. Some respondents suggested that additional information transparency could be helpful, but did not necessarily think it would aid liquidity directly.

1.47. One respondent noted that a measure similar to that introduced by UNC219[26] for the GB gas market, releasing more information on market liquidity in the electricity market would be beneficial. Several respondents supported Ofgem's moves to require vertically integrated companies to publish separate generation and supply accounts.

1.48. In terms of additional information, respondents suggested that increased transparency on generation loads and LNG access could be useful.

[26] Uniform Network Code modification UNC219: Publication of UK wholesale gas market liquidity data, http://www.ofgem.gov.uk/Licensing/GasCodes/UNC/Mods/Documents1/UNC219D.pdf

Market makers

1.49. Views were mixed on the market maker option with some respondents stating that market makers could improve liquidity (particularly in products that are currently not traded frequently) while others argued that the socialised costs of a market maker may exceed the benefits and could distort competitive activity. One respondent argued that the need for a market maker should be assessed after the N2EX has had an opportunity to bed in.

1.50. Supporters of the market maker option suggested that it would be an obvious, low cost and easy to implement solution that would greatly assist small suppliers and new entrants. Several respondents noted that market makers could promote overall liquidity but that they did not need to be subsidised.

1.51. One respondent argued that a market maker would only be beneficial if it provide a lower bid/offer spread than already exists, at sufficient volumes to support new entry. Respondents also noted that a market maker would help in developing short term liquidity but further measures would be needed to support liquidity in the long run, such as compulsory auctions.

Cash out

1.52. The Big 6 argued that altering cash out arrangements could damage incentives to balance. One argued that changes introduced by modification P217[27] should be assessed before further alterations are considered.

1.53. Other respondents' opinions were split. Some did not believe cash out is an issue, whilst others were supportive of changes to the cash out arrangements which reduced the punitive nature of imbalance charges. One respondent expressed concern that changes to cash out may reduce liquidity by discouraging participants with short positions from trading. Another respondent noted that complex cash out arrangements reduce liquidity, and large players have blocked further reform. They argued that proactive measures are required to reduce complexity.

1.54. One respondent noted that changes made to simplify the cash out regime have actually resulted in it becoming more complex. A further respondent suggested that more predictable cash out prices would encourage market participation, but did not offer support for actions to artificially suppress volatility.

[27] Balancing and Settlement Code modification P217: Revised tagging process and calculation of cash-out prices
http://www.ofgem.gov.uk/Markets/WhlMkts/CompandEff/CashoutRev/Documents1/P217%20Revised%20Tagging%20process%20and%20calculation%20of%20cash-out%20prices.pdf

Demand side participation

1.55. Most respondents agreed that whilst increased demand side participation could be beneficial, there is currently only a limited amount of participation in the market.

1.56. One respondent noted that excessive volatility creates a barrier for demand side participants. Other views expressed by respondents were that demand side participation would improve liquidity and that demand side participation is a reflection of the level of liquidity and so is not a driver for it.

1.57. A number of respondents suggested that further interaction of the demand side would increase liquidity. Respondents also suggested that participation should be encouraged by widening the range of products available from intermediaries. One respondent also suggested that measures to provide access to the demand side and smaller participants should be considered together.

Possible measures on credit and collateral requirements

1.58. There was broad consensus that socialising credit requirements could weaken the market by increasing the likelihood of the failure of a market participant.

1.59. In terms of socialising credit risk for small suppliers, respondents' views were mixed, with some respondents in support; however, the majority argued that socialising credit risk would reduce the incentives for companies to efficiently manage risk. Other respondents considered socialising credit risk would not have an effect on liquidity.

1.60. An alternative approach suggested by one respondent was to introduce a centralised credit vetting agency.

Additional measures to improve liquidity

1.61. One respondent noted that use of the Electricity Forward Agreement (EFA) calendar may deter arbitrage between the GB market and continental markets which typically trade standard calendar months. Another respondent suggested that internal transfer prices should be based on actual trades. Another argued that customers should be offered a default tariff, as is the case in New Jersey, which effectively separates generation and supply as a solution to liquidity issues. Finally, one respondent argued that nodal dispatch would help to improve GB electricity market liquidity.

Appendix 3 - Reciprocal externalities theory

1.1. The term "reciprocal externalities" is used to describe the situation where the level of activity of one agent depends positively on the level of activity of another agent. Thus, if one agent is active, another agent will be active and vice versa. The existence of reciprocal externalities was used in the 1980's, initially by Peter Diamond in a paper on "Aggregate demand management in search equilibrium"[28], as a method of explaining involuntary unemployment. Its essential insight was that both high and low steady state equilibrium levels of involuntary unemployment can exist. The low unemployment level is characterised by numerous trading opportunities and thus strong incentives to produce. Conversely, a high unemployment level involves few trading opportunities and hence low incentives to produce. Market imperfections, such as coordination failures, mean that it is difficult for the economy to move from one equilibrium state to another.

1.2. The equilibrium level of unemployment in which an economy remains depends on the initial level of unemployment and whether, and what type, of shocks to the economy have subsequently occurred. Only a large shock will move the economy from one equilibrium to another: small shocks may cause temporary deviations from the equilibrium but the economy will in time return to the same equilibrium. The concept has been applied to other aspects of economic activity.

1.3. These ideas can be adapted to consider the problem of liquidity in traded markets; in other words, the possibility that there are self-sustaining low and high liquidity states. The high liquidity state is characterised by multiple opportunities to trade, low transaction costs and high levels of entry. The low liquidity state is characterised by few opportunities to trade, high transaction costs and little incentive to enter the market. This model is consistent with Diamond's key assumption that the arrival of trading partners is an increasing function of the level of activity i.e. an increase in the level of activity makes trading easier and encourages entry.

1.4. It seems plausible that liquidity in the GB wholesale electricity market has settled into a low liquidity self-sustaining equilibrium. If this is so, significant increases in liquidity would require a large external shock; without such an influence, the market would be unlikely to create a material increase in liquidity.

[28] Journal of Economic Studies, 90, pp 881-894.

Appendix 4 - Market maker examples in other countries

1.1. This appendix summarises international experience in market making, looking at Nord Pool, the EEX Exchange, and proposed reforms in New Zealand.

Market makers' role, incentives, and risks

1.2. Market makers are a common feature of financial, foreign exchange and commodities markets and exchanges around the world. Many exchanges operate with officially designated market markers who offer buy and sell prices for the products in which they make the market. Typically, the agreement between the exchange and the market maker will stipulate a cap on the maximum bid/offer spread that the market maker is allowed to quote as well as a minimum volume. In return for taking on these obligations, the market maker will have their quotes displayed on the exchange systems and it is through them that much of the trading takes place.

1.3. From an exchange's perspective, market makers perform a key role. By guaranteeing that buyers and sellers will be able to transact, they serve to create liquidity. Exchanges contemplating a new product will often want to sign up market markers in advance to help grow liquidity in the new offering.

1.4. The market maker can be exposed to significant commercial risk. If the market maker misjudges the market price or if the market price changes before the market maker can react and adjust its bid and offer, losses may be incurred. Markets in which price discovery may be difficult or in which prices have the potential to move quickly pose the most risk for the market maker.

1.5. Potential for fast moving prices is a particular concern in electricity and gas markets given price volatility and the linkage with physical events. For example, if a sudden generation outage leads to a spike in spot market prices, a spot market maker will have to adjust its bids and offers on the electronic platform before other market participants can execute against the previously posted bids and offers. Failure to react immediately would expose the market marker to selling at the lower (previously quoted) prices leaving a short position to be closed at the (now) higher new market prices.

1.6. The importance of such physical risk factors depends where on the curve the market maker is making the market. For players operating further out on the forward curve, this is less of an issue. For a market maker in near term forward, prompt, spot or intra-day markets, these risks can be material and require the market maker to be able to adjust bids and offers posted very quickly, at all times, in response to notifications.

1.7. Commodity exchanges typically include specific rules which seek to mitigate some of the risks on the market maker. Both Nord Pool and EEX have rules relating

to "Fast Moving Market" events. When the market is moving fast (as defined in the market maker contract), market makers are allowed to increase the size of the bid/offer spread and/or be released from contractual obligations to make a market. Secondly, rules targeted on "insider trading" also serve to protect market makers. For example, Nord Pool requires generators to notify the market immediately of outage events (before they buy to cover the outage).

Strategic and regulatory motivations for market making

1.8. Given the risks associated with market making, the direct commercial rewards may not, on their own, be sufficient to justify taking on the role of a market maker. It is a widely held view that companies that choose to become market makers do so because they also see a long term strategic value in promoting liquidity.

1.9. Such strategic value may arise from a number of sources. Trading oriented businesses will have a strategic interest in stimulating overall liquidity. However, speculative trading can lead to high exposure to market risk, especially if market making in the near term markets. Several smaller Nordic players of this sort initially become market makers on Nord Pool, but have since withdrawn.

1.10. Companies with large structural portfolio imbalances (between generation and supply) may see a long term interest in promoting liquid markets for risk and position management purposes. In addition to such companies' need for market depth, ability to trade anonymously may represent a subsidiary motivation. Participants that regularly have to go to the OTC market with large exposed positions may be at a commercial disadvantage as the market "can see them coming". Stimulating exchange based trading increases the scope for accessing the market anonymously.

1.11. Finally, companies with dominant positions may view market making and stimulation of liquid wholesale markets as a defence against regulatory and competition concerns. Poorly operating wholesale markets with low levels of liquidity and lack of transparency are likely to attract attention from regulatory/competition policy authorities. Taking on the role of market maker may go some way to demonstrating that trading is carried out according to transparent (exchange) rules and that potential market power is contained by defined publicly quoted maximum bid/offer spreads.

1.12. In a number of cases, market making has been introduced as a direct result of regulatory/competition concerns. In 2003, Elsam and E2 (both now part of DONG) entered into an agreement with the Danish Competition Authorities to address market dominance concerns. One element of this agreement was that both companies would support the market for Danish Contracts for Difference (CfDs) (hedging location spread against the Nord Pool system price). Likewise, market making is a central element of proposed regulatory reforms in New Zealand.

Market making in Nord Pool

1.13. In the early years Nord Pool developed trading volumes without the assistance of market makers. However, most stakeholders perceived a common interest in promoting liquidity, and so Nord Pool introduced the first market maker contracts in 1998. Under the terms of the contract, a market maker would guarantee to post both bids and offers with guaranteed minimum volumes on both the bid and the offer, and with a maximum spread between the bid and the offer. In return for becoming a market maker, Nord Pool offered reduced fees for use of the exchange. Nord Pool has adjusted the market maker agreements over the years to take into account experience gained in different market situations.

1.14. By 1999 Nord Pool had about 5-6 market makers agreements and over the years, more than 20 market participants (members) have been market makers on Nord Pool at various times. The market markers have come from a broad spectrum of market participants including large generators, new trading companies, retailers and industrial customers.

1.15. It is difficult to estimate how much of the growth in Nord Pool liquidity has been due to market makers. The introduction of market makers coincided with the expansion of Nord Pool to Denmark and Finland and rapid growth of clearing services. Likewise, over the following years the range of financial products increased and Nord Pool went through a number of structural changes which further extended its reach and market presence. However, it seems likely that market makers played an important part in stimulating and reinforcing the positive cycle of liquidity growth on Nord Pool.

1.16. Of the 20 companies that at one time or another have acted as market makers on Nord Pool only a few remain in the role. At the end of 2009 there are three market makers in the physical market (Nord Pool Spot AS) and four market makers on the financial market (Nord Pool ASA). Those that remain as market makers are mostly leading generators who have a high market share in one or other sub-market of the Nord Pool area.

1.17. A number of the participants that withdrew from market making did so as a result of mergers and acquisitions. In particular in Denmark, the sector has coalesced significantly with DONG emerging as the dominant Danish energy sector utility. Other players have withdrawn from market making for other reasons, including some who are believed to have incurred financial losses on their market making activity.

Market making on Nord Pool physical markets

1.18. The Elspot market is a day-ahead auction, whereby the auctioneer (Nord Pool Spot AS) matches buyers and sellers when the maximum price the buyer is prepared to pay exceeds the minimum price at which the seller is prepared to sell. Therefore by definition, there is no need for any market participant to play the role of market maker.

1.19. By contrast, the Elbas market is a continuously traded market, in which participants are seeking to balance their positions in short timescales (on the day), often in response to unexpected events such as generation outages or weather driven demand surprises. Given that market participants are typically looking to hedge exposures quickly and at short notice, market makers clearly deliver benefits for the generality of the market. However, they are also exposed to the price volatility of on-the-day products which is typically much higher than that impacting analogous products further out along the curve.

1.20. There are currently three market makers on Elbas:

- Vattenfall AB (Swedish market area only);
- E.ON Energy Trading SE (Swedish market area only);
- Fortum Power and Heat Oy (Finnish market area only).

1.21. It is notable that all of these companies chose to be Elbas market makers only in the local Nord Pool price zones in which they have a significant market share. The companies are well positioned to be market makers in these zones because they have significant portfolios of flexible physical generation. This enables them to provide balancing energy at short notice at relatively low costs, and allows them to provide the balancing energy at costs that lie within the bounds of the bid/offer spread. A participant without access to physical flexible would potentially be very exposed in this short term physical market.

1.22. It is also notable that other generators with sizeable portfolios have chosen not to operate as market makers on Elbas. This includes Statkraft, which has a 36% share of the Norwegian market. However, the fragmented ownership of other Norwegian generation assets and the large volume of flexible hydro capacity may have served to reduce the importance of and need for a strong market maker.

Market making on the Nord Pool financial markets

1.23. Nord Pool ASA offers a wide range of financial products and there are ten different categories in which market participants can choose to be a market maker. Three of these categories relate to trading of financial products outside the Nord Pool area (in Germany and Netherlands) and a further category relates to emissions products (e.g. carbon European Unit Allowances (EUAs) and Certified Emission Reduction (CERs).

1.24. The four companies which make various markets on Nord Pool's financial markets are Vattenfall AB, DONG A/S, Energi Danmark and Elkem Energi Handel A/S.

1.25. Vattenfall is the only company quoting in more than one product category. They make markets in all base load and peak Nordic system price products (except short term base load day futures), as well as base load and peak load German products (which can be backed by the substantial Vattenfall Europe portfolio). As the

largest generator in the overall Nordic system, Vattenfall is well placed to make markets in Nordic system prices.

1.26. DONG Energy and Energi Danmark act as market makers for the Danish zones. Their CfDs allow Danish market participants to hedge the difference between the Nordic system price and the prices in the local Danish price zones (so a Danish market participant can fix the price of electricity in Denmark by trading a combination of a Nord Pool system price forward/future and a Danish CfD). DONG Energy's role as market maker is a continuation of undertakings made by Elsam and Energi E2 (both now merged within DONG) to the Danish competition authorities.

Market making in Germany

1.27. The European Energy Exchange AG (EEX) is the leading energy exchange in Continental Europe and operates market platforms for trading in electricity, natural gas, CO2 emission allowances and coal. The Exchange was formed in 2002 from the merger of the two German electricity exchanges in Leipzig and Frankfurt. In 2009, spot electricity and derivatives trading were separated into separate legal entities as part of a wide-ranging cooperation with Powernext in France.

1.28. In line with the development of trading on Nord Pool, the EEX exchange has sought to establish market markers in their core forward markets to underpin and safeguard a basic level of liquidity. The contractual arrangements for market making are very similar to Nord Pool. Market makers were already attached to the predecessor exchanges which became EEX in 2002 and in its first years of operation numbered around 5. By 2008 EEX had 11 market makers across all markets and commodities, of which 6 provide market making for futures in the electricity derivatives market.

1.29. EEX has seen a very rapid increase in its electricity market volumes since its inception in 2002. Today the exchange has some 280 participants across all products (including gas, coal, EUAs) of which 145 also participate in the electricity derivatives market. As with Nord Pool, it is difficult to assess how much of this growth is due to market making. However, according to EEX almost 80% of the total turnover on the derivatives market for electricity was accounted for by the market makers in 2003. It would seem likely that market makers played an important role in promoting liquidity in exchange based products which subsequently provided the foundations for rapid growth. By 2008 market makers' share had declined to less than 20 percent, but of a higher base, reflecting the overall growth in volumes and the number of participants.

Market making in New Zealand reforms

1.30. Electricity market reforms in New Zealand are noteworthy because market making is an important element in the revised wholesale trading arrangements to be introduced by mid 2011. The reforms followed a ministerial Review of the Electricity Market which raised a number of concerns with respect to the performance of the wholesale and retail competition and market liquidity.

1.31. As part of the reforms, the Minister of Energy and Resources instructs the major generator-retailers (with over 500MW of capacity) to develop some form of exchange traded electricity contracts through 'market maker' arrangements offering buy and sell prices with a maximum spread. The objective is to provide liquidity and open access for new entrant generators and retailers and for consumers.

1.32. The market is to have the following components:

- Standardised, tradable contracts;
- A clearing house to act as a counter-party for all trades;
- Low barriers to participation and low transaction costs; and
- Market makers (offering buy and sell prices within a maximum spread) to provide basic market liquidity

1.33. The market marker approach was seen as superior to a simple sell obligation which could possibly be avoided by offering very high sell prices. This risk is mitigated in the market marker model because a generator offering an out-of-the-market sell price also would have to post an equally high buy price (which would likely be taken up).

1.34. An assessment of market liquidity is to be completed by 1 June 2011. This assessment will be judged against a threshold definition of satisfactory liquidity set at 3,000GWh of 'unmatched open interest' (contracts without matching offsetting contracts). In the event that the new market fails to achieve satisfactory liquidity, the Electricity Market Authority reserves the right to impose mandatory market making on the major generators.

Appendix 5 - Market Making Agent

1.1. This appendix sets out in more detail how the Market Making Agent model, outlined in chapter 5, could work.

1.2. The key characteristics of the Market Making Agent approach could include:

- Standardised products;
- Predetermined clip size;
- Compulsion on Big 6 to provide bid/offers for all products at a maximum spread;
- Continuous availability of bid/offers;
- A minimum and maximum requirement for the volume to be traded;
- Anonymity via use of the Market Making Agent to calculate and post the best bid/offers;
- Exchange based collateral requirements;
- No collateral exposure on the Market Making Agent;
- No imbalance exposure on the Market Making Agent; and
- No notification requirements needed by the Market Making Agent.

Concept in Detail

1.3. The process that the Market Making Agent could follow can be described in two stages, as set out below.

Stage 1: Sourcing the product from the Big 6 (and possibly other providers)

- The Big 6 provide bid/offers, with a maximum spread, on all specified products to the Market Making Agent.
- These bid/offers are not published to the market and can only be seen by the Market Making Agent.
- There is a requirement on the Big 6 to have a minimum volume available with the Market Making Agent at any one time.
- The Market Making Agent calculates the best bid/offer, for each product based on bid/offer prices submitted by the Big 6.

Stage 2: Trading platform

- The best bid/offer price for each product is posted by the Market Making Agent onto the trading platform at the predetermined minimum clip size.
- Once the product is traded, then the relevant Big 6 supplier, whose volume was used, is informed of the volume and price traded. The supplier will then reset its bid/offer volumes as per Stage 1.
- Effectively, the Market Making Agent is drawing down on the product offered in Stage 1. Not all of the product offered in Stage 1 is necessarily traded, but it is drawn down as required.

- Using the Market Making Agent to post the best bid/offer on the exchange allows for anonymous trading. The market will know that the product is posted by the Market Making Agent but will not know which of the Big 6 supplied the underlying product.
- Using the exchange enables the notification requirements to NG to be made by the exchange and is not therefore a requirement on the Market Making Agent.

Ownership, fees and collateral

- Volumes transferred from Stage 1 to Stage 2 are not via the purchase/sale of electricity by the Market Making Agent. The Agent acts as an intermediary between the Big 6 and the exchange, and does not take direct product ownership.
- The Market Making Agent adds a fee calculated as either a fixed cost or a percent of the price when product that it has placed on the exchange is bought or sold.
- The collateral required will be determined by the exchange's collateral rules. This reduces counterparty risk and the need to negotiate separate agreements.

Products

- Products that could be made available through this model include:
- Day ahead, 3month, 6month, 1 year
- Base load, peak, off-peak, super peak.
- Super peak[29] is the product that is least well covered by current arrangements and could be the initial product trialled.

Systems requirements

1.4. The Market Making Agent will need two primary systems: one to interface with the product source, and one to carry out the disaggregation and interface with the exchange.

Participation by Independent Generators

1.5. Potentially, independent generators could place Offers only with the Market Making Agent in Stage 1. Additionally, independent generators may be able to buy the product posted on the exchange.

[29] In the context of the Dutch electricity market, super peak hours represent the period between 9 am and 6 pm on working days.

Appendix 6 - European Commission proposals for derivatives markets

1.1. The regulation of derivatives markets is being assessed by the European Commission (EC), and this could have an impact on collateral requirements and policy measures introduced to ameliorate the position of small suppliers.

1.2. Forward contracts are typically considered a form of derivative, which are subject to financial service regulation under the terms of Markets in Financial Instruments Directive (MiFID). However, it appears that most electricity and gas forward contracts are currently exempt from these regulations because they are physically settled. It is possible that the current exemption on forward electricity contracts might be reconsidered. In considering potential remedies with regard to collateral requirements, we need to bear in mind the proposals that the European Commission (EC) has published in respect of derivatives markets.

1.3. In October 2009, the EC released a second communication regarding the regulation of derivatives markets[30]. The communication sets out to ensure an "efficient, safe and sound derivatives markets". It sets out future policy to "increase transparency of the derivatives market, reduce counterparty and operational risk in trading and enhance market integrity and oversight." The main proposals are to:

- Require all standardised derivatives to be traded via a clearing house (strictly a central counterparty or CCP) under common terms;
- Impose increased collateral requirements on bilateral trades, including substantially increasing capital charges for such trades (compared to those that are cleared); and
- Require market participants to record all trades that are not cleared by a CCP in trade repositories.

1.4. The EC has said it will come forward with legislative proposals in 2010 following a thorough impact assessment.

1.5. Even if the current exemption on electricity forward contracts were to be removed, it is not clear what impact this would have on small suppliers. It might make it more difficult for small suppliers to enter into bilateral agreements with large participants, but this will depend on whether the collateral terms for bilateral trading currently imposed on small suppliers are more or less onerous than those that a clearing house would impose. On the other hand, the proposals are clearly designed

[30] For more details, please see: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2009:0563:FIN:EN:PDF

to increase the percentage of trades made via a clearing house and this should mean that all participants would be treated equally, in other words, the stronger balance sheets of larger participants would no longer reduce the collateral they had to provide. However, it is not obvious whether the regulations would apply to internal trading: if they do not then this might act to reduce liquidity because it would further increase the incentives for vertically integrated companies to trade internally.

1.6. Ofgem will carefully monitor how these proposals develop, particularly in respect of whether the exemption for physical derivatives will be continued.

Appendix 7 – The Authority's Powers and Duties

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

1.2. The Authority's powers and duties are largely provided for in statute, principally the Gas Act 1986, the Electricity Act 1989, the Utilities Act 2000, the Competition Act 1998, the Enterprise Act 2002 and the Energy Act 2004, as well as arising from directly effective European Community legislation. References to the Gas Act and the Electricity Act in this Appendix are to Part 1 of each of those Acts.[31]

1.3. Duties and functions relating to gas are set out in the Gas Act and those relating to electricity are set out in the Electricity Act. This Appendix must be read accordingly[32].

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

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

- the need to secure that, so far as it is economical to meet them, all reasonable demands in Great Britain for gas conveyed through pipes are met;
- the need to secure that all reasonable demands for electricity are met;
- the need to secure that licence holders are able to finance the activities which are the subject of obligations on them[33];
- the need to contribute to the achievement of sustainable development; and
- the interests of individuals who are disabled or chronically sick, of pensionable age, with low incomes, or residing in rural areas.[34]

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

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

- promote efficiency and economy on the part of those licensed[35] under the relevant Act and the efficient use of gas conveyed through pipes and electricity conveyed by distribution systems or transmission systems;
- protect the public from dangers arising from the conveyance of gas through pipes or the use of gas conveyed through pipes and from the generation, transmission, distribution or supply of electricity; and
- secure a diverse and viable long-term energy supply.

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

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

1.8. The Authority has powers under the Competition Act to investigate suspected anti-competitive activity and take action for breaches of the prohibitions in the legislation in respect of the gas and electricity sectors in Great Britain and is a designated National Competition Authority under the EC Modernisation Regulation[36] and therefore part of the European Competition Network. The Authority also has concurrent powers with the Office of Fair Trading in respect of market investigation references to the Competition Commission.

35 or persons authorised by exemptions to carry on any activity.
36 Council Regulation (EC) 1/2003

Appendix 8 - Glossary

A

Amsterdam Power Exchange (APX)

APX Group is a holding company which owns and operates energy exchange markets in the Netherlands, UK and Belgium. APX-ENDEX, a subsidiary of APX Group, provides exchange trading, central clearing & settlement and data distribution services. For further information see: www.apxgroup.com

B

Balancing and Settlement Code (BSC)

The BSC contains the rules and governance arrangements for the electricity balancing and settlement system in GB.

Balancing Mechanism Reporting Service (BMRS)

The BMRS provides near real time and historic data about the Balancing Mechanism which is used by the National Grid (System Operator) as a means of balancing electricity flows on to and off the electricity Transmission System in Great Britain;

Barrier to Entry

A factor that may restrict a firm's entry into a market.

BETTA

British Electricity Transmission and Trading Arrangements: the extension of NETA to the whole of Britain through the combining of English/Welsh and Scottish rules which occurred on 1 April 2005.

Bid/offer spread

The bid/offer spread indicates the difference between the price quoted for an immediate sale (bid) and an immediate purchase (offer). It is often used as a measure of liquidity; a smaller bid/offer spread indicates a higher level of liquidity.

Big 6

The name collectively given to the six companies that supply most of the energy to domestic households in the GB market. They are: Centrica plc (three retail brands, British Gas, Scottish Gas and Nwy Prydain in England, Scotland and Wales respectively), E.ON UK, Scottish and Southern Energy (SSE), RWE npower, EDF Energy and ScottishPower.

Broker

A broker is a service provider which handles orders to buy and sell. For this service, a commission is charged which, depending upon the broker and the amount of the transaction, may or may not be negotiated.

C

Cash out arrangements

Arrangements whereby generators and suppliers pay or are paid for imbalances i.e. shortages and surpluses of electricity relative to their contracted commitments.

Central counterparty (CCP)

A CCP is an entity that interposes itself between counterparties to contracts traded in one or more financial markets, becoming the buyer to every seller and the seller to every buyer.

Churn rate

The churn rate is a measure of liquidity based on how many times a good or product is sold and re-sold before consumption. It is typically measured by the volume traded as a multiple of the underlying consumption level, or other measure of physical output. For example, a churn rate of 3 would mean that on average each product would have been sold and then re-sold twice before being consumed.

Clearing

The centralised process whereby transacted business is recorded and positions are maintained.

Clearing House

An organisation which guarantees the performance and settlement of futures and options contracts, e.g. the London Clearing House in London or the Options Clearing Corporation in Chicago.

Clip size

The size of a contract to be traded. For flat electricity products, such as baseload and peakload, the clip size is generally in MW. For shaped products, clip size is normally defined in MWh of total volume.

Collateral

Collateral is any asset – cash, securities, property etc. – that a borrower pledges in order to demonstrate their ability to meet their obligations to repay monies loaned. Collateral serves as protection for a lender against a borrower's risk of default.

Contestability

The degree of ease with which firms can enter or leave a market.

Counterparty

Each participant in a trade is a counterparty to the other participant – the buyer to a seller and the seller to a buyer.

Counterparty Risk

The risk that a counterparty to a contract defaults and does not fulfil their obligations.

Credit Risk

Credit risk is the risk of a party defaulting on a payment where they have been given credit.

Customer Profile

The variation in the electrical load over time for a defined type of customer. Load profile will vary according to customer type (e.g. residential, commercial and industrial), temperature, holiday seasons etc.

E

EEX

European Energy Exchange. An energy exchange based in Leipzig, Germany. EEX operates Spot and Derivatives Markets for energy and related products.

EFA

Electricity Forward Agreement.

ERGEG

European Regulators Group for Electricity and Gas. For further information see: www.energy-regulators.eu/

EU ETS

European Union Emission Trading Scheme: The EU-wide greenhouse gas emissions cap and trade scheme, under which governments must set emission limits for all large emitters of carbon dioxide in their country.

F

Flat products

Flat products are contracts which do not vary the volume delivered over time. They are often traded as standard products.

Forward products

Forward products are a promise to buy or sell a commodity or security in the future at a set price. Forward products are potentially tradable and so can be bought, sold and re-sold. They are used to assume or set exposure to price risk and so are used for hedging as part of a risk management strategy. Forward products may be physically settled – by delivery – or financially settled. See futures for additional information on this type of forward product.

In the electricity market, any contracts for delivery in the front month or after are considered to be forward products, but may include trades for months, seasons or years ahead.

Front month

The front month is the current contract month, which is the contract month closest to expiration. It is also known as the spot month.

FSA

The Financial Services Authority (FSA) is the regulator of the financial services industry in the UK. It is an independent nongovernmental body, given statutory powers by the Financial Services and Markets Act 2000.

Futures

Futures are a type of forward product. The key difference between a future and a forward product is that futures are standardised products which are usually exchange traded while forward products can be non-standardised and are usually traded OTC. In addition, futures are financially, rather than physically, settled.

G

Gate closure

The point in time by which all Contract Notifications and Final Physical Notifications must be submitted for each settlement period.

Granularity

Granularity is the level of detail or resolution of a product. For example, the level of detail of a shaped product may be defined in terms of the minimum size of blocks of electricity, in MWh, that the contract can be composed of in each half hour period. So, if a product had a granularity of 0.1MWh per half hour, the contract would specify the volume of electricity in multiples of 0.1MWh in each half hour period; the first half an hour may be 1.5MWh, the second 1.6MWh etc.

GTMA

The Grid Trade Master Agreement (GTMA) is a generic framework covering energy trading between counterparties, introduced during the implementation of NETA.

H

Hedging

Hedging is an action taken by a buyer or seller to protect their business or assets against changes in prices. In the electricity market this often involves trading forward products to lock in future prices. This reduces the exposure to short term price movements.

Herfindahl Hirschman Index (HHI)

The HHI is a measure of market concentration calculated by summing the square of the market shares of each firm in the market. It is influenced both by the number of firms in the market and differences in their relative sizes.

I

Incumbent

An incumbent is the firm which owns the former monopoly supplier in a particular region. The incumbent in each region for electricity is known as the ex-PES. British Gas(Centrica) is the incumbent in the gas market.

Industrial and Commercial (I&C) sector

The I&C sector is the non-domestic sector in general rather than any specific group of customers.

Initial margin

The amount required to be placed with a counterparty in order to open a trading position. It may be specified either in per cent of the traded value or as an absolute amount as agreed between the counterparties.

Imbalance prices

The imbalance price is the price charged or paid to market participants whose portfolio of demand and supply of electricity is out of balance at gate closure. These charges are paid to the SO as the residual balancer and are intended to reflect the costs to the SO of balancing the system. Under the GB arrangements there are two imbalance prices for each settlement period, the System Buy Price and the System Sell Price.

L

LEBA

London Energy Brokers Association, formed in 2003 to represent the interests of London-based energy brokers.

Letter of Credit (LoC)

A document issued by a financial institution authorising the payment of a sum of money up to a set limit by the institution to the receiving party. A LoC can be used in place of cash as a form of collateral.

M

Mark-to-market

See Variation Margin

Market maker

An independent trader or trading firm which buys and sells futures or options contracts in a designated market. Market makers provide a two-sided (bid and offer) market.

MW

Mega Watt.

MWh

Mega Watt hours.

N

N2EX

N2 Exchange, a recently established GB electricity exchange platform. For further information see: www.n2ex.com

Nord Pool

Nord Pool is the Nordic Power Exchange, a single electricity market for Norway, Denmark, Sweden and Finland. For further information see: http://www.nordpool.com/asa/

O

OCM

The On-the-day Commodity Market (OCM) enables anonymously financially cleared on the day trading in gas between market participants.

OTC

An Over The Counter (OTC) market is any market which does not work through an exchange-based system. It includes trading which is negotiated via OTC brokers.

P

PES

The previous Public Electricity Supplier for one of the 14 electricity regions in England, Wales and Scotland.

Product

In this report products are defined as contracts. They are differentiated by their duration, timing, shape, granularity and clip size. Duration of the delivery period could be a day, week, month, season, year etc.; the timing of the delivery of the product could be prompt, day-ahead, front month, month-ahead, etc.; see shaped products, granularity and clip size for further details.

R

Renewables Obligation Certificate (ROC)

ROCs are certificates awarded to renewable generators for producing renewable electricity. They are awarded at a rate which depends on the technology type. They are used to fulfil suppliers' obligations to provide a certain proportion of their electricity from renewable sources.

Retail margin

The profit margin earned by a supplier on products sold to a retail customer.

Risk management activity

Any activity undertaken by an individual or company to optimise their exposure to risk. In the context of the energy markets, risk management activities are undertaken in order to decrease exposure to volatile wholesale energy prices and often take the form of hedging.

S

Shaped products

A shaped product is a contract which specifies different amounts of electricity to be delivered at different times. A bespoke shaped product with half-hour granularity could specify a different volume for every half-hour period of the contract's duration.

Standard products

Standard products have well established terms and are widely traded; exchanges always deal in standard products.

Structured products

A structured product's terms are precisely tailored to match the contract buyer's requirements, and usually involve variable contract volumes and/or non-standard volumes and durations. These products are generally traded OTC.

SO

The System Operator (SO) is the entity charged with operating either the GB electricity or gas transmission system. National Grid Electricity Transmission (NGET) is the operator of the high voltage electricity transmission system for the GB. National Grid Gas (NGG) is the operator for the gas national transmission system for GB.

T

Transaction Cost

A cost incurred by a party during the completion of a sale or purchase.

TXU

Texas Utilities, today known as Energy Future Holdings Corporation.

U

UNC

The Uniform Network Code (UNC) replaced National Grid Gas Network Code as the contractual framework for the national transmission system, gas distribution network and system users as of 1 May 2005.

V

Variation margin

The variation margin is the additional collateral required on a forward product to account for the difference between the current mark-to-market price and the contract price. Trades are usually marked-to-market every day, by comparing the current price to the previous day's price. The profit or loss on the day of a position is then paid to or debited from the holder of the contract.

Also known as the maintenance margin.

Vertical Integration

A vertically integrated company owns businesses in both the upstream and

downstream parts of a market. For example, a supply group which owns generation capacity and also supplies energy to the retail market is vertically integrated.

Volatility

Volatility is the relative change of prices from one time period to another, often in the short run.

W

Working capital

A company's current assets minus its current liabilities.

Appendix 9 - Feedback Questionnaire

1.1. Ofgem considers that consultation is at the heart of good policy development. We are keen to consider any comments or complaints about the manner in which this consultation has been conducted.

1.2. In any case we would be keen to get your answers to the following questions:

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

1.3. Please send your comments to:

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