



# **Market Power and Liquidity in SEM**

## **A report for the CER and the Utility Regulator**

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## **EXECUTIVE SUMMARY**

### **Introduction**

This report has been prepared by Cambridge Economic Policy Associates Ltd (CEPA) and assesses the evolution of competition in the SEM, the appropriateness of the current market mitigation strategy and the outlook for contract market liquidity. As such, the report builds on the analysis presented by the Regulatory Authorities ('RAs') in the August 2010 paper "SEM Market Power and Liquidity State of the Nation Review" ('the State of the Nation Review')<sup>1</sup> and the responses to that publication. The RAs have also asked CEPA to consider ESB's proposals regarding horizontal and vertical reintegration and the associated liquidity undertakings.

The SEM, in its design as a gross mandatory pool, has limited potential for spot market power. However, at its inception, given the dominant positions of ESB and Viridian, the RAs decided to put in place a package of mitigants to prevent abuse of market power and to encourage competition in the wholesale market. The package included the Bidding Code of Practice ('BCoP'), the Market Monitoring Unit ('MMU'), Directed Contracts ('DCs') and the Economic Purchasing Obligations ('EPO'), as well as measures to address local market power where needed.

### **Overview of mitigation measures and scenario analysis**

The market design and the associated mitigation measures appear to be working well. Reserve margins are high, although in part due to falling demand, and our examination of (falling) profitability in the SEM does not point to any abuse of market power – although some caution is required as falling profits seem to have been driven by falling gas prices rather than the entry of new price-setting plant or enhanced regulatory supervision (through the MMU).

We have also considered how competition will develop in the market, looking ahead to 2015 and 2020, and with forecasts of demand and generation investment based on what is expected in the 2010 Generation Adequacy Report and the "Gate 3" transmission access process. We have then used the Herfindahl-Hirschman-Index (HHI), which measures market concentration, and our preferred measure of the Residual Supply Index (RSI), which uses a continuous scale to examine whether a generator is 'pivotal', to inform an assessment of the potential for a generator to exert market power as the market develops in the chosen scenarios.

Our RSI analysis sets out the frequency of periods in which the system is not able to balance supply with demand without the supply of the 'investigated' market participant. For each scenario, we considered the position of ESB as a stand-alone generator (ESB PG), ESB as a horizontally integrated group (ESB PG and ESBI), ESB as a horizontally and vertically integrated group and of AES. We have also netted out an estimated level of Directed Contracts based on the current methodology which reduces the HHI to 1150 by requiring the larger generators to contract a portion of their expected output.

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<sup>1</sup> <http://www.allislandproject.org/GetAttachment.aspx?id=e83a335f-8366-416c-a6fe-96a0d54b1721>

In all cases, the RSI remains above the selected 1.2 threshold when averaged. It is nevertheless interesting to note that it also drops below 1.1 in more than 5% of cases and even below 1 in a number of situations examined. This is most likely to be due to the impact of the assumed rapid expansion of wind power in the SEM during the forecast period, as in periods of low wind generation generators with even modest market shares may become pivotal. This suggests that a robust market power mitigation strategy is likely to continue to have value for the foreseeable future.

### **Review of market power mitigation strategy**

We have examined each of the mitigants in turn and considered their appropriateness, relative to other structural or behavioural measures.

The SEM is a capacity and energy market, such that generators receive revenue separately for making capacity available to the market irrespective of whether any electricity is generated and for the electricity that is actually generated. In part to avoid the risk of generators being rewarded twice for making capacity available, a BCoP was put in place that required generators to bid at Short Run Marginal Cost ('SRMC') in the energy part of the market. The RAs also established the MMU to monitor generators' compliance with the BCoP. Overall, we believe that the BCoP, together with the monitoring by the MMU, has been effective in ensuring that bids are made at or very close to their SRMC. We do, however, note that respondents to the State of the Nation Review make a good case for the MMU to be 'beefed up' such that it can be more proactive in investigating proscribed bidding behaviour including e.g. underbidding. But the apparent success of the SEM should not be taken to mean that the BCoP and MMU should be removed, as our analysis shows that there will still be potential for market abuse under a number of scenarios.

DCs require market participants who are considered to have market power in the wholesale market to forward contract a proportion of their output. DCs also contribute to the availability of hedges, which is of great importance to the electricity market as a whole. Retailers need to hedge their product offerings, especially given consumer preferences for longer term (greater than one month) offerings, and the imperfect fit of fuel market hedges for supply companies that do not have the natural hedge of a group generator. Respondents to the State of the Nation Review noted that whilst DCs are imperfect, they are necessary to promote competition given the relatively illiquid non-directed contract market. Respondents also noted the need for an improved range of DC offering.

Ring-fencing takes two forms: horizontal and vertical. Whilst the BCoP is considered effective, if there is a desire to move over time to a less regulated (and therefore by definition more competitive market), then allowing the horizontal integration of a dominant generator would have a potentially adverse impact on the evolution of competition in the near term, for example increasing the potential for anti-competitive bidding in the energy market. Whilst the BCoP remains in place though, the operational horizontal separation of ESB seems to have little value in promoting competition, whilst adding some cost to ESB, and thus an operational integration could be considered.

Vertical separation and the EPO again seem to have served a useful purpose, not least in encouraging new entry, and potential changes to these arrangements are discussed below.

## Liquidity

We have examined the outlook for contract liquidity in the SEM. Again, this builds on the State of the Nation Review, which provided data on the current state of hedging and liquidity in the SEM. As noted above, contract liquidity enables non-vertically integrated suppliers to effectively source energy and manage risk. It also allows generators to manage gross revenue, which can be important to shareholders.

It is difficult to predict how the traded volumes in contracts outside the DCs will evolve over the scenario period. There are, however, a number of positive factors including:

- the SEM has now been active for a sufficiently long period for its parties to have observed the features of the market in practice and become comfortable with spot price formation;
- the gross mandatory pool market system means spot-price discovery in the market is based on all the generating capacity; and
- the east-west interconnector will mean that the SEM will have significant interconnection and present potential arbitrage and entry opportunities from the GB market.

There are however also a number of potentially negative factors:

- the SEM market is relatively small by volume, raising questions as to whether trading parties will find it economic to participate;
- there are a limited number of domestic market participants;
- DCs may serve to reduce the potential demand for hedging products by suppliers; and
- the perception of strong incumbency with for example information advantages, as well as the potential for vertical ring-fencing to be removed for ESB group may deter entry.

It is important to keep in mind that trading in other markets has taken time to develop, and that interconnection could facilitate significant increases in liquidity, as well as to an extent compete away premiums of Non-Directed Contracts over DCs by providing additional volumes. This will however fundamentally be dependent on effective arrangement for interconnection.

## Policy options and recommendations

We have considered a range of policy options to promote competition under different potential structural scenarios for the SEM. These measures are both structural, i.e. making changes to the industry structure through, for example asset sales or change of ownership, and behavioural i.e. restricting and monitoring the behaviour of market participants.

### Option A: 'No removal of ring-fencing'

The option of 'No removal of ring-fencing' of ESB companies, not surprisingly, offers the most favourable structure in terms of market power metrics with both concentration ratios and RSI outputs reducing as new CCGT and wind capacity is commissioned. In order to achieve even greater competition in the SEM, it could be desirable to see a reduction in the size of some of

the existing parties, although our RSI analysis does not indicate that a non-competitive outcome would be very likely before any structural measure is in place. Additional structural change however significantly reduces the HHI. Under this option, it will be prudent to maintain the current market power mitigation package and to enhance the role of the MMU.

We have also considered how to promote liquidity. Under this option a potential strategy would be to reform DCs to help facilitate the development of a forward market. As market power metrics improve, it will not be reasonable to require ESB to support the market with contract offerings that are out of proportion to its market position – instead, under this scenario, market participants would need to view liquidity as a positive market outcome worth investing in as the volumes of DCs available to the market decline as the market becomes less concentrated. Furthermore, under this scenario ESB CS will have a strong incentive to encourage ESB PG to provide a greater range of contract products. In addition to this, there may be a case for adopting a specific policy on minimum levels of hedging from all generators, based on either a market power metric or market shares or to appoint a market maker.

We also think that under all scenarios market liquidity will benefit from an RA-led transparency programme for market data.

### **Option B: Horizontal ring-fencing between ESB Group generating companies relaxed or removed**

Horizontal ring-fencing could take one of two forms: either full legal integration or an operational integration that allows the ESB generating companies to share and exchange information and a joint trading arm. Whilst the increased size of ESB as a generator is partially offset by new entry e.g. the Bord Gais Whitegate CCGT, as well as investment by Endesa, the modelled market metrics show that on balance market concentration is likely to remain at material levels and therefore measures to enhance competition and contract market liquidity will need to remain in place, including DC in their current form. As ESB CS will remain ring-fenced, it will continue to need to work with ESB's generation business to offer appropriate contracts, and if the EPO remains in place this offering will ensure a significant proportion of the market, which with the vertical integration of ESB may become internalised, remains contestable. Overall we would expect the appropriate measures to increase liquidity to be similar under this scenario to Option A, however, clearly the volumes of DCs would be expected to be higher as market concentration would be higher.

Under this scenario, options to increase competition are more problematic, although competition may well increase with the introduction of the East-West interconnection, assuming the market rules are changed to allow for effective competition from the GB BETTA market. As with option A, adopting a specific policy on minimum levels of hedging from all generators could be implemented to improve liquidity.

Overall, we see benefits in the form of efficiency savings in allowing operational horizontal integration, with limited risks so long as the BCoP remains in place. Legal integration may be more problematic, as this separation arguably has option value for any future change of ownership.

### **Option C: Horizontal and vertical integration of ESB allowed**

Under this scenario ESB would vertically and horizontally integrate, with ESB's supply business being fully backed by the capacity of both ESB PG and ESBI. Under this option, not surprisingly, the competitive starting point is significantly worse, both in terms of market concentration and RSI metrics. There are also significant potential impacts on retail market power, as, absent DCs, ESB would have little incentive to innovate in providing contract market liquidity. This, combined with a lesser incentive for the supply arm to purchase outside of the generation arm, may have a detrimental impact on other suppliers and end consumers through inefficient contracting, which may more than offset any operational efficiency savings from integration. Thus if vertical integration were to be allowed, there would need to be a review of the nature of tariff regulation in retail markets that are not competitive.

ESB has submitted a liquidity undertaking which would serve as a potentially positive step in proving volumes to the market, but this undertaking needs to be set against the potential adverse effects of reduced overall incentives to trade in the market and increased market concentration which severely limits the ability for the regulators to relax market mitigation and regulation in the market – both of which are seen by market participants as positive steps in encouraging liquidity to emerge. In addition, ring fencing and the EPO disappear, and it would be difficult to address the removal of an important structural remedy through behavioural measures alone.

It is further worth noting that under these conditions the market power mitigation strategy through the DCs ensures that the RSI stays above 1.2 in most scenarios as well as above 1.1 in during more than 95% of period. These metrics are though of course sensitive to assumptions for demand, interconnector flows and investment, all of which can have significant impact. In addition to this it can be argued that the impact of DCs is reduced if the vertically integrated ESB is allowed to take up the DCs it would be entitled to through the consumer load of ESB CS.

A preferable option under these conditions could be to balance the re-integration of ESB with structural divestment (into separate ownership) to help facilitate the development of liquidity and wholesale market competition. Such structural changes would however need to be carefully designed to ensure it delivers a competitive outcome. In this regard we understand that the Irish Minister for Finance has appointed "The Review Group on State Assets and Liabilities" to consider, inter alia, the potential for asset disposal in the Public Sector including commercial State Sponsored Bodies. Another alternative would be to create two separately ring-fenced vertically integrated entities to reduce ESB's market share. This would allow the benefits of vertical integration while also promoting competition between the two entities.

### **Conclusion**

The SEM wholesale market appears to be working well. Competition is increasing, in part due to the current market mitigation strategy. With significant market developments in the near-term (mainly interconnection, potentially bringing competition from GB once appropriate access arrangements are in place, and increased wind penetration), we consider it prudent not to implement ESB vertical integration in the near-term as that might damage competition, but instead to focus on enhancing measures to promote competition and improve liquidity.



## 1. INTRODUCTION

In August 2010 the RAs published the information paper the State of the Nation Review. The report presented market participants with a range of information including:

- An explanation of the rationale for, and function of, the existing market mitigation measures;
- A presentation of market data showing how the composition of the SEM has evolved since its start almost three years ago;
- A presentation of market power metrics and how these have evolved; and
- A presentation of the current and historical availability of contracts and contract liquidity in the SEM.

The State of the Nation Review asked for the views of market participants on a range of issues across the topics of market power and liquidity in the SEM.

Following on from the State of the Nation Review, the RAs have commissioned a study by CEPA to assess how competition can be promoted in the SEM. This has focused on the appropriateness and need for the market power mitigation strategy, with an emphasis on how it, through its components could be amended to promote competition. It is important to note from the outset that the market power mitigation strategy was intended to be a “package” of measures, and thus when assessing the individual measures they are always, unless otherwise stated, considered as being discussed within the context of the other measures remaining in their current form.

We have also examined the outlook for contract market liquidity in the SEM. We consider that liquidity is a desirable and important feature of a competitive market. We note that liquidity is not an end in itself, to be accomplished at any cost, but rather a feature that, if it exists, will help enhance competition across the electricity value chain.

### 1.1. Interactions with other work undertake by the Regulator Authorities

This workstream naturally interacts with other work being undertaken by the RAs. This includes work on price deregulation of the retail market in Republic of Ireland (RoI) and on day-ahead trading<sup>2</sup>. In this workstream, we have taken account of the The Roadmap to Deregulation (CER/10/058) (“The Roadmap”) published in April 2010 and progress towards retail market price deregulation in the near term. The day-ahead trading project is, we understand, just commencing, so, whilst any interaction on liquidity impacts will be important, this is likely to happen during the consultation phase of this project.

### 1.2. Structure of report

The remainder of this report is structured as follows:

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<sup>2</sup> Please see annex 2 for details.

- Section 2 sets out background to the market power mitigation strategy, its objectives, and the context within which it was designed. This section complements the fuller outline provided in the State of the Nation Review.
- Section 3 presents a brief overview of the market power measures referred to through this paper - this again complements the analysis already presented as part of the State of the Nation Review.
- Section 4 presents an assessment of the market power mitigation strategy adopted so far in the SEM.
- Section 5 outlines an assessment of the current drivers of contract market liquidity in the SEM, as well as an evaluation of what the drivers will be in the future.
- Section 6 sets out the policy options available to mitigate market power and to promote competition, and outlines the recommended changes to the market power mitigation strategy, as well as our proposals for measures to enhance contract liquidity in the SEM.

Annex 1 summarises the responses received to the questions raised in the State of the Nation report. The responses by market participants have informed this report.

Annex 2 provides a summary of the Terms of Reference for the Day-Ahead Trading work.

Annex 3 sets out higher level scenario metrics.

Annex 4 sets out sensitivity analysis undertaken and shows the impact on RSI curves.

Annex 5 sets out ESB's proposals.

Annex 6 sets out the modelling assumptions used.

Annex 7 provides the list of consultation questions, on which the RAs would welcome specific responses.

## 2. OBJECTIVES AND CRITERIA

Before we consider how the SEM market structures have evolved and consider the effectiveness of the Mitigation Strategy, we should first consider the regulatory objectives these are designed to achieve. In this section, we therefore set out the objectives of the RAs, as well as the objectives and design criteria behind the Market Power Mitigation Strategy. Further details behind the design criteria is available in the State of the Nation Review.

### 2.1. Introduction

The Market Power Mitigation Strategy was designed by the regulators of the SEM, CER and NIAUR, to mitigate certain features which they anticipated that the SEM market structure would have upon its inception. But before we consider the objectives and design criteria of the SEM it is first useful to consider the overall objectives and missions of the SEM Committee, as well as the RAs.

The objectives of the SEM Committee are outlined in box 2.1.

*Box 2.1 Objectives of the SEM Committee<sup>3</sup>*

#### Objectives of the SEM Committee

...is to protect the interests of consumers of electricity in Northern Ireland and Ireland supplied by authorised persons, wherever appropriate by promoting effective competition between persons engaged in, or in commercial activities connected with, the sale or purchase of electricity through the SEM.

Having regard to

- (a) the need to secure that all reasonable demands for electricity in Northern Ireland and Ireland are met; and
- (b) the need to secure that authorised persons are able to finance the activities which are the subject of obligations imposed by or under Part II of the Electricity Order or the Energy Order or any corresponding provision of the law of Ireland; and
- (c) the need to secure that the functions of the Department, the Authority, the Irish Minister and CER in relation to the SEM are exercised in a co-ordinated manner,
- (d) the need to ensure transparent pricing in the SEM;
- (e) the need to avoid unfair discrimination between consumers in Northern Ireland and consumers in Ireland.

The objectives of the regulators need to be borne in mind, as the details of the Market Power Mitigation Strategy and any proposed changes will ultimately need to better fulfil these objectives.

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<sup>3</sup> Set out in Section 9 of the Electricity Regulation (Amendment) (Single Electricity Market) Act 2007 and Section 9 of the Electricity(Single Wholesale Market) (Northern Ireland) Order 2007.

## 2.2. Objectives of the Market Power Mitigation Strategy

Due to the existence of two large electricity groups on the island - ESB and Viridian - the RAs considered that, in addition to the standard features of the SEM, a specific strategy would need to be implemented to mitigate market power and its potential abuse. The objectives of this strategy, as referred to in AIP-SEM-31-06, are:

- To prevent market participants from abusing their market power; and
- To maintain efficient incentives for new entry and exit. In particular, all market participants should see correct market signals and, where possible, have available to them a range of competitive strategies.

The secondary objectives are:

- To expose the incumbents to competitive pressure, which should lead to increased efficiencies; and
- Not to unfairly discriminate between new entrants and existing players.

The RAs considered in AIP/SEM/02/06 that any market power mitigation strategy should meet the criteria outline in box 2.2.

*Box 2.2 Criteria for the design of Market Power Mitigation Strategy*

Criteria
<i>Effectiveness</i> The market power mitigation measure should be effective at mitigating market power.
<i>Feasibility</i> A market power mitigation mechanism which cannot be effectively applied by the RAs is of no value.
<i>Retention of the Profit Motive at the Margin</i> Rate-of-return regulation eliminates the market power problem through elimination of the profitability of market power exploitation schemes. However it is the profit motive which in fact engenders improvements to customers which no regulatory scheme can achieve. Thus, whatever market power mitigation scheme is adopted, it should not eliminate the profit incentive.
<i>Allows for Innovative Strategy</i> In order for competition to deliver benefits to consumers, market participants should have as wide a set of strategies to employ as possible. Any market power mitigation scheme will limit the strategies available to market participants to some extent but, ideally and where possible, only those strategies which are directed to the exercise of market power should be limited while allowing all others. Given a choice between two otherwise equivalent schemes in terms of their ability to control the exercise of market power, the RAs aim to choose the one which leaves the most scope for important economic choices to be made by all market participants.

### *Regulatory Efficiency*

The selected market power mitigation scheme should not be an excessively difficult or expensive one to implement. More generally, any market power mitigation scheme ought to achieve benefits in excess of its costs.

### *Flexibility*

The mitigation scheme must have the flexibility to deal with surprises in the SEM, whatever they turn out to be.

### *Transparency*

As much as possible, the mitigation scheme should be transparent. Generators should know what is expected of them; whether or not they perform up to those expectations ought to be simple to monitor.

### *Ability to Sunset*

If conditions warrant removal of a particular market power mitigation scheme, it should be removed and if possible, the conditions under which such a scheme will be removed should be stated in advance.

### *Impact on Retail Markets*

The implementation of a market power mitigation strategy needs to take account of the method of PES regulation

The proposals we develop throughout this paper keep these criteria and the objectives of the regulators at their heart. The assessment and policy options we develop in this paper build on these objectives by considering how the objectives and can potentially be better fulfilled, reflecting both the experience for the SEM to date, and the outlook for the next 10 years.

### **3. ASSESSING MARKET POWER**

#### **3.1. Introduction**

In this section we firstly briefly outline the basic concepts of market power and why it is considered harmful for consumers from an economic point of view and how the features of electricity as a product has an impact on the assessment of market power in these markets.

We then briefly outline the market power measures employed, including their strengths and weaknesses. It is important to note from the outset that indicators of market power do not necessarily suggest that market power is being used, or that it would be possible for the party to use it. Similarly, it should be noted that there are special features of electricity markets: in particular, that it is instant in nature, non-storable and demand is relatively unresponsive to price, and these features mean that it may be possible for market power to occur even when traditional indicators of market power, such as market shares or HHI's may suggest it would be unlikely to appear.

We then assess profitability in the SEM, and assess possible causes for the apparent decline. We then undertake RSI analysis to assess the impact of different options on market power.

#### **3.2. Defining market power as a concept**

When considering competition, it is important to specify the meaning of the concept “market power”, as well as the related concepts of “substantial market power” and “dominance”<sup>4</sup>.

Market power is an economic concept often linked to the legal concept of dominance. Dominance as a legal term derived from Article 102<sup>5</sup> of the European treaty. It is clarified in European case-law in particular through the “United Brands” ruling which specifies a position of dominance as:

“The dominant position thus referred to by Article 86 relates to a position of economic strength enjoyed by an undertaking which enables it to prevent effective competition being maintained on the relevant market by affording it the power to behave to an appreciable extent independently of its competitors, customers and ultimately of its consumers.”<sup>6</sup>

Dominance is a legal term, rather than an economic concept which can more easily be assessed. The corresponding economic term is usually a concept characterised as substantial market power. The link between the two concepts are explicit in the UK, and highlighted through working papers by the European Commission<sup>7</sup>.

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<sup>4</sup> Substantial market power and dominance are concepts of general competition law. It is important to note that in an electricity market context it is often argued that harm from market power may arise in circumstances not captured by the Article 102 of the EC treaty. For example, consider the market power case in Scotland considered by the GB regulator Ofgem, and the subsequent development of a Market Power Licence condition: <http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=42&refer=Markets/WhlMkts/CompandEff>

<sup>5</sup> The current Article 102 was previously article 82 of the Treaty of Amsterdam, and before that Article 86 of the Treaty of Rome

<sup>6</sup> United Brands v Commission Case 27/76 1978

<sup>7</sup> DG COMP: DG Competition discussion paper on the application of Article 82 of the treaty to exclusionary abuse (DG Competition, December 2005)

More generally market power is described in guidance from the Office of Fair Trading (the GB competition authority), which is closely aligned statements by DG-COMP as:

“Market power can be thought of as the ability profitably to sustain prices above competitive levels or to restrict output or quality below competitive levels. An undertaking with market power might also have the ability and incentive to harm the process of competition in other ways, for example by weakening existing competition, raising entry barriers or slowing innovation. However, although market power is not solely concerned with the ability of a supplier to raise prices, this guideline, for convenience, often refers to market power as the ability profitably to sustain prices above competitive levels.”<sup>8</sup>

It is important to note that market power is not a black and white concept, but rather possessed by firms in a continuum ranging from perfect competition at one extreme to monopoly at the other. Some degree of market power exists in most markets and an important role for policymakers, competition authorities and regulators is to determine when it mandates intervention.

An important nuance to note is the need for a firm to be able to *profitably* sustain prices above the competitive level. This requirement also hints at longer term strategies whereby a party with market power may be able to exercise his market power to drive the competitor out of the market by offering his output at prices below cost. This strategy would, however, only be profitable if the party is able to recover the cost of the strategy once the competitor has left the market, by gaining the ability to for example withhold capacity. This would, for example, require some form of barrier to other competitors entering the market.

### **3.3. Market Power in Electricity**

Assessing market power in electricity markets can be different from markets for many other products. Electricity as a product has several features that mean that particular care is needed to safeguard against abuse of market power concerns when competition is introduced in markets. There are several characteristics of electricity as a product and of transmission networks that are important to consider:

- It is an instantaneous product, as in order for the electricity network to operate it is necessary to maintain its frequency within a narrow band. This means that supply and demand on the system needs to be kept in balance in real time.
- It cannot be stored economically to a material extent. This means that production needs to be balanced to supply in real time, and arbitrage over time is limited. Systems with significant hydroelectric reservoirs are slightly different in this respect.
- Electricity markets have developed with a regional; or national scope and interconnection between networks is often limited.
- Demand is relatively unresponsive to price, particularly within day and often driven by seasonal and weather factors, rather than economic signals.

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<sup>8</sup> OFT415: Assessment of market power:  
[http://www.offt.gov.uk/shared\\_offt/business\\_leaflets/ca98\\_guidelines/offt415.pdf](http://www.offt.gov.uk/shared_offt/business_leaflets/ca98_guidelines/offt415.pdf)

- Limitations to transmission capacity exist within electricity transmission networks.

These characteristics imply that the supply/demand situation and market conditions will change on a continuous basis and transmission constraints may mean that even within a network localised market power can arise, and move over time. For example outages in specific stations or circuits on a network may create situations whereby a specific powerstation is in a uniquely able or necessary to maintain the system frequency. If the station can predict when this will occur it implies that that it has the ability to raise the prices it asks for its production independently of other market participants.

### 3.4. Measures of market power in electricity

A range of both general and sector specific indicators and investigatory tools exist to detect market power. Many of these metrics are better suited to investigate the “raw” market structure – i.e. before taking into account the structural features of the SEM.

Some of these measures outlined are obviously less relevant in the SEM due to its design as a central dispatch market, and the existence of the Bidding Code of Practice (“BCoP”). It is nevertheless important to keep some of these in mind given that this project also considers ways in which the existing measures could be altered to facilitate competition.

It is important from the outset to note that metrics do not necessarily imply that a party has market power. In addition to this market power in electricity can materialise and be exploited even in contexts where metrics suggest there should not be a problem.

#### *Market Shares*

The most simple indicator or measure of market power is market share. The measure benefits from being readily understood and easy and transparent to calculate. By summing the market shares of the n largest (usually 4) participants in the market, a basic measure of market concentration is obtained. Market concentrations are relevant as fewer or larger market participants are considered to make it easier to exercise market power.

Market shares, concentration ratios and HHIs are calculated in the context of a defined “relevant market”. A relevant market is commonly defined across several dimensions including:

- Product – such as energy production, baseload generation, short term capacity or long term capacity.
- Geography – is the relevant market the island of Ireland? Is it RoI and NI as separate markets? Or will it develop with interconnection and market coupling to become RoI, NI and GB as one market?
- Time – this last aspect is particular important given the non-storable and instant nature of electricity. This implies that electricity production during the morning hours are not substitutable with production in the afternoon peak hours (you generally<sup>9</sup> cannot buy the

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<sup>9</sup> it should be noted that the storability question is slightly different in systems with a large quantity of hydroelectric capacity



former cheap and sell it for more in the later period). Similarly electricity production in the winter is not substitutable with production in the summer.

The traditional economic approach is to use the Small but Significant Non-transitory Increase in Price test (the “SSNIP-test”) to define a market. The SSNIP test starts with the product of the party being investigated and asks the question “if the product held by the party was a market, would it be worth monopolising?” The way to answer this question is to examine if the party would be able to raise his price by a small amount (usually 5-10%) and profitably sustain the rise in price for a year. The definition is then expanded with the closest substitute until the narrowest possible definition where it is possible to profitably<sup>10</sup> raise prices by 5-10% is found.

It is however often difficult in practice to apply the SSNIP test and a potential alternative is to investigate market power under a range of scenarios characterising the more likely relevant markets. Consideration of market definition is nevertheless important in the context of the SEM as interconnection with GB increases during the next decade, both through the East-West interconnector, and the potential for expanding the export capacity to GB on the Moyle interconnector from the current 80MW to the full capacity of the interconnector of 450MW.

#### *Herfindahl-Hirschman Index (HHI)*

The Herfindahl-Hirschman-Index (HHI) measures the concentration in a relevant market. It is different from other concentration ratios as, rather than calculating the sum of the  $n$  largest firms in the market, it calculates the sum of the squared market shares of all market participants in a market. This yields a number between close to 0 and 10,000. The result is commonly characterised into three categories:

- HHI below 1,000 – unconcentrated;
- HHI between 1,000 and 1,800 – moderately concentrated; and
- HHI above 1,800 – highly concentrated.

By using the square of the market shares, rather than the actual shares, the HHI places additional weight on larger market shares than on lower ones and will highlight if a market is concentrated to a few large firms. One attraction of the HHI is that if firms act as Cournot oligopolists (that is, they decide on their supply to the market assuming that this has no impact on the supply decisions of their rivals), then the average Lerner Index (the output-weighted average of the price-cost margin as a proportion of the price) is proportional to the HHI and inversely proportional to the elasticity of market demand. This, however, ignores contract positions and makes strong assumptions about short-run bidding behaviour that may be a poor description of the way electricity wholesale markets operate.

#### *Pivotal supplier Indicator and Residual Supply Index*

The Pivotal Supplier Indicator (PSI) is an electricity specific indicator that makes an assessment that combines supply and demand conditions in the electricity markets. The PSI assesses if a particular generator is “pivotal” in serving demand. In other words it examines if demand could

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<sup>10</sup> Profitably in this context suggests that the increased revenue from increasing prices outweigh the opposite effect of loss of sales as a result of the price increase.

be met without the capacity of that generator. The exercise is repeated for each period of the dataset being investigated.

The measure is, however, not without faults as it for example does not take into account contracting of stations (which would limit the ability of the generator to exercise his market power in practice). In addition to this, it does not address the potential for collusion or co-ordinated behaviour.

Some of the shortcomings of the PSI are addressed in the Residual Supply Index (RSI), which is an evolution of the former. While the PSI is a binary metric (you are either pivotal or not), the RSI uses a continuous scale. It is calculated as follows:

$$\text{RSI} = (\text{System capacity (including import capability)} - \text{Uncommitted capacity of investigated generator}) / \text{demand}$$

Uncommitted capacity here is that part of capacity that has not been contracted forward, and requiring an increase in the RSI for the investigated generator is equivalent to requiring an increase in its contract cover. If the RSI is below 115 then the capacity of the generator is necessary to meet demand (allowing for a planning reserve margin of 15%, otherwise it would be 100 + the required planning reserve margin). The ability to set a threshold is useful - however, similar to market shares and HHIs, there are no consensus rules as to what the critical value should be. Empirical studies in California suggests an RSI above 120% would result in a competitive market price outcome. In addition to this the studies undertaken as part of the European Commission Sector enquiry highlighted a critical value of at least 110% for 95% of the periods observed.

#### *Barriers to entry and Market Entry/Exit*

In addition to the metrics it also important to examine evidence for barriers to entry and expansion in a market. Low barriers to entry acts as an important check on competition and will help ensure that even large market participants will not be in a position to exercise market power. This means that where barriers to entry are relatively low, and there is a credible threat of entry, then even quite high market shares may not be a particular concern. In assessing the barriers to entry in a market it is useful to consider a range of different factors, including:

- Market liquidity: wholesale market liquidity can be a barrier to entry in a market as low liquidity may for example undermine the confidence market participants have in the price formation (and through that investment signals). It can also raise questions about the ability of participants to hedge their output and make entry by non-vertically integrated companies too risky.
- Compliance with trading arrangements and regulatory rules.
- Planning limitations and barriers to investment.

### **3.5. Market power and access to information**

One very important way through which market power may be exercised is through the information advantages a large player will possess compared to smaller competitors. One of the premises upon which competitive markets are based is the requirement that all market

participants have good (or perfect) information and that no party possesses an information advantage.

The specialised, and real time nature of electricity markets require that detailed, and timely information be available in order to enable market participants to take decisions in a timely manner. Absent information being made available to all on an equal basis a larger player may, through access to his large portfolio of generating stations, be in possession of information about plant availabilities, transmission outages and other factors that could enable it to take actions independently of its competitors. In many markets, including the SEM this type of advantage is often solved by requiring generators to make public the forecast maintenance plans for their plants, either directly, or through an agent. Critically access to transparent information also enables market participants to detect exploitation of market power by their competitors, and is therefore an important source of discipline in the market.

As we will discuss later in this paper information and transparency is also a very important feature to provide the confidence in the price formation necessary for liquidity to emerge.

### **3.6. Evolution of market power in the SEM**

The MMU published a report in April 2009<sup>11</sup>, which outlined the key developments of the SEM through to the end of 2008. Notably the report observed that:

- The highest SMP points coincided with highest demand periods during days;
- The movements of the SMP was in broad alignments with rises and falls in the underlying fuel prices and the carbon price;
- The SMP has tended to be inversely related to the available capacity margin; and
- The daily price profiles broadly follow the trends in GB balancing prices.

The report further undertook analysis of Pivotal Supplier Indexes which noted that one or more of the participants were pivotal (i.e. demand could not be met without their portfolio) in 65.8% of the period considered.

The MMU concluded that these observations were encouraging and that it suggested that the market design was working as expected. It further noted that much work had gone into the clarity of the BCoP and ensuring it is clear to interpret.

### **3.7. Evolution of profitability in the SEM**

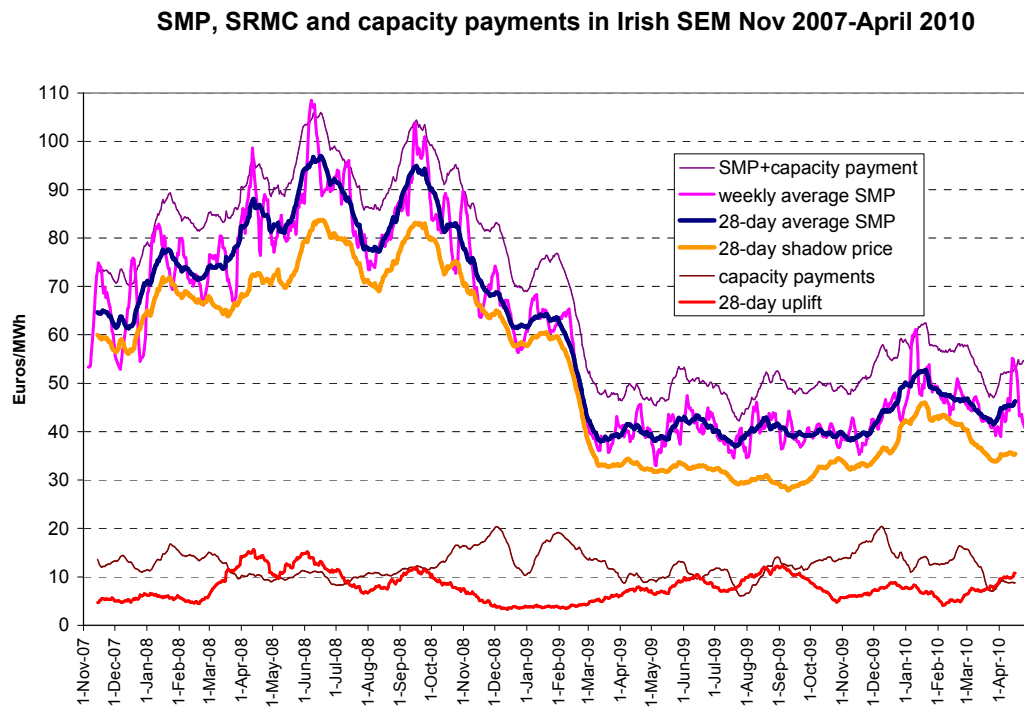
In most markets, one simple test of the presence or absence of market power, and more precisely, possible changes over time, is to examine corporate profit margins. In the SEM, market power is already heavily mitigated by the BCoP, but it is nonetheless worth examining recent trends in profits to see what trends emerge and what explanations might fit (ignoring for the time being any profits on contracts and assuming that all power is sold at the wholesale price).

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<sup>11</sup> SEM/09/039 Market Monitoring Unit, Public Report 2009

Figure 3.1 below shows the weekly and 28-day averages for the shadow price, the uplift, their sum, the System Marginal Price (SMP), and the capacity payments that, when added to the SMP, determine the total payments to scheduled generators (those available but not dispatched just receive the capacity payment). It reveals a steady decline, but before concluding that profits have fallen with declining incumbent market share we need to examine fuel costs and other drivers of estimates of profits.

Figure 3.1: Components of wholesale price, 7 and 28-day moving average (source: SEMO)



There are a number of factors that might have driven any changes in gross profit margins, namely:

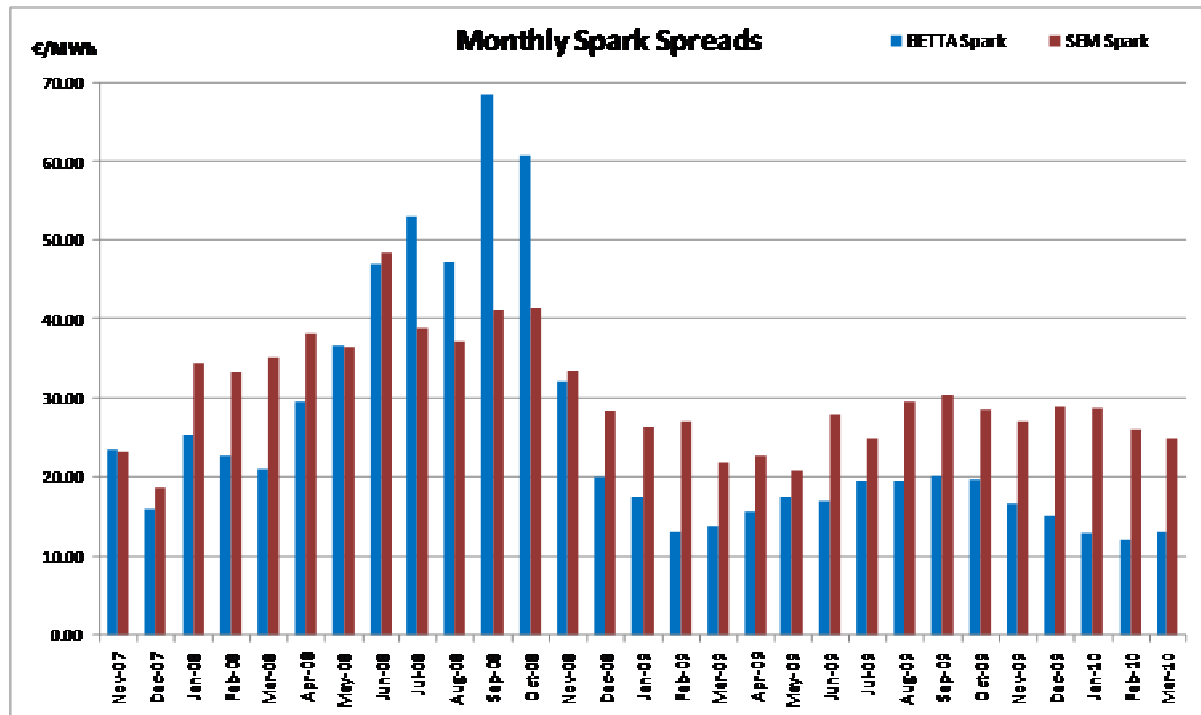
- Changes in fuel prices: in power generation markets, gross margins in part depend on fuel prices and relative heat rates. So, for example, if an OCGT is the marginal unit (i.e. the price setting unit) and gas prices fall, then the gross margin for a CCGT will decline in proportion to the relative heat rates.
- New generation has shifted the price-setting plant to plant with lower short-run marginal cost.
- Market monitoring is becoming more effective and is reducing opportunities to increase profits unreasonably.

We examine the first two factors further below. The last factor may in principle have been a driver, but the MMU has not as far as we are aware observed any unreasonable attempts to increase profits, so its actions are unlikely to have further reduced opportunities to increase profits.

### 3.7.1. Changes in fuel prices

The analysis provided in the State of the Nation Review showed that spark spreads (the wholesale price of electricity less the gas price, adjusting for the heat rate) have fallen since the peaks of mid-2008, as per Figure 3.2 below. This is likely to have been a major driver of declining profitability in the SEM, given the predominance of gas-fired generation.

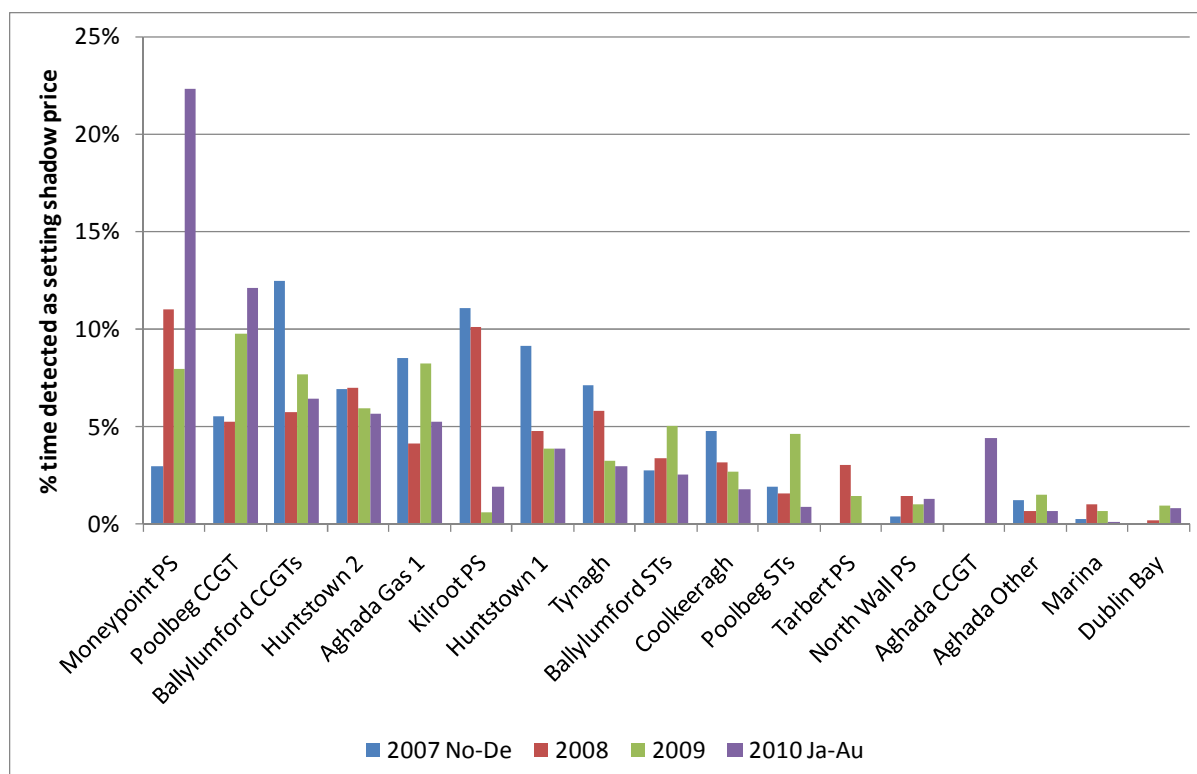
Figure 3.2: Monthly spark spreads



### 3.7.2. Changes in price-setting plant

Figure 3.3 shows which plants have set the SMP for what percentage of time between November 2007 and August 2010. It shows that there is considerable volatility in the percentage of time which any plant and indeed any fuel has set the SMP, with the main movements between gas-fired plants and coal-fired plants (Moneypoint and Kilroot). But it is apparent that on average, gas has been the price-setting fuel, although the spike in 2010 for Moneypoint (as the price setting plant) most likely reflects the relative movement between coal and gas. This would again point to changes in fuel prices being a major driver of changes in profitability for the SEM as a whole.

Figure 3.3: Plants setting shadow price (source: SEMO)



### 3.7.3. Assessment

It appears that gross profits have fallen significantly in the SEM since late 2008, which would not give a prima facie cause for concern that market power is being exercised. It seems likely that the major driver of falling gross profits was declining gas prices, rather than new entry of more efficient plant.

Caution is required, however, as falling profitability should not be taken to mean that there is no potential to exercise market power if the current mitigants are changed or removed.

### 3.8. Analysis of RSI in the SEM

In this section we outline analysis of RSI undertaken on a series of forward looking scenarios modelling market conditions in the SEM. The modelling was undertaken for the years 2015 and 2020, with demand and generation investment based on data from the 2010 GAR and Gate 3 transmission entry. The scenarios were modelled by the RAs through Plexos. A number of scenarios for input assumptions were prepared, these are outlined in Table 3.1 below.

Table 3.1 Plexos input scenarios

Variable	Summary of Scenario
SEM Demand <sup>12</sup>	Low Growth 2.0% annually

<sup>12</sup> The growth scenarios are based on the GAR. It should be noted that the high growth scenario was excluded due to further adverse economic developments since the 2010 GAR was published.

Coal prices	A central and low case scenario for coal prices was modelled
GB interconnection	In order to model flows through the interconnectors with the GB the GB electricity market is modelled through a representative gas generator. To model the potential impact of different flows through the electricity interconnectors scenarios for a differentiating gas price, significantly lower and higher than the price of gas in the SEM was the input assumption for GB.

The scenarios have the following higher level properties, as presented in Table 3.2. Additional higher level metrics from these scenarios are presented in Annex 3.

*Table 3.2 Higher level metrics of the SEM*

Variable	2015	2020
Total Consumption	39.81 TWh	43.82 TWh
Wind Output	11.07 TWh	17.06 TWh
Peak Load	7,971 MW	8,700 MW

For each combination of input scenario we calculated the RSI for the two largest generators in the SEM. We also calculated the RSI for a hypothetical, horizontally integrated ESB Group as well as the RSI for the ESB Group once the Directed Contracts (based on an HHI threshold of 1150) have been taken into account.

The results of the RSI analysis for the 2015 and 2020 scenarios are presented in Figures 3.4 – 3.5. As outlined earlier, an RSI of more than 1.2 suggests a competitive outcome, while one below 1 suggests that the system is not able to balance supply with demand without the (uncontracted) supply of the investigated market participant. Thus, if a line in these charts intercepts the “1” axis at the 5% mark, it indicates that the market would not be able to balance without the capacity of that party in 5% of half hours in a year. It should be noted that the curves deducting the impact of the Directed Contracts are based on approximation and does not necessarily provide a fully accurate picture of the ability of Directed Contracts to mitigate against market power. In addition to these scenarios, a number of sensitivities around SEM prices relative to GB prices and coal prices relative to gas prices are included in Annex 4.

*Figure 3.4: RSI for 2015 low demand scenarios, high coal, and medium GB price*

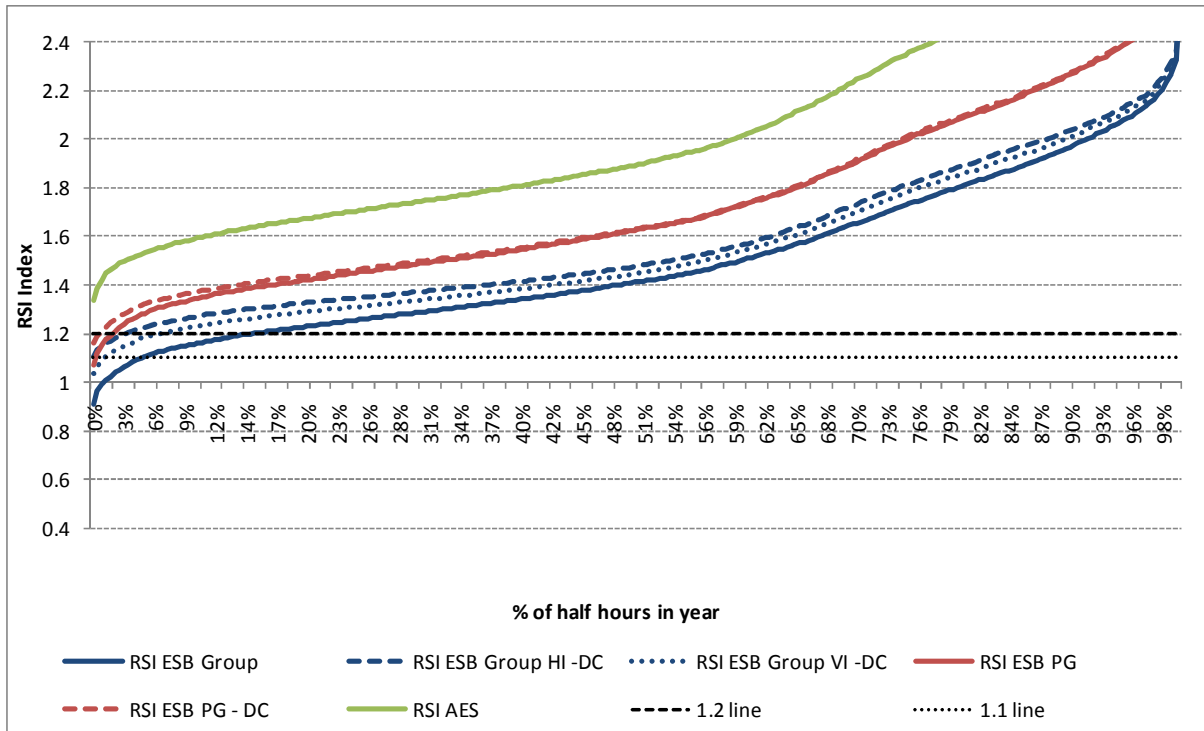
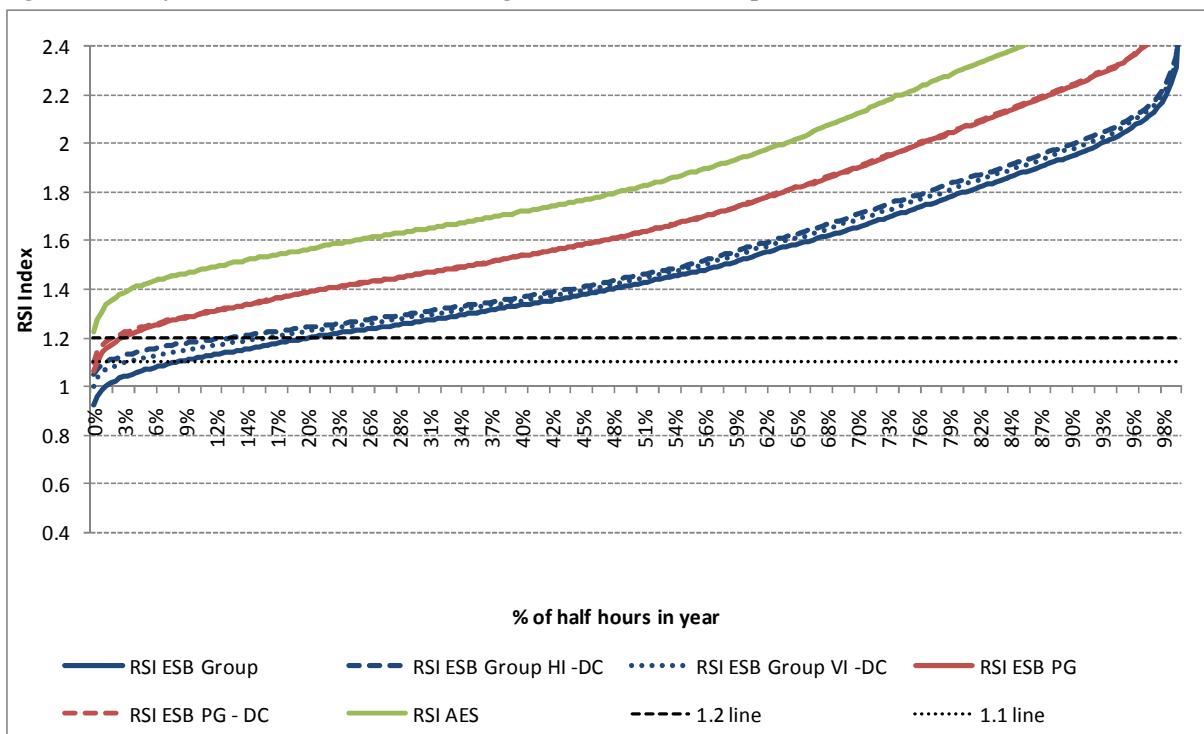


Figure 3.5: RSI for 2020 low demand scenarios, high coal, and medium GB price



The following approach has been taken in undertaking the calculations:

- ESB PG: This calculates the RSI for ESB PG with its current power generation portfolio. This line simulates the outcome before contracting has been taken into account.
- ESB PG – DC : This calculates the RSI for ESB PG with the simulated quantity of DC removed from the capacity to illustrate the impact on RSI of the DCs.



- **ESB Group:** This calculates the RSI for ESB Group under a scenario where ESB PG and ESBI integrate horizontally. Under this scenario the conventional generating capacity of both ESB PG and ESBI is included, as well as the renewable capacity grouped under ESBI.
- **ESB Group HI – DC:** This calculates the RSI for the horizontally integrated ESB Group (i.e. ESB PG + ESBI), net of the simulated volume of Directed Contracts which would be offered by such as grouping.
- **ESB Group VI – DC:** This calculates the RSI for the horizontally and vertically integrated ESB group net of the simulated volume of Directed Contracts such a grouping would be required to offer and net of volumes which ESB CS would be eligible for, with an adverse impact on the RSI metric.
- **AES:** This calculates the RSI for AES.

In both charts we have plotted the RSI for ESB PG, as well as when combined with the capacity of ESBI through horizontal integration. Since the ability of a party to affect the market outcome is also influenced by its contracting position we have also investigated the RSI of these generator groupings after the capacity estimated would be required to be contracted by them through DCs.<sup>13</sup>

In addition to Figures 3.4 and 3.5, Tables 3.3 – 3.8 provide an additional overview of the findings of the forward looking RSI analysis.

Table 3.3 Average Half Hourly RSI for 2015 scenarios

Scenario	RSI ESB Group		RSI ESB Group		RSI ESB PG	RSI ESB PG	
	RSI ESB Group	HI net Directed Contracts	VI net Directed Contracts	net Directed Contracts		RSI AES	
High Coal price, Low Load, High GB price	1.28	1.35	1.32	1.47	1.48	1.72	
High Coal price, Low Load, Medium GB price	1.50	1.58	1.55	1.73	1.74	2.03	
High Coal price, Low Load, Low GB price	1.58	1.67	1.63	1.82	1.83	2.13	
Low Coal price, Low Load, High GB price	1.28	1.35	1.32	1.47	1.48	1.72	
Low Coal price, Low Load, Medium GB price	1.48	1.56	1.53	1.70	1.71	1.99	
Low Coal price, Low Load, Low GB price	1.58	1.67	1.63	1.82	1.83	2.13	

Table 3.4 Percent of Half Hours the RSI is below 1.2 for 2015 scenarios

Scenario	RSI ESB Group		RSI ESB Group		RSI ESB PG	RSI ESB PG	
	RSI ESB Group	HI net Directed Contracts	VI net Directed Contracts	net Directed Contracts		RSI AES	
High Coal price, Low Load, High GB price	43%	29%	36%	15%	11%	1%	
High Coal price, Low Load, Medium GB price	15%	3%	6%	2%	1%	0%	
High Coal price, Low Load, Low GB price	12%	3%	5%	2%	1%	0%	
Low Coal price, Low Load, High GB price	43%	29%	36%	15%	11%	1%	
Low Coal price, Low Load, Medium GB price	18%	4%	8%	2%	1%	0%	
Low Coal price, Low Load, Low GB price	12%	3%	5%	2%	1%	0%	

Table 3.5 Percent of Half Hours the RSI is below 1.1 for 2015 scenarios

<sup>13</sup> Assuming an HHI Threshold level of 1150

Scenario	RSI ESB Group		RSI ESB Group		RSI ESB PG	RSI ESB PG	
	RSI ESB Group	HI net	VI net	net Directed		RSI AES	
		Directed	Directed				
		Contracts	Contracts	Contracts			
High Coal price, Low Load, High GB price	25%	8%	15%	5%	3%	0%	
High Coal price, Low Load, Medium GB price	5%	0%	1%	1%	0%	0%	
High Coal price, Low Load, Low GB price	4%	0%	1%	1%	0%	0%	
Low Coal price, Low Load, High GB price	25%	8%	15%	5%	3%	0%	
Low Coal price, Low Load, Medium GB price	6%	0%	2%	1%	0%	0%	
Low Coal price, Low Load, Low GB price	4%	0%	1%	1%	0%	0%	

Table 3.6 Average Half Hourly RSI for 2020 scenarios

Scenario	RSI ESB Group		RSI ESB Group		RSI ESB PG	RSI ESB PG	
	RSI ESB Group	HI net	VI net	net Directed		RSI AES	
		Directed	Directed				
		Contracts	Contracts	Contracts			
High Coal price, Low Load, High GB price	1.30	1.34	1.33	1.50	1.50	1.68	
High Coal price, Low Load, Medium GB price	1.48	1.53	1.51	1.71	1.71	1.91	
High Coal price, Low Load, Low GB price	1.57	1.62	1.60	1.80	1.81	2.02	
Low Coal price, Low Load, High GB price	1.30	1.35	1.33	1.50	1.50	1.68	
Low Coal price, Low Load, Medium GB price	1.46	1.51	1.49	1.68	1.68	1.88	
Low Coal price, Low Load, Low GB price	1.57	1.62	1.60	1.80	1.81	2.02	

Table 3.7 Percent of Half Hours the RSI is below 1.2 for 2020 scenarios

Scenario	RSI ESB Group		RSI ESB Group		RSI ESB PG	RSI ESB PG	
	RSI ESB Group	HI net	VI net	net Directed		RSI AES	
		Directed	Directed				
		Contracts	Contracts	Contracts			
High Coal price, Low Load, High GB price	40%	35%	37%	16%	16%	3%	
High Coal price, Low Load, Medium GB price	20%	13%	16%	3%	2%	0%	
High Coal price, Low Load, Low GB price	15%	8%	11%	3%	2%	0%	
Low Coal price, Low Load, High GB price	39%	35%	37%	16%	16%	3%	
Low Coal price, Low Load, Medium GB price	22%	16%	19%	4%	3%	0%	
Low Coal price, Low Load, Low GB price	15%	8%	11%	3%	2%	0%	

Table 3.8 Percent of Half Hours the RSI is below 1.1 for 2020 scenarios

Scenario	RSI ESB Group		RSI ESB Group		RSI ESB PG	RSI ESB PG	
	RSI ESB Group	HI net	VI net	net Directed		RSI AES	
		Directed	Directed				
		Contracts	Contracts	Contracts			
High Coal price, Low Load, High GB price	25%	19%	22%	6%	6%	0%	
High Coal price, Low Load, Medium GB price	8%	2%	3%	1%	0%	0%	
High Coal price, Low Load, Low GB price	6%	1%	3%	1%	0%	0%	
Low Coal price, Low Load, High GB price	25%	19%	21%	7%	6%	1%	
Low Coal price, Low Load, Medium GB price	10%	2%	5%	1%	0%	0%	
Low Coal price, Low Load, Low GB price	6%	1%	3%	1%	0%	0%	

In most cases the RSI will remain above the indicative 1.2 value when averaged. It is nevertheless interesting to note that it also drops below 1.2 and 1.1 in a significant number of cases and even below 1 in a number of scenarios examined. This feature is likely to be due to the impact of the rapid expansion of wind power in the SEM during the period studied. The increase in wind generation has the effect of:

- increasing the supply margin in a large number of cases; but
- in periods with low wind generation, generators even with a moderate market share may become pivotal for the supply of electricity in the SEM.

It is further apparent from the RSI analysis that the price difference between the SEM and GB has an important effect on the competitive conditions in the market, and this suggests that much of the spare capacity in the market may be concentrated in the larger generators, as when demand increases and the margin narrows, it increases the potential for large generators to exploit their market power. As we discuss further in Section 5.6, this is further supported by an increase in HHIs and required DCs when coal is an in-merit fuel. The variation of the HHIs and potential market shares of ESB for our 2015 scenario is illustrated in Table 3.9 and Table 3.10 for the 2020 scenario.

It is further interesting to note that under the combined vertical and horizontal integration of ESB, the analysis indicates that the current configuration of DCs alone may not be sufficient to ensure a competitive outcome as measured by the RSI analysis. It is nevertheless worth noting in these scenarios that the additional contracting done by ESB through its liquidity sell undertaking would further increase the proportion of output contracted in these scenarios, making it more difficult to profitably withhold capacity.

Table 3.9 HHIs and Market Shares for 2015 Scenarios

	HHI - no integration	HHI - horizontal integration	Market share of ESB PG	Market Share of ESB PG + ESBI
<i>High Coal price, Low Load, High GB price</i>	1073	1572	17%	32%
<i>High Coal price, Low Load, Medium GB price</i>	1112	1612	15%	32%
<i>High Coal price, Low Load, Low GB price</i>	1193	1682	15%	31%
<i>Low Coal price, Low Load, High GB price</i>	1300	1981	25%	39%
<i>Low Coal price, Low Load, Medium GB price</i>	1486	2118	28%	39%
<i>Low Coal price, Low Load, Low GB price</i>	1614	2031	29%	37%
<i>By capacity</i>	1349	1873	28%	38%

Table 3.10 HHIs and Market Shares for 2020 Scenarios

	HHI - no integration	HHI - horizontal integration	Market share of ESB PG	Market Share of ESB PG + ESBI
<i>High Coal price, Low Load, High GB price</i>	984	1356	14%	27%
<i>High Coal price, Low Load, Medium GB price</i>	1043	1412	13%	27%
<i>High Coal price, Low Load, Low GB price</i>	1135	1484	12%	25%
<i>Low Coal price, Low Load, High GB price</i>	1200	1732	22%	34%
<i>Low Coal price, Low Load, Medium GB price</i>	1318	1784	23%	33%
<i>Low Coal price, Low Load, Low GB price</i>	1468	1803	24%	31%
<i>By capacity</i>	1144	1721	23%	36%

It is important to consider the impact of increasing interconnection on competition in the SEM. As our forward looking modelling reveals, depending on relative price levels, additional interconnection with GB has a significant impact on the competitive outcome. If GB electricity

price levels are consistently higher than SEM levels, this would then limit the ability of the interconnector to constrain market power in the SEM. If prevailing GB price level is higher than the SEM then this effectively means that the additional interconnection increases SEM demand by close to 950MW (and similarly if the SEM price was to be consistently lower than GB, then demand is 950MW less). This has an important impact, in particular in the 2015 scenario, as while investment in additional CCGT capacity by Endesa and Bord Gais means competition among baseload plants will increase, and concentration decline, spare capacity appears to remain concentrated. This is illustrated by higher HHI and market shares when measured by installed capacity compared to when it is measured by output. Since baseload plants are usually less likely to be price setting this suggests that concentration among the price setting plants will be higher than the overall HHI suggests.

This indicates that unless concentration in generation declines through structural changes, intervention through the BCoP and DCs will still be appropriate. The BCoP offers protection against concentration in spare capacity as it restricts the ability of a generator with multiple plants in a merit order sequence to price his cheaper plant up to the cost of his most expensive (knowing that the expensive plant is the plant placing a competitive constraint rather than the cheaper plant, but that the expensive plant is still cheaper than the next competitor). DCs also help in this situation as, despite the BCoP, a generator could still withhold capacity from the market by making the plant unavailable. For a withholding strategy to be profitable, the generator would however need to be able to ensure that the price increases sufficiently such that revenue received by his remaining plant is higher than the loss of revenue from the withheld capacity. Two factors of the SEM protect against this type of behaviour:

- DCs ensure that a proportion of the large generators output is already forward contracted. This means that the generator is not able to increase the revenue received by that capacity by increasing the SMP price through withholding. This reduces the chance of such opportunities arising.
- The revenues received would also need to cover the Capacity Payments foregone by the generator when he withholds the capacity.

Overall, the modelling suggests that the forecast entry and investment in the SEM, and the increase in intermittent generation, is, on the whole, likely to result in increased competition and (absent a market power mitigation strategy) a decreasing ability for generators to exploit market power. It nevertheless also suggests that the intermittency on the system may mean that opportunities to exploit market power may still present themselves in a significant number of cases. This suggests that a robust market power mitigation strategy is likely to continue to have value for the foreseeable future.

### **3.9. Conclusion**

In this section, we have noted the particular features of electricity markets that might give rise to market power.

The forward looking modelling of the SEM reveals that the increase in intermittency and interconnection has the potential to have a significant effect on competition in the wholesale market. The analysis further suggests that competition will continue to increase with the

commissioning of additional generation. It is however nevertheless the case that the increased level of intermittency may also mean that opportunities for opportunistic behaviour will continue to arise under several potential scenarios. It is therefore likely that there will be an ongoing need for robust market monitoring and bidding principles.

## 4. ASSESSMENT OF THE MARKET POWER MITIGATION MEASURES

### 4.1. Introduction

In this section we evaluate the current market power mitigation measures. The five market power mitigation measures are:

- The BCoP, including monitoring by the Market Monitoring Unit (MMU);
- DCs;
- Ring Fencing;
- The EPO; and
- If necessary, a targeted package of certain local market power mitigation measures.

The last measure was aimed solely at generators that must be operated for local transmission concerns and face no effective competition. These measures could be made effective through the capping of constraint payments or full Reliability Must-Run (RMR) treatment which involves out-of-market contract payments to the generator. As the package was to be applied only ‘as necessary’, and in practice has not been used to date it is not discussed further in this document.

The first measure applies to all market participants, while the next three measures only apply to ESB and Viridian (who we also refer to as NIEES).

When assessing the market power mitigation strategy for the SEM it is important to consider the measures separately, but also recognise that the RAs intended that they form a coherent overall strategy to mitigate market power. This section discusses the measures separately before drawing together an overall analysis of the market power mitigation measures.

It is important to recognise that during the three years that the SEM has operated, the market power mitigation strategy appears to have helped deliver a generation market which currently appears to attract new entry through investment, alongside new entry in the retail market. It is however the case that there are differences in the level of competition between the retail markets in Northern Ireland and the Republic of Ireland. It is harder to draw conclusions about the relative success of the SEM compared to wholesale markets in other countries, but the high level of reserve margin and transparent wholesale pricing are positive signals. The State of the Nation Review does, however, indicate that the SEM may have higher per unit costs than a number of European wholesale markets, although lower than some others, most likely due to generation mix, back-up fuel requirements, economies of scale and transportation costs.

If competition for peak, mid merit and baseload continues to develop in the SEM, then it would be expected that the need for intervention in the market should decline. Furthermore, the operation of the SEM and the market power mitigation measures provide an opportunity to consider which of the measures have been most effective, and which may have led to unintended negative consequences. Given this, it is appropriate to consider what the overall level of intervention should be in the market given the current levels of market power, and importantly, risks of abuse of market power.

In the subsequent sections we firstly provide a brief overview of the current measures and then discuss the market power mitigation measures in turn.

## 4.2. Design of the current Market Power Mitigation Strategy

The Market Power Mitigation Strategy is outlined in more detail in Section 3 of the SEM Market Power and Liquidity State of the Nation Review (SEM-10-057). Box 4.1 reproduces a high level overview of this document.

*Box 4.1 The Market Power Mitigation Strategy<sup>14</sup>*

### Components of the Market Power Mitigation Strategy

- Bidding principles for generators that reflect an expectation that bids in the energy market should reasonably reflect marginal costs. Thus a Bidding Code of Practice was developed, which are a set of principles upon which participants are required to build Commercial Offer Data (including energy bid prices) for their Generator Units. The principles state that participants must bid their Short-Run Marginal Cost (SRMC) in to the market, and are designed to help mitigate the potential abuse of market power by Generators.
- Market monitoring to monitor adherence to the bidding principles by generators and to alert regulators to problems with market rules that may create unintended pricing power or gaming opportunities primarily for generators with large portfolios. Thus the Market Monitoring Unit was created, which, among other activities, involves ex-post monitoring of the operation of the SEM to ensure that generators have submitted bids to the market in line with the Bidding Code of Practice. The Market Monitoring Unit also conducts investigations into the exercise of market power including but not limited to the violations of bidding principles or other market rules.
- Directed Contracts (DCs) that incumbent generators with large shares of control over generation in the SEM will be required by the RAs to offer. DCs are essentially financial hedge contracts - Contracts for Differences (CfDs) – which exist outside of the physical electricity market and whose price are based on the projected SMP in the SEM. DCs help ensure that generators with market power do not have an underlying incentive to attempt to abuse their dominant positions in the SEM to the detriment of competitors or consumers (this is explained in more detail later). They also have the benefit of providing forward liquidity to the SEM by helping suppliers, especially those which are not vertically integrated, to manage the risk associated with movements in the SEM's SMP. As they are “directed”, it is the RAs who decide upon the methodology, pricing and quantity of these DCs every year.
- Ring-fencing arrangements between affiliated generating and supply businesses within the ESB and Viridian groups. The main purpose of these arrangements is to ensure that, via licences, the ESB and Viridian businesses operate independently of each other. They feature separate management, separate accounts, as well as a prohibition of anti-competitive behaviour, cross-subsidies (either to or from their affiliate businesses) and contracts with affiliates other than those which are on an arm's length basis on normal commercial terms. This applies to both the generation and supply arms of the ESB and Viridian groups. As part of the licensing and ring-fencing of ESB and Viridian, the Regulatory Authorities put in place, for ESB Customer Supply (CS) and NIE Supply, an Economic Purchase Obligation (EPO) requiring them to purchase forward contracts in a manner that is economic, fair and transparent. Without an EPO these

<sup>14</sup> As set out in SEM Market Power and Liquidity State of the Nation Review (SEM-10-057)  
[http://www.allislandproject.org/en/market\\_decision\\_documents.aspx?article=dcdad63-660c-4b28-b71f-9896f306e6cc](http://www.allislandproject.org/en/market_decision_documents.aspx?article=dcdad63-660c-4b28-b71f-9896f306e6cc)

suppliers could, where there is market power in the supply market, pay too much for contracts from their affiliates, resulting in their customers paying too much for their electricity and competition in the market being distorted. Note that an EPO was in place for ESB since 1999, but was adapted for the new market structure.

- A targeted package of certain local market power mitigation measures *if necessary* aimed solely at generators that must be operated for local transmission concerns and face no effective competition. These measures would be through the capping of constraint payments or full Reliability Must-Run (RMR) treatment which involves out-of-market contract payments to the generator.

In the following sections we discuss the four main components of the Market Power Mitigation Strategy in turn, comment on their respective performance to date and provide an assessment of whether or not they are likely to remain fit for purpose.

### **4.3. Bidding code of practice, and monitoring by the Market Monitoring Unit**

The SEM is a capacity and energy market, such that generators receive revenue separately for making capacity available to the market irrespective of whether any electricity is generated, and for the electricity that is actually generated. In part to avoid the risk of generators being rewarded twice for making capacity available, a BCoP was put in place that required generators to bid at Short Run Marginal Cost (SRMC) in the energy part of the market.<sup>15</sup> The BCoP provides guidelines about how the different elements of SRMC should be made up, including for example, that fuel costs should be calculated on the basis of the opportunity cost of the fuel rather than the price the generator actually paid for the fuel, if for example, it is supplied under a long term contract.

The RAs established the MMU to monitor generators' compliance with the BCoP. The MMU investigates complaints about bidding behaviour and also behaviour that its own analysis may suggest is in breach of the BCoP. Although much of the activity of the MMU is undertaken on a confidential basis we understand that it has investigated a range of concerns about generators bidding behaviour, and some of the investigations have led to concerns being raised by generators or changes/ clarifications to aspects of the BCoP.

Overall, we believe that the BCoP, together with the monitoring by the MMU, has been effective in ensuring that most bids are made at or very close to their SRMC. This means that prices within the SEM are relatively predictable if prevailing levels of fuel costs and demand outturn are understood because the merit order for plants is relatively predictable. As we discuss further below this has implications for the demand for contracts to hedge price risk in the SEM.

Overall, without any other provisions the BCoP heavily constrains the ability of any market participant to exploit any market power they may have, even if the market power is only transitory. While the MMU has investigated some events during the SEM, the lack of major concerns about bidding behaviour, also suggests that the BCoP substantially limits the ability of market participants to exploit any market power they may have.

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<sup>15</sup> In a market such as the SEM that separates remuneration for capacity and energy, it would be expected that in a well functioning competitive market on most occasions generators would bid at SRMC for the energy component of the market.



The apparent success of the BCoP and MMU suggests that these provisions are effective and will and should remain in place for the foreseeable future to mitigate the risk of any market power being exploited, with an enhanced MMU. The success of the BCoP and MMU also has implications for other market power mitigation measures, and in particular, it may suggest that the RAs should be careful to ensure that any other measures that are put in place clearly address risks of exploiting spot market power that are not effectively addressed by the BCoP and MMU.

#### 4.4. Directed Contracts

DCs require market participants who are considered to have market power in the wholesale market to contract a certain amount of their output by making it available to all market participants.

ESB has made a proposal to the RAs to supplement the directed contracts with a liquidity release mechanism linked to its wholesale market share. Under this approach ESB would no longer be subject to the vertical ring fencing provisions discussed below and the amount of liquidity made available would be partly determined by its market share. We discuss the undertaking proposed by ESB further in Chapter 5. Apart from raising questions of market power, such a change would, absent such a liquidity undertaking, have a considerable impact on market liquidity, and thus needs careful consideration, as does the wider question of whether the contract market is working well.

The RAs determine the volume and pricing approach for the directed contracts based on relatively mechanistic approaches, including the use of the HHI to help determine the volume of contracts in the baseload, mid-merit and peaking segments of the market that are made available. Box 4.2 discusses whether or not an alternative metric may be more suitable to determine the volume of DCs to be offered to the market.

*Box 4.2 DC volumes HHI or alternative metric*

#### **Would it be appropriate for DC volumes to be based on an alternative metric to HHI?**

Directed Contract complement the Bidding Code of Practice, and other bidding arrangements, in helping to prevent market participants from using market power in the spot market. As the quantities of DCs that market participants are required to provide is determined ex-ante, the mechanism through which these quantities are determined is an important consideration.

The RA evaluated two measures of market power when the DCs were originally put in place; HHI and RSI. The RAs choose to adopt the HHI ahead of the RSI for three main reasons:

- It focuses on high market concentration throughout the price duration curve, while the RSI focuses only on the peak period (price spikes at times of scarcity), and is incapable of detecting potential for the exercise of market power in shoulder and off-peak periods;
- The HHI is a more established and widely used index that has been applied to multiple industries; and,
- The HHI measures competitiveness of an industry while the RSI measures only the power of the largest participant.

Each of these reasons are can be challenged, and could be reconsidered. Specifically;

- The RSI measure can be calculated for any time period, not just peak times. It is also not necessarily correct that peak periods alone are the only times of scarcity. An RSI for baseload, shoulder and peak times is possible and more applicable and informative than

HHI measures over similar periods, due to the electricity market specificity of the measure and the characteristics of electricity markets.

- HHI is a widely used measure in many industries but it is not best suited to electricity markets and can be incapable of detecting market power as it focuses on market shares and not the indispensability of a generator to meeting load.

RSI can be calculated for any market participant, it is not limited to the largest. The measure, by definition, measures the ability of the market, less a participant, to supply the (hourly) load. Based on these objections, it could indeed be preferable to use the RSI to determine the volume of contracts that should be offered.

From the responses to the consultation it is clear that there are concerns amongst some market participants about the effectiveness of directed contracts even where market participants consider that regulation and direction of contracts is appropriate. These concerns are focused on the timing, shape and pricing of directed contracts, although there is an acceptance that the role of the regulator will always be second best i.e. the ideal would be to have an active competitive market for forward contracts. However, most market participants other than ESB argued that some form of regulated mechanism to ensure that liquidity is maintained in the contract market is required. There was a concern that without such a mechanism ESB would have little incentive to contract with third parties, and would instead rely on internal hedging. It is however important to note that these comments are not based on reviewing the ESB liquidity undertaking, which was not available to respondents. Currently ESB is providing the bulk of contracts to the market, including (with the exception of a period in 2009) all the Directed Contracts, as well as around 70% of the non-directed contracts available to the market (if the PSO backed CFDs are included in the calculation this number would be higher still). Figure 4.1 shows the volumes of CFDs offered to the market by incumbents and Figure 4.2 shows the volumes offered by ESB PG alone. In addition to this Figure 4.3 shows the share of contracts offered by the two incumbent generators to the market.

It is also the case that ESBCS and NIEES, owing to their market shares, are currently entitled to take up most of the DCs in the market, and it appears likely that, given that ESB CS is vertically separated from ESB PG, it would also have significant demand for Non-Directed Contracts and PSO-backed CFDs. The overall share of contracts taken up by the Incumbent suppliers is indicated in Figure 4.4.

*Figure 4.1 Volumes of Contracts available in the SEM and Figure 4.2 Volume of contracts offered by ESB (source: State of the Nation paper)*

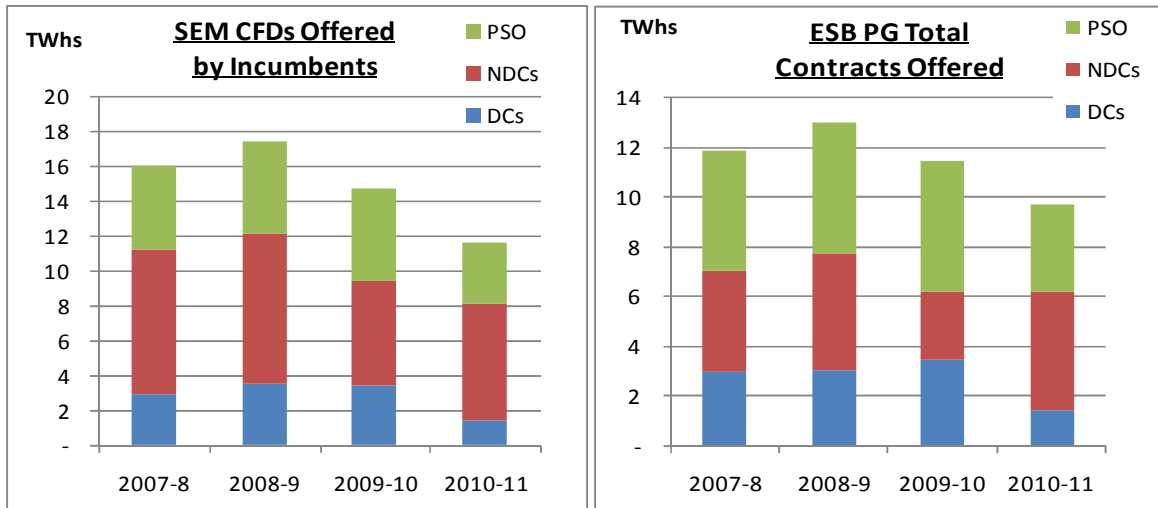
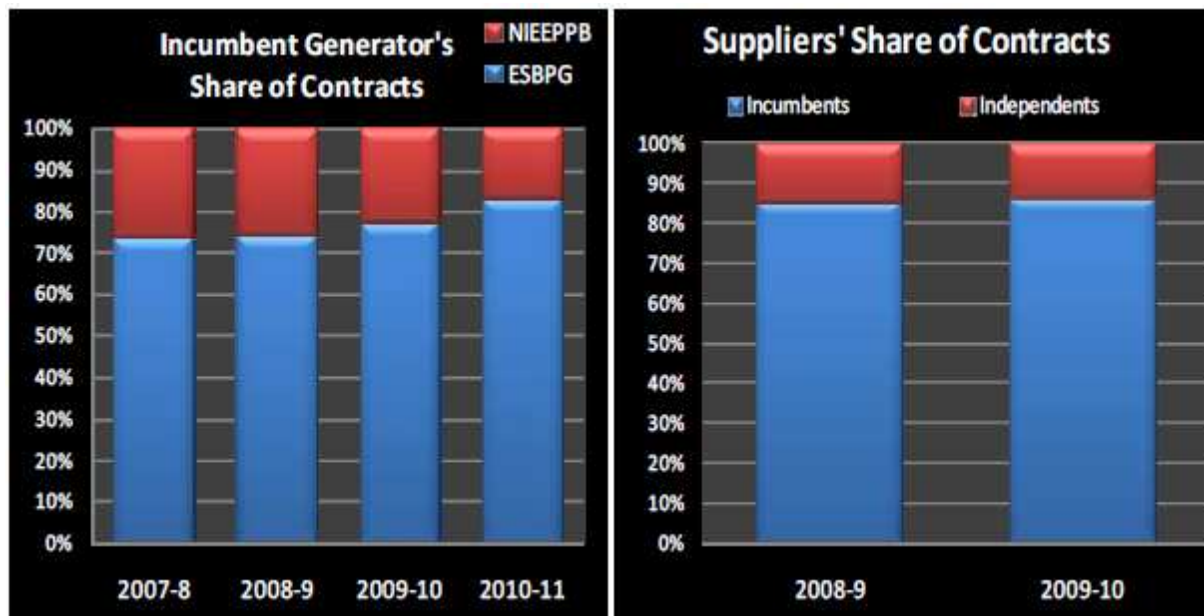


Figure 4.3 Shares of and Figure 4.4 Volume of contracts offered by incumbents and taken up by incumbents and independents suppliers (source: State of the Nation paper)



There is an important question about the demand for hedging contracts against SEM prices. A key determinant of changes in SEM prices is fuel costs, and most of the main fuel costs used by generation plant within the SEM can be hedged in primary commodity markets that are relatively very liquid, including gas and coal markets. Therefore, market participants can in theory achieve a substantial hedge against a key price risk in the SEM without using SEM related contracts, although this hedge will be less than perfect i.e. participants will still be exposed to some SEM price risk. As the correlation between the SMP and fuel prices becomes less good with an increase in wind, the option of hedging in fuel markets will become less attractive.

However, it is important to note that fuel cost hedges are an imperfect hedge against the risks associated with the SEM, and hence suppliers are likely to want to hedge the SEM price through SEM forward contracts. Other risks associated with SEM prices include the level of demand, and therefore, how far up the merit order dispatch is required. Although the SEM is a relatively mature market, so the merit order should be relatively well understood by most market participants, as the extent of wind penetration increases, so the accuracy of any prediction of the

shadow price will likely decrease. So most participants who require revenue/ cost certainty will require CfDs.

Nevertheless, it is important to note that there are reasons why a relatively low level of contract market liquidity in the SEM might be expected (these reasons are set out in section 5 of this document). A number of respondents to the information paper suggested that a much more liquid contract, especially for shorter term offerings, was required.

Overall we recognise that DCs provide an important source of hedging and liquidity release mechanism and absent them, some third parties may find it difficult to access electricity hedging contracts, and that the risks of market power being exercised would increase due to the potential reduction in contracted capacity by generation. While we discuss liquidity further in Chapter 5, it is important to note that the scale and timing of changes to DCs should be carefully considered so that it does not attempt to require companies to make available far more output than would be expected to be required for reasonable risk management activities in the SEM. It is also important to ensure that the requirements are place on market participants in a fair and proportional way, recognising not only the special responsibility incumbent on a market participant with market power in a market, but also that a liquid contract market is of interest to all market participants in the SEM.

#### **4.5. Ring Fencing**

The ring fencing provisions can be described as having two main parts. Horizontal ring fencing prevents the generation and supply businesses of ESB and NIEES (see the State of the Nation Review for details) from sharing information and working together between units at the same level of the supply chain. For example, different generation businesses within the ESB group are ring fenced separately from each other. Vertical ring fencing prevents ESB and NIEES from sharing information and working together between their retail and generation businesses. These two types of ring fencing seek to address different aspects of the potential abuse of market power. Horizontal ring fencing seeks to address only market power at the level of the supply chain to which it applies, e.g. separating generation business units. Vertical ring fencing seeks to address the concern that a vertically integrated company may be able to exploit market power across the supply chain, and particularly in the domestic retail market, which evidence from GB suggests remains an issue even in a larger market with six large competitors. We discuss each of the types of ring fencing in turn.

Given the discussion above about the effectiveness of the BCoP and MMU, we are sceptical about whether horizontal ring fencing provides significant additional protection against the exploitation of market power whilst the BCoP remains in place. Furthermore, ESB has stated that ring fencing imposes material costs on its businesses, although it is unclear whether this is a commonly held view. Overall, given that operational horizontal ring fencing does not seem to materially increase the protection against the exploitation of market power given the presence of the BCoP and MMU, but can impose costs, its continued role should as a minimum be carefully considered. It may be premature to horizontally merge the companies, as maintaining legal separation has option value, but this in itself would not be an argument against information exchange and possibly economising on associated costs by sharing trading activities.

The main effect of vertical ring fencing, alongside the EPO/NDO, is to prevent ESB CS and NIEES from having a natural hedge<sup>16</sup> against the risks associated with the costs for supplying their customers – this natural hedge occurs when, simplistically assuming that a supply co is 100% self-supplied, the generating companies and supply companies are viewed at the group level – any loss/ gain on retail contracts arising from movements in wholesale prices will be offset by equal and opposite gain/ loss on generating profits and vice versa. Instead they can at best seek to hedge the risk through CfDs or direct hedges of fuel costs, or if their parent companies chose so to do they can deal with risk at the group level, through the natural hedge. As ESB has noted, many retailers in gas and electricity markets in other countries (with relatively competitive markets) use natural hedges to a significant degree, which suggests that such an approach is an efficient way of managing risk, notwithstanding that it is difficult to draw conclusions about the SEM from other markets with different structures. This means it is important to consider whether the vertical ring fencing is significantly reducing the risk of market power being exploited given other measures such as the BCoP and MMU, and furthermore, whether it is the best way to reduce the risk of market power being further exploited if additional measures are required. As discussed above for DCs, we recognise that there may be a residual issue regarding a lack of liquidity in the contract market, which vertical ring fencing could in principle help address because it encourages ESB PG to make CfD's available and encourages ESB CS to purchase them, more so than if they could rely on a natural hedge. However, vertical ring fencing imposes some costs on the companies to implement e.g. through the need to duplicate trading and finance functions, which may mean that revised arrangements for directed contracts or alternative liquidity release provisions should be considered as potentially cost effective ways to address a lack of liquidity in the contract market given the presence of market power.

Overall, we consider that the benefits of operational horizontal ring fencing seem unlikely to outweigh the costs of implementing the ring fencing given that it is unclear what additional protection such ring fencing provides against the exploitation of market power, over and above the protection provided by the BCoP and MMU.

Vertical ring fencing could in principle help address the concern about a lack of liquidity in the contract market due to the presence of market power. More importantly though, vertical ring-fencing, incentivises ESB to innovate in providing contract market liquidity and to purchase in the most cost effective manner from a range of generators. If this benefit is passed on to consumers, it may more than offset any operational costs imposed by vertical ring-fencing.

#### **4.6. Economic purchasing obligation**

This obligation is placed on ESB CS and NIEES to seek to ensure that they do not procure electricity ineffectively and pass on inefficient costs to their customers, which would lead to these paying more for wholesale electricity than is appropriate, although it clearly has an impact on the generation market as it only allows suppliers subject to the EPO to buy economically priced power. It allows the RAs to review *ex post* the purchasing and hedging decisions of the

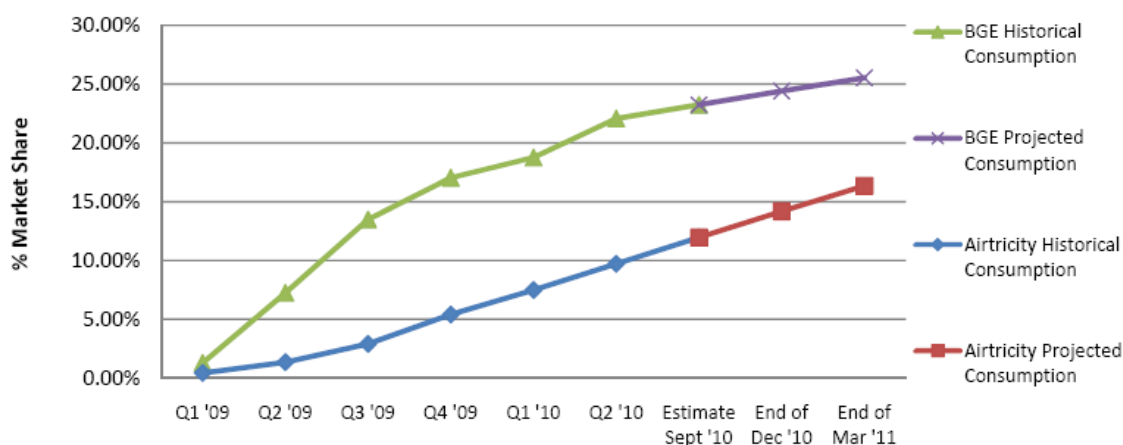
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<sup>16</sup> By a natural hedge we mean the ownership or control through contracts, of generation capacity that matches a material proportion of the demand requirements of customers.

companies to ensure that they were efficient and offered value for money<sup>17</sup>. The provisions are intended to recognise that the companies can only make decisions based on the information available at the time and the RAs should not use hindsight to evaluate the decisions. To help with compliance with the provisions the companies develop procurement principles within which their decisions are taken.

It is important to recognise that this provision has implication for both retail and wholesale market power. A company could comply with the EPO for its retail customers while still exploiting market power in the wholesale market to raise wholesale electricity costs for all customers. Therefore, the provisions are only likely to remain appropriate while there is a concern that the companies have a level of market power in the retail electricity market that would allow them to pass through higher than efficient wholesale electricity costs. The introduction of retail competition in RoI is eroding any potential benefit from inefficient purchasing, although the position in the domestic market is very different in Northern Ireland (although the EPO was removed for the more competitive industrial and commercial market in Northern Ireland in 2009). Figure 4.5 illustrates the rapid gain of consumers by independent suppliers in the RoI. The most recent quarterly Retail Market Competition Review<sup>18</sup> further found that the average annual switching rate over the previous 12 months was 22.

Figure 4.5 Gain of domestic retail market share by BGE and Airtricity<sup>19</sup>



Further to the Roadmap consultation, the EPO has been removed from ESB CS for industrial and commercial, coincident with the cessation of retail price regulation from the 1<sup>st</sup> October, and CER intends that it will be removed for ESB CS domestic customers once the criteria are met for this market, subject to any replacement mechanism which the SEM Committee may deem necessary. In this context, we note that the 3<sup>rd</sup> Package places requirements on regulators to monitor the market to ensure that customers are benefiting from competition, and to take action where that is not the case.

Figure 4.6 Spot prices and fuel costs

<sup>17</sup> We understand that to date, the CER has assessed compliance by engaging independent consultants to audit ESB CS as the PES supplier.

<sup>18</sup> Retail Market Competition Review Q2 2010 CER/10/116:  
<http://www.cer.ie/GetAttachment.aspx?id=76226042-e3de-4028-8f64-92794db01d48>

<sup>19</sup> Source: Figure 2.4, page 9 of Retail Market Competition Review Q3 2010 CER/10/196

### Spot prices and fuel costs

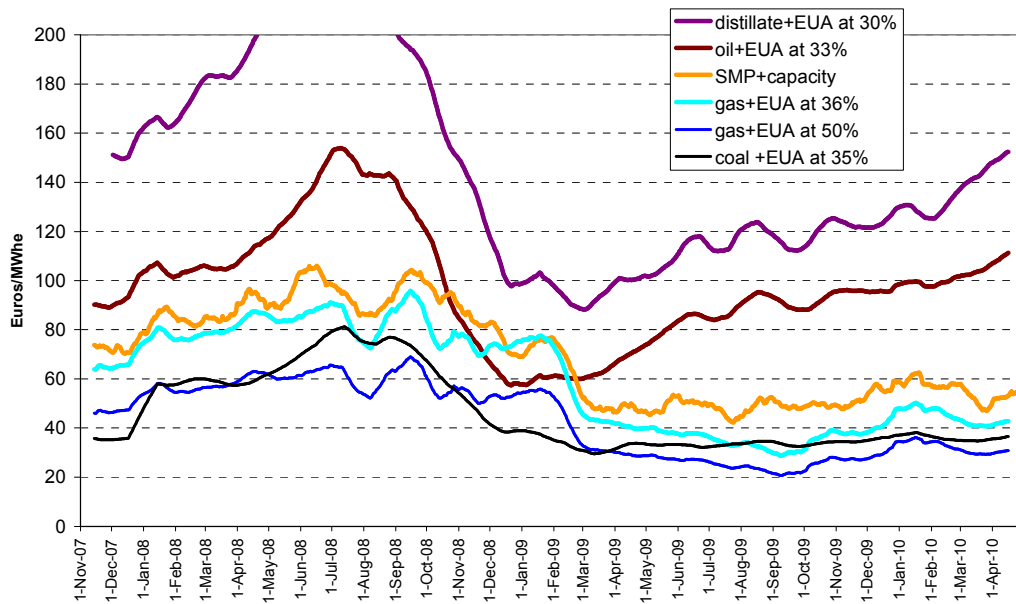


Figure 4.6 shows that in the latter part of 2008 clean<sup>20</sup> oil and coal prices collapsed, and in early 2009 so did clean gas prices. Incumbents who had hedged their fuel costs forward to reduce the risk of offering fixed price electricity contracts suddenly found that the spot fuel costs and SMP in the SEM had sharply fallen, allowing entrants to offer discounts on ESB CS's offerings (typically 10%) as they could contract at now considerably lower prices. So some caution is required in drawing conclusions about the future path of retail competition and market shares from this single event, and while the value of the EPO may be reduced where part of the market for which the company is purchasing wholesale electricity is vigorously competitive (because it will in practice be difficult for the company to purchase some electricity efficiently and other electricity inefficiently) one must be cautious in assuming that retail market competition will continue to deepen.

There is also a practical question as to whether an EPO can be effectively enforced. It is likely to be difficult for a regulator to determine that all but the most obviously inefficient decisions by a company breach the obligation. In other words, companies are likely to have a reasonable margin of error within which to make slightly inefficient decisions before any action is taken. This is because it is very difficult for a regulator to reasonably question decisions that a company makes even if in hindsight they turn out to have been more costly than other available decisions.

#### 4.7. Wider observations on the domestic retail market

In this sub-section we briefly discuss the domestic retail market in the Republic of Ireland and the imminent full removal of the EPO, the potential concerns arising from the high market shares of the ESB group, and the potential need for regulatory intervention.

<sup>20</sup> When hedging electricity prices, it is the fuel cost that matters, and this includes the EUAs necessary to burn the fuel in the relevant power station. The clean fuel costs include the cost of EUAs as well, which can also be hedged.

The Roadmap set out the CER's phased approach to deregulation of the Irish retail electricity market. It noted a number of criteria that would need to be met in order for ESB to be de-regulated, including:

- There are at least three suppliers active in the relevant market.
- There is a minimum of 2 independent suppliers, each of which has at least 10% share of load (GWh) in the relevant market.
- ESB PS and ESBIE combined serves or will serve within a specified period a defined percentage of consumption market share in a relevant market. For each of the Business markets, the percentage market share is 50% or less. In the Domestic market, the percentage share is 60% or less.

Additional criteria for the Domestic market were set out as (i) switching rates greater than 10% and (ii) a commitment, satisfactory to CER, for the rebranding of ESB supply companies prior to the deregulation of the domestic market.

The Roadmap also noted that, given the unidirectional constraint between jurisdictions (arising from limitations in switching systems in Northern Ireland), the Irish market and the Northern Irish market should be considered separately, but that this will be reviewed upon completion of the Harmonisation Project in 2012.

The Roadmap also considered the EPO and the CER has decided that effective competition and commercial pressures render the EPO unnecessary and inappropriate and that therefore, subject to the Roadmap criteria for a competitive market being met, CER has removed the price control from ESP PES and the obligation of the EPO for business customers from 1<sup>st</sup> October 2010 and will do so for domestic customers when the criteria has been met. The removal of EPO on either PES is subject to replacement by any new conditions that which the SEMC may deem necessary to address wholesale market power or liquidity issues.

Domestic customers have respond to clearly announced offers by new entrants undercutting incumbents. But as noted above, the conditions that led to this may not be repeated, and the evidence from domestic liberalization in GB was that many of the new suppliers entering rapidly exited, and they now have less than 1% of the market, and concerns remain that six largely vertically integrated incumbents appear capable of sustaining prices above competitive levels, although no actual evidence of this has been found. Given that the GB market is more stable and mature, this raises concerns as to how retail competition will continue to evolve in the SEM, and whether some further measures will be appropriate as and when the EPO is removed and if vertical ring-fencing was permitted, given the market shares of the incumbent. Such measures might include a price cap on the margin of the supply business, but at this stage we simply wish to flag the importance of addressing concerns about retail market power, and the risks of implementing (the reversal of) structural decisions that were designed to make the retail market more competitive.

#### **4.8. ESB's proposal to re-integrate**

In this section we briefly discuss ESB's proposal to re-integrate. The proposal submitted by ESB is summarised in Box 4.3.



### Summary of ESBs proposal

ESB's retail market share has fallen from almost 100% of the Republic of Ireland (ROI) market in 2000 to 52.5% in 2010. In addition, its wholesale market share has fallen from over 90% of the ROI market in 2000 to 45.1% of the Single Energy Market (SEM), and ESB predicts it will fall below 40% in the next two years.

Due to these changes and the competition and market arrangements in the Irish electricity market, ESB believes that if it were deregulated from a retail price perspective, the market structure would prevent it from exercising market power in the wholesale market, and it would remain unable to profitably follow the strategies that the regulations are designed to prevent.

ESB believe that de-regulation will bring four key benefits to the Irish energy market:

- 1) **De-regulation will reduce the duplication of unnecessary activities to the benefit of consumers.**
- 2) **De-regulation will allow ESB to manage the risk associated with a stand-alone supply business.**
- 3) **De-regulation will avoid potential distortions and instabilities in the retail market that are contrary to the interests of consumers.**
- 4) **De-regulation will avoid the likelihood of discriminating unfairly and will avoid regulating where it is obsolete or unnecessary.**

As such, ESB developed six key proposals that it believes would improve the current regulatory environment. These are summarized below.

- 1) The Regulatory Authorities (RAs) should immediately approve arrangements permitting the disclosure of commercially sensitive information between CS and Power Generation (PG), and the use of this information by both businesses. This will allow PG to hedge the risks to which CS is exposed, and allow CS to develop products that account for such risk.
- 2) The RAs should immediately modify the licences granted to the independent generators within the ESB group, removing all conditions requiring these to be separated.
- 3) Directly following retail de-regulation, the RAs ought to remove all conditions requiring the separation of CS and ESB Independent Energy (ESBIE) and remove the condition in the ESBIE licence preventing it offering supply to customers with consumption lower than 225MWh. This would allow ESB to remove some duplication of operations, and it argues this would also bring benefits to industrial and commercial customers.
- 4) As of January 2011, the CS and PG licences should be modified to remove all conditions requiring vertical separation between those businesses.
- 5) As of January 2011, the PG licence and the licences for all of ESB's independent generation businesses should be modified to remove all conditions requiring their horizontal separation.
- 6) Following the commissioning of the East-West connector between ROI and GB (expected to be completed in 2012) there should be a review and consultation process with the aim of phasing out Directed Contracts, as by this stage the market will be large enough that additional measures restricting market power will be unnecessary.

ESB foresees that if these proposals were expected, they would protect the interests of consumers, promote competition, ensure that the licensee can finance activities, and promote efficiency and economy.

The submission by ESB was complimented by a proposed liquidity undertaking to the SEM committee. This is summarised in Box 5.2 and the full reintegration and liquidity proposals are attached as Annex 5 to this consultation.

We discuss the ESB proposals further alongside our policy options in Section 6.

#### 4.9. Conclusions on market power mitigation measures

Developments since the introduction of the SEM suggest that it may be appropriate to consider relatively material changes to the market power mitigation measures. In particular, we have reached the following preliminary conclusions:

- The BCoP and MMU provide substantial protection against the abuse of market power. Nevertheless feedback from market participants have identified that the monitoring activities could be more transparent.
- There appears to be a residual and reasonable concern about a lack of liquidity in the contract market, notwithstanding that we would not expect the SEM to be characterised by very high levels of contract market liquidity. There are some concerns from market participants about the operation of the DCs that, if addressed, should in principle help address these issues, although it should be borne in mind that DCs are first and foremost a market power mitigation tool, rather than a liquidity release mechanism.
- It is unclear what additional risks of exploitation of market power operational horizontal ring fencing would address, that are not already addressed whilst the BCOP remains in place. Given the costs of such ring fencing provisions it may be appropriate to amend them to allow operational horizontal integration. Operational information exchange and sharing of a common trading platform might deliver all the benefits of removing the horizontal restraints without the need for full legal integration.
- Vertical ring fencing is an important component of measures to restrain market power in the domestic retail market, which evidence from GB suggests is more prone to the exercise of market power than comparably concentrated markets for other goods and services. Indeed, Ofgem now requires separate accounts between the retail and power generation arms of the big six integrated GB companies. Given the salience of the retail market, great care should be exercised before taking structural decisions that might increase costs for customers through reduced incentives for efficient purchasing and contracting.

Vertical ring fencing, together with the Non Discrimination Obligation, can in principle help address the lack of liquidity in the contract market by encouraging contract provision, but revised directed contracts or an alternative liquidity release mechanism may also be appropriate mechanisms to address this issue. We would welcome market participants and other stakeholders' views on these initial conclusions.

## 5. CONTRACT LIQUIDITY IN THE SEM

### 5.1. Introduction

In this section we examine the current level of contract liquidity in the SEM, as well as outlook for liquidity and access to hedges. The section starts off by providing a brief overview of liquidity as a concept, including why it is a desirable feature of a traded energy market. It then discusses the current levels of contract liquidity in the SEM and what is currently driving it and provides some international examples. It should be noted that the starting point for a discussion of liquidity in the SEM is slightly different from similar debates in for example GB. This is because the gross mandatory pool market system of the SEM means that price formation in the spot pool market is based on nearly 100% of capacity.

### 5.2. Contract liquidity as a concept

In this section we briefly discuss why contract liquidity is, firstly, needed and, secondly, a desirable feature of a competitive energy market structure.

Liquidity is, alongside effective access to networks and price signals on a spot market, an important and desirable feature of competitive markets. When present, contract liquidity enables non-vertically integrated parties to effectively source energy and manage risk. This lowers barrier to entry in both upstream and downstream electricity markets. Absent contract liquidity:

- A supplier is exposed to the SMP price, as well as uncertainty about its consumers' demand. This limits the ability to offer fixed price contracts, and will also increase the risk to the supplier's cashflow and profitability, unless it can pass on the variability in input prices to his consumers, or hedge through fuel proxy hedges.
- A generator is also exposed to the SMP and less able to reduce risk by "locking in" gross revenues. In the SEM, the risk to a generator is arguably lower than in self dispatch systems (such as BETA), as the generator will be dispatched and receive the SMP and Capacity Payment if it is in merit, and the Capacity Payment if it is not in merit, but still available. This is not to say that market participants seeking to invest in a new project would not be aided or need forward price certainty through forward contracts or tolling agreements to help bank their projects. Furthermore, shareholders often value predictability of gross revenue.

Absent contract liquidity, a rational actor may seek to hedge through vertical integration<sup>21</sup>. This is driven by a desire to lock in gross margin by securing fuel hedges matching the duration of its consumer contracts. It is however unlikely to take a fully hedged position in order to protect himself against the risk of being too long, which could for example come about through customer turnover, or being out of the market.

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<sup>21</sup> Note that market participants may still wish to hedge their exposure through vertical integration even if they have access to a liquid wholesale market.

As identified in the detailed document published by Ofgem<sup>22</sup>, contract liquidity provides a range of benefits as it can:

- facilitate new entry in generation and supply by allowing new entrants to buy and sell electricity to match their output and customer base with confidence;
- reduce the ability of market participants to engage in market manipulation;
- lead to a wider range of products and counterparties for participants to hedge their risk exposure;
- increase confidence in traded prices;
- allow non-vertically integrated entrants to participate on the same terms as vertically integrated incumbent firms by enabling them to effectively hedge their position;
- allow parties to better manage long-term risk and provide long term price signals about future market development, which inform investment decisions and promote long term security of supply; and
- allow market participants to fine tune their positions without extensive costs.

The nature of the SEM as a gross mandatory pool means that by definition the physical spot price is set by reference to the total market volume (in other words the spot market churn is 100%). This means that the confidence in the spot price will be high, as all available supply and demand factors will be reflected in the resulting price. To a certain extent this differs from the liquidity discussion currently ongoing in the GB BETTA market, where typically the exchanged based spot market churn has been much lower at around 3-5%. Confidence in the spot market price formation is important, as financial contracts need a fair benchmark to be settled against. It is further worth noting that if there is significant vertical integration in a market, and in the absence of bidding rules, the spot price may become less relevant as a transparency tool as it may not reflect the value vertically integrated players put on the power.

In the subsequent sections we focus on the development of contract market liquidity; in other word contracts for power with a longer time horizon than the immediate day-ahead prompt market, which has transparent price formation due to the mandatory nature of the SEM.

### **5.3. Key features of liquidity and measures**

Before we investigate liquidity in the SEM and its drivers it is useful to establish the key functions and concept of liquidity. A first important distinction to make is between effective access of market participants to hedging contracts and regular trading:

1. The ability of suppliers to obtain hedging contracts at a reasonable cost: this is the critical concern for electricity suppliers as it enables them to offer desirable fixed price contracts to their consumers.

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<sup>22</sup><http://www.ofgem.gov.uk/Markets/WhlMkts/CompanEff/Documents1/Liquidity%20Proposals%20for%20the%20GB%20wholesale%20electricity%20market.pdf>

2. Whether or not the contracts are regularly traded, and there is sufficient volume for trades to be executed with a reasonably small impact on the prices<sup>23</sup>. This aspect is important as it both provides on-going price signals and confidence in the price formation in the market, but it also importantly reduces the risk of suppliers taking up longer term hedging contracts as it enables them to moderate their positions.

In the context of the SEM as an evolving electricity market it is important to consider both of these aspects of the market. In order to safeguard the competition already achieved in the RoI retail markets, and facilitate the development of competition in NI the ability to obtain hedging contracts is important. As we note elsewhere it is possible to undertake a degree of hedging using fuel contracts, but for smaller suppliers access to suitable product is important. In order for the SEM to continue to evolve and deliver benefits to Irish consumers it is however also desirable for the second aspect to emerge.

### 5.3.1. Measures of liquidity

Before considering the drivers of liquidity and experience to date it is useful to first briefly consider the potential measures of liquidity available. There are multiple possible definitions of contract liquidity, and also several ways to measure it. Common measures include:

- **The Churn Rate:** churn is simply the total volume of trade divided by the physical demand of a market. Commonly it is calculated on an annual basis as:
  - total annual volume traded/total annual electricity demand
  - In other words a churn rate of “2” would imply that every MWh of electricity consumed in a market will have changed hands twice.
- **Number and distribution of trades:** this measure studies how frequently a particular product is traded, and how trading occurs over the duration of contracts;
- **Products available:** are the products available suitable to the needs of market participants. For example the product size may not be suitable for suppliers of minor quantities;
- **Bid-offer spread:** in a liquid market the spread between bids and offers on the markets will be reduced, reflecting the lower transaction cost involved;
- **Forward contracts:** this measures how trading develops along the various durations of products. For example how does the frequency and volume of trading on a contract 12 months from delivery compare to one 5 months from delivery?
- **Number of active market participants:** this final measure can provide an indication of how attractive potential market participants consider the market to be.

These measures provide reasonably simple metrics of the overall liquidity of the market. Measures such as the churn ratio, the number of trades and the number of market participants furthermore allow for simple comparisons of liquidity between markets.

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<sup>23</sup> One aspect of contract liquidity is the ability of the market to absorb transactions without the market price moving significantly as a result.

It is however important to note that all of these measures only provide a higher-level picture of liquidity, but do not individually provide a complete picture of how liquid the market is. As discussed earlier contract liquidity is not an end in itself, but is a likely feature of an effective market. In light of this it is important to complement the study of the higher-level indicators with consultation with market participants.

#### **5.4. Current state of contract liquidity in the SEM**

In the State of the Nation Review, the RAs provides a presentation of the available data on the current state of hedging and liquidity in the SEM. The electricity hedging available is focused to three types of products; Directed Contracts, Non-Directed Contracts and PSO-Levy backed Contracts for Difference. We now discuss the data available for each of these.

##### **5.4.1. Directed Contracts**

The Directed Contracts are not market liquidity instruments as such, but rather instruments provided as a product of the Market Power Mitigation Strategy. The contracts are “Directed” for several reasons:

The *type and quantity* of contracts offered are determined by the RAs. As discussed in Section 4, the types and quantities are determined with reference to the HHI index for the forthcoming period. It is an iterative calculation. In each iteration, the largest party is required to offer additional contracts, until the predicted HHI index reaches a pre-determined level.

The *Price* of the Directed contracts is determined by the regulatory authorities by calculating what the cost of the products would be given the current valued of underlying fuel and CO2 products.

The *eligibility* for suppliers to take up the Directed Contracts is based on the supplier’s consumer portfolio, and the supplier can choose take up the directed contracts within certain contracting windows. Contracts not taken up by an eligible supplier are then re-offered to remaining suppliers.

It is important to note from the outset that these characteristics of the Directed Contracts mean that they are not market hedges in a conventional sense (i.e. voluntary contracts entered into by parties to mitigate risk). They do however provide a degree of hedging to suppliers based on their current share in the downstream market.

*Figure 5.1 Directed Contracts Volumes (source: data from RAs)*

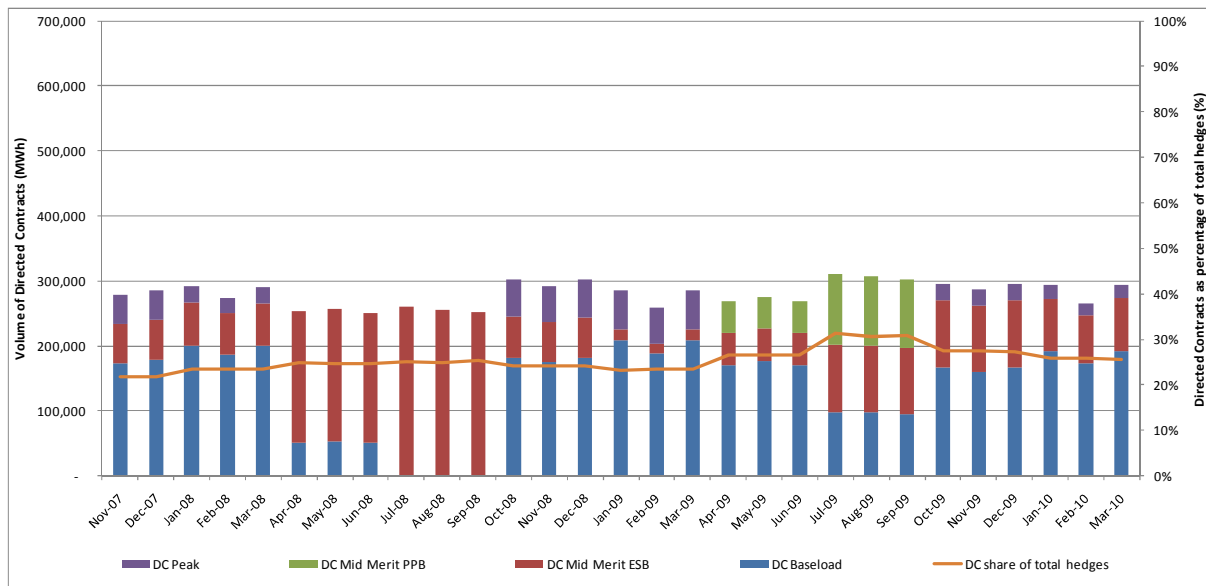


Figure 5.1 illustrates how the volume of energy covered by DCs has evolved since the start of the SEM. Note that whilst the chart shows variations on a monthly basis, the volumes of DCs were in practice determined on a quarterly basis over the period. Any month on month within-quarter variation is due to differences in the number of days of the months. As explained elsewhere the quantity of contracts available is linked to a measure of market power in the SEM, and hence if the measure of market power increases then the total volume of DCs would increase.

Due to the nature of DCs it is not likely that there would be any re-trading of these products unless a better priced contract becomes available. Since DCs are provided to the market on eligibility in proportion to their current market share, they effectively reduce the need for further hedges without effecting the relative positions of current market participants. Thus by selling its DCs a participant would increase his market exposure relative to his competitors. Since the alternative hedges offered through the Non Directed Contracts and PSO levy backed CfDs tend to trade a premium to the DCs the party would then be worse off. It would not be impossible for a vertically integrated, or over-contracted player to offer a NDC type product backed by the volume obtained through the DC thereby exploiting any premium between DC and NDC prices. In practice however there are currently only seven parties likely to be recipients of DC volumes.

A further issue worth mentioning again is that market power metrics such as HHIs and market shares are only valid in the context of a particular relevant market<sup>24</sup>. With interconnection with GB it is possible that the relevant wholesale electricity market may also see a significant increase in competitive constraints from the GB market. If the market definition was to change then the HHI measure, which the Directed Contracts is based on would diminish significantly, while a degree of market power, as indicated by the RSI analysis may remain. While we do not consider it possible this point to determine under what conditions market integration between the SEM and GB would be sufficient for the market definition to be expanded, this could have an effect on the DCs, both as a market power metric, and provider of a degree of hedges to the market.

#### 5.4.2. Non-Directed Contracts

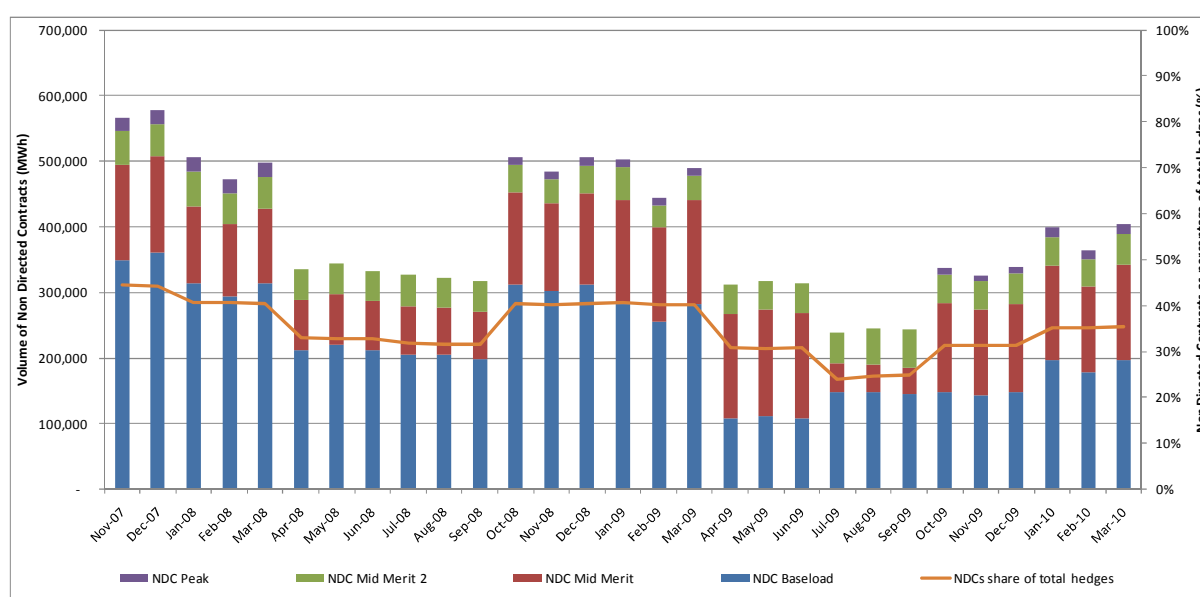
<sup>24</sup> The RSI does not rely on the definition of a relevant market and remains applicable.

Non-Directed Contracts are market instruments offered by parties<sup>25</sup> in the SEM on a voluntary basis. Non-Directed Contracts have the following properties.

- The *type and quantity* of Non-Directed Contracts offered are determined by the offering parties;
- The *Price* of the Non-Directed Contracts is determined through auctions, subject to reservation prices set by the offering party; and
- The *eligibility* is not restricted<sup>26</sup> and any interested party can bid for contracts.

The price and quantity of Non-Directed Contracts are determined by market dynamics. Figure 5.2 shows how Non-Directed Contract volumes available for particular period have evolved over time.

Figure 5.2 Non - Directed Contracts volumes (source: data from RAs)



### 5.4.3. Republic of Ireland PSO Levy Associated Contracts For Difference

The PSO Levy backed Contracts for Difference are a special type of product offered by the market on the basis of mainly peat stations. The PSO backed CfDs have the following properties:

- The *type and quantity* of the CfDs are determined by the Regulatory Authorities based on the output of the backed plants;
- The *Price* of the PSO levy backed CfDs is determined through auctions, subject to reservation prices set by the CER; and
- *Eligibility* is not restricted and hence any interested party can bid for contracts.

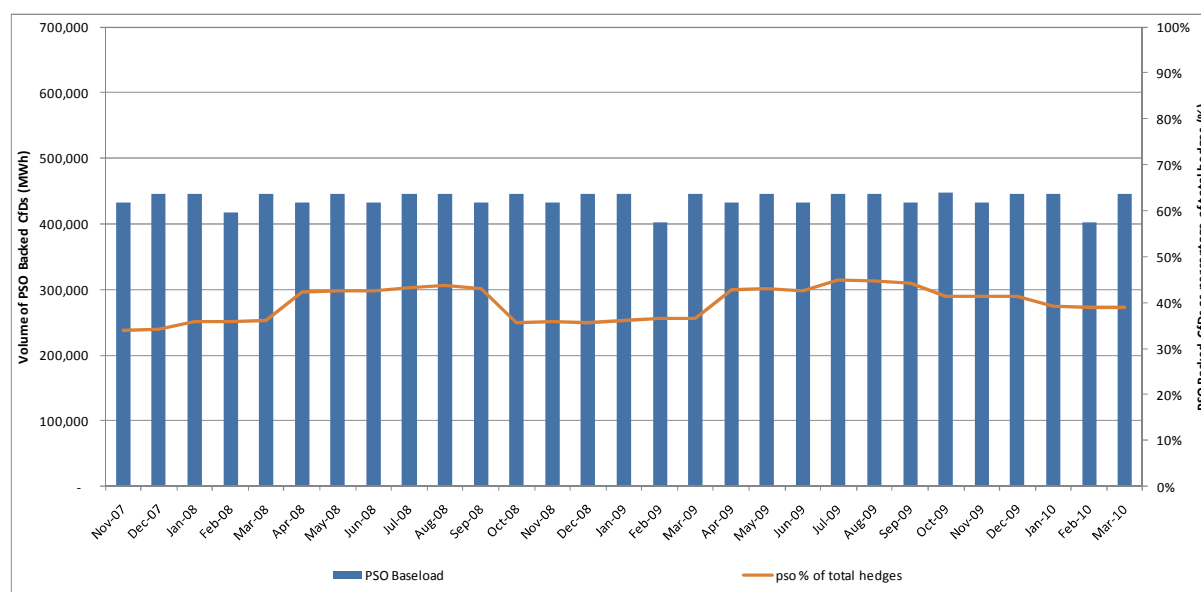
The price of the PSO backed CfDs are therefore determined by market dynamics.

<sup>25</sup> For the purpose of our discussion here the PPB PSO contracts are included as part of the NDCs.

<sup>26</sup> Eligibility is however subject to credit cover requirements and costs associated with legal review of contract documents. It is also worth noting that there are de-minimis quantities.



Figure 5.3 PSO Backed CfD Contracts Volumes (source: data from RAs)



## 5.5. Drivers of liquidity

In this section we discuss the drivers of contract liquidity in the SEM to date. From the outset we consider it is important when considering the prospects for liquidity in the SEM to consider three important features of the market.

- Firstly the SEM is still a relatively young market, having only been in operation for three years.
- Secondly products offered in the SEM to date have had a relatively long duration (quarters, years), and in many cases started a period out into the future. Given the lack of products with shorter duration closer to delivery, it is difficult for parties to moderate their hedging positions closer to delivery. This increases the risk of entering into contracting positions. It should be noted that monthly products have recently been made available and that products are being made available on a more regular basis. This serves to reduce the risk of parties entering into contracts by making the contracts price less risky. Absent secondary trading it is however still difficult for parties to moderate their positions once they have been entered into.
- Thirdly the SEM is a relatively small market which may mean that it possible that the market simply is not large enough to attract generic trading. By way of comparison, it was only when NordPool was expanded from Norway to also cover Sweden, Denmark and Finland in the period of 1996-2000 that financial trading started occurring at a large scale.

These factors present natural reasons why, firstly, financial trading has not emerged to a greater extent in the SEM, and secondly also highlight that this may not actually mean that there is a fundamental flaw with the SEM that may need to be addressed.

As in most liberalised electricity markets based on thermal generation<sup>27</sup>, a vertically integrated participant in the market (generation and supply) could potentially offer a range of different products to its end users based on underlying fuel contracts. For example the vertically integrated player could:

- Offer a longer term fixed price product, which would then be underpinned by the fuel hedges (such as gas and coal) required by its generating portfolio over the same timescale;
- Offer shorter duration products, such as products based on monthly prices; and/ or
- Offer ex-post tracker products, based on the actual settlement price of the fuel contract, rather than forward products.

A vertically integrated supplier would also have a natural hedge against variability in the efficiency of the plant type, which it would be less able to hedge against using a fuel hedge. This could provide the vertically integrated supplier with additional flexibility to develop innovative products relative to a stand-alone supplier<sup>28</sup>.

In the subsequent sections we examine the incentives on stand-alone generators to offer hedges and for stand-alone suppliers to take these up.

### **5.5.1. Incentive for generators to supply hedging contracts**

In this section we discuss the incentives on generators to offer hedging contracts to the market.

In many electricity markets, generators will generally seek to offer forward contracts (or tolling agreements). This is because an independent generator will wish to contract forward to ensure forwards utilisation and revenue of its plant. The generator will effectively seek to “lock in” a gross margin based on an agreement to sell its output, and also contract for its fuel price over a similar timescale. Such behaviour will help secure gross revenue for the generator. Contract market liquidity is therefore a key consideration for an independent generator as it enables it to manage the risk profile of his investment. Absent an ability to contract forward the independent generator will need to rely on the potentially more volatile shorter term market for revenue.

A generator with a vertically integrated supply business is subject to a slightly different set of incentives compared to the independent generator. A vertically integrated party can manage the overall risk to his business by offering fixed price contracts to his end users, and then locking in a gross margin by signing a forward agreement for his input fuel. This means that overall the vertically integrated business is less dependent on the effective operation of the contracting market.

The SEM have some features which mean that there are deviations from these principles outlined above. In particular three factors will influence the incentive for independent suppliers to offer hedging contracts:

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<sup>27</sup> It is different in hydro dominated systems. In hydro dominated system the forward cost of electricity often reflects the underlying hydro reservoirs, rather than underlying fuel contracts.

<sup>28</sup> This is based on the important assumption that a stand-alone supplier would only be able to enter into underlying fuel hedges, not power market hedges.

- Firstly, at least a significant proportion of the generator's fixed costs are covered by the capacity payments.
- Secondly, even in the absence of contract liquidity, a generator has certainty regarding dispatch as long as he is in merit.
- Thirdly, the gross mandatory pool system means that the generators are guaranteed dispatch as long as he is in merit. The central dispatch system also means that a forward contracted generator becomes subject to the risk of not being dispatched.

Taken together these factors mean that an independent generator in the SEM is likely to be subject to less risk than a similar company in say the GB BETTA market. Given this, it appears likely that there will have been less of an incentive on generators to drive the development of liquidity to date.

### **5.5.2. Demand for hedges by suppliers**

In this section we examine the risks faced by a stand-alone supplier in the SEM. The section assumes that the only hedging available to the supplier is through underlying fuel contracts, and does not consider the possibility that the supplier would be able to cover part of its load from Directed Contracts.

Stand-alone generators are partially hedged through the link of SRMC to the SMP, although the analysis above suggests that the hedge is incomplete, as a different fuel than that of the generator may fuel the price-setting plant. Stand-alone suppliers are more exposed as in the absence of electricity hedging contracts they are exposed to the risk that the efficiency of the price setting plant, or the fuel type and price is different from their expectation. An interesting question is how the variability of prices may develop. Three effects are likely to impact on this:

- the increased importance of intermittent generation, which is priority-dispatched means that the range of potential price setting plants will increase;
- the increased interconnection will bring the total “demand swing” implied by interconnection up to 1,900MW, which will further increase the potential range of price setting plant; and
- over the period investment will take place in a number of new CCGTs, and a number of older, fuel oil fired plant condensation plant will close.

Figure 5.4 Price duration curves for 2009/10, 2015 and 2020

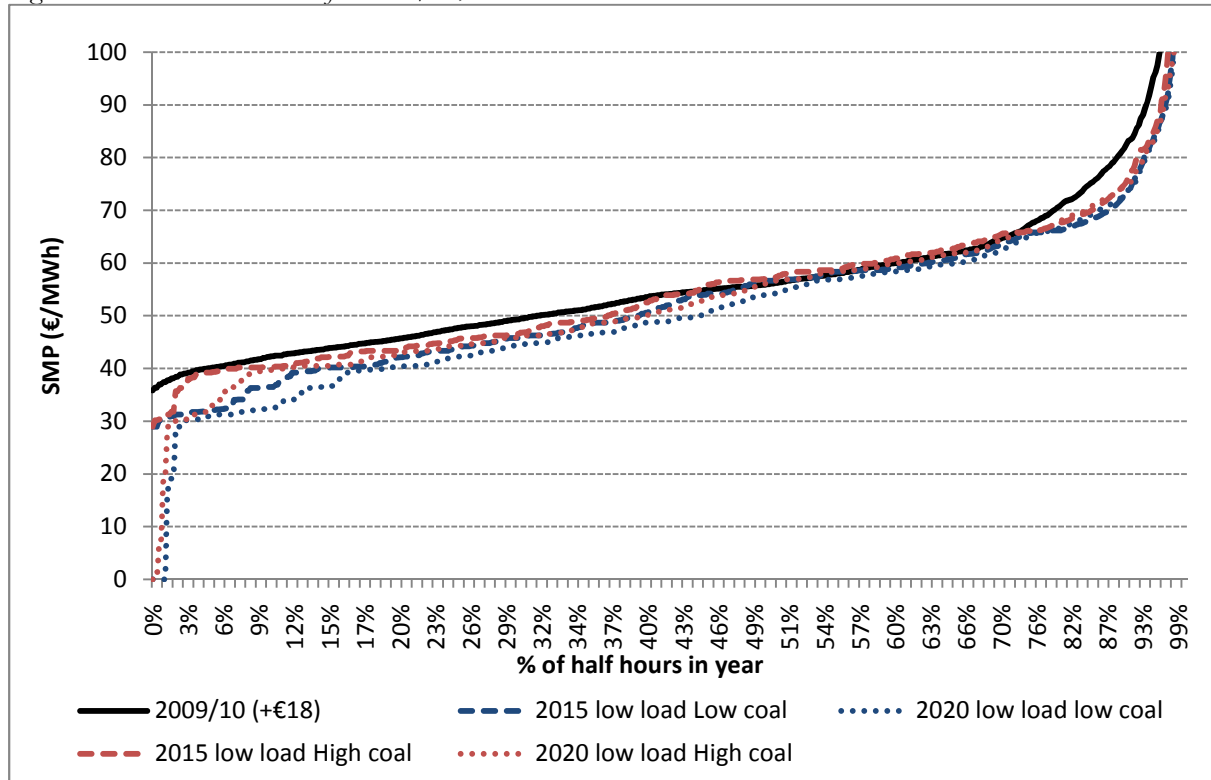


Figure 5.4 plots price duration curves for 2009/10, 2015 and 2020. The price level of the chart for 2009/10 has been raised by a constant to more clearly illustrate the relative slopes of the curves. The graphs have the following properties:

- The slope for 2015 and 2020 are steeper towards the lower end of the curve relative to the 2009/10 curve.
- The slope for 2015 and 2020 increases less quickly towards the upper end of the curve relative to the 2009/10 curve.
- The curves for scenarios where coal is in merit are steeper overall. This suggests a greater variability between high and low prices.

Overall the analysis is interesting because it suggests that the variability of SMP prices will increase somewhat (in particular if coal is in merit). It does however also suggest that the investment in CCGT capacity means that the likely type of price setting plant will become more uniform. Taken together this analysis has implications from the ability of suppliers to use fuel price hedges as a proxy for electricity forwards. The increase in slope suggests that the hedge will

remain imperfect. The steadier slope towards the upper end of the curve does however also suggest that the range over which the price setting plant is determined by relative plant efficiency, rather than by fuel type, will increase. This indicates that predicting the price setting fuel type will become easier thereby reducing some of the risk of gas price hedges.

Figure 5.5 shows the monthly average prices<sup>29</sup> for the August-08 demand-weighted<sup>30</sup> average wholesale price including capacity payments (weighting by other months makes a negligible difference) compared with standard products for the same definition of prices. It shows that a simple average of base-load and mid-merit 1 would replicate the monthly average closely, although the variation from month to month is considerable, certainly compared to the margins on retailing.

Figure 5.5 Monthly average wholesale prices for various products (source SEMO/RA data)

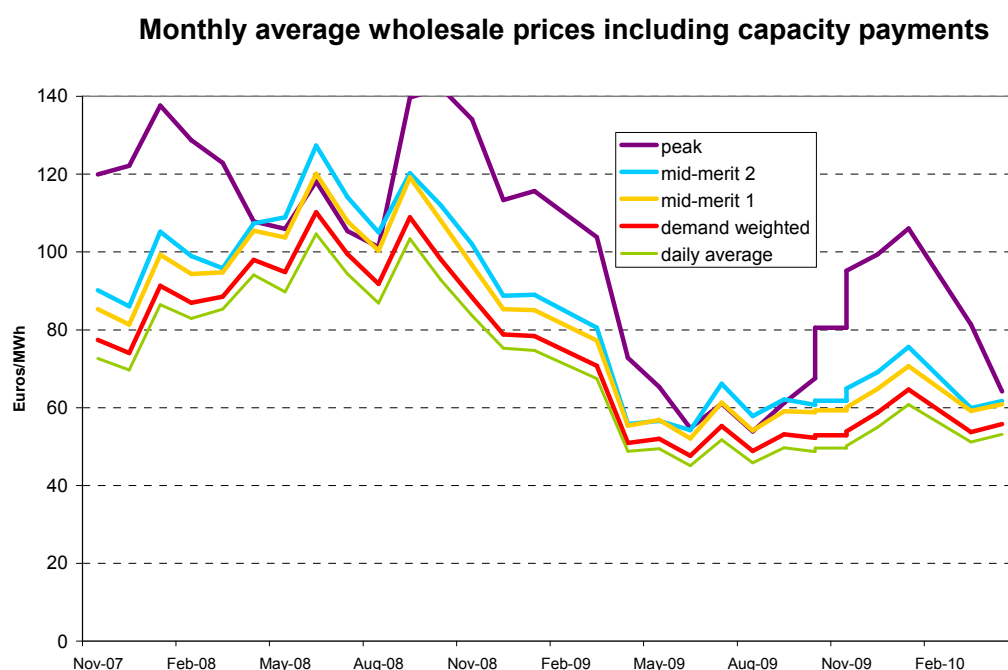


Figure 5.5 suggests that suppliers lacking a generation hedge might need a means of hedging their fixed price retail offerings. The combination of a base-load and mid-merit standard CfD, and possibly a one-sided CfD<sup>31</sup> with a high strike price should provide sufficient hedging, while keeping a small number of instruments would maximise liquidity, which should reduce the mark-up over the average of the spot prices. The main concern is that if ESB is vertically integrated then the Non Discrimination Obligation on ESB PG no longer induces ESB PG to offer competitive non-directed contracts, and the removal of the EPO on ESB CS will mean that it will have less of an incentive to shop around for better hedges. This means that other suppliers may be put at a disadvantage.<sup>32</sup> To judge how much they might be willing to pay a monopoly

<sup>29</sup> These are the averages for the calendar month, not the centred moving averages of previous figures.

<sup>30</sup> Demand weighting means weighting each hourly price by the fraction of daily demand (MSQ), in this case the average demand is for August 2008.

<sup>31</sup> A one side Cfd is one where compensation is only paid for movements in one direction.

<sup>32</sup> If ESB PG offers CS cheap contracts then it must do so to other suppliers, and this will be unattractive, but if PG offers expensive contracts then CS might find cheaper ones in the market and would be under an obligation to buy these instead, disadvantaging PG.

contract supplier we need to explore their residual risk after they have hedged using other types of contract, specifically forward fuel contracts.

A further point to note is that the NDC and PSO contracts offered are not licence conditions, but voluntary. The non-discrimination clause on ESB PG only applies to the extent that it offers CfDs. So ESB PG is not obliged by licence to offer CfDs (beyond DCs).

### *Hedging with one-month forward fuel contracts: an illustration*

Below we illustrate the simple strategy of buying 1-month forward fuel contracts shortly before the start of the relevant month (trading closes two working days before the relevant month), and then offer contracts to domestic households based on that hedge<sup>33</sup>. The main risk is that if the fuel (and hence electricity) contract is out of the money, then customers will switch. That could be mitigated by offering customers contracts of varying durability (rather like building society deposits of typically instant access, or term deposits that have a penalty for early encashment).

Figure 5.6 Monthly average wholesale prices, fuel hedges and revenue at risk (sources SEMO/RA data)

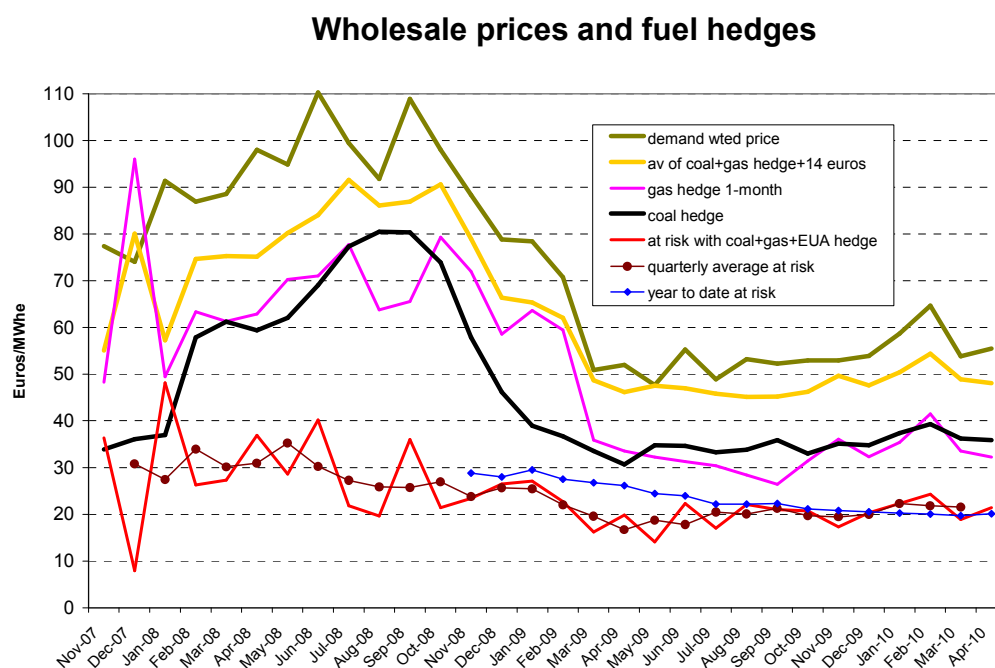


Figure 5.6 plots the monthly average August-08 demand weighted wholesale price, and the price of the 1-month ahead coal and gas contracts, in each case with the required volume of EUAs and adjusted to the coal and gas efficiencies (35% and 50% respectively). They are then averaged and €14/MWh added to show how closely this composite hedge tracks the average wholesale demand-weighted price. The lower plots show the difference between the average wholesale price and the average of the coal and gas hedges, showing the difference as “at risk”. The volatility of risk calculated over any period longer than one-quarter is quite low.

The simple rule followed is to offer a “retail” price (to which would have to be added all transmission, distribution and retailing charges) equal to the previous month’s wholesale

<sup>33</sup> We recognise that consumer preferences tend to favour fixed price contracts, although this may change in the future with remotely read metering and supplier product innovation.

demand-weighted average price plus any increase in the average fuel+EUA forward price (equal weights of coal and gas generation costs). The profit on this contract is the daily average spot price less this fixed retail price. At the same time the supplier would buy 1x1MWh gas contracts and 1.5x1 MWh coal contracts + the relevant number (0.71) of EUAs (which would hedge the fuel costs of ½ MW 50% efficient CCGT and ½ MW 33.33% efficient coal-fired station, producing 1 MWh).

Figure 5.7 Fuel hedge profits and retail profits, monthly and year to date (sources SEMO/RA data, Bloomberg)

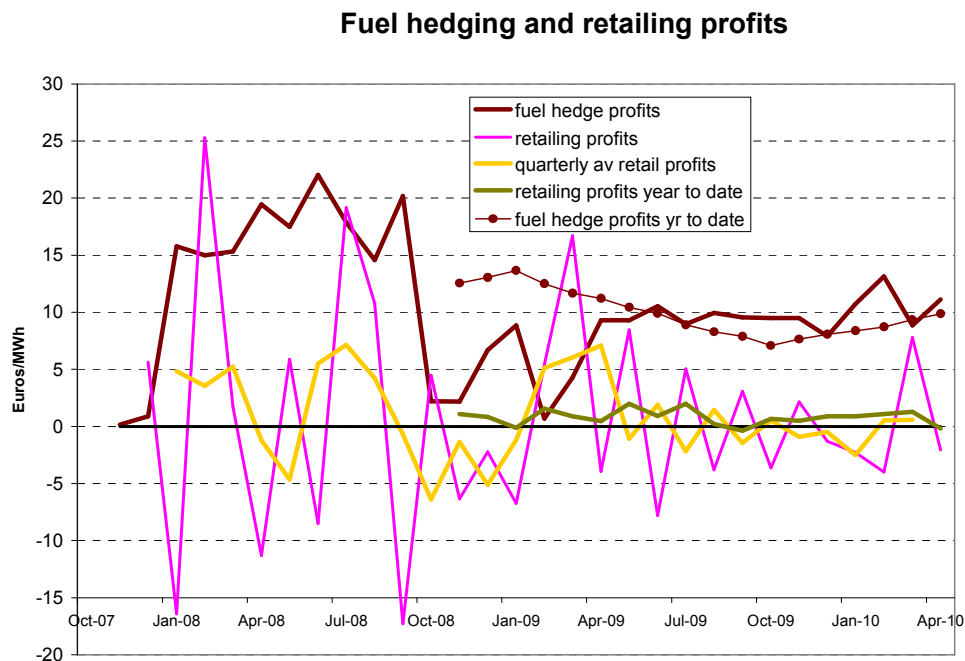


Figure 5.7 shows the resulting profit of selling at the fixed retail price for the month but buying in the wholesale market, and the profit of buying the fuel hedge and selling it back into the spot markets (gas, coal and ETS) to realise the fuel hedge profits. There is essentially no correlation between the two monthly series ( $R^2=0.007$ ). On the other hand the profit averaged over a year from setting the retail price each month has a remarkably low variability of €0.7/MWh.

So surprisingly, perhaps, the most effective way to reduce risk in retailing is to be willing to adjust prices each month in line with forward fuel price movements, and then average over a reasonably long period (a year is considerably less volatile than the quarterly figures shown in Figure 5.6). Clearly, though, this is less satisfactory than having the option of buying a 50:50 mixture of base and mid-merit forward electricity contracts on which to base the offered retail price, unless the risk premium were excessive.

This analysis suggests that, in the presence of the SEM pool system, retail suppliers do have a degree of ability to offer at least monthly fixed price contracts to its consumers. It would be able to offer these in addition to products that track the underlying electricity prices. It would however still remain a challenge for the retail supplier to offer longer term fixed price contracts if there were no electricity hedging contract available. This effect is however partly offset by the existence of the Directed and Non-Directed Contracts, as well as the PSO levy backed Contracts for difference, which, in combination with the fuel hedges increases the ability for non vertically integrated parties to offer products.

### 5.5.3. Conclusions on supply and demand for hedges

Based on the concerns raised by respondents and looking at the incentives on a stand-alone generators and suppliers it is likely that the demand for hedges would primarily be driven by the need of suppliers.

It is however important to note that looking forward, two additional factors may provide an increasingly strong incentive on generators and vertically integrated parties:

- Firstly as competition in the retail supply markets develops further this will continue to drive a need to optimise the underlying cost base. While it is possible for a vertically integrated party to provide a degree of optimisation, only sourcing electricity from its upstream generating arm, rather than contracting for cheaper generation, will expose the business to inefficiencies.
- Secondly the increased prominence of intermittent generation in the form of wind will mean that some of the current certainty of dispatch will be eroded.

In the following sections we examine the outlook for liquidity in the SEM further, with particular focus on the three types of contracts for difference; Directed Contracts, Non-Directed Contracts and PSO CFDs.

### 5.6. Outlook for liquidity

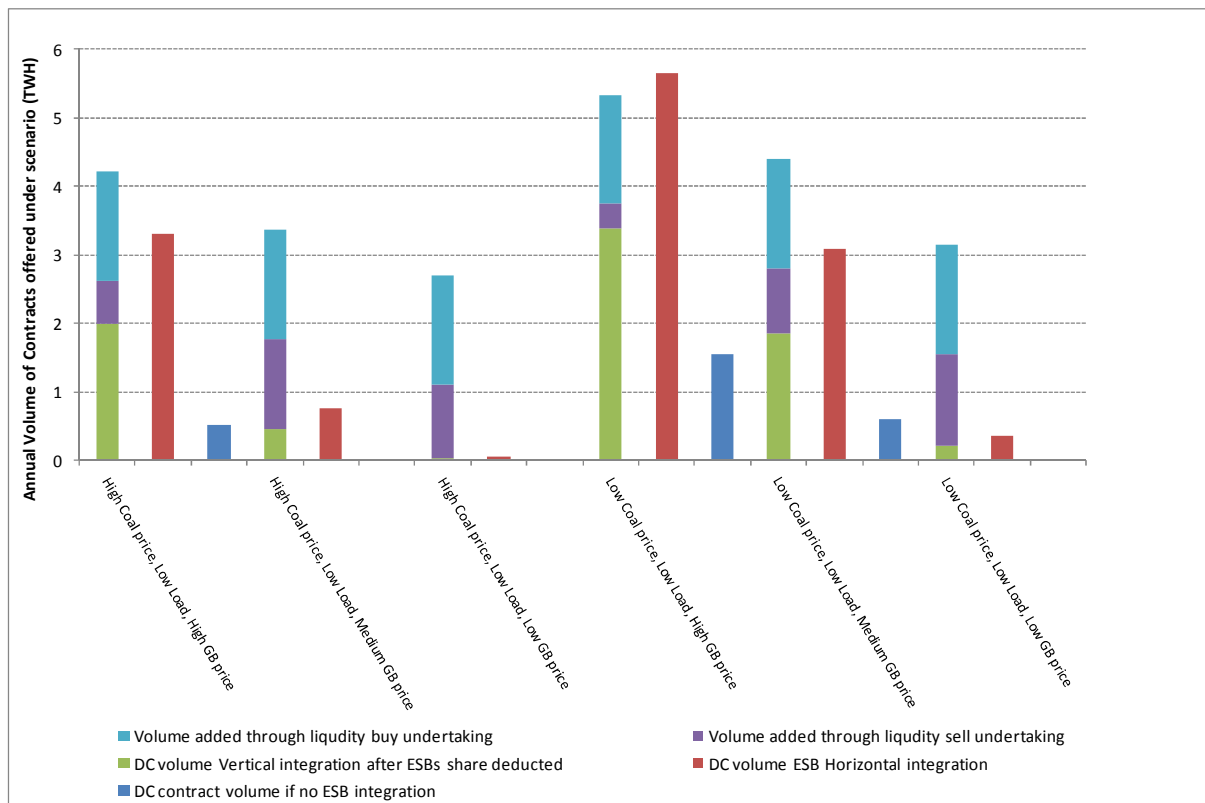
In order to inform policy options for hedging and liquidity we should consider the outlook for the different types of hedging products available. We do this in light of the discussion above regarding the fundamental impact of market design, we discuss the three main types of contracts in the SEM, what drives the volume offered through these routes, and provide commentary on the outlook for each of these contracts.

- The future outlook for Direct Contract volumes is driven by regulatory factors and market structure. In particular:
  - The volume of Directed Contracts is dependent on the evolution of future market power metrics. As the market becomes more competitive the volume of Directed Contracts provided to the market will decline.
  - The overall volume of Directed Contracts could however also be moderated by the RAs deciding to link the metric to a different critical number for HHI (or other measure), rather than the targeted 1150 index number currently used. Increasing the target to above 1150 would decrease the overall volume of Directed Contracts for any given level of market power observed by the metric. It could for example be observed that 1000 (the equivalent of 10 equal sized companies each with 10% market share) is often used as a critical number in competition analysis.
  - If the target critical value (and market power index used) is held constant, then the volume of Directed Contracts can be modelled based on market modelling output from Plexos.



- Drivers for Non-Directed Contracts are more uncertain. In principle these contracts are offered on a voluntary basis by market participants<sup>34</sup>. In practice there have however only been two providers of these contracts to date, and no new providers have been observed despite the contracts for periods commanding a significant premium in price above similar product Directed Contracts.
- The PSO backed CfD volumes are also influenced by regulatory factors. The outlook for these volumes are uncertain due to the fact that shortfalls or surpluses made by these contracts are passed on to consumers.
- The RAs have undertaken forward looking modelling of scenarios for the SEM<sup>35</sup>. Based on these scenarios we have undertaken a higher level estimation exercise to provide an indication of the potential volumes of Directed Contracts which would be available under each market structure. The results of this estimation exercise is presented in Figures 5.8 – 5.9.

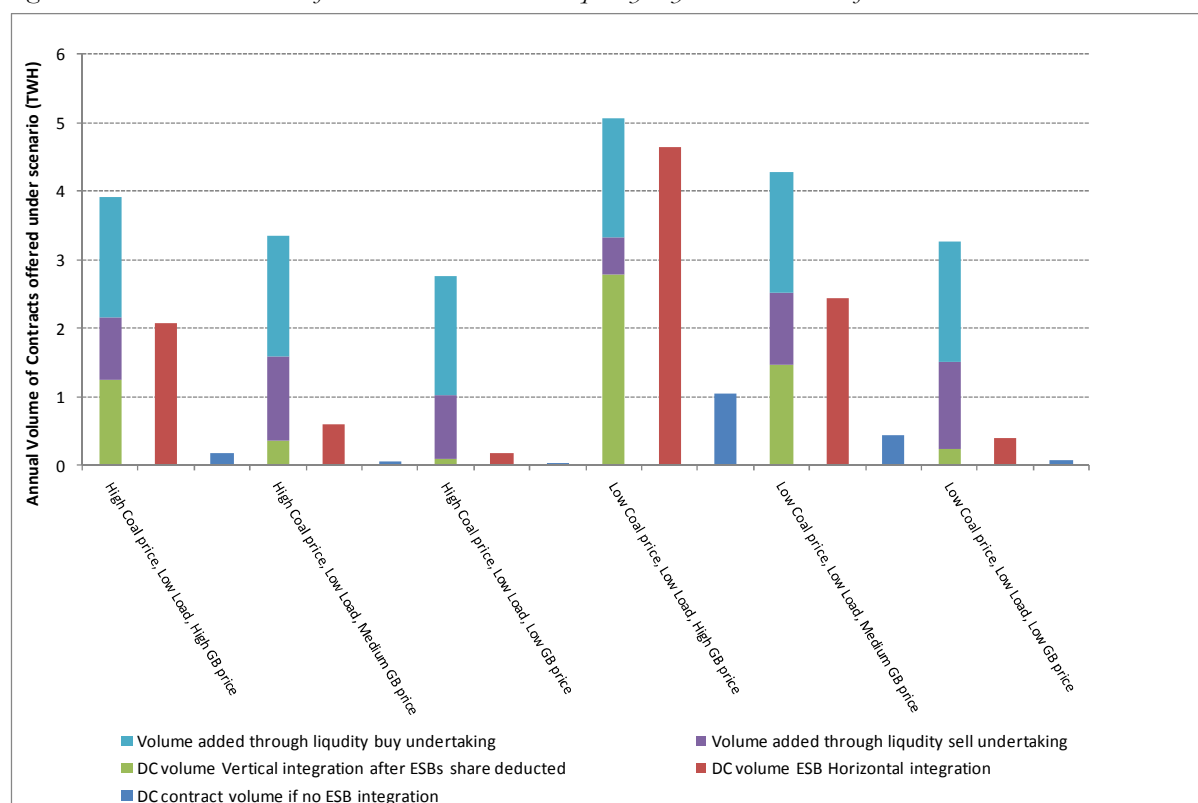
Figure 5.8 Estimated volumes of Directed Contracts and liquidity buy and sell volumes for 2015 scenarios



<sup>34</sup> We note that the contracts offered by NIE PPB are slightly different from the NDCs offered by ESB PG in these are linked to the PSO in Northern Ireland

<sup>35</sup> The assumption behind this analysis is outlined in section 3.8

Figure 5.9 Estimated volumes of Directed Contracts and liquidity buy and sell volumes for 2020 scenarios



The estimation in the charts provide an indication of how the volumes of DCs may develop, as well as the liquidity sell and liquidity buy commitments proposed by ESB. The legend of the charts is as follows:

- **DC volume if no ESB integration:** This is the volume of Directed Contracts it is estimated that ESB PG would provide if there is no horizontal integration.
- **DC volume if ESB integration:** This is the volume of Directed Contracts it is estimated a horizontally integrated ESB PG and ESBI would be required to provide.
- **DC volume after integration after ESBs share deducted:** This is the volume of Directed Contract it is estimated that a *Horizontally and Vertically* integrated ESB Group would be required to provide if it is allowed to internalise the volume of DCs it is entitled to owing to its own consumer load (ESB's customer load is assumed to be 40% of demand).
- **Volume added through liquidity sell undertaking:** This is the estimated volume of contracts the horizontally and vertically integrated ESB Group would sell *on top of the volume of DCs it would also be required to provide.*
- **Volume added through liquidity buy undertaking:** This is the estimated volume of contracts the horizontally and vertically integrated ESB Group would offer to buy through its liquidity buy commitment (assuming ESB's customer load is 40% of demand).

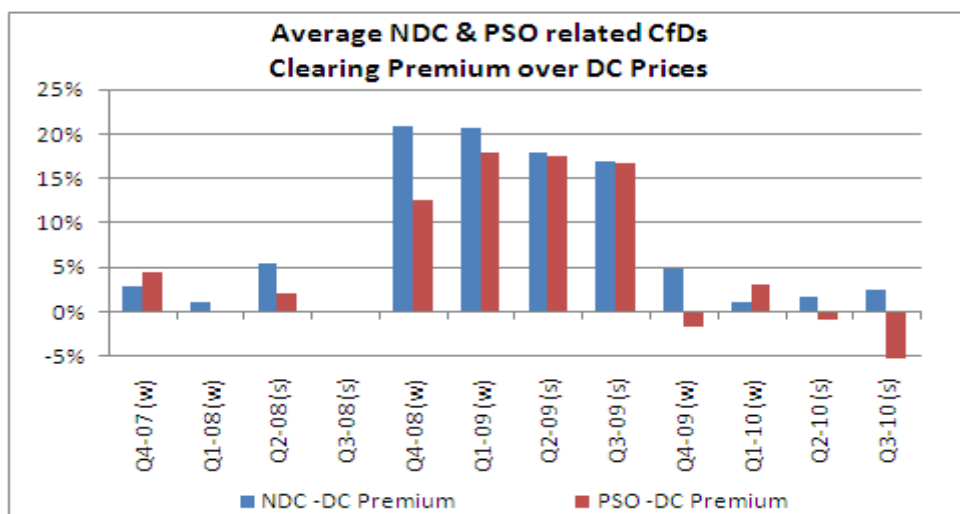
It is important to note that the liquidity buy commitment does not provide hedges to other suppliers, but rather provides hedging opportunities for other generators. Given this it would contribute to the total volume of hedges available in the SEM. It is nevertheless important to note that these hedges provide trading volume and aid the development of price discovery in the market.

It is interesting to note that the volume of DCs varies significantly with several variables. In particular it is higher in scenarios where coal prices are low relative to the gas price. Concentration in this scenario increases since the Moneypoint and Kilroot coal power stations, belonging to the two largest generators ESB and AES respectively are then in merit at the expense of other generators. Similarly if capacity margins are lower due to prevailing exports to GB (when the GB price is higher) then the concentration of spare capacity to ESB and AES pushes up the HHI resulting in higher volumes.

### 5.7. Potential issue of market power in the market for contracts

One observation worth making regarding the SEM contract market is the potential for market power distortions in the market for forward market contracts. In particular it has been observed that the prices of the Non-Directed Contracts (and PSO backed CfD) achieve a significant premium over the DC prices. This is illustrated in Figure 5.10.

Figure 5.10 NDC and PSO CfDs clearing Premium over DC Prices (source data from Regulatory Authorities)



For Directed Contracts both the price and quantity of CFD contracts are determined through a regulatory process. As the contracts are made available to downstream parties based on their supply portfolio the DCs gives parties the opportunity to hedge a proportion of their load at a simulated electricity forward price. Given that presence of the Bidding Code of Practice and Market Monitoring Unit effectively ensures that the SMP price is set at a level which is very closely related to the short run marginal cost of the price setting plant, the DC price setting calculation should in principle closely proxy what an competitive traded electricity forward price would have been in the SEM given those underlying conditions.

Figure 5.7 suggest that it has been possible for suppliers of contracts to achieve contract prices above those of Directed Contracts for periods (including over 10% above the DC price which is

often cited as a critical number in competition economics if compared against a competitive price). It is however also notable that these premiums appears to have been volatile over time.

Figure 5.11 Volatility in the NBP gas price (source Bloomberg)

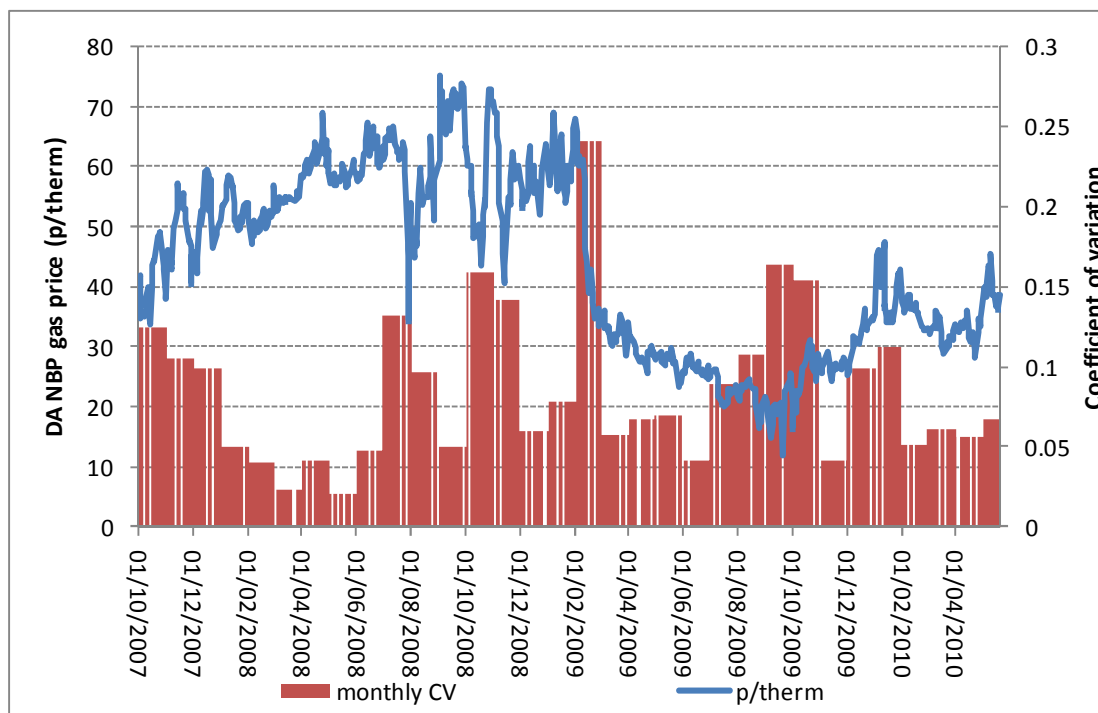


Figure 5.11 shows the evolution of the day-ahead NBP gas price over the same time period, as well as the monthly coefficient of variation (a standardised measure of volatility or variability). As the NBP price is a key driver of the SEM SMP price it is can to an extent be expected that volatility in the gas market could drive demand for hedges in the SEM. It is notable that the period corresponding to the most significant period of premium in NDC prices above DC (Q4 2008 – Q3 2009) corresponded to a period of expected undersupply in the GB gas market. When the NBP supply/demand situation eased in early 2009 both the prompt and forward prices fell significantly. This would however not be visible in the NDC prices as these were fixed when sold during the summer of 2008. Another test that it might be worth conducting is to compare the premium paid for forward gas contracts over buying spot – if that were comparable to the NDC premium then one might infer that both the Gas forward market and the NDC market were comparably competitive.

A plausible explanation for the premiums of NDC prices above those of DCs could therefore be that there was an excess demand for hedges over the period. This alone does however not answer the question if there may be market power in the market for contracts, but may suggest that price could be higher due to too few contract being available (which could be interpreted as holding contracts back in order to increase their price).

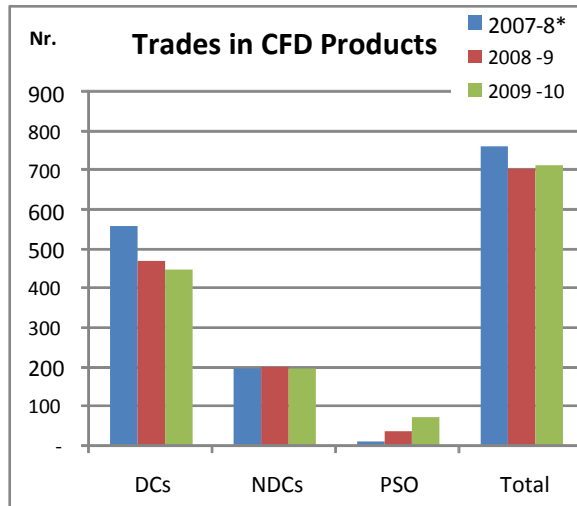
It is also worth adding a number of other observations regarding the trade in Directed and Non-Directed contracts

- Number of trades – Figure 5.12 suggests that the number of transactions have remained relatively steady, but the ones on the NDC side are clearly very limited, in particular

when one considers that in terms of volume the NDCs make up a larger volume than the DCs.

- Number of market participants: the number of market participants is significantly limited with only 2 sellers and 7 buyers

Figure 5.12 number of trades in CFD Products (source data from RAs)



While normal forward markets are difficult to manipulate by reducing the supply of contracts it should be noted that this is not a liquid or market. As contracts are offered through auctions the suppliers of contracts are arguably not using the offer price as a route to increase the price. Instead if there is an imperfection it is likely to be in the form of restrictions to the total supply of contracts. The supply side drivers of NDCs are not clear and appear to largely be based on consultation between the two suppliers and the regulatory authorities. It is possible the opaque nature of the NDC quantity (which may still be perceived as a regulatory tool as it is offered by formerly incumbent generators) could act as a barrier to other parties entering the market.

It is possible that the premium of NDC prices above DC prices are caused by two current market features:

- undersupply of contracts; and
- a degree of oligopoly in the setting of quantity of products coming about due to a lack of parties offering contracts (as opposed to collusion)

In either case these risks implied by these features would be reduced with entry into the market by other parties, or the premiums be competed away if arbitrage against products in the BETTA market becomes available through increase interconnection.

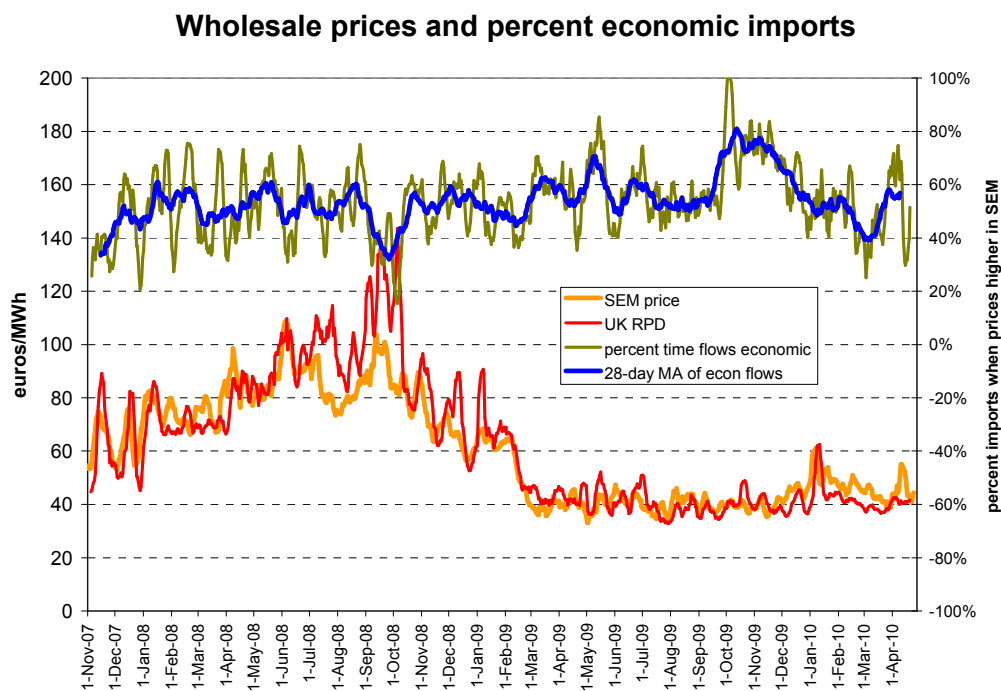
It is however possible for the imperfections in the NDC market to have an impact on the ability of parties to enter or expand in the retail supply market. It may be worth considering options for supporting the entry of smaller suppliers to help enhance competition in the retail sector. This could take two forms:

- Regulatory backed market making<sup>36</sup> for smaller suppliers. This will facilitate entry to the retail market. The measure would be removed once it is deemed that smaller suppliers could access hedges effectively.
- Introducing a liquidity provision mechanism with an ex-ante fixed quantity. This will both make it easier for parties to predict the minimum volume and types of contracts which will be available in the future, and therefore price risk. This may also serve as an incentive for other generators to offer contracts on a competitive basis if they believe that they could profitably beat the prices offered through the mechanism.

## 5.8. Effect of interconnectors arrangements

As discussed in the previous section, interconnection could potentially both reduce the risk of competition issues in contract markets, directly facilitate entry and provide additional opportunities feeding liquidity. It is however important that the regulatory arrangements applying to the interconnectors are carefully designed so that trading can effectively take place. If this is not the case then the benefits of additional interconnection capacity may be limited or lost. This is important both in the context of the existing 450MW Moyle interconnector, and in particular the 500MW East-West interconnector currently under construction. These cables will enable a total swing of 1,900MW of capacity between the SEM and GB, against an SEM peak demand of between 6.5 and 7 GW in 2015<sup>37</sup>.

Chart 5.13 Interconnector flows across Moyle (source data from Regulatory Authorities, Bloomberg, Elexon)



<sup>36</sup> We discuss market making further in the section 6 of this document.

<sup>37</sup> Eirgrid Generation Adequacy report 2010-2016

Figure 5.13 illustrates the recent experience of the current Moyle interconnector between the GB market and the SEM<sup>38</sup>. It is notable that the flows across the interconnector appears to have been economic only around 50% of the time, thus suggesting that electricity frequently flows in the opposite direction compared to what would be expected given market prices. This is likely to be due to imperfections either in the capacity allocation mechanism for the interconnector, or compatibility of the GB and SEM markets (particularly the ex post price determination on the SEM).

We would like to stress the importance of the work currently underway to facilitate intraday trading in ensuring that the benefits of interconnection can be achieved in the context of compliance with the relevant EU regulation and SEM regional integration.

## 5.9. Role of information

In order to promote competition and to facilitate the development of traded market liquidity transparency is a key factor. In order to increase the likelihood of the SEM appearing attractive to financial traders, the price formation mechanism needs to be seen as sound and transparent. It is also important that there are not significant information advantages available to incumbents. While the SEM arguably has good information available to market participants, the Regulatory Authorities and Market Operator should be vigilant to ensure this remains the case.

Electricity trading enables parties to manage their exposure to revenue and cost risks. Buyers and sellers of electricity can hedge their exposures to the often volatile nature of electricity prices by signing forward agreements.

One of the key factors needed in order to enable this to happen effectively is that sufficient information needs to be available in order for the contracting parties to assess the factors influencing the price drivers. In the context of the electricity market information transparency becomes an important factor as smaller players, or even utilities active in other countries, will be less willing to engage in trading in a market if it perceives that the incumbent generators and suppliers have a significant advantage in the availability of information.

In light of this, an important tool in enhancing the potential for forward trading is enhancing the level of information available to market participants, hence enabling them to make more effective decisions and ensuring that they are able to engage in forward transaction in a fair way.

In addition to transparency regarding the factors influencing price, another important aspect is whether the trading is conducted physically or financially. A physical contract requires the signatory to physically deliver, or take delivery of the product on the delivery date. If there is insufficient liquidity in the short term market, then a party without physical assets may find itself unable to “balance” his position and may become exposed to imbalance charges. If liquidity is sufficient then he will be able make trades to balance the position. In financial trading the forward contracts are not for physical delivery, but rather settled against a reference price, often derived from a short-term physical market (like NordPool ElSpot). For financial trading to be able to develop it is however necessary for this reference price to be perceived to be reliable and

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<sup>38</sup> It should be noted that until recently GB arrangements required Moyle to pay Transmission Use of System Charges, which due to the GB connection location in Scotland where high. This meant that it was relatively expensive for a GB party to import electricity through Moyle.

reflecting solid market fundamentals. The reference price transparency is an area where the SEM market design is strong and where the BCoP and Market Monitoring Unit should continue to play an important role in ensuring confidence in the price formation mechanism remains high.

A potential limited intervention that could have an important impact on market confidence would be a transparency programme for market data. Market participants have highlighted that some market features could require additional explanation, or for data to be published such as:

- Forecast transmission outages and constraint treatment;
- Forecast Generator outages, or a requirement to publish updates to generation outage plant before participating in auctions;
- Investigation and reporting by the MMU; and
- Forecast future DC/NDC volumes.

A number of different, and not necessarily mutually exclusive measures to enhance transparency could be adopted.

- A strict approach to transparency would be to adopt an approach similar to that adopted by Nordpool, where market participants are required to make public certain information through messages to the market before they are allowed to execute trades through the system. Such information includes long term planned outages for generating units. In addition to this unplanned outages needs to be announced through urgent market messages as well. In the context of the SEM such an approach could help facilitate potential future relaxing of the bidding code of practice.
- The RAs could establish a working group made up of market participants with terms of reference to identify additional data items needed for the market to be able to operate efficiently. This approach is however likely to require some activity by the regulator since the publication of some data may prove to be controversial with market participants.<sup>39</sup>
- A market entry handbook. The regulatory regimes and various interventions that make up a quasi-regulated market like the SEM electricity market are by their nature specialised, detailed, and have evolved over time. Parties investigating entry into the SEM (if only for trading) would need to invest significantly in understanding how these rules impact on market participants. A handbook could be developed and maintained in co-operation with market participants to ensure this information is less costly to maintain.

Transparency measures can however only help encourage entry by facilitating understanding of the price formation process and market dynamics. Such measures do however not directly provide hedging volumes that are important for downstream parties to be able to enter or expand.

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<sup>39</sup> We note for example that the publication of real time gas flow data by subterminal which was introduced in the GB market in 2006 was opposed by several parties for commercial and contractual reasons. Similarly the publication of aggregate storage volumes at LNG facilities was opposed on the grounds that it was commercially sensitive. Both items are now published through National Grid Gas, the system operator for gas transmission system in GB.



## 5.10. International experience of liquidity

Several other energy markets have taken steps to address concerns over market liquidity over the past few years. The most recent and in depth study undertaken was probably that of the GB regulator Ofgem, but NordPool and the experience of New Zealand are also worth considering in this context.

### *Liquidity concerns in BETTA*

The regulator started its investigation after electricity market liquidity was identified as a potential issue in the context of an investigation into the level of competition in the retail energy markets. Over the same time period concerns were also raised about a trend towards vertical integration, with the large non-vertically integrated generator, British Energy, being bought by EDF, and later a proportion of it bought by Centrica. Both of these companies are vertically integrated companies. Box 5.1 provides a summary of policy proposals made by the GB regulator following its review, as well as an indication of the current status of this programme.

#### *Box 5.1 Ofgem's programme of work for liquidity*

##### **Work in GB on liquidity**

###### Liquidity Proposals for the UK Wholesale Electricity Market

Ofgem want to improve the liquidity in the UK wholesale electricity market. There are a number of steps it wants the market to improve this, and they will assess the solutions provided using a number of criteria:

- **High volumes traded in standard products.** Ofgem will review how the volumes of standard baseload and peak products are developing, and will desire evidence that volumes are sustainably increasing.
- **The availability of key longer dated products and/or financial derivatives.** A key consideration will be to assess the ability of market participants to hedge their positions over longer periods of time. For indicators of market development, Ofgem will evaluate the emergence and availability of appropriate products, and consider whether or not there is a trusted reference price for financial derivatives and forward products
- **Use of trading platforms by small/independent suppliers.** This requires developing products with a clip size, shape and duration to meet small suppliers' needs. If small traders cannot access the market to hedge against risk, then increased trading volumes on their own may not improve retail market contestability.
- **Positive feedback from small/independent suppliers and potential entrants.** Ofgem will survey small/independent suppliers and potential entrants to determine whether their trading conditions are improving.

If the market doesn't improve liquidity (as measured by these criteria) within the timeframe desired by Ofgem then it intends to introduce some policy remedies. These may include:

- **An obligation requiring large generators to trade with small/independent suppliers:** This would require large generators to offer terms when approached by small suppliers, and may be extended to require large suppliers to offer purchase terms to small generators. Currently no such obligations exist.

- **Market making arrangements**, supported by a licence obligation on the Big 6 to provide electricity in defined products: The electricity would then be available to all market participants through a trading platform.
- **Mandatory auctions**: these may focus on the prompt market (in order to develop trusted reference prices and accordingly more financial derivatives) and, as an alternative and perhaps as a complement, it may also focus on longer term products. All large generators would be obliged to offer volume at auction.
- **Self-supply restrictions on large, vertically integrated utilities**: this would limit the extent a company's generation business may supply its retail business. As a result, a proportion of their requirements would have to be traded on the market.

These interventions aim to improve liquidity (including in forward products) in the UK wholesale electricity market, and to improve the ability of small or independent suppliers and potential new entrants to meet their wholesale energy purchasing and risk management needs. It is hoped that this will improve competition in the supply market.

### Summer 2010 Assessment

Ofgem concluded in its Summer 2010 assessment of liquidity that the GB wholesale electricity market is performing well against some of its eleven metrics of liquidity but less well against others. It has summarized the results of its research into positive and negative developments.

On the positive side, it highlights four points:

- **The annual trend in aggregate churn has been rising since 2005**: the aggregate churn peaked in 2002 at 6.8 times the rate of physical consumption. It then slumped to a low of 2.0 in 2005, and has been rising steadily since, increasing to 3.9 in 2009 and is forecast to reach 5.0 in 2010.
- **There has been industry-led innovation and new development, and there are plans to introduce new derivatives**: There has been a move towards exchange based trading over the past year and a new exchange, N2EX opened in January. It's levels have been stable but relatively low. N2EX will be offering cash settled futures contracts later this year.
- **The market generally meets the needs of large vertically integrated market participants**: the products offered and the platforms they are available on cater to the needs of large market players.
- **There are some important positive drivers that will impact the market over the medium term**: connecting markets through interconnectors like Britned will increase market participation by European energy firms, which increase the size of the market and improve overall liquidity.

However, on the negative side there are an additional four points:

- **Overall churn remains well below that seen in the most liquid electricity markets**: Aggregate churn is significantly lower than in the German and Nordic wholesale electricity markets, where the values for 2009 were 9.6 and 7.6 respectively.
- **Liquidity further along the curve remains weak, and there is evidence of increasing bid-offer spreads**: Whilst spreads on near-term products have fallen over the past two years, those further along the curve have increased. Also, the proportion of baseload traded

volumes further along the curve has declined since 2006. Independent market players who responded to Ofgem's questionnaire unanimously agreed that they had not observed any improvements in liquidity further along the forward curve.

- **There has not been a major increase in auction volumes and price transparency:** High levels of exchange-based trading allows for the creation of robust reference prices and greater transparency, however, OTC trading predominates in GB.
- There is ongoing dissatisfaction from non-vertically integrated market participants about their ability to meet their wholesale power hedging needs: the lack of suitable financial products, offered for appropriate time periods and available in small clip sizes, is seen as discouraging entry to the market as smaller/independent players cannot hedge their risk appropriately, and product diversity has fallen in GB since 2003. Further, the small number of counterparties offering these products is also a matter of concern for small/independent participants.

Ofgem believes that as further improvement is required and as it is not implausible that these improvements shall not be sustained, it is prepared to further develop the interventions set out above. This is conditional on the reforms being cost effective and consistent with current regulatory aims.

The key lessons from BETTA for the Regulatory Authorities is that contract liquidity in electricity is problematic both to investigate, and to design remedies for. The BETTA investigation takes place against a background of a much higher level of liquidity, with a regularly trade spot market. Even under these relatively favourable circumstances, and with several industry initiatives underway, Ofgem has been actively engaging on this subject for over two years<sup>40</sup>.

#### *NordPool*

NordPool has managed to achieve a higher degree of liquidity than most European electricity markets. In the Nordpool area the wholesale markets were de-regulated by increasing the size of the market from originally only Norway, to also include Sweden and eventually Finland and Denmark. This enabled the national market structures to remain fundamentally in place.

NordPool operates a non-mandatory pool system where participants can either bid into the pool on a gross or a net basis.

- with gross bidding the participant bids in all his generation and all the demand through the system; and
- with net bidding the generator would only bid in the residual demand they need to meet their load.

Currently over 70% of volumes are submitted through the Pool on gross bid basis. This has the effect of generating good price formation at the day-ahead stage. Financial forward market then settle contracts against the day ahead reference price.

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<sup>40</sup> Electricity market liquidity was identified as an area needing further study in the initial findings report for the Retail Supply Probe, published in October 2008.

<http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=4&refer=Markets/RetMkts/ensupro>

A number of factors have contributed to create favourable circumstances within which liquidity and trading effectively developing in the Nordpool are:

- Low market concentration with many small generators.
- A very large proportion of generation is traded through the pool system (i.e. it has almost as good price formation as a gross mandatory pool). This has been achieved through two factors:
  - discounts to market participation fees have been offered to participant bidding in on a gross basis;
  - an undertaking from the larger generators to bid in on a gross basis; and
  - several of the larger parties have acted as market makers. Since inception over 20 parties have operated as market makers in Nordpool.
- In the NordPool region the supply markets have been national, while the generation market became regional. This had the effect of encouraging competition and entry into other market areas.
- Sweden and Norway have surplus generation, mainly in the form of nuclear and hydroelectric power, while Denmark and Finland are short on generation and more exposed to conventional fuels such as natural gas, coal and oil.
- The large proportion of hydropower in NordPool means that storage levels in the water magazines become an important driver for the availability of generation.
- The region has interconnection, not only within itself, but also to Russia, Estonia, Germany, Netherland and Poland. Each of these links presents trading and optimisation opportunities for parties.
- A very strong emphasis was placed on transparency from the outset and the rules governing information release are enforced strictly.

Critically in the Nordpool region generators identified market liquidity and effective forward market price formation to be an important, and valued feature. They therefore made commitments to ensure a large volume is traded through the physical Day Ahead Spot Market. This has been key factor in the development of financial trading in the forward market.

Nordpool has also illustrated that information availability on subjects such as generator outages could be improved in many parts of Europe.

#### *New Zealand<sup>41</sup>*

The New Zealand energy markets where aggressively de-regulated during the 1990s followed by light handed regulation based on the threat of re-regulation, information disclosure and self regulation, as well as competition policy prohibiting anti-competitive behaviour. Following

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<sup>41</sup> Competition in the New Zealand gas sector is explored further in the paper 'New Zealand Gas Industry Regulation, Lessons to learn for the British Energy Sector' (report by CEPA for Ofgem RPI-X@20 project, March 2009. <http://www.ofgem.gov.uk/Networks/rpix20/ConsultReports/Documents1/NZ%20gas%20regulation.pdf>  
A good summary on the proposed market maker arrangements in electricity is available in appendix 4 to Ofgem's Liquidity proposal for the GB wholesale energy market: <http://www.ofgem.gov.uk/Markets/WhlMkts/CompanEff/Documents1/Liquidity%20Proposals%20for%20the%20GB%20wholesale%20electricity%20market.pdf>

concerns over the state of competition in both the gas and electricity markets regulation has been raised, investigated and reforms proposed.

On the electricity side the new electricity trading arrangements large generator/retailers will be required to develop exchange traded arrangements, including requirements to offer bids and offered with a maximum spread. The aim of this measure is to provide access and contestability in both the generation and retail sectors. The market maker approach was identified to help above and beyond buy/sell obligations which could be avoided by manipulated by setting high reservation prices.

Another key lesson from the New Zealand electricity market is that too quick de-regulation can have significant adverse consequences, requiring costly interventions ex-post.

### 5.11. ESB's liquidity Proposals

In this section we discuss the proposed liquidity undertaking put forward by ESB to the SEM committee. Box 5.2 provides a summary of the liquidity undertaking submitted by ESB. A more complete version of this proposal is presented in Annex 5.

*Box 5.2 Liquidity undertaking proposed by ESB*

#### Summary of Proposed undertaking

ESB is proposing the following binding commitments, following the removal of the business separation constraints between PG and CS.

ESB's PG is currently providing the great majority of Contracts for Differences (CFD) in the SEM market, through the mandated Directed Contracts (DCs) and the voluntary (NDCs). These products allow suppliers and generators to trade away the risk of their exposure to the System Marginal Price (SMP) in the SEM. One of the key concerns regarding the removal of separation between ESB's PG and CS is that ESB will be able to hedge against risks internally, and as a result will provide lower levels of liquidity than is required by the rest of the market to meet its risk management needs.

In its undertaking, ESB commits itself to continuing to provide liquidity in the case of removal of separation. It believes that because of the low levels of trade in SMP CFDs, the low volatility in CFD prices, and the regulated nature of the market means that a low level of liquidity is required: unlike other wholesale electricity markets, parties do not need churn equal to five or six times their underlying position traded, they only need match their existing physical position, which amounts to a relatively small volume.

ESB does however highlight that the greater the volume commitment it has to make to the provision of external liquidity, the less valuable and relevant the removal of separation will be. The greater the market and counterparty risk ESB has to take on, the higher the cost of such liquidity provision for the whole market. ESB argues that other market actors have a role to play in providing liquidity for risk management, and believes that the current situation and the disproportionate share of CFDs that PG provides (especially considering its falling market share) is 'unreasonable and unsustainable'.

**The shape of ESB's liquidity undertaking:** ESB proposes that it will offer annual, monthly and quarterly products (though it believes the annual products will be in the highest demand) and it also will lower the minimum contract size to 0.1MW, as a support to new entrants.

Despite the lower demand for CFDs from generators than the demand from suppliers (because of the SMP conditions, fixed prices leave generators exposed to fuel price increases) ESB has also

committed to offer products where generators swap SMP exposure for a fixed revenue stream, in an attempt to support the entry of new generators.

The two key components of ESB's proposal are a "liquidity sell commitment" and a "liquidity buy commitment". These are summarised below.

**Liquidity sell commitment:** ESB will offer a Liquidity Sell Commitment (LSC), including its DC commitments, of 25% of PG forecast output, based on its commitment to reduce its generation market share to 40% of the SEM. ESB will offer proportionately more or less of its output, depending on whether or not its market share is above or below the 40%.

If the LSC were to reduce PG's capability to internally hedge at least 30% of ESB's forecast demand, or if ESB's access to other forms of SEM risk management were reduced, ESB would lower the LSC by that amount.

The LSC will cease if:

ESB's share of Generation in the SEM falls below 30%

The commissioning of an additional interconnector

The GB and SEM markets become effectively coupled, or

There is a fundamental change in the SEM market rules.

**Volume of Liquidity Buy Commitment (LBC):** ESB will offer a LBC of 10% of ESB's forecast demand based on a 40% SEM market share, and will offer proportionately more or less, depending on whether or not its market share is above or below the 40%.

If the LBC is too large, it will defeat the purpose of removing separation and ESB's demand will become significantly overhedged. As a result, it wants to make its LBC dependent on the degree that its demand is internally hedged after it has discharged the LSC. If, after the LSC is taken into account ESB is significantly long on generation, the LBC will be reduced to that extent. The criteria for the cessation of the LBC are the same as those for the LSC.

## 5.12. Summary on liquidity

While it is important to recognise the strong benefits a liquid contracts market can provide, it is also important not to lose sight of fact that contract market liquidity is a means to an end. The SEM has only been in operation for a limited time period. It is important to keep in mind that trading in other market have taken time to develop, and that interconnection could facilitate significant increases in liquidity, as well as to an extent compete away premiums of Non-Directed Contracts over Directed Contracts by providing additional volumes. This will however fundamentally be dependent on effective arrangement for interconnection and alignment of GB and SEM trading arrangements to minimise the cost of trading, and to facilitate within day trading. It should also be remembered that there are other ways of hedging risks in various forward fuel markets as well as the GB electricity market (which is driven by similar factors), and that the way that the spot price is determined may reduce the need for hedging as it is more strongly related to these fuel price fundamentals.

While such development may still be a couple of years distant, and it may take a period for confidence to develop in the systems it should nevertheless be recognised that there are features of the SEM that helps promote liquidity, in particular:

- ring fencing between the large supply and generation of companies<sup>42</sup>; and
- requirements on large generators to sell a proportion of their capacity through Non-Directed Contracts.

Both of these measures could clearly facilitate contracting liquidity by increasing both the demand for and supply of hedges. It should however also be recognised that they lead to potential inefficiencies by limiting the freedom and ability of parties and shareholders to adopt their own risk management strategies, and impose transaction costs on market participants. If these measures are retained for longer than necessary they could ultimately lead to higher than necessary consumer bills and therefore have a detrimental effect on consumer welfare. It is therefore important to carefully balance and monitor the expected benefits of any measure to increase liquidity so that they can be removed when the market has matures sufficiently.

Our analysis has shown that, in the presence of the SEM pool system, retail suppliers do have a degree of ability to offer at least monthly fixed price contracts to its consumers, but that it would remain a challenge for the retail supplier to offer longer term fixed price contracts.

This, combined, with the key lesson from BETTA that contract liquidity in electricity is problematic both to investigate, and to design remedies for, would argue for a continuation of ring-fencing for a further period.

Finally, it is worth noting in the context of liquidity that the Directed Contracts volume have the effect of reducing demand for hedges by suppliers, and reducing the potential size and potential volumes of a traded market. As wholesale market concentration declines the exposure of suppliers to the SMP increases and thereby also the potential demand for hedges. Measures that help reduce concentration in the wholesale market is therefore also likely to help increase the demand for hedges (or vertical integration) by suppliers in forward market.

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<sup>42</sup> It should be noted that while Chart 5.8 and 5.9 of this document indicates that higher levels of contracts may be available under integration scenarios these charts only show the DC volumes and volumes made available through liquidity release undertakings. Vertical integration by itself is however naturally detrimental to liquidity and the incentives to trade by removing buyers and sellers from the market.

## 6. POLICY OPTIONS

In this section we discuss the options for policies and measures to promote competition under different potential structural scenarios for the SEM.

This includes considering amendments to the market power mitigation strategy, as well as potential other measures to promote competition. We also outline our proposals to help facilitate hedging by suppliers and stimulate the emergence of traded market liquidity under these conditions.

Finally, we give CEPA's initial recommendations on any amendments to the market mitigation strategy and our preferred option(s) to promote competition.

### 6.1. Introduction

Before setting out the policy proposals it is worth re-iterating the objectives of the SEM Committee, as well as the objectives of the market power mitigation strategy. Certain of these can effectively serve as criteria against which to assess the options presented below.

The objectives of the SEM Committee, as referenced in Section 2.1, are:

... to protect the interests of consumers of electricity in Northern Ireland and Ireland supplied by authorised persons, wherever appropriate by promoting effective competition between persons engaged in, or in commercial activities connected with, the sale or purchase of electricity through the SEM.

Having regard to

- (a) the need to secure that all reasonable demands for electricity in Northern Ireland and Ireland are met; and
- (b) the need to secure that authorised persons are able to finance the activities which are the subject of obligations imposed by or under Part II of the Electricity Order or the Energy Order or any corresponding provision of the law of Ireland; and
- (c) the need to secure that the functions of the Department, the Authority, the Irish Minister and CER in relation to the SEM are exercised in a co-ordinated manner,
- (d) the need to ensure transparent pricing in the SEM;
- (e) the need to avoid unfair discrimination between consumers in Northern Ireland and consumers in Ireland.

The policy proposals set out in this documents flow explicitly from these objectives and are designed to better facilitate these objectives. In addition to the objectives of the RAs it is also worth noting the criteria of the market power mitigation strategy as set out in AIP/SEM/02/06. These are:



- Effectiveness
- Feasibility
- Retention of the Profit Motive at the Margin
- Allows for Innovative Strategy
- Regulatory Efficiency
- Flexibility
- Transparency
- Ability to Sunset
- Impact on Retail Markets

These criteria have been borne in mind when framing the proposed changes to the market power mitigation strategy. It is however important to note that we also make policy proposals to promote competition in the SEM.

## **6.2. Assessment of current mitigants**

This section provides a summary view on how well the current market power mitigation strategy is working and provides the case for any change.

### **6.2.1. BCoP and MMU**

The BCoP and MMU provide substantial protection against the abuse of market power, such that careful consideration needs to be given to precisely what additional protection against the exploitation of market power other measures provide.

### **6.2.2. Directed Contracts**

Directed Contracts play a complimentary role in mitigating against the use of market power by reducing incentives for parties to withhold capacity from the market.

There appears to be a residual and reasonable concern about a lack of liquidity in the contract market arising from the presence of market power, notwithstanding that participants would not expect the SEM to be characterised by very high levels of contract market liquidity. Therefore, this issue may best be addressed following the commissioning of the East-West Interconnector by complimenting the Directed Contracts by introducing an alternative liquidity release mechanism. It should further be noted that the Directed Contracts themselves serve as a link to reduce the potential demand for hedges by reducing demand. In order to help facilitate liquidity it would be desirable to also reduce concentration in the wholesale market, to firstly reduce the need for market power mitigation, and secondly increase the demand for hedges by suppliers. This would help stimulate the development of a traded market for contracts.

### **6.2.3. Horizontal ring fencing**

It is unclear what additional risks of exploitation of wholesale market power horizontal ring fencing addresses that are not already addressed by the BCoP and MMU. Given the costs of such ring fencing provisions it may be appropriate to remove them in an operational sense, but leaving legal separation in place as this arguably has option value for future structural changes.

Overall we consider that the market power mitigation strategy appear to be serving well and has proven successful in attracting investment. We would caution against substantially reforming the existing measures before the impact of increased interconnection becomes clear and the market arrangements have bedded down.

### 6.3. Structural changes in the SEM

The proposals put forward by ESB to the SEM committee present three main structural options (as the horizontal integration in the retail market is progressing with the transition to full retail market deregulation, subject to any new conditions which the SEMC may deem necessary to address wholesale market power or liquidity issues, vertical integration between ESB CS and ESB PG is not considered as a separate option). These are illustrated in Figure 6.1 below.

Figure 6.1 Potential structural changes in SEM

		Horizontal integration of ESB groups generation	
		No	Yes
Vertical integration of ESB	No	<p><b>Option A:</b> No further removal of ring-fencing between ESB Group companies: Retains current structure, no horizontal, or vertical integration of ESB Group</p>	<p><b>Option B:</b> Removal of information sharing restrictions between ESB group generation companies i.e. ESB PG, ESBI, and allowing joint trading activities while retaining separate legal corporate form. Ring-fencing of ESB CS retained.</p>
	Yes	N/A	<p><b>Option C:</b> Removal of information restrictions and permission to set up joint trading activities for ESB group; i.e. ESB PG, ESBI, ESB CS</p>

In the following sections we discuss policy options in the context of each of these structural changes. These options are discussed against the backdrop of the forward looking modelling of

competition and hedging we have presented in the previous sections. Broadly speaking our policy measures to promote competition can be divided into two categories:

- *Structural measures* – these measures are designed to improve competition in the market by making changes to the industry structure. The main types of structural measures are changes to ownership structures. This includes structural changes to companies, such as the sale of business units or assets. It is also possible to include ring-fencing between business units in this category, although these require a degree of monitoring, which ownership changes typically do not.
- *Behavioural measures* – these are measures that are designed to mitigate against market power by putting restrictions and/or obligations on the behaviour of market participants. Examples of behavioural measures include several of the existing market power mitigation rules such as the BCoP, and directed contracts. Alternative behavioural measures include measures such as voluntary codes of practice and explicit bidding rules.

Structural measures can have several benefits above and beyond behavioural and regulatory measures. In particular they directly influence the competitive situation in a market, and require less direct monitoring.

#### 6.4. No removal of ring-fencing between ESB Group companies

In this section we discuss policy options appropriate if the ring fencing of ESB Group companies is retained, both in terms of horizontal and vertical integration.

##### 6.4.1. Summary of outlook for competition and liquidity

Not surprisingly, this structural scenario produces the most favourable structure in terms of market power metrics and suggests least concern is warranted from a market power perspective of the three cases. In this case the market structure will continue to become less concentrated and the potential for future relaxations to the market power mitigation measures to enhance competition is arguably greater. Table 6.1 summaries the outlook for the market power metrics.

*Table 6.1 Market power metrics in SEM – no removal of ring fencing*

	2015	2020
Market share of ESB PG (by output) range of minimum and maximum across scenarios	15%-29%	12-24%
Wholesale Market concentration (HHI) by output (before deduction of volumes under Directed Contracts)	1073-1614	784-1468
Wholesale Market concentration (HHI) by capacity (before deduction of volumes under Directed	1481	1144

Contracts)		
% of half-hours with RSI below 1.1 for ESB PG	1% - 4%	1%-7%

In the following sections we outline the options for reforming the market power mitigation strategy, improving competition and improving liquidity and the availability of hedging contracts.

#### 6.4.2. Options for reforming market power mitigation strategy

Under this structure the current market power mitigation strategy based on the BCoP, market monitoring through the MMU and forced contracting, continues to be fit for purpose with two minor modifications:

- We agree with some market participants that there may be a case for increased transparency in the operation of the MMU, including its investigations and reporting. Increased transparency would help provide certainty to the market<sup>43</sup>.
- There may be a case for reforming Directed Contracts to a form where they are allocated to parties based on willingness to pay, or ex-post based on actual consumer numbers rather than as currently made available to market participants based on a demand profile. This will mitigate against the potential effect of Directed Contracts of raising barriers to entry in the Retail Market.

Under this scenario the need for market power mitigation will gradually diminish both as a result of continuing entry in the wholesale market and it may be prudent to review the market power mitigation strategy again after the market has developed experience of the operation the East West interconnector.

#### 6.4.3. Options for improving competition

In this section we discuss further options appropriate for this scenario – in particular how further reducing market concentration can enhance competition. Enhancing competition in the SEM would enable competitive pressures to take the place of certain regulatory measures, such as relaxation of the BCoP.

In order to achieve greater competition in the SEM it could be desirable to reduce the size of some of the existing parties, and in order to facilitate the emergence of greater contract liquidity, also ensure that the assets considered constitute an appropriate portfolio. Finally the interests of the residual firms also need to be considered.

The three largest generators in the SEM in 2015 by output under this scenario are ESB PG, AES and ESBI as illustrated in Table 6.2. Under this scenario concentration decreases over time compared to current levels (and as Table 6.1. suggests even further by 2020).

*Table 6 .2 Market power metrics in SEM (by output) – no removal of ring fencing, NewGenco*

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<sup>43</sup> We note that the Regulatory Authorities are intending to consult on a process manual for the Market Monitoring Unit

	Installed capacity (no change)	2015 market shares (no change) high coal / low coal (medium GB gas price)	Installed capacity (with NewGenco)	2015 market shares (with NewGenco) high coal / low coal (medium GB gas price)
ESB PG	3268 MW	15% / 28%	2791 MW	14% / 27%
ESBI	1207 MW	16% / 11%	1207 MW	16% / 11%
AES	1830 MW	6% / 12%	1830 MW	6% / 12%
Bord Gais	734 MW	6% / 2%	734 MW	6% / 2%
Viridian	740 MW	5% / 1%	740 MW	5% / 1%
Endesa	876 MW	8% / 7%	876 MW	8% / 7%
NewGenco	0	0% / 0%	475 MW	1% / 0%

In order to reduce concentration in the SEM we considered a scenario, for illustrative purposes only, where the largest generators by installed capacity, ESB PG was required to divest the Poolbeg station into a new generating company (NewGenco). As indicated in Table 6.2 this has a dramatic effect on market shares as measured by output. As table 6.3 suggests it would also have a dramatic effect on reducing the HHI in the market.

*Table 6.3 Market power metrics in SEM no removal of ring fencing, NewGenco*

	No structural change (high coal / low coal) (in brackets is figures for high GB prices)	With Newgenco (high coal / low coal)
% of half-hours with RSI below 1.1 for ESB PG	1% (4%)	0% (2%)
HHI (before deduction of volumes under Directed Contracts)	1349	1129

In term of RSI the scenarios with low demand growth and GB parity in prices, the analysis does not indicate a non-competitive outcome would be likely before the measure is in place. The measure however significantly reduces the HHI.

#### **6.4.4. Options for improving liquidity and availability of hedges**

Currently ESB PG provides the majority of hedging contracts in the SEM through the Directed and Non-Directed contracts. As discussed earlier, the volume of Directed Contracts to be offered is however dependent on the amount of wholesale market power and the Non-Directed

Contracts are provided on a voluntary basis, thereby both reducing the exposure of downstream parties to volatility in the SMP price, and providing the ability to compete with ESB CS for forward market volumes to facilitate further expansion.

It is however not reasonable to expect ESB to continue to support the market with liquidity on an ongoing basis if the wholesale market power metrics was to reduce and the market become more competitive. Fundamentally ESB's special responsibility for aiding the development of competition in the market through providing hedging products should, as it is now, be proportional to its market power position. As discussed in earlier chapters market power is not a binary question, but rather one of degrees and it would be reasonable for ESB's obligations to provide liquidity to continue to be linked to a market power metric. If contract market liquidity fails to develop as the market power of ESB reduces then the lack of liquidity needs to be recognised as an issue of interest to all market participants.

In order to promote competition and to facilitate the development of traded market liquidity transparency is a key factor. In order to increase the likelihood of the SEM appearing attractive to trade on a financial basis, the price formation mechanism needs to be seen as sound and transparent. It is also important that there are no significant information advantages available to incumbents. While the SEM arguably has good information available to market participants, the RAs and Market Operator should be vigilant to ensure this remains the case.

A potential limited intervention that could have an important impact on market confidence would be a transparency programme for market data such as outlined in Section 5 of this document. This could include various items from a requirement for all parties to make certain categories of information available, to a more gradual approach led by the regulator. Market participants have highlighted that some market features could require additional explanation, or for data to be published such as:

- Transmission outages and constraint treatment;
- Investigation and reporting by the MMU; and
- Forecast future DC/NDC volumes.

As a starting point additional information on these items may be beneficial.

If lack of access to hedges is considered a significant impediment to competition in SEM by market participants, in particular ones active in the downstream market, then there may be case for adopting a specific policy to ensure minimum levels of hedging contracts are made available. The potential objectives of such a policy are outlined in Box 6.1.

*Box 6.1 potential objectives for a liquidity policy*

Objectives for a liquidity policy
A measure designed to promote competition by ensuring a minimum availability of hedges in the SEM should: <ul style="list-style-type: none"><li>• Link the overall impact of the measure to:</li></ul>

- overall competition in the market
- overall liquidity in the market
- The measure should not be unduly discriminatory
- It should provides a predictable amount of hedging contracts:
  - obligated to be provided by parties more likely to have market power, but declining as competition continues to develop;
  - the hedging contracts should be offered on a non-discriminatory basis; and
  - they should be based on a market price, preferably without a reserve price.
  - that minimises the risk of market power being exploited in the forward market
- The measure should not discourages the emergence of generic trading; and should sunset when generic trading emerges

A policy designed to provide a minimum level of contracting to the market under these principles could take several shapes and multiple specific measures are possible. In principle, however, several options could be considered:

*Option 1: a minimum volume* provided by a mix of market power based and market based contracts

- a measure linked to wholesale market power could be similar to the current Directed Contracts. In its current form the Directed Contracts, while mitigating against wholesale market power, however do not promote downstream competition and may serve to discourage entry downstream. In order for it to facilitate market entry it would however be necessary to reform the DC's to:
  - be allocated based on mechanism whereby entrants have an equal opportunity to obtain the Directed Contracts, such as a market mechanism;
  - be offered through a mix of the current eligibility mechanism and a market mechanism; and
  - reallocate the DC volumes on an ex-post basis to parties based on their actual achieved market share (rather than the ex-ante market share).<sup>44</sup>
- if competition reduces the availability of hedges provided through the market power linked measure below acceptable levels, then market participants would be obliged to offer contracts to the market up to the same volume based on their relative market shares.

For contracts offered on a market basis two main options exists:

- an auction system; or
- bilateral trading (backed up by an auction with a reserve price of zero).

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<sup>44</sup> We note that this arrangement would be somewhat cumbersome, although the arrangement is not dissimilar to French gas storage contracts which are based on incumbent market share.

Both of these have advantages and disadvantages. Allowing bilateral trading backed up by a fixed date reserve price auction may provide incentives for the party offering contracts to actively market their contracts and to engage with potential customers to maximise the value of their products. A drawback of the system may however be that if there are insufficient competition among the buyers it could expose the seller to buyer market power, or buyer collusion forcing it to sell volumes at the reserve price action.

The measure would be calibrated to sunset if real traded volumes were to emerge. For example it may be appropriate for the scheme to be re-evaluated every 3-5 years, or in light of substantial market events. In particular such a scheme may not be necessary if the East West interconnector facilitates trading.

#### *Option 2: a market maker*

Another option could be for a market maker to be appointed in the SEM. Market makers have notably been successful in achieving liquidity in the Nordpool market. It is however important to note that in Nordpool generators volunteered to undertake this service as an investment to provide price discovery and liquidity in the market (from which they ultimately would benefit).

A market maker in the SEM would agree to provide a minimum level of liquidity to an exchange and post bids and offers with a maximum spread. In practice this could be adopted in two ways:

- The largest generator (or potentially 3 largest generators) could be mandated to undertake the role of market makers.
- The RAs could tender for a “minimum specification” market maker. The specification of such a market maker would be developed through a consultation process with in particular smaller suppliers, but also industry in general. The tender evaluation could be based on what level of cover the market maker would need for his risk to be able to undertake the “minimum spec” market maker role. Under this options it would be envisaged that usage of the system would be limited to suppliers of a certain size for the volumes provided on a regulated basis.

Similar to Option 1 the measure could be reviewed regularly to determine if it remained fit for purpose or needed.

Under either of these options the market maker would also be required to make the platform available for use by other parties. The market maker approach helps above and beyond simple buy/sell auctions in that it also helps against the potential manipulation by means of setting reservation prices. This is due to the fact that a party is required to remain within a maximum spread between bids and offers. If the party post a too high bid or offer, then he would also be required to buy/sell electricity at the implied opposite price.

#### **6.4.5. CEPA’s assessment**

The main argument for retaining the present structure with some of the suggested improvements is that competition in the SEM is on course to deliver continued benefits over the next 10 years. Given the impending East-West interconnector and possible subsequent market coupling, the market is likely to continue to change considerably in the next few years. Given this, it is likely to be prudent to pause before allowing the vertical integration of ESB Group. Nevertheless against



that, the costs of horizontal separation seem burdensome, and the risks of allowing the ESB generating companies to share and exchange information and possibly share a joint trading arm seem small, providing the BCoP remains in place. This is balanced with the fact that doing so would reduce the ability of the market power mitigation strategy to be relaxed or removed. This could however have implications for the incentive to trade as it would reduce the number of active parties in the market. On balance we consider these gains might be worth the possibly small additional risk, but we consider that retaining separate legal corporate forms has an option value that is likely greater than the benefits of full integration. Furthermore, under this scenario ESB CS will have a strong incentive to encourage ESB PG to provide a greater range of contract products.

## **6.5. Horizontal ring-fencing between ESB Group generating companies relaxed or removed**

In this section we discuss policy options appropriate if the horizontal ring fencing of ESB Groups generating companies is either relaxed or removed altogether.

### **6.5.1. Summary of outlook for competition and liquidity**

Full horizontal integration of ESB Group's generating companies in this context means the integration of the stations under ESB PG and ESBI and Synergen. An intermediate step (partial horizontal integration) would allow the ESB generating companies to share and exchange information and share a joint trading arm. Full integration would add the Dublin Bay and Coolkeeragh power stations to ESB's portfolio of conventional generating assets, as well as the wind portfolio of Hibernian Energy. Full integration implies a significant increase in concentration of baseload generation as it would concentrate the control of the modern and effective CCGT baseload plants of Coolkeeragh, Dublin Bay and Aghada to a single party (as well as the Moneypoint coal station). Together the CCGT plant consists of 1,220MW of generating capacity in the context of 4.5 GW of ESB Group. The combined output of these three stations would, depending on relative coal and gas prices be between 8.4 and 5.9TWh in 2015 (if coal is in merit then Moneypoint would add another 6.2 TWh to the 5.9TWh). This means that ESB will have:

- a significant proportion of generation with installed capacity of 38% against the second largest generator (AES with 16%) of installed capacity in the market;
- a significant proportion of output varying between 21% and 39% in 2015; and
- a large proportion of the spare capacity in the market.

It is nevertheless important to note that the entry of new capacity over the period, notably the Bord Gais Whitegate CCGT, will help enhance competition. Based on forward looking modelling undertaken by the RA's we expect the market power metrics for this scenario to develop as outlined in Table 6.4.

Table 6.4 Market Power metrics in SEM – removal of horizontal ringfencing

	2015	2020
Market share of ESB by output, range of minimum and maximum across scenarios	31-39%	18-34%
Wholesale Market concentration (HHI) (exclusive of Directed Contracts)	1873	750-1732
% of half-hours with RSI below 1.1 for ESB Group	4%-24%	6%-25%

On balance this indicates that wholesale market concentration is likely to remain at material levels under this scenario and therefore measures to enhance competition will need to be explored further. It is further important to note that in this market context concentration will initially increase due to the integration of ESB’s assets, but may then gradually decline. It is however uncertain to what extent investment in conventional capacity will necessarily continue as wind power becomes more predominant in the market.

Allowing the horizontal integration of ESB’s power generation arms has the benefits of enabling ESB to remove duplication of functions, and thereby reducing its costs. This includes information sharing and duplication of trading functions.

In the subsequent sections we discuss what this market context implies for reforming the market power mitigation strategy and for policy options to enhance market power and liquidity.

### 6.5.2. Options for reforming market power mitigation strategy

Absent the market power mitigation strategy, the horizontal integration of ESB has potential implications for the underlying competitive structure of the wholesale power market. We would expect that this structural change would mean that increasing regulatory intervention may be necessary. Several options are available to increase the impact of the current market power mitigation strategy such as:

- A stricter bidding rule regime (such as more explicit bidding formulas, or formulas approved ex-ante by the regulatory authorities).
- Increase the volume of Directed Contract to be offered. This could be done by lowering the overall threshold for the calculation from the current HHI of 1150 to a lower number. A similar approach change could also be adopted for an alternative measure.

In our assessment the market power mitigation strategy under this scenario will remain relatively effective for two reasons:

- the BCoP is likely to make it very difficult for parties to exploit market power;
- the volume of directed contracts is directly linked to a measure of market concentration in the generation market. The re-integration of ESB’s generation portfolio will cause the

concentration measure to increase sharply (at least in the short term), and therefore increase the total volume of Directed Contracts it is required to provide. This further limits the ability of ESB to exploit any market power arising from its position.

Under this scenario it is assumed that ESB CS remains a ring-fenced company while competition continues to deepen in the retail sector. The separation of retail supply arm from the generation arm further helps ensure that ESB CS will need to continue to innovate its contractual strategy to compete. This has the impact of presenting opportunities for entry in the market for forward market contracts, and may also help reduce any market power in the contracts market. As already noted, the EPO has been removed from ESB CS for industrial and commercial, coincident with the cessation of retail price regulation from the 1<sup>st</sup> October, and CER intends that it will be removed for ESB CS domestic customers once the criteria are met for this market, although this removal may be conditional on other measures being in place.

### **6.5.3. Options for improving competition**

The increased concentration in the wholesale market under this scenario presents a challenge for identifying measures to enhance competition. In particular, it is notable that the structural measures to ensure competitive conditions are satisfactory under this structure would be tantamount to reverting the structure to its original form. Given this we do not discuss specific measures in this section.

It is nevertheless the case that the competitive situation in the SEM may change following the introduction of the East-West interconnection, if the market rules are also changed to allow for effective competition from the GB BETTA market. Such competition would potentially reduce the ability of an integrated ESB group to exploit wholesale market power. It is, however, notable that market arrangements for Moyle suggest that changes are needed to facilitate effective flows across these interconnectors and developing such changes could take a period to be developed.<sup>45</sup> Ensuring effective cross-border trading is facilitated and third party access is made available on an effective basis might enhance competition sufficiently for the market power mitigation strategy to be reviewed under this scenario. It should however be noted that it would be preferable for the SEM and its market participants to have a period of experience of the interconnector regime before the mitigation strategy is reviewed.

### **6.5.4. Options for improving liquidity and availability of hedges**

Under this structural change we would expect the overall impact on baseline liquidity to be limited for two reasons:

- ESB CS will still have a significant demand for hedging contracts which will both serve as an opportunity for generators to provide hedging contracts, and ensure a level playing field against a supplier which sources its energy either from contracts, or from the GB wholesale power market.

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<sup>45</sup> It may be that the current system in which the spot price is only finalized after 4 days needs revisiting with a firm predictive ex ante price. Some changes may be needed in any case if there is market coupling with BETTA.

- The total volume of Directed Contracts available will increase as a result of the increase in the short term as a result of concentration in generation.

Under this scenario we consider the potential problem of market power in contract markets to be relatively limited as both the integrated ESB generation business and ESB CS would have an incentive to develop products and processes to ensure they could compete with integrated competitors (or competitors sourcing power from the GB wholesale market over the interconnectors)).

Similarly to the scenario with no structural change we would however note that the requirements on market participants to provide products should be proportional to their potential market power. For ESB the horizontal integration would mean initially this obligation to provide products to the market would increase however over time it may once again be reduced. Overall we would expect the appropriate measures to increase liquidity to be similar under this scenario to the no structural change scenario: i.e:

- an initiative to ensure transparency and better information in the market
- a measure providing hedges through either
  - a combination of a market power linked measure and one which all generators are subject to; or
  - a market maker.

We would however note that the impact of the market power linked measures would have a greater impact given the greater market share of the horizontally integrated ESB.

#### **6.5.5. CEPA's assessment**

While there are clear advantages in retaining separate legal ownership of generation companies if at some stage there might be divestiture leading to less concentrated ownership, the present restrictions on information sharing and trading impose costs on the ESB generating companies that do not seem compensated by the market power mitigation they offer, so long as the other market power mitigation measures (BCoP, MMU) remain effective.

### **6.6. Horizontal and vertical integration of ESB allowed**

In this section we discuss policy options appropriate if the horizontal and vertical ring fencing of ESB Group's companies is removed.

#### **6.6.1. Summary of outlook for competition and liquidity**

Under this market structure ESB would vertically and horizontally integrate. Under this option ESB CS consumer portfolio would be backed by the generation assets currently available to ESB PG and ESBI.

Another key difference is the impact on retail market power.

- ESB's generation capacity would provide an automatic and costless hedge for its retail activity, reducing or eliminating its need to trade contracts with other market participants unless this were mandated.
- Vertical integration would, absent undertakings, give ESB the power to deny other suppliers forward market wholesale market access unless prevented.
- ESB's liquidity proposals, in the context of an integrated company, are helpful, but at best they would mitigate a power that ESB does not currently hold due to the ring-fencing.
- Even if vertical integration were approved, together with certain liquidity requirements (on ESB and potentially other generators), this would not address the underlying lack of incentive on ESB to engage actively with market participants to offer liquidity of the right shape etc and increase reliance on the regulators to monitor, approve and track the type of contracts made available is what potential entrants need. It would also give potential entrants subsequent pause to consider whether, after they entered, they might be subject to various forms of hard-to-monitor discrimination.
- Whilst intermediaries may emerge to assist new entrant suppliers to access liquidity, this is far from certain, and the evidence of the rapid exit of new retail players in the GB market post 1998 is not encouraging. It should further be noted that the total potential market served by such parties will be significantly smaller compared to the current situation as:
  - An integrated ESB would have less of an incentive to facilitate trading (as this could potentially aid new entrant by reducing entry barriers)
  - The increase in horizontal concentration implied volumes of Directed Contracts of between 0.03 and 3.4 TWh / year (net of ESB own entitlement), this will effectively reduce the potential demand for hedges by up to 20% of the residual demand (assuming ESB groups share of total demand remains at around 40% as indicated in the State of the Nation report<sup>46</sup>.)
- Hence if vertical integration were to be approved, there would need to be a review of the nature of tariff regulation in retail markets that are not considered competitive.

### 6.6.2. Options for reforming market power mitigation strategy

Under the scenario we see both increased concentration in the wholesale generation market, and a combination between the largest players in both the retail supply of electricity and generation into a single dominant vertically integrated incumbent. It is important to note from the outset that under this structure one of the market power mitigation measures - the vertical ring-fencing between ESB CS and ESB's generating arms - is removed.

It is further worth noting that under these conditions the market power mitigation strategy through the Directed Contracts ensures that the RSI stays above 1.1 for more than 95% of periods in most scenarios. In order to ensure that the RSI remains above 1.1 for more than 95% of period across the scenarios the volume of DCs would need to be increased.

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<sup>46</sup> SEM – 10 – 057, page 40, Figure 26

On balance we consider that while the market power mitigation strategy could be expanded by introducing additional behavioural and/or regulatory measures, it would be difficult to address the removal of an important structural remedy by using behavioural measures alone. We do however understand that ESB could realise some efficiency saving by being allowed to operate as a vertically integrated company, but these unproven savings might be more than offset by less efficient purchasing of power.<sup>47</sup> In the following section we consider potential structural remedies which could allow the benefits of vertical integration to be realised, while at the same time promoting competition in the SEM.

### 6.6.3. Options for improving competition

In this section we discuss potential structural options improve competition and liquidity with the horizontal and vertical integration of ESB group as a starting point.

As outlined in earlier in this section, the competitive starting point under this scenario is significantly worse, both in terms of market concentration, and RSIs compared to the structural scenario where ESB is retained in its present subdivisions. In addition to this the vertical integration of ESB presents additional challenges. In it sector enquiry the European Commission identified some of the general issues with vertical integration in electricity markets:

“Vertical integration of generation and retail reduces the incentives to trade on wholesale markets. This might lead to a drying up of wholesale markets. Illiquid wholesale markets are a barrier to entry as they are characterised by higher price volatility. Volatile wholesale markets might oblige new entrants to enter as a vertically integrated generator and supplier, which is more difficult”<sup>48</sup>

In order to achieve greater competition, and to mitigate against the likely negative impact on liquidity in the SEM, a potential structural option would be to create an independent market participant with a suitable portfolio to maximise its potential ability to offer forward products to the market. In addition to this it would be desirable to ensure that the party would provide a potential incentive for retail suppliers who wish to contract with it.

Desirable properties of such as party would be for its structure to include:

- Low merit order gas fired generation;
- Coal generation based to ensure the party benefits from a portfolio effect in offering Contracts for Differences
- Potential additional mid merit generation if it helps reduce the risk of offering contracts and reduces market concentration.

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<sup>47</sup> Triebbs, Pollitt and Kwoka (2010) ‘The Direct Costs and Benefits of US Electric Utility Divestitures’ [EPRG1024](#) found that vertical unbundling of US utilities increased overall efficiency, and although retailing costs appear to have risen, the saving on buying power more competitively was far greater than the apparent increase in these costs, suggesting that they were more an accounting change of cost allocation than a real cost increase.

<sup>48</sup> Final Report of the European Commission Energy Sector Enquiry, [http://ec.europa.eu/comm/competition/sectors/energy/inquiry/full\\_report\\_part2.pdf](http://ec.europa.eu/comm/competition/sectors/energy/inquiry/full_report_part2.pdf); p128 and p. 169

The party would not have a retail position (but may possibly be allowed to enter the retail market after a period of time). Instead it would act as an independent producer, with access to both low merit order gas, and coal fired generation. Based on this portfolio, there would be an incentive for suppliers in the market to seek to contract with the party.

In order to investigate the competitive effect of modifying the industrial structure to introduce another party of this type we consider an entirely hypothetical scenario where the Moneypoint and Dublin Bay plants from the vertically and horizontally integrated ESB group are placed in a separate generating company (NewGenco).

Table 6.5 provides the higher level overview of the market characteristics of such a company

*Table 6 .5 Market power metrics in SEM (by output) –removal of horizontal and vertical ring fencing, NewGenco*

	<b>Installed capacity (no change)</b>	<b>2015 market shares (no change) high coal / low coal (medium GB gas price)</b>	<b>Installed capacity (with NewGenco)</b>	<b>2015 market shares (with NewGenco) high coal / low coal (medium GB gas price)</b>
ESB Group	4475 MW	32% / 39%	3225 MW	25% / 19%
AES	1830 MW	6% / 12%	1830 MW	6% / 12%
Bord Gais	734 MW	6% / 2%	734 MW	6% / 2%
Viridian	740 MW	5% / 1%	740 MW	5% / 1%
Endesa	876 MW	8% / 7%	876 MW	8% / 7%
NewGenco	0	0% / 0%	1250 MW	7% / 20%

As indicated in Table 6.5, not surprisingly, this has a dramatic effect on market shares as measured by output, both when coal is in merit and when it is not. As Table 6.6 suggests it would have a dramatic effect on reducing the HHI and RSI in the market to competitive levels.

*Table 6 .6 Market power metrics in SEM integration and NewGenco*

	<b>Vertical and horizontal integration (high coal / low coal) (in brackets is figures for high GB prices)</b>	<b>With NewGenco (high coal / low coal)</b>
% of half hours with RSI below 1.1 for ESB Group	5% (24%)	0% (3%)

HHI	1873	1161
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The portfolio effect of the Moneypoint coal station and the Dublin Bay CCGT station provides a potentially important combination in providing between 7 – 19% of output on a non-integrated basis. NewGenco would also have a structure similar to that of AES’s capacity in the SEM, which should induce competition between these parties. The volume of these parties would furthermore be available to other parties to contract (with the additional protection of competition law to protect against potential attempts to foreclose the market from the buyer side).

Under this condition the generation arm of ESB Group would be reduced in size and may put the new combined entity out of balance with its consumer demand. The entity would however still possess significant capacity in the form of CCGTs and peaking plant which means that it would have access to a substantial internal hedging capability. It would however still be subject to the competitive pressure which would occur if coal was to become an in-merit fuel. Under these circumstances ESB would need to procure hedges from NewGenco or AES on the same basis as other suppliers. If it choose not to do so it would then run the risk of other suppliers being able to obtain better hedging conditions.

The experience of the GB and other retail market suggest that competition concerns can arise in retail market even in the context of multiple competitors. In particular retail energy markets tend to have the following characteristics:

- churn levels proportional to discounts offered relative to competitors;
- a substantial proportion of consumers can be “sticky”, i.e. will not switch even if offered a substantial discount; and suppliers can easily price differentiate between different categories of users.

A further theoretical option could be a structural remedy to reduce ESB’s market share in both retail supply and generation. Creating two ring-fenced entities could allow each one to realise some of the benefits of vertical integration, while at the same time also promoting competition between the two entities. It would also be desirable for a degree of at least reporting and accounting separation to be maintained between each of the retail and generation arms. This will enable transparent monitoring of potential cross-subsidisation between generation and retail arms.

A further measure which could serve to increase competition in this scenario could be to undertake a facilitated one-off retail market “active choice”. Under such a campaign each supplier would be require to present former ESB consumers with an explicit choice of offers. The RAs would then collate the offers which could be sent by mail to each household. The two vertically integrated and ring-fenced entities would each be allowed to participate along with any other supplier. If a consumer was to decline making an active choice, then it would default to one of the supply companies by way of lottery, but receive the contractual conditions and prices offered through the campaign by defaults. Undertaking such an exercise could potentially limit the ability of incumbent suppliers to take advantage of the stickiness of some consumer groups.



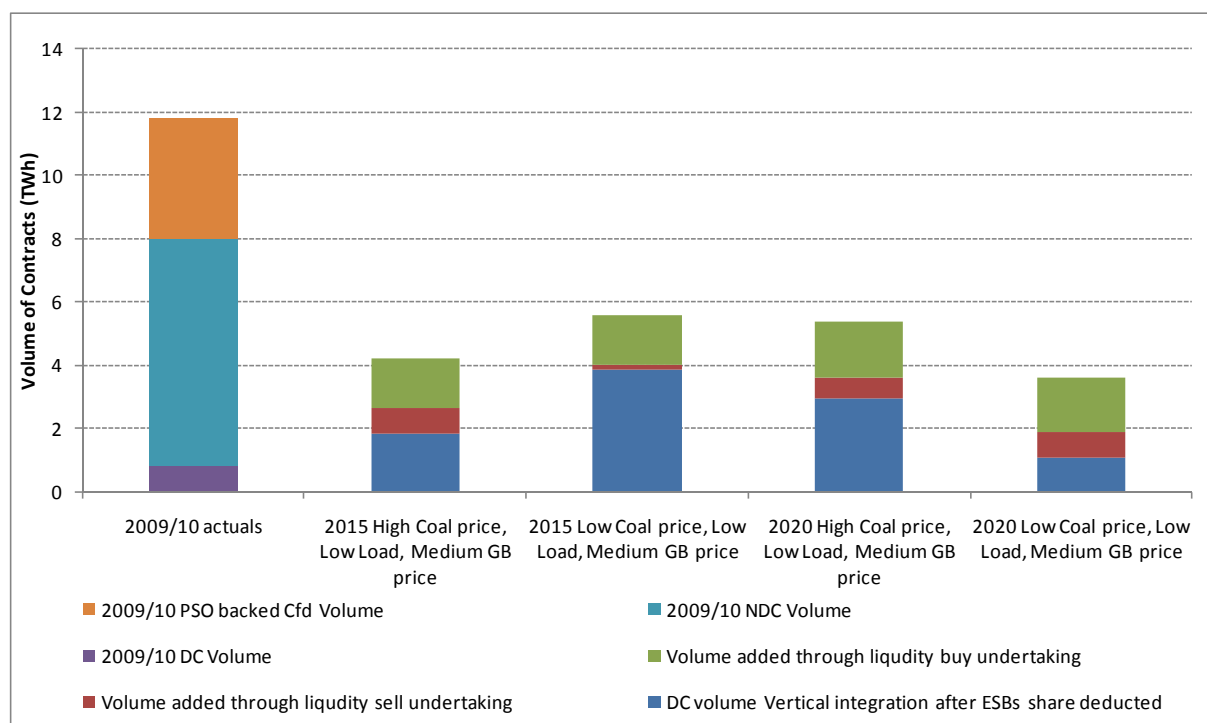
Creating two ring fenced entities would have the additional benefit of providing flexibility for the SEM to potentially moderate the market power mitigation strategy further to, for example, ensure better compatibility with the BETTA market, which would further facilitate both competition and liquidity. In addition to this it would keep the option open to allow the two companies to potentially re-integrate if effective regional Ireland-Northern Ireland-GB markets develop for retail and wholesale power through entry and market integration.

#### 6.6.4. Options for improving liquidity and availability of hedges

The provision of liquidity and hedges in the SEM under the vertically and horizontally integrated structure is problematic. As discussed elsewhere the volume of Directed Contracts would be likely to increase in the short term as a result of increased market concentration arising from the integration between ESB PG and ESBI. It is however possible that the Non-Directed Contract volumes will diminish sharply and the Directed Contracts would make up a significant proportion of the volumes offered by ESB to the market. It is also notable that the single biggest source of demand for Non-Directed Contracts - ESB CS - will have a lower requirement for contracts.

Figure 6.2 shows the potential impact on overall volumes of contracts available to the market in comparison to actual 2009/10 contract availability. The columns show the volume of DC's and release mechanism NDC's ESB would be making available to the market under its proposed liquidity undertaking. The figure only counts the DC volumes ESB itself would not be eligible to take up towards ESB's liquidity commitment.

Figure 6.2 Actual 2009/10 volumes and estimated volumes of Directed Contracts and liquidity buy and sell volumes for 2015 and 2020 Low demand scenarios



As can be seen the overall volume is likely to reduce sharply. It is however important to note that at the moment limited trading means that this may still not have any effect on price discovery.

Combined with a potential removal of the PSO levy back CfD's it could however squeeze the availability of hedges.

#### **6.6.5. CEPA's assessment**

Our overall assessment of the option of relying on behavioural remedies (by enhancing the market power mitigation strategy) to allow the vertical re-integration of ESB Group is unfavourable as doing so would replace a structural remedy with a likely less effective behavioural and/or regulatory remedy. The whole thrust of EU liberalization has been to unbundle generation first from transmission and then from distribution, with some pressure for further separation of distribution and retailing. In addition to this we note that the market power mitigation strategy does indeed potentially protect consumers against the potential horizontal effects. Allowing re-integration would come at the expense of reducing any scope for encouraging competition by reducing the scope of the market power mitigation strategy.

In addition to this it should also be kept in mind that potential investors investing in generating capacity in Ireland in anticipation of future de-regulation may not look favourable upon the re-integration of the incumbent. Vertical separation is seen as a fundamentally positive feature to encourage the development of liquidity in the market. In addition to this additional behavioural remedies will be perceived as greater regulatory risk. Parties examining the SEM as a potential investment candidate may consider that allowing vertical integration would increase the level of risk of operating in the market, and ultimately reduce the level of entry and investment in the market.

The regulators have an important role in signalling commitment to the development of competition. But of course a preferable option under these conditions would be to balance the re-integration of ESB Group with significant structural divestment (into separate ownership) to help facilitate the development of liquidity and wholesale market competition. In this regard we understand that the Irish Minister for Finance has appointed "The Review Group on State Assets and Liabilities" to consider, inter alia, the potential for asset disposal in the Public Sector including commercial State Sponsored Bodies.

## **ANNEX 1: SUMMARY OF RESPONSES TO STATE OF THE NATION REVIEW**

In this Annex we provide a summary of the key issues raised by the stakeholders who have responded to the joint Commission for Energy Regulation and Northern Ireland Authority Utility Regulation (NIAUR) consultation on: the Single Energy Market (SEM) Power & Liquidity, State of the Nation Review.

In Table A1 below we summarise the stakeholders responses to each of the questions stated in Section 2.3 of the consultation document. In addition we summarise the additional issues raised by the stakeholders that do not directly respond to the specific consultation questions.

Table A1: Summary of consultation responses

	Consultation question	Response	Source
1	How well are the market rules and monitoring arrangements working in terms of promoting contract liquidity, competition and market entry?	<p>The market rules do not promote liquidity. Liquidity is provided through the regulator directed CfDs Directed Contracts (DCs), which have been complemented by the offering of some Non-Directed Contracts (NDCs).</p> <p>BG are of the view that market liquidity could be manipulated without the introduction of rules to enshrine liquidity in the market. They suggest that a greater proportion of auctions should be offered through DCs rather than NDCs to provide greater certainty.</p>	Bord Gais
		<p>Viridian are of the view that the existing approach to determining both the price and quantity of the DCs is not transparent. Further the available range of DCs is inappropriate and misaligned with the needs of market participants. The current set-up reduces liquidity and competition in the market as the contracts favour domestic suppliers, which can deter market entry.</p> <p>Alternative options for DCs should be considered such as mandating the quantity of the DCs and auctioning the quantity to determine a market value. In addition a Mid-Merit 2 product is required so that the overall quantity of DCs available should remain at the current level.</p> <p>They are of the view that there is a discrepancy between the stated views of the regulators and the actions of the SEM Committee. In their opinion this creates regulatory uncertainty, which restricts market access.</p> <p>Viridian state that the Market Monitoring Unit has acted in a way that is reactive rather than proactive, in particular they note that the Unit is too reliant on generators raising complaints. They also state that the Unit should reduce its remit to increase its ability to act proactively on monitoring issues.</p>	Viridian
		<p>ESB are of the view that existing regulatory controls have been very successful in ensuring the smooth operation of the market to date.</p> <p>ESB state that the Market Monitoring Unit should include commentary on the effectiveness of the Bidding Code of Practice (BCOP), and include confirmation on the level of compliance of market participants with this regulatory control.</p>	ESB

		<p>Airtricity recapped its views from its response to the SEMC consultation paper on Market Power Mitigation in the SEM: Directed Contract Implementation Report 2010 (SEM-10-005), dated 12th March 2010. These were that there are issues with the delay between contract execution and delivery; the granularity of products, as well as the improper sizing of subscription windows; lack of standardized terms; lack of general guidelines to inform the conduct of voluntary contracting by the incumbents; lack of recognition of rapidly changing aggregate demand positions of suppliers in the market in determining volume eligibility; limitations on flexibility that can be exercised by suppliers by imposing daily subscription caps and requirements to fully subscribe to allocated quantities for eligibility in subsequent rounds.</p> <p>Regarding market monitoring arrangements, Airtricity have expressed the view that a suitably experienced body, independent of the RAs should carry out the role.</p>	Airtricity
2	<p>Do SEM participants have the potential to exercise market power in the short and longer run? Please provide any evidence available.</p>	<p>Believes that in theory there is potential for SEM participants to exercise market power, but in practice the incentives to do so have been removed by the regulators use of tools such as Directed Contracts and market monitoring arrangements.</p> <p>State that given the potential for market power, the issue is worth considering.</p>	Endesa Ireland

		<p>The combination of a Bidding Code of Practice (BCoP) and the Directed Contracts (DCs) reduce the scope to exercise market power in the SEM. Further the operation of the Market Monitoring Unit provides ongoing assessment of compliance against the BCoP.</p> <p>Synergen’s modelling of electricity market prices does not indicate that market power is being exercised.</p> <p>They state that regardless of the BCoP there is sufficient competition in some market segments to provide sufficient consumer protection through competitive pressures. Further the single-site nature of many of the participants makes the exercise of market power through strategies such as economic withholding unlikely in many instances.</p> <p>They also do not believe that there is any evidence of predatory pricing in the market.</p> <p>Their initial assessment is that the longer term exercise of market power to raise or lower SMPs has not occurred.</p> <p>In terms of the short-term use of market power, they are of the view that it is likely to be constraint related. They are unable to comment whether constrained on/off plant has sought to make short terms changes to bids to exploit its position on the system. They also note that the market monitoring unit should be mindful as to the market definition being applied to any investigation of market abuse.</p>	Synergen
		<p>Regulators initiatives to dilute market power in a nascent SEM have been relatively effective. Though this has focused on efforts to limit the ability of dominant incumbents to hoard generation capacity. In the long-term initiatives should focus on facilitating and incentivising liquidity, ensuring contact prices are set by the market, and allowing the market to emerge such that no one/two parties control the market for liquidity and risk management.</p>	Bord Gais
		<p>Viridian is of the view that there is significant potential for ESB PG to exercise market power, they derive this power largely from the prevailing regulatory arrangements.</p> <p>They state that ring-fencing remains to limit the incentives for ESB’s market power to be leveraged.</p>	Viridian

		<p>ESB contend that the key determinant of participants to exert market power is the application and monitoring of the BCOP, as this ensures that the wholesale markets settles based on the SRMC of the marginal plant on the system.</p> <p>They are of the view that the control is working as evidenced by the high levels of retail market customer churn experienced in recent years.</p> <p>The ESB caution against the use of any single metric to assess the level of market power, and states that a detailed assessment would be required to explain why a particular metric was used.</p>	ESB
3	Do market participants face contract liquidity constraints? If so, how are these exhibited, what is their impact, and how could these impacts be addressed?	<p>Agree that market participants (MPs) face liquidity constraints, would like to see the development of a short-term contracts market to facilitate customer switching and more efficient interconnector trading – at present the Directed Contracts (DCs) and Non-Directed Contracts (NDCs) market is only offered over a short window once a year.</p> <p>State that the impact of the CfD credit cover arrangements on liquidity in the contracts market should be examined by the regulators.</p>	Endesa Ireland
		<p>Constraints exist around: the price set for contracts; when they are available; how much notice is given to participants on their availability, and how reliable they actually are. Generator User Agreements (GUAs) and the dominance of incumbent integrated utilities inhibit the ability of parties to strike bi-lateral hedge contracts in the market. BG would support the termination of GUAs and other such obligations/agreements that prevent the market from pricing and negotiating liquidity.</p>	Bord Gais
		<p>Viridian states that a Mi-Merit 2 product should be developed to reduce concerns over the DC contracts and the formulation of both their price and quantity.</p>	Viridian
		<p>Airtricity note that liquidity is very poor. Available contracts are limited and most have very long delivery periods. No options for true hedges exist as there are no sell-markets, only buy-markets. The high floor prices do not encourage competition and do not reflect true residual values for electricity. Possible solutions could be sought by examining the case in UK and Europe where electricity can be bought physical forward and by replacing floored auctions with a bids-and-offers mechanism.</p>	Airtricity

4	How do you foresee the contracts market developing in the SEM, over the medium and long-term?	<p>Depends on how the regulators regulate incumbent generation and supply companies. The regulators will need to consider and consult on the appropriate degree of regulation of incumbents to ensure that a competitive market develops. Measures beyond non-discrimination clauses and EPO requirements in licences may be required. In addition the move to an all-island retail market would improve contract liquidity – they would support progress on this issue.</p> <p>The move to a regional market will improve contract liquidity. Support the development of a framework for regional integration.</p>	Endesa Ireland
		<p>States that the vertical integration of ESB would reverse the progress made in developing liquidity into the SEM. Unqualified re-integration would effectively restate a bi-lateral market on the market. There would also be no incentive for ESB to offer CfDs externally.</p> <p>BG suggests that the future termination of GUAs will aid liquidity in the market and offer more options to both generators and suppliers in sourcing hedge counterparties.</p> <p>In addition the development of day-ahead market coupling with the GB market might improve liquidity and the choices and prices available to participants in hedging their portfolios.</p>	Bord Gais
		<p>The future development of the SEM markets is largely dependent on future changes to rules and policy.</p> <p>In the absence of regulatory requirements on ESB PG to sell power through regulated platforms the contracts market in the SEM would collapse.</p> <p>There is potential for more liquidity in the market following the introduction of the new interconnector but this will be dependent on the market rules governing its use.</p>	Viridian
		<p>Airtricity do not see much prospect for the development of vibrant contracts markets when the only sizable generators continue to offer CFD products priced well in excess of fair value. In the absence of physically delivered contracts markets, the only way we can see of addressing this will be to comprehensively address commercial cross-border trading across the interconnectors, enabling market participants to effectively seek contracting parties outside the SEM.</p>	Airtricity



5	<p>What are the costs and benefits of Directed Contracts (DC) as currently configured? How well does the current price setting mechanism of the DCs work in practice? Should alternative price setting mechanisms be considered and what would be the costs and benefits?</p>	<p>Are of the view that the implicit sunset provisions of DCs make them an appropriate tool for mitigating market power. As the market share of incumbents fall, the regulators role in determining wholesale prices will fall.</p> <p>DCs also ensure that contracts are made available to the market with an independent price-setting mechanism. For DCs to continue to be effective it is important that the price-setting mechanism continues to be unbiased and independent.</p>	Endesa Ireland
		<p>The prices for DC auctions are typically not published until after the NDC auctions have taken place. The general market trend has been for NDC prices to be higher than DC prices due to the associated reserve prices of the NDC auctions. BG energy suggests that DC prices are used to set the reserve prices for the NDC auctions. This would be a more transparent mechanism than currently used to set NDC reserve prices.</p>	Bord Gais
		<p>The regulators should improve the transparency of price setting for the DCs. This is particularly important if DC contracts are used as a benchmark for the market – typically DCs have been priced below NDC contracts, the reasons for this should be considered in the review.</p> <p>The biggest benefit of the DC arrangements is that it mitigates the exercise of market power by ESB PG by mandating them to sell power.</p>	Viridian
		<p>Airtricity states that directed contracts only offer volume hedges. With the likely deregulation of the retail market where these will no longer be used to set tariffs, there will be limited hedging benefits from them. A physical market is more likely to provide improved liquidity and transparency, but then such a market does not align with the SEM principles and design.</p>	Airtricity

6	Should the PSO-related contracts continue, taking account of the interests of the end customer?	<p>Are of the view that the Capacity and Differences Agreement (CADA) could be described as a ‘PSO-related CfD’, while they note that it was not explicitly referred to by the regulator, they state that:</p> <ul style="list-style-type: none"> <li>• The CADA was entered into following a competition and is now enforced by a legally binding contract;</li> <li>• Tynagh are unsure why the regulator is asking whether it ‘<i>should continue</i>’, given that a binding contract is in place it ‘will continue’ in their view.</li> <li>• Tynagh state that the interests of the consumer should have been taken into account at the time of designing and running the 2003 Capacity Competition.</li> <li>• The CADA is an agreement critical to the continuation of Tynagh’s business model.</li> </ul> <p>Tyngagh seek clarification as to whether the regulators intend to consider the CADA as a ‘PSO related CfD’.</p>	Tynagh Energy Limited
		<p>States that auctions for PSO-backed contracts are necessary to foster competition in wholesale and retail markets. Of the view that the ESB should hedge fuel-related PSO costs to eliminate exposure to fuel price volatility.</p>	Endesa Ireland
		<p>PSO contracts have provided a level of flexibility in the type of hedge contracts offered to the market.</p> <p>Note that the question is likely to be related to the Department of Communication, Energy and Natural Resources’ impending review of the PSO and its inclusion of peat plant. If following the review PSO contracts are no longer made available to the market, regulators will need to look at alternative ways to replace mid-merit and peaking hedge contracts.</p>	Bord Gais
		<p>PSO contracts should be maintained from a wholesale market perspective to the extent that they contribute to liquidity of the contract market.</p>	Viridian
		<p>Airtricity is not aware of any real benefits accruing to end customers from the PSO-related contracts. It does have concerns however about the potential to introduce additional costs over and above what already exists in the support schemes the PSO funds.</p>	Airtricity

7	In terms of liquidity and competition, what are the likely impacts on the SEM of the next interconnector and Ireland-UK market coupling?	<p>Believes that it would have a positive impact on contract liquidity and competition – the extent of benefit depending on capacity access arrangements and the success of regulators in developing rules to allow for efficient cross-border trading.</p> <p>The barriers to entry identified in the regulators consultation paper on regional integration will need to be addressed prior to the commissioning of the East-West Interconnector.</p>	Endesa Ireland
		<p>Believes that it would increase liquidity and competition in the market, although the impact will be limited by physical, transfer limits, differences in market arrangements between BETTA and the SEM and the extent of price differences between BETTA and the SEM.</p> <p>They understand that further interconnection is required to achieve full market coupling, which will give time to consider how the different market rules can be combined.</p> <p>The overall outcome could be increased liquidity, significant scheduling and dispatch questions to address and the longer-term likelihood that the benefits of interconnection will only allow the potential liquidity to be realised once SEM and BETTA are more closely aligned.</p>	Synergen
		<p>The developments will augment the level of competition in the wholesale market – though this will depend on how the arrangements are implemented.</p> <p>As a centrally dispatched market BG energy would suggest that this is limited to the bi-lateral BETTA market.</p> <p>BG cautions against actions that lead to the SEM developing in a way that aligns it more closely with BETTA, as BETTA is currently being reviewed. The relevant authorities need to coordinate future actions.</p>	Bord Gais
		<p>The full potential benefits of the next interconnector will only be realised if the correct market rules and rules for the sale of capacity on the interconnectors are put in place.</p>	Viridian

		Airtricity notes that the coming on-stream of the East West Interconnector and the coupling of Ireland and Great Britain will most likely bring some improvements to liquidity and competition. However it notes that these are likely to be marginal given the dominance of the incumbents on the local system and that the design of SEM precludes a physical market and so implies that trading opportunities are constrained and can in no way respond to real time events. If a physical market as in most of Europe were introduced into SEM, this could open out much more competition and liquidity, improving the utility of the interconnectors. In addition if forward physical trading took place participants could trade out additional products such as spark spreads.	Airtricity
8	Are there locational constraints that could give rise to the potential to exercise market power? How is market entry best promoted where there is congestion?	<p>Agree with statement in consultation paper that all market participants have the potential to exercise market power behind an export constraint. The Grid25 program will be important to remove transmission constraints – they believe that greater transparency is required around the program and that the development of a steering committee could help to ensure timely delivery.</p> <p>They do not believe that new entry should be promoted where there is congestion – current market rules provide sufficient incentives for new entry to invest in unconstrained areas. The regulators proposals to ignore firm access rights in constrained areas will eliminate investment signals for TSOs and will cause significant uncertainty for generators.</p> <p>Believes that the TSOs should be incentivised to minimize congestion. Where locational constraints are uneconomic to eliminate, regulators should explore the possibility of offering Reliability Must Run contracts for units behind the constraints – as introduced in SEM – 114 – 06.</p>	Endesa Ireland
		The best approach to promoting market entry is to provide strong incentives for network operators to deliver a quick and efficient network roll-out in the future.	Bord Gais

9	Is there a case to allow vertical or horizontal integration/re-integration of ESB? What would be the costs and benefits? What changes to market rules (especially market power mitigation measures), if any, should accompany further integration? These changes might either involve the relaxation of rules or addition to the rules. What other remedies should be considered?	<p>Does not consider that vertical or horizontal reintegration of ESBs should be permitted until it is determined that all sectors of the retail market are deemed fully competitive.</p> <p>State that if the regulators are to allow further integration, appropriate regulatory measures would be necessary to maintain some liquidity in the contracts market – the regulators should note the problems encountered in the UK on this issue.</p>	Endesa Ireland
		<p>Any decision on re-integration would need to take place following an extensive analysis of the potential impact on the market.</p> <p>BG does not support the suggested vertical re-integration of ESB's generation and supply businesses, as it would erode wholesale liquidity weakening competition in both wholesale and retail markets.</p> <p>In particular they cite ESBs significant market power due to its position as the largest provider of hedge contracts in the market.</p> <p>BG does not necessarily object to horizontal re-integration for operational purposes – though this is premised on the basis that there is a clear demarcation and separation between the generation and supply business.</p>	Bord Gais
		<p>Viridian believe that it would only have a negative effect and should not be permitted.</p>	Viridian

		<p>The Consultation paper should consider the potential impact on customer welfare that may arise following the removal of business separation obligations on ESB.</p> <p>In the view of ESB the removal of business separation would facilitate more effective market risk management by ESB in-line with standard industry practice. It would also provide ESB with more scope to innovate for the benefit of the customer.</p>	ESB
10	How would increased ESB integration impact the contracts market? If adverse impacts are anticipated, how would they be best mitigated?	It would significantly diminish liquidity in the market, though this could be mitigated by not allowing re-integration or by requiring a percentage of ESB PG and ESB CS contracts to be sold to / purchased from independents.	Endesa Ireland
		Viridian believe that it would only have a negative effect and should not be permitted.	Viridian
11	Are the current ring-fencing arrangements for ESB and Viridian adequate?	<p>In their view the current arrangements are adequate, but they have concerns that with the move to deregulation and potential for full reintegration, they have concerns of the potential impact on the market.</p> <p>They note that these companies have an unfair advantage, particularly access to historic data for the large majority of electricity customers, which gives them an advantage in developing offers to attract or maintain these customers.</p>	Endesa Ireland
		<p>They comment only on their own ring-fencing arrangements.</p> <p>They note that the regulators calculation of market concentration includes Synergen within the ESBI grouping despite them being ring-fenced from ESBI and the ESB regulated business.</p> <p>They regard existing ring-fencing arrangements as excessive and not required in today's all-island market.</p>	Synergen

		<p>BG would support horizontal reintegration of ESB's supply and generation businesses, while keeping the current ring-fencing mechanisms in place between the separate businesses.</p>	Bord Gais
		<p>The current ring-fencing arrangements are considered to be both adequate and appropriate, and they would caution against any relaxation or removal of the arrangements.</p> <p>Viridian is of the view that the main issue with the ring-fencing agreements is the regulators misuse of them. In particular delays in the implementation of ring-fencing arrangements.</p> <p>Viridian call for regulators to adopt a common approach to the use of ring-fencing arrangements.</p>	Viridian
<b>12</b>	Are there any other ways of addressing market power in the spot and/or contracts markets which you think should be considered?	<p>Regulators should relax and then eventually remove their regulatory tools to mitigate market power as the SEM develops. Relaxing the bidding principles should be examined for independent players in the medium-term and for both independents and incumbents in the longer-term. Strict bidding principles or rules may be stifling innovative bidding strategies which deny end-customers the full benefits of a competitive market.</p> <p>Existing provisions for the use of ex-ante regulation – through the market monitoring unit - could be used more effectively by increasing transparency around the units monitoring and sanctioning activities.</p> <p>Future changes to market rules require full transparent consultation and more reasoned decision making.</p> <p>They are of the view that spot markets are generally working as intended, but that significant improvements are possible in relation to, but not limited to DCs – in particular relevant to volumes to be sold, products to be made available and the appropriate mechanisms for these sales.</p>	<p>Endesa Ireland</p> <p>Bord Gais</p> <p>Viridian</p>
<b>13</b>	Other issues / statements	<p>The lack of a forward curve, brokerage services, exchanges etc. reflect an obvious lack of liquidity that represent a fundamental issue for the SEM going forward.</p> <p>IWEA state that the review of market power and liquidity in the SEM should take place within a transparent policy framework given the other ongoing issues under review in the SEM.</p> <p>They also believe that the review should consider the broader investment signals and conditions necessary to encourage efficient investment.</p>	<p>AES</p> <p>Irish Wind Energy Association</p>

		<p>The regulators need to consider a broader range of metrics when seeking to determine the extent of market power in the SEM. In particular they note that as the largest provider of hedge contracts in the market ESB has the potential to considerably diminish liquidity in the wholesale market and consequently in the supply market.</p>	Bord Gais
		<p>Market liquidity in the SEM is currently driven by the regulatory directives placed on incumbents. The recent improvements in liquidity – in terms of number of auctions held and flexibility of contracts offered do not necessarily reflect a robust level of liquidity.</p> <p>The price setting mechanism is an important determinant of liquidity. At times the reserve price of some contracts have been set above market prices, which rendered the contracts valueless as a result eroding liquidity. The lack of a facility for re-trading hedge positions between market participants reduces the level of liquidity in the market.</p> <p>Meaningful and value-added liquidity is a function of the number, length and flexibility of contract offerings but also transparency in the price setting mechanisms and flexibility in the trading platform.</p>	Bord Gais
		<p>For the BCOP to be a reliable market power mitigation tool, greater strength and transparency is needed in the oversight and capabilities of the market monitoring unit.</p> <p>This will become increasingly important as developments in market integration arise. In particular intra-day trading will remove some of the market power mitigation mechanisms in the SEM.</p> <p>BG advocates for the development of more transparent and forceful monitoring by the market monitoring unit to instil confidence in the market for all participants.</p>	Bord Gais
		<p>States that the use of the HHI measure to measure market concentration is incorrect for the electricity sector. They advocate for the use of the Residual Supply Index measure.</p>	Viridian
		<p>State that the level of regulatory risk is being increased by the failure of the regulators to adhere to best regulatory practice.</p>	Viridian



		<p>Viridian view the following pieces of work important for the regulators to carry out:</p> <ul style="list-style-type: none"> <li>• Analysis of electricity specific market structure measures/metrics – RSI (and/or the binary equivalent, Pivotal Supplier Index (PSI));</li> <li>• Comparison of RSI values with current HHI approach;</li> <li>• Consideration of the implications of adopting an alternative market power metric as a basis for determining DC volumes;</li> <li>• Robust regression testing of DC pricing formulae and pricing analysis that is made available to market participants to enhance confidence in the process given the stated concerns;</li> <li>• Consideration of the proposal to auction mandated DC volumes;</li> <li>• Adherence to best regulatory practice and the RAs’ own published guidelines on these matters.</li> </ul>	Viridian
		<p>Believe that the regulator needs to make a fundamental decision about its use of regulatory controls in place of allowing the market to determine outcomes. ESB is of the view that greater market dynamics could be introduced by the removal of existing regulatory controls.</p> <p>ESB also state that the regulators should provide more information about the context within which the review of market power is taking place.</p>	ESB
		<p>ESB states that the regulators should provide information to stakeholders on the proposed duties and powers of regulatory authorities as part of the Third Package. In particular the potential for an increased role for the Market Monitoring Unit in the emerging regulatory environment.</p>	ESB
		<p>ESB believe that an overview of the structural model of all SEM market participants could further aid stakeholder understanding of the market dynamics. This should include an assessment of the structure of market participants in other markets.</p>	ESB
		<p>The Consultation paper would benefit from an explanation from the regulators on the risks facing participants in the upstream and downstream sectors.</p> <p>The Consultation should also assess the probability of the market risks faced by all participants occurring. The risk assessment could be supplemented by an overview of the typical risk management and mitigation techniques available to market participants.</p>	ESB

## ANNEX 2: SUMMARY OF TERMS OF REFERENCE FOR DAY AHEAD TRADING WORK

### Objectives

To develop proposals for a means of facilitating trade at the day-ahead stage across the interconnectors between the SEM and GB, having regard to:

- the development of EU Network Codes which will, in all likelihood, mandate the use of implicit auctions at the day ahead stage;
- the ongoing work on intra-day trading across the interconnectors.

### Terms of Reference

The terms of reference called for economic and technical advice on how best a day-ahead price in a gross mandatory pool such as the SEM could be established, always bearing in mind that the ultimate objective is to use that price to market couple the SEM and GB markets using implicit auctions.

The TOR set out the key issues to be addressed as:

- what is the experience of market coupling in other markets (e.g., the Trilateral Market Coupling area, CWE, Denmark-Germany) and does it have any relevance for the SEM, given the very different market designs in Continental Europe?
- what is the best means of establishing a liquid day-ahead market and a reliable day-ahead price in the SEM, in the light of the potential establishment and recurring costs of establishing a market, the costs of concomitant TSC changes and potential benefits?
- if market coupling is deemed to be best achieved through the auctioning of day ahead CfDs, how can the RAs be sure that liquidity would be sufficient to incentivise participants and traders to use the day-ahead CfD market?
- is the option of mandating that all trades across the ICs take place at the *ex ante* price in the SEM feasible and practicable? What risks would it impose on market participants? How efficient would the market coupling solution be in practice?
- what are the implications of the proposed solutions emerging from the Modifications Committee on intra-day trading for a day-ahead price coupling method for the SEM?
- are there any interactions between a day-ahead price for the purposes of interconnection and market coupling and wider CfD market liquidity issues in the SEM?

Others considerations include:

- Is the presence of a liquid organised market in Ireland a necessary condition for day ahead coupling in the SEM? If so, how can one be established? If one cannot reliably be established, is the existence of an organised market (or markets) in GB sufficient?

- How relevant is the 'spur' solution being developed for coupling the GB and Dutch markets across the BritNed interconnector for the SEM? Could it be copied in the SEM? If so how?
- Does the presence of two power exchanges (APX and N2EX) in GB complicate matters for coupling between the SEM and GB?

## ANNEX 3: SCENARIO METRICS

Table A3.1: 2015: higher level metrics

	average margin - total demand (MW)	min margin - total demand (MW)	Net Import/Exports (TWh)	Average SMP price (€/MWh)	Max SMP price (€/MWh)	Min SMP price (€/MWh)
High Coal High GB	4398	1137	8.10	67	483	0.001
High Coal Medium GB	5262	2558	0.44	59	582	0.002
High Coal Low GB	6200	2909	-7.65	58	1000	2.906
Low Coal High GB	4408	1014	8.11	63	1000	0.001
Low Coal Medium GB	5163	2589	1.29	56	357	0.816
Low Coal Low GB	6176	2909	-7.51	56	1000	2.905

total Consumption (TWh)	Wind output (MW)	peak load (MW)
39.81	11.07	7971

Table A3.2: 2020 higher level metrics

	average margin - total demand (MW)	min margin - total demand (MW)	Net Import/Exports (TWh)	Average SMP price (€/MWh)	Max SMP price (€/MWh)	Min SMP price (€/MWh)
High Coal High GB	3995	925	8.06	68	1000	0.0004
High Coal Medium GB	4754	1946	1.35	57	1000	0.0003
High Coal Low GB	5670	2053	-6.63	57	1000	0.0003
Low Coal High GB	3995	557	8.10	63	1000	0.0003
Low Coal Medium GB	4653	1528	2.21	55	381	0.0007
Low Coal Low GB	5636	2053	-6.35	53	1000	0.0005

total Consumption (TWh)	Wind output (MW)	peak load (MW)
43.82	17.06	8700

total Consumption (TWh)	Wind output (MW)	peak load (MW)
44.52	17.06	8822

## ANNEX 4: RSI CURVES

Chart A4.1 RSI for 2015, high coal, and high GB price

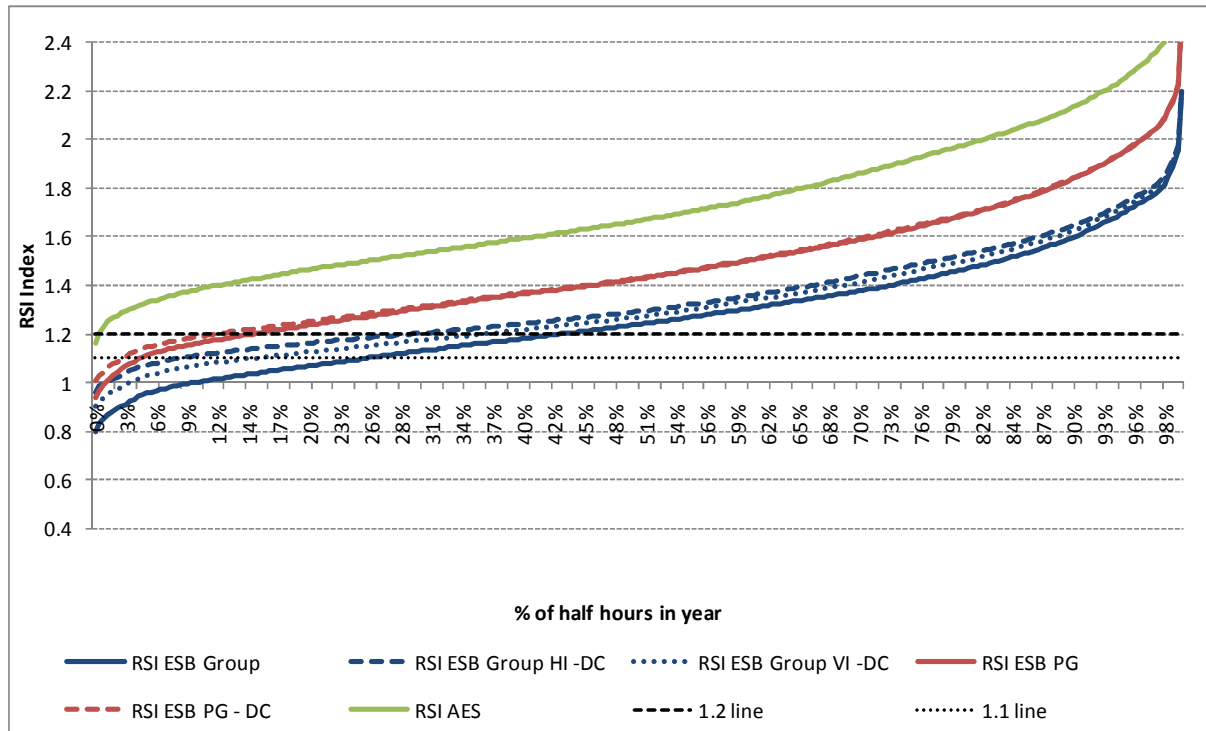


Chart A4.2 RSI for 2015, high coal, and medium GB price

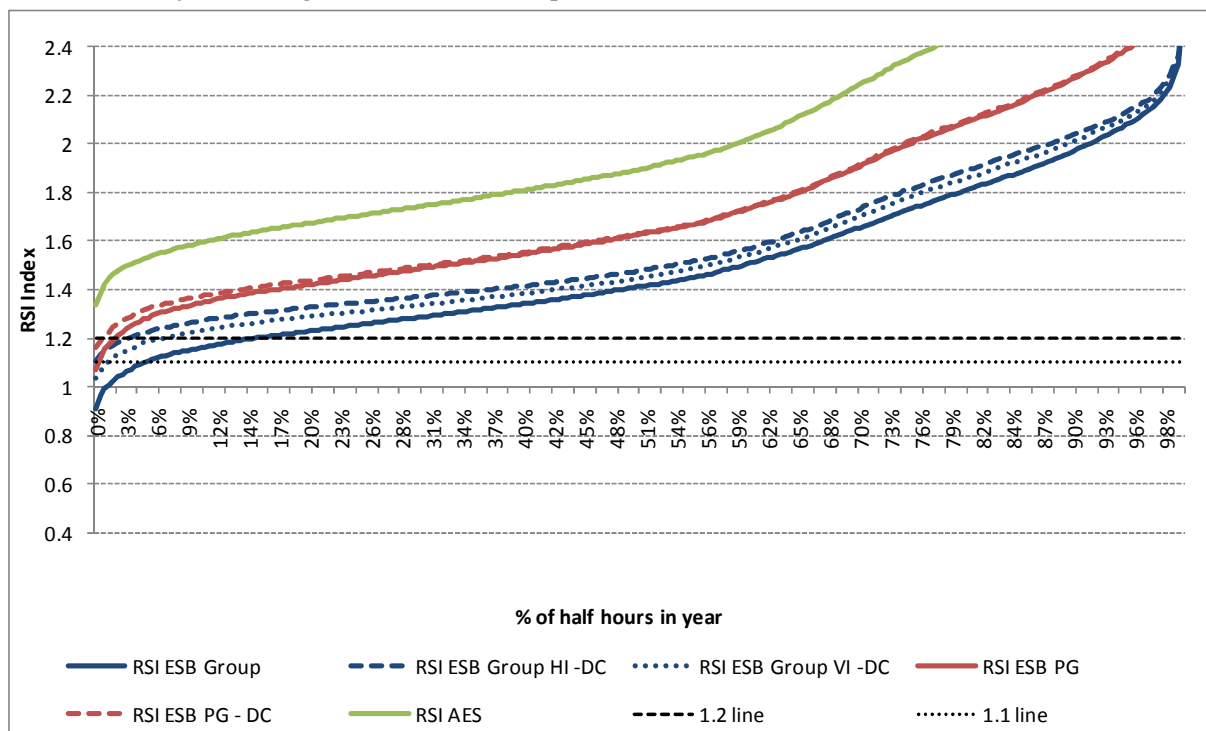


Chart A4.3 RSI for 2015, high coal, and low GB price

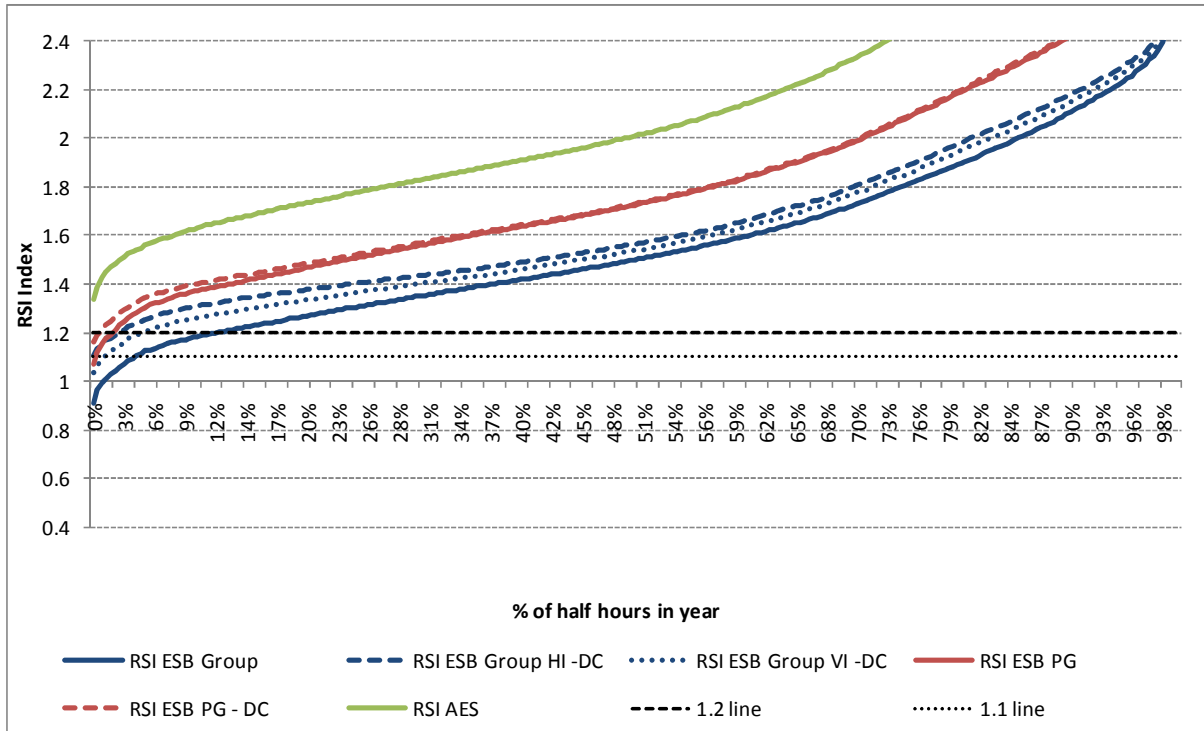


Chart A4.4 RSI for 2015, low coal, and high GB price

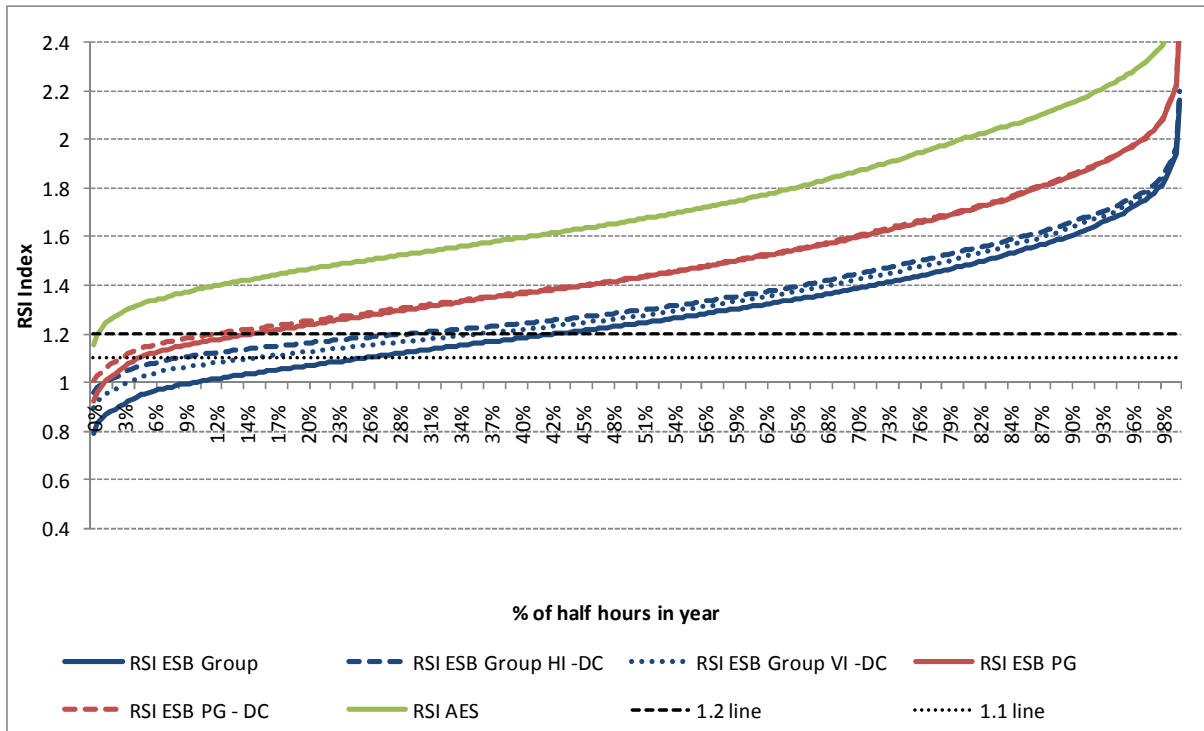


Chart A4.5 RSI for 2015, low coal, and medium GB price

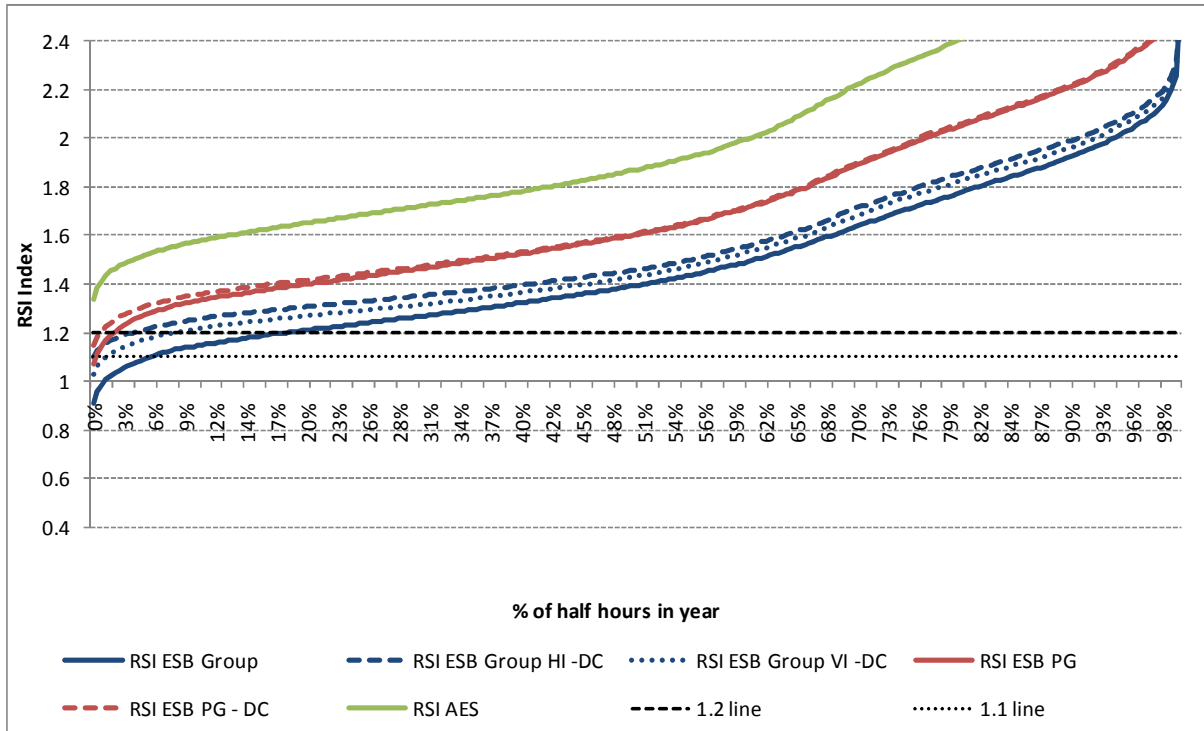


Chart A4.6 RSI for 2015, low coal, and low GB price

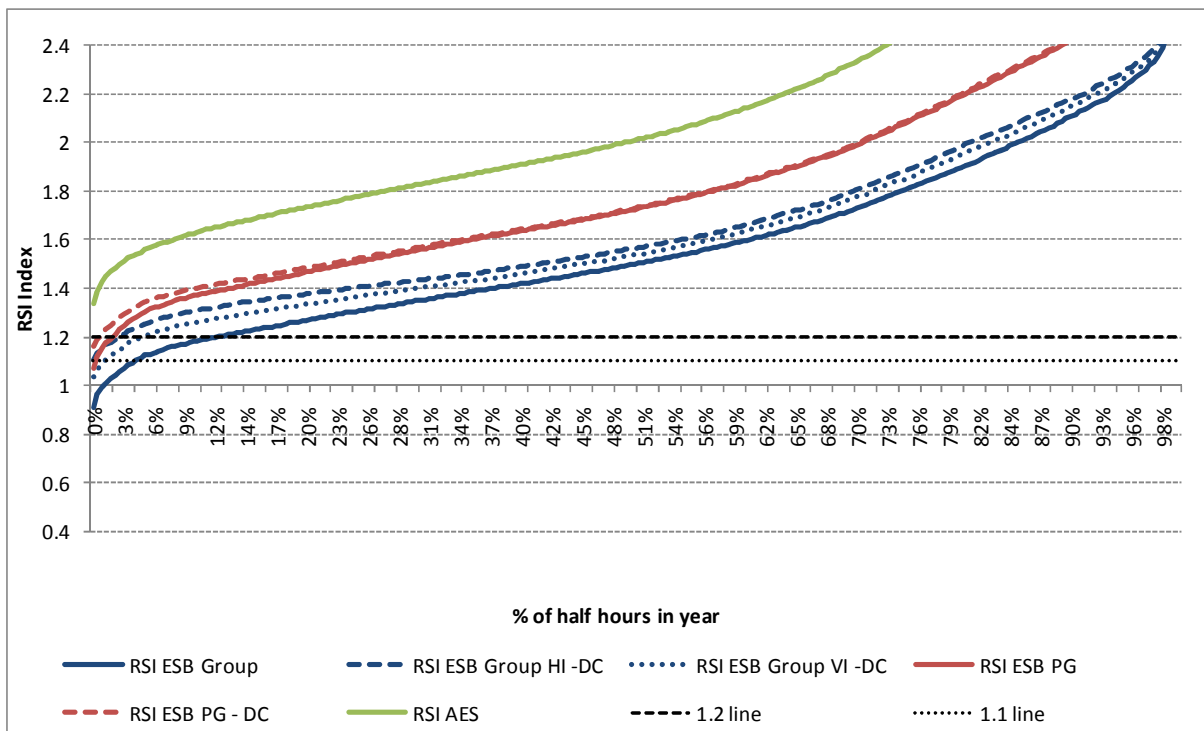


Chart A4.7 RSI for 2020, high coal, and high GB price

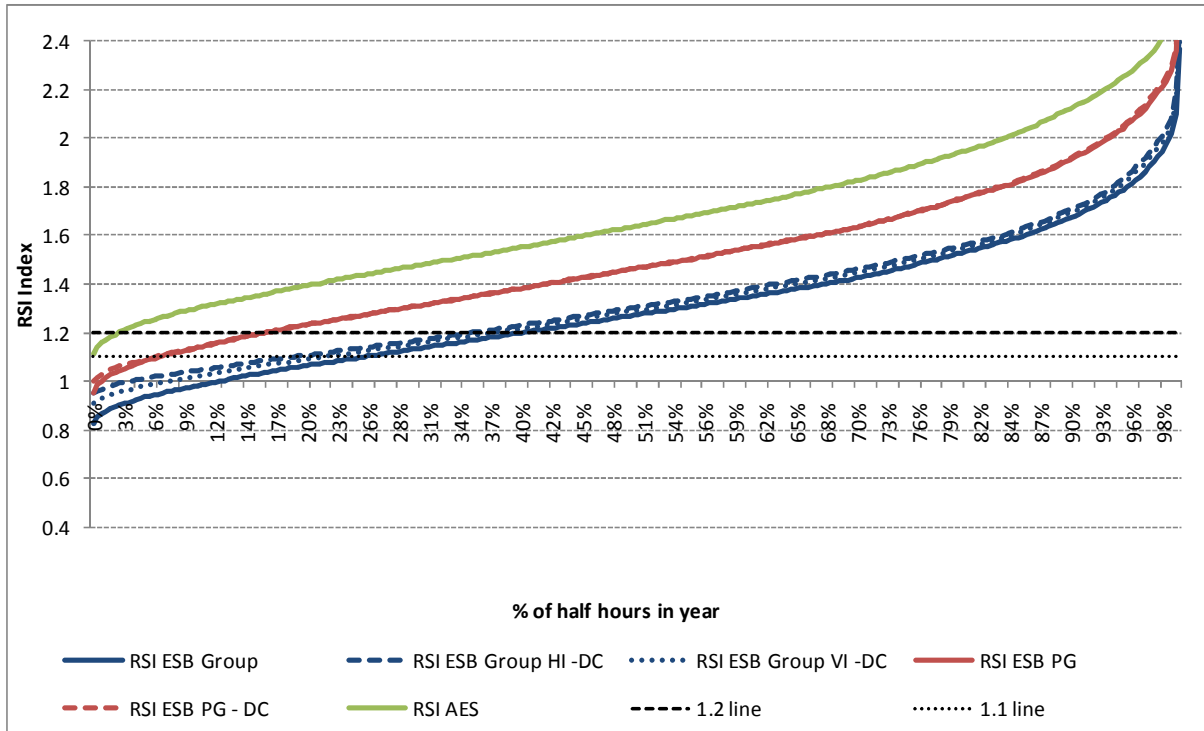


Chart A4.8 RSI for 2020, high coal, and medium GB price

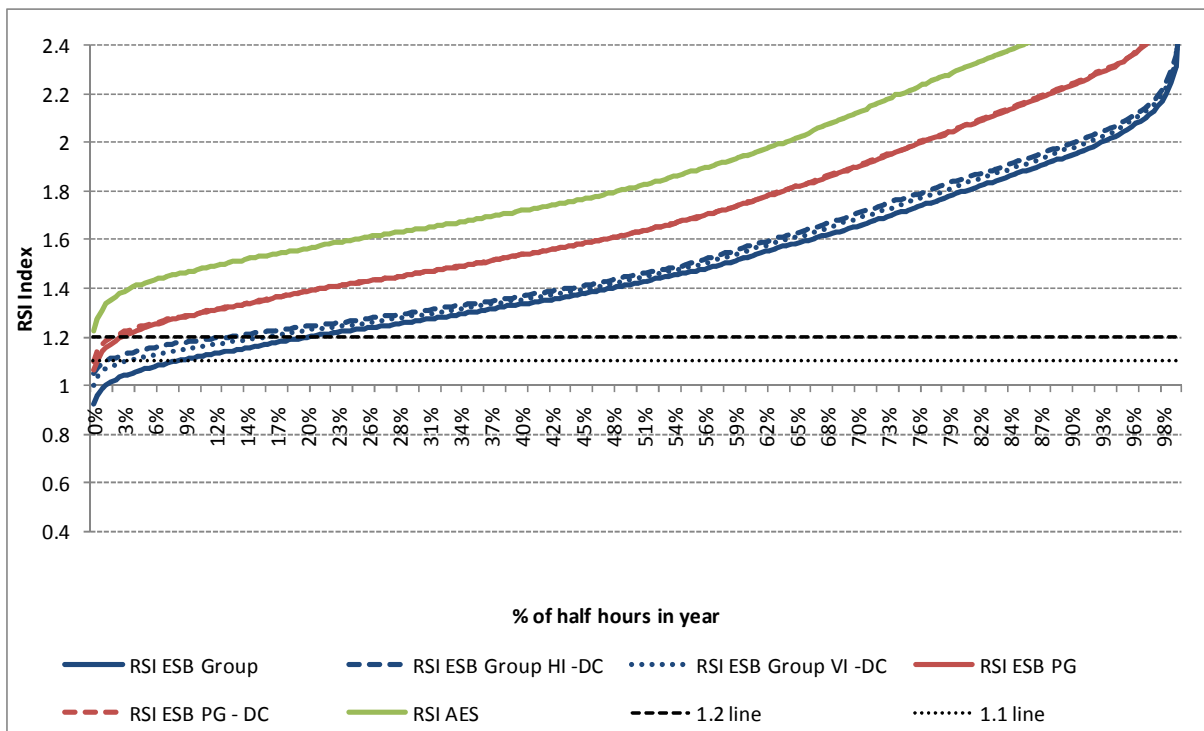




Chart A4.9 RSI for 2020, high coal, and low GB price

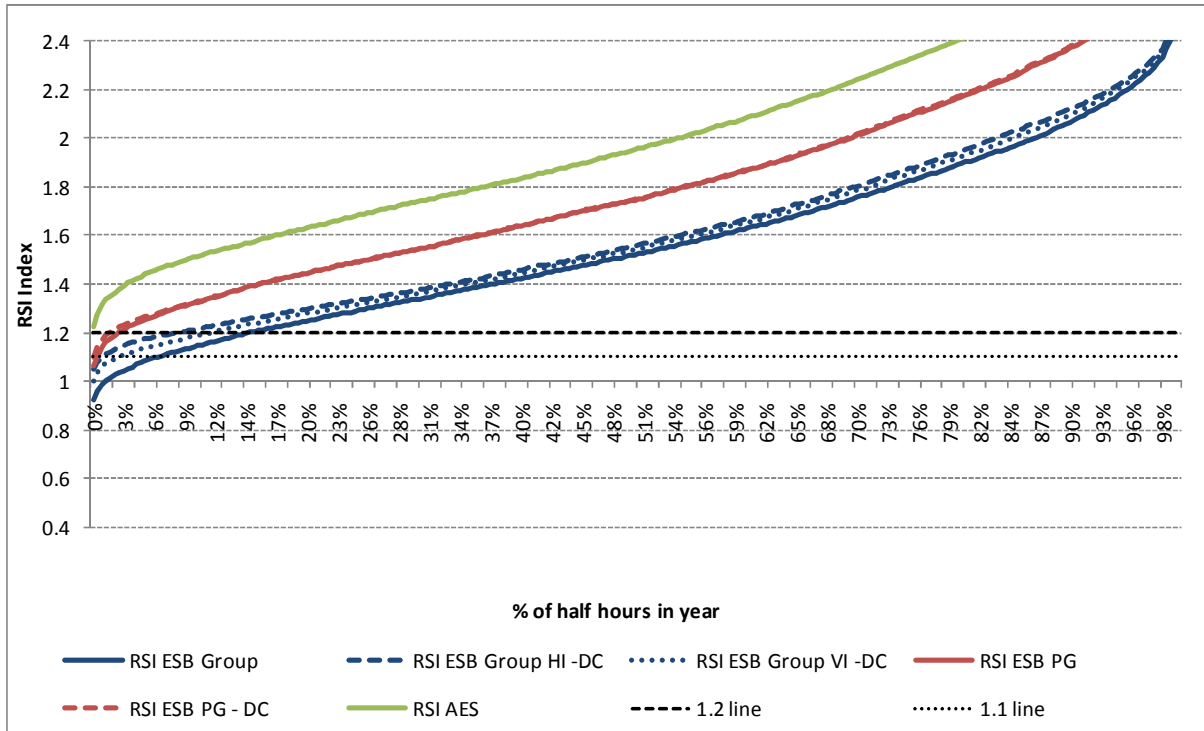


Chart A4.10 RSI for 2020, low coal, and high GB price

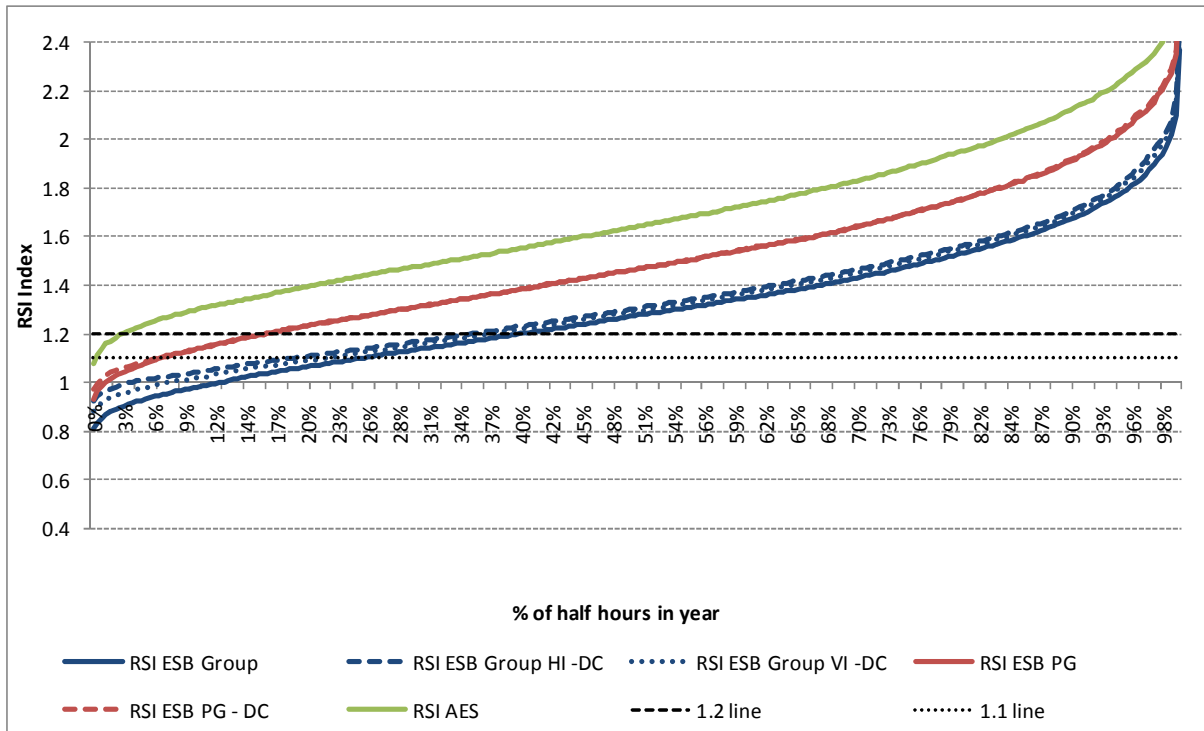


Chart A4.11 RSI for 2020, low coal, and medium GB price

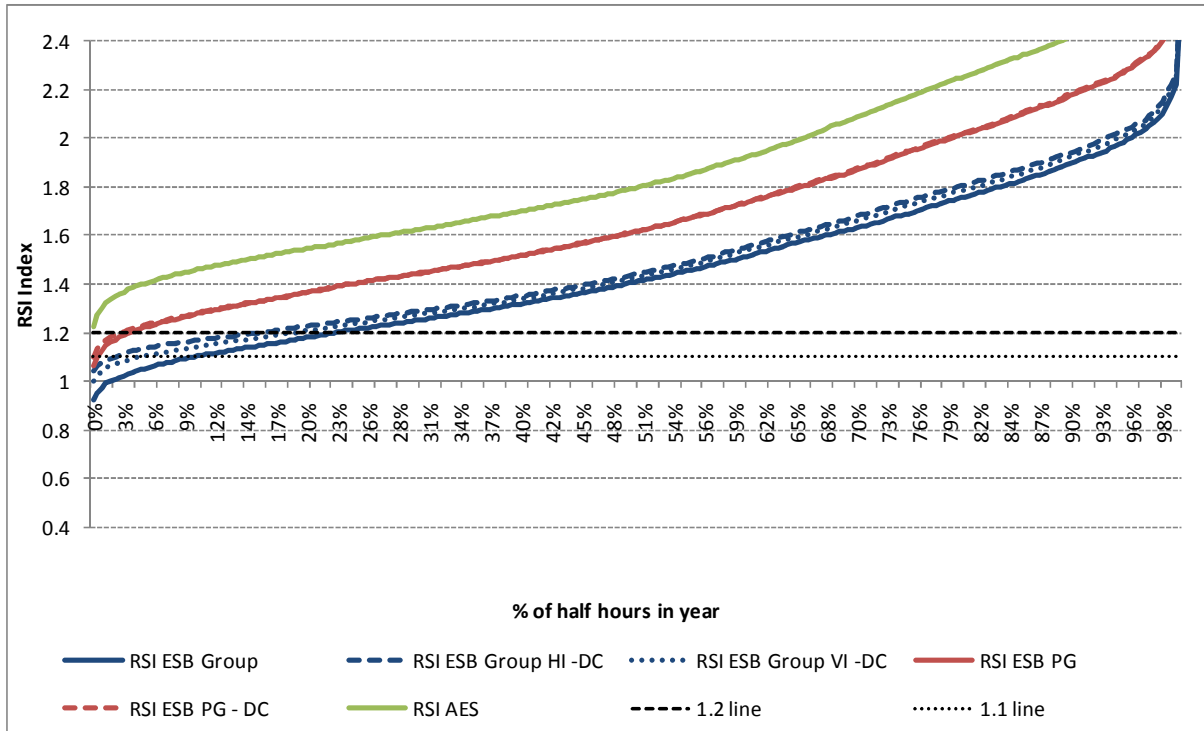
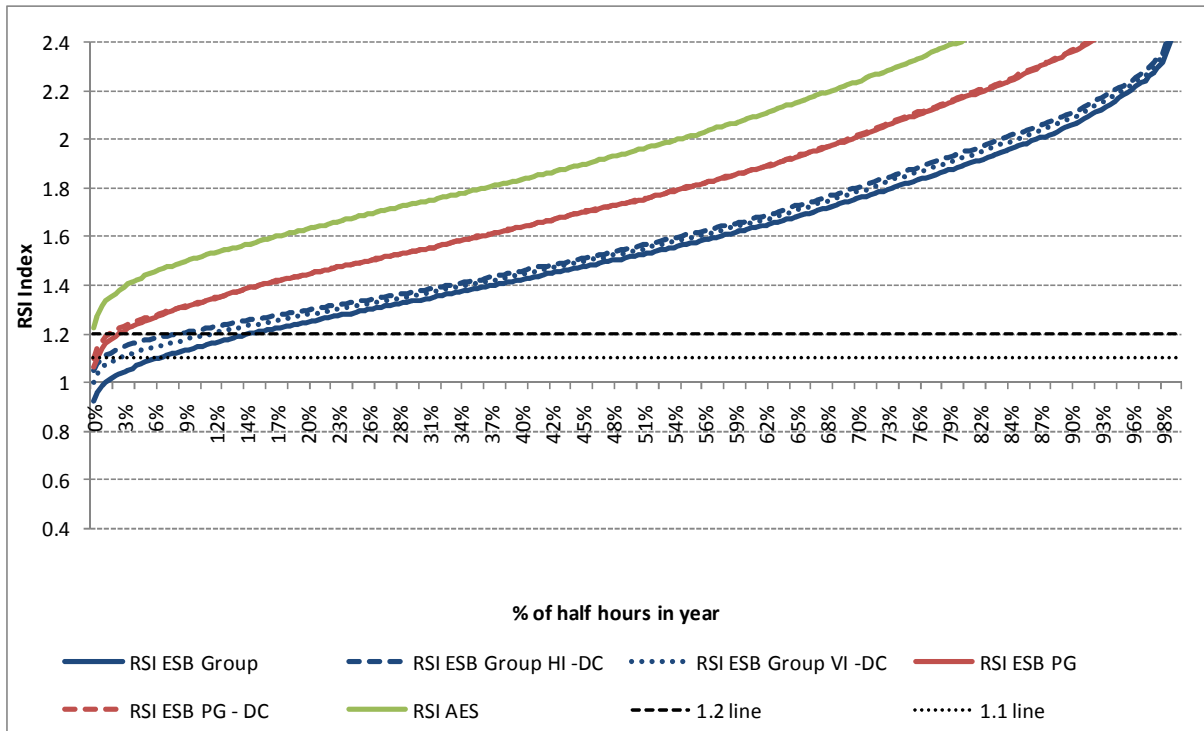


Chart A4.12 RSI for 2020, low coal, and low GB price



## **ANNEX 5: ESB'S PROPOSALS**

This annex contains two proposals provided by ESB. The first is titled 'Industry Change and Progressive ESB De-Regulation' and is a non-confidential summary of a submission to the SEM Committee in February 2010. The second is the 'Proposed Liquidity Undertaking in the context of Progressive ESB De-Regulation' as submitted from ESB to the SEM Committee on 30th July 2010.

INDUSTRY CHANGE AND PROGRESSIVE ESB DE-REGULATION  
SUBMISSION FROM ESB TO THE SEM COMMITTEE.  
FEBRUARY 25<sup>TH</sup> 2010

NON CONFIDENTIAL SUMMARY  
OCTOBER 20<sup>TH</sup> 2010

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### INTRODUCTION

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CASE FOR DEREGULATION

SPECIFIC PROPOSALS

CONSISTENCY WITH REGULATORY OBJECTIVES

CONCLUSIONS

## Industry Change and Progressive ESB De-Regulation

The purpose of this submission is to establish a *prima facie* case for the SEM Committee to begin the progressive de-regulation of ESB and to request specific regulatory actions.

### INTRODUCTION

In this paper ESB presents a case that now is the appropriate time for the progressive de-regulation of ESB and provides a description of the regulatory actions that are sought from the SEM Committee.

Although competition and market positions are radically different from those that existed both at the time when ESB's licences were first introduced and at the time of the design and implementation of the Single Electricity Market, ESB remains subject to the same business separation restrictions.

ESB Customer Supply (CS) has suffered an extreme and ongoing loss of customers at such a rate that, whether or not retail deregulation takes place, its existence as a stand-alone supply business is untenable.

ESB believes that continued instability of CS is likely to damage the retail market, competition and customers.

This paper proposes mechanisms for dealing with these matters by the progressive removal of regulatory restrictions to a schedule linked to time and market events. It also presents evidence that the regulatory actions proposed

- will be of direct and lasting benefit to all customers served by the SEM;
- will further stimulate the development of effective competition; and
- are consistent with sound regulatory principles and with the stated and legislated objectives of the SEM Committee.

## SUMMARY

While substantial competition has developed in both the wholesale and retail markets of the SEM, ESB currently has imposed upon it a range of regulatory provisions, implemented through specific licence conditions, which materially restrict its ability to do business efficiently and effectively. This set of provisions was introduced at a time when ESB held close to monopoly positions in each potentially relevant market, including the wholesale market and each segment of the retail market and long before the SEM was contemplated. Many of these provisions are no longer necessary as a result of the existence of material competitive pressures, or have been superseded by the development of other effective regulatory instruments. Since SEM go-live, competitive pressures have increased very substantially, in both wholesale and retail markets, changing substantially the backdrop against which the appropriateness of licences should be assessed. The continued existence of these now unnecessary provisions in a number of licences is imposing significant additional costs and risks on ESB, which ultimately impact all customers, and is destabilising ESB's CS business (acting as PES).

In the light of the very significant market developments that have emerged since the introduction of these measures, and based on a well founded presumption that competition will continue to develop rapidly, ESB is requesting progressive removal of these regulatory restrictions to a schedule linked to the timing of key market events. ESB's requests are set out below.

1. Immediately, in order to allow ESB some partial capability to address the untenable risks encountered in respect of CS' exposures as a stand-alone supply business to the end of contracting year 2010/11;

That the Regulatory Authorities exercise the discretion reserved by Conditions 5.4 and 5.5 and by Condition 6 of each of the PES and PG Licences, to approve in writing arrangements permitting the disclosure of commercially sensitive information between those Licensees and the use within each Licensee of confidential information received from the other, in order to permit PG to hedge on behalf of ESB the risks to which CS is exposed and to permit CS to develop retail products that can be hedged sensibly.

2. Immediately, in order to ensure that licence restrictions are targeted only where needed;

.Modify the licences granted to ESBIE, Synergen, Coolkeeragh, Wind and the other independent generators within ESB Group as necessary to remove all conditions requiring separation between those businesses;

3. Directly following Retail De-regulation, in order to reduce costs and improve efficiency, thereby bringing benefit to consumers and in order to increase competition in the sub 225MWhpa sector of the market;

Modify the PES and ESBIE Licences as necessary to remove all conditions requiring separation of those businesses and modify Condition 3B of the ESBIE Licence to remove the restrictions on the Licensee's offering supply to customers not having at least one site whose annual consumption exceeds 225MWhpa.

4. At January 1<sup>st</sup> 2011, in order to allow ESB to manage the considerable and unacceptable risks associated with a stand-alone Supply Business from the period from October 2011 onwards, to reduce the likelihood of market instability and to protect the interests of consumers, and given that ESB makes a commitment to provide liquidity unless and until an alternative emerges in order to ensure that this removal of separation does not reduce competition in the retail sector;

Modify the PES and PG Licences as necessary to remove all conditions requiring separation between those businesses.

5. At January 1<sup>st</sup> 2011, in order that ESB, reasonably in advance of October 2011 may begin to remove duplication of functions within its various generation businesses, reducing cost and risk to the ultimate benefit of consumers;

Modify the PG Licence and the Licences granted to ESB Group's independent generation businesses as necessary to remove all conditions requiring separation between those businesses.

6. Following the commissioning of the East-West interconnector, in order to ensure that licence restrictions are targeted only where necessary and to ensure no unfair discrimination;

Review and consult with a view to the gradual phase out the requirement to offer Directed Contracts.



ESB will make a formal request for the licences changes required. It understands that it will then be necessary for the relevant Regulatory Authority to consult on the requested licence changes. In order to ensure a coordinated and consistent approach to renewing licences, ESB suggests that all of these changes are consulted upon through a single process, even though a number of the requested changes will not be put into immediate effect. A single process will help to ensure that the net effect of proposed changes can be understood by potential respondents to the process. The ideal outcome of such a process would be a timetable of agreed licence changes, providing important clarity regarding the evolution of regulatory arrangements over the following two years. Such clarity would allow all market participants to develop robust business plans with a greater degree of certainty, supporting the development of sustainable competition to the ultimate benefit of all customers.

The remainder of this paper provides information in support of ESB's proposals and presents evidence that the actions proposed will be of direct and lasting benefit to all customers served by the SEM and are consistent with the stated and legislated objectives of the SEM Committee.

## BACKGROUND

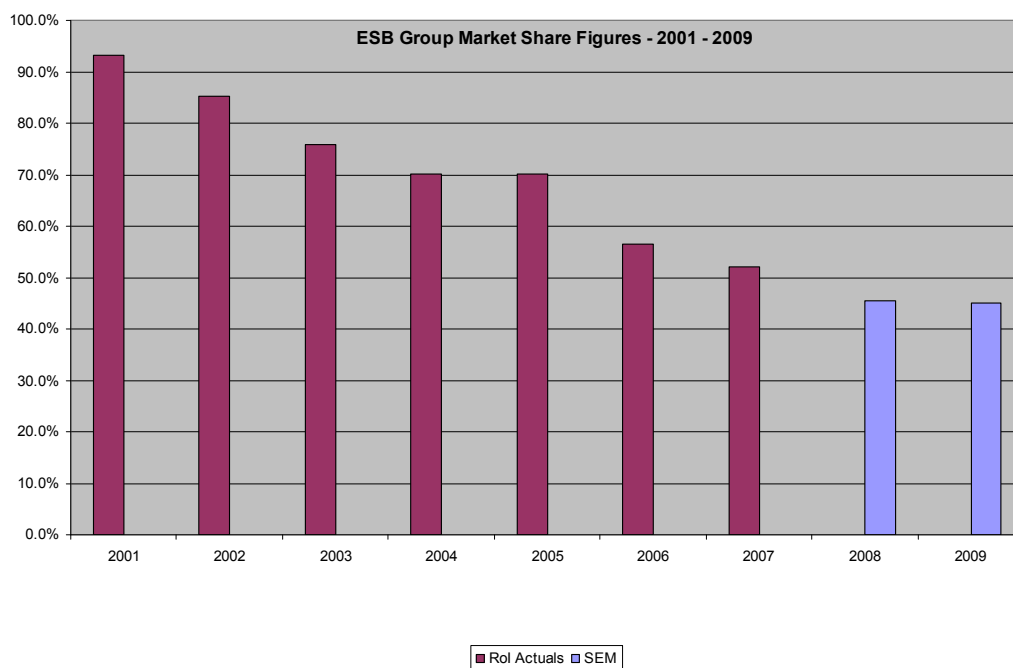
The ring fencing provisions within ESB's various licences have been progressively imposed since 1999 at a time when:

- the SEM was not implemented (indeed not even under active consideration);
- there was no interconnection to GB;
- ESB's market share in the relevant (ROI) generation market was close to 100%; and
- customers (even large industrial customers) were unable to choose their retailer.

In advance of progressive market opening and facing a monopoly incumbent, ring fences and business separation were an important element of the regulatory framework established to protect electricity consumers, to encourage ESB's prospective rivals in wholesale and retail markets, and to protect these potential entrants from certain types of conduct which ESB, as the clearly dominant operator, could have chosen to adopt in their absence. In particular, the ring fencing provisions supported two critical licence conditions, namely Economic Purchase Obligation (EPO) and Non-Discrimination Obligation (NDO). These licence conditions provided CER and SEM with a set of regulatory instruments through which it could regulate effectively both CS and PG, in the absence at that time of any prevailing competitive pressure. They also addressed any concerns that ESB might seek to use its dominance in wholesale to benefit its affiliated retail business and vice versa in the light of ESB's dominance in both markets at that time.

Business separation ring fencing, EPO and NDO were essential prerequisites to the development of competition and were key elements of a wider set of regulatory arrangements designed to support market opening and ESB has been fully compliant with all its obligations in this regard. Since those arrangements were introduced, the structure of wholesale and retail markets have changed fundamentally. In the remainder of this section we review how competition has developed in both wholesale and retail markets over the course of the last ten years. Additionally the successful implementation of the SEM (comprised of a set of trading arrangements and a wider set of associated regulatory arrangements) has changed markedly the terms under which power is traded. In the following section we set out the case for progressive de-regulation in the light of these developments, particularly those over the last two to three years.

Between 2000 and 2010, ESB's wholesale generation market share has declined from over 90% of the ROI market to 45.1%<sup>49</sup> of the SEM. This decline is illustrated in Fig 1, which demonstrates the effectiveness of the regulatory regime in stimulating market entry. There are now six new entrant generators (Viridian, BGE, Tynagh, Bord Na Mona, Endessa and SSE) competing at a wholesale market level, in addition to the ESB businesses and the extant NI generators at Kilroot and Ballylumford currently contracted to PPB. ESB has been supportive of this new entry, providing VIPP products and delivering divestment and closure of generation capacity as per an agreement with CER. ESB Group's market share will fall further in future, in particular following the commissioning of the East-West Interconnector (reported as being on target for completion in 2012), which will also create the realistic prospect of a wider geographic market following coupling with GB. ESB forecasts that its market share (measured by volume) will fall below 40% by 2012, if not 2011. Following market coupling with GB the adoption of a wider geographic market would see ESB's market share fall to around 5%. (ESB's forecast of future generation market share is shown in Appendix 2.)



**Figure 1. The Rapid Decline of ESB's Share of the Wholesale Generation Market (ROI to 2007 and SEM in 2008 and 2009)**

<sup>49</sup> This includes the output of all of ESB Group's generation, including Synergen, Coolkeeragh, Peat and wind. The equivalent market share of stations owned and operated by ESB PG in 2009 was 26.7%.

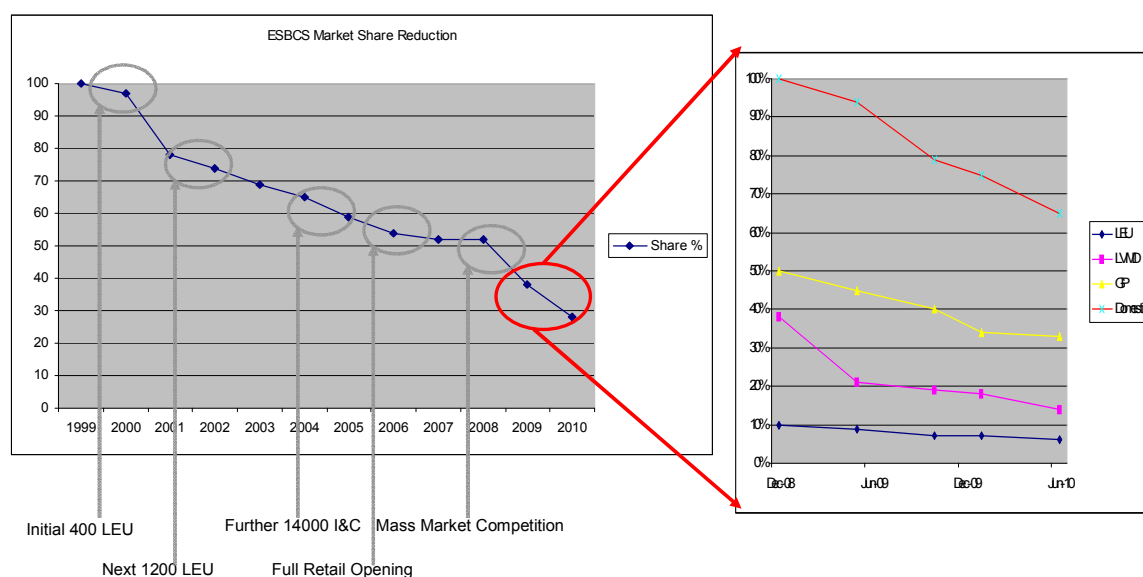
The most recent public report of the Market Monitoring Unit (April 2009) concludes that the SEM is functioning as intended, with prices aligning reasonably with those of BETTA. In particular the report regards the correlation between fuel prices and SMP as encouraging evidence of the effectiveness of and compliance with the Bidding Code of Practice.

The Bidding Code of Practice and associated Capacity Payment Arrangements also create an environment in which pricing volatility is reduced, since they mitigate completely the scope for any market participant to exercise market power in the spot market.

As a consequence of these developments, ESB's regulated and unregulated businesses face considerable competition in the wholesale market, the intensity of which has developed considerably since the design phase of the SEM, in the context of a set of market arrangements that prevent the exercise of market power. Competition and market arrangements are now such that if the ring fencing and NDO were removed, the prevailing market structure would ensure that ESB could not exercise market power in the wholesale market or follow profitably the strategies that the original separation provisions and NDO were designed to prevent. Furthermore, the increased level of competition in the wholesale market is now heavily reinforced by a number of existing regulatory provisions focused on conduct in the wholesale market (both spot and contract) such as the requirement for Separate Accounts, the Bidding Code of Practice and the Market Monitoring Unit. The Third Electricity Directive will further enhance the powers of Regulators.

## Retail Market

The development of market shares in the retail market reveals a similar pattern, as illustrated in Fig 2. Three major supply companies (Energia, BGE and SSE) have entered the market and compete with ESB and ESB's market share<sup>50</sup> has fallen from almost 100% of ROI market in 2000 to 52.5% of the ROI market (and 44% of SEM) as at end 2009. The rate of customer loss has increased markedly since the design phase of the SEM and SEM go live. ESB has supported the development of retail competition, implementing a number of measures agreed with the CER such as VIPP support for new entrant suppliers, the MOIP programme to facilitate switching and the provision of liquidity via the DC/NDC processes.

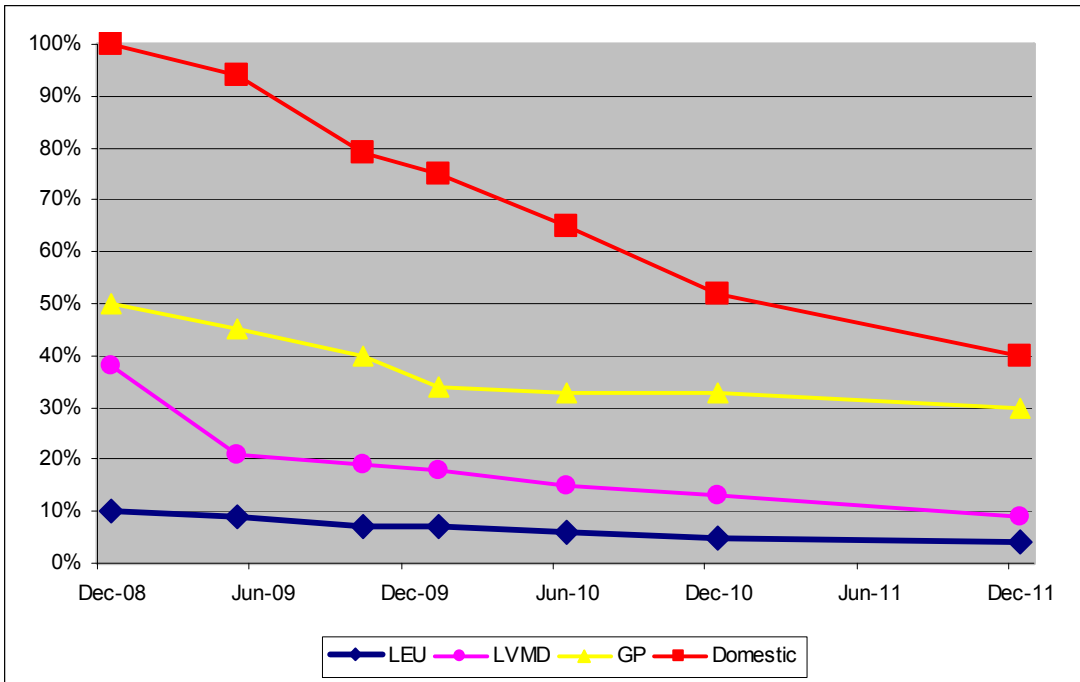


**Figure 2. The Rapid Decline of ESB's Share of the ROI Retail Market.**

Competition for business customers has long been well established and effective. Furthermore, since the advent of SEM ESB has seen two rivals enter and become established in the mass market. In less than one year since the formal launch of BGE's domestic market offering in February 2009, BGE and SSE have in aggregate successfully acquired approximately 480,000 out of ESB's opening 2,000,000 customers, 24% of the mass market (on an RoI only basis). This level of customer loss is unprecedented, greatly exceeding, for example, the rates of incumbent customer share loss observed in GB at any point since those retail markets were liberalised.

Retail competition is likely to become even more effective over the forthcoming one to two year period. Figure 3 shows CS' projected retail shares out to 2011.

<sup>50</sup> For the avoidance of doubt, the market share of ESB CS on an ROI only basis is illustrated



**Figure 3. Actual and Projected CS Shares of the ROI Retail Market**

Given that the wholesale market will be subject to further pro-competitive entry including the commissioning of the first tranche of the East-West Interconnector, creating the prospect of much closer coupling between the SEM and GB. This in turn creates the realistic prospect of retail market entry by existing GB market participants all of whom are vertically integrated. Without change, it is clear that ESB's retail market share will fall as it continues to lose mass market customers. Furthermore, work continues to integrate the retail markets of NI and RoI, over time, widening the relevant geographic market further and reducing ESB's measured market share and power.

## Consequences

The consequences of these substantial changes in competitive structure are as follows:

In the wholesale market ESB Group's market share has fallen substantially and is expected to fall below 40% by 2012, while ESB PG's market share is already far below this level. More importantly, there is no scope for ESB (or indeed any other market participant) to exercise any residual market power in the wholesale market as a result of the design of the SEM and the close and effective monitoring of the Bidding Code of Practice. ESB's conduct is further moderated through the requirement to offer for sale Directed Contracts. None of these arrangements was in place at the time these business restrictions were introduced, but they clearly create an environment in which ESB's wholesale market conduct is tightly monitored and constrained.

In retail markets any attempt to recover excess costs (of the kind prohibited by EPO) from its domestic customers would result in continued and increased customer loss, as demonstrated by the evident willingness of domestic customers to switch in large numbers to rivals. Similarly, any attempt by ESB to impose excess costs on business customers, through above market purchases of the kind prohibited by EPO, would be likely to result in substantial customer losses. ESB believes that recent market developments (i.e. customer loss) provide ample evidence to support this position. In addition, retail market de-regulation is currently subject to regulatory review, and ex ante tariff regulation will only be removed if the CER is satisfied that any outstanding concerns could be adequately addressed by competitive pressures coupled with the exercise of standard competition law. While ESB believes competition alone is already sufficient to discipline ESB's conduct in retail markets, ESB's proposed timetable for progressive deregulation is consistent with the timing envisaged in the CER's Roadmap consultation.

In the light of these developments and their consequences, it is unambiguously the case that the competition concerns that were in the past addressed through the imposition of business separation restrictions are no longer present. Both the relevant wholesale and retail markets have changed beyond all recognition since a number of regulatory arrangements were put in place. Over the course of the last ten years the successful development of competition has created an environment in which it is now appropriate and desirable for certain regulatory controls to be replaced by competition, in accordance with the view espoused by ERGEG. It is against this background that ESB seeks to agree a timetable for the continued, progressive deregulation of its business.

## CASE FOR DE-REGULATION

The development of competition, coupled with the successful implementation of the SEM has created an environment where further and progressive de-regulation of ESB is now absolutely necessary. There are four primary arguments for this

- To reduce the duplication of unnecessary activities and costs to the benefit of consumers
- To allow ESB to manage the untenable risk associated with a stand-alone supply business
- To avoid potential distortions of the retail market and potential instabilities that are not in the interests of consumers of electricity
- To avoid the likelihood of discriminating unfairly and to avoid regulating in cases where action is obsolete or unnecessary



## SPECIFIC PROPOSALS

This section sets out ESB's specific proposals with regard to the removal of a range of business restrictions. We highlight six measures and identify the proposed timing of each change, together with the process that might be adopted.

1. Immediately, in order to allow ESB some partial capability to address the untenable risks encountered in respect of CS' exposures as a stand-alone supply business to the end of year 2010/11;

That the Regulatory Authorities exercise the discretion reserved by Conditions 5.4 and 5.5 and by Condition 6 of each of the PES and PG Licences, to approve in writing arrangements permitting the disclosure of commercially sensitive information between those Licensees and the use within each Licensee of confidential information received from the other, in order to permit PG to hedge on behalf of ESB the risks to which CS is exposed and to permit CS to develop retail products that can be hedged sensibly.

At present the transfer of information between PG and CS is subject to highly restrictive controls. As a consequence ESB is unable to hedge its position effectively as all relevant information cannot be gathered together and acted upon in a timely manner. Similarly, CS is not provided with the information it would need to understand the consequences of its retail activities on Group risk, nor to allow it to structure and price its retail offerings appropriately.

2. Immediately, in order to ensure that licence restrictions are targeted only where needed;

.Modify the licences granted to ESBIE, Synergen, Coolkeeragh, Wind and the other independent generators within ESB Group as necessary to remove all conditions requiring separation between those businesses.

The tight controls on conduct in the wholesale market, as set out in the Bidding Code of Practice and as monitored by the MMU, ensure that no competition concerns can arise in the wholesale market as a result of the removal of these restrictions. The restrictions therefore serve no obvious regulatory purpose, may have no legal basis, while compliance imposes additional costs on ESB.

3. Directly following Retail De-regulation, in order to reduce costs and improve efficiency, thereby bringing benefit to consumers and in order to increase competition in the sub 225MWhpa sector of the market;

Modify the PES and ESBIE Licences as necessary to remove all conditions requiring separation of those businesses and modify Condition 3B of the ESBIE Licence to remove the restrictions on the Licensee's offering supply to customers not having at least one site whose annual consumption exceeds 225MWh.

As described above, the removal of this restriction would allow ESB to remove some duplication from its operations, allowing costs to be reduced to the benefit of customers. This proposal would also enhance competition for I&C customers. Given that ESB is seeking the removal of these conditions after Retail De-regulation, presuming the passing of the various market tests, no competition concerns would arise as a consequence.

4. At January 1<sup>st</sup> 2011, in order to allow ESB to manage the considerable and unacceptable risks associated with a stand-alone Supply Business from the period from October 2011 onwards, to reduce the likelihood of market instability and to protect the interests of consumers, and given that ESB makes a commitment to provide liquidity unless and until an alternative emerges in order to ensure that this removal of separation does not reduce competition in the retail sector;

Modify the PES and PG Licences as necessary to remove all conditions requiring separation between those businesses.

As explained above, ESB CS is exposed to considerable market risks that, as a stand-alone retailer, it is unable to manage effectively. Permitting PG and CS to integrate will allow those risks to be managed more effectively, reducing costs for customers and ensuring that retail market competition is not artificially distorted to the detriment of independent retailers.

5. At January 1<sup>st</sup> 2011, in order that ESB, reasonably in advance of October 2011 may begin to remove duplication of functions within its various generation businesses, reducing cost and risk to the ultimate benefit of consumers;

Modify the PG Licence and the Licences granted to ESB Group's independent generation businesses as necessary to remove all conditions requiring separation between those businesses.

The tight controls on conduct in the wholesale market, as set out in the Bidding Code of Practice and as monitored by the MMU, ensure that no competition

concerns can arise in the wholesale market.

6. Following the commissioning of the East-West interconnector, in order to ensure that licence restrictions are targeted only where necessary and to ensure no unfair discrimination;

Review and consult with a view to the gradual phase out the requirement to offer Directed Contracts.

As described above, the commissioning of the East-West interconnector should ensure that any residual concerns over market in the wholesale market are removed. At this time, the prevailing restrictions will serve little purpose and it is appropriate that their requirement should be reviewed with a view to phasing them out.

ESB will make a formal request for the licences changes required. It understands that it will then be necessary for the relevant Regulatory Authority to consult on the requested licence changes. In order to ensure a coordinated and consistent approach to renewing licences, ESB suggests that all of these changes are consulted upon through a single process, even though a number of the requested changes will not be put into immediate effect. A single process will help to ensure that the net effect of proposed changes can be understood by potential respondents to the process.

The ideal outcome of such a process would be a timetable of agreed licence changes, providing important clarity regarding the evolution of regulatory arrangements over the following two years. Such clarity would allow all market participants to develop robust business plans with a greater degree of certainty, supporting the development of sustainable competition to the ultimate benefit of all customers.

## PROPOSED

## TRANSITIONS

Along with each of the requested regulatory actions outlined above we have provided a suggested timing. Given the inherent instability of the ESB CS business, and the likelihood of this instability growing in the future, a number of the requested changes are necessary now. Ideally ESB would have desired certain restrictions to have been lifted already. It is already, effectively, too late to make certain changes in sufficient time for them to take hold in advance of the 2010/11 tariff year. However, the changes that are requested immediately will at least allow some improvements in risk management and mitigation to be implemented over the course of the coming year.

In order to prepare with certainty for October 2011, ESB is seeking urgently confirmation of the phased removal of certain licence conditions, although in certain instances the restrictions themselves will persist for some time beyond this agreement. Substantial work will be required to bring about the estimated savings and to create robust, integrated systems. It is anticipated that at least 18 to 24 months will be required to integrate various currently separate businesses so an early determination is critical to ensure that the potential benefits can be captured as early as possible and to prevent a situation where the unprecedented rate of market change, coupled with obsolete separation requirements results in ESB being unfairly discriminated against and finding itself unable to compete.

## CONCLUSIONS

Many of the prevailing business restrictions currently imposed on ESB were introduced at a time when there was almost no competition in either wholesale or retail markets. While there was a clear rationale for their original imposition, there have been major changes in the competitive landscape since those licences were framed and last assessed and, in particular, since the design phase of the SEM and SEM go live. As a result, a number of existing licence conditions are now obsolete (in the sense they address concerns that are no longer reasonable) and are now having unintended consequences and are potentially harming rather than protecting customers and destabilising rather than promoting competition. Further, we are fast approaching the stage where the continued imposition of these restrictions will have the effect of discriminating unfairly against ESB. In the light of this, ESB is formally requesting changes to a number of licences currently held by the ESB group in order to remove a range of unwarranted restrictions on its business.

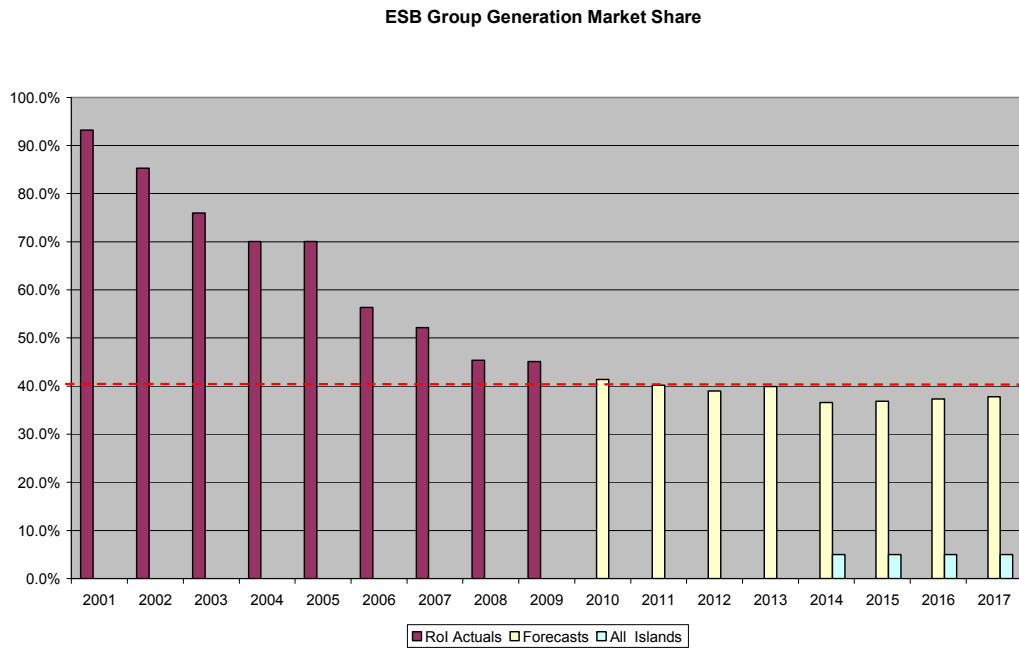
As set out above, the identified business restrictions expose ESB CS to very material market risks, risks that will be inadequately addressed by retail deregulation alone. ESB Customer Supply (CS) has suffered an extreme and ongoing loss of customers at such a rate that, whether or not retail deregulation takes place, its existence as a stand-alone supply business is untenable. Absent the ability to manage those risks across the value chain, there is the scope for significant market distortions to arise to the detriment of all customers and the sustainability of competition.

ESB proposes dealing with these matters by the progressive removal of regulatory restrictions to a schedule linked to time and market events. ESB believes that the actions proposed will be of direct and lasting benefit to all customers served by the SEM, will further stimulate the development of effective competition, and are consistent with sound regulatory principles and with the stated and legislated objectives of the SEM Committee.

ESB requests that the SEM Committee considers these proposals and comes to an early decision in respect of the sequence of proposed actions and licence changes.

## Appendix

### ESB's Forecast of Wholesale Generation Market Share



## **Proposed Liquidity Undertaking**

IN THE CONTEXT OF PROGRESSIVE ESB DE-REGULATION  
SUBMISSION FROM ESB TO THE SEM COMMITTEE.

30<sup>TH</sup> JULY 2010

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## INTRODUCTION

ESB, in its submission to the SEM Committee of February 2010 "Industry Change and Progressive ESB De-Regulation", requested modification of the PES and PG Licences as necessary to remove all conditions requiring separation between those businesses "in order to allow ESB to manage the considerable and unacceptable risks associated with a stand-alone Supply Business from the period from October 2011 onwards, to reduce the likelihood of market instability and to protect the interests of consumers, and given that ESB makes a commitment to provide liquidity unless and until an alternative emerges in order to ensure that this removal of separation does not reduce competition in the retail sector".

ESB has discussed such a provision of liquidity with both the Regulatory Authorities (RAs) and with other market participants and has developed a proposal for discussion.

This paper sets out a proposed Liquidity Undertaking for consideration by the SEM Committee in the context of the progressive deregulation of ESB and the removal of separation between ESB's generation and supply businesses.

This submission will not rehearse the many arguments for the progressive deregulation of ESB that have already been presented to the SEM Committee, rather it considers the importance of liquidity in a context which assumes the removal of separation between ESB businesses.

The paper explores those characteristics of the market that have an influence on the need for liquidity, the form of such liquidity and the range of choices that exist for its provision.

The paper goes on to set out a proposal from ESB undertaking to provide a significant level of liquidity in the context of a deregulated business.

## SUMMARY

The nature of the SEM and the fact that most unregulated Suppliers are integrated with generation means that both the requirement for contracts for difference (CFDs) and the associated risk premiums tend to be low reducing the likelihood of significant levels of trades in CFDs around the SMP.

Any party can trade in CFDs around the SMP and it is not necessary to have an underlying physical position. In addition, because of the possibilities of substitution, the trade in CFDs does not constitute a separate and distinct market and ESB cannot exercise market power in this regard.

ESB understands the challenge facing the market to be one of ensuring that Suppliers and Generators and potential new entrants can generally get access to CFD products which allow them to trade away the risk of their exposure to the SMP. This is a challenge for the market as a whole and the solution should not be provided by just one or two market participants.

There is concern that the removal of separation between Power Generation (PG) and Customer Supply (CS) will collapse liquidity and ESB has committed to ensuring that this will not be the case.

In the context of the removal of separation between its generation and supply businesses, ESB commits to provide products that will allow other market participants to manage their exposure to the risk of SMP movements. This commitment tries to strike a balance between providing a significant level of liquidity support whilst not completely undermining the objectives of the removal of business separation.

ESB commits to the provision to Suppliers of baseload, mid-merit and peak profile products for annual, quarterly and monthly terms, to a volume of 25% of ESB Power Generation's forecast production (depending on market share and certain other constraints).

ESB commits to the provision to Generators of baseload, mid-merit and peak profile products for annual, quarterly and monthly terms, to a volume of 10% of ESB's forecast demand (depending on market share and certain other constraints).

ESB commits to the provision of regular auctions, to reduce the minimum clip size for new entrants down to 0.1MW, ensuring that shape products are available in volumes proportionate to the volume of the overall liquidity undertaking, and to consider offering products based on EFA blocks (such as UK Peak), as an alternative and dependent on market demand.

This is a very significant commitment made in the context of ESB's submission to the SEM Committee of February 2010 "Industry Change and Progressive ESB De-Regulation" and is subject to approval of its request for the removal of the separation between ESB's generation and supply businesses.

## **BACKGROUND**

### **Liquidity.**

The Single Electricity Market is based around a gross mandatory pool. All *Generators* must sell all of their output into the pool and all *Suppliers* must buy out of the pool. As the market clearing mechanism ensures that generation and supply always balance it is clear that, at this level, there is no requirement for liquidity - a *Generator* in merit will always be able to sell and a *Supplier* with customers will always be able to buy.

It is also clear that market power can exist in this market and this has already been addressed by the RAs in their design of the market and particularly by the highly regulated nature of the Bidding Code of Practice (BCOP) and by the imposition of Directed Contracts (DCs).

However, in a market where any given *Supplier* does not always have a perfect generation hedge for their demand and any given *Generator* does not always have a perfect hedge for their production, market participants are exposed to the risk of movements in the price of power in the gross mandatory pool (the system marginal price or SMP). A party which is long on supply may want to buy a hedge against the risk of the SMP increasing and a party which is long on generation may want to buy a hedge against the risk of the SMP falling. ESB understands from discussions with the RAs that it is liquidity in the purchase and sale of these contracts for difference (CFDs) around the SMP that is the matter at issue. These CFDs are products that allow the purchaser to exchange the risk of exposure to the SMP for a fixed price.

### **The Purchase and Sale of CFDs around the SMP.**

The nature of factors surrounding the purchase and sale of CFDs around the SMP is very important.

Firstly, anybody can buy or sell these products. It is not necessary to have an underlying generation or supply position to be a buyer or seller of CFDs around

the SMP. It is not even necessary to be a participant in the SEM to be able to purchase or sell such products. Traders without underlying physical positions buy and sell many

equivalent CFDs based around other physical markets, the financial value of such trades often being many multiples of the value of the underlying physical products.

Discussions with the RAs have raised questions such as whether the purchase and sale of CFDs around the SMP constitutes a separate and distinct market in its own right - a contracts market - and, if so whether any participant has or can exercise market power in such a market.

Our analysis is that such a distinct market (comprised solely of CFD contracts around the SMP) cannot be defined. In addition, we consider that, even were such a distinct narrowly defined contracts market to exist, it is not just SEM market participants that can buy or sell CFDs around the SMP and, therefore, no particular participant could or could be considered to have power or to be able to exercise power in such a market.

#### **Liquidity in the Purchase and Sales of CFDs around the SMP.**

It appears that there are relatively low levels of trade in SMP CFDs. It is worth considering why this might be the case, given that any parties (not just those with physical SEM generation or supply positions) might be interested, as they are for other derivatives, in buying or selling such products.

The regulated nature of the underlying SEM market is significant here. Parties that trade in CFDs around the SMP are essentially buying or selling the risk that the SMP price might rise or fall and, particularly, that it might rise or fall in an unexpected way. Given the regulated nature of bids as a consequence of the Bidding Code of Practice, it is reasonable to argue that SEM prices will be less volatile than prices in other less regulated wholesale electricity spot markets. The Capacity Payment Mechanism has been specifically designed to reduce volatility in the SEM itself (and it appears very successful in achieving this end) whilst the regulated BCOP ensures that the SMP moves very closely with underlying movements in commodities such as NBP gas.

A further aspect of regulation is the fact that benchmark products in the form of DCs are made available at the behest of the RAs and are priced with no risk premium, thereby satisfying demand to a certain extent and undermining prices for CFDs. The process for the sale of PSO CFDs has a similar effect.

These factors when taken together are unlikely to create an environment attractive to those parties that normally trade around volatility, act as creators or providers of risk avoidance products or serve as market-makers.

Furthermore, the fact that the vast majority of the non regulated suppliers in the SEM are vertically integrated to a high degree, also suppresses demand so it is not surprising that there has been no development of an active and extensive trade in CFDs around the SMP.

In conclusion, therefore, it is debatable as to whether a high degree of liquidity in CFD products is required and it certainly appears to be the case that the relative stability and market power mitigation arrangements associated with the SEM together with the vertically integrated nature of the major unregulated Suppliers act to dampen down the development of any potential CFD trade

### **So, is there a Problem?**

The consequence of this is that an active or secondary trading in CFDs has not developed and, given the nature of the underlying market, is unlikely to develop in the future. On one level, given the existence of a gross mandatory pool and the relatively low level of SMP volatility, this is unlikely to be a fundamental issue. However, it is unquestionably helpful for market participants in general, for the efficient operation of the market, for customers and, particularly, for potential new entrants. to have access to SMP CFD products in order, from time to time, to be able to transfer their risk to somebody better able to manage it.

So, from discussions with the RAs, ESB understands the challenge facing the market to be one of ensuring that Suppliers and Generators and potential new entrants can generally get access to CFD products which allow them to mitigate the risk of their exposure to the SMP. It is not necessary to have five times or six times the underlying physical position traded. In most cases, parties are likely to be looking for shape to allow them to better match existing supply and generation positions and this should amount to a relatively small volume of their underlying position.

### **Whose issue is it?**

The current situation (although it is not possible to be definitive here as CFD trades between counterparties in the SEM do not have to be declared) is that PG provides the great majority of CFDs.

PG provides DCs as mandated by the RAs on a regular basis and, acting as an agent on behalf of the RAs, also auctions PSO products into the market. NIE PPB provides DCs when required, while PG has been voluntarily auctioning an increasing level of NDCs at the encouragement of CER. It appears that there is sufficient volume of CFDs available: had it been otherwise, CFD premiums (over and above reasonable forecasts of future SMP prices) would have risen significantly (and possibly drawing in alternative providers of CFDs).

Many participants in the physical SEM market want to be able to purchase SMP CFDs in

order to reduce their own risk and exposure to the SMP but want such risk management products to be provided by somebody else and do not want to pay the premiums associated with buying out risk. In addition, it is apparent that many market participants consider that the provision of risk management products is somebody else's problem and that they need not be part of the solution. Whilst this is normal, it is unreasonable.

The market structure reduces the likelihood of parties external to the physical underlying market being attracted into the provision of CFDs around the SMP. This being the case, it is important that all participants in the physical market participate in the provision of risk management products in proportion to their size, but it is clear that CFD coverage of a relatively low proportion of the underlying physical electricity is all that is necessary.

The current situation in which PG is providing a disproportionate share of CFD products is unreasonable and unsustainable. PG is prepared to be a significant provider of risk management contracts but other parties must also be part of the solution.

### **ESB's Contribution to Liquidity**

Since the start of the SEM, PG has offered a considerable volume of its output for sale as CFDs to allow Suppliers to manage their exposure to the risk of SMP movements. During that period, the shape and volume of PG's offerings have been continuously developed to support liquidity in the market.

In the year 2007/08, PG initially offered base-load and mid-merit products in an annual round of NDC auctions. Subsequently, in response to requests from Suppliers, PG offered "mid-merit 2" products and both annual and quarterly products. PG offered similar products in 2009/10.

In 2009/10 at the request of the RAs and in order to facilitate NIE PPB's MiFID compliance requirements, ESB PG adopted the multilateral trading platform provided by Tullet Prebon as the facility for its auctions.

In 2009/10, PG sold 5.8TWh of DCs and NDCs in the annual round of auctions based on a production forecast of 8.3TWh. Further to Supplier requests for increased liquidity, PG sold 0.1TWh of quarterly NDC products in December 2009 and held two auctions for monthly NDC products in Q1 2010, selling a further 0.2TWh.

PG carried out a review of providers of multilateral trading platforms in January 2010. While some parties expressed interest, no new provider has to date entered the SEM so PG continues to auction through Tullet Prebon.

Due to the fall in demand together with moves in coal prices relative to gas prices, PG forecast reduced production in 2010/11. Despite this forecast fall, PG is committed to maintain and increase the volume of CFDs offered for sale for the 2010/11 SEM year.

PG offered 1.4TWh of Directed Contracts in auctions through April and May 2010 and offered a further 3.4TWh of Non-Directed Contracts during June 2010. PG also plans to provide additional short-term liquidity, offering about 1.4TWh during the 2010/11 SEM year.

During this period PG also acted as agent for the RAs auctioning significant volumes of PSO backed CFDs and managing these contracts on their behalf without charging for this service.

Meanwhile, it should be noted that 2010/11 NDC offerings by NIE, the only other provider, currently appear to be substantially less than in previous years. Furthermore, there was no DC obligation for NIE for the 2010/11 tariff year.

In general, ESB has continually developed its liquidity offerings at the behest of the RAs and in response to requests from Suppliers and it will continue to operate in this manner should the separation between PG and CS be removed.

### **The Impact of ESB Vertical Integration**

Currently, CS purchases CFDs under the DC allocations, the PSO auctions and various other NDCs from PG and others in order to hedge exposure to the SMP.

Currently, PG is obliged to sell DCs for the purposes of market power mitigation and typically sells a significant quantity of other hedges as part of the NDC process. It should be noted that these sales of NDC products are voluntarily provided by PG at the encouragement of the RAs. The impact of the BCOP is such that, depending on price, the provision of such hedges is not necessarily in the interest of a Generator.

Clearly the removal of ring-fencing between PG and CS will lead to a situation in which, all other things being equal, PG and CS will seek to minimise their combined risk exposure and this is likely to lead to PG and CS trying to balance their positions internally before looking externally and, as a consequence, both selling and buying fewer hedges.

Given the fact that PG is providing the vast majority of the CFDs to allow others to manage SMP risk, this could reduce liquidity in the market.

ESB is conscious of this and will make a commitment to the RAs in relation to the ongoing provision of liquidity in the context of the removal of separation between PG and CS. However, the greater the volume commitment to the provision of external

liquidity, the less the value and point of the removal of that separation, the greater the market and counterparty risk ESB would be taking on itself, the higher the cost and price of such liquidity provision.

ESB's share of the SEM market for both supply and generation is in significant decline. If it is important for the market to have CFD liquidity, it is essential that this is provided by a mechanism of which ESB is a part (and a significant part, in keeping with its size) but not a mechanism in which ESB is the sole provider.

So, in making its liquidity commitment, ESB is trying to strike a balance between providing a significant share of the level of liquidity required by the market without completely compromising the point of removing the separation between its CS and PG businesses and without accepting more market risk than would be consistent with sound corporate governance.

## **OTHER CONSIDERATIONS AND CAVEATS**

### **Asymmetry in Buy/Sell Requirements**

The exposures of Generators and Suppliers to the risk of SMP movements are generally different.

Currently most Suppliers offer customer tariffs that are fixed for a period of time into the future. Absent tariffs that float as the SMP moves, such Suppliers are clearly exposed to rises in SMP and rationally will seek to hedge the risk of SMP increases.

On the other hand, Generators are required by the BCOP to bid their marginal (floating) avoidable fuel cost into the market. It is rational for a generator, therefore, to keep its fuel floating as, if it is in merit and runs, it will receive that floating fuel price. So, if a Generator enters into a CFD that fixes its income, it thereby increases its risk (as it now becomes exposed to rises in fuel prices).

Therefore, it is expected that there will be a lower demand for products that help Generators to manage their exposure to SMP than there will be for Suppliers.

ESB's Liquidity Undertaking reflects this.

### **Trade off between the Frequency of Auctions, the number of Product Types and Depth.**

For any given volume of product, there is clearly a trade off between the number of product types (annual baseload, annual peak, quarterly baseload, etc) and the depth of each product that can be made available for sale.



Similarly, for a given volume of product, there is a trade off between the frequency of auctions (month, quarterly etc) and the depth of product that can be made available at each auction.

ESB has considered comments from the RAs and feedback from various existing counterparties in relation to the frequency of auctions. Considering the purpose of the provision of liquidity and given that the majority of customer demand is likely to be priced under annual tariffs, ESB is of the view that the volume of product made available in annual auctions should predominate. ESB is committed to trying to achieve a good balance between product varieties, auction frequency and depth, consistent with risk management requirements, customer tariff structures and the availability and structure of fuel hedges. However, it is considered likely that weekly or daily products would face insufficient demand and would reduce availability of more critical monthly, quarterly and annual products.

ESB also understands that market participants value the certainty of knowing what products and volumes will be auctioned into the future.

### **The Shape of Liquidity**

DC and NDC products are currently sold on the basis of baseload, mid-merit and peak profiles.

ESB is happy to continue to sell products on this basis.

However, the increasing use of the Moyle interconnector, the imminent arrival of the E-W interconnector and various market discussions seeking to facilitate increased trade between GB and SEM indicate that it might be sensible at some stage to provide products based on EFA blocks.

ESB is willing, within the scope of the overall Liquidity Undertaking, to consider the development and sale of products profiled on the basis of various EFA block combinations (rather than existing mid-merit and peak definitions) should that be the general requirement of the market.

### **ESB's Unregulated Generation and Supply Businesses**

ESB's Liquidity Undertaking is developed in the context of the potential removal of separation between PG and CS and is designed to mitigate concerns about the possible collapse of liquidity consequent on the removal of that separation. For this reason commitments and volumes relating to generation positions refer to PG generation. However, given that the deregulation of CS is an ongoing process, commitments and

volumes in the Liquidity Undertaking that refer to supply positions are expressed in relation to the total ESB supply position (i.e. the total of ESBIE and CS).

Within its submission to the SEM Committee of February 2010 "Industry Change and Progressive ESB De-Regulation", ESB requested removal of the separation not only between PG and CS but also between PG and ESB's unregulated generation businesses. Should some or all of this be permitted, ESB will work with the RAs to describe the Liquidity Undertaking in terms of the overall generation position so that the same absolute volume of liquidity is maintained.

Within the liquidity commitment, references to market shares are understood to be ESB's total share of the SEM markets, but excluding generation output sold under PSO.

### **New Entrant Considerations**

ESB has tried to consider the possible requirements of potential new entrants and, in particular, the suggestion from within the RAs that while market participants might want to or choose to be vertically integrated, it ought not be a necessary pre-condition of market entry.

ESB considers one of the key requirements of new entrants (whether *Generators* or *Suppliers*) is the knowledge that they can be certain of access to a regular, frequent and predictable source of liquidity.

For new entrants with small or developing positions, whether in *Supply* or *Generation*, ESB considers that access to sufficiently small lot or clip sizes is of fundamental importance and ESB will cater for this in its Liquidity Undertaking.

### **Forecasts**

Because the market changes and dispatch and demand patterns and positions change over time, it is necessary for ESB to base its Liquidity Commitments on its forecast position (forecast generation, forecast demand, forecast market share) from time to time.

ESB intends to carry out these forecasts on a quarterly basis and in a transparent manner and is happy to share outcomes for such forecasts with the RAs, to the extent to which they impact the Liquidity Undertaking in any way.

### **Pricing**

ESB will price all products covered within the Liquidity Undertaking (with the exception of the DCs which are priced by the RAs) in accordance with its latest market models and forecasts and taking into account its view of the risks of market movements.

ESB will continue to apply appropriate credit and counterparty terms to products made available under the Liquidity Undertaking.

### **Legal Requirements**

ESB is obliged to operate within the terms of the Financial Transactions of Certain Companies and Other Bodies Act, 1992 ("the 1992 Act"), in conjunction with the Specification of the Minister for Finance. This limits ESB in relation to the counterparties with whom it can deal in derivative products such as CFDs and to the nature of such contracts.

While ESB is committed to providing market liquidity, our ability to contract with some market participants (depending on credit ratings or the posting of collateral) may be constrained by the terms of the Specification. Also, by virtue of the terms of the Specification, ESB cannot extend its provision of liquidity to the market to the extent that ESB would be buying or selling CFDs against generation or demand which are not expected to be realised.

### **SPECIFIC PROPOSALS**

ESB is conscious of the importance the Regulatory Authorities ascribe to the continued provision of liquidity in the form of the availability of products to manage the risk of SMP movements. ESB understands that this is an issue of importance not only for existing market participants but particularly for potential new entrants.

ESB appreciates that, given its size in the generation and supply markets, there is a reasonable expectation that it should play a significant part (whilst not shouldering the whole responsibility) in helping to solve market difficulties with respect to the provision of liquidity.

Given that PG currently provides the lion's share of liquidity (through DCs and voluntary NDCs), ESB understands that there will be concern that liquidity will collapse should the separation between PG and CS be removed. ESB is prepared to commit to making a significant level of liquidity available in the context of the removal of separation between PG and CS.

In the context of the removal of separation between PG and CS, ESB is prepared to commit to making available liquidity as follows:

### **The Shape of ESB's Liquidity Undertaking**

Having consulted with the RAs and with various market participants and CFD counterparties, ESB proposes that in relation to liquidity shape it will commit to offer;

Annual products offered quarterly (consistent with fuel hedge availability);  
Quarterly products for terms of up to one year ahead and offered monthly; and  
Monthly products for terms of up to a quarter ahead, offered monthly.

Annual, quarterly and monthly products will be offered shaped as baseload, mid-merit and peak profiles as is reasonable within the profile of forecast generation. ESB is also prepared to consider offering similar products based on EFA blocks (such as UK Peak), as an alternative and dependent on market demand.

ESB will commit to ensuring the shape products (mid-merit and peak) are made available in volumes generally proportionate with the overall liquidity commitment (so, if the Liquidity Undertaking is for an overall commitment of X% of PG's forecast production, ESB will commit to ensuring that at least X% of PG's forecast peak and mid-merit production is made available as CFDs.)

In order to support smaller new entrants, ESB is prepared to reduce the clip or minimum contract size for new entrants down to 0.1MW.

In consultations with the RAs, the issue of new entrant generators and liquidity from the perspective of the management of their risk has been raised. Although being able to buy products mitigating SMP risk is less important for Generators than for Suppliers, ESB is prepared to make a commitment to provide products in which Generators can swap an exposure to the SMP for a fixed revenue stream. This is a significant new departure for ESB.

In order to improve certainty for market participants, ESB will, on a quarterly basis, provide a programme of the anticipated auction dates, products and expected volumes for the subsequent 12 month period.

### **The Volume of ESB's Liquidity Sell Undertaking.**

#### **Preamble**

For the purpose of this commitment, the term "Liquidity Sell" is used to mean a CFD product that is sold so that a Supplier can manage the price risk of buying power at SMP by effectively paying a fixed price for power. The term "Liquidity Buy" is used to mean a CFD product that is sold so that a Generator can manage the price risk of selling power at SMP by effectively selling power at a fixed price.

ESB has made a commitment to reduce from almost 100% of generation in the ROI

market some ten years ago to a 40% market share of the SEM. In this context, ESB will make its commitment based on a 40% share of the generation market, with the level of the commitment rising or falling should ESB's share of the generation market be forecast to be above or below this 40%.. (Note, in this regard, ESB's output determining its share of the SEM generation market does not include output from the Peat plants where the output is sold on behalf of the CER.)

ESB is not in the business of trading CFDs and other financial derivatives for the sake of it and considers it important to reduce to a minimum the extent to which the delivery of any liquidity commitment puts it in a position of trading financial products without an underlying physical position or increasing its market, credit or operational risks to levels that are inconsistent with sound corporate governance and risk management practices. ESB is also bound by the terms of the 1992 Act as outlined above. PG's forecast generation has varied considerably over the past number of years, and even month-to-month,

depending on demand, market entry, interconnection, wind, relative fuel prices and so on. It is appropriate therefore that the Liquidity Undertaking is based on PG's forecast production at any given point in time.

In the absence of information to the contrary, ESB assumes that DCs will continue to be imposed for the purposes of generation market power mitigation. ESB's Liquidity Undertaking, therefore, is stated inclusive of any DCs. It is understood that if the DCs imposed for a given period exceed the stated liquidity commitment for that period, ESB will make the DC volumes available.

It makes sense, if the separation between PG and CS is removed, for ESB to try to reduce risk across the value chain as this will reduce the price to the end consumer. ESB's risk associated with the provision of liquidity will reduce and hence its ability to offer liquidity will increase based on the availability of liquidity from other sources such as other market participants. (ESB will be more relaxed about selling liquidity if it knows its chances of being able to access liquidity elsewhere are high.) It makes sense therefore, that ESB's Liquidity Undertaking must at some level be dependent on the level of ESB's access to alternative hedging products.

ESB is offering a Liquidity Undertaking in the context of the removal of separation between PG and CS, the purpose of which is to allow ESB to better manage its risk and to reduce inefficiencies to the long-term benefit of electricity consumers. This objective cannot be achieved if the liquidity commitment is so large that only a very small proportion of CS sales can be internally hedged by PG. It makes sense, therefore, that the Liquidity Undertaking be to some extent dependent upon the degree to which CS' demand can be internally hedged after discharge of the liquidity commitment.

### **Volume of Liquidity Sell Commitment**

ESB will offer a Liquidity Sell Commitment of 25% of PG forecast output based on an ESB 40% generation market share. (Note that in this regard PG forecast production does not include output from the Peat plants.)

ESB will offer a Liquidity Sell Commitment of proportionately more than this to the extent to which ESB's forecast market share of generation is greater than 40%. Equally, ESB's Liquidity Sell Commitment will reduce proportionately as its forecast market share of generation reduces below 40%. (See Appendix 1)

The Liquidity Sell Commitment is inclusive of any DCs imposed for market power mitigation and will be no less than the DC volume imposed.

The Liquidity Sell Commitment reduces to the extent to which it reduces PG's capability to internally hedge at least 30% of ESB forecast demand.

The Liquidity Sell Commitment reduces to the extent to which ESB's access to alternative SEM hedges is reduced.

The Liquidity Sell Commitment ceases in the event of the following;

- ESB's share of Generation in the SEM falls below 30%;
- The commissioning of an additional interconnector (in addition to the E-W interconnector currently under construction);
- The GB and SEM markets become effectively coupled; or
- There is a fundamental change of SEM market rules.

## **Liquidity Buy Commitment**

### **Preamble**

The primary purpose of this Liquidity Buy Commitment (LBC) is understood to be to provide new entrant generators with a mechanism for managing their exposure to SMP. In this regard, ESB is prepared to provide products with baseload, midmerit and peak profiles with annual, quarterly and monthly duration.

ESB's market share of supply has reduced from almost 100% of the ROI market some ten years ago to roughly 37% market share of the SEM. In this context, ESB will make its Liquidity Buy Commitment based on a 40% share of the SEM supply market, with the level of the commitment rising or falling should ESB's share of the supply market be forecast to be above or below this 40%.

ESB is offering a Liquidity Buy Commitment in the context of the removal of separation between PG and CS, the purpose of which is to allow ESB to better manage its risk and to reduce inefficiencies to the long-term benefit of electricity consumers. This

objective is undermined if the Liquidity Buy Commitment is so large that it leads to a situation in which ESB's demand is significantly overhedged. It makes sense, therefore, that the Liquidity Buy Commitment be to some extent dependent upon the degree to which ESB's demand is internally hedged after discharge of the Liquidity Sell Commitment.

### **Volume of Liquidity Buy Commitment**

ESB will offer a Liquidity Buy Commitment of 10% of ESB's forecast demand based on a 40% SEM supply market share.

ESB will offer a Liquidity Buy Commitment of proportionately more than this to the extent to which ESB's forecast market share of supply is greater than 40%. Equally, ESB's Liquidity Buy Commitment will reduce proportionately as its forecast market share of supply in the SEM reduces below 40%. (See Appendix 1)

The Liquidity Buy Commitment reduces to the extent to which, after the Liquidity Sell Commitment is taken into account, it pushes ESB significantly long on generation.

The Liquidity Buy Commitment ceases in the event of the following:

- ESB's share of Supply in the SEM falls below 30%;
- The commissioning of an additional interconnector (in addition to the E-W interconnector currently under construction);
- The GB and SEM markets become effectively coupled; or
- There is a fundamental change of SEM market rules.

### **Overall Commitment**

Based on the removal of the present business-separation constraints between PG and CS and finalisation with the RAs of an arrangement in respect of liquidity as outlined above, ESB is prepared, subject to Board approval, to enter into a binding commitment to the effect set out in this paper.

### **CONCLUSIONS**

The nature of the SEM and the fact that most unregulated Suppliers are integrated with generation means that both the requirement for contracts for difference (CFDs) and the associated risk premiums tend to be low reducing the likelihood of significant levels of trades in CFDs around the SMP.

Any party can trade in CFDs around the SMP and it is not necessary to have an underlying physical position. In addition, because of the possibilities of substitution, the trade in CFDs does not constitute a separate and distinct market and ESB can not exercise market power in this regard.

ESB understands the challenge facing the market to be one of ensuring that Suppliers and Generators and potential new entrants can generally get access to CFD products which allow them to trade away the risk of their exposure to the SMP. This is a challenge for the market as a whole and the solution cannot be provided by just one or two market participants.

There is concern that the removal of separation between PG and CS will collapse liquidity and ESB has committed to ensuring that this will not be the case.

In the context of the removal of separation between CS and PG, ESB commits to sell and buy products that will allow other market participants to manage their exposure to the risk of SMP movements. This commitment must strike a balance between providing a significant level of liquidity support on the one hand without completely undermining the objectives of the removal of PG - CS separation on the other.

ESB commits to the provision to Suppliers of baseload, mid-merit and peak profile products for annual, quarterly and monthly terms, to a volume of 25% of PG's forecast production (depending on market share and certain other constraints).

ESB commits to the provision to Generators of baseload, mid-merit and peak profile products for annual, quarterly and monthly terms, to a volume of 10% of ESB's forecast demand (depending on market share and certain other constraints).

ESB commits to the provision of regular and dependable auctions, to reduce the minimum clip size for new entrants down to 0.1MW, ensuring that shape products are available in proportion to the overall liquidity commitment, and to consider offering products based on EFA blocks (such as UK Peak), as an alternative and dependent on market demand.

This is a very significant commitment made in the context of ESB's submission to the SEM Committee of February 2010 "Industry Change and Progressive ESB De-Regulation" and is subject to approval of its request for the removal of the separation between PG and CS.

Based on the removal of the present business-separation constraints between PG and CS and finalisation with the RAs of an arrangement in respect of liquidity as outlined above, ESB is prepared, subject to Board approval, to enter into a binding commitment to the effect set out in this paper.



## Appendix 1.

Liquidity Sell Commitment (LSC)

ESB Market Share of Generation in the SEM (MSoG) (Note, in this regard, ESB's output determining its MSoG does not include output from the Peat plants where the output is sold on behalf of the CER.)

Directed Contract Volume (DCV)

Power Generation Forecast Production (PGprod) (Note that in this regard PGprod does not include output from the Peat plants.)

ESB Forecast Demand (ESBdemand)

Non ESB Hedge Opportunities Volumes (including PSO Volumes) (NHOV)

$$LSC = 25\% \times (MSoG/40) \times (PGprod)$$

LSC includes DCV. If  $DCV \geq LSC$  then LSC becomes DCV.

LSC is limited such that  $(PGprod - LSC) \geq 30\%$  of ESBdemand

LSC is limited such that  $NHOV + (PGprod - LSC) \geq ESBdemand \times 50\%$

Liquidity Buy Commitment (LBC)

ESB Market Share of Supply in the SEM Market (MSoS)

$$LBC = 10\% \times (MSoS/40) \times ESBdemand$$

LBC is limited such that  $LBC \leq 50\% \times ESBdemand - (PGprod - LSC)$

End.

## ANNEX 6: MODELLING ASSUMPTIONS

The 2010-11 Redpoint Validated Plexos Model was used as the template for this modelling. The following tables include some of the specific assumptions made for the years modelled.

SEM System Data	Unit	2015	2020
Embedded Generation	MW	126.1	156.2
WIND	MW	3,941.0	6,069.0

Plexos Unit ID	Station Ownership	Station Fuel	Capacity (MW)	2015 Available / Retired	2020 Available / Retired
AA1	ESBPG	Hydro	21	Available	Available
AA2	ESBPG	Hydro	22	Available	Available
AA3	ESBPG	Hydro	19	Available	Available
AA4	ESBPG	Hydro	24	Available	Available
AD1	ESBPG	Gas	258	Available	Retired
ADC	ESBPG	Gas	431.6	Available	Available
AT1	ESBPG	Gas	88	Available	Retired
AT2	ESBPG	Gas	90	Available	Retired
AT4	ESBPG	Gas	90	Available	Retired
B10	AES	Gas	101	Available	Available
B31	AES	Gas	247	Available	Available
B32	AES	Gas	247	Available	Available
BGT1	AES	Distillate	58	Available	Available
BGT2	AES	Distillate	58	Available	Available
Caulstown GT	Airtricity	Gas	58	Available	Available
CGT8	ESBI	Distillate	58	Available	Available
Contour 1	Contour Global	Gas	3	Available	Available
Contour 2	Contour Global	Gas	3	Available	Available
Cork PS	Wind Prospect Ireland Ltd	Hydro	70	Available	Available
CPS CCGT	ESBI	Gas	425	Available	Available
Cuilean OCGT	Bord Gais	Gas	98	Available	Available
DB1	ESBI	Gas	415	Available	Available
Dublin	Covanta	Waste	72	Available	Available
ED1	Bord na Mona	Peat	117.6	Available	Available
ED3	Bord na Mona	Distillate	56	Available	Available
ED5	Bord na Mona	Distillate	56	Available	Available
ER1	ESBPG	Hydro	10	Available	Available
ER2	ESBPG	Hydro	10	Available	Available
ER3	ESBPG	Hydro	22.5	Available	Available

ER4	ESBPG	Hydro	22.5	Available	Available
Great Island CCGT	Endesa	Gas	430	Available	Available
HN2	Viridian	Gas	404	Available	Available
HNC	Viridian	Gas	343	Available	Available
K1 Coal 220	AES	Coal	238	Available	Available
K2 Coal 220	AES	Coal	238	Available	Available
KGT1	AES	Distillate	29	Available	Available
KGT2	AES	Distillate	29	Available	Available
KGT3	AES	Distillate	41.6	Available	Available
KGT4	AES	Distillate	41.6	Available	Available
LE1	ESBPG	Hydro	15	Available	Available
LE2	ESBPG	Hydro	4	Available	Available
LE3	ESBPG	Hydro	8	Available	Available
LI1	ESBPG	Hydro	15	Available	Available
LI2	ESBPG	Hydro	15	Available	Available
LI4	ESBPG	Hydro	4	Available	Available
LI5	ESBPG	Hydro	4	Available	Available
LR4	ESBPG	Peat	91	Available	Available
Meath	Indaver	Waste	17	Available	Available
MP1	ESBPG	Coal	280	Available	Available
MP2	ESBPG	Coal	280	Available	Available
MP3	ESBPG	Coal	280	Available	Available
New CCGT 1	New Entrant 1	Gas	440	Available	Available
New CCGT 2	New Entrant 2	Gas	445	Available	Available
Nore OCGT	Bord Gais	Gas	98	Available	Available
NW4	ESBPG	Gas	163	Available	Retired
NW5	ESBPG	Gas	104	Available	Retired
PBC	ESBPG	Gas	480	Available	Available
RH1	Endesa	Distillate	52	Available	Available
RH2	Endesa	Distillate	52	Available	Available
SK3	Aughinish	Gas	83	Available	Available
SK4	Aughinish	Gas	83	Available	Available
Suir OCGT	Bord Gais	Gas	98	Available	Available
TB4	Endesa	Oil	240	Available	Retired
Tarbert OCGT	Endesa	Gas	285	Available	Available
TH1	ESBPG	Hydro	73	Available	Available
TH2	ESBPG	Hydro	73	Available	Available
TH3	ESBPG	Hydro	73	Available	Available
TH4	ESBPG	Hydro	73	Available	Available
TP1	Endesa	Distillate	52	Available	Available

TP3	Endesa	Distillate	52	Available	Available
TY	Tynagh	Gas	388.5	Available	Available
WG	Bord Gais	Gas	445	Available	Available
WO4	ESBPG	Peat	137	Available	Available

## ANNEX 7: CONSULTATION QUESTIONS

The issues/ questions posed by the RAs in their Consultation Paper are repeated below for ease of reference.

1. Do the objectives and criteria for the Market Power Mitigation Strategy remain appropriate today and for the foreseeable future?
2. Will the new interconnector facilitate more competition from Great Britain? If so, what will be the impact on the appropriate market power mitigation strategy?
3. It would be helpful if market participants could explain why they believe demand for hedging products in the SEM exists, and how this demand is not addressed by alternative hedging options, such as through fuel markets.
4. In what way could DCs be reformed in order to promote contract liquidity while also mitigating market power? Do you see merits in replacing the HHI with the RSI in determining DC volumes?
5. Does the recent removal of the EPO condition from ESBCS for business customers and the earlier EPO removal from NIEES for customers with an annual demand above 150 MWhs, together with the removal of ring-fencing between ESBCS and ESBIE, negatively impact on the SEM spot or contract markets? If you consider that it does, are there any replacement conditions required in the SEM and what should they be?
6. Do you consider that the planned forthcoming removal of the EPO for domestic customers in Ireland will have an adverse effect on competition and liquidity in the SEM spot or contracts market? If so, what replacement would you recommend for the SEM? Would the removal of the EPO from NIEES for customers below 150 MWh per annum in NI have a similar impact – and if so, what replacement would you recommend?
7. What if any, implications for competition/ end customer do you see arising from ESB's proposed reintegration:
  - a) Horizontally,
  - b) Vertically,
  - c) Horizontally & Vertically.

What, if any, new measures would you recommend be put in place for each of the above forms of integration?

8. Would further divestment by ESB encourage deeper competition in the wholesale market?
9. What are the current incentives on generators and suppliers to offer and purchase contracts? Are there any impediments to trading contracts? Do you agree with mandating all generators to offer contracts and/or to become market makers? If not all generators, what criteria would you use for mandating generator to offer contracts or to become a market maker?
10. What product types and in what proportions should a minimum specification market maker offer? What eligibility restrictions should there be to trading with market makers?
11. Do you agree with the CEPA analysis of the ability of structural remedies to address the competition problems presented by the hypothetical structural scenarios outlined in section 6 of the accompanying paper?
12. Will ESB's liquidity proposal be effective in assisting contract liquidity in the market if it is allowed to vertically and horizontally integrate? Will this proposal facilitate competition in the wholesale and retail market? If so, why? If not, why not?

13. Will increased wind penetration affect demand for contracts and the need for market liquidity?