



Integrated Single Electricity Market (I-SEM)

I-SEM Market Power Mitigation

Discussion Paper

SEM-15-031

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1 PURPOSE, JUSTIFICATION AND OBJECTIVES

1.1 PURPOSE

- 1.1.1 In its High Level Design Decision (HLD) on the Integrated Single Electricity Market (I-SEM)¹, the SEM Committee stated that it will use the detailed design and implementation phase for I-SEM to develop any additional measures it believes appropriate to ensure that consumers are protected from the abuse of market power.
- 1.1.2 This discussion paper by the Regulatory Authorities - the CER and Utility Regulator - introduces the I-SEM market power mitigation workstream to stakeholders. Its purpose is to provide a background on market power, provide possible considerations in relation to I-SEM, outline the workstream's expected scope and to illicit views from stakeholders regarding the topics raised.
- 1.1.3 At a high-level, the scope of the market power mitigation workstream is to identify to what extent there could be market power in the I-SEM wholesale market and to decide on an associated regulatory market power mitigation strategy and measures. The workstream will evaluate the potential for the exercise of market power within the design of the I-SEM wholesale market, and consider the implications of this for the range of regulatory market power mitigation measures that may be employed.
- 1.1.4 This is not a formal consultation paper but rather provides an opportunity for stakeholders to provide initial information to the Regulatory Authorities to inform the forthcoming consultations in the market power mitigation workstream.
- 1.1.5 Accordingly, comments to this discussion paper are requested from stakeholders by 19th June 2015, with comments to be sent in electronic format to both James Curtin in the CER at jcurtin@cer.ie and Joe Craig in the Utility Regulator at joe.craig@uregni.go.uk

1.2 JUSTIFICATION

- 1.2.1 Market power can generally be thought of as the ability to profitably sustain prices above competitive levels or restrict output/quality below competitive levels. A generation company with market power might also have the ability and incentive to impact competition in other ways; for example, by

¹ Please see: http://www.allislandproject.org/en/wholesale_overview.aspx?article=d3cf03a9-b4ab-44af-8cc0-ee1b4e251d0f

weakening existing competitors, discourage potential competitors by raising entry barriers or slowing innovation. This is discussed further in section 2.

- 1.2.2 The exercise of market power is therefore harmful to electricity customer interests and to other market participants. It is accordingly necessary for the Regulatory Authorities to determine whether any market participants have the ability and incentive to exercise I-SEM wholesale market power to the detriment of customers, to develop a regulatory strategy that will mitigate either or both of incentive and ability to exercise this power, and to determine the measures that must be employed to implement the regulatory strategy.

1.3 OBJECTIVES

- 1.3.1 The SEM Committee stated in the HLD that I-SEM is characterised by the following philosophy:

- Preference for a competitive approach that is in the interests of consumers, in accordance with the statutory duties of the SEM Committee;
- Access to all I-SEM market places for participants of all sizes and technologies;
- Liquid trading of financial forward contracts for effective hedging of short term prices, which is particularly important for independent generators and suppliers;
- Liquid and transparent centralised short-term physical markets that are coupled with European trading mechanisms, and are exclusive routes to physical scheduling;
- Balance responsibility for all participants to ensure that their notifications of generation or demand best reflect their actual expectations; and,
- An explicit capacity remuneration mechanism to help deliver secure supplies for consumers in the all-island market, particularly with increasing variable generation.

- 1.3.2 Taking account of this philosophy, the objectives of the I-SEM market power mitigation workstream are to:

- Develop an appropriate regulatory strategy and measures to mitigate the incentive and ability of any market participant to exercise market power in the I-SEM physical and financial wholesale energy markets;
- Enable efficient and transparent price formation in I-SEM's physical and financial markets;
- Promote competition in I-SEM's physical and financial markets, including appropriate generation entry/exit;
- Allow for the development of liquid physical short-term and forward financial trading in I-SEM, with the latter to be progressed as part of policy developed in the I-SEM "forwards and liquidity" workstream;

- Be consistent with other I-SEM policy decisions, including I-SEM’s Energy Trading Arrangements, Capacity Remuneration Mechanism workstream, Financial Transmission Rights and policies to promote forward and spot market liquidity. This includes market power mitigation measures designed separately as part of these policy measures, for example in relation to the Capacity Remuneration Mechanism and Financial Transmission Rights; and,
- Be consistent with other segments in the electricity cost chain, specifically the all-island “DS3” programme for system services² and retail electricity markets in ROI and NI, including any market power mitigation measures that are developed in these areas.

1.3.3 The market power mitigation policy development will focus on appropriate regulatory market power mitigation measures in I-SEM’s energy and financial wholesale trading windows (only), taking account of consistency with other I-SEM consultations and decisions as per section 1.3.2. For clarity, structural reform of market participants as a method to mitigate market power is out of scope given that this is outside of the SEM Committee’s remit. That said, the potential for structural changes will be taken into account in developing a market power mitigation strategy.

1.4 STRUCTURE OF THIS PAPER

1.4.1 The Discussion Paper is structured as follows:

- Section 1: sets out the purpose, justification and objectives for this workstream;
- Section 2: provides a background to market power concepts, along with possible approaches to the measurement of market power, related to I-SEM;
- Section 3: sets out considerations for a possible market power mitigation strategy in I-SEM;
- Section 4: identifies the proposed approach to this workstream and interactions with other I-SEM workstreams;
- Appendix 1: summarises the questions asked in this paper; and,
- Appendix 2: sets out some international comparison on market power matters.

² Please see latest relevant SEM Committee decision:
http://www.allislandproject.org/en/transmission_current_consultations.aspx?article=11d55fa2-e9cd-454c-aaa5-d689d434db20&mode=author

2 MARKET POWER CONCEPTS & MEASUREMENTS

2.1 BACKGROUND

- 2.1.1 It is worthwhile considering what constitutes market power in an electricity market, how this was considered for SEM and its potential application to I-SEM.
- 2.1.2 In developing the SEM, the Regulatory Authorities tended to consider market power as the *capability* that a market participant has to consistently enhance its profitability by raising or reducing electricity prices in the all-island wholesale spot market from levels consistent with appropriate competition. While a market participant may or may not exercise market power, the key issue is that it has the capability to do so. It is expected that a similar definition, at least in part, would be relevant for I-SEM, albeit with differences taking account of the emerging I-SEM design as discussed below. Such a definition could also account for the fact that a generation company with market power might also have the ability and incentive to foreclose competition in other ways; for example, by weakening existing competition, raising entry barriers or slowing innovation.
- 2.1.3 In general, market power in electricity wholesale/spot markets is exacerbated by the relatively inelastic nature of demand in the short term, though increased demand side participation in I-SEM may help to make it more responsive to changes in price levels. If demand is relatively inelastic, generators who are not adequately constrained by demand-side response or supply competition can raise the price in the respective physical spot or financial forward market. Raising the price of electricity may well produce short run profits for generators in the physical markets and may also raise market expectations of future spot prices, thereby enhancing forward financial contract revenues. It is therefore essential that wholesale prices be free of untoward market power both to control physical spot prices and to ensure that competitively priced financial hedges are available to suppliers in terms of forward products and contracts.

2.2 MARKET POWER CONCEPTS

- 2.2.1 The following are possible forms of market power abuse by generators in a centralised physical spot market, be it SEM or I-SEM:
- **Financial withholding:** this is the practice of a generator bidding higher than the unit would bid in an effectively competitive market with the knowledge that there is likely to be little or no competition, such that the bid sets the System Marginal Price (SMP);

- **Physical withholding:** this involves a portfolio player withholding some of its infra-marginal plant from the market, thereby ensuring that more expensive plant is run, driving up prices and revenue earned from the rest of the portfolio; and,
- **Price suppression:** this involves pricing actions which reduce market prices either to yield long run profits by damaging current and future competitors, or to achieve other non-profit-related goals, such as foreclosing competition.

2.2.2 Although financial and physical withholding actions referred to above may reduce the profitability of the particular generation unit, the aggregate profitability of the other units under control of the bidder may be enhanced by this action. Whether or not the net profitability is increased depends on the profits sacrificed at the particular unit, the increase in price achieved, and the quantity of other units generating to receive the higher price.

2.2.3 Market participants can also exercise market power specifically in the market for forward financial contracts. For example, a market participant - typically a generator - could increase the price at which forward financial contracts are offered and/or withhold products from the forward market. The ability for demand to respond to changes in price in the forward market is probably greater than in the spot market, because a supplier (i.e. a buyer of a forward contract) can choose not to contract at a price that is above their expectations of the spot price (i.e. remain unhedged) or use alternative forms of hedging, such as the purchase fuel hedges.

2.2.4 The ability to sustain high prices in the forward financial market would be predicated on the existence of high and non-transitory barriers to entry into that market. While offering financial contracts on the back of physical assets may reduce risk for a trader, there is no requirement to own a physical asset, in order to offer such contracts for sale. Hence, the barriers to entry for trading financial contracts would appear to be lower than for markets for physical delivery, where entry into the market requires building and operating a power plant.

2.2.5 Hence it could be argued that the potential for the exercise of market power is less in the financial market than the physical spot market. That said, market power here is still a possible cause for concern, if for example suppliers feel the need to buy forward hedges to reduce the risk of exposure to the volatile physical spot market, and/or if the retail markets are not subject to sufficient competition or regulation so that willingness to pay by a supplier may not act as a sufficient constraint on the seller of forward contracts.

2.2.6 More generally, when assessing whether and to what extent market power exists in I-SEM, it is helpful to consider the strength of any competitive

constraints, i.e. market factors that prevent a generator from profitably sustaining prices above competitive levels, as discussed below.

- **Existing Competitors:** This refers to generation companies already in the relevant wholesale market. If a generation company (or group of companies) attempts to sustain prices above competitive levels, this might not be profitable because suppliers would switch their purchases to existing competitors. The market shares of competitors, in the relevant market, are one measure of the competitive constraint from existing competitors. It is also important to consider how the market shares of generation companies in the SEM have moved over time, and any future changes, e.g., due to exit of existing generation capacity. Information on the concentration of the current SEM is provided in section 2.4.
- **Potential Competition:** This refers to the scope for new entry into the wholesale market by generators. For example, where entry barriers are low, it might not be profitable for one or more generation companies in a market to sustain prices above competitive levels via market power because this would attract new entry which would then drive the price down – if not immediately, then in the long term.
- **Buyer power:** Buyer power exists where buyers, suppliers in this case, have a strong negotiating position with generators, which weakens the potential market power of a generator in the physical or financial wholesale electricity markets. So the number and size of suppliers and potential suppliers is relevant in relation to market power.

2.2.7 Stakeholder views are invited on the following questions:

- Q1 Are the market power concepts and examples provided appropriate and sufficient for I-SEM?
- Q2 Are the potential constraints on market power referred to above appropriate for I-SEM?

2.3 I-SEM MARKET DESIGN & MARKET POWER

2.3.1 The architecture/design of a wholesale electricity market, as well as existing and potential participants within it (see section 2.2 above), can have a significant impact on the exercise of market power. Looking forward to I-SEM, the potential exercise of market power as referred to in section 2.2 will continue to be a key focus for a market power mitigation strategy and measures, but with some key differences taking account of the I-SEM design.

2.3.2 At a high-level, increased physical interconnection between the island and Great Britain, and use of the EU Target Model's Euphemia algorithm in day ahead trading as part of I-SEM, with likely further cross-border intraday trade also, means that market power needs to be examined from both an all-island but possibly a broader geographic perspective too. Thus consideration will

need to be given to what the appropriate geographic market(s) is/are when measuring market power and determining mitigation measures.

2.3.3 In more detail, the assessment of market power will need to take account of the particular design features of I-SEM. The following table compares a number of the market features in SEM and I-SEM in this regard, with a discussion provided underneath.

Wholesale Market Architecture	SEM	I-SEM
1 Market Zone	All Island	All Island
2 Trading Day	06:00 for 24 hours	23:00 for 24 hours
3 Trading Period	30 minutes	Hourly (Day ahead and intraday) & 30 minutes (balancing market)
4 Gate Closure	Trading day – 20.5 hours (EA1)	Trading day -12 Hours (Day-1)
5 Offer/Bids	Generator with complex offers (with commercial & technical components) Single bids per day Demand is a price taker	Simple or sophisticated offers (e.g. block orders, linked block orders, flexible orders, minimum revenue condition, load gradient) Hourly bids and offers Demand can be a price maker
6 Market clearing timeframes	Single ex-post clearing	Day ahead: Centrally cleared 2 sided auction Intraday: Continuous trading Balancing: Ex-post clearing
7 Firm Pricing	Ex-post	Ex-ante day ahead & intraday and ex-post balancing
8 Forward Contracts	Financial	Financial
9 Cross Border Settlement	Interconnector units settle cross border trades.	Implicit with a central counter party
10 Capacity Mechanism	Capacity payments	Reliability Options
11 Ancillary Services	Regulated	Auctions & regulated

Table 1

2.3.4 The market power considerations for each of these market features for SEM & I-SEM are discussed below.

1. Market Zone

Trading in the SEM covers the island of Ireland with the incorporation of interconnector users which trade to and from Great Britain (GB).

In I-SEM the day ahead and intraday markets will be part of a continental European wide market. This will mean greater optimisation of cross-border trades across Europe and increased benefits of competition, therefore mitigating the extent of market power in each market. However this will be limited by the ability of pan-European generation sources to deliver into the I-SEM via the two interconnectors, i.e. limited by the capacity of the interconnectors. The balancing market will remain all-island with the incorporation of cross-border trades to and from GB facilitated by a Common Merit Order List as the European Network Code on Balancing progresses.

2. Trading Day

The trading day in SEM is aligned with the trading day for the gas market in GB, as this is the fuel that dominates the generation mix on the island.

In I-SEM the trading day will be aligned with all the other electricity markets across Europe, midnight at Central European Time (CET). This feature will enhance the competition across European markets and could mitigate the extent of market power by improving the scope of cross-border trading.

3. Trading Period

SEM has a trading period of 30 minutes.

In I-SEM the day ahead trading period will be hourly. Intraday products will be at least hourly and the Local implementation Project (LIP) on the I-SEM to GB border will decide on the implementation of more granular products, i.e. 30 minute or 15 minute products. The imbalance settlement period will likely be 30 minutes at I-SEM Go-Live although it is possible that this will move to 15 minutes in future as the European Network Code on Electricity Balancing progresses. Larger trading periods may reduce transparency of participant actions/trades and pose a greater challenge in identifying the exertion of market power.

4. Gate Closure

The gate closure in SEM is 20.5 hours before the trading day.

In I-SEM this will be 12 hours before the commencement of the trading day. Earlier gate closures reduce the opportunities for the exertion of market power in response to changes in market conditions and information. This is offset by less efficient trading by participants not being able to incorporate more up-to-date information, such as changes in fuel prices.

5. Offers/bids

SEM requires generators to submit a single set of complex offers (separating start up, no load and energy costs) for each trading day. Demand in SEM is a price-taker and as a result does not exert market power in the pool. The exception to this is the participation of demand side units.

In I-SEM generators will be required to submit hourly bids, either simple or sophisticated (neither of which have separate start and no-load costs). Monitoring the exertion of market power may be more difficult in I-SEM with such bidding compared to the complex bidding in SEM. In addition, being able to vary their prices over the trading day (rather than a single set of prices for the entire day) may give I-SEM participants more ability to exercise market power.

Furthermore, demand, in addition to demand side units, will have the opportunity to participate in all trading windows and be a price-maker in I-SEM, not a price-taker as in SEM. Demand in I-SEM may therefore have the potential to mitigate or increase generator market power, which may also increase the monitoring requirement of the Regulatory Authorities.

6. Market Clearing Timeframes

Currently the SEM has two intraday windows for participants to alter day ahead offers.

I-SEM will have continuous implicit trading, which will provide a greater challenge in terms of market liquidity and monitoring. This is offset by more efficient trading by participants being able to incorporate more up-to-date information, such as changes in fuel prices.

SEM is a gross mandatory pool, which means there is a single trading place where all physical wholesale transactions take place. This has the benefits of liquidity and easier monitoring by the RAs and market participants.

I-SEM has more than one trading window for physical trades and different types of trade formats, auctions and continuous trading arrangements. This could mean less certainty around the liquidity in trading and possibly greater monitoring requirements in relation to the potential exercise of market power in different timeframes.

7. Firm Pricing

SEM prices are determined ex-post, which limits the opportunities for the exertion of market power, removing the possibility to alter prices or availability based on system information (high demand, low wind etc.).

In I-SEM day ahead and intraday prices are ex-ante and balancing prices are ex-post. This gives market participants the opportunity to adjust their bidding

according to market conditions as well as more incentives for demand side participation, which could limit the ability of generators to exercise market power.

8. Forward Contracts

The form of forward trading of electricity will remain unchanged between SEM and I-SEM, both will need to be financial (Contracts for Difference), as physical trading is limited to the day ahead and spot markets.

In the design of SEM the thinking was that in considering purchase of hedges such as financial contracts, the willingness of buyers (suppliers) to pay would be based on expected spot market prices. Hence, if contracts were over-priced relative to the spot market, buyers could decide to not purchase them and rely instead on the physical spot market. Hence, market power in the forward contract markets was primarily considered to be derived from market power in the spot market and so SEM market power analysis and measures were focused there.

In SEM, while the Directed Contracts were primarily used as a mechanism to reduce the incentive of ESB Generation to exercise market power, they had the added benefit of providing fixed priced forward contracts, available to all suppliers in proportion to their demand. There is clearly, therefore, an interaction between this market power mitigation measure and the volume of contracts traded in the forward market.

For I-SEM, the experience gained in the operation and out-turn of trading in forward contracts in SEM will be used to improve the liquidity and concerns over market power in this market – see section 2.2 also.

9. Cross Border Settlement

Interconnector (IC) trades in the SEM are settled with the individual owners of IC capacity. This means that flows between SEM & GB are dependent on the preferences of the individual traders and do not always correspond to the direction of the price differential between the markets.

In I-SEM physical trades will be determined by the EU Target Model's Euphemia algorithm during the day ahead market. Holders of transmission capacity (FTRs) will receive the price differential between both markets, rather than the right to schedule power on that capacity. This means that there is no linkage between holding an FTR and cross-zonal flows, leading to improved trading between the markets and increased competition as a result, which should help mitigate against market power. FTRs are not applicable for intraday trading.

10. Capacity Payment

The SEM remunerates generation capacity through a capacity payment. The total revenue is determined administratively and payments are made to all

generation that provides capacity. There is little opportunity for market power manipulation under these arrangements.

Reliability options are proposed for I-SEM, which is similar to a call option. This mechanism requires generators (and demand side response) to compete for capacity revenue and obliges them to make difference payments when the wholesale market price exceeds a predefined strike price. Furthermore, additional incentives may be placed on the capacity providers to ensure that they are delivering energy into the reference market during periods of system stress. Reliability Options could be instrumental to mitigate against the exercise of market power by removing the incentive for holders of capacity contracts to bid into the reference market above the strike price of the reliability option.

11. Ancillary Services

Under the harmonised ancillary service arrangements in SEM there are three main system services (operating reserve, reactive power and black start) that are remunerated based on regulated rates that are approved annually by the RAs. Other services are mandated requirements on generators through the Grid Code. There is little opportunity for market power manipulation under these arrangements.

Under the DS3 project a redefined set of system services have been proposed in order to securely and efficiently accommodate the increasing levels of intermittent wind generation being added to the network. In order to efficiently secure these services from new and existing generators, they will be procured through a competitive process, where there is sufficient competition and through regulated tariffs where there isn't. These changes may introduce an increased risk of the exploitation of market power for those services being procured on a competitive basis. The SEM Committee has recognised this and is committed to addressing the risks of market power in the DS3 System Services implementation project.

2.3.5 In addition, in SEM as well as in I-SEM, local system constraints and dependencies on limited (single in some cases) plant to provide a service or solve a system problem creates an exposure to transient/local market power situations that manifest themselves in the balancing market. Mitigating local market power that might arise in the balancing market is therefore an important area to focus on for I-SEM. For information, the Transmission Constraint Licence Condition (TCLC) in GB is seeking to address this type of issue and it may be a more significant factor in markets with constraints and/or with limited interconnection, such as GB and SEM/I-SEM. More heavily meshed systems are less susceptible to these types of issues.

2.3.6 A market power mitigation strategy and associated measures in I-SEM will need to take account of the issues identified above. A market power mitigation strategy will also need to take into account the desire to develop

forward financial liquidity (as being progressed via the “forwards and liquidity” workstream), along with the need for effective and efficient interaction with I-SEM’s Capacity Remuneration Mechanism and Financial Transmission Rights, the “DS3” programme and jurisdictional retail markets. This includes any market power mitigation measures that are designed separately in these areas.

2.3.7 Stakeholder views are invited on the following questions:

- Q3 Given the emerging I-SEM design, including closer integration to European electricity markets and a number of energy trading timeframes, what is the appropriate geographic market(s) and/or trading period(s) definition for the measurement of market power and determination of a mitigation strategy in I-SEM?
- Q4 Are the various (other) market design issues referred to above and their potential impacts on market power captured appropriately and fully?

2.4 POSSIBLE MARKET CONCENTRATION MEASUREMENTS FOR I-SEM

2.4.1 This section considers the different measurements that may help in identifying market power in wholesale electricity markets such as I-SEM. In general, market power is more likely to exist if a company (or group of companies) has a persistently high market share. Likewise, market power is less likely to exist if a company has a persistently low market share. Relative market shares can also be important. For example, a high market share might be more indicative of market power when all other competitors have very low market shares. The price-setting ability of a company is also an important in determining the existence of market power. A variety of metrics are discussed in this section that try to capture different aspects of market power.

2.4.2 It is worth noting that when examining market power there are different dimensions that are involved in measurement, such as the product (energy, capacity etc.), the horizon being examined (specific hours in the trading day or capacity over a number of years) or the specific location (a region or constraints at a particular node). With the selection of different points on the scale in each dimension, it is likely that the results of any measures of market power are likely to change.

2.4.3 The following measures of market concentration were considered by the Regulatory Authorities in developing a measure of physical wholesale market power for the SEM. Taking account of the issues referred to in previous sections, these and/ or other measures could also be considered for I-SEM in determining the expected level of physical and financial market power for I-SEM and developing an associated market power mitigation strategy.

- Market Share [Energy & Capacity]
- Generation Price setting [Capacity]
- Residual Supplier Index (RSI) [Capacity]
- Herfindahl-Hirschman Index (HHI) [Energy]

These are discussed in more detail below.

2.4.4 Market Share: This is one of the simplest and most accessible measures of market power, which can be used to measure the volume of both energy and capacity. Companies with large market shares could be seen as an indication of market power. As mentioned earlier, the relative size of companies needs to be considered. While this might be an indication of market power, it would not be deemed a sufficient proof of the exercise of market power. The following figures show market share in SEM generation by capacity and spot market energy, forward financial and supply (energy). As can be seen, ESB's spot market share for 2014 was at 47.5% and it was 85% of the forward financial energy sold for 2013. Thus the SEM is quiet concentrated. On the supply side, the two retail markets are largely covered by 5 companies. There is not the same relative concentration by the largest company, Electric Ireland as in the SEM spot market, and the four other large suppliers account for a larger share of the market than they do in generation.

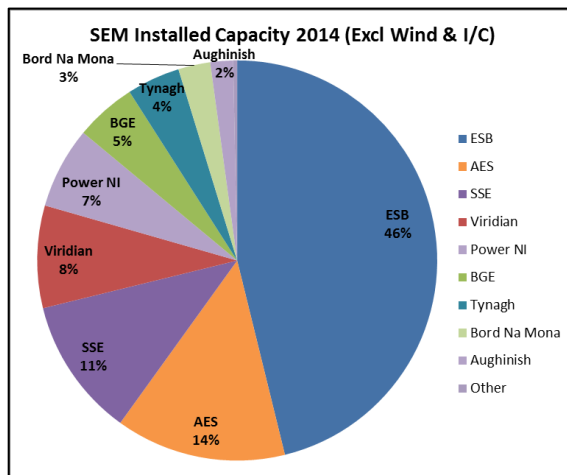


Figure 1

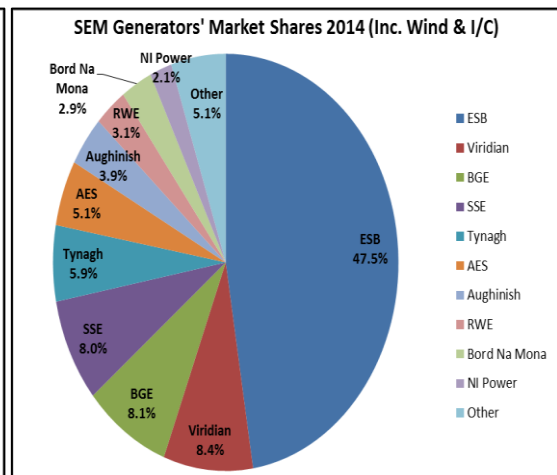


Figure 2

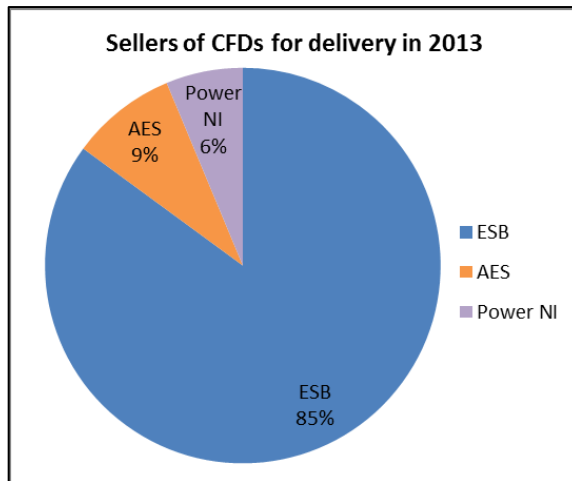


Figure 3

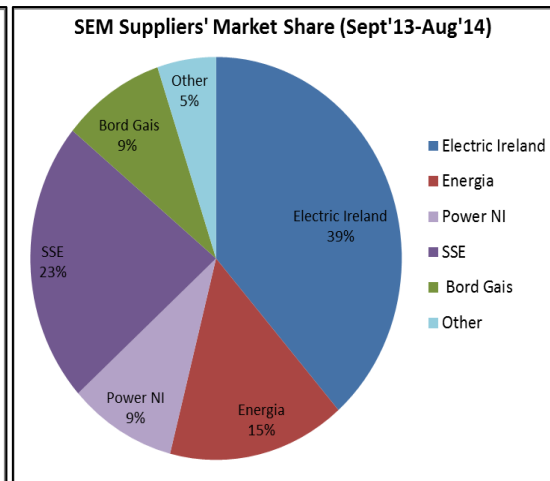


Figure 4

2.4.5 **Generation Price Setting:** Related to the above, an indicator of market power that could be measured is the ability of a firm to set the SMP of the market in a given trading period. If a company can be certain of setting the SMP at certain times of the day or week, it may have the ability to bid in a price which is unreflective of their underlying costs. The larger a company's generation portfolio, of competitive capacity, typically the greater their influence on price setting and their potential to exploit market power.

2.4.6 **Residual Supply Index:** The Residual Supply Index (RSI) measures the extent to which a market participant's capacity is necessary to meeting demand after taking into account the capacity held by other suppliers. The formula for the RSI is:

$$RSI = (\text{Total Installed Capacity} - \text{Firm's Installed Capacity}) / \text{Total Demand}$$

The California Independent System Operator (CAISO) first developed the RSI to measure the ability of a generating unit to set the prices and possibly abuse market power. The CAISO estimated that in general the RSI should not be less than 1.2 at the time of the peak, or less than 1.1 for more than 5% of the hours in a year. Thus, firms with an RSI of less than 1.2 are found to significantly influence the market price.

2.4.7 **Herfindahl-Hirschman Index (HHI):** This is an index of market concentration that accounts for the relative size of the firms in the market. The HHI approaches zero when a market consists of a large number of firms of relatively equal size, while 10,000 is the maximum value and indicates a total monopoly. A market with a HHI between 1,000 and 1,800 would be considered to be moderately concentrated and above 1,800 indicates a significant potential for market power. The HHI was selected instead of the RSI as a measure of market concentration and calculator of Directed Contracts in the SEM for reasons including:

- 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; and,
- The HHI is a more established and widely used index that has been applied to multiple industries.

One drawback of this measure is that the focus on the market can take attention away from changes at the company level.

2.4.8 Stakeholder views are invited on the following questions:

- Q5 What is the appropriate approach to measuring market power when developing a mitigation strategy for I-SEM?
- Q6 Should the measure be determined at a snapshot in time or based on historical or potential future trends in market share (or both or all three)?

3 MARKET POWER MITIGATION CONSIDERATIONS

3.1 EXISTING MARKET POWER MITIGATION MEASURES

3.1.1 As referred to in section 2, some of the market power concerns that exist in the context of the SEM will remain in the I-SEM; effective market power mitigation arrangements will likely be required to address existing concerns and also new issues arising from by the particular design of the I-SEM. To protect customers from the exercise of market power, either or both of the incentive and ability of any generator to raise prices above the competitive level needs to be curtailed.

3.1.2 An initial review of market power mitigation measures in some other markets is provided in Appendix 2, some of which may be applicable to I-SEM. Furthermore, a range of market power mitigation measures were developed as part of a market power mitigation strategy in SEM, addressing both the ability of generators to exercise market power and the incentives to increase spot prices, which may also have applicability to I-SEM, as follows:

- **A Bidding Code of Practice (BCoP):** for all generators such that they are required to bid the opportunity Short Run Marginal Cost (SRMC) into the market;
- **A Market Monitoring Unit (MMU):** in the Regulatory Authorities which, amongst other activities, involves ex-post monitoring of the operation of the SEM to ensure that generators have submitted bids in line with the BCoP. The MMU 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):** which are forward financial Contracts for Differences (CfDs) directed by the RAs, who decide upon the methodology, pricing and quantity of DCs offered by generators with spot market power - currently ESB Generation - with a view to reducing their incentive to exercise market power in the spot market. If ESB exercises market power in the spot market and raises SMP, it will not earn that higher price for the volume of power sold under DCs, thereby mitigating its incentive to exercise market power. DCs also have the secondary benefit of providing forward financial liquidity and helping suppliers, especially those which are not vertically integrated, to manage the risk associated with movements in the spot market.
- **Vertical ring-fencing:** strict licensing arrangements for ESB and Viridian. The main purpose of the vertical licensing arrangements is to prohibit anti-competitive behaviour, cross-subsidies and sale/purchase of contracts other than those which are on an arm's length basis on normal

commercial terms, between the generation and supply businesses of the ESB and Viridian groups³. This means, for example, that ESB Generation must sell forward financial contracts to all suppliers on the same basis, i.e. it can't offer special terms to favour its own supply business. In the absence of this, ESB could refuse to sell forward contracts to independent suppliers on reasonable terms - they could sell to their supply business below the price to non-affiliates for the same contract, to the detriment of rival suppliers.

- **Local market power mitigation measures:** if deemed necessary.

3.2 MARKET POWER EXPERIENCE

3.2.1 A high-level indication that the physical wholesale market in SEM has reflected its underlying costs and has not been subject to the exercise of significant market power is available from the following graph. This shows that the SMP has closely tracked the gas price (National balancing Point or NBP) in Great Britain since the start of SEM, as one would expect in an efficiently performing market where gas has typically been over half of the generation fuel mix.

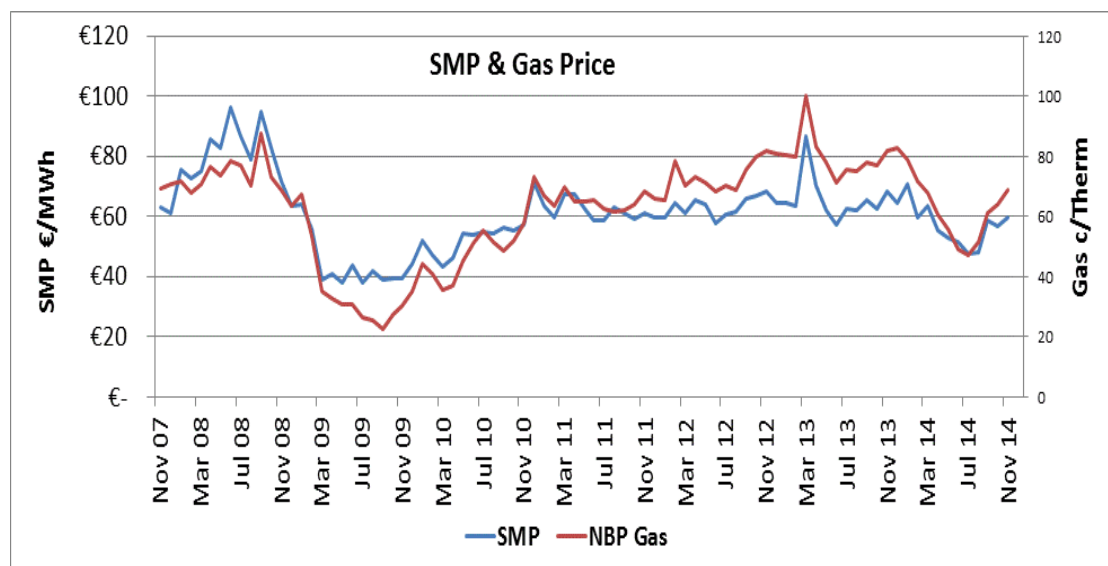


Figure 5

3.2.2 In SEM 12-02-002 of February 2012, the SEM Committee expressed the view that there has been no significant market power exercised in the physical spot market due to the relevant market power mitigation measures in place. Thus it could be argued that the market power mitigation measures in SEM

³ ESB Power Generation (PG) and ESBI were originally also horizontally ring-fenced in SEM. Following a public consultation exercise on market power and liquidity in SEM, in SEM-12-002 of February 2012 the SEM Committee decided to allow ESB to horizontally integrate these generation businesses. This was implemented thereafter via licence changes to ESB's Generation Licence.

have helped ensure that generator bids have been at competitive SRMC levels, resulting in SEM wholesale prices that are efficient and providing the correct market signals. Adapted as necessary, there may therefore be a case for applying some or all of these measures to I-SEM.

3.2.3 Looking to the forward financial market experience, the number of sellers of forward contracts (CfDs) in the SEM has been considerably more limited than the number of sellers in the physical spot market. Figure 6 below shows the overwhelming share that ESB has in this market, arguably reflective of its size in the physical spot market and the lack of participation from vertically integrated companies. Figure 7 shows the different forward spark spreads of contracts that ESB has offered to the market. The spark spread of the non-regulated Non Directed Contracts (NDCs), offered via auctions and Over The Counter (OTC) trades, exceeded that of the regulated DCs in a number of years which possibly indicates a premium being added to these contracts. While this may potentially result from a lack of competition, one would expect some differential between DC and NDC prices in any case given that the DC prices do not have a risk premium.

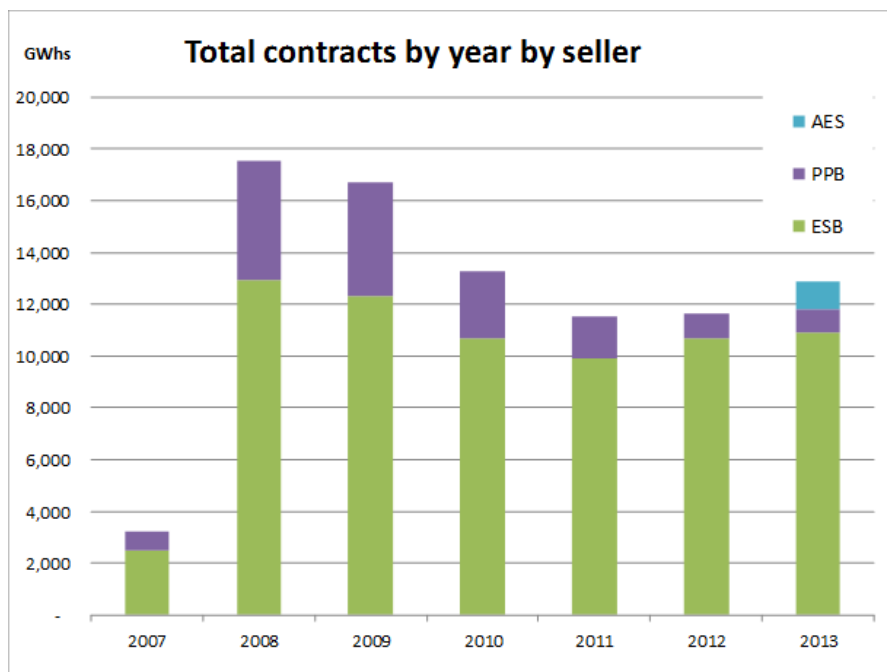


Figure 6

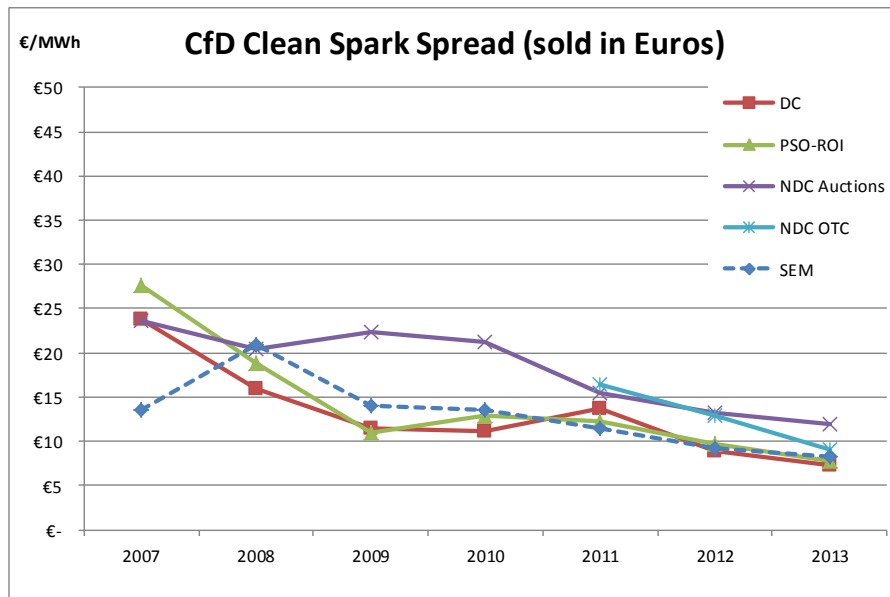


Figure 7

3.2.4 Stakeholder views are invited on the following questions:

- Q7 How effective have the SEM market power mitigation strategy and measures been?
- Q8 To what extent is the strategy and measures applicable to I-SEM?
- Q9 Are there other market power mitigation measures worth considering in the context of I-SEM? (See Appendix 2 for a review of a number of other European markets).
- Q10 What are the barriers to entry for non-asset backed traders in the SEM financial forwards market?

3.3 PRINCIPLES FOR MARKET POWER MITIGATION WITHIN I-SEM

3.3.1 Taking account of experience in SEM and feedback received as part of this workstream, the approach to market power mitigation in I-SEM should be underpinned and informed by principles that are widely agreed to be necessary and appropriate. These principles should be consistent with the overall I-SEM HLD and the incentives within it (some of which may on their own accord mitigate market power) and the objectives referred to in section 1. The principles should also consider effective and efficient interaction with I-SEM's Capacity Remuneration Mechanism, Financial Transmission Rights, the "DS3" programme and jurisdictional retails markets, taking account of any market power mitigation measures developed in these areas.

3.3.2 On this basis, this section suggests key principles that may underpin a market power mitigation strategy in I-SEM, some of which may be (to an extent at least) somewhat competing.

1. **Effective and Feasible:** Naturally a market power mitigation strategy should be effective at mitigating market power. Related, a market power

mitigation mechanism which cannot be effectively applied is of no value – this includes, for example, any market power mitigation measures that are outside the regulatory framework of the SEM Committee and the Regulatory Authorities.

- 2. Targeted:** Market power mitigation should interfere with the natural operation of all markets to the minimum extent possible and all measures adopted should be proportionate. So for example, a key issue is whether a BCoP (Bidding Code of Practice) or some form of bid caps and/or floors in I-SEM, should apply, and if so, to all market participants or only those with market power, and/or to which trading periods in I-SEM.

More generally on this point, it may be the case that a particular participant may only have market power for some of their behaviour at some of the time, or in some circumstances, with mitigation measures applied to this alone. So for example, a unit within a company portfolio might always be constrained on for inertia, allowing the participant to safely bid the price cap up to minimum generation, but with no power existing above Minimum Generation. An appropriate measure might be to limit (e.g. cap) the bid of that unit up to minimum generation only, allowing the participant freedom with the remaining capacity. Different approaches may be considered for those generation entities that have local market power, as opposed to those market participants that have general market power.

- 3. Flexible:** Mitigation policies and measures should be flexible to evolving conditions on the island, such as swapping of the merit of fuel types or relief of constraints through transmission build or other measures, or changes in generation mix due to new investment, or closure of existing plants. This means that the policy or market power mitigant can be applied and removed smoothly in response to developments in the market. Measures, however, should be employed consistently, thus facilitating transparency in operation and application.
- 4. Practical:** Market power mitigation should allow the Regulatory Authorities the power to, under appropriate guiding principles and after engagement with market participants including advice from operators, calculate the parameters that define mitigating measures and facilitate enforcement via direction under licence. This process, once implemented, should operate in very short timeframes if and when required. It should involve readily understood and accepted administrative processes that are predictable and reasonable.
- 5. Facilitate Competitive Entry and Exit:** The ability to increase prices temporarily above a competitive level is not a signal for the existence of market power. It is therefore sensible to allow participants that enjoy a particular segment of market power to enjoy a reasonable return from

their market position in order to encourage competition to emerge and to signal the need for investment in generation, services or transmission as relevant. This is the case where there are no barriers to market entry prevent the entry of such competition to emerge. However, new entry into electricity generation can take a number of years to complete and this can delay the response of competition to high prices in the wholesale market. It may make sense to limit the market power rents available to participants in segments that have very high barriers to entry or in other circumstances which mean that the market power cannot be competed away in a reasonable timeframe or the harm to consumers or other market participants is unacceptably high.

6. **Allows for Innovative Strategy:** 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; 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 Regulatory Authorities aim to choose the one which leaves the most scope for important economic choices to be made by all market participants.
7. **Transparent:** Market power mitigation measures should not be overly complicated, should be easily understood and compliance should be easily achievable and observable. The imposition of market power mitigants should be published and maintained transparently for all participants and potential participants to view. This, for example, might include transparent publication of the mitigated market revenues enjoyed by parties that are regulated by the mitigation measure.
8. **Regulatory Efficiency:** A market power mitigation scheme should not be an excessively difficult or expensive to implement and it ought to achieve benefits in excess of its costs.
9. **Sunset Ability:** 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.

3.3.3 Stakeholder views are invited on the following questions:

- Q11 Are the principles of market power mitigation outlined appropriate?
- Q12 How should these or other principles be applied in I-SEM?

4.1 PROPOSED APPROACH

4.1.1 The proposed approach of the I-SEM market power mitigation workstream is that it will be divided into two phases as follows and discussed below:

- Phase 1 will consider the development of a market power mitigation strategy for I-SEM, with a public consultation and decision for this phase expected in September and December 2015 respectively;
- Phase 2 will consider the detailed market power mitigation measures for I-SEM, taking account of the output of Phase 1 as well as the design proposals and decisions made as part of other I-SEM workstreams such as Energy Trading Arrangements, Forwards and Liquidity and the Capacity Remuneration Mechanism, and DS3. The approach and detailed timings for phase 2 will be decided on and communicated by the Regulatory Authorities this September, i.e. when the market power consultation paper for phase 1 is published (see below for more information).

4.2 PHASE 1 OF WORKSTREAM

4.2.1 Phase 1 of the workstream is expected to formally begin in June 2015 and will consist of the Regulatory Authorities developing and consulting on the broad strategy and principles of market power mitigation appropriate for the I-SEM physical and financial wholesale markets.

4.2.2 This phase will include an examination of the issues highlighted below, some of which have begun to be considered in this discussion paper, which will feed into a public consultation paper expected in September 2015. The consultation paper will also consider comments received to this discussion paper. Following this consultation, a decision on the strategy and principles for market power mitigation in I-SEM is expected in December 2015, ending phase 1 of the workstream.

- 1. Review of Market Power Metrics:** There will be an identification of how market power is typically assessed and measured in wholesale electricity markets such as I-SEM, including in SEM and in wholesale markets in other relevant jurisdictions. This will facilitate the development of a number of methodologies/metrics that could be employed to identify the level of market power in I-SEM.
- 2. Definition of Relevant Market(s) for I-SEM:** I-SEM will operate over a number of trading timeframes and will facilitate further integration with European electricity markets. Therefore in developing the principles underpinning a market power mitigation strategy for I-SEM, this phase

will identify the relevant geographic market(s) and/or trading periods, and (if more than one) their interaction and operation, that should be assessed for market power.

- 3. Review of Market Power Mitigation Measures:** This will identify “lessons learned” from the current SEM and other relevant jurisdictions in relation to the effectiveness of ex-ante and ex-post market power mitigation. It will include a review of market power mitigation inherent in SEM design and in particular the effectiveness of the specific market power mitigation measures in place across the (physical) spot market, forward (financial) contracts markets, as well as the same for other jurisdictions. This is with a view to learning of the appropriateness of the current market mitigation measures in SEM and other jurisdictions and the extent to which they could apply to I-SEM.

- 4. Level of Market Power in I-SEM:** This will provide a high-level assessment of expected market power levels in relevant trading periods/markets in I-SEM wholesale physical and financial markets over the coming decade according to the metric(s) proposed, based on published, publically available and/or easily accessible information. This will need to consider likely future generation, interconnection, demand levels and demand-side participations that will be amenable to modelling. While this review will assume no structural change to ESB Generation as a “central scenario”, scenario analysis will include such a change in the context of the implications it could have for proposed market power mitigation measures.

This qualitative analysis will take into account emerging or decided upon policy led by other aspects of I-SEM such as the Energy Trading Arrangements, Forwards and Liquidity and the Capacity Remuneration workstreams, as well as DS3.

- Legal principles employed, their implementation and enforcement in I-SEM, including through licences and other binding policies;
- Financial and other European Union regulatory developments such as “REMIT” and the interaction between the responsibilities of different regulatory authorities within and across relevant jurisdictions;
- Roles, responsibilities, systems and process developments which may be required, applying to all market participants including generators, suppliers, Regulatory Authorities, transmission system operators, market operator(s) and other relevant bodies; and,
- Implementation issues (for example physical, process and licensing) associated with the above in relation to the planned go-live of I-SEM by Q4 2017.

4.3 PHASE 2 OF WORKSTREAM

4.3.1 Phase 2 will develop upon the market power mitigation strategy and principles to set out in detail market power mitigation measures that may be appropriate across the I-SEM energy trading timeframes (including forwards). This will include a detailed analysis of the following with respect to any proposed market power mitigation measures:

- Detailed design, operation and duration/flexibility of any proposed measures, taking account of the issues referred to in section 1.3.2;
- Roles and responsibilities of market participants including generators, suppliers, Regulatory Authorities, Transmission System Operators, Market Operator(s) and other relevant bodies;
- Design and operation of any systems, procedures or licence changes needed to support the measures by the planned go-live of I-SEM by Q4 2017;
- Financial and other EU regulatory developments such as REMIT and the interaction between the responsibilities of different regulatory authorities within and across relevant jurisdictions;
- Legal principles, measures and enforcement, including any licensing changes, associated with the measures; and,
- Follow-on RA decisions needed required prior to and subsequent to I-SEM go-live.

4.3.2 Phase 2 of the market power mitigation workstream will commence after phase 1 is complete, i.e. after December 2015. It would be expected that a public consultation paper covering the issues identified for phase 2 will be held in Quarter 1 2016, with the approach and detailed timings for phase 2 to be decided on and communicated by the Regulatory Authorities in September 2015, i.e. when the market power consultation paper for phase 1 is published.

4.3.3 The timings and approach to phase 2 will take account of and be fully co-ordinated with DS3 and the various I-SEM workstreams (see I-SEM Quarterly Plan) of relevance to market power, including:

- The Energy Trading Arrangements detailed design, in which a decision on the physical wholesale markets is due by September. Analysis of and any mitigation measures related to local market power will be closely coordinated with the decisions related to the Energy Trading Arrangements, including the treatment of constraints and setting of balancing market prices;
- The Forwards and Liquidity policy development, in relation to:
 - Financial Transmission Rights, which are to be consulted on in June and decided on in September 2015;

- Forward within-zone contract liquidity issues, in particular the role of Directed Contracts to offer an alternative hedging mechanism to unregulated forward financial contracts, the scope and timelines for which will be decided on by the Regulatory Authorities in the coming weeks;
- The Capacity Remuneration Mechanism detailed design, including:
 - Appropriate reference price, which is due to be publicly consulted and decided on in June and October 2015 respectively;
 - Detailed auction design rules, which are due to be publicly consulted and decided on in April and September 2016 respectively.

APPENDIX 1: SUMMARY OF QUESTIONS

The following is a collection of the questions raised throughout this discussion paper, which the Regulatory Authorities would welcome responses to:

Section 2.2

- Q1 Are the market power concepts and examples provided appropriate and sufficient for I-SEM?
- Q2 Are the potential constraints on market power referred to in this section appropriate for I-SEM?

Section 2.3

- Q3 Given the emerging I-SEM design, including closer integration to European electricity markets and a number of energy trading timeframes, what is the appropriate geographic market(s) and/or trading period(s) definition for the measurement of market power and determination of a mitigation strategy in I-SEM?
- Q4 Are the various (other) market design issues referred to in this section and their potential impacts on market power captured appropriately and fully?

Section 2.4

- Q5 What is the appropriate approach to measuring market power when developing a mitigation strategy for I-SEM?
- Q6 Should the measure be determined at a snapshot in time or based on historical or potential future trends in market share (or both or all three)?

Section 3.2

- Q7 How effective have the SEM market power mitigation strategy and measures been?
- Q8 To what extent is the strategy and measures applicable to I-SEM?
- Q9 Are there other market power mitigation measures worth considering in the context of I-SEM? (See Appendix 2 for a review of a number of other European markets).
- Q10 What are the barriers to entry for non-asset backed traders in the SEM financial forwards market?

Section 3.3

- Q11 Are the principles of market power mitigation outlined in this section appropriate?
- Q12 How should these or other principles be applied in I-SEM?

APPENDIX 2: SOME INTERNATIONAL EXPERIENCE

This Appendix outlines market power mitigation measures which, on initial examination, are prevailing in three different countries or group of countries across Europe. They have been selected because they all share some of their features with the I-SEM High Level Design and may therefore have some applicability to I-SEM. Please note that this is not a thorough review but rather is an approximate initial overview only - a further examination of market power in relevant jurisdictions will happen in phase 1 of this workstream as per section 4 of this paper.

The selected wholesale electricity markets are:

- Great Britain,
- Nordic Countries; and
- Iberian Countries.

Market power mitigation measures are categorised on measures applying at the Multi-Period, Forwards, Spot and Balancing Markets, below. A summary is provided in the table below followed by commentary.

Timescale	GB	NordPool	Spain
Forward	Liquidity promoting measures include: <ul style="list-style-type: none"> • Supplier Access obligation • Market Making obligation for largest participants 	VPP scheme in Denmark (now terminated)	<ul style="list-style-type: none"> • VPP scheme (now terminated) • Dominant operators unable to access interconnector capacity outside the MIBEL system • Distributors were required to buy at least 10% of volumes through MIBEL auction, but rule longer in place • Restrictions on Dominant Operators
Spot	Voluntary commitments to trade certain volumes day ahead on gross bidding basis	<ul style="list-style-type: none"> • Voluntary market makers in within-day market • Voluntary commitments to trade day ahead on gross bidding basis 	Price cap of €180/MWh
Balancing	Transmission Constraint Licence Condition mitigates potential for generators to seek to benefit from constraints	No specific arrangements	Rule to restrict exploitation of transmission constraints was not implemented

Table 2: Summary market power features

Multi-period

Ofgem has a market surveillance team which reviews and investigates activity across all timeframes. Relevant financial regulation also applies.

Forward

Trading is generally conducted on a bilateral basis, with the majority of trades being physical in nature. Parties are free to strike forward trades to match requirements at a mutually agreed price.

While not an explicit market power mitigation measure, Ofgem’s “Secure and Promote” (S&P) package does have relevance for this topic. S&P was introduced to promote liquidity. But in seeking to improve liquidity, the package aims to promote competition and increase the number of active buyers and sellers. These goals, if achieved, can help to mitigate market power concerns. The S&P package came into effect in March 2014 and it includes the following measures:

- A Supplier Market Access obligation to secure fair trading terms for independent suppliers, which applies to the 6 vertically integrated utilities and the 2 largest independent generators active in GB; and,
- A Market Making obligation to promote improvement in forward liquidity, which applies to the 6 vertically integrated utilities only.

The Supplier Market Access obligation requires the obligated parties to respond to requests to trade from smaller suppliers in a defined timescale, with proportionate credit/collateral arrangements and a price reflective of the market price. Trade can be in clip sizes from 0.5MW and greater, across baseload and peak products ranging from week+1 to season+3 for peak and season+4 for baseload. The Market Making obligation requires the obligated parties to post specified bid-offer spreads for certain products on trading platforms. The products and required bid-offer spreads are shown in table 3 and trade is in clip sizes of 5 MW, with 10 MW the minimum trade size.

Baseload		Peak	
Product	Spread	Product	Spread
Month+1 Month+2 Quarter+1 Season+1 Season+2	0.5%	Month+1 Month+2 Quarter+1 Season+1 Season+2	0.7%
Season+3 Season+4	0.6%	Season+3	1%

Table 3: Maximum Bid-Offer spreads under Market Making obligation

Spot

In response to concerns of Ofgem and intervention with specific measures to improve day ahead liquidity, market participants took voluntary action to increase trade in this window. The “Big 6”⁴ and others undertook to auction significant portions of their power on the N2EX day ahead market, as shown below. It is important to reiterate that the current bidding commitments are voluntary and so could be reversed.

Party	Gross bidding minimum commitment (expressed in terms of generation)	Equivalent volume (TWh) (based on 2011 generation)
SSE (effective from October 2011)	100%	45.7
EON (effective from January 2012)	30%	8.8
Scottish Power (effective from March 2012)	30%	6.6
EDF Energy (effective from April 2012)	30%	20.8
RWE Npower (effective from May 2012)	30%	9.3
Centrica (effective from July 2012)	30%	6.6

Table 4: N2EX trading day ahead auction minimum gross bidding commitments

Balancing

Transmission constraints are an issue in the GB market. This is partly linked to the “Connect and Manage” regime for providing access to the transmission system, which allows parties to connect before full transmission reinforcements have taken place. As generators have firm access rights, in cases where the system is constrained, they are constrained down/off via the Balancing Mechanism and receive financial compensation.

Typically, bids are paid by generators to the System Operator (SO) to reduce their generation of electricity, with the level of bids reflecting avoidable costs associated with generation. However, during some periods the SO may have to pay large amounts (i.e. negative bids) to generators to reduce their generation. This creates constraint costs for the system and the potential for generators to benefit at consumers’ expense during periods of electricity transmission constraints by making dispatch decisions that create or exacerbate constraints, or by benefitting excessively from bids they make to reduce their output.

To address this concern, the Department of Energy and Climate Change, with support from Ofgem, introduced the Transmission Constraint Licence Condition (TCLC) in October 2012. The TCLC will stay in effect until 15th July 2017, with the

⁴ This refers to the companies with a significant presence in both generation and retail markets in GB.

possibility of a two-year extension. The TCLC was, therefore, introduced to prevent generators from exploiting periods of transmission constraint to obtain “excessive benefit”. It includes:

- Manipulation of generation to create or exacerbate a transmission constraint (output manipulation) enabling the generator to derive excessive benefit from either bids or offers in the BM;
- Excessive bids in relation to export constraints; and,
- Ofgem conducts monitoring and enforcement of the TCLC.

SPAIN

Multi-period

The National Regulatory Authority (NRA) monitors prices on an ongoing basis. Building on this, the NRA has the ability to launch investigations and impose fines in the event of anti-competitive behaviour. There is an open investigation at present relating to prices in December 2013.

Forward

The MIBEL Futures market, operated by OMIP⁵, began operation in in 2006. Trading is conducted through a continuous market and auctions. Spanish distributors and the Portuguese provider of last resort are required to buy 10% of their required volumes through the MIBEL auctions⁶. This was intended as a measure to stimulate liquidity. The rule remains in place.

MIBEL also runs the joint auction of interconnection capacity between Spain and Portugal. The products auctioned are FTRs for the forward quarter and annual time periods, with separate products for each flow direction.

On a regular basis, the NRA publishes a list of dominant operators in the energy sector. For electricity, this is based on market share in MIBEL covering Spain and Portugal. Under the current list⁷, dominant operators in power generation are: Endesa, Iberdrola, EDP and Gas Natural Fenosa. Dominant operators are prevented from acquiring interconnection capacity to access systems from outside MIBEL.

Starting in 2007, dominant market players Endesa and Iberdrola were required to hold Virtual Power Producer (VPP) auctions to provide other market players with access to its capacity. The auctions provided access to two products; baseload and peak. The VPP programme came to an end during the first quarter of 2010. A maximum of close to 2.6 GW of baseload and peak output was auctioned under the VPP programme, equivalent to 5%-7% of Endesa and Iberdrola’s respective capacity.

⁵ <http://www.omip.pt/>

⁶ In Spain, Orden ITC 2129/2006 established an initial obligation of a 5% increased to 10% by ITC 3990/2006.

⁷ <http://www.mibel.com/index.php?mod=noticias&mem=detalle&relmenu=24&id=89>

A review of the programme carried out by the sectoral regulator (the Comisión Nacional de Energía, CNE) in 2009 indicates that the scheme may have been effective in promoting retail competition and market liquidity, but not necessarily in making wholesale market outcomes more competitive.

Spot

Spain's spot market has been coupled with Portugal since 2007 and with the NWE region since May 2014. The spot market in Spain is made up of an organised part and a non-organised part. The organised market is structured around a day ahead market followed by six intraday auctions. The non-organised part consists of physical bilateral contracts. During 2013 bilateral contracts represented 26% of the sold energy in the daily programme. A price cap of €180/MWh applies in the day ahead market.

Balancing

A proposal to regulate "constraints bids" used to solve grid constraints over the DA schedule in situations when only two companies can solve a local problem was proposed to avoid potential abuse through high bids. However, this rule change was not progressed.

NORDPOOL

Forward

In Denmark, following its creation from merger between Elsam and Nesa in 2004, DONG Energy was required from 2005 to release capacity in VPP auctions. The VPP scheme obliged DONG Energy to auction 600 MW of electricity generation capacity. This was in response to concerns that the merger could allow DONG to affect prices independent of other competitors in the market. The final auction was held in 2014 and the VPP process is not being continued⁸. This is on the basis that there is now strong competitive pressure on DONG Energy and so no need for the VPP auction to stimulate competition.

Spot

Elspot is the common Nordic and Estonian market for trading physical electricity contracts with next-day supply.

Elbas is a physical intraday implicit continuous market for Sweden, Finland, Norway, Denmark, Germany and Estonia. There are three market makers within Elbas to ensure fundamental liquidity⁹:

- Fortum Power and Heat Oy for the Finnish market;

⁸ <http://www.dongenergyvpp.com/en>

⁹ <http://www.nordpoolspot.com>

- Vattenfall AB for the Swedish bidding areas: SE1 and SE2; and,
- E.ON Global Commodities SE for the Swedish areas: SE2 and SE3.

The market makers are required to quote a maximum spread between buy and sell orders, unless the Elspot price is below €20/MWh or above €80/ MWh. The market makers are self-selected and are free to be released from market maker obligations. This is because the market maker system is not intended to address market power but instead to promote liquidity.

Balancing

There are no specific arrangements that seek to address market power issues in balancing timeframes.
