



# **SINGLE ELECTRICITY MARKET COMMITTEE**

## **Integrated Single Electricity Market (I-SEM) SEM Committee Decision on High Level Design**

**SEM-14-085a**

**17 September 2014**

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'The SEM Committee is established in Ireland and Northern Ireland by virtue of section 8A of the Electricity Regulation Act 1999 and Article 6 (1) of the Electricity (Single Wholesale Market) (Northern Ireland) Order 2007 respectively. The SEM Committee is a Committee of both CER and NIAUR (together the Regulatory Authorities) that, on behalf of the Regulatory Authorities, takes any decision as to the exercise of a relevant function of CER or NIAUR in relation to an SEM matter.'

## 1 INTRODUCTION

The European Union (EU) is building an internal market for electricity and gas, to help deliver energy supplies that are affordable, secure and sustainable. The process of European electricity market integration was given fresh impetus by the EU's Third Energy Package. This set in place provisions for the implementation of the European Electricity Target Model (EU Target Model). The EU Target Model is a set of harmonised arrangements for the cross-border trading of wholesale energy and balancing services across Europe.

EU Member states have the responsibility to comply with the requirements of the EU Target Model. In Ireland and Northern Ireland, the Department of Communications, Energy and Natural Resources (DCENR) and the Department of Enterprise Trade and Investment (DETI) respectively have charged the SEM Committee with responsibility for developing a new set of wholesale electricity market arrangements.

This document presents the decision of the SEM Committee on the High Level Design (HLD) of the Integrated Single Electricity Market (I-SEM). In line with its statutory objectives, the SEM Committee decision seeks to maximise benefits for consumers in the short-term and long-term, while ensuring security of supply and meeting environmental requirements. The purpose of the decision of the SEM Committee is to lay out a series of recommendations which the authorities in Dublin and Belfast will be able to consider and, if they agree, to incorporate into legislation should that be required. References in this and all other supporting documents to 'decision' should be read and understood accordingly.

In the I-SEM, the trading of electricity will be focused in liquid and transparent markets accessible to participants of all technologies and sizes. This will be combined with an explicit CRM in the form of a Centralised Reliability Options mechanism to ensure that sufficient capacity is available to deliver secure supplies for all-island consumers.

The SEM Committee has made a commitment to evidence-based decision making. Therefore, it has reached its Decision on the I-SEM HLD after extensive stakeholder engagement and a detailed, comprehensive assessment process.

A separate supporting document details the issues raised in responses to the draft decision paper, and the SEM Committee's position on these issues. The SEM Committee has also published an Impact Assessment, which should be read in conjunction with this Decision Paper. The Impact Assessment includes a cost-benefit analysis and qualitative assessment of different options for the HLD of the I-SEM.

The HLD of the I-SEM described in this Decision paper provides a robust basis to move forward into the next phase of the Market Integration project. That phase of the project will see the detailed design and implementation of the I-SEM in line with European requirements whilst delivering maximum benefits for all island consumers. The detailed design phase will identify the actual timelines for implementation of each aspect of the HLD.

## 2 PROCESS FOR THE DEVELOPMENT OF THE I-SEM HIGH LEVEL DESIGN

### 2.1 PURPOSE OF THIS DOCUMENT

In March 2013, DETI and DCENR endorsed the recommendation by the SEM Committee in the “Next Steps Decision Paper” (SEM-13-009) that the SEM Committee should proceed to develop a revised High Level Design (HLD) of the wholesale market arrangements on the island of Ireland. The Departments have been informed of the developments in the project through frequent, regular meetings with the Regulatory Authorities (RAs).

This document presents the decision of the SEM Committee (SEMC) on the HLD of the I-SEM in relation to energy trading arrangements, and a capacity remuneration mechanism (CRM). This will ensure that existing and future assets and infrastructure are used in the most efficient ways to deliver electricity to consumers at lowest cost.

Alongside this Decision Paper, the SEM Committee is also publishing:

- I. a Non Technical Summary of the decision on the HLD of the I-SEM;
- II. a summary of the issues raised in responses to the June 2014 Draft Decision Paper on the I-SEM HLD (SEM-14-045), and the SEM Committee’s position on these issues; and
- III. an updated Impact Assessment, which sets out the cost-benefit analysis and qualitative assessment which has informed the SEM Committee Decision.
- IV. A Next Steps paper outlining the progress made to date and providing an indication of when upcoming publications and stakeholder engagement will take place.

### 2.2 EVIDENCE-BASED DECISION MAKING

The SEM Committee has made a commitment to evidence based decision making. Therefore, the SEM Committee decision on the I-SEM HLD is based on detailed technical analysis by the RAs, supported by extensive stakeholder engagement both in the all island market and at a European level.

The SEM Committee Decision is informed by a comprehensive Impact Assessment, which has been updated since the Draft Decision Paper (SEM -140-045). The Impact Assessment includes a cost-benefit analysis and qualitative evaluation against the assessment criteria for the I-SEM HLD set out in the Next Steps Decision Paper (SEM-13-009). The cost-benefit analysis considers the impact of different options on wholesale market costs, as well as implementation and operating costs.

In preparing the Impact Assessment and refining the options for the I-SEM HLD, the RAs have carefully considered the points raised by stakeholders, as well as substantial policy and technical research. This has included meeting with the Transmission System Operators

(TSOs) to discuss the implications of energy trading arrangements for system operation processes and policies.

The RAs welcome the level of active engagement shown by market participants in the development of the I-SEM HLD through:

- **Written responses** to the Consultation Paper (SEM-14-008), and to the Draft Decision Paper (SEM-14-045). These papers described and assessed options for the HLD of energy trading arrangements (ETA) and Capacity Remuneration Mechanisms (CRMs) that could be implemented in the all-island market<sup>1</sup>.
- **High Level Design Review Group**<sup>2</sup> which met during the preparation of the Consultation Document (SEM-14-008).
- **Stakeholder fora** after the publication of the Consultation Paper and the Draft Decision Paper, which provided an opportunity for an early exchange of views and understanding between the RAs and market participants during the consultation period.
- **Bilateral meetings**, with the RAs meeting 24 different stakeholders and stakeholder groups in individual meetings over 3 days in March. This meeting allowed more focused discussions on the I-SEM HLD Consultation Paper from each participant's own unique perspective.

During the development of the I-SEM HLD, the RAs have also met with a wide range of external stakeholders, including OFGEM, DECC, power exchanges, representatives from the European Commission and ACER. A further meeting is planned with the Commission and ACER in September to inform them of the SEM Committee Decision on the I-SEM HLD.

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<sup>1</sup> The RAs also published a set of worked examples to illustrate the operation of the various HLD options for energy trading arrangements set out in the I-SEM Consultation Paper.

<sup>2</sup> The agenda and materials discussed for each meeting of the High Level Design Review Group can be found at [http://www.allislandproject.org/en/wholesale\\_overview.aspx?article=d3cf03a9-b4ab-44af-8cc0-ee1b4e251d0f](http://www.allislandproject.org/en/TS_Current_Consultations.aspx?article=dac49400-fed7-41e7-ad9c-17c8ea4c65f4)

[http://www.allislandproject.org/en/TS\\_Current\\_Consultations.aspx?article=dac49400-fed7-41e7-ad9c-17c8ea4c65f4](http://www.allislandproject.org/en/TS_Current_Consultations.aspx?article=dac49400-fed7-41e7-ad9c-17c8ea4c65f4).

### 3 SUMMARY OF HIGH LEVEL DESIGN FOR I-SEM

This document presents the decision of the SEM Committee on the High Level Design (HLD) of the I-SEM with respect to energy trading arrangements (ETA) and a capacity remuneration mechanism (CRM).

Efficient implementation of the EU Target Model is the main driver for the introduction of I-SEM. At the same time, the I-SEM will also address a number of emerging issues for the current market design, resulting from changes in generation, demand and interconnection.

Therefore, the SEM Committee has assessed that the I-SEM HLD will best deliver the benefits of European market integration in terms of:

- security of supply;
- promotion of renewable energy sources;
- establishment of a level playing field in which competition can flourish;
- maximise the efficient use of interconnectors; and
- provision of a sound investment climate that is based upon a stable and predictable regulatory framework<sup>3</sup>.

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#### 3.1 PHILOSOPHY FOR I-SEM

The design of the I-SEM is characterised by:

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

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<sup>3</sup>

[http://www.acer.europa.eu/Official\\_documents/Public\\_consultations/Documents/PC\\_2014\\_O\\_01%20-%20A%20Bridge%20to%202025%20-%20Public%20Consultation%20Paper.pdf](http://www.acer.europa.eu/Official_documents/Public_consultations/Documents/PC_2014_O_01%20-%20A%20Bridge%20to%202025%20-%20Public%20Consultation%20Paper.pdf)

### DECISION 1: I-SEM ENERGY TRADING ARRANGEMENTS

#### Forward Market

- i. The I-SEM will have only financial trading instruments for within zone trading.
- ii. Subject to further discussions and agreement with neighbouring markets, Cross-Zonal trading will be supported only by Financial Transmission Rights (FTRs).

#### Day-Ahead Market

- iii. The European Day Ahead Market will be the 'exclusive' route to a physical contract nomination at the Day Ahead stage.
- iv. Unit-based participation for generation in general, with (gross portfolio) aggregation arrangements for DSU, demand and (some) variable renewable generation.

#### Intraday Market

- v. Continuous intraday trading will be the exclusive route to Intraday physical contract nominations (with scope to introduce periodic implicit auctions as/if these develop at the European level)
- vi. Unit-based participation for generation in general, with (gross portfolio) aggregation arrangements for DSU, demand and (some) variable renewable generation.

#### Balancing (or process for reaching feasible dispatch)

- vii. Starting point for dispatch is detailed and feasible physical nominations required for all market participants following DAM.
- viii. Mandatory participation in Balancing Mechanism (BM) after DA stage
- ix. Unit-based participation in BM in general
- x. Marginal pricing for unconstrained energy balancing actions
- xi. Pay as Bid for non-energy actions (possibly combined with local market power mitigation measures)

#### Imbalance

- xii. All market participants will be Balance Responsible
- xiii. Imbalance settlement will be unit-based for generation
- xiv. Single imbalance price

#### Other complementary actions to support I-SEM efficiency

- xv. Route to market for small players
- xvi. Encouragement of forward financial market liquidity, including facilitation of centralised forward trading platform

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### 3.3 DECISIONS ON I-SEM HLD FOR CAPACITY REMUNERATION MECHANISM

#### **DECISION 2: I-SEM CAPACITY REMUNERATION MECHANISM**

- i. The I-SEM will include an explicit capacity remuneration mechanism (CRM).
- ii. The explicit CRM would work alongside any targeted contracting mechanisms that are put in place as a back stop measure to address specific security of supply concerns.
- iii. The explicit CRM will be a quantity-based mechanism.
- iv. The explicit quantity-based CRM will take the form of Reliability Options, which are financial call options issued to capacity providers by a centralised party through a competitive auction.
- v. There will be a requirement that the Reliability Options are backed up by the provision of physical capacity.

## 4 DECISION ON HLD OF ENERGY TRADING ARRANGEMENTS

### 4.1 OVERVIEW OF ENERGY TRADING ARRANGEMENTS IN THE I-SEM

The HLD of the I-SEM Energy Trading Arrangements sets out centralised Day-ahead Market (DAM), Intra-day Market (IDM) and Balancing Markets as the exclusive routes for physical contract nomination and physical scheduling of generation. Any contracts struck between market participants in the forwards timeframe will not confer a right to physically schedule generation, demand or cross-zonal capacity in the all-island market. In other words, forward contracts will not offset imbalance exposures caused by a difference between metered volumes and traded positions from the DAM, IDM and BM.

In addition, imbalances will be traded out on public market places rather than vertically integrated participants being allowed to balance within their own portfolio outside of the market. Imbalance prices will reflect the cost to the TSOs of procuring the energy needed to keep the overall supply and demand of energy in balance. Market participants will be required to provide bids and offers to provide this energy to the TSOs in the Balancing Mechanism (BM), up to the technical capability of the market participant to respond to dispatch instructions.

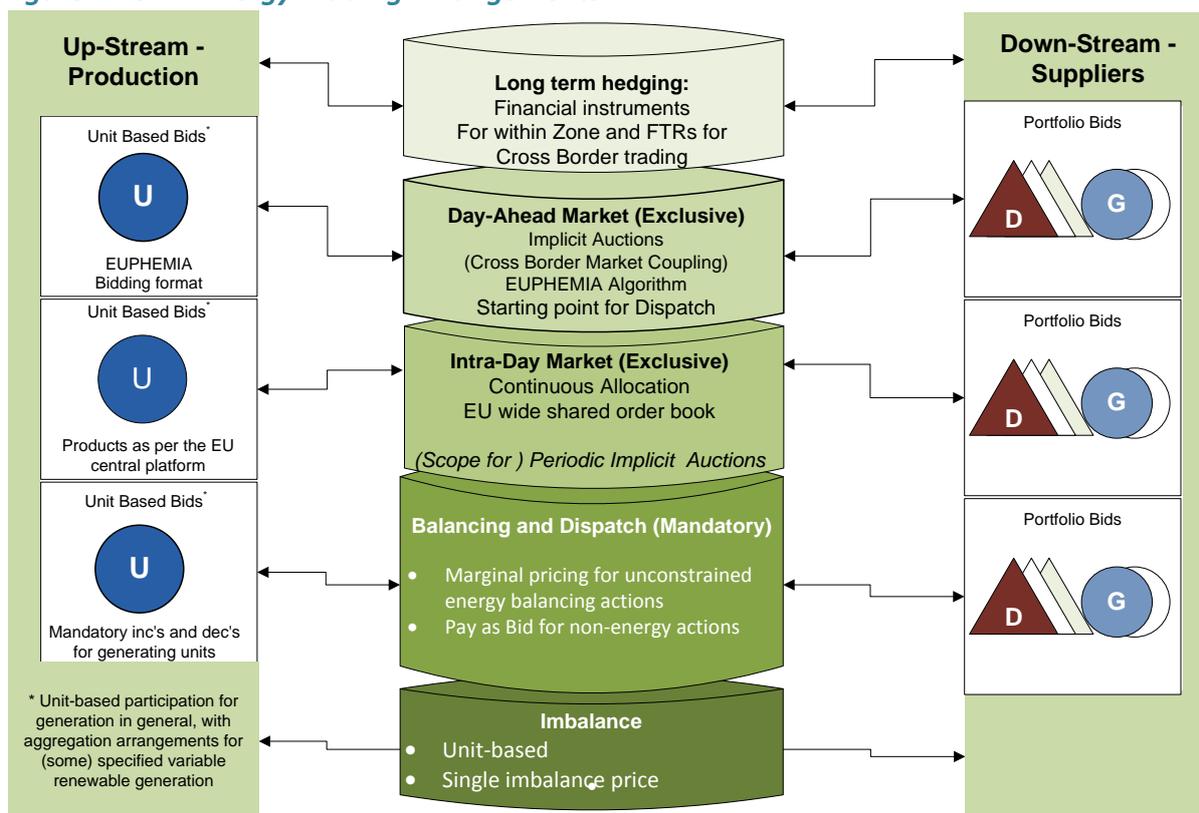
Although participation in the Day Ahead Market will not be universally mandated, the SEM Committee expects there to be a very high level of liquidity in that market. Indeed, the HLD of the I-SEM has been chosen to promote liquid and transparent trading arrangements accessible by market participants of all technologies and sizes. Transparency of data will facilitate competition enabling participants and interested stakeholders to understand the price formation process and relevant market signals. It is also an effective mechanism in mitigating the scope for the abuse of market power, with the EU placing increasing on the need for market transparency.

The competition and efficiency of I-SEM will be further enhanced by physical cross-zonal capacity being released for use only in centralised short-term markets. This will facilitate the scheduled flow of power to and from the all-island market where it is efficient to do so. Efficient use of the interconnector in real time will be facilitated by the TSO through inter-TSO collaboration to affect flows close to real-time, and through intra-day cross border trades occurring in the Intra-day market.

The figure below presents the key features of the proposed Energy Trading Arrangements for the I-SEM. It illustrates that the I-SEM will provide new trading opportunities for market participants over a much wider range of timeframes than in the current market, which is based on a gross mandatory ex-post pool. The I-SEM will provide access to firm ex-ante prices, which will facilitate greater participation in the market by demand-side participants.

The behaviour of and outcomes for the market participants in I-SEM will be decided not by participation in one market as today. Instead, it will be determined by the overall impact of their activities in the forward, day-ahead, intraday and balancing markets.

**Figure 1 I-SEM Energy Trading Arrangements**



The I-SEM HLD can work with one or many zones. It will therefore be able to accommodate any future decision to divide or not divide the all island market into more than one bidding zone. Any such decision would be taken as part of the zonal reviews required by the EU Target Model.

The priority for the Market Integration project is to deliver the elements of the market design required to comply with the EU Target Model from the launch of I-SEM.

The SEMC recognises that existing market power concerns will remain in the I-SEM, and will make sure that effective market power mitigation arrangements are in effect in I-SEM. The SEM Committee has taken the importance of market power mitigation into its account in its Decision on the I-SEM HLD. As with the original SEM, the SEM Committee will use the detailed design and implementation phase to develop any additional measures that it believes are appropriate to ensure that consumers are protected from the abuse of market power.

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## 4.2 FORWARD TRADING

### **i. The I-SEM will have only financial trading instruments for within zone trading.**

4.2.1 In the I-SEM, trading between market participants in the forwards timeframe will be in the form of financial contracts, in that holders of forward contracts will not have the right to physically dispatch generation. This is consistent with the approach to forward trading in the SEM.

4.2.2 The financial trades would be expected to be in the form of Contracts for Differences (CfDs) struck against a reference market, expected to be the DAM. This would allow market participants to hedge their exposure to variations in the reference price, which is particularly important for independent generators and retail suppliers.

4.2.3 The use of forward financial trading in the I-SEM does not preclude intermediary arrangements. An intermediary is a third party who takes complete responsibility for fulfilling the generator's requirements under the Trading and Settlement Code. These arrangements are currently in place in the SEM in specified circumstances<sup>4</sup>. An intermediary could act for more than one generator to facilitate the mechanics of market participation, but would have to bid them separately into the DAM, IDM and Balancing Mechanism if they are defined as separate units.

4.2.4 Similarly, aggregation can still operate with forward financial trading, where it is allowed in the detailed design of the I-SEM. An aggregator is allowed to combine several units into a single bid into the centralised spot marketplaces – i.e. effectively submit a portfolio bid. The provisions for Demand Side Units in the current SEM are an example of aggregation.

### **ii. Subject to further discussions and agreement with neighbouring markets, Cross-Zonal trading will be supported only by Financial Transmission Rights (FTRs).**

4.2.5 I-SEM, cross-zonal risk hedging tools should be sold in the form of Financial Transmission Rights (FTRs). An FTR is effectively a CfD where the holder receives a payment based on the difference in the Day-Ahead price between the two zones.

4.2.6 Long-term cross-zonal risk hedging tools are a central feature of the EU Target Model because they facilitate forward trading of energy across borders. As these tools can take various forms, the Network Code on Forward Capacity Allocation requires that the final approval on the type of the long-term transmission right offered between bidding zones be given jointly by the NRAs in the two zones. Therefore, for the Moyle or East West interconnectors, the SEM Committee's preference for FTRs is conditional on Ofgem agreement.

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<sup>4</sup>

<sup>4</sup>Extension to the Criteria for Approval of Intermediary Applications under the Trading and Settlement Code, SEM-11-014, SEM Committee, March 2011

- 4.2.7 Other issues, such as the whether these are FTR Options (one-way CfD) or FTR Obligations (two-way CfD), and the auction rules, will be determined at the detailed design stage.

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### 4.3 DAY-AHEAD MARKET (DAM)

**iii. The European Day Ahead Market will be the ‘exclusive’ route to a physical contract nomination at the Day-Ahead Stage.**

- 4.3.1 As forward trading in the I-SEM will be financial, bidding generation or demand into the European day-ahead price coupling process will be the only route by which a market participant can take a forward position in the DAM to offset their balancing responsibility.

- 4.3.2 It is the expectation of the SEM Committee that commercial incentives and other aspects of the market rules will encourage a very high level of participation in the DAM. Therefore, the HLD of I-SEM does not include a blanket requirement for mandatory participation in the DAM. Provisions for the delivery of a very liquid DAM will be an important focus in the detailed design and implementation of the I-SEM, and in its ongoing operation.

**iv. Unit-based participation for generation in general, with (gross portfolio) aggregation arrangements for DSU, demand and (some) variable renewable generation.**

- 4.3.3 The default position in the I-SEM will be to require unit-based bidding by generation into the DAM in the interests of transparency and promoting effective competition.

- 4.3.4 The SEM Committee recognises that there may be merit in allowing for gross portfolio bidding from generation in certain circumstances, e.g. small variable generation. Therefore, the detailed design stage will specify the circumstances in which generation can submit an aggregated bid into the DAM.

- 4.3.5 Gross portfolio bidding will be allowed from suppliers and from demand-side units, subject to any specific limitations imposed at the detailed design stage. Gross portfolio bidding means that ordinarily separate bids must be submitted for demand, demand side units, and for generation, even where aggregation is allowed.

- 4.3.6 The HLD requirement for gross portfolio bidding in the DAM does not preclude the retention of a de-minimis level below which generation can be registered as ‘negative demand’, i.e. a portfolio bid containing generation and supply, which would take the form of a ‘Trading site’ in the current SEM. The operation of the existing de-minimis provision will be addressed in the detailed design phase.

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#### 4.4 INTRADAY MARKET (IDM)

- v. **Continuous intraday trading will be the exclusive route to Intraday physical contract nominations (with scope to introduce periodic implicit auctions as/if these develop at the European level)**
- 4.4.1 Making a matched trade in the European intraday price coupling mechanism will be the only route by which a market participant can update their physical contract nomination at the Intraday stage. This will support the scheduling in the market of more efficient electricity flows between the all-island market and the GB market, and deliver robust compliance with the EU Target Model.
  - 4.4.2 The Intraday Market in I-SEM will employ the products available through the EU central platform. In the medium term these are expected to be quite simple bidding structures but may develop more in the future to more sophisticated products as foreseen by the CACM Network Code. The detailed design phase will specify the timing and format of bids and offers into the IDM.
  - 4.4.3 In line with the requirements of the EU Target Model, intraday trading in the I-SEM will be based on a continuous trading mechanism, where a 'first come, first served' basis is used to allocate cross-zonal capacity to match bids and offers in different zones. The detailed design, rules and systems for the I-SEM will allow for the introduction of complementary periodic intraday auctions, as allowed under the EU Target Model.
- vi. **Unit-based participation for generation in general, with (gross portfolio) aggregation arrangements for DSU, demand and (some) variable renewable generation.**
- 4.4.4 The default position in the I-SEM will be to require unit-based bidding by generation into the IDM in the interests of transparency and promoting effective competition. The SEM Committee recognises that there may be merit in allowing for gross portfolio bidding from generation in certain circumstances, e.g. small variable generation. Therefore, the detailed design stage will specify the circumstances in which generation can submit an aggregated bid into the IDM.
  - 4.4.5 Gross portfolio bidding means that ordinarily separate bids must be submitted for demand, demand side units, and for generation, even where aggregation is allowed. Gross portfolio bidding will be allowed from suppliers and from demand-side units, subject to any specific limitations imposed at the detailed design stage.
  - 4.4.6 The requirement for gross portfolio bidding in the IDM in the HLD does not preclude the retention of a de-minimis level below which generation can be registered as 'negative demand', i.e. a portfolio bid containing generation and supply, which would take the form of a 'Trading Site' in the current SEM. The operation of the existing de-minimis provision will be addressed in the detailed design phase.

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## 4.5 BALANCING MARKET (BM)

### **vii. Starting point for dispatch is detailed and feasible physical nominations required for all market participants following DAM.**

- 4.5.1 The HLD of the I-SEM BM allows it to link more easily into European balancing arrangements through the Coordinated Balancing Area (CoBA) in the medium term and through the EU common merit order in the longer term. The TSOs will be responsible for the efficient use of the interconnectors in real-time by adjusting cross-border flows in response to the common merit order, based on Balancing Market offers and bids.
- 4.5.2 The TSOs are responsible for ensuring a feasible dispatch of plant that delivers a safe and secure system, including having sufficient reserve available to deal with contingencies.
- 4.5.3 The starting point for this dispatch is the physical nominations available from the day-ahead stage. This nominations will be updated to reflect developments during the Intraday stage.
- 4.5.4 Market participants will be responsible for converting a contractual schedule for any generation allowed in a gross portfolio into a schedule for individual units.
- 4.5.5 The nomination profiles will reflect generator physical constraints and be sufficiently granular to support the TSOs in operating a secure and safe system. The detailed design phase will determine the rules and responsibilities for converting the contractual schedules into a more granular nomination profile (e.g. moving from an hourly contractual schedule in the DAM to physical nominations divided into blocks of 1 or 5 minutes). The required granularity will be agreed in the detailed design. The rules will need to address the provision of these nominations at the Day-Ahead stage, and then subsequent updates to reflect changes intraday.
- 4.5.6 From the day-ahead stage onwards, the TSOs will assess the system feasibility of the physical nomination profile for each generator, take relevant actions if necessary and issue dispatch instructions for ensuring system security. In taking dispatch actions, the TSOs will be able to consider their own forecasts – e.g. for wind output or demand – as well as the detailed physical nominations.
- 4.5.7 The TSOs will aim to minimise costs of deviating from these physical nominations, whilst respecting the principle of absolute priority set out in SEM-11-062. The HLD does not specify the precise nature of any financial incentives on the TSOs in operating the system.

**viii. Mandatory participation in Balancing Mechanism (BM) after DA stage**

- 4.5.8 All market participants will be mandated to participate in the BM in keeping with their technical ability to do so.
- 4.5.9 In the BM, all market participants will submit incremental bids (incs) and decremental bids (decs) to the TSOs. The TSOs will in turn use these to move market participants from their nominated position if they need to do so to maintain a safe and secure system, and to ensure efficient cross border flows
- 4.5.10 The BM will open after the DAM results have been published and the TSOs have received the detailed day-ahead physical nominations from the market participants.
- 4.5.11 The SEM Committee will give further consideration to whether and how the TSOs can contract with a plant outside the central markets before the opening of the BM. This will not form part of the HLD of I-SEM.
- 4.5.12 The timing for the closure of the BM will be in line with the requirements of the EU Target Model, and the characteristics of the all-island system. It will be established as part of the detailed market design.

**ix. Unit-based participation in BM in general**

- 4.5.13 The default position in the I-SEM will be to require unit-based bidding by generation into the BM in the interests of transparency and promoting effective competition. This also reflects the importance of locational information to the TSOs in operating a safe and secure system. Any specific exemptions from this will need to be considered as part of the detailed design phase.

**x. Marginal pricing for unconstrained energy balancing actions**

- 4.5.14 The I-SEM will employ a marginal pricing mechanism for energy balancing actions taken through the BM. The marginal price reflects the cost for generating one more or one fewer MWh of electricity within the BM timeframe. This means that, if aggregate load on the system is higher in the BM than DAM, the incremental bid of the nextmost expensive resource (generation or DSU) used to meet demand (i.e., provide balancing energy) will set the balancing energy. If aggregate load on the system is lower in the BM than the DAM, the decremental bid of the next resource (Generation or DSU) that would be dispatched down, will set the balancing energy price. Marginal pricing is in line with the thrust of the EU target model for balancing.
- 4.5.15 The definition of the marginal unit for energy balancing actions will be determined in the detailed design phase.

**xi. Pay as Bid for non-energy actions (possibly combined with local market power mitigation measures)**

4.5.16 Actions taken by the TSOs for non-energy balancing reasons will be subject to a pay as bid pricing regime, as in the SEM today.

4.5.17 The classification of energy and non-energy balancing actions will be a key feature of the balancing market. Non-energy bids may be taken by the TSOs from the same set of bids and offers as energy balancing but will be treated differently in pricing. Therefore the TSOs will be required to put in place a system to identify energy and non-energy actions.

4.5.18 The detailed design and implementation phase will consider any specific measures required to address local market power issues in providing non-energy balancing services.

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## 4.6 IMBALANCE PRICING

**xii. All market participants will be Balance Responsible**

4.6.1 All market participants in I-SEM will be balance responsible. This means that they are financially responsible for differences in volumes between their actual metered generation or load, and the volumes traded in the DAM and IDM, adjusted for any instructed non-energy . This illustrates the importance of a liquid intraday market to allow market participants to manage their contracted positions in responses to changes after the DAM – e.g. change in forecast demand or generation.

4.6.2 Some market participants may discharge their financial responsibility for balancing energy transactions through a third party, such as an aggregation agent, in circumstances to be specified in the Detailed Design phase.

**xiii. Imbalance settlement will be unit-based for generation**

4.6.3 The introduction of balance responsibility in the I-SEM requires the implementation of an imbalance settlement mechanism.

4.6.4 All settlement for imbalances will be done on a unit by unit basis for generation.

**xiv. Single imbalance price**

4.6.5 The imbalance price will be determined for each imbalance settlement period and will reflect the marginal costs of energy balancing actions taken by the TSOs.

4.6.6 All imbalance transactions will be settled at the same imbalance price. Market participants with a long position in imbalance settlement (contracted position > allocated volumes) will receive the same imbalance price as is paid by market

participants with a short position (contracted position < allocation) in the same imbalance settlement period.

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#### 4.7 SUPPORTING ACTIONS FOR FORWARD LIQUIDITY

##### **xv. Route to market for small players**

4.7.1 The I-SEM will include a transitional mechanism to help smaller players to access the market in ex-ante timeframes without necessarily needing to invest in trading capability of their own. This aggregator or offtaker of last resort will help to mitigate particular risks for smaller players in transitioning to a new market design based on their active participation. The existing role of intermediaries will continue to be facilitated.

4.7.2 The intention of any such mechanism would be to facilitate participation of smaller players in the DAM and IDM, through the provision of bidding and settlement transaction services.

4.7.3 The mechanism will be designed to avoid distortion of market outcomes, and minimise the risk of crowding out of alternative commercial solutions.

##### **xvi. Encouragement of forward financial market liquidity, including facilitation of centralised forward trading platform**

4.7.4 The SEM Committee recognises the importance of long term hedging opportunities for market participants, particularly independent generators and suppliers. Therefore, it will consider additional measures to support the development of forward market liquidity.

4.7.5 The SEM Committee will facilitate the development of a centralised forward trading platform. This will address the high collateral requirements that parties have identified as a barrier to forward trading in the SEM today.

## 5 DECISION ON HLD OF CAPACITY REMUNERATION MECHANISM

### 5.1 SUMMARY

The I-SEM will include an explicit CRM in the form of a centralised Reliability Options mechanism. This is a quantity-based CRM, in which up-front capacity payments are determined through a competitive mechanism, such as an auction.

A centralised Reliability Option mechanism involves a financial one way CfD issued by a single party<sup>5</sup>, such as the TSOs, to all successful bidders in a competitive auction. The ROs have a strike price and a reference price. If the reference price goes above the strike price the holder of the RO pays the difference back to the TSOs. The RO holder receives an option fee, set in a competitive auction, in return for handing back the difference between the reference and strike prices when the reference price is higher. The option fees will be paid by consumers as the beneficiaries of more secure electricity supplies.

The SEMC recognizes that existing market power concerns will remain in the ISEM capacity markets. Therefore, the SEMC will ensure effective market power mitigation arrangements are in place for the CRM. This will draw on international experience, and lessons from the market power mitigation strategies deployed in the SEM.

The explicit CRM described in the HLD does not preclude any targeted contracting mechanisms to be put in place as a back stop measure in line with national legislation in Ireland and Northern Ireland and the Security of Supply Directive (Directive 2005/89/EC) to ensure that security of supply is maintained.

### 5.2 REQUIREMENT FOR EXPLICIT CRM IN THE I-SEM

#### **i. The I-SEM will include an explicit capacity remuneration mechanism (CRM).**

5.2.1 A capacity remuneration mechanism (CRM) in the I-SEM is required because an energy-only market will not, in practice, deliver long term generation adequacy in the all-island market.

5.2.2 This Decision reflects the increased risks to generation adequacy as a result of the scope for missing money, particularly in a small island market with increasing levels of variable renewable generation.

5.2.3 The explicit CRM will be implemented in such a way as to avoid distorting cross border trade in the EU Internal Energy Market as well as being compatible with wider European developments on public interventions to ensure generation adequacy.

5.2.4 The SEM Committee recognises the importance of ensuring that the HLD is compatible with other policy measures designed to support generation adequacy.

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<sup>5</sup> A Reliability option can also be classified as a financial call option.

This includes encouraging demand-side response, facilitating the development of interconnection and ensuring efficient cross-border trading.

**ii. The explicit CRM does not preclude any targeted contracting mechanisms that are put in place as a back stop measure to address specific security of supply concerns**

5.2.5 The SEM Committee, and the RAs, note that national and European legislation allow for targeted contracting mechanisms to be used to address specific security of supply concerns. However, this type of targeted mechanism on its own would not be sufficient to address the broader issues arising for generation adequacy in a small island system with high penetration of variable renewable generation.

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### 5.3 QUANTITY-BASED CRM

**iii. The explicit CRM will be a quantity-based mechanism.**

5.3.1 The decision of the SEM Committee is that the explicit CRM will be a quantity-based CRM, under which capacity payments will be paid to the successful bidders in a competitive process, such as an auction.

5.3.2 A central body will set the quantity of capacity required under the CRM. The capacity price will then be determined by competition between capacity providers. Capacity providers will only be able to participate in the competitive process if they can demonstrate the existence of physical plant capable of providing the capacity (or firm availability date for any new investment). As well as providing efficient exit signals, a quantity-based CRM allows customers to benefit from competition between capacity providers.

5.3.3 The scope of any specific market power mitigation measures in the centralised auctions will be a key consideration in the detailed design phase.

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### 5.4 FORM OF QUANTITY-BASED CRM

**iv. The explicit quantity-based CRM will take the form of Reliability Options, which are financial call options issued to capacity providers by a centralised party through a competitive auction.**

5.4.1 The HLD of the I-SEM CRM will be based on the centralised auction of reliability options. This type of mechanism has proved successful in delivering security of supply in a number of markets and is consistent with the underlying principles of the European Target Model and I-SEM philosophy.

5.4.2 Reliability Options are call option contracts, where the holder of the option is paid an annual payment in return for the TSO having the right to call on the option holder to provide energy at a pre-determined strike price.

- 5.4.3 The centralised auction of the reliability options will be settled on a pay-as-cleared basis, meaning that all successful bidders would receive the same price for the same option.
- 5.4.4 Equitable treatment of different capacity resources in terms of access to the CRM scheme for the capacity that they can provide to the system will be addressed in the detailed design phase.
- 5.4.5 For example, this includes allowing allow cross-border participation in line with European requirements. The rules for cross-border participation will be determined during the detailed design phase.
- v. There will be a requirement that the Reliability Options are backed up by the provision of physical capacity.**
- 5.4.6 All resources issuing ROs must be backed up by a physical resource that is capable of providing the capacity when required. The requirement for physical capacity to back-up the provision of reliability options is important in helping the reliability options scheme to address the missing money issue.
- 5.4.7 In the detailed design phase, the SEM Committee will ensure that the requirement for physical capacity is consistent with appropriate access to the CRM for potential providers of capacity of all technologies and all sizes. In all cases, the payments under the CRM will reflect the value that the capacity provides to the system in the context of the capacity adequacy challenges that the CRM is intended to resolve.