

# **A new electricity market for Northern Ireland and Ireland from 2016 - Integrated Single Electricity Market (I-SEM)**

**Non-technical summary**

**High level design Draft Decision Paper**

**SEM -14-047**

June 2014

## **1 INTRODUCTION**

- 1.1 In February the regulatory authorities in Northern Ireland and Ireland published a consultation paper on possible options for redesign of the wholesale electricity market, known as the Single Electricity Market (SEM), which covers the island of Ireland. This is required because of changes to European legislation that are designed to harmonise cross border trading arrangements across all European electricity markets. These changes are designed to create a competitive market across Europe and require compliance with a European 'target model' that will link the separate markets. The new wholesale market will be known as the Integrated Single Electricity Market (I-SEM).
- 1.2 Compliance with the European Target Model and development of new market arrangements that will be compliant with it are the responsibility of the member states. The Northern Ireland Department of Trade and Industry (DETI) and the Irish Department of Communications, Energy and Natural Resources (DCENR) have charged the SEM Committee with developing these new market arrangements. The SEM Committee was created as the governing body of the current Single Electricity Market and its membership is drawn from the Utility Regulator (UR) in Northern Ireland, the Commission for Energy Regulation (CER) in Ireland and expert independent members.
- 1.3 Following receipt of responses to the consultation paper from stakeholders within the electricity industry and consumer representatives the SEM Committee is now publishing a Draft Decision Paper. This summarises the views of respondents and sets out the proposed decisions of the SEM Committee on the preferred design of the new market.
- 1.4 The Draft Decision Paper outlines the SEM Committee's proposed decisions on energy trading arrangements and capacity remuneration mechanism for the I-SEM. This non-technical paper provides an outline of the key issues from the Draft Decision Paper but is not itself issued for consultation.

## **2 EXPERIENCE OF THE SEM**

- 2.1 The Single Electricity Market came into operation on the 1st November 2007. The value of the market today is around £2.7/€3.3 billion per year. The SEM is made up of both an energy only market and compensation for capacity available. Based on tariffs for the year 2013/14 this comprises £2.1/€2.6 billion relating to energy only costs, £432/€531 million relating to the cost of the capacity remuneration mechanism and £162/€133 million arising from the cost of resolving constraints on the transmission system.
- 2.2 From 2007 the market has grown, with additional investment in conventional generation and increased interconnection with the electricity market in Great Britain (GB). Interconnection on the island in 2007 was initially limited to a maximum import capacity of 400MW and a maximum export capacity of 80MW but has risen to 950MW export and import capacity today. Investment has taken place in new technologies such as combined heat and power, the aggregation of small generating units and the emergence of units of electricity demand that can reduce their use of power when required. The SEM has also facilitated an increase in renewable generation, primarily wind, in order to assist achievement of the two Governments' targets of 40 per cent of generation coming from renewable resources by 2020 as part of an EU wide drive to a low carbon electricity supply.
- 2.3 The proposed changes in the all island wholesale electricity market have been triggered by requirements arising from European legislation designed to harmonise cross border trading arrangements across all European electricity markets. However this also represents a timely opportunity to learn from the experience of the SEM and incorporate those lessons, along with other significant developments in the mix of generation resources and demand levels, into the new market design. The SEM Committee in reaching its decisions has sought to optimise energy trading, maximising competition and benefits for consumers, while ensuring security of supply and meeting environmental requirements.
- 2.4 The trend of prices in the SEM has followed that in other countries and has been reflective of the costs incurred in generation. Electricity prices are set by the cost of the last (marginal) generation unit required to meet the level of demand. With gas fuelled generation usually being this marginal generation, energy market prices have tracked changes in gas prices. Increased interconnection with GB has increased convergence between prices in Ireland and GB and the proposed I-SEM market design should further serve to bring

together electricity prices across the two islands and across the wider EU, which is the key purpose of the European target model. The more efficient flows of electricity across the interconnectors as a result of the I-SEM will also facilitate export of power from the local market where it is profitable to do so. The I-SEM will facilitate participation of demand in setting wholesale prices and this will further enhance competition and efficiency in the market.

- 2.5 When the SEM began in 2007 there were a number of dominant market players which resulted in market power mitigation measures being implemented. While there have been changes in the concentration of generation ownership and new interconnection facilities, it is expected that market power mitigation measures will remain a feature of the I-SEM. These will be designed to ensure that consumers are protected from the impact of any market power. The details of these measures will be developed in the next phase of the project.
- 2.6 As with the current SEM, the I-SEM will retain the features of a liquid spot market and transparent price formation. In addition, the I-SEM will introduce measures to encourage and facilitate forward trading. Long term hedging opportunities are of critical importance for market participants but in particular for retail suppliers.
- 2.7 In meeting the 40% renewables target, growing levels of variable renewable generation (such as wind) will present challenges, both in terms of the amount of variable generation that can be accommodated simultaneously on the electricity grid and the need to ensure sufficient back-up power generation for when variable generation is not available. The SEM Committee decisions around the need for and the type of capacity remuneration mechanism are targeted at addressing this issue. A separate project within the two regulatory authorities is focused on ensuring the delivery of secure sustainable systems in light of the technical requirements of high levels of wind generation. The development of services that achieve this has proceeded in parallel with the development of the new I-SEM thus supporting achievement of renewable generation targets.

### **3 ENERGY TRADING ARRANGEMENTS**

- 3.1 The February consultation paper put forward four possible options for the new trading arrangements, each with its own particular approach to creation of a wholesale electricity market.

- Option 1 allows market participants to schedule the generation that they have contracted to buy and sell in the day-ahead timeframe, in addition to their initial offers and bids.
- Option 2 allows for a combination of scheduling contracted generation and demand in various timeframes and a central pool, so that it may be seen as a combination of the arrangements in options 1 and 4. This may require measures to promote liquidity between the pool and other forward trading, particularly for market participants that are not vertically integrated. Such market participants are able to buy and sell electricity between their generation and retail arms within a single undertaking.
- Option 3 emphasises the importance of concentrating trading in the day-ahead and intra day markets so that the all-island market is tightly integrated with the wider European market. Participation in this market was mandated to ensure that all market participants can buy and sell out of centralised marketplace on equal terms.
- Option 4 represents the most centralised set of arrangements, concentrating demand and generation within a pool that determines a single price, while it is still left open for market participants to trade before and outside the pool.

3.2 The SEM Committee has considered the strengths and weaknesses of each option following feedback from the consultation, which consisted of 95 separate stakeholder responses:

- Option 1 was viewed as enabling market participants to trade in the forward timeframes and to be compatible with trading arrangements in the rest of Europe. However some respondents to the consultation have expressed the view that it gives rise to concerns about lack of transparency in the market and may facilitate the exercise of market power by larger or vertically integrated participants.
- Option 2 was seen as untested, costly and riskier than the other options. It is effectively two markets competing for primacy, which might ultimately entail market participants looking to move to either option 1 or option 4.
- Option 4 provides a clear route to participation in the market and allows measures that mitigate market power to be focused in the balancing market in which any imbalance in the demand and supply of power is

addressed. However because trading in the pool discourages trading in the day-ahead and intra-day timeframes, which determine physical power flows to Great Britain, this option was viewed as not giving rise to efficient electricity flows between the all-island market and the GB market. The efficiency of such flows depends on a liquid day-ahead and intra-day market which can produce robust prices that can determine whether power is exported or imported across the interconnectors.

- Option 3 was viewed as retaining a strong emphasis on centralised markets while incentivising responsibility for market participants to fully account for the balance of their generation or demand. Because of its emphasis on the day-ahead and intra-day markets it is also considered to provide the grounds for efficient interconnection with the GB and European markets.

3.3 The consultation paper noted that there was scope to amend specific elements of the design of each option as a result of feedback, although any changes would not undermine the fundamental approach of the design.

3.4 Of all high level design options consulted upon, option 3 (mandatory centralised market), with some modifications, is the option favoured most by market participants. This option is seen as providing a strong day-ahead and intra day market and the concentration of liquidity required by the relatively small I-SEM to generate efficient and transparent price formation. This option is also seen as providing robust compliance with the European target model.

3.5 The preferred design on which the SEM Committee is consulting in the draft decision is therefore closest to option 3 with clarification of elements of the design and some modifications.

3.6 The preferred option 3 will therefore operate in the following way across the different timeframes in which electricity is traded.

- In the forwards timeframe trading will be financial, in that trades will not provide the right to physically dispatch generation. This will allow market participants to hedge their trades so that they may agree a price in advance and minimise losses or gains resulting from movements in eventual spot prices. This will improve confidence in trading in the forwards timeframe and assist the formation of prices in later timeframes such as the day-ahead and intra-day markets.

- The day-ahead, intra-day and balancing markets will be centralised and must be exclusive, that is they will be part of European market coupling, which will not for example allow the scheduling of physical contracts between two parties. Bidding in the market will be by generating unit and not by a portfolio bid made up of a number of generation assets, although some aggregation of demand, demand responsive units and some variable generation will be permitted. As part of the detailed design phase an assessment will be made as to whether participation in the day-ahead market will be mandated or not.
- The day-ahead market is intended to provide a starting point for determining which generation plants will be dispatched. It will provide a robust price to which out of market support mechanisms for remunerating renewable generation can be referenced and it will assist efficient integration with the European market.
- Market participants will be responsible for ensuring that their notifications of generation or demand are in balance with power actually generated or taken off the system. In the intra-day market participants will have the ability to adjust their positions nominated in the day-ahead market to achieve this balance. All market participants will be mandated to participate in the balancing market in keeping with their technical ability to do so. This means they will have to bid in incremental or decremental prices that will allow the transmission system operator to use these bids to balance total demand and supply across the system in a least cost manner.
- Market participants will be subject to the cost of any imbalances for which they are responsible which shall incentivise provision of accurate commercial and technical inputs into the market. These imbalance prices will therefore reflect the actual costs of balancing the electricity system thereby improving the efficiency and equity of the market. There will also be a transitional mechanism for small renewable generators to access the market to ensure that they are able to manage their risks in transitioning to this new design.

3.7 The draft decision sets out the areas where further work is required in order to provide a more complete market design. These include, among others, market power mitigation measures that may be implemented to ensure competition within the market. It will also include measures to promote liquidity, which

allows market participants to buy and sell quickly without large price changes, and provision of clear routes to market that allow all those seeking to enter it a clear means of joining and fully participating.

#### **4 CAPACITY REMUNERATION MECHANISM**

- 4.1 Because electricity must be provided instantly when demanded and consumers place a high value on reliability of supply there must be adequate generation capacity available at all times to meet demand. This means that some generation capacity will only generate on a limited basis when demand is high. When this happens prices will be high but a question arises whether these prices will provide enough revenue to finance the generation that only runs during such times. If the prices do not rise sufficiently there exists a ‘missing money’ problem because the fixed costs that are incurred by a generator that does not run often are not covered by its revenue. This means that there may be a need for an additional revenue stream for generators to ensure that there is enough generation capacity available in the electricity system at all times it is needed.
- 4.2 This supplemental revenue stream is often referred to as a capacity remuneration mechanism (CRM). Whether a CRM is needed in the all-island market or the type of CRM that may be required were questions raised in the consultation paper.
- 4.3 The majority of respondents stated that a CRM is needed. The SEM Committee accepts that a ‘missing money’ problem could lead to existing generation leaving the market and prevent new generation from entering. This could lead to a lack of generating capacity in the market. This problem would be exacerbated by increased renewable generation, mainly low marginal cost variable generation such as wind, which will reduce the hours in which other generation operates and recovers its costs while such generation will continue to be required to provide power when wind generation is not available.
- 4.4 The SEM Committee concurs with these views and has concluded that a CRM is needed in the all-island market. However, with the EU putting a strong emphasis on relying more on interconnection and generation in other Member States as part of ensuring security of supply, it is important that the design of the CRM must not create barriers to trade or distortions in the European single market.

- 4.5 In this wider European context, the SEM Committee examined the preferred option for the type of CRM. The consultation paper set out different types of possible capacity mechanisms. These included a strategic reserve that would involve payments for specific capacity that would not otherwise enter the wider electricity market. While the SEM Committee thinks there may be particular circumstances warranting such targeted interventions this sort of mechanism does not address the wider market reasons for having a CRM.
- 4.6 A short and long-term price based CRM were also put forward as options. These set the amount of money that the CRM is required to provide and directly address the problem of “missing money” but the view of the SEM Committee is that price-based mechanisms score relatively poorly in terms of promoting competition for the capacity payments. There is also concern that they do not provide efficient signals for appropriate generation to exit the market and risk distorting short term trade and long term investment signals between markets.
- 4.7 The proposed decision of the SEM Committee is therefore that a quantity-based CRM, (which sets the quantity of capacity required but allows market participants to compete to set the price of the capacity) should form part of the high level design of the new market.
- 4.8 The SEM Committee also has decided that the CRM should be based on reliability options which take the form of financial call options issued by a centralised party through a competitive auction. This design should deliver benefits to end consumers through promoting competition between market participants for receipt of capacity payments, can provide appropriate exit signals and can ensure that payments more closely reflect the value provided by capacity to the system. Reliability options have proved successful in delivering security of supply in a number of markets around the world and are consistent with the underlying principles of the European Target Model and the I-SEM philosophy.
- 4.9 The SEM Committee in taking its decision considered that the proposed CRM is compatible with other measures which encourage demand to reduce when prices rise so that less capacity is required. It facilitates development of interconnection with other markets that would provide additional sources of capacity and ensures that the market arrangements promote efficient trading across this interconnection.
- 4.10 The SEM Committee is satisfied that this type of CRM is consistent with European requirements and lowers the risk of dampening short-term prices that

provide the signals required for efficient flows across the interconnector and incentives for demand to respond to prices. The precise nature of the quantity-based reliability options will be finalised in the detailed design phase. Issues to be addressed in this phase include setting the rules for how much capacity is to be procured, when this is done, who is eligible to provide the capacity and how the option is auctioned. Other issues, including the rules applying when there is failure to deliver the capacity when required, will also be addressed in the detailed design stage.

## **5 INITIAL IMPACT ASSESSMENT**

- 5.1 The SEM Committee has carried out an assessment of the trading arrangements, the need for a capacity remuneration mechanism and the type of CRM proposed. The impact assessment is a mixture of qualitative and quantitative evaluation and has informed the decisions taken. Each option has been assessed against the principles of security of supply; stability; least cost; equity; practicality; promotion of competition; promotion of generation from renewable energy sources; how it could adapt to change and an assessment of its compliance with the EU Target Model. The quantitative assessment has included the costs of implementing and maintaining different market arrangements as well as estimated wholesale electricity costs.
- 5.2 The qualitative and quantitative assessments support the retention of a CRM. It is recognised that a quantity-based CRM requires capacity providers to take a more active role and will involve higher implementation and operating costs than a price-based CRM. However in the assessment this is significantly outweighed by the benefits of competition that would accrue to consumers and the savings that would arise compared to a long-term price-based mechanism
- 5.3 The proposed energy trading arrangements and CRM have been assessed as best delivering the benefits of European market integration. The new I-SEM should increase competition in the energy market, maximise the efficient use of interconnectors and therefore render benefits to the end consumer. Quantitative evidence is presented in the impact assessment showing that the proposed design of the I-SEM energy trading arrangements should increase the economic efficiency of cross border electricity flows and reduce the level of curtailment of variable renewable generation on the island.

## 6 NEXT STAGES OF MARKET INTEGRATION PROJECT

- 6.1 It is important to note that the full draft decision on the high level design represents the ‘minded-to’ decision of the SEM Committee on the new I-SEM. It does not cover all the elements of the new market although the initial preferences on some of these are outlined. The SEM Committee’s final decision will be published in early September.
- 6.2 Responses to the Draft Decision Paper are requested by the 25 July 2014. The SEM Committee will then consider these responses and any further work carried out by the project team and will publish its final decision on the new I-SEM high level design. A full impact assessment will be published alongside the final decision and will include further analysis of the costs and benefits of the proposed energy trading arrangements and CRM.

<b>CONSULTATION</b>	<b>START DATE</b>	<b>END DATE</b>
Design option-proposed decision paper	9 <sup>th</sup> June 2014	25 <sup>th</sup> July 2014
Publication of final I-SEM high level design for 2016	N/ A	September 2014

- 6.3 The full Draft Decision Paper, which sets out the decisions in detail and summarises the responses to the consultation paper is published on the all island web site at:

<http://www.allislandproject.org/>