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27th April 2016

Dear Sir/Madam,

**Re: I-SEM Capacity Remuneration Mechanism, Detailed Design – Third Consultation Paper (SEM-16-010)**

The Demand Response Aggregators of Ireland (“DRAI”) is a recently-formed association of ten Demand Side Unit (DSU) and Aggregated Generating Unit (AGU) providers in the SEM. Our purpose is to provide a single voice on policy and regulatory matters of common interest and we very much look forward to working with you into the future. I hope that you will consider this response in your deliberations, as we believe there is a significant role for DSUs and demand-side participation in any future market arrangements in Ireland.

**WHY DR/DSU ARE IMPORTANT?**

DR/DSUs are capable of responding to signals from the system operator within an hour and therefore provide an effective means of reducing the demand requirement, which can assist in balancing the system and avoiding constraints. Facilitation of DR/DSUs increases demand flexibility and improves overall system stability by:

- providing reliable distributed capacity to the system;
- contributing to avoided investment in peaking plant by delivering peak load reduction;
- providing flexibility to mitigate the uncertainty of wind output; and
- helping mitigate transmission and distribution network constraints.<sup>1</sup>

<sup>1</sup> Single Electricity Market (SEM) (2011), Demand side Vision for 2020 Decision Paper, SEM/11/022.

Effective integration of DR/DSUs into the market structure will provide flexible, cost-effective capacity and in doing so complement thermal plant and renewables capacity. In addition, the participation of DR/DSUs can reduce the market power of conventional generators in the wholesale market, leading to more competitive outcomes.

In the past, inefficient diesel plant could run for hours in anticipation of high retail price signals or system demand (Peak lopping in NI, WPDRS in ROI), even though such system demand did not always materialise. The SEM has been successful in positioning AGUs and DSUs correctly in the merit order, ensuring this capacity is available to the system operator to dispatch when needed, and thereby avoiding the need to run the inefficient diesel plant unnecessarily. This is a substantial improvement, both economically and environmentally. The DRAI would therefore fully support the carryover of this aspect of the SEM model into the I-SEM, as the alternative would result in reverting to expensive load curtailment and would also see the unnecessary operation of diesel generation capacity.

### **FACILITATION OF DR/DSU IN THE I-SEM**

Fundamentally, the DRAI expects that DR/DSUs/demand-side capacity will become increasingly important in the design of the Irish electricity system and believes that the regulators need to give further consideration to how DR/DSUs<sup>2</sup> can be facilitated when developing the new I-SEM market arrangements.

Across Europe, DR/DSUs are increasingly recognised as an effective and highly efficient means of balancing the supply of electricity with consumer demand, and within the I-SEM the requirement to balance an increasing proportion of variable wind generation is expected to be an increasing challenge. In Ireland the delivery of the 2020 and 2030 renewable energy targets is projected to result in one of the highest penetrations of variable non-synchronous generation on any power system in the world and is expected to create very challenging future operational scenarios for the grid system operators<sup>3</sup>. It is therefore paramount that this advanced and progressive electricity system is supported by appropriate market arrangements within the I-SEM to encourage the growth of demand-side participation and other system balancing measures.

Whilst the DRAI recognises that flexible dispatchable generation (peaking plants/OCGT) is effective at providing real-time balancing of renewable generation variability in the today's electricity system design, we expect that DR/DSUs will have an increasing role in delivering system balance in the future: to continue to rely on conventional plant with ever lower utilisation factors would be unaffordable. The DRAI therefore believes that the regulators need to be mindful of this growing potential in order to ensure that the market arrangements within the I-SEM provide adequate support for DR/DSU participation into the future.

In this consultation response, we begin by providing some general comments on the approach taken in the design of the Capacity Remuneration Mechanism (CRM) to date, followed by specific reference to the key implications of CRM consultation 1 and 2 for auction design. The DRAI view point is then expressed in relation to a number of the proposals contained within the I-SEM CRM Detailed Design (SEM-16-010) that directly affect DR/DSUs and we also include suggestions as to how the CRM can be designed to work to effectively integrate DR/DSUs.

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<sup>2</sup> The term 'DSU' has been used throughout this letter. It should be understood to refer to both DSUs and AGUs as appropriate. The term 'DR' refers to Demand Response as provided by DSUs and AGUs

<sup>3</sup> EIRGRID GROUP ANNUAL RENEWABLE REPORT 2013 Towards a Smart, Sustainable Energy Future

## **GENERAL COMMENT – SEM-15-103 CRM CONSULTATION PHASE 1 DECISIONS**

The DRAI are supportive of the approach taken to the design of the I-SEM CRM and in particular we agree that the assessment criteria for the detailed design of the CRM are appropriate. Specifically the DRAI support the need for an efficient market design which aims to achieve the most economic overall operation of the power system.

Please be aware that DR/DSUs in Ireland are at the early stages of market development and are therefore predominantly developed and operated by relatively small market actors (aggregators) with limited resources. Participation in a market with an overly complex structure would require substantial resources that may be beyond the capabilities of these new market entrants. Failure to factor in demand-side participation in the initial I-SEM design may inadvertently force its exclusion due to the complexity of the proposed market structures.

The responses below are intended to specifically address the important aspects of CRM detailed design (Consultation 3), which are specific to DR.

## **KEY IMPLICATIONS OF CRM CONSULTATION 1 AND 2 FOR AUCTION DESIGN**

### **Contract length**

*1.4.6 The SEM Committee's minded to positions is as follows:*

- *Existing capacity should be limited to receiving a one year duration contract;*
- *Plant requiring significant new investment will be able to opt for a multi-year contract;*
- *The maximum contract duration may be 10 years, although new investment may opt for a contract of less than this maximum duration;*
- *The financial threshold for such new investment will be high;*
- *There will not be a separate 'upgraded' category;*
- *In any given auction different bidders seeking a range of single year and multi-year contracts of different durations may compete alongside each other; and*
- *These decisions will be kept under review with a view to moving to shorter term contracts in the future.*

The DRAI has a significant concern regarding the above "minded to" position, and in particular to the proposal to only offer long contracts to new generators, which we consider to be both inefficient and discriminatory.

To our knowledge, the only capacity market to have adopted this approach is the current GB energy market. This seems to have been in response to a history of repeated political intervention, which has led to an environment in which project finance lenders are unwilling to take any merchant risk, meaning that the revenues supporting debt service must be supported by a long-term agreement underwritten by the Government. The DRAI would like to point out that this reluctance to take any merchant risk seems unique to the GB, which is perhaps due to the high level of political control over the electricity markets in that country. We are also aware that the state aid approval of the GB capacity market design is currently undergoing a legal challenge, precisely relating to this aspect of the market design.

The DRAI would like to draw attention to better approaches taken in other capacity markets, for example, PJM which has benefited from significant investment in new generation capacity, without offering more than 3 years of capacity price certainty. In PJM, a new entrant can acquire 3 years of price assurance, but only in the case where they are the marginal resource in the auction and their clearing on this basis would lead to a significantly lower clearing price than their not clearing<sup>4</sup>. In this way, PJM minimises the resulting distortions, by only locking in the price where absolutely necessary.

Another preferable approach has been adopted in ISO New England, which offers long contracts (7 years) only to new entrants. It avoids being so discriminatory by making these longer-term contracts available to any new resource, including new DR.<sup>5</sup>

Both the PJM and ISO-NE approaches are better practice than the GB one, but the best (and most common amongst the world's capacity markets) approach is to offer only a single length of contract.

**The DRAI consider this “minded to” position to violate the “equity” assessment criterion and therefore urge the SEM Committee to reverse the proposal to make available multi-year contracts only to plant requiring significant new investment. Good practice would dictate that longer-term contracts should either be available on a non-discriminatory basis or not at all. To deliberately distort the market to favour more expensive new capacity over existing capacity and cheaper new capacity – as suggested in the “minded to” position – would be an extraordinary degree of intervention, and very difficult to justify; we have not yet seen any attempt to show that it is necessary and proportionate.**

We fully support the introduction of a sloped demand curve, which we believe will remove the need to offer discriminating long-term contracts to new entrants, as it solves the problem of prices falling sharply after significant new capacity is added to the system. In our opinion the inclusion of this feature in the market design would cause considerably less distortion than allowing long-term contracts, as well as limiting market power by reducing the incentives for withholding.

### **Lead time**

The DRAI support the SEM Committee “minded to” position to have auctions approximately 4 years ahead of delivery, with new build plant allowed a further 18 months to complete their projects.

### **Transitional auction arrangements**

The DRAI also support the SEM Committee “minded to” position to adopt Option 1, and auction each transitional year separately.

## **AUCTION DESIGN FRAMEWORK**

*3.2.1. Do respondents agree with the proposed approach for transitional auctions, T-4 auctions and T-1 auctions? If not, please explain.*

### **Auction format**

In relation to the options outlined for the auction format, the DRAI believe it will be essential to have a system where the winners' payments are based solely upon the uniform clearing price, “pay-

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<sup>4</sup> PJM Manual 18, section 5.3.3, as at version 31, 25 Feb 2016

<sup>5</sup> ISO-NE Market Rule III.13.1.4.2.2.5

as-clear". This approach will produce bids that are most closely based on a participant's actual costs, and will therefore produce the most efficient outcome. Conversely, a "pay-as-bid" arrangement, which rewards participants for second-guessing other bidders' behaviour, is considered less efficient. It is also unfair as it gives larger players with better market knowledge an advantage over smaller players and new entrants.

Provided a "pay-as-clear" system is adopted the DRAI do not have a preference for either Option 1 or Option 2 auction format.

### **2.1.3 Winner determination**

If multiple contract lengths are to be made available, the DRAI consider that the risk transfer associated with longer contracts should be taken into account in determining the auction winners. Although we recognise that it may not always be possible to value this risk transfer precisely, we firmly believe that the existence of an approximate discount formula would discourage participants from routinely requesting the longest possible contracts. Accounting for the risk transfer in this way is expected to reduce the levels of risk unnecessarily transferred to consumers.

## **AUCTION FREQUENCY AND VOLUMES**

*3.2.2. What is respondents view in relation to the flexibility around the timing of the T-1 and T-4 auctions?*

### **Possible cancellation of T-4 auctions**

The DRAI agrees that the introduction of long-term contracts on a discriminatory basis could potentially lead to a scenario in the future where no new contracts may be required for a full year, based on future capacity projections, as described in paragraph 3.1.7 of the consultation paper.

The existence of this scenario presents participants that are only permitted to enter into year-to-year contracts with elevated risks and hence increased costs: they have to allow for the risk that the market for their services may entirely disappear because it has already been saturated by competitors who enjoy preferential treatment by being allowed multi-year contracts.

This case clearly demonstrates the unfairness of offering longer-term contracts on a discriminatory basis, as it permits those favoured participants on multi-year contracts to buy-out the capacity market. The risk resulting from this distortion will increase the cost of capital for all other participants, and hence is likely to increase the total costs borne by consumers.

### **T-1 Auctions – Holdback quantities**

The DRAI are familiar with the January 2016 GB T-1 Auction. We would like to point out that this was not a normal T-1 Auction, since there was no corresponding T-4 Auction. On the contrary, this atypical T-1 Auction was actually conducted under the GB "transitional arrangements", for a quantity of capacity chosen arbitrarily by politicians. In addition, since participation in the January 2016 T-1 Auction led to automatic disqualification from other T-4 auctions (and vice versa), it attracted a low level of interest.

The DRAI support the practice of holding capacity requirement back from T-4 Auctions to T-1 Auctions, as DR participants need to have confidence that there will be a continuing opportunity to deliver on the T-1 auction track. If a T-1 Auction turns out to be for a small quantity, or the auction

is skipped, it undermines participating customers' confidence in DR as a concept, as well as inflicting financial distress on aggregators.

We would like to draw the attention of the SEM Committee to the GB Capacity Market's State Aid approval document, which states: "If demand falls between the four-year ahead and year ahead auctions, the amount of capacity auctioned in the year ahead auction will be reduced. However, because the year ahead auctions provide a better route to market for DSR, the Government commits to procure in the year ahead auctions at least 50% of the capacity reserved four years earlier."<sup>6</sup>

## **MARKET POWER**

*4.8.3. Do respondents think that the overall market power control framework and package of mitigation measures set out in this section is comprehensive and proportionate? Are there any additional market power concerns that the SEM Committee should be focussing on?*

### **Market power and mitigation approaches – Physical withholding**

The DRAI recognise that under certain circumstances a seller (generator) may decide to physically withhold its capacity and not to bid into the market in the hope that this action will cause the market price to rise. We would like to highlight that in comparison to the GB market, withholding will be relatively attractive under the proposed I-SEM design. This is because:

- (a) Opting out of the GB capacity market simply results in a loss of capacity market revenue: there's no upside in doing so. In contrast, in the I-SEM, a generator that opts out misses out on option fee revenue, but has the benefit of retaining all of their energy market revenues, rather than surrendering those parts that come from prices above the strike price; and
- (b) In the I-SEM the proposed penalty regime and stop-loss limits mean that there is potentially a greater downside to winning a capacity contract than in the GB market.

Hence it would be advisable to apply stronger market power mitigation measures in the I-SEM than there are in the GB market.

### **Use of a sloping demand curve (physical and economic withholding)**

The inclusion of a sloped demand curve is considered essential, not only to limit market power, but also to:

- (a) Represent customers' collective willingness to pay for particular levels of security of supply; and,
- (b) Ameliorate capacity price volatility, especially after the entrance of a major new plant, which could otherwise cause the price to crash for years.

International experience also suggests that "the lower volatility due to a sloped demand curve should render capacity investment less risky, thereby encouraging greater investment at a lower cost"<sup>7</sup>.

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<sup>6</sup> Paragraph 46 of the public version of European Commission State aid document SA.35980 (2014/N-2), 23 July 2014

<sup>7</sup> Brattle: Second Performance Assessment of PJM's Reliability Pricing Model, 26 Aug 2011, p.7.

The DRAI therefore support introduction of a sloped demand curve, which we also consider will negate the requirement to offer discriminating long-term contracts to new entrants. In our opinion the inclusion of this feature in the market design would limit market power, deliver greater efficiency and result in considerably less distortion than alternative approaches.

## **AUCTION DESIGN**

*5.9.2. Which auction format (simple sealed bid, multiple round descending clock, combinatorial format, i.e. Option 1 to 3 in Section 5.2) do you think is most appropriate for the transitional auctions, T-4 and T-1 auctions, and why?*

### **Auction format**

Overall, the proposals for a multiple-round descending clock auction (Option 2) and a sealed bid combinatorial auction (Option 3) appear overly complex. The DRAI do, however, recognise that the additional information made available in the multiple-round descending clock auction could be important, and may have value in reducing the risk of winner's curse. In which case the added complexity associated with Option 2 may be justified over a simple sealed bid (Option 1).

*5.9.3. Do you have any preference for the structure of bids for the auctions? Explain your rationale.*

### **Structure of bids**

The DRAI support the adoption of Option 2 for the structure of bids, as we consider that the additional flexibility of bidding a price curve will have value. DR aggregators are genuinely be able to provide more capacity if prices are higher as they will be able to offer customers increased value for capacity. Option 2 allows them to represent this reality in the auction.

*5.9.7. Winner determination. Do you agree with winners being determined purely on price offered for each Capacity Delivery Year?*

*5.9.8. Winner determination. Do you agree that the auctioneer should be able to accept "out-of-merit" bids to manage the lumpiness problem or should only in-merit bid be accepted? What rules should be used to determine whether the marginal bidder is accepted (if only in-merit bids can be accepted) or to determine which out-of-merit bid should be accepted?*

### **Winner and price determination with contracts of differing lengths**

In relation to the proposed winner determination options, the DRAI consider Option 2 (winner determination with a discount rate determination) to offer the most appropriate solution (assuming the discount rate is set through a transparent methodology). In this case, even if the discount rate only provides a rough estimate, and not a perfect representation of consumer preferences, we would expect that it will be more accurate than taking the extreme position of ignoring duration, which is equivalent to assuming that a multi-year contract presents no additional risk to consumers than a single year contract.

We would also expect that choosing the alternative, Option 1, would unnecessarily increase the risk for electricity consumers, as they will be locked in to paying for large-scale capacity that may turn



out not to be required. In addition, we believe that this option is also likely to stifle competition from nimbler technologies – “Nevertheless this approach might score less favourably on a score measuring efficiency over the whole contract horizon” (section 5.4.9). For this reason the DRAI do not support the adoption of Option 1.

*5.9.9. Price determination. Do you agree that it appropriate to pay auction winners on a “pay-as-clear” basis, with this uniform clearing price being based on the highest accepted in-merit bid price? Should any out-of-merit winners be paid a different price to in-merit winners?*

### **Pricing rules**

The DRAI fully support the adoption of uniform clearing pricing (pay-as-clear). We agree with the rationale set out in the consultation paper, and as mentioned above we consider that this approach will produce bids that are most closely based on a participant’s actual costs, and will therefore produce the most efficient outcome.

*5.9.10. How do you think the lumpiness / discrete bid issue should be dealt with?*

### **Dealing with lumpiness and discrete bids**

The DRAI do not have a strong preference between any of the three options presented in the consultation paper. We do, however, recognise that there may be merit in being able to identify bids (or particular capacity spans on a price-quantity curve) as “divisible”, and that this capability, in combination with Option 3, which gives the auctioneer the ability to accept an out-of-merit bid, could deliver an efficient solution.

Under the alternative options the auctioneer is constrained and can only accept or reject the bid of a large marginal generator, only part of whose capacity is needed. However, under Option 2, the auctioneer is given the option of moving up the bid stack to find a more suitable bid that produces a better outcome. Should the I-SEM Committee choose to Option 2, then the introduction of “divisible bids” that can be adjusted by the auctioneer to exactly the right size would optimise the flexibility offered through this solution.

*5.9.11. Do you have any comments on the treatment of tied bids?*

### **Tied bids**

The DRAI support the proposal to apply a net welfare function to rank the bids and do not consider that the inclusion of this algorithm would result in disproportionate computational demands.

## **AUCTION PARAMETERS**

*6.5.3. If a sloped demand curve is introduced, what principles should be used to determine the slope of the demand curve, and the range within which the demand curve is sloped?*

### **Demand curve**

Paragraphs 4.7.25-27 explain the need for a sloped demand curve, and highlight its important function in lowering volatility, which in turn reduces the level of risk for market participants and



consequently lead to lower costs for consumers overall<sup>8</sup>. The DRAI also consider that the inclusion of a demand curve will be especially important in the I-SEM, as the total capacity of the market is relatively small when compared to the capacity of a plausible new entrant generator. Therefore in the case of the I-SEM the demand curve needs to be comparatively shallow to have the desired effect.

Indeed, as noted in paragraph 6.2.9, if the demand curve is too steep in a small market such as the I-SEM, then a large new entrant generator can have a disproportionate impact on the market, as it can change the price from near the cap (the price signal that would have formed the basis of its business model) down towards zero. The price could then be expected to stay at this lower level for many years until there is another significant change in the market, e.g. other participants exit the market (cease trading) or demand increases significantly to absorb much of the capacity of the new entrant. For this reason, when comparing demand curves from different markets, we have found it helpful to parameterise the curves in terms of absolute MW relative to the capacity target, rather than as % of capacity.

#### *6.5.4. If introduced, should the sloped demand curve be different for the transitional period?*

As noted in paragraph 6.2.5, it is important to consider the role of the demand curve as a transitional tool, and to recognise the value in a shallow-sloped demand curve, which can ameliorate the impact of market design changes on participants. The DRAI consider that it may therefore be worthwhile starting with a curve that is shallower than that which is intended to be in place once the market has become established.

#### *6.5.6. Do you agree with the requirement for an Auction Price Cap? What principles should be used to determine the level for the Auction Price Cap/what level should it be set at?*

### **Auction price cap**

The DRAI support the objective to set the auction cap price at a level which balances incentivising investment in new capacity without allowing market participants to abuse their market power and drive up the auction clearing price. It should be clear, however, that the Auction Price Cap cannot be set at 1x Net CONE, as this approach would require absolute confidence that the value of the Net CONE will never be underestimated. Indeed the DRAI are particularly concerned for the case where the Net CONE is underestimated as this will deter investment in capacity, even when it is needed, and ultimately all electricity consumers will be adversely affected. It would only make sense to take the risk of setting the Auction Price Cap at 1x Net CONE if there was a very low level of confidence in market competition.

The DRAI consider that the characteristics of the I-SEM are such that there is significant uncertainty regarding the Net CONE estimates. We also expect that the design of the I-SEM will encourage a strong level of competition amongst market participants. For these reasons, we consider that it would be more appropriate to set the Auction Price Cap substantially higher, and we would support the adoption of the ISO-NE approach, where the Auction Price Cap is set at 2x the estimated Net CONE, as this is deemed to be a suitable compromise.

### **OTHER RESIDUAL ISSUES**

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<sup>8</sup> Brattle: Second Performance Assessment of PJM's Reliability Pricing Model, 26 Aug 2011.

**Strike price**

The DRAI fully support the approach to Strike Price calculation described in section 8.2. We agree that DSU floor price could be expected to set the Strike Price for the majority of the time (paragraph 8.2.23), since DSUs generally have higher short-run marginal costs than any generator.

We look forward to hearing from you and would welcome the opportunity to discuss matters relating to the I-SEM CRM and how they could potential assist the development of the DR/DSU market within the context of the All Island electricity market.

Yours sincerely,



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PATRICK LIDDY  
DRAI Chairman