Utility Regulator
ELECTRICITY GAS WATER

CER
Commission for Energy Regulation
An Coimisiún um Rialáil Fuinnimh

Integrated Single Electricity Market (I-SEM)

High Level Design for Ireland and Northern Ireland from 2016

Consultation Response Template

4 April 2014

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1 PURPOSE OF THIS DOCUMENT

1.1 PURPOSE AND STRUCTURE OF THIS DOCUMENT

1.1.1 This supplementary document provides a template for responses to the consultation document on implementing a new High Level Design ('HLD') for the Integrated Single Electricity Market (I-SEM) in Ireland by the end of 2016. We request all responses to the consultation are submitted in this template, and in **Microsoft Word** format.

1.1.2 This template contains the questions presented in the consultation document.

1.1.3 Responses to the Consultation Paper are requested by 17.00 4th April 2014. Following a review of the responses to this paper the SEM Committee will publish its draft decision on the proposals set out in this paper in June 2014.

1.1.4 Responses should be sent to Jean-Pierre Miura (JeanPierre.Miura@uregni.gov.uk) and Philip Newsome (pnewsome@cer.ie). Please note that the SEM Committee intends to publish all responses unless marked confidential[1].

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[1] While the SEM Committee does not intend to publish responses marked confidential please note that both Regulatory Authorities are subject to Freedom of Information legislation.

2 CONSULTATION QUESTIONS

2.1 RESPONDENT DETAILS

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MAIN INTEREST IN CONSULTATION	HgCapital is Europe's largest institutional investment fund solely dedicated to investing in EU renewable energy projects. We are one of the three largest financial investors in EU renewable energy projects. Since 2004 we have raised over €900 million in equity capital from over 30 leading global institutional investors, including European, UK and US pension funds, insurance companies and family offices. In a world of scarce long-term capital, EU governments are increasingly looking to investors such as those that back us to bring patient, long-term capital to their renewable energy and other infrastructure projects. We are a bridge to that capital. We have invested and continue to invest in onshore wind in the Republic of Ireland. We made our first investment in 2005 and since 2011 have been working with the Craydel Group to assemble and expand a portfolio of wind farms. Together we have built a 44MW wind farm in Kerry and a 42MW wind farm in Galway. We in the process of starting construction of a further 50-100MW during 2014 and have a project pipeline that supports our goal of developing, building and operating a further 300MW of new onshore wind projects over the next 36 months with additional projects planned thereafter. Most of these projects are located on the West Coast of the Republic of Ireland. As a result, we have a strong interest in the maintenance and evolution of a stable, effective electricity market in Ireland and one that is structured to assist in the Irish government's intended transition to 40% of electricity consumed being generated from renewable resources (primarily wind energy). We are also committed to a market that offers a level playing field for all participants, that is accessible, liquid and transparent. We believe this promotes competition and encourages change and innovation, all in a way that is beneficial to the consumer.

2.2 GENERAL COMMENTS

The SEM has operated well so far. It has provided easy access, transparency and liquidity to all market participants. It is imperative that the I-SEM delivers equally or better on these fronts and improves in the areas where it has been deficient. The effective parts of the SEM which should be kept central to the I-SEM design are ease of access, transparency and liquidity. The deficient areas include firm ex-ante pricing and lengthy and convoluted settlement processes. In many power markets worldwide for example all settlement occurs at the end of each day. This contrasts starkly with the complicated settlement calendar in SEM which spans weeks and months after the trading day in question. Without a key focus on access, transparency and liquidity as well as centrally cleared locations for trading each time frame the I-SEM will be the preserve of the large vertically integrated utilities at the expense of smaller market participants and all electricity consumers on the Island.

The energy landscape that existed when SEM was designed has also changed considerably from under-capacity of thermal units to over-capacity and from limited amounts of variable must run generation to hugely increasing levels of variable generation. Demand side and energy storage technologies have also become market ready since SEM was designed. The focus of the I-SEM design must be on the emerging and future fundamentals of the electricity system on the Island rather than the existing or past situation. In particular the Irish government's stated goal of increasing consumption from electricity generated from renewable resources (primarily wind) to 40% of total electricity consumption in the near future, and the implications of this for other forms of generation, should be taken into account in a way that supports the required transition and also respects the bona fide commercial interests of all of those involved. A further consideration is the range of new technologies that are becoming commercially available and economically viable (such as storage technologies) and the potential for changes to the nature and volume of demand (for example the potential for use of electric vehicles). All of these changes are expected to take place during and in the years after the period in which the new market design will be implemented and it is critical that they are given full consideration.

As an investor in wind energy generation in Ireland we note that the existing regulatory structures for wind energy (REFIT 2) currently come to an end by 31 December 2017 and that from the start of 2016 wind projects seeking to begin construction will need to operate under whatever new arrangements are put in place. This all will take place at the same time as the new market arrangements take effect. Clearly post-REFIT regulation for wind energy is not part of this consultation but we believe it is important that the new market design takes this into account and consideration is given to a market design that can operate well with post-REFIT regulation for renewables. At present this is not covered in the consultation and we believe it should be incorporated, especially given the extent of wind energy expected in the SEM in future.

The small size and operationally constrained nature of the Ireland system has not been sufficiently acknowledged in the I-SEM documentation and discussions to date. Both of these undeniable fundamentals present a challenge which should be a key focus of the design.

The SEM is a liquid market at present because it is mandatory and because all physical power is traded within the pool. All the proposed I-SEM designs introduce multiple locations to trade power (Future, Day-ahead, Intra-Day & Imbalance), the unavoidable consequence of this is that liquidity will be spread out in some manner between the various markets. Each of these markets needs sufficient liquidity to perform. The clear solution to this is that all trading in each of the market time

frames is carried out exclusively at a unit level in centrally cleared exchanges where liquidity is focused, access is straightforward and pricing is transparent.

To further increase liquidity participants should be permitted to trade between each of the markets meaning for example that a non-physical trader (not a generator or supplier) could buy power in the day-ahead market to sell it in the intra-day market. This type of trading is widespread in international power markets and brings two key benefits. Firstly it increases liquidity in each market timeframe and secondly it equalizes the prices between each market time frame reducing price volatility, risk and associated costs.

The operational constraints on the Ireland power system should not be ignored in the market design. The Ireland power system is already operationally constrained. EirGrid have a long list of operational rules about which generation must be on where and when in order for "the lights to stay on". No market design can avoid these operational constraints which are required to maintain stability in a system which is very small by international standards and has unprecedented levels of variable generation. All the I-SEM designs feature elements of self-dispatch. It is inevitable that the self-dispatch decisions made by individual participants will not fully obey the operational rules that exist. Therefore EirGrid will be required to dispatch off some units and then dispatch on some other units to meet the operational constraints. It is not clear at this stage which market design will minimize this un-doing and re-doing of dispatch but it must be recognized that this will occur, that it may be a significant operational challenge for EirGrid, that it may undermine the functioning of the market and that this feature is prone to gaming particularly by participants who have multiple generators. The extent of this re-dispatch should be established as early as possible in the design process and its impact on the market, the electricity system and consumers calculated.

2.3 PURPOSE OF THE DOCUMENT (SECTION 1)

Question	Answer
1. Which option for energy trading arrangements would be your preferred choice for the I-SEM market, and why?	Our preferred choice of sub-topics is a non-mandatory centrally cleared forwards market, unit based bidding, mandatory day-ahead market participation for all non-wind units, exclusive cleared intra-day market with mandatory participation for all non-wind units and a single price non-penal imbalance market. Trading should be allowed between markets for non-asset based participants and a clear reference price should be designed for wind. Option 3 with some minor modifications appears to encompass most of these options. Participation for wind units should only be mandatory within the imbalance market. This is due to the variable nature of the generation and the infrastructure and cost required in becoming active participants in the Forward, Day-Ahead and Intraday Markets.
2. Is there a requirement for a CRM in the revised HLD, and why?	It is not clear at this stage if a CRM is required or what indeed a CRM should be promoting. Additional thermal generation capacity is not required at least in RoI at present. On the other hand flexibility within the thermal fleet on the Island is required. A CRM may be required to transition some of the thermal fleet to retirement and promote flexibility within the remaining fleet; a CRM can reduce price volatility; these are possible objectives, but the objectives of a CRM have not been made clear yet. The objectives of the CRM needs to be clarified as soon as possible.

3. If there is a requirement for a CRM in the revised HLD, what form would be your preferred choice for the I-SEM, and why?	

2.4 TOPICS FOR THE HIGH LEVEL DESIGN OF ENERGY TRADING ARRANGEMENTS (SECTION 4)

Question	Answer
4. Are these the most important topics to consider in the description of the HLD for the revised energy trading arrangements for the single electricity market on the island of Ireland?	The topics are largely appropriate but the HLD to date has presented the topics in a manner that is overly detached from the known realities of the Ireland power system. For example the topic "Process for reaching a feasible dispatch" does not acknowledge sufficiently the constrained nature of the power system in Ireland and the resulting challenge presented by allowing units to self-dispatch in a unconstrained day-ahead market in a manner that is very unlikely to be operationally feasible. This will result in large volatility in the intra-day and imbalance markets rather than stable prices associated with minor volume adjustments that these markets typically expect. Increased volatility increases risk which increases cost to consumers. Volatility reduction needs to be central in the I-SEM design. In addition this large un-doing and re-doing of dispatch within tight timeframes will present significant TSO, Market Operator and regulatory challenges that have yet to be acknowledged.
5. Are there other aspects of the European Internal Electricity Market that should form part of the process of the High Level Design of energy trading arrangements in the I-SEM?	The European Commission cites the benefits of the European Internal Electricity Market as 1. More choice and flexibility for consumers 2. More liquid and transparent wholesale markets 3. More secure supplies 4. More coordination and transparency in relations with third countries 5. More power for consumers to control their energy costs 6. Better control of consumption through smart technologies 7. More competition through better access to transmission grids 8. More efficient use and development of grids The High Level Design of energy trading arrangements in the I-SEM addresses some of these aspects but areas 1 and 2 of liquidity, transparency and market access for small and new entrants which function well in the SEM should be at the forefront of the I-SEM design.

2.5 SUMMARY OF THE OPTIONS FOR ENERGY TRADING ARRANGEMENTS (SECTION 5)

Question	Answer
6. What evidence can you provide for the assessment of the HLD options with respect to security of supply, efficiency, and adaptability?	Security of supply: The operational constraints on the Ireland power system have largely been ignored in the design so far. The Ireland power system is already operationally constrained. EirGrid have a long list of operational rules about which generation must be on where and when in order for "the lights to stay on". No market design can avoid these operational constraints which are required to maintain stability in a system which is very small by international standards and has unprecedented levels of variable generation. All the I-SEM designs feature elements of self-dispatch. It is inevitable that the self-dispatch decisions made by individual participants will not fully obey the operational rules that exist. Therefore EirGrid will be required to dispatch off some units and then dispatch on some other units to meet the operational constraints. It is not clear at this stage which market design will minimize this un-doing and re-doing of dispatch but it must be recognized that this will occur that it may be a significant operational challenge for EirGrid, that it may undermine the functioning of the market and rescue security of supply. The extent of this re-dispatch should be established as early as possible in the design process and its impact on the market, the electricity system and consumers calculated. If a market design cannot be found that that delivers a similar security of supply as today then this target market initiative should be abandoned in the near term; it may be possible to identify a set of physical criteria which, when met, would allow the introduction of self-dispatch without compromising security of supply is this way. We do not believe that abandoning or postponing self-dispatch would inhibit market integration, the over-arching objective of the proposed changes. Efficiency: The TSO currently dispatches available plant with the assistance of a least cost optimiser that is aware of the operational constraints that exist within the small weakly interconnected power system on the island. Central to all options in the HLD is a forward, day-ahead and intra-day market whereby dispatches from a small number of generators will be determined primarily by participants without any consideration of the operational constraints that do exist. Because the operational constraints are unavoidable initial dispatches will be un-done and adjusted by the TSO within the balancing timeframes to arrive at an operationally feasible dispatch. It is reasonable to assume that the final dispatches will not differ vastly from the constrained dispatches that exist today and therefore efficiency will not improve considerably upon implementation of any chosen HLD option. The costs to the consumer of the chosen design should be established as early as possible and if significant increases in consumer cost are expected this target market initiative should be abandoned in the near term; it may be possible to identify a set of

	physical criteria which, when met, would allow the introduction of self-dispatch at no / low cost. We do not believe that abandoning or postponing self-dispatch would inhibit market integration, the over-arching objective of the proposed changes. Adaptive: The HLD options 1 and 3 which do not feature a pool market are more likely to be adaptive and less costly because these designs are more aligned with the power markets and solutions that have already been implemented across Europe. The components necessary to implement options 1 and 3 are likely to be procured, supported and adapted in a more straightforward manner and at a lower cost than the bespoke pool based solution required in options 2 and 4.

2.6 ADAPTED DECENTRALISED MARKET (SECTION 6)

Question	Answer
7. Are there any changes you would suggest to make the Adapted Decentralised Market more effective for the I-SEM (for instance, a different choice for one or more of the topics or a different topic altogether)?	The Forward market should be an exclusive exchange based centrally cleared forward market which would remove barriers to entry, provide a stable, transparent, efficient, equitable and adaptable platform to encourage forward trading. Portfolio bidding should not be permitted within any of the new markets as it will restrict transparency, competition and liquidity. There should be an exclusive exchange based centrally cleared intra-day market. There is unlikely to be sufficient liquidity unless parties are mandated to participate in a single centrally cleared market. Non-energy services should be integrated more centrally into the HLD in order to minimise the 'reactive' intervention that will be required by the TSO (6.2.8). Without these features competition will suffer and the market will be dominated by large vertically integrated players.
8. Do you agree with the qualitative assessment of the Adapted Decentralised Market against the HLD criteria? If not, what changes to the assessment would you suggest (including the relative strengths and weaknesses of an option)?	**SoS** is a possible weakness because the diversity of trading options will deliver low liquidity, low transparency and a poor reference price. **Efficiency** is a possible weakness because an efficient unit commitment will not result from the Futures, DA and Intra-day markets unless non-energy services are integrated centrally into these markets **Practicality/Cost** Accommodating multiple trading options in each timeframe will be more costly than supporting exclusive trading options at each stage **Equity** Gaining access to multiple trading mechanisms for each of the Futures, DA and ID stages will be costly and present a barrier to entry for new participants. **Environmental** Non obligatory participation prior to the balancing market is strength for renewable generation who may not have the resources to be active participants at the earlier stage.
9. How does the Adapted Decentralised Market measure against the SEM Committee's primary duty to protect the long and short term interests of consumers on the island of Ireland?	Ireland is too small for this market design; liquidity will be spread too thin. Allowing participants to trade anywhere anytime will be a barrier to entry for all but the large vertically integrated players. This design will deliver reduced transparency, liquidity and increased volatility these will increase costs and reduce competition both of which are a backward step for consumers in Ireland.

2.7 MANDATORY EX-POST POOL FOR NET VOLUMES (SECTION 7)

Question	Answer
10. Are there any changes you would suggest to make the Mandatory Ex-post Pool for Net Volumes more effective for the I-SEM (for instance, a different choice for one or more of the topics or a different topic altogether)?	Focus non pool base trading exclusively within centrally cleared exchanges to reduce barriers to entry and to promote liquidity, transparency and competition. Ireland has a very small market by international standards and there is considerable uncertainty as to whether this market design is even technically feasible to implement. We are not aware of any country of comparable size where this design has been shown to work. This design should be abandoned at this stage.
11. Do you agree with the qualitative assessment of Mandatory Ex-post Pool for Net Volumes against the HLD criteria? If not, what changes to the assessment would you suggest (including the relative strengths and weaknesses of an option)?	Stability: This option will not be stable and will require too much regulatory intervention to work. This design requires both the DAM and the ex-post net pool to operate effectively traded volumes in each marketplace will need to be heavily regulated to get sufficient volumes into both markets Practicality: Implementing the DAM, ID and Net pool will be expensive and impractical. Off the shelf solutions may be available for the DAM and ID markets but a Net pool Ireland will require a bespoke design which may not be technically feasible. Efficiency: Likely to be good with this option as the design retains a central dispatch approach which has the potential to commit and dispatch plants in a manner that respects the operational constraints on the system. Competition: The market is likely to be less competitive than the current SEM as the complexity of a Futures/DA/ID and pool will prove a further barrier to entry for new participants compared to today and the significant regulatory intervention required for successful operation will be viewed as a risk by new entrants.
12. How does the Mandatory Ex-post Pool for Net Volumes measure against the SEM Committee's primary duty to protect the long and short term interests of consumers on the island of Ireland?	The interests of consumers will not be well served with this approach as it will be very costly to implement compared to other designs, it has the potential to be very unstable without regulation of DA and pool volumes and the dilution of volume amongst the various markets will not encourage efficient pricing.

2.8 MANDATORY CENTRALISED MARKET (SECTION 8)

Question	Answer
13. Are there any changes you would suggest to make the Mandatory Centralised Market more effective for the I-SEM (for instance, a different choice for one or more of the topics or a different topic altogether)?	The Forward market should be an exclusive exchange based centrally cleared forward market which would remove barriers to entry, provide a stable, transparent, efficient, equitable and adaptable platform to encourage forward trading. Wind generators should be mandated to participate in the balancing market only, their participation in earlier markets should be on a voluntary basis. Non-physical trading (buying/selling without physical nominations) between Forward, DA, ID and balancing markets is essential in any design. Trading between the market timeframes will act to equalise and stabilise prices in DA, ID and balancing markets providing better reference prices for all and more stable balancing price for wind units not participating in earlier markets.
14. Do you agree with the qualitative assessment of Mandatory Centralised Market against the HLD criteria? If not, what changes to the assessment would you suggest (including the relative strengths and weaknesses of an option)?	Efficiency: Even with the use of sophisticated bid in the DAM, Euphemia cannot produce feasible least cost dispatches that will meet the operational constraints of the Ireland power system. Significant re-dispatch by the TSO is likely to occur in the intra-day and balancing markets. It is very uncertain if this sequence of dispatch and re-dispatch will result in a least cost dispatch for the island.
15. How does the Mandatory Centralised Market measure against the SEM Committee's primary duty to protect the long and short term interests of consumers on the island of Ireland?	Even with the use of sophisticated bid in the DAM, Euphemia cannot produce feasible least cost dispatches that will meet the operational constraints of the Ireland power system. Significant re-dispatch by the TSO is likely to occur in the intra-day and balancing markets. It is very uncertain if this sequence of dispatch and re-dispatch will result in a least cost dispatch for the island.

2.9 GROSS POOL – NET SETTLEMENT MARKET (SECTION 9)

Question	Answer
16. Are there any changes you would suggest to make the Gross Pool – Net Settlement Market more effective for the all I-SEM (for instance, a different choice for one or more of the topics or a different topic altogether)?	The DAM/Euphemia is designed to produce interconnector schedules between zones. This design does not mandate any participation in the DAM, availability of an ex-post pool further de-incentivises participation in the DAM. An illiquid DAM will not produce efficient interconnector schedules; DAM liquidity promoting measures should be included in this design.
17. Do you agree with the qualitative assessment of Gross Pool – Net Settlement Market against the HLD criteria? If not, what changes to the assessment would you suggest (including the relative strengths and weaknesses of an option)?	We broadly agree with the qualitative assessment of Gross Pool – Net Settlement Market against the HLD criteria. The main risk in this design has been highlighted – participants may choose to do all trading in the pool and not participate in the Forward, DAM and ID markets. Without sufficient participation in the DAM interconnector flows will not be efficiently scheduled and illiquid intra-day markets will not deliver the adjustments to interconnector flows required to reduce wind curtailment. The current SEM design is extremely poor at scheduling interconnector flows. Flows are decided ahead of time and there are very limited mechanisms to adjust flows as conditions change. The result is higher levels of wind curtailment than could otherwise be the case. The I-SEM has the potential to deliver improved interconnector flows by adjusting and settling at the DA, ID and balancing stages. This will only happened however if liquidity is focused and present in each market timeframes and if arbitrage between market timeframes is permitted.
18. How does the Gross Pool – Net Settlement Market measure against the SEM Committee's primary duty to protect the long and short term interests of consumers on the island of Ireland?	This solution requires the procurement of Futures, DAM and ID market as well as a modified ex-post pool this will be very costly and these markets are likely to be underutilised given the existence of the ex-post pool in addition interconnector flows from Euphemia may not be efficient due to lack of liquidity in the DAM.

2.10 CAPACITY REMUNERATION MECHANISMS (CHAPTER 10)

Question	Answer
19. What are the rationales for and against the continuation of some form of CRM as part of the revised trading arrangements for the I- SEM?	The existing CRM has promoted the development of generation and may have over promoted the development of generation at least in the Republic of Ireland. It has also promoted price stability. As we look to the future needs of the system in Ireland promotion of capacity is certainly not required at least in RoI this decade. Flexibility on the other hand has been identified as lacking. Unfortunately it has not been established yet what the CRM is attempting to promote. The CRM design needs to establish firstly what it is trying to promote. If it is established that the energy market will not delivered the required feature then a CRM of some sort will be required. However explicit support should only be put in place if the energy market or ancillary services mechanisms are not expected to deliver the required generation fleet. As we look forward to a system with even higher levels of variable renewables a CRM should encourage a dignified retirement of thermal fleet not suited to this future and promote generation which supports this future system. Reduction in running hours and in some cases retirement of some of the thermal generation fleet over time is an implicit consequence of the increase in penetration of renewables that is sought. We believe these issues need to be acknowledged. If a CRM were to continue similar to the current form, we agree with the IWEA's proposal that wind generators should be given equitable treatment compared to other forms of generation.
20. Are these the most important topics for describing the high level design of any future CRM for the I-SEM?	No, the objective of the CRM should first be established, what we are trying to promote? The past is not a good guide here, it is imperative to look at what the system needs for the next 10 years and then decide the best CRM design.

2.11 STRATEGIC RESERVE (CHAPTER 10.7)

Question	Answer
21. Are there any changes you would suggest to make the design of a Strategic Reserve mechanism more effective for the I-SEM (for instance a different choice for one or more of the topic?)	Strategic reserve is a targeted solution that should be reserved for emergencies or unforeseen capacity shortages only. Strategic reserve should not form part of any general CRM design.
22. Do you agree with the initial assessment of the strengths and weaknesses of a Strategic Reserve Mechanism? If not, what changes to the assessment would you suggest (including the strengths and weaknesses of an option relative to the others)?	Broadly in agreement
23. Would a Strategic Reserve Mechanism work or fit more effectively with a particular option for the energy trading arrangements. If so, which one and why?	Strategic reserve should work with all options

2.12 LONG-TERM PRICE-BASED CRM (CHAPTER 10.9)

Question	Answer
24. Are there any changes you would suggest to make the design of a Long-term price-based CRM effective for the I-SEM (for instance a different choice for one or more of the topic?)	The design is reasonable .
25. Do you agree with the initial assessment of the strengths and weaknesses of a Long-term price-based CRM? If not, what changes to the assessment would you suggest (including the strengths and weaknesses of an option relative to the others)?	Distortion of cross border flows due to ex-post capacity settlement may not be as problematic as predicted. Cross border flows in SEM today do not appear distorted because of ex-post capacity settlement. Year on year stability is important for investment but the mechanism should provide a capacity exit as well as entry signal.
26. Would a Long-term price-based CRM work or fit more effectively with a particular option for the energy trading arrangements. If so, which one and why?	This approach could be accommodated in all options

2.13 SHORT-TERM PRICE-BASED CRM (CHAPTER 10.10)

Question	Answer
27. Are there any changes you would suggest to make the design of a Short-term price-based CRM effective for the I-SEM (for instance a different choice for one or more of the topic)?	Linking capacity price to capacity margin in a DA market will result in volatile capacity pricing. Volatile capacity prices will not promote financing of generation and will be prone to gaming as identified in the assessment. They will also increase cost to the consumer: all things being equal and within certain bounds, investors will seek a higher return (price) for the same amount of income if it is exposed to higher risk.
28. Do you agree with the initial assessment of the strengths and weaknesses of a Short-term price-based CRM? If not, what changes to the assessment would you suggest (including the strengths and weaknesses of an option relative to the others)?	Capacity price volatility will be high in this approach. Volatile capacity prices will not promote financing of generation and will be prone to gaming as identified in the assessment.
29. Would a Short-term price-based CRM work or fit more effectively with a particular option for the energy trading arrangements. If so, which one and why?	This approach could be accommodated in all options but if an ex-ante capacity price is required then non ex-post pool options 1 and 3 are more likely to have reflective capacity margin and thus capacity price information available ex-ante.

2.14 QUANTITY-BASED CAPACITY AUCTION (CHAPTER 10.11)

Question	Answer
30. Are there any changes you would suggest to make the design of a Quantity-based Capacity Auction CRM effective for the I-SEM (for instance a different choice for one or more of the topic)?	Not at this stage
31. Do you agree with the initial assessment of the strengths and weaknesses of a Quantity-based Capacity Auction CRM? If not, what changes to the assessment would you suggest (including the strengths and weaknesses of an option relative to the others)?	Broadly in agreement The design of the penalty for non-availability would be key to the success of this approach.
32. Would a Quantity-based Capacity Auction CRM work or fit more effectively with a particular option for the energy trading arrangements. If so, which one and why?	This approach would fit better with options 1 and 2 where PTR are permitted on interconnectors and thus out of zone capacity can have better surety of delivery.

2.15 QUANTITY-BASED CAPACITY OBLIGATION (CHAPTER 10.12)

Question	Answer
33. Are there any changes you would suggest to make the design of a Quantity-based Capacity Obligation CRM effective for the I-SEM (for instance a different choice for one or more of the topic)?	A well regulated mandatory centrally cleared market for procurement of capacity would be necessary to prevent market power and to improve liquidity and transparency.
34. Do you agree with the initial assessment of the strengths and weaknesses of a Quantity-based Capacity Obligation CRM? If not, what changes to the assessment would you suggest (including the strengths and weaknesses of an option relative to the others)?	The level of regulatory intervention may appear to be reduced due to the decentralised nature of the procurement but a well regulated mandatory centrally cleared market for procurement would be necessary to prevent market power and to improve liquidity and transparency. The design of the penalty for non-availability would be key to the success of this approach.
35. Would a Quantity-based Capacity Obligation CRM work or fit more effectively with a particular option for the energy trading arrangements. If so, which one and why?	This approach could be accommodated in all options

2.16 CENTRALISED RELIABILITY OPTIONS (CHAPTER 10.14)

Question	Answer
36. Are there any changes you would suggest to make the design of a Centralised Reliability Option CRM effective for the I-SEM (for instance a different choice for one or more of the topic)?	This design is too complicated. This level of complexity will present a barrier to market entry for all but the vertically integrated utilities.
37. Do you agree with the initial assessment of the strengths and weaknesses of a Centralised Reliability Option? If not, what changes to the assessment would you suggest (including the strengths and weaknesses of an option relative to the others)?	Defining an appropriate liquid reference price for settlement of a reliability option when called will be challenging.
38. Would a Centralised Reliability Option work or fit more effectively with a particular option for the energy trading arrangements. If so, which one and why?	This approach would work better with options which have an ex-post pool as this could provide the appropriate reference price required for settlement.

2.17 DECENTRALISED RELIABILITY OPTIONS (CHAPTER 10.15)

Question	Answer
39. Are there any changes you would suggest to make the design of a Decentralised Reliability Option CRM effective for the I-SEM (for instance a different choice for one or more of the topic)?	This design is too complicated. This level of complexity will present a barrier to market entry for all but the vertically integrated utilities.
40. Do you agree with the initial assessment of the strengths and weaknesses of a Decentralised Reliability Option? If not, what changes to the assessment would you suggest (including the strengths and weaknesses of an option relative to the others)?	The complexity of this approach would prove a difficulty for participants and investors.
41. Would a Decentralised Reliability Option work or fit more effectively with a particular option for the energy trading arrangements. If so, which one and why?	This approach would work better with options which have an ex-post pool as this could provide the appropriate reference price required for settlement.