



Integrated Single Electricity Market (I-SEM)

**High Level Design for Ireland and Northern
Ireland from 2016**

Consultation Response Template

4th 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 confidential¹.

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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	<p>From the perspective of an independent non-vertically integrated generator participant with concerns regarding the impact on stability and predictability of earnings, finance ability, liquidity, risk management and flexibility valuation of the new market options.</p>

2.2 GENERAL COMMENTS

1 INTRODUCTION

AES welcomes the opportunity to submit to the Regulatory Authorities a response to their consultation on the Integrated Single Electricity Market (I-SEM) proposed high level design (HLD) options.

AES is a global energy company with assets in the all island market consisting of coal and gas fired conventional and CCGT plant with additional distillate fired peaking gas turbine plant. AES is a non-vertically integrated independent generator which owns and operates Kilroot and Ballylumford power stations in Northern Ireland with a combination of merchant and contracted base load, mid merit and peaking plant. The responses to this consultation are therefore conditioned by the nature of our current position and portfolio of assets operating in the SEM.

AES welcomes the publication of the consultation document and the helpful explanatory information relating to the rationale behind the development of each of the options. AES appreciates that this is the high level design stage and therefore not all of the subsequent detail which market participants would wish to have available to conduct analysis and form opinions has yet been determined.

2. AES PREFERRED I-SEM HLD

In conducting its own analysis AES has arrived at a preferred high level design energy market structure of **Option 4** which AES believes preserves the principles and value of the current SEM. Since it was introduced in 2007, the existing SEM consisting of a gross mandatory pool and a price-based CRM has delivered stability and certainty for market participants including lenders and investors, to the benefit of end consumers. This is despite the challenges of an isolated island market, and despite the significant volatility in European energy and global commodity markets over the past six years.

However, AES recognises the imperative of increasing European market integration and the central importance of compliance with the EU Target Model in the new I-SEM. AES acknowledges that concerns have been raised with regards to the EU target model compliance of option 4, in particular around:

- the lack of a physical day-ahead market and the difficulty of establishing firm day head prices
- potential low liquidity, and
- the lack of a balancing market.

Nevertheless, AES is of the belief that **if the EU compliance issues could be resolved, then Option 4 would deliver the simplest transition, lowest cost of participation and maximize the benefit to consumers.**

On the assumption that **Option 4 would not be EU target model compliant**, AES' next preferred option would be an alternative market design based upon:

- a developed version of a **mandatory centralised energy market (Option 3)**,
- a compliant **long-term price-based capacity remuneration mechanism**, taking **Option 2a** as a starting point, and
- the option to procure **targeted strategic reserve capacity if necessary** to address specific short-term locational issues and constraints.

AES believes that a coherent design based upon these energy market and capacity mechanism options not only has the greatest potential to fulfil the SEM HLD criteria, but also is most consistent with AES' four key design requirements which are as follows.

AES believes that the I-SEM design must:

a) Be robust, enduring and Target Model compliant

- Option 3 appears to be fully EU Target Model compliant, is likely to fit with future developments in the integrated European electricity market and / or could be easily adapted to accommodate future developments.
- There is significant European experience with this energy market model, meaning that similar market arrangements have been 'tried and tested'.
- With careful design to ensure that capacity pricing is firm at the ex-ante stage, the Option 2a long-term price-based CRM could be made Target Model compliant.

b) Ensure fair and open access to the market

- Option 3 should provide a high degree of day-ahead liquidity by focusing the physical trading of power within a single market – helping to increase the accessibility of the market for all participants.
- Option 3 is likely to deliver a robust and transparent day-ahead reference price.
- The centralised short-term markets under this preferred model should help to reduce collateral and credit costs versus alternatives such as Option 1 which would potentially require a multitude of bilateral trading arrangements, each with its own collateral requirements.
- The long-term price-based CRM is likely to require minimal change to existing systems, helping to control the costs of operation and implementation.
- The preferred I-SEM design will be neutral with respect to business model, and will not provide any particular benefit or disbenefit to either vertically integrated or independent market participants.
- Subject to careful development of the design details, the preferred design options should not result in excessive market complexity.

c) Preserve a bankable capacity mechanism

- The adapted Option 2a CRM will provide a stable long-term price signal which will continue to support new investment as required in order to ensure security of supply.

- CRM Option 2a mitigates against the potentially excessive volatility of pure energy market scarcity rent in a relatively small market such as the SEM.
- The stable price signals offered by the long-term price-based CRM result in a greater ability to finance new developments and lower financing costs which ultimately help to reduce costs for consumers of electricity.
- The adapted Option 2a CRM will reflect both scarcity in the market as well as providing for a sharper exit signal should there be excess capacity.

d) *Facilitate mitigation of market power*

- Energy market Option 3 should provide a high degree of transparency in the near-term day-ahead and intra-day markets, helping to mitigate against market power.
- The long-term price-based capacity mechanism avoids the significant market power and gaming potential of some quantity-based models such as capacity auctions and obligations.
- AES believes that an energy-only model is fundamentally unsuitable in a small market such as the SEM, since with a relatively small number of generators the emergence of ‘scarcity rent’ through bids above short-run marginal cost levels during peak periods becomes increasingly difficult to differentiate from market power.
- In line with this view, AES believes that careful consideration should be given to retaining cost-reflective bidding principles in the I-SEM.

In order to better meet the SEM HLD criteria and AES’ four design requirements, AES recommends consideration of the following design amendments and supporting measures to energy market Option 3 and CRM Option 2a:

Energy market Option 3 Amendments (Strawman)

Make European coupled intra-day trading non-exclusive

- The reliance of Option 3 on European intra-day market coupling as the exclusive route for intra-day trading introduces significant risk for two reasons.
- First, European intra-day market coupling may not be implemented in time for an I-SEM go-live in 2016. This is a particular concern given the delays to the intra-day market coupling programme to date.
- Second, issues emerge with the market coupling algorithms which result in detrimental or unexpected market outcomes.
- In order to mitigate these risks, AES believes there is merit in making intra-day trading in the European coupled intra-day market non-exclusive to provide market participants with backup alternative routes to manage positions close to real time. This amendment could be implemented subject to measures to ensure sufficient liquidity in the intra-day timeframe and could be implemented either as an interim transitional measure to allow confidence and experience with the new market arrangements to become established, or as an enduring solution.

Clarify the capabilities and suitability of Euphemia in the SEM context

- Under Option 3, prices and plant dispatch outcomes in the I-SEM would be closely linked with European market coupling algorithms such as Euphemia.
- It is not clear to what extent Euphemia is able to accommodate commercial and technical bid parameters, and how these will translate into day-ahead / intra-day price outcomes.

- AES therefore seeks clarification on the extent to which Euphemia
 - can capture commercial and technical offer parameters, and
 - can cope with the extensive use of such parameters by many market participants.

Seek a formal arrangement with exchange(s) to provide greater certainty on PCR governance and product offering

- Under the European market coupling implementation, it is down to individual power exchanges to determine which products are made available to the market.
- For example, although Euphemia provides the ability to accommodate sophisticated bids, these are currently not available for use in most markets since they are not offered by the local power exchanges.
- AES suggests that the RAs seek to reduce the uncertainty around PCR products by drawing up a formal power exchange specification, with details such as the range of products which the power exchange must offer to the market, and lines of governance for PCR issues.
- This can then be used as the basis for a formal tender for a suitable power exchange provider.

Consider mandatory bid format in day-ahead / intra-day markets

- The legitimate costs of starting and part-loading plant are currently recovered through the uplift component of the SMP, and it is important that these can still be fully recovered under the revised market design.
- To aid the management and recovery of plant start-up and no-load costs, we suggest a mandatory format for sophisticated bids is agreed, in particular for day-ahead market.

As an interim measure, consider an additional step to allow amendments to the Euphemia day-ahead schedule before it is passed to the market operator

- A concern with Option 3 is the extent to which anomalous outcomes could emerge in the day-ahead schedule calculated by Euphemia.
- In order to address these concerns, there may be merit in considering how an additional intermediate step could be incorporated into the scheduling process to allow anomalous outcomes in the Euphemia day-ahead schedule to be corrected.
- This could be incorporated as an interim measure while experience and confidence in the operation of the new I-SEM develops.

Formulate robust measures to address market power across all timeframes

- AES notes that detailed market power mitigation measures have not been considered at this stage in the I-SEM HLD, but emphasises the need to incorporate robust measures across all timeframes.

CRM Option 2a

Develop an alternative capacity payment formula which is Target Model compliant by eliminating the ex-post element

- In order to comply with the EU Target Model, a long-term price-based CRM design should be developed which eliminates the current ex-post element of the pricing formula.

- An alternative mechanism to address under- / over-recovery will be required, which could involve an annual rolling adjustment upwards or downwards of the capacity pot.

Make capacity payments more responsive to capacity scarcity

- Under a purely long-term CRM such as the current SEM design, short-term price signals are relatively weak, and capacity payments do not closely reflect actual capacity scarcity or system tightness.
- As a result, a long-term CRM may
 - not recognise the full value of flexible plant and capacity which contributes to the maintenance of system security during periods of system stress, and
 - over-remunerate inflexible plant and capacity which contributes less during periods of system stress.
- In order to address this concern, AES recommends that a CRM design is developed which incorporates elements of the short-term price-based CRM approach, while retaining the essential certainty and forward visibility of a long-term CRM.
- An overall annual capacity pot should still be calculated centrally based upon a fixed formula, however capacity payments themselves could be calculated as a more direct (but not necessarily sole) function of short-term capacity margin.
- It is possible under such a mechanism that annual outturn capacity payments may under- / over-shoot the capacity pot – in this case the capacity pot in following year would need to be adjusted to correct for the under- / over-recovery.

Make the annual capacity pot responsive to capacity margin

- A common concern with long-term CRMs is the potential for over-remuneration of capacity in years where system margins are comfortable, and when there is a less immediate need for new generation capacity.
- AES notes that by the nature of a long-term price-based CRM, remuneration in any particular year cannot be viewed in isolation, since the aim of such a CRM is to provide sufficient remuneration to allow the costs of required new build and investment to be recovered over the lifetime of an investment.
- Nevertheless, AES believes that there may be merit in considering whether the annual capacity pot should include some form of dynamic response to the prevailing capacity margin.
- Once calculated, the annual capacity pot could be scaled upwards or downwards within certain limits according to a defined function of system margin.
- This could result in a lower capacity pot value during years of relative oversupply, and conversely in higher capacity pot value during periods with tighter capacity margins.
- AES believes that such an adjustment would significantly strengthen the case for the I-SEM CRM under EU State Aid guidelines by increasing the proportionality of the measure, and providing a stronger exit signal for capacity.

3. PCR (Euphemia) Governance Concerns

There is a dependence, to varying degrees, across all the high level design options on the Price Coupling of Regions (PCR) algorithm (Euphemia) for the operation of the Day Ahead Market. In a number of the options, the PCR will be fundamental in the way prices are set in the I-SEM, and for producing the initial market schedule which will act as the starting point for the TSO dispatch solution.

Market options based on submitting bids/offers to the PCR (Euphemia), especially if this is the only route to market, are exposed to the risk of potential changes to the bid format or PCR algorithm. Therefore governance of the bidding formats, process, PCR algorithm and the monitoring of bidding behaviour are of particular concern to AES.

The lack of clear governance guidelines around the PCR algorithm is of particular concern in our preferred energy market option 3 in which the European DAM plays a central role in price-setting and scheduling in the SEM. AES acknowledges that the PCR algorithm and governance set-up will be the same for other markets in Europe, but notes that in these markets the coupled day ahead and intraday markets are not being considered as the mandated route for sale of power.

There is a risk that ‘unexpected’ changes or pricing effects could arise in the I-SEM caused by events in other European zones over which the island RAs have no control. The ability of the RAs to ‘control’ the fundamentals of market operation, and the ability to respond to the developing needs of market participants may therefore be limited. This is a particular concern given the relatively small size of the I-SEM within the European context.

PCR (Euphemia) Capability Concerns

In participating in the European day ahead market the I-SEM participants would potentially look to utilize the sophisticated bid / offer structures. However, at present there is limited public domain information available on the format of these offer structures and how these would practicably apply in the I-SEM.

AES understands that the current implementation of PCR in Day Ahead market coupling across a limited European region is for the most part utilizing simple hourly (or block) bids / offers. Many of the more ‘sophisticated’ bid / offer features are latent in the algorithm and have not been widely tested in a ‘live’ market situation. AES is concerned that, at present, there is uncertainty over the ability of the algorithm to manage the volume of sophisticated bids/offers which may be required in the I-SEM, and to produce a technically feasible schedule as the starting point for TSO dispatch.

The sophisticated bids/offers structures appear to only partly allow for the recovery of start-up and no load costs creating the potential for significant discrepancy between current complex SEM and potential Euphemia sophisticated I-SEM bids. AES

is concerned that this could lead to the non-recovery of incurred start-up and no load costs.

4. Process Concerns and Issues

RAs assessment criteria – The consultation paper documents a list of criteria the RAs have used to assess the high level design options. The consultation document contains no information as to how or if any weighting is applied to the criteria and if any quantitative analysis would be used to determine the RAs preferred option. At our recent bi lateral meeting the RAs commented that the same criteria where used in the assessment for the 2007 SEM process (with the exception of EU IEM compliance) and that the criteria at that time were unweighted and a qualitative comment was given on each criteria. They stated it is the intention to use the same approach this time i.e. un-weighted and qualitative comment with the additional criteria of EU IEM compliance as the assessment criteria. AES is concerned at the purely qualitative nature of this type of assessment and would prefer to see an element of quantitative analysis feed into the I-SEM assessment.

Ongoing Industry Involvement – At the High Level Design industry forum hosted by the RAs in February, no comment was made on the level of industry and stakeholder involvement in the ongoing process for the development of the detailed market design and market rules.

Due to the requirement for EU IEM compliance AES accepts that there cannot be a business as usual option to enable an effective comparison with any new market design to be carried out. AES therefore would like to see greater ongoing stakeholder involvement and consultation in the detailed design and market rules phases as this is essential to ensuring continued industry understanding of the market development process and would urge the RAs to have a working group of interested market participants similar to the High Level Design Working Group for the detailed level design and market rules phases.

At our Bilateral meeting the RAs stated that they were considering their detailed design and implementation plan in parallel with the current consultation process and would have something on ongoing involvement in the near future. AES would welcome the information of ongoing industry involvement and consultation.

Cost Benefit Analysis – The consultation paper states that it is the RAs intention to carry out a cost benefit analysis of the option selected from the qualitative assessment process as the final high level design. AES accepts that the analysis cannot be carried out against a business as usual case due to the requirement for EU IEM compliance. However AES believes that a cost benefit analysis of at least two options should be carried out to enable some quantitative analysis and comparison

to be recorded against the final option selection. In our Bi-lateral meeting with the RAs this point was noted and the RAs stated they are now considering how best to do a quantitative analysis and whilst they did not commit to do two options stated that they will identify benchmarks for new design for comparison. AES requests that the information regarding the benchmarks and comparison analysis be made available to market participants.

1.1 PURPOSE OF THE DOCUMENT (SECTION 1)

Question	Answer
<p>1. Which option for energy trading arrangements would be your preferred choice for the I-SEM market, and why?</p>	<p>AES favours Option 4 for the reasons that this option represents a minimum change option, the simplest transition, the lowest cost of participation, maximize the benefit to consumers and is likely to incur the lowest cost of implementation.</p> <p>AES believes that the current SEM consisting of a gross mandatory pool and a price-based CRM has delivered stability and certainty for market participants including lenders and investors, to the benefit of end consumers. This is despite the challenges of an isolated island market, and despite the significant volatility in European energy and global commodity markets over the past six years.</p> <p>AES recognises that an ex –post mandatory pool is a:</p> <ul style="list-style-type: none"> • proven design for the island being a small system, • providing easy access to market, • high transparency and high liquidity • Allows for the submission of complex bidding. <p>However AES also recognises the importance of EU target model compliance. AES acknowledges that concerns have been raised with regards to the EU target model compliance of Option 4, in particular around:</p> <ul style="list-style-type: none"> • the lack of a physical day-ahead market and the difficulty of establishing firm day head prices, • potential low liquidity • the lack of a balancing market. <p>In the event that option 4 cannot be made compliant with the EU target model AES views Option 3 as the next preferable option but with some amendments as suggested in the AES Option 3 ‘straw man’ under Section 2.2</p> <p>AES Recognises that a mandatory centralised market :</p> <ul style="list-style-type: none"> • Ensures that mandatory DAM & Exclusive IDM present opportunities for liquid markets. • Provides for voluntary trading in forward timeframe • Has Less bias toward vertical integration • Supports sophisticated unit based bids to support transparency • Provides opportunities for flexible generation through a balancing market reflecting the true value of flexibility.
<p>2. Is there a requirement for a CRM in the revised HLD, and why?</p>	<p>Yes - AES views a CRM as essential to the market design as it provides for stability and predictability of revenues and mitigates against excessive volatility of a pure energy market. It also provides the basis for:</p> <ul style="list-style-type: none"> • Ability to secure finance for current and future projects • Provision of long term generation adequacy – investment signals and prevention of early retirement by recovery of fixed costs

	<ul style="list-style-type: none"> • Provision of short term flexible generation adequacy required due to increased levels intermittent generation. • Benefits to consumer – reducing energy price volatility – participants bidding only SRMC as no necessity to recover fixed costs in scarcity periods • AES believes that an energy-only model is fundamentally unsuitable in a small market such as the SEM, since: <ul style="list-style-type: none"> • With a relatively small number of generators the emergence of ‘scarcity rent’ through bids above short-run marginal cost levels during peak periods becomes increasingly difficult to differentiate from market power. • The closure or commissioning of even a single large power plant can significantly impact the overall system margin – leading to the risk of excessive year-to-year variation in scarcity rent and wholesale prices. <p>AES notes:</p> <ul style="list-style-type: none"> • Regulatory review (2011) – successful and integral part of the market structure (RA Medium Term Review 2011) – in which the RAs concluded that the CRM had been broadly successful in meeting its objectives and should remain in place in the SEM. <p>Evidence that:</p> <ul style="list-style-type: none"> • Energy only markets may no longer be fit for purpose, • Moth balling of plants, lack of new investment, • Tightening of generation supply balance, • Introduction of CPMs across Europe, • Growing opinion that energy only market is no longer feasible. <ul style="list-style-type: none"> • NI Context - The 2014-2023 All Island Generation Capacity Statement clearly identifies adequacy issues for Northern Ireland post 2015, and AES believes that a CRM will be fundamental in ensuring that the adequacy issue is resolved.
<p>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?</p>	<p>AES has reviewed the options for CRMs presented in the consultation paper and favours an amended version of Option 2a – Long term CRM to:</p> <ul style="list-style-type: none"> • Provide a stable long-term price signal to support new investment as required in order to ensure security of supply. • Mitigate against the potentially excessive volatility of pure energy market scarcity rent in a relatively small market such as the SEM. • The stable price signals offered by the long-term price-based CRM result in a greater ability to finance new developments and lower financing costs which ultimately help to reduce costs for consumers of electricity. • The adapted Option 2a CRM will reflect both scarcity in the market as well as providing for a sharper exit signal should there be excess capacity • Payments targeted at periods of system stress – i.e. the distribution function amended to strengthen the link between system margin to reward capacity contribution at times of system stress while maintaining the annual allocation pot and long term price certainty.

AES recognises that additional technology or locational specific capacity may be required for system flexibility or due to system constraints and a further specific strategic or short term capacity remuneration mechanism may be required to address these specific issues. This is particularly relevant to the security of supply issue in Northern Ireland.

Capacity mechanisms may therefore be required to address two distinct elements:

- Generation adequacy element for revenue stability, predictability and prevention of early retirement
- Flexible capacity element For short term security of supply in response to enabling increased levels intermittent generation and adequate remuneration for provision of flexible capability

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

Question	Answer
<p>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?</p>	<ul style="list-style-type: none"> • For the most part - Yes - In terms of the structure of the design of the energy market only options, for comparison of the options and assessment of compliance with the EU Target Model. • The topics are really determined by the need for compliance with the EU Target Model. However AES believes that a CRM is essential to the functioning of the market and should be incorporated into the design of the energy market.
<p>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?</p>	<p>AES believes that other related issues that could impact on the high level design are:</p> <ul style="list-style-type: none"> • Recent developing thinking by industry forums and consultation groups on the feasibility of the EU energy only target model and reconsideration of whether it is fit for purpose. • Bidding zone review – potentially short to medium term for I-SEM due to North/south tie line – the impact of 1 or 2 bidding zones would have on the range of options • CRM - growing belief that it is an essential part of market structure providing for generation adequacy and flexibility with a fundamentally great influence on the ability to finance projects and provide an indication of return on investments. With consideration of the impact of state aid guidelines a CRM should be designed as an integral part of the HLD. • RES subsidies integration – the HLD needs to consider the impact and possible distortion which could be caused by existing renewable energy subsidies which would be accommodated into the range of options. <p>Other areas for consideration important to AES –</p> <ul style="list-style-type: none"> • Recovery of start-up and no load costs (uplift) • Revenue predictability and Stability – stable trading arrangements with little requirement for ongoing regulatory intervention and providing the ability to analyse the market option for financial forecasting and modelling purposes. Difficult if access to market is only through the European day ahead and intraday markets (EU market) • Cost of participation – all options differ from the existing SEM arrangements with the probable requirement of substantial new systems and trading arrangements. • Impact on liquidity – we note that Low liquidity has been a long standing problem in bi-lateral decentralised GB market especially in longer dated and peaking products and has resulted in regulatory intervention in the form of market maker obligations. • Value of flexibility – there is no detail in this option regarding short time frame balancing services and the provision of Ancillary Services presumably still the remit of the TSO.

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

Question	Answer
<p>6. What evidence can you provide for the assessment of the HLD options with respect to security of supply, efficiency, and adaptability?</p>	<p><u>Security of Supply</u></p> <p>With regard to Security of Supply (SoS) AES do not believe that energy only market designs on their own will provide security of supply in the form of generation adequacy or short term security of supply in the provision of the required level of flexible plant to cover the increasing levels of intermittent generation. Therefore AES believes the regardless of which energy market option is selected security of supply can only be delivered by the provision of a capacity remuneration mechanism (CRM).</p> <p>AES believes that a CRM is essential for the I-SEM and should be considered as an integral part of the market design. Evidence to support this view is as follows:</p> <ul style="list-style-type: none"> • 2011 mid-term regulatory review paper stating CRM successful in achieving its objectives – now viewed as even more essential due to levels of intermittent generation and impact on SMP, • CRMs being introduced in various forms to support the energy trading arrangements in almost every country in the EU. E.g. GB, France, Germany, along with those who already have a CRM mechanism such as Spain, Ireland, Italy. • I-SEM – The all island market is a small island system with limited interconnection - connected by HVDC links. Moyle is at half capacity and there remain concerns over its reliability. Also existing north/south system constraint presents concerns for islanding on Northern Ireland and therefore inherent need for independent Security of Supply. • Ballylumford B Station – peaking plant due to closed Dec 2015 (opted out of LCPD), any extension is reliant on CPM of some form. • Ballylumford C Station – marginal flexible peaking plant - in energy only market will rely on unpredictably high frequency and levels of scarcity rent to cover fixed costs. Regulatory Price caps will reduce scarcity rent leaving the peaking plant potentially unable to cover its fixed costs. • ROI capacity reduction – in the absence of a CRM it is probably that a substantial reduction in capacity will occur due to the retirement of older generating plant leading to a reduction of the adequacy margin particularly in ROI. • Increasing levels of Intermittent Generation – RES and I/C flow swings. - requirement for increased flexibility close to real time requires not just capacity but flexible capacity able to respond in short timescales. Short term security of supply requires greater flexibility from base load plant and flexible peaking plant with short run up times. Energy only market with price caps may not provide incentive to modify base load plant to increase flexibility, provide enough revenue to enable peaking plant to remain in the market or invest in new options.

Efficiency

Two conditions for the efficient commitment and dispatch of generating units are System Operators having accurate COD and TOD and the accuracy of the centralised algorithm.

- Portfolio bidding reduces transparency of bidding process in DAM/IDM and will require additional time to convert portfolio bids to unitised nomination to enable the TSO to provide an efficient and optimum dispatch.
- Limited public information is available on the Euphemia bids structure, the algorithm for solving the market and little of the sophisticated bids proposed have been actually used. It is difficult to know if the PCR will produce a meaningful and efficient day ahead schedule and if this can be used effectively by the TSO to dispatch plant.
- It is not clear how actions taken by participants and TSOs in the IDM/BM and by TSO because of system constraints will be separated out. More clarity is required proposals to manage this aspect in the various options. There is a lack of clarity on how challenges associated with significant differences between the unconstrained market schedule and the constrained dispatch schedule would be managed , and on what the commercial arrangements would be for plant constrained off

Adaptive

- Although AES has called for stable market arrangements we recognise the requirement to be able to adapt to further changes required by external circumstances. By the level of change required to comply with the target model it would appear that the original SEM was not adaptive to external circumstances and it is important that the I-SEM design is adaptive. AES believes that other areas where adaptation of the market may be required include
 - Accommodation of the potential overlap of DS3 and market reform process
 - Governance around EU bidding structures, behaviour and process.
 - Adaptable to emerging technologies and enable new routes to market for new technology – e.g. of energy storage.

2.6 ADAPTED DECENTRALISED MARKET (SECTION 6)

Question	Answer
<p>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)?</p>	<p>Whilst AES considers Option 1 presents a feasible market design we do not favour this option and would have concern over how market power would be mitigated in this option. Although we do not see the requirement for any changes to the structure of this option we did want to state what we see are the advantages and disadvantages of this option for consideration.</p> <p>Advantages</p> <ul style="list-style-type: none"> • Provides market participants with the greatest choice of all the four options of the markets and timeframes in which they trade energy with a wide variety of tools to help manage risk • Wind is integrated more fully into the market with a much greater responsibility for managing its own position with balance responsibility • Portfolio bidding may offer participants the opportunity to take account of commercial and technical characteristics to help manage start up and no-load costs. <p>Disadvantages</p> <ul style="list-style-type: none"> • There is the potential in this market model for a bias towards vertical integration, due to efficiency savings of transferring power internally between generation and supply businesses, versus trading on the open market. • There are question marks over the effectiveness of a highly decentralised bilaterally traded market in managing the specific complexities of a relatively small and isolated island market. There is a risk that the SEM is too small a market to allow genuine freedom of trading opportunities for participants. • Transparency/market power – we have potential concerns over market power in this option particularly if large players choose not to trade volumes through the centralised markets - portfolio bidding in DA and IDM reduces transparency and could increase market power – Big Six issue in GB (self-trading) • There is a level of detail missing on Regulatory measures that could be implemented to force liquidity – e.g. market maker obligation and on whom? Low liquidity in the key forward, DA and ID markets would be a concern under this design, particularly if high levels of trade move outside of centralised markets / exchanges. We note that market liquidity is a significant concern for the National Regulatory Authorities in a number of markets which have adopted this design – including Ofgem in GB. • Level of detail missing on bid structure for portfolio and unit bids (start up, no load costs recovery) – it is unclear to what extent sophisticated (complex) bids could be accommodated? • Energy Balancing arrangements – <ul style="list-style-type: none"> - It is not clear how the interaction between the TSO balancing actions and the market participant Intra-day trading would work. - It is unclear how the system operator could re-dispatch plant

	<p>before nominations are received</p> <ul style="list-style-type: none"> - The voluntary nature of participation in the balancing mechanism prior to gate closure may not result in efficient balancing costs or a feasible dispatch schedule • Treatment of System constraints – under this (and other) options is unclear. • Some significant issues around imbalance pricing are not addressed in this option <ul style="list-style-type: none"> • The separation of energy and system balancing actions • Single versus dual cash out • Potential for significant imbalance price volatility (could be an upside for some market participants) • The cost of implementation of this option is likely to be relatively high due to the almost complete overhaul of trading systems which would be required. Market players may also need to acquire more intensive trading capabilities, for example in order to effectively operate in a continuously traded ID market. • Ancillary Services – There is insufficient information on Interaction between the market timeframes especially the balancing market and Ancillary (system) services. The High level design options should record how system services are to be addressed in any new market structure.
<p>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)?</p>	<p>We have stated the relevant advantages and disadvantages in the section above and would make the following additional comments regarding the assessment of this option against the RAs criteria.</p> <ul style="list-style-type: none"> • AES believes this option presents a significant degree of change from existing SEM and places greater responsibility for adjusting nominated positions on the market participants. • Security of Supply will depend on the sufficient availability of flexible plant to provide balancing services after IDM gate closure and possibly any TSO contracted balancing services. This plant will require high levels of scarcity rent to enable their continued availability due to their limited operation. • There exists the potential for the emergence of dominant players with self-trading capability, resulting in a loss of transparency and the potential for the abuse possible of market power. The options viability will therefore depend on success of the regulatory measures to mitigate market power and promote liquidity in certain market timeframes. • The stability of the arrangements will also depend on the regulatory action to make certain market time frames liquid but we would suggest that the existence of a CRM would be essential to help provide stability under this option. The governance process for changes to these regulatory measures should be defined and communicated to participants. • Practicality/Cost – This factor has been rated as neutral impact in the RAs own assessment yet option 1 presents the potential for significant change to structure of the participant and would present a significant increase in costs for most market participants,

	<p>especially small players, due to the requirement for procurement of central systems for market participation, credit requirements and 24-7 trading functions or intermediary costs. AES finds it difficult to understand how this could be categorised as neutral impact.</p> <ul style="list-style-type: none"> • Equity - Option 1 pushes market participants to a position of vertical integration similar to that of the GB market. This could presents challenges for the ability of an independent generator to compete with large scale vertically integrated players with portfolio bidding and reduced transparency. • Although wind is exposed to marginal imbalance pricing, conversely such a mechanism would better reflect the value of flexibility, and would send positive price signals to encourage demand side participation • Competition – AES does not believe that this market structure provides a constraint on market power, and believes there is a risk that a limited number of large players may emerge at the expense of independents generators – as per the GB market. Significant regulatory intervention could be needed as transparency of trading behaviour will be reduced.
<p>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?</p>	<p>AES believes the SEMCo have a duty to ensure that the market arrangements provide the opportunities for market participants to be able to efficiently and effectively finance their activities in both the long and short term to maximise social welfare and consumer benefit. Option 1 presents challenges for independent generators regarding the cost of participation and who are non-vertically integrated to find sufficient trading partners in the forward day-ahead and intra-day time frames.</p> <p>In addition</p> <ul style="list-style-type: none"> • Cost recovery –It is understood that the bid structure in the EU PCR cannot accommodate a SEM complex bid resulting in concern on how start up and no load costs can be recovered. • AES believes that Option 1 in isolation is unlikely to deliver long term system security and may result in excessive energy market volatility to the detriment of both short and long-term consumer interest. • For this reason, a stable long-term price-based CRM would be essential in combination with Option 1 to mitigate against these downfalls.

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

Question	Answer
<p>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)?</p>	<p>AES considers that Option 2 does not present a feasible market design and we do not favour this option. AES would question how regulatory measures to encourage liquidity in either market would function in this option. Although we do see the requirement for changes to the structure of this option and changes would push this option towards one of the other options already described. However we did want to state what we see are the advantages and disadvantages of this option for consideration.</p> <p>Advantages</p> <ul style="list-style-type: none"> • The mandatory net ex-post pool will support the submission of complex bids by generation units, which will assist the management of start-up and no-load costs which could increase the transparency of this option and facilitate ex-post market monitoring. • The TSO will retain the scope and tools to take action to manage the system beyond the DA stage through the mandatory net pool. • If trading is concentrated outside the pool, this may lead to procurement of flexibility by wind generators through the IDM. This could increase the value of flexible generation. <p>Disadvantages</p> <ul style="list-style-type: none"> • There is an inherent tension in this option between liquidity in the ex-ante DA / IDM markets and in the pool. The liquidity of the ex-ante markets will determine the effectiveness of the pool • Option to trade in ex-anti markets and/or ex-post pool but unclear regulated limit on ex-anti level of trading to force liquidity in ex-post pool. • Regulatory intervention may be required to limit the physical volume traded outside the pool – this could raise stability issues. • On the other hand, if volumes migrate towards the pool leaving low liquidity in the DAM, then the efficiency of interconnector flows may reduce and the DA reference price may not be robust. • Portfolio bidding with Unit based nominations from market participants forms an above zero starting point for participants bidding into the pool process. AES favours unit bidding in the ex-anti markets as well as the ex-post pool for greater transparency. • Limited re nomination in intraday timeframe up to the regulated limit on total nominated volumes places restrictions ability of participants to reposition themselves and possible exposure to increased balancing and imbalance costs. • Implementation of the EU target model in ex-anti physical markets but not in balancing time frame – balancing covered by TSO with ex-post pool complex bids costs socialised – therefore no balancing market balance responsibility and the true value of flexibility not rewarded and not really fully compliance with EU Target Model? • More information is required on the process for conversion of ex-post pool complex bids to cross border balancing Standard products.

<p>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)?</p>	<p>We have stated the relevant advantages and disadvantages in the section above and would make the following additional comments regarding the assessment of this option against the RAs criteria.</p> <ul style="list-style-type: none"> • Security of supply – AES agrees that the liquidity of Ex-anti and Ex-post pool arrangements could lead to security of supply and stability issues and it is likely that regulatory intervention would be required to limit trades outside the pool, or quality of DA price if limited liquidity in the ex-anti markets. • Stability - AES Agrees that a majority of the qualitative assessment depends on the balance of physical trading in the Ex-anti and Ex-post pool markets which in turn will be determined by the level of regulatory intervention required to incentivise or force participants to trade in either or both markets. • Stability - Regulatory intervention to force liquidity in the ex-anti or ex-post will change the structure of this option to make it similar to one of the other options • IEM Compliance - AES would also question whether the proposed ex-post pool complies with the balancing requirements of the EU target model
<p>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?</p>	<p>AES believes the SEMCo have a duty to ensure that the market arrangements provide the opportunities for market participants to be able to efficiently and effectively finance their activities in both the long and short term to maximise social welfare and consumer benefit. Option 2 presents challenges with regard to the structure of the option and the regulatory measures necessary to ensure sufficient liquidity is achieved in each market, it is difficult to see how this can be accomplished in practice.</p> <p>In addition</p> <ul style="list-style-type: none"> • Intension is to split liquidity across DA and ex- post pool but If DA volumes are low, this may limit the advanced information available for the TSO planning at the day ahead stage impairing its ability to manage security of supply. • Forcing liquidity in either market with regulated trading volumes will limit the options for market participants to adjust their positions especially in the IDM timeframe which could lead to less efficient operation of the system. • Unclear how ex-post prices would be set – or would behave – solving the net position ex-post. • Market outturns (ex-anti and ex-post) could be different depending on arrangements for recovery of start-up and no load costs • There is an inherent complexity in the simultaneous operation of intraday and balancing arrangements with different bid structures and a lack of clarity on how these will be managed. • Market risk - If the market concentrates outside the pool (ex-anti process becomes similar to option 1) presents significant risk to independent generator if more forward bilateral in nature as transparency is reduced, limited trading partners and also reduces access to market for small players. • In the ex-post pool Balancing costs are socialised therefore wind does not face incentive to increase forecast accuracy and

	<p>predictability closer to real time and balance service providers do not receive the full value of balance service provision leading to less efficient system operation.</p> <ul style="list-style-type: none">• A hybrid approach such as this may be difficult to adapt to future EU or other market design challenges which presents difficulties maintaining a coherent approach.• Cost of participation may be increased due to the requirement to maintain parallel systems for ID trading and for the pool. Also implementation would require significant new systems to support DAM and IDM participation with major changes needed to the existing SEM systems.
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2.8 MANDATORY CENTRALISED MARKET (SECTION 8)

Question	Answer
<p>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)?</p>	<p>AES considers that Option 3 presents a feasible market design and we would identify this option <i>with some amendments</i> as our favoured option (assuming option 4 is deemed to be non EU Target Model compliant).</p> <p>In order to better meet the SEM HLD criteria, AES recommends consideration of the following design amendments and supporting measures to Option 3:</p> <ol style="list-style-type: none"> 1. <i>Make European coupled intra-day trading non-exclusive</i> <ul style="list-style-type: none"> • The reliance of Option 3 on European intra-day market coupling as the exclusive route for intra-day trading introduces significant risk for two reasons. • First, European intra-day market coupling may not be implemented in time for an I-SEM go-live in 2016. This is a particular concern given the delays to the intra-day market coupling programme to date. • Second, issues emerge with the market coupling algorithms which result in detrimental or unexpected market outcomes. • In order to mitigate these risks, AES recommends making intra-day trading in the European coupled intra-day market non-exclusive to provide market participants with backup alternative routes to manage positions close to real time. This amendment could be implemented either as an interim transitional measure to allow confidence and experience with the new market arrangements to become established, or as an enduring solution. 2. <i>Clarify the capabilities and suitability of Euphemia in the SEM context</i> <ul style="list-style-type: none"> • Under Option 3, prices and plant dispatch outcomes in the I-SEM would be closely linked with European market coupling algorithms such as Euphemia. • It is not clear to what extent Euphemia is able to accommodate commercial and technical bid parameters, and how these will translate into day-ahead / intra-day price outcomes. • AES therefore seeks clarification on the extent to which Euphemia <ul style="list-style-type: none"> ○ can capture commercial and technical offer parameters, and ○ can cope with the extensive use of such parameters by many market participants. 3. <i>Seek a formal arrangement with exchange(s) to provide greater certainty on PCR governance and product offering</i> <ul style="list-style-type: none"> • Under the European market coupling implementation, it is down to individual power exchanges to determine which products are made available to the market. • For example, although Euphemia provides the ability to

accommodate sophisticated bids, these are currently not available for use in most markets since they are not offered by the local power exchanges.

- AES suggests that the RAs seek to reduce the uncertainty around PCR product by drawing up a formal power exchange specification, with details such as the range of products which the power exchange must offer to the market, and lines of governance for PCR issues.
- This can then be used as the basis for a formal tender for a suitable power exchange provider.

4. Consider mandatory bid format in day-ahead / intra-day markets

- The legitimate costs of starting and part-loading plant are currently recovered through the uplift component of the SMP, and it is important that these can still be fully recovered under the revised market design.
- To aid the management and recovery of plant start-up and no-load costs, we suggest a mandatory format for sophisticated bids is agreed, in particular for day-ahead market.

5. As an interim measure, consider an additional step to allow amendments to the Euphemia day-ahead schedule before it is passed to the market operator

- A concern with Option 3 is the extent to which anomalous outcomes could emerge in the day-ahead schedule calculated by Euphemia.
- In order to address these concerns, there may be merit in considering how an additional intermediate step could be incorporated into the scheduling process to allow anomalous outcomes in the Euphemia day-ahead schedule to be corrected.
- This could be incorporated as an interim measure while experience and confidence in the operation of the new I-SEM develops.

6. Formulate robust measures to address market power across all timeframes

- AES notes that detailed market power mitigation measures have not been considered at this stage in the I-SEM HLD, but emphasises the need to incorporate robust measures across all timeframes.

We believe the (amended) Option 3 offers a number of advantages:

Advantages

- Mandatory participation in the DA market for all participants focusses liquidity in a single time horizon (rather than spreading thinly across a wider time horizon) and should deliver a robust and transparent DA reference price.
- The delivery of a robust and transparent DA reference price should aid the mitigation of market power.
- Option 3 should improve the quality of information available to the TSO for planning at the DA stage as cross-border flows would be fully integrated in the nominations process and should help provide

	<p>a strong DA reference price.</p> <ul style="list-style-type: none"> • Mandatory participation in the DAM for intermittent generation will incentivise better forecasting of availability and provide opportunities for adjustment in the IDM timeframe • Unit-based bidding will increase transparency and help mitigate market power, and is better able to support sophisticated bid structures. • Mandatory submission of bids to the balancing market arrangement is more compatible with EU target model • Marginal imbalance pricing should help to reflect more fully the value of within day flexibility and providing good price signals for flexible capacity and participation from the demand side.
<p>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)?</p>	<p>We have stated the relevant advantages and disadvantages in the section above and would make the following additional comments regarding the assessment of this option against the RAs criteria.</p> <ul style="list-style-type: none"> • Security of Supply - AES Agrees that short term Security of Supply is more likely to be delivered by this option than the previous options as the planning of the day ahead stage will be based on a complete market schedule and flows and nominations should be matched. Long term security of supply will still depend on the presence of a stable and robust CRM which we view as essential. • Stability – A reliance on scheduling through the European DAM (PCR) process presents questions on the governance arrangements surrounding the PCR bids and bidding behaviour which could present issues for stability of the market arrangements. • Practicality – the fact that this was considered as neutral impact in the assessment process is surprising as the cost of participation in the EU DAM and IDM for participants will require significant changes to organisational structure and require the purchase of new market interface systems to enable 24 -7 trading. • Balancing mechanism in this option should reveal the value of flexibility as cost is not socialised but more information is need on imbalance pricing i.e. single or dual pricing?
<p>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?</p>	<p>AES believes the SEMCo have a duty to ensure that the market arrangements provide the opportunities for market participants to be able to efficiently and effectively finance their activities in both the long and short term to maximise social welfare and consumer benefit. Option 3 presents challenges with regard to the governance of and reliance on the EU PCR bidding process particularly as it is the mandatory route to the market</p> <p>In addition</p> <ul style="list-style-type: none"> • It is unclear given the lack of information on PCR how start-up and no load costs will be recovered. This option has a key dependence on PCR bid structures and pricing algorithm and there is currently little information known regarding market surveillance and governance of PXs and bidding behaviour. • This options places significant responsibility on all participants to adjust positions within day to be in balance and this should provide the incentive for intermittent generation to provide better

	<p>forecasting and predictability closer to real time.</p> <ul style="list-style-type: none">• More information is needed on the nature of DAM/IDM sophisticated bids and how they are designed to manage the risk of start-up and no load costs i.e. to what extent they are a proxy for complex bids.• Assumes that the DAM scheduling process is suitable for creating a schedule close enough to an optimised dispatch• More clarity is need on how continuous intraday trading would operate i.e. the interaction between simpler ID bids/offers and changing dispatch schedule - simple bids allowed only under continuous ID trading. Auction could provide opportunity to provide more sophisticated/complex bids.• Dependence on intraday market coupling for post DA trading raises a number of risks not least of which is around the delivery of successful ID market coupling within the required timeframe given the significant delays to the implementation schedule to date.• More clarity is required on how system constraints managed and settled?
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2.9 GROSS POOL – NET SETTLEMENT MARKET (SECTION 9)

Question	Answer
<p>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)?</p>	<p>AES favours Option 4 for the reasons that this option is the most likely to preserve the principles and value of the current SEM and incur the lowest cost of implementation.</p> <p>AES believes that the current SEM consisting of a gross mandatory pool and a price-based CRM has delivered stability and certainty for market participants including lenders and investors, to the benefit of end consumers. This is despite the challenges of an isolated island market, and despite the significant volatility in European energy and global commodity markets over the past six years.</p> <p>An ex–post mandatory pool:</p> <ul style="list-style-type: none"> • is a proven design for the island being a small system, • provides easy access to market, • provides high transparency and liquidity • allows for the submission of complex bids. <p>However AES also recognises the importance of EU target model compliance. AES acknowledges that concerns have been raised with regards to the EU target model compliance of Option 4, in particular around:</p> <ul style="list-style-type: none"> • the lack of a physical day-ahead market and the difficulty of establishing firm day head prices, • potential low liquidity • the lack of a balancing market. <p>Advantages</p> <ul style="list-style-type: none"> • AES agrees this is the ‘minimum change’ option, closest to the current SEM, and therefore has the advantage of familiarity across market participants. The retention of the gross mandatory pool may make all-island specific changes to arrangements easier to enact. • As such, this is likely to incur the lowest cost of implementation, particularly for participants who do not choose to participate in the European markets • Ex-post mandatory pool is a proven design in the all-island market, provides a route to market open to all market participants, a high degree of market transparency, helps mitigate market power and provides a route to market for intermittent generation. • AES Agrees that liquidity should be boosted by the fact that all physical interconnector capacity should be available to the DA / ID market since voluntary FTRs are used for cross-border hedging and long term hedging opportunities. • The consultation document states that the ‘physical’ cross-zonal flows resulting from the financially firm DA and ID coupling arrangements in this option ‘appear to be consistent’ with the wording of the current drafts of the CACM network code

	<ul style="list-style-type: none"> • The provision of complex bidding will facilitate the management of start-up and no-load costs. <p>Disadvantages</p> <ul style="list-style-type: none"> • There is a significant risk that this option is deemed not compliant with the EU Target Model. There is a question mark whether financial DA and ID markets can really be considered ‘firm’ day-ahead references. Interconnector flows would not be fully integrated into the pool dispatch process (inputs to the process rather than determined by it) • The disconnect between physical interconnector flows and pool operation may prevent interconnection acting efficiently as an alternative to starting plant in the SEM. This could become more pronounced if there was a large increase in interconnection. • There is a risk of low liquidity in the financial DAM and IDM and a question remains as to whether a voluntary DA would create sufficient formation of a day ahead price, liquidity for intraday trading opportunities and optimal interconnector flows • This option has the greatest reliance on financial trading as a hedging tool, which presents a risk in terms of exposure to changes in financial trading regulations. Licensing requirements for market participants trading outside the pool may fall under financial rather than energy market regulation. • The cost of participation in European markets in this option may be greater if trading is deemed to fall under financial rather than energy market trading arrangements. • This would be the first example of the use of financial instruments to determine cross-border flows in Europe. • This option could require significant discussion and interaction to get European stakeholders comfortable with proposed DA and ID market trading arrangements. • Balancing actions – it is not clear how translation of complex bids into standard products for cross border balancing by the TSO is carried out more information required. • Single ex-post price applied to all volumes does not reflect the full value of flexibility
<p>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)?</p>	<p>We have stated the relevant advantages and disadvantages in the section above and would make the following additional comments regarding the assessment of this option against the RAs criteria</p> <ul style="list-style-type: none"> • Security of Supply – AES agrees the retention of mandatory ex-post pool provides an easy route to market with transparency on inputs and outcomes. • Stability – A high degree of regulation may be needed to ensure liquidity in voluntary financial ex-anti markets to create DA price and cross border I/C flows outside the pool (not integrated). This could create two potential reference prices – DAM and Ex-post. • There is a disconnection between I/C physical flows and operation of the pool including different bidding structures (complex in pool) • Cost of Participation -This option would appear to have the lowest cost of implementation as there are a lot of similarities to SEM therefore lowest cost of participation

	<ul style="list-style-type: none"> • Choice of participation in Forward financial trades outside the pool - may come under MIFID II (barriers) and present higher costs for participation. Participation in pool costs similar to current. • Mandatory ex-post pool open to all participants and all physical interconnection available to DAM as FTRs only are used but attractiveness of the pool may not encourage liquid ex-anti trading. This arrangement ensures open access to the market for all participants. • Energy balancing costs socialised – wind shielded from true balance responsibility and incentive to better forecast. Balance service providers do not receive the full value of flexibility so separate mechanisms are required
<p>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?</p>	<p>AES believes the SEMCo have a duty to ensure that the market arrangements provide the opportunities for market participants to be able to efficiently and effectively finance their activities in both the long and short term to maximise social welfare and consumer benefit. AES recognises that Option 4 presents challenges with regard to compliance with the EU target model.</p> <p>In addition</p> <ul style="list-style-type: none"> • The current SEM design, similar to Option 4, has delivered stability and certainty for market participants including lenders and investors, to the benefit of end consumers over the past six years. • AES believes that Option 4 (in combination with an appropriate long-term price-based CRM) is best aligned with the SEMCo’s primary duties to protect long and short term consumer interest.

2.6 CAPACITY REMUNERATION MECHANISMS (CHAPTER 10)

Question	Answer
<p>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?</p>	<p>AES believes that the overwhelming rationale is in favour of some form of CRM in the I-SEM.</p> <ul style="list-style-type: none"> • AES believes that an energy-only model is fundamentally unsuitable in a small market such as the SEM. • With a relatively small number of generators the emergence of ‘scarcity rent’ through bids above short-run marginal cost levels during peak periods becomes increasingly difficult to differentiate from market power. • The closure or commissioning of even a single large power plant can significantly impact the overall system margin – leading to the risk of excessive year-to-year variation in scarcity rent and wholesale prices. • CRMs being introduced in various forms to support the energy trading arrangements in almost every country in the EU. E.g. GB, France, Germany, along with those who already have a CRM mechanism such as Spain, Ireland, Italy. <ul style="list-style-type: none"> • I-SEM – The all island market is a small island system with limited interconnection - connected by HVDC links. Moyle is at half capacity and there remain concerns over its reliability. Also existing north/south system constraint presents concerns for islanding on Northern Ireland and therefore inherent need for independent Security of Supply. • Ballylumford B Station – peaking plant due to closed Dec 2015 (opted out of LCPD), extension is reliant on CPM of some form or plant retirement – too much uncertainty over quantity of scarcity rent in energy only market to justify investment in IED compliance • Ballylumford C Station – flexible peaking plant - in energy only market will rely on unpredictably high frequency and levels of scarcity rent to cover fixed costs. Regulatory Price caps will reduce scarcity rent leaving the peaking plant potentially unable to cover its fixed costs. • ROI capacity reduction – in the absence of a CRM it is probably that a substantial reduction in capacity will occur due to the retirement of older generating plant leading to a reduction of the adequacy margin particularly in ROI. • Increasing Intermittent Generation levels – RES and I/C flow swings. - requirement for increased flexibility close to real time requires not just capacity but flexible capacity able to respond in short timescales. Short term security of supply requires greater flexibility from base load plant and flexible peaking plant with short run up times. Energy only market may not provide incentive to modify base load plant to increase flexibility, provide enough revenue to enable peaking plant to remain in the market or invest in new options.

	<ul style="list-style-type: none"> • Provides for Security of supply - CRM a necessity in I-SEM to ensure security of supply both long term and short term flexible capacity due to limited interconnection HVDC, Issues with existing interconnection, increasing levels of intermittent generation and system constraints – congestion of north/south tie line and uncertainty over time scale of second north/south, • Provides Stability - Regulations CPM review 2011 conclusion – CPM remained an important part of SEM – broadly successful and should remain. • Provides some level of predictability of income for participants to aid investment decision making and Financing • Consumers will not be exposed to high spot prices as CPM will act as damping measure smoothing price volatility. <p>AES believes that there are few rationales against the retention of a CRM in the I-SEM which cannot be eliminated through careful design.</p>
<p>20. Are these the most important topics for describing the high level design of any future CRM for the I-SEM?</p>	<p>Consideration needs to be given to the interaction of the CRM with other system elements</p> <ul style="list-style-type: none"> • The CRM needs to reflect the value of lost load and the impact of intermittent generation on the system by providing reward for reliable flexible plant • Provision of Security of supply – the capacity price signal is required to indicate the need for plant to stay connected to, be built to provide generation adequacy and provision of flexible plant for intermittent generation cover or to exit if never dispatched. • Impact on Energy Market – consideration needs to be given to the optimum design of an integrated capacity and energy market. • Predictability and Stability of revenue – each option should be assessed on its ability to provide predictable and stable revenue – contract or market arrangement duration – expansion of forward visibility of the price signal. • The CRM introduced should avoid creating unmanageable penalty risks by including in the design of the CRM excessive penalties for non-delivery of capacity essentially removing any potential gain from the mechanism. • Complexity – the capacity mechanism should not introduce levels of complexity that are significantly increased from the existing market arrangements.

2.7 STRATEGIC RESERVE (CHAPTER 10.7)

Question	Answer
<p>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?)</p>	<ul style="list-style-type: none"> • AES considers that strategic reserve is not a feasible capacity remuneration mechanism on its own but could be used in conjunction with a long term CRM to provide targeted capacity for particular technology or location issues. • There is a significant risk that this option will not provide sufficient revenue for market participants nor sufficient security of supply as capacity held at strategic reserve is usually kept separate from the energy market. • Remaining generation would be reliant on energy only market to recover their fixed costs. • Strategic reserve is however suitable for use in conjunction with any of the other schemes • Strategic reserve would be useful for targeting flexible generation for intermittent generation cover. • AES notes that some clarity is needed on the interaction with the ancillary services process
<p>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)?</p>	<p>Yes</p> <ul style="list-style-type: none"> • Depending on how it is targeted strategic reserve could address a potential medium to long term generation adequacy issue or target flexible plant to cover intermittent generation but it is difficult to understand how it would be able to cover both issues. • There is no explanation of how strategic reserve is to be procured – Auction, tender process – transparency of this process is important • Further detail on nature of process for procurement by TSO and duration of contract required. • Can be a lower cost solution for end consumers than a market wide mechanism. • Usually viewed as a temporary measure and may not provide a strong long term signal for new investment.
<p>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?</p>	<ul style="list-style-type: none"> • Strategic reserve could fit with any of the options – providing possible security of supply assurance for TSO in the event of shortage at day ahead and intraday stages in the event of an illiquid DAM. • Strategic reserve for flexible generation could fit with a long term price based CRM for generation adequacy.

LONG-TERM PRICE-BASED CRM (CHAPTER 10.9)

Question	Answer
<p>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?)</p>	<p>AES supports this option</p> <ul style="list-style-type: none"> • AES favours the provision of a long term price based CRM similar to that in the existing SEM. • However, we believe that the design under Option 2a should be amended in a number of respects in order to mitigate against potential issues with a long-term price-based scheme. <p>1. Develop an alternative capacity payment formula which is Target Model compliant by eliminating the ex-post element</p> <ul style="list-style-type: none"> • In order to comply with the EU Target Model, a long-term price-based CRM design should be developed which eliminates the current ex-post element of the pricing formula. • An alternative mechanism to address under- / over-recovery will be required, which could involve an annual rolling adjustment upwards or downwards of the capacity pot. <p>2. Make capacity payments more responsive to capacity scarcity</p> <ul style="list-style-type: none"> • Under a purely long-term CRM such as the current SEM design, short-term price signals are relatively weak, and capacity payments do not closely reflect actual capacity scarcity or system tightness. • As a result, a long-term CRM may <ul style="list-style-type: none"> ○ not recognise the full value of flexible plant and capacity which contributes to the maintenance of system security during periods of system stress, and ○ over-remunerate inflexible plant and capacity which contributes less during periods of system stress. • In order to address this concern, AES recommends that a CRM design is developed which incorporates elements of the short-term price-based CRM approach, while retaining the essential certainty and forward visibility of a long-term CRM. • An overall annual capacity pot should still be calculated centrally based upon a fixed formula, however capacity payments themselves could be calculated as a more direct (but not necessarily sole) function of short-term capacity margin. • It is possible under such a mechanism that annual outturn capacity payments may under- / over-shoot the capacity pot – in this case the capacity pot in following year would need to be adjusted to correct for the under- / over-recovery. <p>3. Make the annual capacity pot responsive to capacity margin</p> <ul style="list-style-type: none"> • A common concern with long-term CRMs is the potential for over-remuneration of capacity in years where system margins are comfortable, and when there is a less immediate need for new generation capacity. • AES notes that by the nature of a long-term price-based CRM, remuneration in any particular year cannot be viewed in isolation, since the aim of such a CRM is to provide sufficient

	<p>remuneration to allow the costs of required new build and investment to be recovered over the lifetime of an investment.</p> <ul style="list-style-type: none"> • Nevertheless, AES believes that there may be merit in considering whether the annual capacity pot should include some form of dynamic response to the prevailing capacity margin. • Once calculated, the annual capacity pot could be scaled upwards or downwards within certain limits according to a defined function of system margin. • This could result in a lower capacity pot value during years of relative oversupply, and conversely in higher capacity pot value during periods with tighter capacity margins. • AES believes that such an adjustment would significantly strengthen the case for the I-SEM CRM under EU State Aid guidelines by increasing the proportionality of the measure, and providing a stronger exit signal for capacity.
<p>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)?</p>	<ul style="list-style-type: none"> • Due to the particular circumstances of the SEM with limited HVDC interconnection and significant system constraints, a long term CRM would assist with the provision of long term security of supply if designed into the I-SEM structure. • Leads to increased predictability and stability of revenue providing greater certainty for investors. • More detail required on the process for defining the CRM ex-anti and potential for damping of payments on a given day. • This option may not provide the short term flexible capacity required to cover for increasing levels of intermittent generation and a separate mechanism for the provision of ancillary services will be required.
<p>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?</p>	<ul style="list-style-type: none"> • AES believes that a long term price based CRM would fit and work effectively with any of the energy market design options. • Two elements of security of supply need to be addressed by the CRM process, the long term generation adequacy and the requirement for short term flexible plant to provide cover for increasing levels of intermittent generation. • Long term priced based mechanism would provide long term security of supply but not necessarily short term flexibility. • A long term price based CRM could work with short term strategic reserve or flexible plant or a short term price based CRM for flexible generation.

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

Question	Answer
<p>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)?</p>	<ul style="list-style-type: none"> • Short term price signals targets payments at reliable and flexible generators • Capacity prices can be calculated ex-anti based on a regulated scarcity rent function which is responsive to the capacity margin at the DA stage and updated as positions change. More information is required on the form of regulated scarcity rent function. • Capacity payments are included in the bids at DA for market coupling and ID for cross border trading • Actual capacity calculation carried out Ex-post
<p>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)?</p>	<ul style="list-style-type: none"> • Agree that a strong incentive is provided to be available at times of scarcity as price of capacity varies with scarcity and is calculated ex-post. • More favourable to flexible generators who can deliver in the short term to cover intermittent generation and take advantage of short term price volatility • Unlikely that this will provide the long term predictability and stability of earnings important to investors due to revenue uncertainty. • Potential for market power and gaming – e.g. withholding capacity at the day ahead stage then releasing to capture CRM values. (a concern in the old GB pool)
<p>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?</p>	<ul style="list-style-type: none"> • Short term price based CRM would fit with all energy market options provided there was liquidity in the forward trading market to be able to adequately hedge volumes and price risk. • May not provide the predictability and stability of revenues required for investment. • Short term price based CRM could fit with a strategic reserve format targeted for long term generation adequacy.

2.9 QUANTITY-BASED CAPACITY AUCTION (CHAPTER 10.11)

Question	Answer
<p>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)?</p>	<p>AES does not support this option</p> <ul style="list-style-type: none"> • A TSO run Capacity Auction for set capacity requirement level including all generation technologies and demand side with capacity price set as clearing price of the auction. • Descending clock auction. • Capacity procured up to 3 years in advance provides longer term price signal and helps with predictability and stability of revenue. • Contracted to deliver capacity over periods of system stress with penalty arrangements for non-delivery up to VoLL. • Penalty arrangements not defined and could remove substantial benefit – more clarity required • Produces transparent capacity price, forward signal and is aimed at being market wide though penalty risk is likely to exclude intermittent generation. • Requires rules – to be defined – regarding cross border participation re volume that is eligible and risk of non-delivery.
<p>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)?</p>	<ul style="list-style-type: none"> • The potential for market power and gaming in the auction present problems for RAs and market operators. • Increased emphasis placed on the central forecast of the capacity margin requirement and may require some discretion over volume procurement rules and governance. • Experience in other markets has required extensive central involvement across all stages with constant tweaking and very extensive rule books (and training courses) • Provides a transparent price for capacity and a relatively stable framework for investment • Does not offer short term capacity price signal and can dampen energy prices as quantity based.
<p>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?</p>	<ul style="list-style-type: none"> • AES believes this CRM option is incompatible with Option 2- Mandatory ex post pool as regulated volume restrictions could prevent delivery of capacity leading to unacceptable risk of penalty exposure. • AES believes this CRM option is incompatible with Option 4 - Gross Pool net settlement due to an unacceptable risk of penalty exposure since central dispatch through an ex-post mandatory pool means a generator cannot be certain of running during critical periods.

2.10 QUANTITY-BASED CAPACITY OBLIGATION (CHAPTER 10.12)

Question	Answer
<p>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)?</p>	<p>AES does not support this option.</p> <ul style="list-style-type: none"> • Given the relatively small size of the SEM it is difficult to see how CRMs which rely on liquid trading of capacity obligations between relatively few participants can be effective. • TSO or RA decides/sets capacity requirement level including all generation technologies and demand side therefore open to risk of capacity requirement decision process. • Penalty levied if capacity not delivered at times of system stress up to VoLL as with auctions. • Allows for cross border participation with same requirement as auctions for rules regarding volume of out of zone capacity that is eligible – Rules need to be defined
<p>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)?</p>	<ul style="list-style-type: none"> • Agree less regulatory intervention required than with Auctions as more proactive approach from suppliers is required. This would incentivise suppliers to reduce their demand at times of system stress and reduce level of obligations to procure. • Presents opportunity for trading and re-trading of certificates on an organised platform though liquidity concerns remain. • As with auction, the penalty level could pose a high non delivery risk for participants imposed for non-delivery of capacity in times of system stress. • Could place onerous credit cover arrangements on market participants increasing cost of participation and favouring larger vertically integrated players and create barriers to entry if counterparties are seeking long term obligations from one another. • Agree capacity obligations do not offer short term price signal as can dampen energy scarcity prices • Market led approach to selecting and trading capacity allowing integration of capacity payments into existing commercial arrangements between suppliers and generators for efficiency
<p>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?</p>	<ul style="list-style-type: none"> • AES believes this CRM option is incompatible with Option 2- Mandatory ex post pool as regulated volume restrictions could prevent delivery of capacity leading to unacceptable risk of penalty exposure. • AES believes this CRM option is incompatible with Option 4 - Gross Pool net settlement due to an unacceptable risk of penalty exposure since central dispatch through an ex-post mandatory pool means a generator cannot be certain of running during critical periods. • This would also not work for intermittent generation due to their inherent unreliability

2.11 CENTRALISED RELIABILITY OPTIONS (CHAPTER 10.14)

Question	Answer
<p>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)?</p>	<p>AES does not support this option</p> <ul style="list-style-type: none"> • Required capacity quantity set centrally by TSO or RA options purchased centrally or by suppliers directly therefore this option contains a quantity decision risk. • Options purchased by market participants in based on centrally organised auction similar to capacity auction option. Obligation and financial incentive to be available over critical periods • Penalty based on reference price and therefore dependent on system tightness – proposed reference price to be the DAM price – but could be ID Auction price if these are developed. • Use of DAM would allow cross border participation but need to hold PTRs or FTRs to access the reference price.
<p>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)?</p>	<ul style="list-style-type: none"> • Capacity providers commit to providing energy (when required to) at spot prices (DAM) above the strike price set. • This option introduces potential exposure to high pay-outs. Both centralised and decentralised reliability options result in generators entering a one-way CfD. It is presumed that where the SMP is in excess of the strike price the generator will be generating and therefore will have revenue from which to pay the difference payment. It is not clear under any of the energy options that this will in fact be the case. If the generator is scheduled as a result of a non-energy balancing action the revenue the generator receives will be paid as bid. The generator will therefore not have received the revenue from which to pay the difference payment and the reliability option will be a liability. • Using DAM reference price does not capture the value of capacity close to real time ID auction would provide a reference price closer to real time. • Strike price will effectively act as a price cap as capacity providers will not receive energy prices above their strike price for their energy. • Real risk of dampened short term energy price signals if strike price is set low – below SRMC of peaking plant – impact for development of flexible generation. • There is insufficient detail to assess the viability of this option as it is less familiar and not widely used in other markets
<p>38. Would a Centralised Reliability Option work or fit more effectively with a particular option for the energy trading arrangements. If</p>	<ul style="list-style-type: none"> • AES believes this CRM option is incompatible with Option 2- Mandatory ex post pool as regulated volume restrictions could prevent delivery of capacity leading to unacceptable risk of penalty exposure. • AES believes this CRM option is incompatible with Option 4 - Gross Pool net settlement due to an unacceptable risk of penalty exposure since central dispatch through an ex-post mandatory pool means a generator cannot be certain of running during critical periods.

so, which one and why?	
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2.12 DECENTRALISED RELIABILITY OPTIONS (CHAPTER 10.15)

Question	Answer
<p>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)?</p>	<p>AES does not support this option</p> <ul style="list-style-type: none"> • Decentralised hosted scheme on an organised platform for market participants to trade capacity options with different strike prices • Market participants decide type of products they wish to buy and sell with combinations of strike prices. • Different strike price levels emerging in the market • Use of DAM as reference price for settlement though ID auctions would provide closer to real time reference price. • May be difficult to administer with central dispatch as generators need to be confident of being scheduled when energy prices approach the strike price.
<p>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)?</p>	<ul style="list-style-type: none"> • Agree this option provides greater freedom of choice to meet obligations • Potential for market power concerns due to the absence of a central buyer • To avoid exposure to high CfD pay outs generators need to be confident of being scheduled whenever energy prices exceed the strike price. Both centralised and decentralised reliability options result in generators entering one-way a CfD. It is presumed that where the SMP is in excess of the strike price the generator will be generating and therefore will have revenue from which to pay the difference payment. It is not clear under any of the energy options that this will in fact be the case. If the generator is scheduled as a result of a non-energy balancing action the revenue the generator receives will be paid as bid. The generator will therefore not have received the revenue from which to pay the difference payment and the reliability option will be a liability. • Energy prices less affected with more steps in the price duration curve. • No centrally defined level of capacity to be achieved. • No experience in other markets
<p>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?</p>	<ul style="list-style-type: none"> • AES believes this CRM option is incompatible with Option 2- Mandatory ex post pool as regulated volume restrictions could prevent delivery of capacity leading to unacceptable risk of penalty exposure. • AES believes this CRM option is incompatible with Option 4 - Gross Pool net settlement due to an unacceptable risk of penalty exposure since central dispatch through an ex-post mandatory pool means a generator cannot be certain of running during critical periods.